THE UNIVERSITY OF STIRLING

A SYSTEMS APPROACH TO OPERATIONS MANAGEMENT IN A GREEK MANUFACTURING COMPANY

BY

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Dedicated to

my parents

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ABBREVIATIONS

ATA *	Wages Indexation System
CIF	Cost, Insurance and Freight
CPI	Consumer Price Index
DEH *	Public Electricity Board
DM	Deutsche Mark
EBEΘ *	Commercial and Industrial Chamber of Thessaloniki
ECU	European Currency Unit
EEC	European Economic Community
EFTA	European Free Trade Association
EGSSE *	National General Collective Labour Agreement
EIU	The Economist Intellience Unit
EMS	European Monetary System
ERDF	European Regional Development Fund
ERM	Exchange-Rate Mechanism
ESF	European Social Fund
ETEBA *	National Bank of Industrial Investment and Growth
EUA	European Units of Account
FAO	Food of Agricultural Organisation
FEK *	Government's Gazette
FF	French Francs
FIFO	First-In, First-Out
FOB	Free on Board
GATT	General Agreement on Tarrifs and Trade
GDP	Gross Domestic Product
HP	Horse Power
ICAC	International Cotton Advisory Committee
IMF	International Monetary Fund
IMPs	Integrated Mediterranean Programmes
IND ENG	Industrial Engineering
IOBE *	Institute of Economic and Industrial Research
ITMA	International Textile Manufacturers Association
ITMF	International Textile Manufacturers Federation
ITS	International Textile Bulletin
IWTO	International Wool Trade Organisation
IWS	International Wool Secretariat
J SYST ENG	Journal of Systems Engineering
J SYST MANAGE	Journal of Systems Management
J TEX I	Journal of the Textile Institute
KEEM *	Exports Studies Research Centre
KYDEP *	Public Enterprise for Products Distribution and Trade
KYSYM *	National Ministerial Consul
LDCs	Lesser Developed Countries
LIFO	Last-In, First-Out

MFA	Multifibre Arrangement
MMF	Man-Made Fibres
N *	Law (Parliamentary)
ND *	Legislative Act (Ministerial)
NE *	Monetary Committee (Bank of Greece)
NSSG	National Statistical Society of Greece
OAED *	Employment Organisation of Labour Force
OE	Open-End
OECD	Organisation for Economic Co-operation and Development
PAEGA *	National Warehousing Enterprise
PASOK *	Panhellenic Socialist Movement
PD *	Presidential Act (Precidency)
PSBR	Public Sector Borrowing Requirement
SBBE *	Federation of Northern Greece Industries
SEB *	Federation of Greek Industries
TEXT HORIZONS	Textile Horizons
TEXT I IND	Textile Institute and Industry
TEXT IND	Textile Industries
TEXT MONTH	Textile Month
UN	United Nations
UNCTAD	United Nations Conference on Trade and Development
UNIDO	United Nations Industrial Development Organisation
USA	United States of America
USD	United States Dollar
USSR	Union Soviet Socialist Republic
VAT	Value Added Tax
VDU	Video Display Unit
WIRA	Wool Industries Research Association (UK)
WPI	Wholesale Price Index

Note: * Greek standard notation

SUMMARY

SUMMARY

The intention of this work was to examine the infra-structure of a medium-sized Greek textile manufacturing enterprise. The organisation became a leading acrylic blanket producer at national level, as a result of the management's receptivity to transfer of the highest standards of technology and expertise. The business was geared to the quality end of the market and offered its customers a high added value range of products.

At the initiation of the systems study, the problem was conceived as one of inadequate production planning and stock control procedures. The high customer service level policy was accomplished through substantial stockholding on the part of the firm and resulted in inventories being the company's highest current assets component. A systems approach to the operations of the organisation indicated problems of information discontinuity, while barriers of communication were caused by lack of clear objectives.

Analysis of the existed procedures led to the creation of three new sub-systems: the production scheduling, the quality control and the marketing departments. Material and information closed-loop controls were established and job description systems were introduced. An internal management reporting system was designed to facilitate improved decision making. In the implementation stage the author concentrated on training the systems/users while operational difficulties were resolved during actual running.

The project's objective was the development of an open system which would maintain dynamic equilibrium with its surrounding environment. Planning and control procedures made the internal

sub-systems interactions controllable, but the external changes created difficulty. Growing recession and government austerity policies exercised considerable influence on the operations of the system/organisation. Company viability was safeguarded, a make-to-order policy was pursued and a new business structure was created.

This work is considered to exemplify the Greek industrial sector and the difficulties which will be experienced in deploying modern management methods in Greek manufacturing industry.

CHAPTER 1

INTRODUCTION

1. INTRODUCTION

1.1 THE INTERNAL SYSTEM : COMPANY PROFILE

1.1.1 1935-1973 : A HISTORICAL BACKGROUND

The company was founded in 1935 by two entrepreneurs who established a partnership and acquired wooden shuttle looms for weaving textile products such as: tablecloths, bedspreads and women fabrics. The small firm was located in the eastern part of Thessaloniki in leased premises, employed a few people, while both partners were involved in the day-to-day operations of the business. Incoming materials were spun yarns, purchased from home manafacturers, while the articles produced were predominantly sold in the local market.

The company's shape was changed in the post-war period when in late 1953 the next generation of the family was involved in the business. Details of the shareholding and structure of the company are shown in Table 1.1. The firm was not able to fully benefit from the favourable 1960's change in Greece's economic environment because in February 1965 the premises were devastated by fire, insurance cover was inadequate. Thus the company's initial growth period was terminated by that unforeseen event.

Following the destruction of the old company, the business was continued initially by subcontracting weaving and finishing of blankets elsewhere, but when the first difficulties were over, their own production began again in leased premises. Having decided to re-equip and modernise the business; metal shuttle looms were imported from abroad and new premises were acquired in January 1966, at Kalohorion in the Western part of Thessaloniki. The new company was named OR.SALIARIS & SONS and specialised in the manufacture of viscose blankets.

The business established a reputation for quality, seeking improvements in product development, valuing aesthetic appearance of the finished goods and by providing high customer service. Using an agents' sales network in the home market, the increasing demand for the company's products enabled the business to grow in terms of esteem and sales volume, while the profits at the end of each financial year permitted further expansion. During a period of monetary stability and rapid economic growth the enterprise experienced growing sales turnover and created a strong company image in the Greek market. The key elements of success were: high product quality, close financial controls and good selling strategy. The owner managers established good industrial relations with their employees, who in the early 1970's accounted to about 40 people. The shift in the consumers' preference for a lighter and luxurious type of product was met by the company in 1972 when the production of the acrylic blankets began.

1.1.2 1974-1982: THE NEW STRUCTURE

The increasing demand for high quality acrylic blankets was a result of the significant improvement of the living standards in Greece. The management of the company grasped the opportunity to expand the business and in 1974 a decision was made to modernize the plant and machinery. Acrylic blanket processing required an extensive range of new technology equipment which had to be purchased. Orders were placed with foreign machine manufacturers and a year later, in mid-1975 when the construction of the new buildings was completed, a high capacity dyeing plant was installed, followed by a coarse count spinning plant, new automatic shuttleless looms, along with raising, cutting and polishing

machines for the acrylics production finishing plant. The re-equipment scheme made the company's structure vertical - from fibres to finished goods - providing modern outlook in the market, mainly financed by the Greek banking sector.

In late 1975 the company signed a franchise agreement with BAYER A.G, being offered the exclusive use of the high quality DRALON ^{R} fibre for the Greek blanket market. As a result of negotiation with BAYER A.G, OR. SALIARIS & SONS was provided with technology and expertise transfer so that the acrylic blankets produced would reflect the high quality of the DRALON ^{R} fibre. It appears that the company best met the challenge in the 1970's by adhering to its philosophy of providing goods of high quality and value. Following the company's market orientation no more viscose blankets were produced after 1974, while the management specialised in the acrylic blankets processing.

The company went public in 1978 named OR. SALIARIS S.A, and since then it has grown steadily to become one of the leading acrylic blanket manufacturers in Greece in the late 1970's. The management of the company demonstrated strength in the areas of productivity and end-product quality. Despite the deepening world recession, the Greek textile industry continued to expand and OR. SALIARIS S.A. followed the prevailing pattern. In an attempt to expand, the construction of a new 5,000m^2 factory was ordered in 1979. The site was opposite the 7,500m^2 old plant while orders for new machinery in the weaving and finishing departments were to be placed. Furthermore in early 1981 another factory - a woollen finishing plant - was acquired in Trikala, Thessalia. The latter investment decision was made based on the grounds that the company required additional specialised machinery, namely: scouring/milling, stentering and raising machines for wool fabrics processing.

In late 1982 the new factory premises in Thessaloniki were completed, but the growing recession in the Greek economy made the management reluctant to proceed with new machinery installation. Furthermore by the end of the 1982 financial year the Managing Director of the company retired from the business and sold his equity to the technical director of OR. SALIARIS S.A. At that time the magnitude of the problems were not easy forseen, particularly from the technical side of the company - in a period when production was still booming -. The post 1982 developments are presented by the author in the subsequent chapters. Map 1.1 shows the location of the Thessaloniki's industrial areas, while their breakdown in terms of number of companies and persons employed, as presented in **Euroeconomy (1982)**, is illustrated in **Table 1.2.**

TABLE 1.1: THE COMPANY'S SHAREHOLDINGS AND STRUCTURE

Date	George Dardoufas	Orestis Saliaris	Susan Saliaris	George Saliaris	Paul Saliaris	Christoforos Saliaris	Total
05/01/1935	30%	10%	60%	-	-	-	100%
10/09/1945	-	20%	80%	-	-	-	100%
01/01/1951	-	20%	40%	20%	20%	-	100%
29/08/1953	-	-	45%	25%	25%	5%	100%
23/03/1962	-	-	50%	25%	25%	-	100%
01/05/1965	-	-	40%	25%	25%	10%	100%
31/01/1966	-	-	25%	25%	25%	25%	100%
29/01/1970	-	-	25%	37.5%	37.5%	-	100%
01/01/1978	-	-	-	50%	50%	-	100%
01/01/1983	-	-	-	100%*	-	-	100%

Note: * G. Saliaris - 83,858 ordinary shares, 99.9% of the equity stock

O. G. Saliaris - 100 " " , 0.1% " " " "

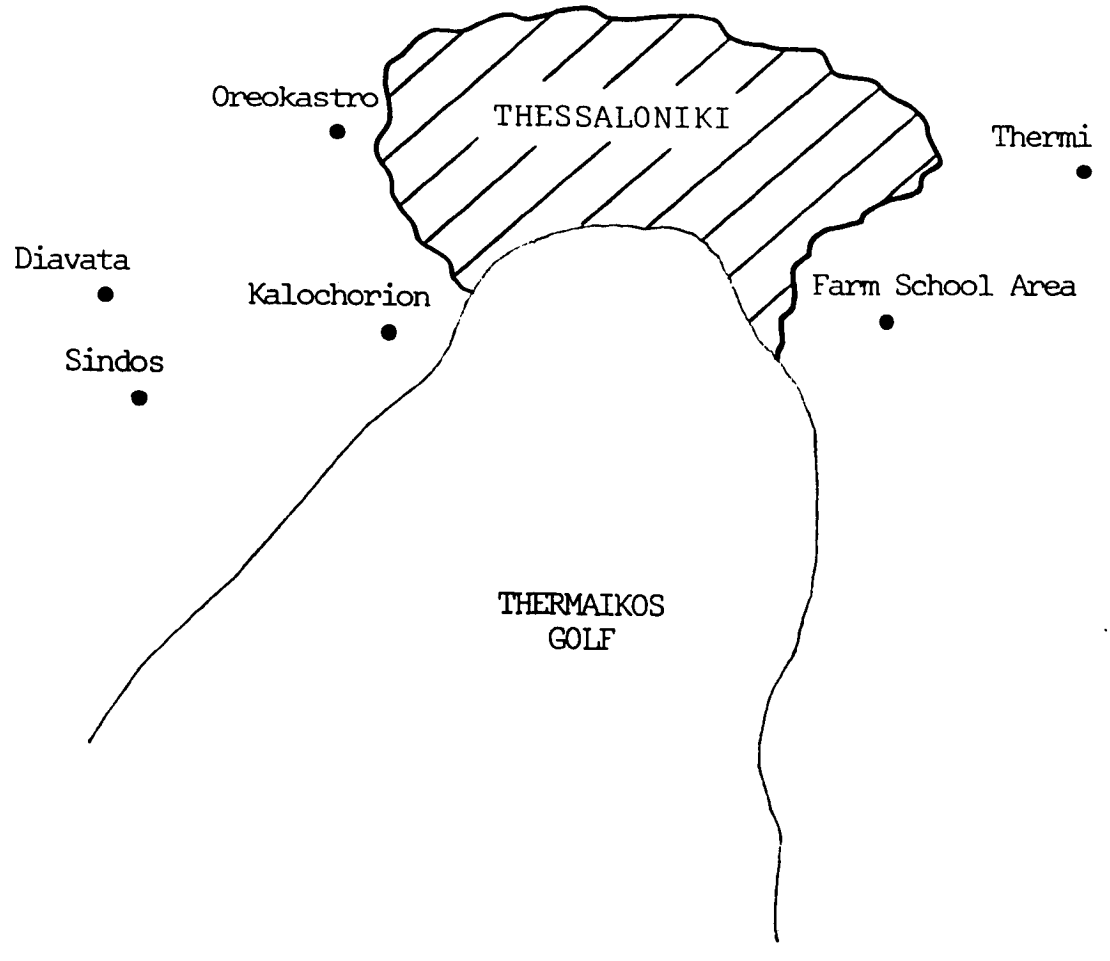
83,958 100.0%

TABLE 1.2: THESSALONIKI INDUSTRIAL AREAS (1982)

THESSALONIKI GREATER AREA					
WESTERN AREA			EASTERN AREA		
Location	No. of Companies	No. of Employees	Location	No. of Companies	No. of Employees
Sindos	30	4,785	Farm School Area	42	4,985
Kalochorion	89	10,250	Thermi	18	1,623
Diavata	40	5,680			
Oreokastro	59	10,355			
TOTAL:	218	31,070	TOTAL:	60	6,608

Source-Reference: Euroeconomy (1982) "Thessaloniki's Industrial Areas" Nov-Dec (31-32) 17

MAP 1.1: THESSALONIKI INDUSTRIAL AREAS



1.2 AN APPRAISAL OF THE COMPANY AND ITS ORGANISATION POST 1982

1.2.1 ANALYSIS OF THE PROBLEMS

A preliminary study by Saliaris (1982) identified a variety of problems at OR. SALIARIS S.A. summarised as follows:

(i) a strong seasonal home sales pattern,

(ii) the value of the company's inventory was high and increasing,

(iii) inadequate stock control procedures, particularly in the areas of yarns and finished goods inventories,

(iv) the quality of information throughout the system was relatively poor, and

(v) no organisation plan; communication barriers due to undefined job description requirements.

The detailed analysis of the organisation's finished goods, during the summer of 1982, indicated a wide range of designs and colour combinations. At that time there were 70 different blankets designs in 6-7 colour combinations each, an aggregated sum of approximately 450 product classifications. The problem was created by the management's aim to provide an extensive variety of end-products to more than 4,000 customers spread throughout the home market. The company's agents exercised considerable influence in the expansion of the annual collection of blankets, since such development made their job easier and provided them with higher returns. Thus the sales philosophy of OR. SALIARIS S.A. was immediate execution of the customers' orders by the creation of a huge stock of finished goods. As a result, the company's yarns and end-products warehouses were filled to capacity and prior to the peak demand period there was an ex-factory leased area to accommodate the excess stocks. It was highlighted to the management of the company the

importance of the cost of capital tied in various forms of stocks, but it appeared to be a matter of indifference at the time. Particularly in the case of the finished goods inventories, products of high demand were often out of stock while slow-moving products were stocked. Furthermore processed materials were scattered in a disorderly manner throughout the system.

In 1981 despite the first signs of the growing recession in Greece the company achieved a total net sales turnover of 252 million drachmas, an increase by 13.8% compared with 1980. In addition the organisation's profit before taxation reached a total of 13.2 million drachmas for the financial year ended in December 31st, 1981 against 8.0 million drachmas in 1980. On the other hand the significant increase by 48.1% of the stocks value to 88.9 million drachmas in 1981 was a serious matter which the management of the company had to consider and take all necessary measures by modifying its business policy. In the early 1980s, as a result of inventories being the company's highest current assets component, increased interest payments had to be met. Unecessary bank loans were obtained, mainly for financing the business short-term capital requirements for investment in stocks - particularly during the low demand period. Total interest payments accounted for 25.0 and 22.9 million drachmas in 1980 and 1981 respectively.

The problem of rising stocks in terms of units (blankets), and kgs (yarns) was caused by the management's conflicting objectives. Aiming to keep the factory operating on a 3-shift basis to achieve high production rates and improved labour and capital productivity, kept on manufacturing rolls of woven blankets - 20 pieces per roll per product quality, design and colour combination - thus contributing to the increasing inventory level of work-in-progress and finished goods.

Furthermore the sales department lacked the necessary information of the end-products stocks breakdown while the problem became worse by the spread of the warehouses and the inconsistency in the storage and allocation of the finished goods. On the other hand the agents' imperfect knowledge of what was actually in stock at the factory's premises amplified the problem since there was no coherent co-operation between the sales department and the firm's representatives.

Diagram 1.1 illustrates a flow diagram of the company production-sales system at the initiation of the project. Customer orders from the business agents were received by the sales department, and instructions were passed to the production departments to build up stocks. The lack of the appropriate procedures for planning and control resulted in imperfect knowledge of the process materials characteristics. The batch size of the woven blankets and the wide variety of the designs and colour combinations made the situation extremely complicated. That imperfection of information imposed excessive stock-holding costs to the company and there seemed to be a growing requirement for corrective action.

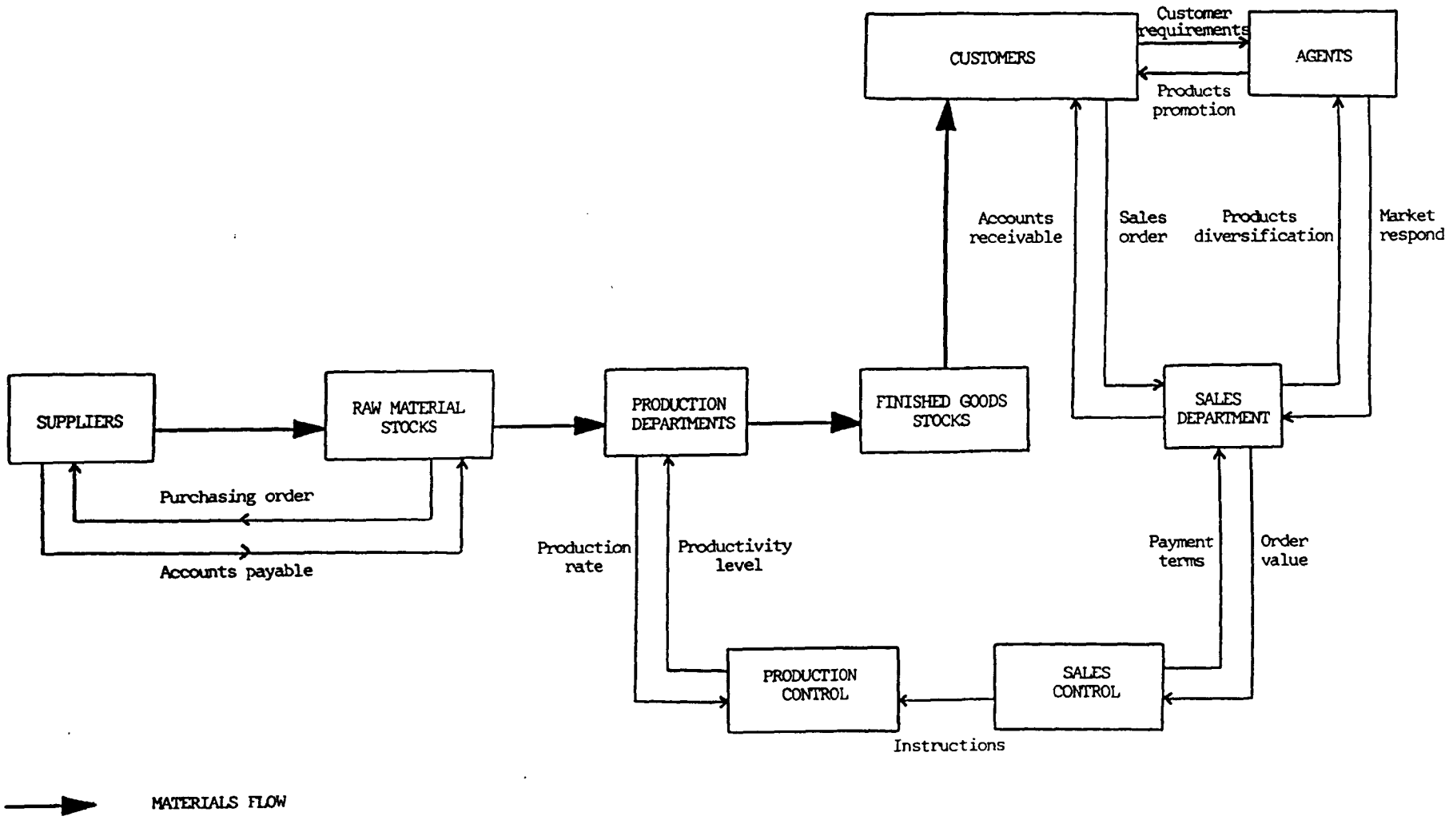
It became apparent that the company had not explored all possible opportunities for new product development or diversification within the existing lines, nor searching for new markets. The function of export marketing had been neglected due to the high home market's demand for acrylic blankets which the business had experienced since the mid-1970's. It was evident at the time that the management was more product rather than market orientated. The home market's sales seasonality was not a major issue in the 1970's in a period when interest rates in Greece were comparatively low and the company could afford to invest in inventories, but during 1980 and 1981 the accounting figures suggested a dramatic change in the business stock-holding costs.

1.2.2 OPERATIONS MANAGEMENT

At the conception of the research work commercial and financial procedures were carried out under the control of the Managing Director, while the day-to-day production scheduling was monitored by the Company's Chairman. Both these areas of responsibilty were well defined but it was at the interface between the areas of responsibility that improvement was required. The company had become competitive and profitable by judicious management decision making, however in order to continue being one of the leading blanket manufacturing firms it was suggested that it would have to update its management structure. The delegation of authority within the organisation and the areas of responsibility had to become identifiable and actionable and it was thought that improvements had to take place by means of job descriptions within the hierarchy. The problems highlighted discontinous information, incomplete or non-existent data and in certain areas barriers of communication were to be eliminated. Clear objectives and achievable targets had to be set by the Board of Directors for issues of major importance such as: the required profit margin, the sales turnover target and the annual growth rate.

On the other hand the creation of closed-loop controls within the structure could facilitate, not only improved material flows between the organisation's production departments, but would also result in the establishment of the appropriate information flows throughout the business. The unilateral flows, particulary among the company's production and sales sub-systems, as shown in **Diagram 1.1**, had to be phased out by the adoption of the necessary policies and procedures, suggested in the course of this study by the author, approved by the Board of Directors, and implemented by company personnel.

DIAGRAM 1.1: OR. SALIARIS S.A. BLANKET MANUFACTURE.
THE EXISTED PRODUCTION-SALES SYSTEM OF THE COMPANY



CHAPTER 2

THE SYSTEMS CONCEPT

2. THE SYSTEMS CONCEPT

2.1 LITERATURE REVIEW

2.1.1 THE EMERGENCE OF SYSTEMS THINKING

Looking at the subject matter from a broad view it becomes evident that the study of 'systems' is not a new pursuit of the human mind. The historical emergence of the systems thinking has been discussed in depth by many authors such as: Hare, Checkland, Churchman, Bertalanffy and Ackoff to mention a few. Even though it appears that there has not been an exhaustive study in the field and contradictions exist between the various researchers as to the description and classification of the material, the various approaches to the subject highlight its importance during the evolution of time both from a philosophical and a scientific perspective.

Hare (1967) traced the systems study back in the time of the Egyptian architects, the Phoenician astronomers and the Greek philosophers. Checkland (1984) examined the systems movement in the context of science; from the Greek science to the medieval science to the scientific revolution and beyond, while Churchman (1968) started his retrieval on the subject from the Plato's Republic, seen as a systems-science book, and proceeded through the modern times. Bertalanffy (1968) regarded the systems philosophy as "the reorientation of thought and the introduction of 'system' as a new scientific paradigm; in contrast to the analytic, mechanistic, on-way causal paradigm of classical science", and Ackoff (1974) introduced the emergence of the 'systems age' and the argument of the synthetic thinking.

The roots of the systems theory can be traced in the early 1920's when preliminary work in the field was carried out in physics, organic chemistry, biology and phychology. Lotka (1925) in examining population

problems in physical biology conceived communities as systems while regarding the individual organism as a sum of cells. He introduced basic formulations to the subject area and adopted an attitude towards a general concept of systems. **Köhler (1927)** in his study of biological phenomena raised the postulate of a system theory when general properties of inorganic systems were compared under the theory of open systems. Research work on metabolism, growth and the biophysics of the organism resulted in the establishment of the theory of open systems and steady states which had been seen as an expansion of conventional physical chemistry, kinetics and thermodynamics.

The review paper by **Köhler (1938)** commented on the nature of closed and open systems (organisms), studied the concept of equilibrium and discussed systems' holistic nature. **Angyal (1941)** investigated the existence of vagueness and obscurity in the early holistic theories and having examined some holistic principles and concepts suggested the possibility of a logical formulation. The literature review on the subject indicates quite clearly that the biologists have been among the pioneers in establishing ways of thinking in terms of wholes. As argued by **Checkland (1984)**" in biology during this century there has been an often truculent debate about the nature of an organism. This debate has been one version of a wider debate between reductionism and holism. The terms of that debate have changed, and the change signals the emergence of systems thinking".

Various studies on the subject matter resulted in the adoption of the organismic viewpoint. General system laws appeared to exist which could be applied to any system, irrespective of its particular properties and the elements involved. These considerations led the biologist Ludwig von Bertalanffy in the late 1930's to the postulate of a new scientific

discipline which he called 'general system theory'. He formulated principles which were valid for 'systems' in general, whatever the nature of their component elements and the relations or 'forces' between them. As mentioned in Checkland (1984) "it was Bertalanffy who in the mid 1940's, generalized organismic thinking concerned with systems in gereral". This leading biologist suggested generalizing this thinking to refer to any kind of 'whole', not simply to the study of biological systems. Checkland (1984) commented that "in treating the living organism as a whole, as a system rather than simply as a set of components together with relationships between components, von Bertalanffy drew attention to the important distinction between systems which are open to their environment and those which are closed".

Bertalanffy (1940) defined an open system as one "having import and export of material". Under his general system model "an open system maintained itself in a continuous inflow and outflow, a buliding up and a breaking down of components". It was only after the second world war that his first publication on the subject matter appeared. Bertalanffy (1950) introduced the idea that all living organisms are open systems and as such interact with their environment. He suggested that living systems maintaining themselves in a steady state, can avoid the increase of entropy - amount of disorder or randomness present in any system - and may even develop towards states of increased order and organisation. As opposed to closed systems where the change of entropy is always positive, in the case of open systems we do not have only production of entropy due to irreversible processes, but also import of entropy which may well be negative.

Bertalanffy (1968) advocated that "at first systems - biological, neurological, psychological or social - are governed by dynamic interaction of their components; later on, fixed arrangements and conditions of constraint are established which render the system and its parts more efficient, but also gradually diminish and eventually abolish its equipotentiality". His general system theory indicated that "open systems, as long as they attain a steady state must show equifinality, so the supposed violation of physical laws disappears". As stated in Schoderbeck, Schoderbeck and Kefalas (1985) under the concept of equifinality "final results may be achieved with different starting conditions and with varying inputs and in different ways".

Bertalanffy (1956) having accepted that open systems move in the direction of differentiation and elaboration he suggested that one type of differentiated growth in systems was what he termed 'progressive mechanization'. Bertalanffy (1968) indicated that 'progressive mechanization' plays an important role in biology, but mechanization is never complete in the biological realm; even though the organism is partly mechanized, it still remains a unitary system; this is the basis of regulation and of the interaction with changing demands of the environment". The system's self-regulating nature was underlined by his advocation that "as long as a system is a unitary whole, a disturbance will be followed by the attainment of a new stationary state, due to the interactions within the system". As highlighted by Schoderbeck, Schoderbeck and Kefalas (1985) "the general systems theory is based on the assumption of unity of nature and sustains the search for the isomorphy of concepts, laws, and models in the various scientific disciplines".

Ashby (1956) recognised the wide applications of the subject of regulation; covering most of the activities in physiology, sociology, ecology and economics and much of the activities in almost every branch of science and life. He introduced the law of requisite variety which enabled to apply a measure to regulation. Furthermore as discussed by Checkland (1984) he attempted "to formulate in general terms the requirements for any controller which governs the overall behaviour of a system in an environment with which it interacts". Ackoff (1974) argued that "although eras do not have precise beginnings and endings, the 1940's can be said to have contained the beginning of the end of the 'machine age' and the beginning of the 'systems age'". He suggested that "this new age is the product of a new intellectual framework in which the doctrines of reductionism and mechanism and the analytical mode of thought are being supplemented by doctrines of expansionism, teleology, and a new synthetic mode of thought". Bertalanffy (1968) advocated that "inclusion of the biological, behavioural and social sciences and modern technology necessitates generalization of basic concepts in science; this implies new categories of scientific thinking compared to those in traditional physics; and models introduced for such purpose are of an interdisciplinary nature".

Checkland (1984) argued that it is the concept of organized complexity which became the subject matter of the new discipline 'systems'. The problems of organized complexity demanded the adoption of new conceptual tools. Among the most influential developments aiming to meet the needs of a general system theory are cybernetics, information theory, game theory and decision theory. The usefulness of the latter two theories was recognized by Ackoff (1959) to whom we owe the advancement of the subject. Information theory, as argued by Checkland (1984),

resulted from the work done in the field by Nyguist, Hartley, Fisher, Shannon, Ashby to name a few. Cybernetics was introduced by Norbert Wiener and definite contributions to the theory were made by W. Ross Ashby and Stanfford Beer among a number of others. **Wiener (1948)** defined cybernetics as "the entire field of control and communication theory, whether in the machine or in the animal". For **Ashby (1956)** the subject of cybernetics deals with "all forms of behaviours in so far as they are regular, or determinate or reproducible. The cybernetic theory shows that the mechanisms of a feedback nature are the base of teleological behaviour in man-made machines as well as in living organisms, and in social systems". Over the last decades the idea of feedback has been gradually transferred to the political, social, economic and managerial fields.

Boulding (1953) introduced a general system theory application to human society. He formulated a general model of organisation and stated his 'iron laws' which are valid for all organisations; the law of optimum size of organisations, the law of instability and so on. He extended the work of Bertalanffy and within a hierarchy of complexity he arranged his theoretical 'system of systems'. **Boulding (1956)** designed an ordering of systems with a hierarchy of nine levels or organisation, based upon the sole criterion of complexity. Boulding's hierarchy theory led to a systematic approach to the study of systems with wide range of applications. The structuring of a hierarchy of levels of complexity necessitates the examination of the fundamental differences between one level of complexity and another. Stanfford Beer took the work of Boulding and demonstrated a broader systems classification. **Beer (1964)** used the criteria of complexity and predictability. Under his first criterion systems were classified as simple, complex and exceedingly complex, while the second criterion explored the system's deterministic or probabilistic nature.

During the 1940's scientists focused their attention in the study of the military systems. Their team effort in the subject matter was called operation research and this field of interdisciplinary area was developed gradually in the post-war years and provided systematic knowledge from the study of military as well as commercial operations. Attempts to formulate an interdisciplinary conceptual system were carried out by **Churchman, Ackoff and Arnoff (1957)**, while **Ackoff (1960)** directed his efforts to the study of organisational problems, an approach which involved the examination of systems/organisations decision making procedures.

As argued by **Blanchard and Fabrycky (1981)** "the development of systemology in the late 1940's resulted in the formulation of an even broader unifying concept than cybernetics. Having accepted that basic principles common to all systems could be found which went beyond the concept of control and self-regulation, a common ground for interdisciplinary relations was required in the study of complex systems. During the last three decades cybernetics has developed as a new science of purposeful and optimal control with a wide range of applications in complex processes in nature, society and business organisations. It is well accepted nowdays that a system's goal-seeking behaviour is controlled by the adoption of the concept of feedback of corrective information regarding deviation from a desired state".

In the post-war period the advances in Bertalanffy's general system theory continued by Boulding, Beer, Ashby, Wiener, Ackoff, Quade, Churchman, Hall and Jenkins, to name a few. **Beer (1966)** declared that "one of the most important developments of the twentieth century has been the concept of systems. In widely deverse field, systems thinking has enabled man to counteract complexity and achieve major advances". Systems

thinking as argued by **Checkland (1984)**" could not do without the idea of information, although its precise difinition raises some problems which are not yet solved. It is important in reaching an understanding of the nature of systems thinking to acknowledge both the importance of information as a concept and the severe limitations of information theory as it exists at present". According to **Schoderbeck, Schoderbeck and Kefalas (1985)** "systems thinking can be seen as a way of conceptualizing whose objective is to reverse the subdivision of the sciences into smaller and more highly specialized disciplines through an interdisciplinary synthesis of existing scientific knowledge". **Jenkins (1969)** highlighted that "systems thinking is founded upon two pair of ideas, those of emergence and hierarchy, and communication and control". In an attempt to tackle effectively the growing 'real-life' complex problems the systems approach has been commonly adopted in recent years aiming to take a broad view of the related problem area(s) while concentrating upon the interactions between the different parts of the system(s).

2.1.2 THE EVOLUTION OF THE SYSTEMS APPROACH

2.1.2.1 THE SYSTEMS VIEW

The etymology of the word system as stated in **Jenkins (1969)**" comes from the Greek systema which can be broken down into syn meaning 'together' and histemi, which means to 'set'. Systems may be natural, such as living organisms; systems may be contrived, such as social organisations". In managerial context 'systems' have been defined in a number of ways by many writers. According to **Churchman (1968)** "a system is a set of parts co-ordinated to accomplish a set of goals". **Grad et al (1979)** suggested that "a system is any dynamic entity that accepts or receives inputs, uses resources to perform physical and informational

transformations, and produces outputs for further use". Jenkins and Youle (1971) argued that "a system is any grouping of resources with a definite objective", while Schoderbeck, Schoderbeck and Kefalas (1985) viewed a system as "a set of objects, together with relationships between the objects and between their attributes, connected or related to each other and to their environment in such a way as to form a whole".

In a broad view one could expect systems; such as set of ideas, theories or principles, schemes or plans, groups of things or parts to work together in a regular relation, or to be connected into a whole, to be in harmony or agreement with each other. In the 'real-world' systems are by nature complex and interdependent while often have conflicting objectives. Thus complex problems have to be solved by a methodical approach not necessarily sophisticated solutions are required, but a sensible and economic approach by means of a coherent systems design.

The systems approach evolved out of the general system theory. The methodology was formalized and advocated by Ludwig von Bertalanffy and in the early days of the new subject Weaver, Rapoport and Horvath among others used the words 'organized complexity' to describe its nature. Churchman, Ackoff and Arnoff (1975) argued that the systems approach has been described as "a quantitative technique with roots as old as science and management functions". Ramo (1970) characterized the subject matter as "a technique which can be applied for a scientific approach to complex problems. The systems approach concentrates on the analysis and design of the whole, as distinct from the components or the parts. It insists upon looking at a problem in its entirety, taking into account all the facets and all the variables, and relating the social to the technology aspects". In a similar vein, Ackoff (1974) suggested that "the synthetic mode of thought, when applied to systems problems, is the

systems approach". Checkland (1984) added that "the systems outlook, accepting the basic proposition of science for it is a part of the scientific tradition, assumes that the world contains structured wholes, which maintain their identity under a certain range of conditions, and which exhibit certain general principles of 'wholeness'".

The full-scale revolution of the approach came in the 1960s and has been regarded by authors such as Churchman, Ackoff, Checkland, Jenkins, Hall, Ramo, Schoderbeck and Kefalas among others as an approach to problem(s) identification and formulation. It takes a broad view of the system's nature, tries to take all aspects into account, concentrates on interactions between the different parts of the problem(s) and suggests improved courses of action. In recent years there has been a noticeable growing need for tackling effectively 'real-life' problems. The emergence of 'systems thinking', 'systems approach', 'systems movement', 'systems science', 'systems management' and so on, emphasizes the significance of the required knowledge and understanding of the subject in order to cope with the increasing everyday complexity.

As argued by Schoderbeck, Schoderbeck and Kefalas (1985) the systems approach "implies some form of departure from the traditional analytical method so successfully employed with simpler problems. The increasing complexities of various modern-day projects make it impossible to look for isolated solutions to problems. Using the systems approach to problems, one can view a problem from various levels of resolution. The shift from the analytical approach to problems to the systems approach to the study of problems as a whole can be viewed as a change in methodology". Churchman (1968) in his examination of the subject matter discussed four different ideas as to what really constitutes the systems approach. He suggested the following grouping: "firstly 'the advocates of

efficiency' who claim that the best approach to a system is the identification of the trouble spots and then proceeding by removing the inefficiency, secondly 'the advocates of the use of science' in approaching a system, thirdly 'the humanists' who claim that systems are people; and the fundamental approach to systems consists of first looking at the human values, finally 'the anti-planners' who oppose any attempt to lay out specific and rational plans".

2.1.2.2 THE SYSTEMS APPROACH TO MANAGEMENT

The approach to the organisation system can be seen as the adaption of the work done in biology and the physical sciences by Bertalanffy and others in their examination of the system (organism). **Feibleman and Friend (1945)** suggested that "the study of an organisation must be approached from two standpoints - that of statics and that of dynamics. Statics treats organisations as independent of their environment and therefore as isolated from problems of interaction with other organisations. Dynamics treats the organisation as dependent to some extent upon their environment and therefore as interactive with other organisations". **Katz and Khan (1966)** indicated the need for an open-system approach to social organisations and stated that "such an effort should begin by identifying and mapping the repeated cycles of input, transformation, output and renewed input comprise the organisational pattern". **Schoderbeck, Schoderbeck and Kefalas (1985)** argued that "an enterprise should be conceived as a set of objects with a given set of relationships between the objects and their attributes, connected or related to each other and to their environment in such a way as to form a whole". It should be emphasized that the modern systems approach regards the organisations as open systems which are in constant interaction with their environment.

In a similar vein management systems have been described differently by a number of authors. **Grad et al (1979)** pointed out that the subject matter has been looked at from three viewpoints. "Firstly it has been regarded as a dynamic structure that holds an organisation together and makes it function in a living sense. Secondly it has been expressed as the total set of governing policies and procedures that enable a business or institution to carry out its functions and try to accomplish its objectives. Finally it has been argued that it encompasses rules for using the resources of an enterprise or an establishment within an organisation and makes it an operating entity". According to **Young and Summer (1966)** "a management system is the sub-system of the organisation whose components consist of a subset of individuals (man to man) whose duties are to receive certain organisational problems (inputs) and thereupon to execute a set of activities (process) which will produce organisational solutions (output) for either increasing the value or return the organisational activity (satisficing) or for optimising some function of the total organisational inputs and outputs".

The effective management of today's enterprises and organisations depend on the understanding of the environment of the system, the factors internal and/or external which influence the operation of the system and the interactions and interdependencies among the elements of the system. As discussed by **Cleland and King (1975)** successful managers of complex systems must possess:

" (i) an understanding of the technology of their 'business',

(ii) an understanding of the 'basic concepts of management',

(iii) an interpersonal style which facilitates their ability to get things done through others, and

(iv) an ability to conceptualize and to operate using a systems approach".

In a similar vein **Drucker (1974)** highlighted that "management is a practice rather than a science. It is not knowledge but performance". On the other hand **Tricker and Boland (1982)** expressed their attitude towards the growing importance of management information and control systems. They argued that "in this managerial world of increasing remoteness, scale, complexity and change, information becomes the key to the management effectiveness". The value of the systems concept to the management of an enterprise, according to **Cleland and King (1975)** can be seen in terms of two elements of the manager's job. "First, he desires to achieve overall effectiveness of his organisation - not to have the parochial interests of one organisational element distort the overall performance. Second, he must do this in an organisational environment which invariably involves conflicting organisational objectives".

2.1.3 SYSTEMS ANALYSIS

As argued by **Schoderbeck, Schoderbeck and Kefalas (1985)** "definitions of systems analysis are as varied as those of the systems approach itself. Indeed, some authors use both terms interchangeably". **Churchman (1971)** in his critique of the systems approach to social organisations he mentioned that "the 1950s saw the advent of what we now call 'systems analysis','operations research', 'management science' and a number of other names". He argued that "the magnitude of the names was caused by a dislike of such names as 'operations research' or even 'systems analysis', and so other names were suggested". According to **Cleland and King (1975)** the application of the systems concept in the planning function of management has come to be labeled 'systems analysis'. They argued that "systems analysis is a scientific process, or methodology, which can best be

described in terms of its salient problem-related elements. The systems analysis approach involves:

(i) systematic examination and comparison of those alternative actions which are related to the accomplishment of desired objectives,

(ii) comparison of alternatives on the basis of the resource cost and the benefit associated with each alternative, and

(iii) explicit considerations of uncertainty".

On the other hand **Neufville and Stafford (1971)** pointed out that "systems analysis at its core, consists of the application of classical microeconomic concepts to the problems of resource allocation. At its simplest, it would be a quantitative study of the possible ways to achieve certain goals or to use available resources". **Quade (1964)** accepted systems analysis as "a precise, logical and scientific method which he applied in his analysis for military solutions". He opposed the generalization of his predecessors who according to **Hoos (1972)** viewed the subject matter as "an art, without fixed rules, universally accepted principles, and criteria for quality". **Bryne, Mullaly and Rothery (1969)** in their application of systems analysis to the industrial environment examined in depth the structure and the functions of the enterprise, highlighted the classification of 'key and link elements' within the system, emphasized the need for the control system and examined the importance of environment's influence upon the system.

Young and Summer (1966) described the subject matter as "a process of subdivision and the establishment of progressively smaller subparts of the system". Possibly **Schoderbeck, Schoderbeck and Kefalas (1985)** came closer in providing a definition of systems analysis within the context of the modern systems management approach to organisations and

enterprises. They suggested that "systems analysis is the organised step-by-step study of the detailed procedures for the collection, manipulation, and evaluation of data about an organisation for the purpose of determining not only what must be done but also to ascertain the best way to improve the functioning of the system". **Hoag (1973)** argued that "systems analysis is a systematic examination of a problem of choice in which each step of the analysis is made explicit wherever possible". **Rivlin (1971)** pointed out that "difficulties, contradictions and complexities stem from three main sources: looseness of the word system; laxity as to usage of terms, with virtual interchange among systems analysis, systems engineering, and systems management".

The first approaches to systems engineering were concerned with structured, machine-like aspects. The subject was developed in the 1960s and definite contributions to the systems approach were made by Hall, Jenkins, Youle, Blanchard and Fabrycky among others. **Jenkins and Youle (1971)** described systems engineering as "the science of designing complex systems, by the efficient use of resources in the form of men, money, machines and materials, so that the individual parts (or sub-systems) making up the overall system can be designed, fitted together, checked and operated so as to achieve the overall objective in the most efficient way". Furthermore they pointed out that "systems engineering replaces a piecemeal approach to problem solving in organisations by a disciplined, overall approach". **Gross and Smith (1976)** argued that "systems analysis-design phase can be viewed as being the 'front-end' of systems engineering and systems management", whereas in **Jenkins (1969)** systems analysis is presented as "the first step in systems engineering". As pointed out by **Hall (1962)** "systems engineering employs the methodology of cybernetics, information theory, network analysis, flow and block diagrams and so on".

A block diagram ordering of various systems approaches is illustrated by **Schoderbeck, Schoderbeck and Kefalas (1985)** and shown in **Figure 2.1.** Among the particularized systems approaches; systems analysis has been selected as the most appropriate conceptual tool and applied in the operations of the organisation examined in this work. In an attempt to tackle complex problems, all aspects should be taken into account. A systems analysis approach to a complex environment would have to examine the interactions between the different parts of a problem(s). Since the various elements of a system are often interdependent and do interact among each other it is important to examine the main properties of systems. As discussed in **Jenkins (1969)** "an important characteristic of systems is that may be broken down into sub-systems and a convenient and readily understood way of displaying that can be provided by a flow-block diagram where individual sub-systems or process units, making up the whole system are displayed as blocks and the links or flows between them, as arrows. The flows between individual sub-systems may refer to Money, Materials, Energy, Information or Decisions". A summary of the main properties of systems, as described by **Jenkins (1969)**, is presented in **Figure 2.2.** **Schoderbeck, Schoderbeck and Kefalas (1985)** argued that "of all the proponents of systems, C. West Churchman has given us perhaps one of the more logical expositions of the subject". **Churchman (1968)** outlined "five basic considerations concerning systems thinking.

(i) objectives of the total system together with performance measures,

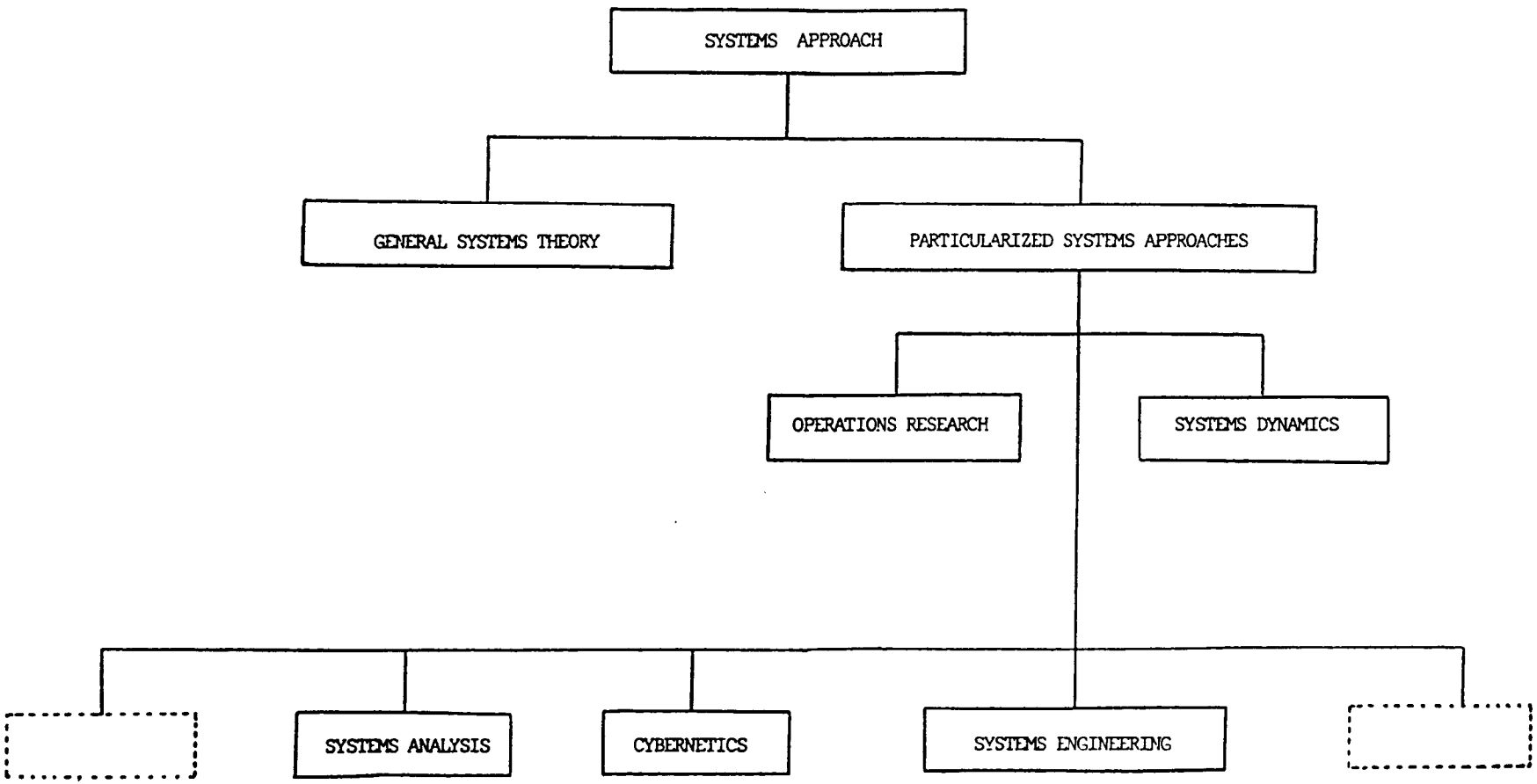
(ii) the system's environment,

(iii) the resources of the system,

(iv) the components of the system, and

(v) the management of the system".

FIGURE 2.1: ORDERING OF VARIOUS SYSTEMS APPROACHES



Source-Reference: Schoderbeck, P.P., Schoderbeck, C.G. and Kefalas, A.G. (1985) "Management Systems. Conceptual Considerations" Business Publications, Inc., Texas 8

FIGURE 2.2: SUMMARY OF PROPERTIES OF SYSTEMS

1. A system is a complex grouping of human beings and machines.

2. Systems may be broken down into sub-system, the amount of sub-system detail depending on the problem being studied. Flow-block diagrams provide a readily understood way of describing these sub-systems.

3. The outputs from a given sub-system provide the inputs for other sub-systems. Thus the performance of a given sub-system interacts with the performance of other sub-systems and hence cannot be studied in isolation.

4. The system being studied will usually form part of a hierarchy of such systems. The systems at the top are very important and exert considerable influence on the systems lower down.

5. To function at all, a system must have an objective, but this is influenced by the wider system of which it forms part. Usually, systems have multiple objectives which are in conflict with one another, so that an overall objective is required which effects a compromise between these conflicting objectives.

6. To function at maximum efficiency, a system must be designed in such a way that it is capable of achieving its overall objective in the best way possible.

Source-Reference: Jenkins, G.M. (1969) "The Systems Approach" J Sys Eng 1 (1)

2.1.4 PRIOR RESEARCH. PERIPHERAL APPLICATIONS

2.1.4.1 EXTERNAL STUDIES

Prior and during the process of this work, relevant literature has been cited but until this moment no investigation, study or research work of similar nature - a systems approach to the operations of a blanket manufacturing company - has been found. A number of selected peripheral applications are presented in this section. A systems study of the production - marketing system of a small textile company in the UK is presented by Jenkins and Youle (1971) whereby the problem was originally conceived as one of bad production planning and control. The company experienced a sharp decline in profits, provided poor customer service and lacked the appropriate and relevant data in order to exercise satisfactory control over its operations. The study examined the system as a whole; both production and marketing functions of the firm. An evaluation of the decision making procedures involved in processing an order through the system to the delivery of the end-product to the customer resulted in the design of two sub-systems, the customer services system and the production services system. A detailed analysis of the objectives and decision making within the two sub-systems led to a definition of the actual number of employees required, their job description along with the necessary information requirements. A management information system was set up aiming to facilitate planning and control within the system and established the methodology of how that information should flow throughout the organisation.

Ntuen, Cornelius and Nelson (1988) presented the study carried out in an American hosiery company which sought ways to increase storage and capacity and to improve inventory turnover efficiency in its distribution centre. The efforts were directed in upgrading the operating

strategies particularly in the areas of inventory control and box-sizing methods. The study, having examined the company's existing manual inventory review procedure, concluded that the installation of automation would save labour costs, improve management and control of inventory and encourage management participation in productivity studies.

Edwards, Wagner and Wood (1985) described the case of one of the largest apparel manufacturers in the US where the management became concerned about the high investment in working capital, given that at the time the inventory and the accounts receivable accounted for 75% of the assets. Aiming to reduce the stocks substantially improvements had to be made in production planning and inventory control. Models were developed for inventory targets, manufacturing requirements, and production scheduling using a seasonal demand forecasting technique and diagnostic computer simulation to reduce inventory.

Jacques (1985) presented the case of a UK clothing company where high productivity has been achieved through payment-by-results programs. He argued that the program adopted provided an effective incentive for employees and also acted as an accurate cost control and production planning system. It was claimed that low unit labour costs can result from a system which combines highly accurate time values with a reasonably attractive incentive bonus plan.

Cole (1988) argued that the total apparel manufacturing process - from design to shipment - determines whether money is made or loss on a garment. He indicated that companies apply varying degrees of sophistication to their costing procedures, from informal methods to the use of computerized quick cost systems. He suggested that manufacturers should evaluate their costing not only to verify that all elements are

included on the cost sheet, but also to ensure that they do not price themselves out of the market on basic styles.

Weintraub (1988) discussed the importance of the adoption of flexible manufacturing systems in the clothing industry. He underlined that flexible manufacturing is based on worker involvement, cross training, and minimal work-in-progress. He argued that the system can permit a wider variety of products to be manufactured through the same sewing room units.

Heydt and Gordon (1987) presented a clothing manufacturing company which was growing at a rate of 15% per year, and this has led to much traffic between the firm's 12 manufacturing locations and the corporate distribution centre. It was suggested that portable tele-transaction computers could be connected to a bar code wand and a mainframe through an FM radio tranceiver to be used by the warehouse workers. The system would replace the paper work that previously followed each carton box through the distribution system.

Trachtenberg (1986) describes the case of a hat company which in 1984 made several acquisitions, invested in the retailing sector and acquired an expensive computer system. As a result, the company ended up with increased liabilities and experienced heavy financial losses in 1985. Lack of operating experience coupled with inadequate financial controls were the cause of the problem. Following a rationalization programme the management of the company accepted that mistakenly they have moved into their own manufacturing in 1984 instead of continuing to license the firm's name to other manufacturers. They have decided to cut back production on ordinary hats and focus on their western line.

2.1.4.2 INTERNAL STUDIES

Within the company there have been three other studies which are presented below:

(i) Whinney, Murray, Ernst & Ernst, (1978) "A Financial Appraisal of OR. SALIARIS S.A."

(ii) Zioutas, G. (1980) "Inventory Analysis of Finished Goods at OR. SALIARIS S.A."

(iii) Saliaris, O. (1982) "A Sales Forecasting Study and an Inventory Analysis of a Medium-Sized Textile Company in Greece".

The first piece of work was an examination of the company's financial operations and was completed within two months and submitted to the management of the company in June 1978. It covered the company's sales strategy, inventory analysis, costing system, payroll, accounting practices and financing from the banking sector. The second study was completed in approximately three months period and examined the inventories of the company's finished goods. The acrylic blankets' stocks were classified into designs and colour combinations within each quality grouping of blankets and formulae of economic batch quantities were used. That piece of work was presented to the company's Board of Directors in October 1980. Finally the third study carried out as an industrial project, was submitted to the University of Stirling and to the senior management of the company in September 1982. The third piece of work highlighted a number of problems within the company and provided evidence that the firm required a production management system which could enable the organisation to pursue its goals efficiently.

All three studies dealt with certain areas of the company's functions and examined specific problems. It was recognised that

individual sub-systems interact with each other and there was an urgent need of viewing the entire system as a whole by seeking to understand the interdependencies and interactions among the different components of the company's structure.

2.2 SYSTEMS APPROACH TO THE COMPANY

2.2.1 THE IMPORTANCE OF THE RESEARCH

2.2.1.1 AIMS AND OBJECTIVES

The aim of the project was to examine the company's infra-structure in detail and to identify areas where the procedures and practices which had evolved over the years no longer met the needs of a modern company. OR. SALIARIS S.A. is regarded as a case-study which could be seen as a representation of the Greek manufacturing industry's problems in microcosm. The research was aiming for the application of systems thinking to the activities of the firm. Since inadequate circulation of information has been observed, it was necessary to develop the collection and diffusion of such information. Thus the information flow, information storage and information retrieval system of the company had to be studied thoroughly. Furthermore, close-loop controls were to be established to facilitate improved decision making at company level and result in efficient use of resources.

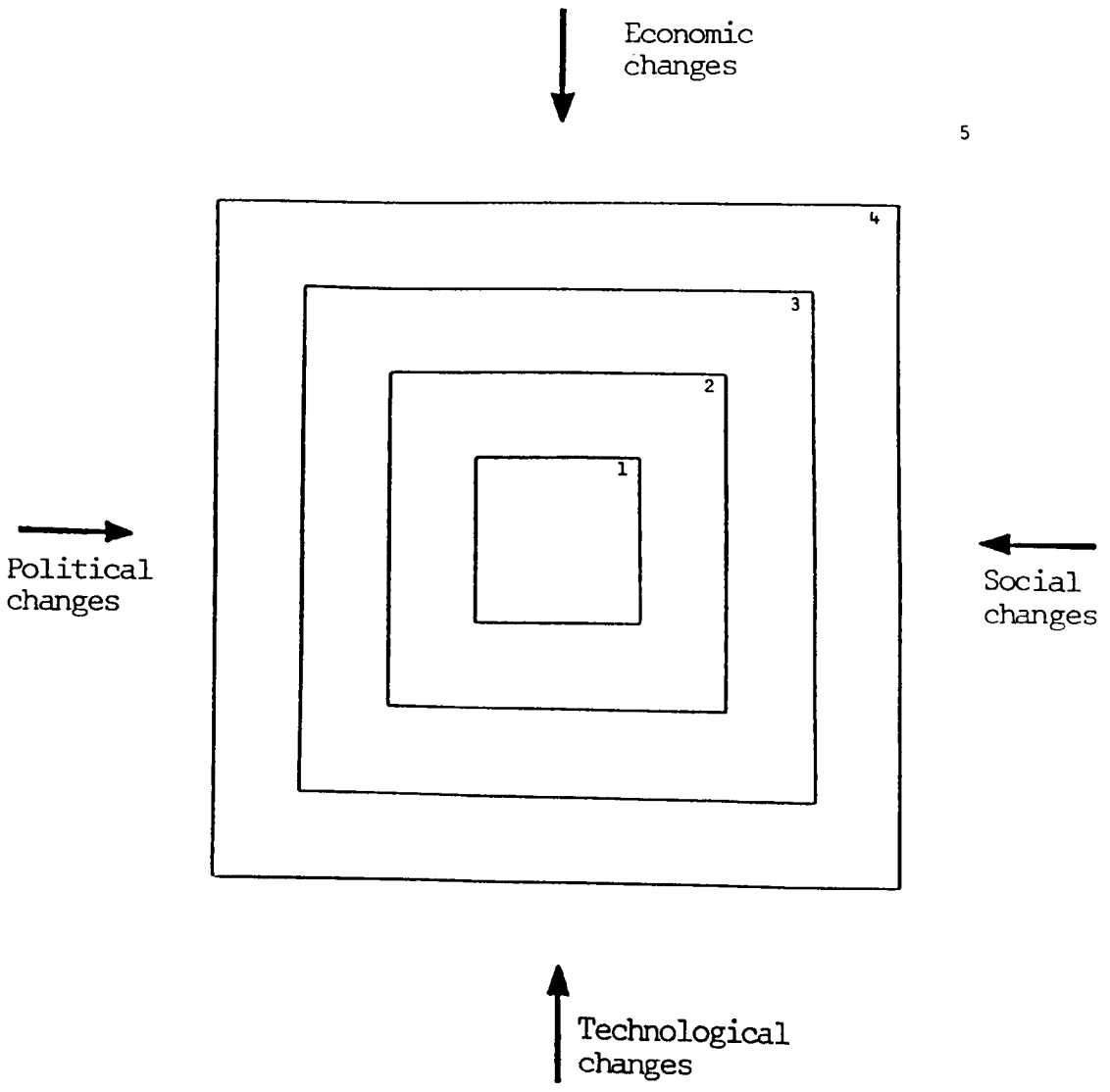
The objective of the research was the development of an open system which would maintain dynamic equilibrium with its environment. Within this framework the following tasks were underlined: First, by ensuring the continued viability of the company. Second, by examining the decision making process and the delegation of responsibility at company level. Third, by improving the information systems within the organisation's structure to enable improved planning and control of the business operations. Fourth, by scrutinising material flows and storage procedures to achieve a drastic reduction of the tied capital in stocks. Fifth, by establishing modern quality control procedures within the firm to ensure product reliability from raw materials to end-products. Six, by expanding the company's product lines and by identifying potential export

markets in the long-run. Seventh, by establishing a corporate structure at OR. SALIARIS S.A. which would benefit the Greek medium-sized textile processing firm. The adoption of a systems approach to the operations of the organisation appeared to be appropriate because of increasing business complexity. The company has been an integral part of the surrounding exteral wider system, as shown in **Diagram 2.1**, and its dynamic interaction with the environment required a continuous awareness of the necessary adaptability in response to economic, political, technological and social changes.

2.2.2 RESEARCH METHODOLOGY

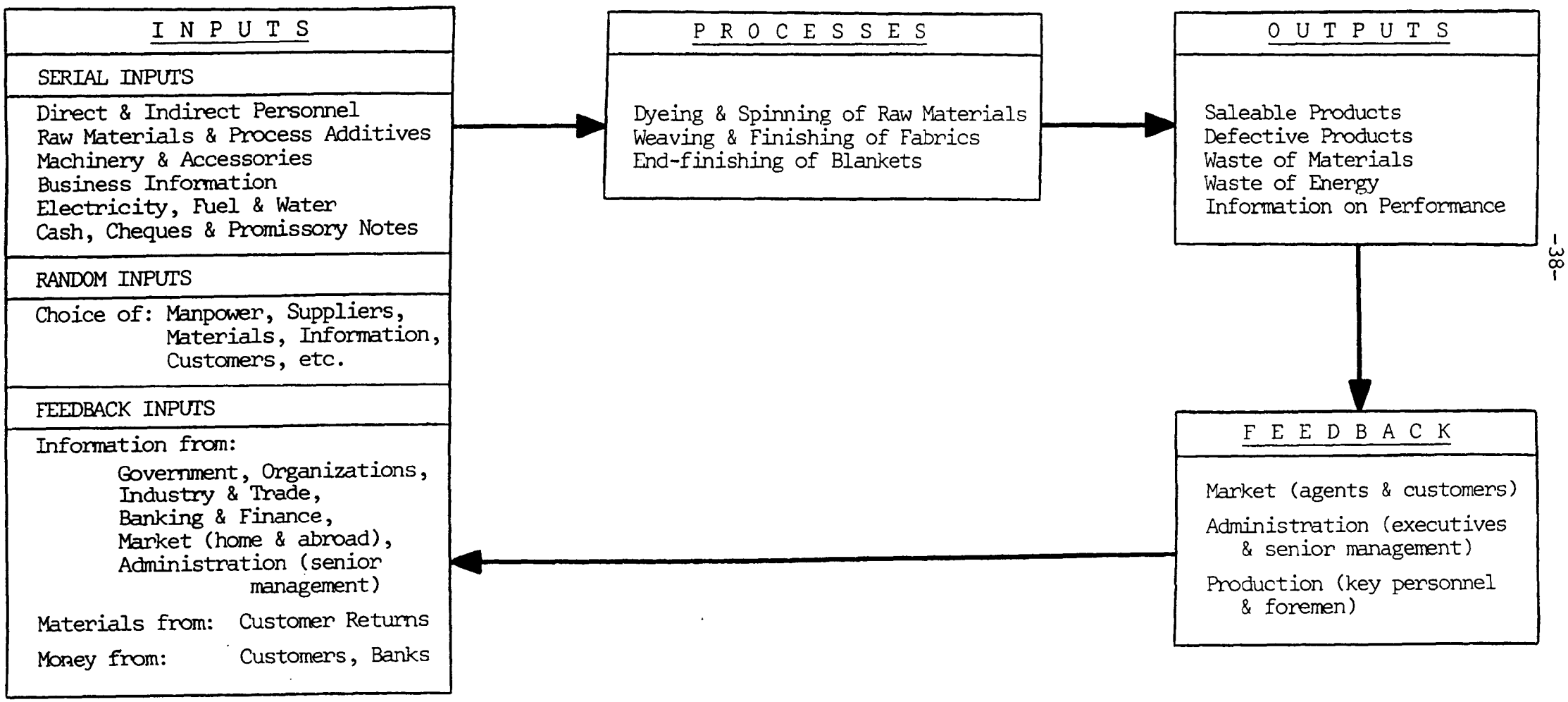
The first phase of the project was a common sense approach to the study of the existing procedures and practices. The company's operations were becoming increasingly complex and a systematic examination of the organisational functions were required in order to highlight the inadequacies and, in addition to those areas where over-elaborate, or duplicate functions existed. The recognition of the relationships between the system's components and the growing interactions and interdependencies among their elements and attributes, made it necessary to adopt a systems approach to the study of the company's operations. Having defined the problems of the system, the material, information, cash and personnel flows between the different sub-systems had to be examined thoroughly. It became evident that in the manufacturing process the outputs of one sub-system were serial inputs to the following focal system. **Diagram 2.2** illustrates a description of the system's components in terms of serial, random and feedback inputs, its characteristics, outputs and feedback.

DIAGRAM 2.1: OR. SALIARIS S.A. BLANKET MANUFACTURE. THE IMPACT OF THE EXTERNAL SYSTEM



Note:
1 The System - The Company
2 The Greek Textiles Industry
3 The Greek Manufacturing Sector
4 The Greek Economy
5 The International Economy

DIAGRAM 2.2: OR. SALIARIS S.A. BLANKET MANUFACTURE. DESCRIPTION OF THE SYSTEM'S COMPONENTS



During the systems analysis stage the concept of interaction between the system and its environment had to be taken into account. The company was trading in a dynamic environment and as a result the external wider system exerted considerable influence on its behaviour. Among a number of uncontrollable factors were: the growing political struggle, the deterioration of the business climate, changes in labour legislation, stagnated inflation, high interest rates, declining purchasing power of the drachma, continuous 'slide' of the national currency and significant price discounts offered by the business competitors. **Diagram 2.3** shows the organisation system within is environment. Internal factors over which the company had a high degree of control were considered to be the system's major resources namely: personnel, material, equipment, and capital. A boundary demarcating the organisation system from its environment has been drawn for schematic purposes in order to enphasize the influence exercised to the open system's performance by the major environmental factors such as: economy, government, industry and society.

During the second phase of the project, all necessary data were to be used in the systems design while in areas where simplification could be achieved, simplified procedures were to be adopted. The proposed new organisation structure of the company appears in **Diagram 2.4.** Having studied the decision making procedures of the production-sales system it was suggested by the author that the following three new departments: marketing department, production scheduling department, and quality control department should be established. The objectives of the three major sub-systems - efficient planning and control of the business operations - were defined by the Board of Directors and the next task was to assign key personnel to the jobs. An integrated management information

system had to be set up within the organisation aiming to provide a continuous flow of information between the company's sub-systems.

The material, labour, financial and information flows between the modified sub-systems and the three new ones had to be studied during the third phase of the project: the systems implementation. The effort concentrated on the analysis and evaluation of the new systems while reports were drawn on a monthly basis describing the systems study. These reports were presented to the senior management of the company. During the actual running of the modified systems all necessary closed-loop controls were generated in order to resolve operational difficulties and ensure the continuous operation of the system. The broad stages in the application of the systems approach to operational problems, as suggested by Jenkins (1969), were followed as illustrated in **Figure 2.3.** The adoption of the systems thinking in the study of the company's operations aimed to make best use of human and non-human resources to improve the overall business performance.

DIAGRAM 2.3: OR. SALIARIS S.A. BLANKET MANUFACTURE.
THE ORGANISATION SYSTEM WITHIN ITS ENVIRONMENT

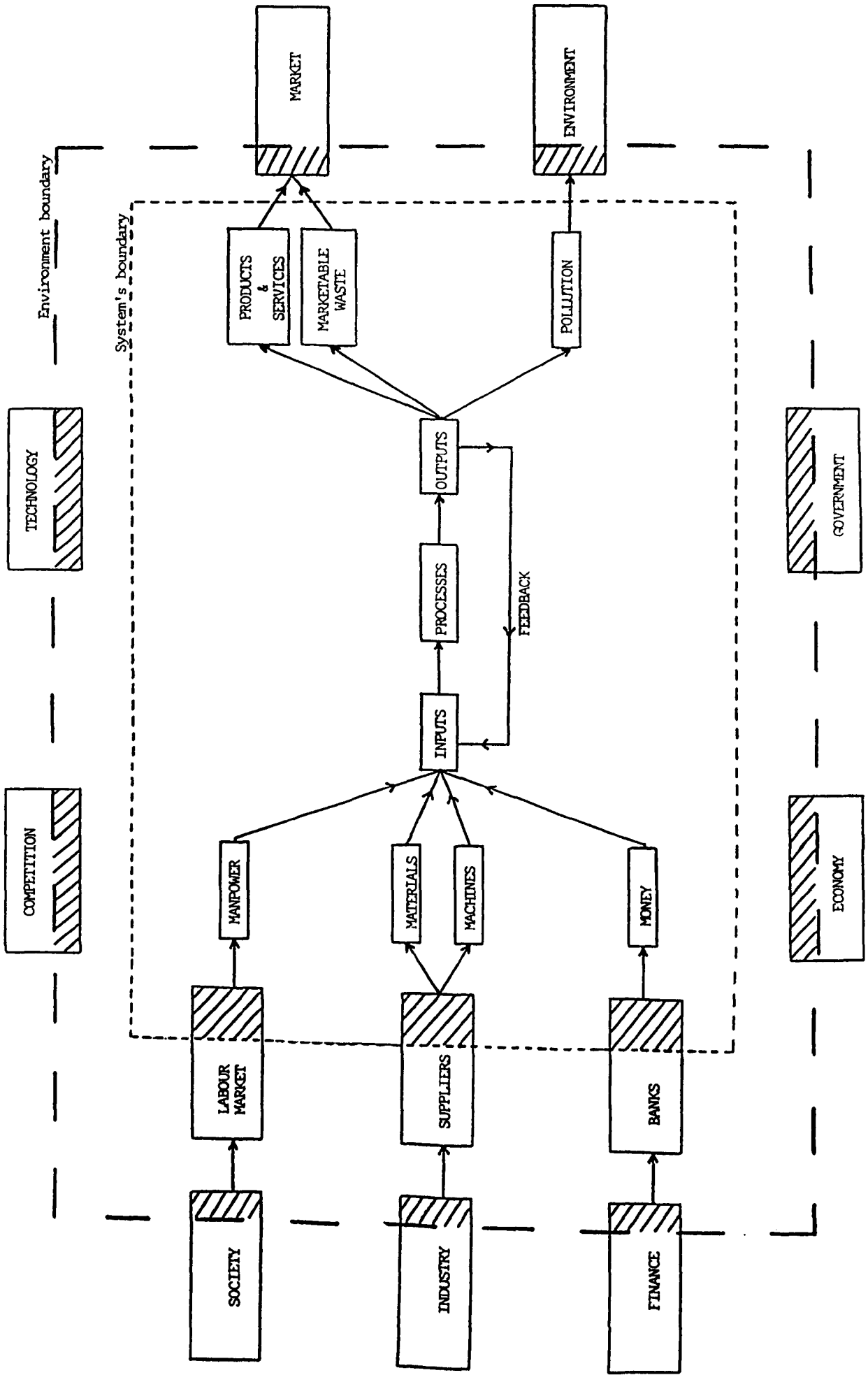


DIAGRAM 2.4: OR. SALIARIS S.A. BLANKET MANUFACTURE.
THE PROPOSED NEW COMPANY ORGANISATION SYSTEM

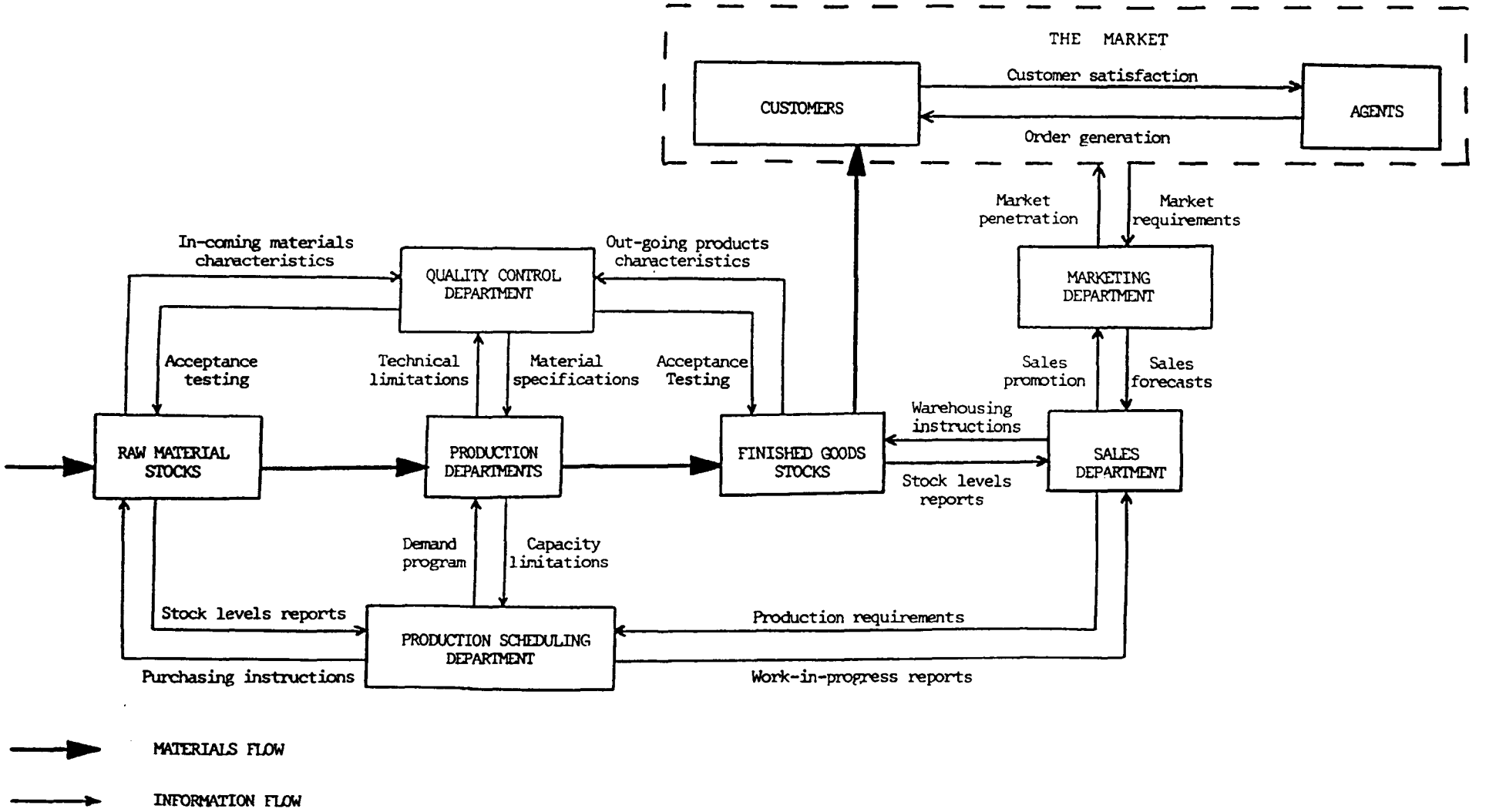
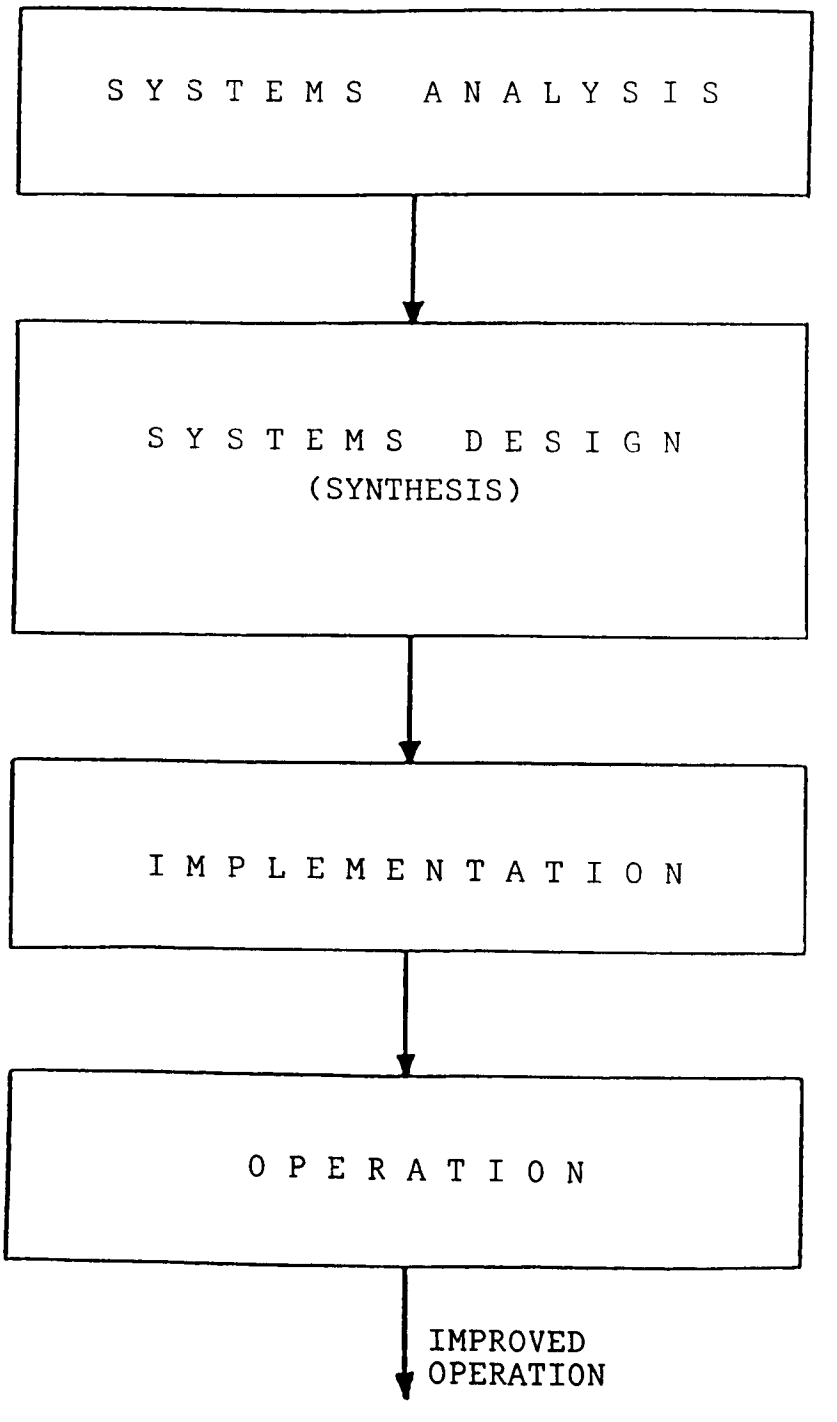


FIGURE 2.3: BROAD STAGES IN THE DEVELOPMENT OF A SYSTEMS PROJECT



Source-Reference: Jenkins, G.M. (1969) "The Systems Approach" J Syst Eng 1 (1)

CHAPTER 3

THE ECONOMIC PROFILE OF GREECE

3. THE ECONOMIC PROFILE OF GREECE

3.1 INTRODUCTION

"The growth of the Greek economy up to 1974 was characterised by a prevailing climate of monetary stability and a rather stable national currency exchange rate against the dollar" as argued by **Nafteboriki (1988p)**. The impact of the first oil crisis was a sudden rise of inflation to 26.9% in 1974 (**Appendix 1**), and a negative GDP growth for the first time in the country's post-war period. In the years between 1975 and 1979 as stated by the **Economist (1984)** "Greece's real GDP grew an average 5% a year; inflation though higher than in the other OECD countries, seemed stable; and the balance of payments deficit was comfortably financed by external borrowing. But growth was increasingly based on consumption: the share of investment in GDP fell through the 1970's".

Greece's transitional period after its accession to the European Community in 1981 overlapped with a prolonged recession, despite the efforts by the governments to adjust to the consequences of the second oil crisis in 1979-1980. The adjustment problems have been particularly severe in Greece, which had serious structural problems before the oil crises and was highly dependent on imported energy. Furthermore the rate of inflation did not keep in pace with the OECD average, total gross foreign debt continued to rise, while the current account deficit deteriorated sharply. On the other hand, the 'slide' of the national currency against the dollar in early 1980s did not prevent deeper deficits. As emphasised by **Mosxonas (1986)** "the structural problems of the economy made the government negotiate the Greek Memorandum to the EEC Commission in May 1982 which resulted in the adoption of the IMPs by the European Council in December 1985."

In the period 1981-1987 inflationary pressures in most of the OECD countries gradually relaxed and most economic indicators provided signs of an upturn. The Greek economy enjoyed marginal benefits from the international recovery. In early 1980s while the western economies were characterised by a decline in the rate of increase of nominal wages and by the adoption of counter-inflationary measures; in Greece the reverse happened. There was a faster rise in nominal wages and economic mismanagement produced serious imbalances in its public sector and external accounts, a growing foreign debt and a rate of inflation which seemed to run out of control. The rise in labour costs reduced profit margins to levels discouraging investment activity. In manufacturing, in particular, the drop in production combined with the government restrictions on licencing personnel, led to a continuing fall in productivity. The prevailing climate of mistrust which discouraged private initiative was to a certain degree the cause of the decline in invisible receipts, thus the balance of payments deteriorated. In 1984 the Greek economy grew for the first time since 1980, having a 2.8% growth in GDP as illustrated in **Appendix 1**, but the recovery did not last. The current account deficit in 1984 was equivilent to 6.3% of GDP, deteriorated further to 9.8% in 1985; the biggest among OECD countries.

On 11 October 1985 Mr Papandreou's government announced a two-year economic stabilization programme. The austerity package was severe and marked a U-turn in the prevailing policies. This was the outcome of the pressures from IMF and the EEC for the Greek government to take monetaristic steps to make it possible for the national economy to enter a new phase of fast growth and to be relieved of its structural weaknesses. The central point of the programme was the fact that 'the country consumes more than it produces' and that caused a serious burden on the balance of

payments and in turn resulted in higher debt due to increasing external borrowing. The austerity programme included a 15% devaluation of the drachma against the dollar, extra taxes, a virtual pay freeze and drastic cuts in public spending. The main aim was to reduce the current account deficit from the record $3.3 billion in 1985 to $1.7 billion in 1986 and further to $1.2 billion in 1987.

The policy measures taken were the implementation of a tight incomes policy; the Greek government substantially remoulded the system of wage indexation which was first introduced in 1981, and imposed a two-year freeze, to the end of 1987, on any other salary and wage increases. In addition a one year postponement of the introduction of the value-added tax system and the continuation of export subsides and foreign-exchange controls (due to be lifted at the end of 1985, when the five - year transitional period of Greece's accession to the Community expired) were approved by the EEC Commission. Furthermore, an import deposit requirement was introduced in early 1986 for a little under half of the imported commodities. Parallel targets of the austerity policies was the reduction of the inflation rate from 19.3% in 1985 to about 16% in 1987, to promote competitiveness and encourage investment.

The attainment of the targets set for 1986 and 1987 would have been difficult without the favourable influence of external factors, such as the sharp cut in oil prices, the dollar's decline in the international markets, and the increased net inflows from the EEC. The decline of the current account deficit and the inflation rate resulted from these factors. On the other hand the delayed U-turn in the economic policies added another problem to the Greek economy; unemployment, although officially no higher than the OECD average, has risen sharply since 1980. It seems that intensified efforts will be required in order to improve the

country's economic aggregates in the years to come and meet the 1992 European challenge in a much better shape and form. In the following sections an appraisal of the key areas of economic consideration will be attempted.

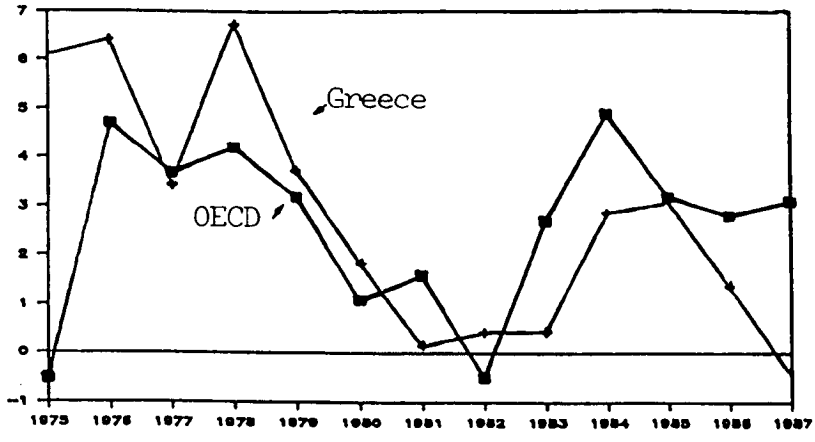
3.2 OUTPUT AND DEMAND

3.2.1 GROSS DOMESTIC PRODUCT GROWTH

The slowdown in economic activity in the western countries was a result of the energy crises. The gradual decline in the GDP growth in Greece and the total of OECD countries was one of the characteristics of the recession. Rylmon (1988d) argued "the drop of the GDP in Greece during the 1980s resulted in growth levels well below the OECD and EEC average."

The prevailing trend of the GDP growth in Greece as compared to OECD average is shown in Graph 3.1 highlighted by Epilogi (19881)" in 1975 - 1980 annual percentage changes of GDP in Greece were almost always above the OECD average and OECD statistics suggest a total 31.4% GDP growth in Greece for the period as compared to 17.5% of the OECD average". In the subsequent years the trend changed dramatically, and with reference to Appendix 1, in 1981 - 1983 the annual rate of GDP growth in Greece ranged between 0.1% and 0.4% in fact hardly showed anything but stagnation whereas 1983 was the third consecutive year of stagflation (GDP rose by 0.4%, inflation was 20.2 % and the current account deficit was $1.9 billion, as 5.4% of GDP). As pointed out by Epilogi (19881)" in the 1980s for almost all years the GDP growth in Greece was less than OECD average; real GDP rose by 7.6% during 1981-1987 as compared to 19.1% of the OECD average".

GRAPH 3.1: REAL GROSS DOMESTIC PRODUCT IN GREECE AS COMPARED TO OECD AVERAGE (1975-1987)
(annual percentage changes)



Source: OECD, Economic Outlook 43 June 1988

Reference: Epilogi (1988ℓ) "Greece-OECD Economic Developments" 7 351

"Appendix 2 presents the GDP per capital development among the EEC member states as a percentage of their national GDP achievement to the Community's overall average. It appears that the other Mediteranean countries apart from Greece, took advantage of the prevailing economic recovery and are expected to proceed to rates of economic growth in 1988 and 1989 which will substain recovery. Furthermore, **Appendix** 3 highlights major macro-economic aggregates in Greece and the EEC (12) for three separate periods; 1961-1970, 1971-1980 and 1981-1987. It seems that Greece followed the prevailing EEC (12) pattern and only the magnitudes differ. Greece's GDP growth at constant prices in the 1980s collapsed by 7 times compared to the 1960s while the Community's decline was approximately 3 fold.

Two areas of relative importance to the Greek economic growth will be highlighted, which in the author's view are worth mentioning. At first the growth of the 'black' economy which according to **Epilogi (1987a)** "is income realised by the underground economy, not taken into account in the National Statistics, and obviously does not contribute officially to the GDP growth". An effort to calculate the 'black' economy in Greece was attempted by **Paulopoulos (1988)** for the year 1984 and according to the outcome of the research work it was pointed out that 'black' economic activities reduced the real size of the National Income by approximately 30%. **Express (1987c)** suggested that "with the deterioration of the economic conditions in Greece over the last years Paulopoulos estimate appears to be rather modest".

The motives for 'black' economic activities are mainly derived from excess government taxation, and is an international phenomenon. This view was supported by **Nafteboriki (1987c)** where a correlation of the increasing 'black' economic activities in Greece and the growth of direct

and indirect taxation was attempted. Accumulated statistical data on total tax receipts over the 1980-1986 period, issued by **Epilogi (1988j)**, indicated "an annual average increase of 27% significantly higher than the average annual rate of inflation over the same period". According to OECD statistics total tax receipts in Greece as percentage of GDP, presented by **Rylmon (1988e)**, illustrated "an increasing trend from 28.6% in 1980 to 36.7% in 1986 while compared to the corresponding OECD total average of 35.1% and 38.1% respectively there seems to be a converging pattern; but the substantial difference in Greece between the 1980 and 1986 levels was the fastest rise in taxation among the OECD area countries".

The second area of interest is the growth of services in Greece and their relative contribution in the composition of GDP. As can be seen in **Table 3.1** in recent years, there has been an increasing trend from an average 50% in the 1970s to an estimated 56.8% contribution of services to the GDP for 1988. As pointed out by **Nafteboriki (1987i)** "the expected outcome is close to the EEC average". It should be mentioned that the noticeable increase in services corresponds to the decline in manufacturing industry. As discussed in **Epilogi (1988d)** "the slump in industrial production has been bigger and has lasted longer in Greece than in the EEC". Although the trend has been similar, it is the magnitude that has created structural problems in the Greek manufacturing sector and the unavoidable shift to the service industries. On the other hand there has been considerable decline in the construction activity after the second oil crisis as illustrated in **Table 3.1**. Private building activity did not escape the 1980 recessionary wave. Furthermore as suggested in **Epilogi (1988j)** "the relative upturn in 1985 and 1986 was not too strong to last". In the author's view Greece's GDP growth in future years will be predominantly due to services and perhaps the construction activities.

TABLE 3.1: COMPOSITION OF THE GDP IN GREECE (1975-1987)

Year	Industry	Construction	Services
1975	20.9	6.8	51.6
1976	21.7	6.8	51.8
1977	21.3	7.4	52.8
1978	21.4	7.3	52.3
1979	21.8	7.5	52.9
1980	21.3	6.3	53.1
1981	21.2	5.8	53.8
1982	20.7	5.3	54.5
1983	20.7	5.5	56.1
1984	19.9	5.0	55.9
1985	20.0	5.0	56.0
1986	19.8	4.9	56.1
1987[1]	18.6	4.8	56.8

Note: [1] Estimates

Source: Ministry of National Economy

References: Epilogi (1987a) "An Appraisal of the Greek Economy" 1 56

Nafteboriki (1987i) "Towards an Economy of Services" 11 (17620) 1

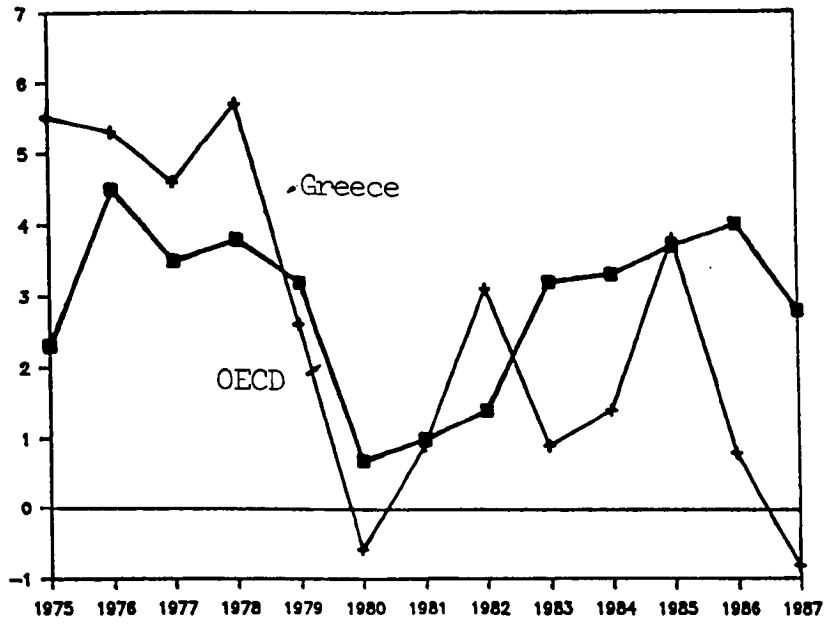
According to OECD forecasts presented in **Nafteboriki (1988n)** "a 1.75% rise in real GDP is to be expected in Greece for 1988 and a 1.5% for 1989. The OECD average real GDP rose by 3.1% in 1987 while a 3.0% rise is expected for 1988". The gap between Greece and the OECD average remains and it is not going to be easily bridged.

3.2.2 PRIVATE AND PUBLIC CONSUMPTION

The gross expenditure of the economy refers to the total demand for consumption and investment. According to OECD statistics presented by **Epilogi (19881)** "during the period 1975-1978 real private consumption in Greece rose by 22.8%, as compared to 14.8% of the OECD average." In the years 1979-1981, during the second oil crisis, the prevailing trend changed as it can be seen in **Graph 3.2.** With a minor exception in 1982 during the period 1979-1987 private consumption in Greece as indicated in **Epilogi (19881)** "rose by 12.7% against 25.7% of the OECD average". The government's policies in 1986-1987, during the economy's stabilitation programme, have squeezed private consumption which stagnated for two years in succession; and it appears that the pattern illustrated in **Graph 3.2** has continued during 1988, and there no signs of recovery even in 1989. As mentioned in **Economicos (1988c)** " the national 1988-1992 programme's target predicts an average annual growth of private consumption of 1.2%".

Appendix 4 presents comparative data of the private consumption growth at constant prices and national currency in the Community's member states. Analysing the data for private domestic consumption expenditure at constant 1970 prices as discussed by **Epilogi (1988)** " it becomes evident that in the period 1970-1986 the category of durable goods depicted the fastest growth. Services also showed a notable increase while semi-durable and non durable goods showed a rise much smaller than the total consumption average".

GRAPH 3.2: REAL PRIVATE CONSUMPTION IN GREECE AS COMPARED TO OECD AVERAGE (1975-1987) (annual percentage changes)



Source: OECD, Economic Outlook 43 June 1988

Reference: Epilogi (1988ℓ) "Greece-OECD, Economic Developments" 7 352

Public consumption refers to the administration, defence, justice as well as health, social welfare and education. **Appendix 5** shows the public consumption growth at constant prices and national currency in the Community's member states. Examining the developments in public and private consumption at constant prices it becomes apparent that in the 1960s and 1970s public consumption remained approximately at the same level, whereas private consumption declined. In the 1980s the only expanding segment of domestic demand in Greece was public consumption. Due to its nature public consumption depends on the government's choices and naturally questions arise concerning the priorities and the costs of the goods and services used. As argued by **Epilogi (1985h)** "Public consumption in Greece accounts for a larger share of the GDP than is the average for the EEC. Of special importance however is the fact that in recent years this share was increasing whereas in most of the EEC countries it continously declined".

3.2.3 GROSS FIXED CAPITAL FORMATION

The share of investment to the GDP while higher in Greece than the OECD average in the period 1975-1979 has declined in subsequent years, as it can be seen in **Graph 3.3.** Gross fixed capital formation collapsed between 1980 and 1984. In 1980-1987 only in 1982 and 1985 the annual percentage change of gross fixed investment was higher in Greece compared to the OECD average. According to OECD statistics, reported by **Epilogi (19881)** "during the period 1975-1979 the volume of fixed investment in Greece rose in total by 33% against a total 13.6% increase in the OECD countries. In the period 1980-1987 the corresponding changes were an overall decline by 19.8% in Greece compared to a total 17.2% increase in the OECD". As argued by **Chalkias (1988)** in the Bank of Greece 1987

Annual Report, "gross fixed capital formation in Greece declined by 2.3% in 1987 due to the 14.3% drop of the public investment, while private investment rose by 4%".

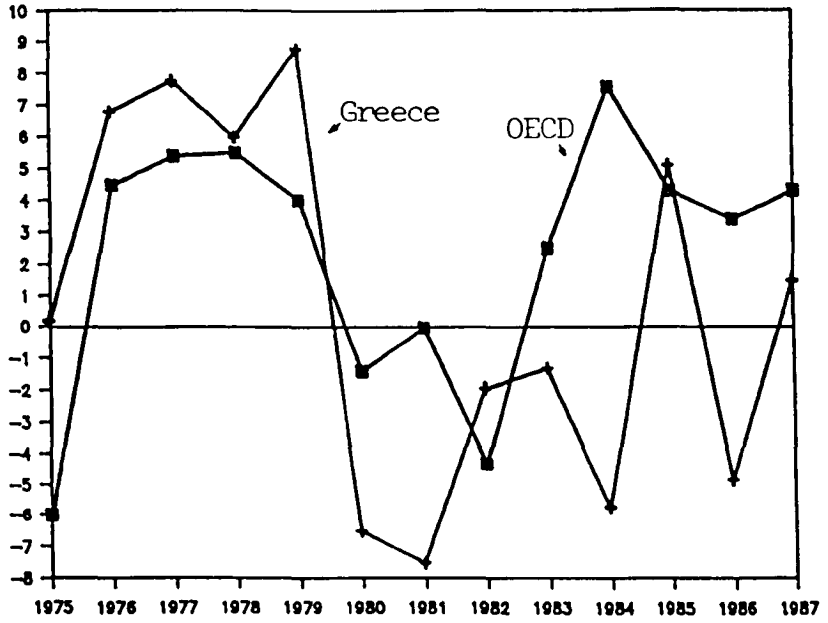
The long-run development of gross fixed capital formation during the period 1970-1987 at national level and in constant prices is shown in Appendix 1. It seems that differences appear in the Greek economic indicators published by the European Commission the OECD and the National Accounts of Greece. The magnitude of the discrepancy is insignificant, but exists in the recent years in the data issued by Eurostatistics, OECD's Outlook, the Bank of Greece, and the Ministry of National Economy. Following the second oil crisis, fixed investment declined and only increased by 5.1% at constant prices in 1985. The rise in investment according to UN (1986) Economic Survey for Europe "was mainly due to the public sector and to an improvement in residential investment; fixed investment in the private business sector showed no signs of recovery".

The development of gross fixed investment in Greece and the EEC member states is shown in **Appendix** 6 where the data presented provide a a clear view of the deterioration in the 1970s, and particularly in the 1980's. It seems that the oil crises affected the growth of the Greek economy which seemed unable to regain the dynamism of the 1960s. As stated in the **Epilogi (1988d)** "the annual average growth of fixed investment in the EEC (12) at constant prices increased during 1981-1986 by 0.2% while in Greece dropped by an annual average of 2.9%". With reference to the Annual Reports issued by the Bank of Greece it can be seen that prior to the Greek government's austerity policies public investment increased steadily; 6.9% in 1982, 12.2% in 1983 and 10.9% in 1984, while decelerated sharply afterwards. On the other hand some signs of improvement appeared during the stabilization programme in 1986-1987

when private investment rose by 5% and 4% resepectively. As argued by **Epilogi (1988)**, and shown in **Appendix 7**, "over the last two decades 1966-1986; the highest level of public investment in real terms was achieved in 1985, whereas the peak value of private fixed investment was reached in 1979".

Express (1983d) highlighted that "the GDP annual average rate of growth in real terms, according to the 5 year development plan (1983-1987) was expected to grow on average by 4%", while as argued in **Nafteboriki (1988q)** "the new 5 year plan (1988-1992) forecasts an annual average rate of GDP growth of 3%. According to SEB an average annual rate of GDP growth in the region of 4-5% should be aimed". On the other hand **Economicos (1988c)** indicated that "the real GDP growth in 1983-1987 was just 1.5% against the expected 4%. The prevailing climate of mistrust in the government will to secure a strong recovery in Greece will make 1989, when general elections will take place, a rather unfortunate economic year". In addition as emphasized by - **Nafteboriki (19881)** "fixed public investment declined on average 0.2% a year in 1983-1987 while private investment decreased by 2.0%. Under the 1988-1992 national economic programme public investment is to grow by 11% and private by 6%". **Koutsoumaris (1988)** commented that "the new 5 year plan should attempt the economic integration of Greece in the Community aiming to bridge existing imbalances by 1992". Furthermore the prevailing Greek socialist's attitude for a mixed economy, as argued by the Prime Minister **Papandreou (1987)** "has to be questioned seriously when the current pattern in the EEC countries is towards a free-market economy with numerous incentives to the private business sector".

GRAPH 3.3: REAL GROSS FIXED CAPITAL FORMATION IN GREECE AS COMPARED TO OECD AVERAGE (1975-1987)
(annual percentage changes)



Source: OECD, Economic Outlook 43 June 1988

Reference: Epilogi (1988ℓ) "Greece-OECD, Economic Developments" 7 352

3.3 THE RATE OF INFLATION IN GREECE

The inflationary surge after the second oil crisis has been more intense in Greece, and the process of deflation slower than in most OECD countries. The inflation differential between Greece and the OECD has increased during the 1981-1987 period. The ratio of the Greek inflation to the OECD average according to **Epilogi (1984b)** "increased from 1.4 in the 1975-1978 period to 1.9 in 1979-1980". For the first time in recent years under the 1986-1987 stabilization programme a tight anti-inflationary policy was to be implemented in Greece. The government's austerity policies consisted of a strict incomes policy (on wages and agricultural prices) and of measures to contract demand in order to contain inflation originating from excess demand. Efforts were to be made towards reducing the public sector's deficit, credit and monetary expansion, as well as foreign exchange rates aiming for an economy's upturn.

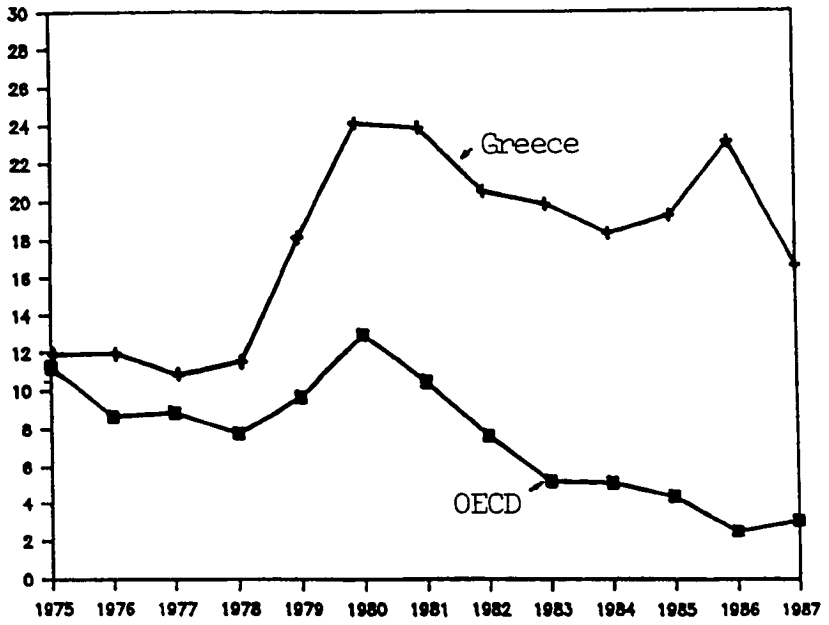
Inflation in Greece has been on average over 20% in the period 1979-1986 and it was only during the second year of the economy's stablization programme in 1987, as shown in **Appendix** 1, that its pace decelerated to an annual 16.3% rate. In the author's view in the years to come, if the austerity policies continue to be implemented with consistency, gradually inflation will fall even to single figures. In other countries, where counter inflationary measures were adopted earlier on and in time the results were not immediate. As illustrated in **Appendix** 8, it took 3 years, in the OECD area for inflation to drop from 12.8% in 1980 to 5.2% in 1983 and another 3 years in order to decline further by a half to 2.5% in 1986. **Epilogi (1988a)** argued that "the ratio of the Greek inflation to the OECD average in 1987 was 5.1, quite an improvement compared to 9.2 ratio in 1986". The slower decline of the inflation rate in Greece as opposed to the OECD region affected the Greek

products competitiveness in both domestic and foreign markets. The devaluation of the drachma between 1981 and 1987 off-set the lost competitiveness resulting from the inflation differential, but on the other hand the appreciation of the foreign currencies refueled pressures on domestic prices, responsible for inflation.

As mentioned in **Epilogi (1988a)** "inflation in Greece was lower than the OECD average during the post-war period, the pattern changed dramatically after the 1973-1974 first oil crisis". In the 1960s the Greek economy experienced monetary stability and economic growth being one of the fastest developing countries in the OECD area. During the 1975-1978 period the rate of inflation in Greece was only slightly higher than the OECD average as argued by **Epilogi (19881)** and presented in **Graph 3.4** "the average annual rate of inflation in Greece was 12.9% as compared to 9.2% of the OECD average". Over the period 1979-1981 due to the energy crisis and the adaption of the Greek agricultural prices to the Community's levels inflation according to OECD statistics, as illustrated in **Appendix 1**, worsened in Greece and reached a level of 24.5% in 1981, while the corresponding OECD average was 10.5% **(Appendix 8)**. It took 7 years for the Greek government to reduce the rate of inflation from 24.5% in 1981 to 16.3% in 1987, thus losing one third of its pace.

As discussed in **Epilogi (1988a)** "one of the basic sources of strong inflationary pressures is growing public sector deficits and, correlation to non-existing signs of improvement in productivity, result in excess demand which is not contributing to the GDP growth". The continuing price increases of the public services support the pace of inflation at high levels, while as pointed out by **Petixakis (1987)** "the Ministry of National Economy argued that if the government's target of 12% inflation in 1987 was achieved then we could aim for a single figure rate

GRAPH 3.4: CONSUMER PRICE INDEX IN GREECE AS COMPARED TO OECD AVERAGE (1975-1987)
(annual percentage changes)



Source: OECD, Economic Outlook 43 June 1988

Reference: Epilogi (1988ℓ) "Greece-OECD, Economic Developments" 7 352

in 1988. The opportunity was lost mainly due to the VAT introduced on 1.1. 1987, which added 4.5% to the consumer price index, and due to the growing public deficits". In the author's view the deceleration in the pace of inflation was a result of the 3 - month price freeze - from November 1986 to January 1987, issued in the government's gazette-FEK-, commended by **Nafteboriki (1986b)**, and to delays in administrative price increases. Moreover, international developments, such as the slump in oil prices, the dollar's decline and further progress in inflation in the international scene, have exerted a favourable influence to the national economy and resulted in the deceleration of the pace of inflation in Greece. It is believed that the prevailing target of 10% inflation level, despite the world recovery climate, might be hard to implement. As mentioned in **Nafteboriki (1988n)** "OECD forecasts an inflation rate in Greece of 14% in 1988 and 13.25% in 1989".

3.3.1 PRICES

The rate of increase of the GDP deflator, the broadest measure of a country's cost developments, among the EEC member states is provided in **Appendix 9.** The distance between the Greek inflation rate and the EEC average during the 1980s widened. From double the EEC average in 1981-1983, the rate of increase of the GDP deflator became three times the Community's average in 1984-1986. The increased inflation differential between Greece and its trading partners in the EEC in the 1980s had a severe impact in the national economy's competitiveness.

Appendix 10 illustrates the development of the domestic product deflators in Greece - the price indices used for expressing domestic product at constant prices - in the various sectors of the economy. The

biggest rise between 1970 and 1986 was that of the construction deflator and the smallest of the electricity, gas and water deflator. In the same period the rise of the deflator for manufacturing was considerably lower that that of the GDP deflator, whereas that of the services sector was only slightly lower.

Wholesale and consumer price changes in Greece over the period 1970-1986 are presented in **Appendix 11**, while for the same period **Appendix 12** shows for each category of consumption the trend in inflation with regard to base year 1982. The weighting of the 1982 consumer price index is presented by **Epilogi (1985b)** and illustrated in **Appendix 13** along with the 1974 consumer price index, as issued in Epilogi (1984). There are noticable differences in the weightings between the old and the new consumer price indices.

According to NSSG the annual average inflation rate at mid-periods annual intervals as reported in **Nafteboriki (1988r)** "was 11.8% in 1988 as compared to 18.1% and 24.4% in 1987 and 1986 respectively". Despite the declining trend **Klavdianos (1988a)** argues that "it is a utopia to talk about the 1988 government's target of 10%, taking into account that political will might easily change the trend".

The long term effects of inflation on living standards are discussed in **Drakatos (1985)** where it is argued that "inflation in Greece has affected income distribution through changes in relative prices which determine income in the various sectors of productive activity". The effects of inflation in the basic services and products in Greece are presented in **Economicos (1984b)** and **Epilogi (1987d)** but although statistics for all commodities and services are not currently available, it must be mentioned that increases have been quite severe particularly if they are to be correlated with the tight incomes polices prevailing over the last years.

3.3.2 WAGES

Income policy measures in the 1980's included the automatic adjustment of wages and salaries to the consumer price index and the annual adjustment of the income tax scales. The system of wages and salaries indexation, known as ATA, ranged from 100% of the rate of price increases for those with lower incomes (monthly salaries up to 35,000 drachmas), 50% for the salary's fraction (35,001 - 55,000 drachmas), 25% for the salary's fraction (55,001 - 80,000 drachmas) and zero for salaries above 80,000 drachmas. The adjustment was to be made at four-month intervals, started on 1 May 1982 and followed the salary increases already implemented in January 1982, as is shown in **Appendix 14.**

To relax inflationary pressures the government established direct price controls by introducing the law N 1320 where under article 27 there were to be no wage increases in the private sector for 1983 other than the ATA. Substantial disagreement existed over that period about the calculation of costs by the authorities and the private industrial sector, and it was claimed that the price freezes were unapplicable with the rising manufacturing costs. The first signs of falling production and increasing number of bankruptcies were observed during 1983, as will be discussed over the following chapter. After the 1981 and 1982 National General Collective Labour Agreements (EGSSE) and the 1983 price freezes, the 1984 EGSSE was signed by all parties in February 1984.

In October 1985 the government's new stabilization programme included a modification of the indexation system: from the beginning of 1986 wages were to be adjusted every four months on the basis of the official forecast of the inflation rate net of import prices. As argued by Epilogi (1985i) "the extend of the employee's compensation for inflation was to depend on the accuracy of the official forecasts and the

calculations for the deduction of the effects on inflation of the prices of imported goods". Incomes policy under the 1986 - 1987 economy's stabilization programme imposed wage freezes and any pay increase - employer's contributions, benefits, bonuses, and so on - other than ATA was made illegal, and there have been a number of industrialists procecuted for providing extra contributions to their employees. Lower incomes level from 35,000 drachmas was increased on 1 January 1984 to 50,000 drachmas and to 60,000 on 1 January 1987, while the 80,000 drachmas ceiling rose to 100,000 drachmas. In early 1988 direct price controls relaxed and the 1988 EGSSE was signed by all parties.

The real purchasing power of the average indexed salary in the urban sector throughout the 1975 - 1987 period did not improve. As argued by **Strogilis (1988)** in his study of the effect of the government's austerity policies to the real wages of the average salaried worker, "in the period 1975 - 1980 increases did not follow the inflation rate and the situation got worse in the following period 1981 - 1987". As illustrated in **Appendix** 15 the 1982 and 1984 increases were not enough to counter balance the falls of the years 1980, 1981 and 1983. For wages above 35,000 drachmas, losses were very severe, because of the philosophy of the automatic wage indexation system and the other regulatory interventions in the labour market. The losses were even higher as can be seen in the **Strogilis (1988)** work especially after allowing for taxes.

As argued by **Epilogi (1987f)** "during the 1981 - 1987 period a wide redistribution of a stagnant income was achieved between the various categories of employees with the aid of the inflationary process and the method of differential wages indexation for each income bracket". As a result the purchasing power of the average employee's earnings over the period decreased, as analysed in **Nafteboriki (1988o)**, and in terms of

real disposable income (after - tax earnings) the loss was even greater. There is no doubt that the redistribution of income is fair and socially accepted and moreover benefitial in the long run, if during the process economic criteria were considered as well as social ones. The redistribution process has, in the pace of inflation lowered the living standards of vast categories of employees. In addition the sharp rises in the wages of certain categories of workers, as will be discussed in the next chapter, in the 1982 - 1985 period, had adverse effects on the competitiveness of the Greek manufacturing production and reduced the companies ability to recruit new personel, while damaging the incentive for higher productivity by the automatic wage indexation system. Furthermore, earnings of experienced employees were almost equalized with the newly employed.

Rylmon (1984a) highlighted that "the continuous slide of the national currency along with the drachma's official devaluation on 9 January 1983, was not adequate to cover the relative rise in the labour cost per unit product which after the first oil crisis boosted" ... "According to the Bank of Greece statistics the labour cost in Greece rose by 51% in the period 1975 - 1983 as compared to the 14 main trade rivals and by 50% against the EEC average". On the other hand it seems that the 2-year stabilization programme of the economy had serious impact on the rate of increase of wages. As argued by **KEEM (1988)** "the labour cost per unit product in Greece against its main trade rivals, remained at reasonably low level after the official drachma's devaluation on 11 October 1985". The development of the labour cost in Greece and in the most influential trade partner countries during the 1980 - 1987 period is illustrated in **Appendix 16**, OECD statistics in US dollars are processed by **KEEM (1988)**. A similar study carried by the Bank of Greece, but in

national currency, published by **Macedonia (1986)** only amplified the magnitude of the problem, and as argued "the competitive position of Greece against the 14 main trade rivals in the period 1980 - 1985, with base year 1980 = 100, rose in Greece to 304.3 in 1985 against 122.0 in the main trade competitors".

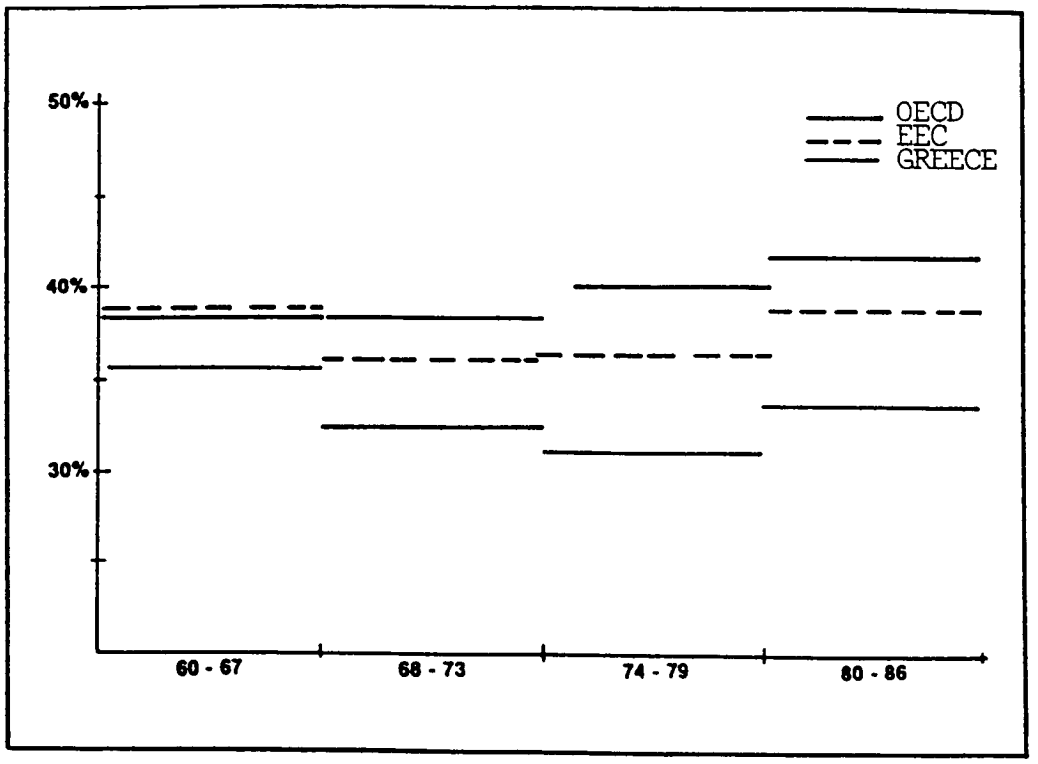
Finally the rate of increase of the unit wage costs in Greece will be compared to other countries. As argued by the **Economist (1985a)** "in 1970 Greek labour costs were only 17% of America's; in 1984 they were 31%". In the 1980's there have been noticeable changes in the international labour markets and as argued by **Nafteboriki (1987a)** "for the first time since 1981 labour cost in some western European countries was in 1986 higher than in the USA". The falling dollar during 1987 favoured the American exporters against their European trade partners, while labour cost remained at low levels in the Asian countries as it presented in **Appendix 17**, a **Werner International (1988)** labour cost comparison for Spring 1987. It can be observed that Greek labour cost rose and in that period reached 43% of America's.

3.4 THE LABOUR MARKET IN GREECE

3.4.1 ECONOMICALLY ACTIVE POPULATION

As argued by **Rylmon (1988d)** and illustrated in **Graph 3.5** "the economically active population in Greece as percentage of its total population over the 1960 - 1986 period was lower than the OECD and the EEC averages". According to **Zisimopoulos (1983)** "the average annual percentage changes of the country's economically active population over the periods 1961 - 1971 and 1971 - 1981 were - 1.2 and 1.3 respectively, while total population over these periods increased by 0.45 and 1.05". Particularly during the 1960's there was emigration from semi-urban and

GRAPH 3.5: TOTAL ACTIVE POPULATION IN GREECE AS % OF TOTAL POPULATION COMPARED TO EEC(12) AND OECD AVERAGE OVER CRITICAL TIME PERIODS (1960-1986)



Source: OECD Historical Statistics, Paris 1988

Reference: Rylmon, P.L. (1988d) "Greece: Economic Aggregates 1960-1986)" Economicos 33 (1789) 52

rural areas of Greece to countries such as W.Germany and Australia. The developments in Greece's economically active population as percentage to its total population is shown in **Appendix 18.**

In the period 1981 - 1986 the average percentage ratio was 39.4 slightly improved compared to 37.4 in 1975 - 1980. As pointed out by **Rylmon (1988d)** "in 1979 the economically active population of Greece to its total population was 35.3%; the lowest post-war record". The labour force by sex and age groups in Greece for 1986 is illustrated in **Appendix 19.** It appears that the relative lower active population percentage of total population against the OECD and EEC averages is a result of both lower female and male percentages.

3.4.2 EMPLOYMENT DISTRIBUTION AND STRUCTURAL DEVELOPMENTS

The developments in employment are of special importance in assessing the economic situation in Greece and its social implications. In an economy employment equals active population minus unemployment. With GDP stagnant, a result of the recession which followed the second oil crisis, employment in Greece rose slightly in the 1980's, not being enough to absorb the growth of manpower, and the country was faced with a growing unemployment problem. The long-term developments of total employment in Greece over the period 1970 - 1987 are illustrated in **Appendix 20.** Particularly in the case of Greece as argued by **Negreponti-Delivani (1985)** "it is difficult to examine problems related to the possibility of creating employment mainly for the following two reasons:

(a) because the total active population of the country clearly shows a falling tendency, and

(b) because the total emigration, both permanent and provisional presents a 3.89% yearly average of its total active population for the period 1965-1977".

It seems that in recent years both parameters mentioned above were less pronounced, or perhaps insignificant. **Appendix 18** provides an overall improvement in the economically active population as percentage to total population ratio over the 1980's, while it looks like many expatriots have returned to the home land and permanent emigration has been almost eliminated. **Epilogi (1987i)** indicated that "in Greece, employment rose from 3325 thousand in 1981 to 3600 thousand in 1986, that is by 8.3%".

A central feature of the employment distribution in Greece by occupational status in 1986, according to NSSG labour force survey, presented in **Appendix 21**, remains the large share (29.7%) of the self-employed persons, who together with the unpaid family members account for 45.1% of the total. The share of the salaried employees was less than half of the total (49.3%). The prevailing Greek structural characteristic of high percentage of self-employed people was also highlighted by **Negreponti-Delivani (1983)** whereby according to NSSG, 1982 labour force statistics, "self-employed accounted for 32.7% of the total and the salaried employees for 49.2%". On the other hand **Epilogi (1986b)** pointed out that "the 1986 OECD employment statistics indicate Greece's highest self-employed ratio among the OECD countries".

A comprehensive description of the nature and determinants of the Greek structural employment changes that occured in the course of its economic development over the period 1960 - 1986 are illustrated in **Appendices 22 and 23.** Over the last two decades employment rose in both the industry and services sector while Greek agricultural work force shrunk. When comparing with the EEC structure of employment in 1986 the services share appeared much smaller in Greece (46.5%) than that of the Community's (58.6%). The same applied for the industry, where Greece's (26.0%) was comparatively lower than EEC (33.0%). On the contrary as

presented in **Appendix 22**, the share of the primary sector was in 1986 larger in Greece (27.5%) than in the EEC (8.4%). It appears that changing technology and economic development over the past quarter of the century have pushed workers off the land in most European countries, while as argued by **Epilogi (1987i)** "in the less developed EEC countries - Ireland, Spain and Portugal - the shares of th services and the secondary sectors are smaller than the EEC average while that of the primary sector higher. But the deviations of their employment structure from the Community's average are much smaller than in the case of Greece". Finally as discussed in **Epilogi (1987i)** "during the 1981 - 1987 period total employment in Greece rose by a rate that did not differ much from the rates in other European countries, whereas for 1988 OECD forecasts a decline in employment in Greece and a rise in most other countries".

3.4.3 THE IMPACT OF CHANGES IN LABOUR LEGISLATION

Appendix 24 highlights the major changes in labour legislation in Greece over the 1981 - 1987 period. Among them are the system of wage indexation (ATA), laws regarding employee's annual vacation period, weekly working hours, retirement schemes followed by legislative acts on trade union rights, group redundancies policies, sex equality over work, overtime work, health and safety regulations. Government interventions in the labour market were severe under article 4 of law N 1365/83 in relation to labour disputes in Public Organisations and Enterprises, while beneficial policies were adopted over the issues of unemployment benefits. **Bazios (1982)** argued about "the extensive governments' interventions in the industry, ever since 1974, when collective conciliation over pay and terms was patronized by the state in favour of the employees, while employers had no option, but to sign three parties co-operation protocols in order to ease prevailing industrial disputes".

Appendix 25 illustrates statistics issued by the Ministry of Labour regarding labour disputes over the period 1981-1987. It seems that the number of disputes have subsided in 1986-1987 after reaching extreme peaks in 1982-1984. The reason was the wage freezes adopted under the austerity policies for the stabilization of the Greek economy during 1986-1987. The classification over a number of issues where arbitration and mediation was offered appears analytically in **Appendix 25** where the causes of dispute and the outcome of the labour authorities intervention is shown. It seems that a constant pattern exists whereby almost half of the disputes on an annual basis were resolved one way or another.

With reference to the World Labour Report, Geneva 1985, as presented by **Economicos (1988a)** "Finland and Sweden have the highest trade unionism density among other countries, a total percentage range of 80-90% which make them be in the top of the pyramid. Greece is grouped along with Canada, Netherlands and Japan with a percentage range of 30-40%, while in the end of the queue are Spain, USA, France and Portugal". While in Greece trade unionism in the 1980s reached its peak, in other countries such as the USA, as argued by the **Economist (1983)** "de-unionisation took place". It has been argued that when law N 1264/82 entered into force in Greece and syndicate rights were granted to all trade unions at national level the prevailing industrial and social climate was not the most appropriate. Thus by the establishment of law N 1365/83, which limited the public servants' right to strike by abolishing the rights offered a year earlier under the previous labour legislation N 1264/82, the situation got worse and almost out of the government's control. According to the Ministry of Labour statistics, presented by **Interim (1988b)** and illustrated in **Appendix 26**, "the number of people on strike reached a peak in 1987 (1,576 thousand) in

comparison to the whole Greek post war period". It appears that the incomes policy adopted during the 1986-1987 period was not favoured by the country's labour force. Furthermore in 1987 the total number of working hours lost accounted for (16,353 thousand), the second worst outcome after 1980. Different senarios were presented by the government authorities, Independent Boards and Institutions aiming to ease the situation, but with limited success. Among them as discussed by by **Zisis (1984)** "various means of labour participation to the management affairs in their companies, Institutions and Public Organisations, could be adopted in order to increase productivity and relax the magnitude of existing labour disputes".

3.4.4 LABOUR PRODUCTIVITY PATTERNS

As argued by **Epilogi (1985d)** "in the industrialized countries, where unemployment resulted from the slowdown of growth rates in production and investment and from the adjustment of their economies to the new conditions of the oil market, a parallel development has been the increase in productivity". In the case of Greece the sharp increase in unemployment of the recent years was matched with stagnant productivity in the urban sector of the economy. The changes in employment in Greece were accompanied by changes in output. As illustrated in **Appendix 27** labour productivity in Greece according to **Voloudakis (1987)**, "declined sharply in the 1970s to 2.30% against 8.29% of the 1960s and even further to 0.89% during the 1981-1986 period". Labour productivity studies with similar results for the early 1980s were carried out by **Tsaklaganos (1983)**, while **Nikolaou (1986)** provided comparative data on industrial productivity in which "during the 5 year period 1975-1979 a total rise by 19.8% was noted whereas over the following 5 year period 1980-1984 there

was an overall increase of just 2.0%". A similar assessment was conducted by Finas (1984) where the declining productivity pattern was underlined while it was highlighted that "immediate measures had to be adopted". Zolotas (1986) attempted to correlate the productivity growth in the Greek public sector, DEH case-study as compared to similar European public enterprises. It seems that the public sector in Greece remains very labour intensive and provides rather low services compared to most of the EEC member states. Nafteboriki (1987b) presented the Greek industrialists view on the subject matter, where "it was strongly believed that in future any payment increases should be correlated with the rise of productivity". In fact there are many benefits provided to the public and private sector, other than ATA, and as argued by Economicos (1985c) "none is linked to productivity growth". Epilogi (1987i) indicated that "between 1981 and 1986 the GDP per working person in Greece rose by only 0.5%. The output per person in the primary sector rose by 5.1%, in the secondary sector by 7.1%, whereas in the services sector marked an important decline of 16.6%". The latter figure most probably reflects poor productivity of the public sector employees, the number of which, in recent years, rose considerably. As accepted by the Greek Prime Minister Papandreou (1987) "we do employ twice as many people than required by the public sector to produce the needed services".

3.4.5 UNEMPLOYMENT PATTERNS

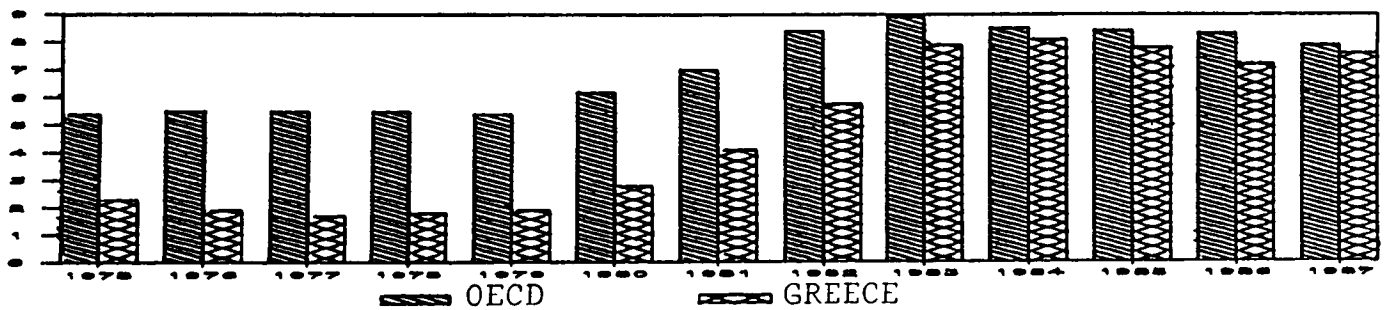
With reference to the UN (1982) Economic Survey for Europe "over the period 1975-1979 when the GDP growth in Greece was on average above 4%, unemployment was less than 2%, while at the same time the OECD average was 5.5%. It appears that until the second oil crisis in 1979, Greece was more successful than the world's biggest industrial countries

in keeping unemployment low". Although the slowdown in output growth brought about a deterioration in the labour market, unemployment rates, as it is illustrated in **Appendix 28**, remained in 1981-1982 at relative low levels compared to the EEC and the OECD averages. Unemployment over the 1980s has risen sharply in Greece and as presented in the NSSG statistics, from 1.9% in 1979 following a period of GDP growth stagnation reached a level of 7.8% in 1983. On the other hand as argued by **Epilogi (19881)** according to OECD statistics "during the 1983-1987 period unemployment in Greece rose by an average rate of 7.7% while in the OECD area, the corresponding rate was 8.4%". The austerity policies adopted in Greece over the last years, aiming to improve the national economic outlook, succeeded to lower the inflation rate only in 1987 while over the 1980s a sharp fall was noticeable in the level of employment, along with a rising unemployment rate. Although the measurement of employment in Greece as stated in **UN (1986)** Economic Survey for Europe, "is subjected to many qualifications which render precise international comparisions difficult "it is clear, that unemployment rate has followed an increasing trend in the 1980s. According to OECD statistics, the prevailing pattern during the 1975-1987 is shown it **Pictogram 3.1**, where it appears that unemployment in Greece almost reached the OECD average in 1987.

Furthermore OECD forecasts, presented in **Nafteboriki (1988v)** indicate that "unemployment rate in Greece from a level of 7.6% in 1987 is expected to rise to 7.7% in 1988 and to reach 8.0% in 1989, while the OECD average from 7.9% in 1979 is expected to be 7.5% on average during 1988-1989". The latest OAED figures, issued by **Nafteboriki (1988y)** report that "the average number of registered unemployed in the 6 months to June 1987 period were 128,332". The data provided represent an ever increasing unemployment trend, as shown in **Appendix 29**, over the period

PICTOGRAM 3.1: UNEMPLOYMENT RATE IN GREECE AS COMPARED TO OECD AVERAGE (1975-1987)

(annual percentage changes)



Source: OECD, Economic Outlook 43 June 1988

Reference: Epilogi (1988ℓ) "Greece-OECD, Economic Developments" 7 353

1975-1987. These figures result from the number of unemployed that were registered in the catalogues of OAED at the end of each month, and do not include some categories of unemployed that are not entitled to unemployment compensation, or do not for various reasons register themselves as unemployed. The data thus underestimate unemployment and cannot be comparable to the figures of other countries. Another source of data for unemployment in Greece is the random survey conducted annually by the NSSG. Despite the fact that the sample changes each year, the data does not appear to have a significant error. Moreover, the data referring to urban unemployment must incorporate an even smaller error since in rural areas underemployment is difficult to be estimated. The unemployment rate in Greece resulting from the 1987 survey was 7.4% of the country's total employment, while as shown in **Appendix 30** the latest figures for the 1984-1987 period do not differ from the EEC, Eurostat statistics. It is well recognised officialy that OAED employment figures do not reflect adequatley the unemployment situation in Greece, eventhough over the last years there is a more comprehensive appraisal of the overall problem. **Papagiannidis (1985)** criticized the OAED figures resulting from registered unemployment while recommended that "NSSG data on unemployment are reliable and most appropriate for EEC comparisons". On the other hand severe criticism was made by **Rylmon (1984b)** for total incomparability of the OAED statistics when in 1983 their 3.8% registered unemployment rate was contradicting the 7.8% NSSG unemployment rate, the latter one having marginal differences from OECD and EEC figures. The Greek unemployment rate in 1986 and 1987 remained fairly stable at 7.4%, while in the 1988-1989 period when the general elections are to take place, unemployment rates should fall because of a large increase in public sector employment.

Express (1987b) indicated that structural problems in the country's labour market, "the Greek employee is rather conservative and demanding while being reluctant to shift employment, or to move in areas away from its local community. The prevailing family, economic and social local background, make the mobility of the working force in Greece quite difficult". Furthermore the unemployment rate in Greece does not provide a complete picture of the production size of the economy's labour utilization. Existing legislation as argued by Epilogi (1984d)" puts considerable constraints in labour shedding. Moreover employers are liable to pay compensation when such sheddings are permitted. Thus many companies, especially in manufacturing, despite reduced production continue to employ personnel which it is not needed, while appearing in the labour statistics as employed". It seems that these people are subsidized by the companies in the manufacturing sector of the economy, differing from those subsidized by the OAED only in the amount and the compensation procedures. Estimates of this 'hidden' enployment do not exist,but the increasing number of ailing industries, as it will be shown in the following chapter, and the declining trend of industrial production among other indications suggest that 'hidden' employment is increasing. Allowing for this factor, it becomes clear that the unemployment question in Greece is much more serious than originally conceived.

According to the NSSG 1986 unemployment statistics, presented in Epilogi (1988) and illustrated in Appendix 31,"of the total number of unemployed (287 thousand) in 1986, 43.1% belonged to the 15-24 age group". As argued by Bougas (1983) "recession in the 1980s hit hard at the youth, and it looked like one in three young people were unemployed. 1982 Labour Force Survey indicated that 41.8% of the total number of unemployed (215.3 thousand) belonged to the 15-24 age group". Youth

unemployment in Greece continues to increase while as pointed out by **Simos (1988)** "Eurostat statistics indicate a 23.2% rise in 1986 as compared to an average 11% over the 1983-1985 period". The high youth jobless rate is alarming and it seems that the governments at present and in the future should have to intensify their efforts to reduce the youth employment problem, while keeping ahead with the youth training schemes and by providing incentives to the companies for youth recruitment.

On the other hand NSSG long-term unemployment in Greece, as argued by **Vrettos (1984)** "was 21.73% of the total unemployment in 1982." The phenomenon of long-term unemployment has been increasing in recent years and as discussed by **Nafteboriki (1988u)** "appeared to be 41.8% of total unemployment in 1986 with reference to Eurostat statistics while over the period 1983-1986 it was on annual average 38.6% compared to EEC (12) 50.0%".

Panetsos (1986) suggested that "part-time employment could provide employment to half of the 13 million unemployed labour force in the Community", while as argued by **Economicos (1986)** "eventhough the Greek government currently opposes the part-time employment and any modification in regard to a flexible or reduced working hours, gradually labour market liberation will take place in Greece up to 1992". The Greek governments have to aim for convergence in major policy issues with the other national governments to complete by 1992 the Single European Market. The Community's Commission believe that the EEC resources, people and materials, capital and investment will have to flow to areas of greatest economic advantage. There is a significant gap to bridge and in the case of the Greek economy it will not be easy - despite the recent efforts - to adopt the Community's changing environment.

3.5 THE INTERNATIONAL DIMENSION

In the wake of the second oil crisis and influenced by relatively expansionary policies, Greece found itself with very large current account deficit and rising burdens of foreign debt. The reduction of these deficits was a major policy objective of most of the adjustment programmes introduced in the 1980s and it was the one objective towards which considerable progress has been made.

3.5.1 DEVELOPMENTS IN THE BALANCE OF PAYMENTS

The long-term developments in the balance of payments in Greece are characterised by a sharp increase of the current account deficit in the period which followed the first oil crisis although remained quite unchanged up to 1978. As illustrated in **Appendix** 32 a sharp rise took place in 1979 followed by another two successive increases caused by the dramatic rise of the dollar value oil prices after the second oil crisis in 1979-1980. Eventhough the trend was reversed in 1982 and 1983, the current account deficit widen again in 1984 and deteriorated substantially in 1985. The package of measures announced on 11 October 1985 by the Greek government, as stated in **Nafteboriki (1988d)** "aimed mainly at reducing the deficit of the country's current account balance to $1.7 billion in 1986 and to $1.25 billion in 1987". The favourable influence of external factors, such as the decline in oil prices, the dollar's drop and the increased receipts from the EEC made it possible for the targets set by the austerity programme in the end of 1985 to be accomplished successfully.

3.5.1.1 TRADE DEFICIT AND OIL DEPENDENCE

The foreign trade balance of Greece has been in the 1975-1987 period constantly in deficit, simply because exports could not cover imports. The ratio of exports to imports attained an average level of 42.9% over the period 1981-1987. The trade deficit widened again in 1987 despite the considerable decline of the oil prices, while as suggested by **Nafteboriki (1988d)** "the increased net inflows from the EEC improved the invisible receipts surplus which in turn covered the increased trade deficit and resulted to a relatively lower current account's deficit". Since the economic development of Greece in early 1960s, EEC countries absorbed a significant proportion of the Greek industrial exports but despite the increasing trend to the EEC region, the Greece/EEC trade balance remains in deficit for Greece. As stated by **Kraloglou (1986)** "on 31.12.1986 the extended transitional period of Greece's accession to the EEC was completed, but under the Greek Moratorium to the Community the export subsidies provided by the NE 1574/70 act were extended". The credit offered as argued by **Roumeliotis (1988b)** "being 6% on the drachma's value worth of exports until the 31.12.1986 was reduced to 5% on 31.3.1987, 3% on 31.12.1987 and as from 1.1.1988 was abolished completely".

The rapid growth of imports (less fuel) resulted, as illustrated in **Appendix 33**, over the last years in the deterioration of the traditional trade balance. As a result the trade deficit (without fuels) grew again, to $5.1 billion in 1987. On the other hand, Greece's net trade deficit for fuel over the period 1975-1987 is presented in **Appendix 34**, highlighting the country's dependence on imported oil. Fuel imports contributed to 29.9% to the trade deficit over 1975-1979, 50.6% during 1980-1985 and 32.6% in the 1986-1987 period. As argued by **Kirtsos (1988)** "the oil dollar value per barrel, in constant market prices, costs

at present to the Greek government approximately 1/3 of the 1980 price level and less than 1/2 of the 1985 prices", while according to **Kathimerini (1988b)** " the recent development of the oil prices collapse, are positive to the Greek economy particularly if it is to be taken into account that every 1 dollar appreciation of the imported oil barrel price leads to added expenditure of about $75 million in the national current account balance".

3.5.1.2 NATIONAL CURRENCY. EXCHANGE RATE PARITIES

In Greece the monetary authorities set the domestic currency's rate against the various foreign currencies. Shifts in the purchasing power parity nessecitate changes in the respective exchange rate in order to avoid adverse effects in the balance of payments. Since the mid 1970's the national currency's devaluation has been used to promote the competitiveness of the Greek economy. The drachma's value against the currencies of Greece's major trading partners for the period 1974-1986 is illustrated in **Appendix 35.** The drachma as argued by **Kefalas (1983)**" during the period 1974-1982 lost 139.7% of its purchasing power". Since the first oil shock there has been a continuous 'slide' of the drachma's exchange rate against the dollar and other major European currencies.

On 9 January 1983 the drachma was officially devalued against the dollar by 15.5% and against the other foreign currencies. As commented by **Grigoriadis (1983)** "the 9.1.1983 drachma's devaluation was the second official post-war national currency's devaluation after the 100% drachma's devaluation on 9 April 1953 when the drachma's value against the dollar from 1$ = 15 drachmas became 1$ = 30 drachmas overnight". On 11 October 1985 when the economy's austerity policies were announced, a 15% official drachma's devaluation against the dollar took place, aiming to make the

Greek products more competitive and as a result exports to be faciliated. The Governor of the Bank of Greece, **Chalkias (1987)** argued that "the sole mechanism to maintain a degree of equilibrium in the trade balance is the steady devaluation of the Greek drachma in order to keep exports competitive and prevent further deterioration of the country's term of trade".

Drachma's average annual rate against the US dollar is illustrated in **Appendix 36,** where following a long period of monetary stability 1960s-1970s; the pattern was reversed after the second oil crisis. The drachma's value against the dollar from 1$ = 43.1 drachma's in 1980 deteriorated sharply to 1$ = 112.7 in 1984. During the period of the dollar's decline in the international capital markets its value against the drachma remained almost stable.

Greece joined the EMS in September 1984, but not the ERM, while the drachma's share in the basket, as discussed by **Economicos (1984a)** and **Epilogi (1984c)** " it was agreed on 17.9.1984 to represent 1.3% of the ECU". **Appendix 37** represents the exchange rates used for the calculation of the ECU values for the period 1970-1986 among the EEC member states along with the ECU/ dollar equivalency. As it can be seen the drachma's counterpart of 1 ECU varied from 61.62 in 1981 to 137.42 in 1986. The ascending trend in the drachma/ ECU exchange rates reflected the weakness of the national currency. Drachma's inclusion in the EUA, as analysed in **Epilogi (1988k)** generated problems since "the rate of inflation in Greece has been significantly higher, approximately 4 times the Community's average over the last three years, than in the other EEC member states". The participation of the national currency unit in the EMS has been one of the necessary adjustments that the Greek economy would have to experience in the context of the Common Market's 1992 task.

Present monetary imbalances would have to be tackled while current economic aggregates need to converge.

3.5.2 TOTAL EXTERNAL DEBT

3.5.2.1 PUBLIC AND PRIVATE FOREIGN DEBT

Greece's total external debt in US dollars has increased considerably in the 1980s. As highlighted by **UN (1986)** Economic Survey for Europe "at the end of 1981 it was some $7.9 billion as compared to $4.5 billion in 1978". In 1985 the country's total external debt (private + public) reached, according to the Bank of Greece, a total of $15.5 billion, on about 42% of its GDP. In the following years 1986-1987, during the government's economy stabilization programme, the rise continued reaching in 1987 a total of $20.7 billion, 2.6 times the 1981 figure. The accelerated rate of the external debt increase in recent years is illustrated in **Appendix 38**, data extracted from the Bank of Greece's publications.

The magnitude of Greece's foreign debt itself in absolute levels, or as a percentage of its GDP, has resulted by higher external borrowing in the 1980s for the coverage of the continuous widening of the current account deficit. As argued by **Nikolaou (1988b)** "with a total external debt which exceeded $20 billion in 1987, Greece is to remain among the over indebted OECD developing countries". What is worrying however is the future consequences on the national economy by the accelerated rate of Greece's total external debt's increase. It seems that the country's external borrowing throughout the 1980-1987 period did not exert favourable influence on the economy since it did not contribute to an expansion of its productive capacity, but on the contrary, contributed to increasing burden on its external balance of payments, since an increasing

part of its export receipts had to be used for the servicing of its debt. A very substantial capital outflow is the amortization payments on private and public sector loans. A reliable index of the country's indebtedness with respect to foreign loans, is the relation of the total payments for the servicing of the loans (amortization and interest) to the country's receipts from exports of goods and services. In the 8 year period 1980-1987 as shown in **Appendix 38,** Greece had to pay increasingly higher sums for the servicing of its external debt.

3.5.2.2 PUBLIC SECTOR DEFICITS AND BORROWING REQUIREMENTS

As argued by **Nafteboriki (1988w)** "the public sector deficit, over the 1980-1987 period, as a percentage of GDP has remained on an annual average level at 13.9%, and along with the inflation pace and the current account deficit is a restrictive parameter for the Greek economy's growth". A illustrated in **Appendix 39,** in 1981 - general elections year - there has been a rapid increase in the public sector deficit from 11.4% of GDP in 1980 to 15.5% in 1981, which had strong inflationary effects. However, due to the favourable export/imports differential in 1981 the current account deficit has increased relatively moderately. The public sector deficit as percentage of GDP rose to 17.6% in 1985 and despite the austerity policies in 1986-1987 dropped slightly to 13.7% and 13.5% respectively. It appears that Greece's position has deteriorated sharply in the 1980s and specific measures may be required in order that the improvement of the public sector's performance to be pursued. However, in the near future the public sector deficits could be contained (at least, as a proportion of GDP) and given the forthcoming 1989 general elections period, modest improvement should be expected in the rate of growth in 1988 and 1989.

In Greece, the continuously widening public deficits exert a strong expansionary influence that in the end results in high inflation. The deficits create a surplus demand that is financed by private savings in the form of deposits with the banking system and by foreign loans used to finance the current account deficit. It has been observed that the increased demand does not become a driving force for higher domestic production, but does promote an increasing trend in consumer imports. The share of consumption to the total expenditure of the economy has been increasing at the expense of investement. The 1988 budget did not deviate from the orientations of those of the previous years. Its deficit as argued by **Stergiou (1987)** "was estimated to account for 13.3% of GDP against 12.1% in 1987", as shown in **Appendix 39.** A budget with a deficit of that size cannot promote business investment, even indirectly. Its financing will absorb the largest part of the savings that are channelled to the banks and to treasury bills that offer attractive yields, considerably higher than the rate of inflation.

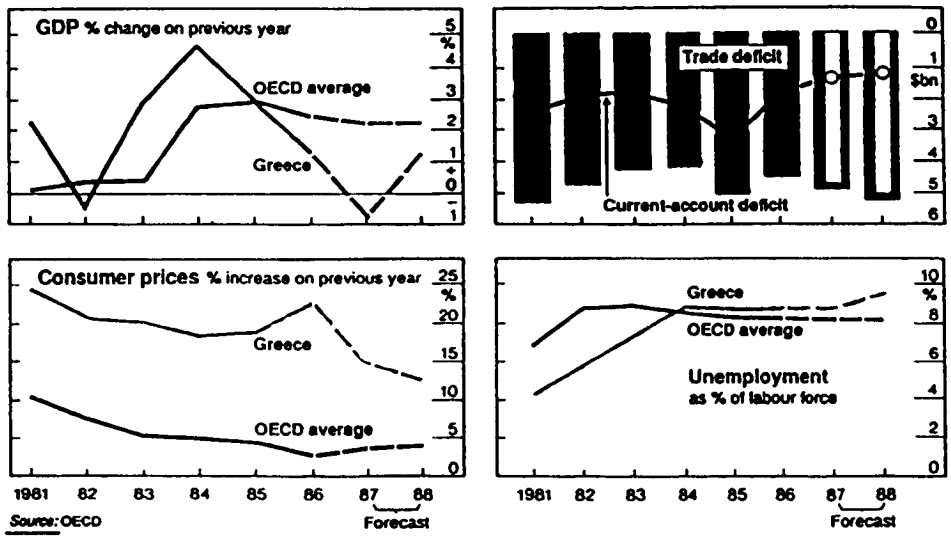
3.5.3 AN OVERVIEW

By the end of 1985, shortly after the introduction of the Greek government's 2 year economy's stabilization plan in October, inflation was 19.3%, the net public-sector borrowing requirement stood at 13.2% of GDP, the current-account deficit was equivalent to 9.8% of GDP - the biggest in the OECD - and Greece's external debt was almost 50% of GDP. Tight fiscal and monetary policies squeezed GDP growth to 1.3% in 1986 while in 1987 the GDP declined by 0.6% as a result of developments in almost all the sectors of the economy. In 1987 the second year of the austerity programme, private consumption appeared to be more noticeably influenced by the adopted policies than in 1986 (1987 : 0.9% decline, 1986 : 0.8%

increase). However, the government can claim some successes since inflation was down to 16.3% in 1987 and is expected to decline further by the end of 1988; and the current-account deficit halved in 1987, from a total of $3.3 billion in 1985 declined sharply to $1.3 billion in 1987. External factors such as the increased EEC net receipts, the collapse of the oil prices and the dollar fall favoured significantly the improvement of Greece's balance of payments profile.

Chart 3.1 illustrates Greece's economic indicators of growth in the 1980s as compared to the OECD average. It appears that there is a growing tendency towards economic aggregates' convergence, such as the GDP and the consumer prices percentage average annual increases, but what is alarming during the recent years is the increasing unemployment (as a percentage of labour force). The 1986-1987 stabilization programme was designed to curb the accelerating inflation and to reduce the budget and current account deficits, and within reason, these targets were successfully accomplished. In the author's view increasing concern would be required in the short-run over the growing unemployment problem in Greece.

CHART 3.1: ECONOMIC INDICATORS OF GROWTH IN GREECE AND THE OECD AREA (1981-1988)



Reference: Economist (1987b) "Greece" 304 (7509) 99

CHAPTER 4

THE GREEK INDUSTRIAL STRUCTURE

4. THE GREEK INDUSTRIAL STRUCTURE

4.1 INTRODUCTION

4.1.1 STAGES OF INDUSTRIALIZATION IN GREECE

The first signs of industrialization were noticeable in the 1870 - 1890 period, quite some time after the country's independence from Turkey in 1830. The manufacturing sector's output in fact grew only during the inter-war period, particularly after the Micrasiatic catastrophy in 1921. As argued by **Papagiannakis** (1983) "despite the prevailing views and opinions there appears to be a general agreement that industrial development in Greece was predominantly attained in three characteristic phases: 1870 - 1890, 1920 - 1930 and 1958 - 1973". Greece's political and military involvements in 1897, 1909, 1912 - 1913 (Greek - Turkish wars for the liberation of Thessalia and Macedonia), followed by the World War I and the Micrasiatic compaign offset the national industrialization efforts. The country's four traditional industry groups - food products, leather and fur, textiles and chemicals - grew in the 1920's and accounted for the major part of the country's industrial structure.

Once more Greece suffered political struggle, war and distruction during World War II which was to be followed by the Greek civil conflict. The post-war industrial achievement was according to an ex-President of the Federation of Greek Industries (SEB) **Drakos (1980)** "the rise of the index of industrial production (1970 = 100) from 10.5% in 1946 to 21.0% in 1950, taking into account the consequences of the war, the long-lasting foreign occupation and the ongoing civil war". Under the Karamanlis (1955 - 1963) administration emphasis was given in the creation of a climate of monetary stability which laid the foundation for the development of heavy industrial plants. Incentives were provided to industry and as a result

there was a nation-wide increase in industrial investment. Manufacturing output grew to 53.7% in 1963 (1970 =100), while as highlighted by **Drakos (1980)** "exports of manufactured products as a percentage of the country's total exports during the 8 years period accounted for 7.6%; the prevailing growth pattern continued in 1963 - 1967 and 1967 - 1974 periods and reached 18.0% and 65.4% respectively". The exports orientation of Greek manufacturing sector was supported during the latter period by the dictatorship which provided a beneficial climate to the industry. **Negreponti-Delivani (1983)** argued "the growth rates achieved during the 1960's were made possible by the relatively low labour cost and the prevailing favourable world economic climate".

On the other hand as pointed out by the President of IOBE, an Athens - based private research organisation, **Marinopoulos (1988a)** "Greece modern industrial structure was attained during the 1960 - 1975 period, at a time when the country's GDP increased by an annual average rate of 7%, having been the second highest level of economic performance among the OECD countries". The motive force of Greece's economic growth in the period 1960 - 1975 was industry as highlighted by **Marinopoulos (1988b)** "manufacturing output rose at that period by an annual average rate of 10% a compared to 4.5% and 6.5% achieved by agriculture and services respectively".

During the last stage of that industrial growth in Greece (1967 - 1974), as presented by **Epilogi (1988)** "the gross capital formation in manufacturing at current prices rose from 5.5 billion drachmas in 1967 to 26.0 billion drachmas in 1974, while in the same periods industrial exports grew from $81.3 million to $866.3 million". In 1974 Greece suffered the Cyprus crisis - which resulted to the restoration of the democratic rule in the country - and the first oil crisis. Under the

second Karamanlis admininstration (1974 - 1980), despite the change in favourable international economic background, industrial growth rates continued in Greece. The result of the combined effects of industrial production and manufacturing exports rises was the significant increase of employment in the Greek manufacturing sector against a declining pattern in the agricultural sector.

According to EEC statistics presented by **Paulopoulos (1987)** "industrial production in Greece during the periods: 1960 - 1968, 1968 - 1973, 1973 - 1979 and 1979 - 1982 rose by an average annual rate of 8.8%, 11.8%, 3.3%, while declined further to -2.9% during the last period". The corresponding EEC average trend has been, as illustrated in **Appendix 40**, 5.1%, 5.2%, 1.7% and -2.1%. In Greece the manufacturing sector attained its peak rate of growth during the early 1970's, being a leading sector of the economy, but after the 1973 - 1974 energy crisis the growth pattern changed radically. The economy's structural problems and imbalances in key economic indicators became more pronounced in the late 1970's following the 1979 - 1980 energy crisis. After a short period in which manufacturing partly recovered its more dynamic role (1975 - 1977) its positive influence weakened again in 1979 - 1982 when gross fixed investment fell sharply to -6.4% compared to the EEC average -1.7%. The volume of industrial exports having reached a 16.1% peak level in the 1968 - 1973 period declined thereafter, but following the national currency devaluations regained its strength in 1984 and 1986.

As argued by **Evert (1988)** "during the 1955 - 1980 period of industrial development in Greece, exports of manufactures as percentage of total exports grew from 2.1% in 1955 to 54.9% in 1980, while fixed investment in manufacturing rose by 7.7 times". **Appendix 41** illustrates the development of the gross fixed capital formation in the manufacturing

sector along with the industrial exports pattern from the 1960's to the 1980's. Furthermore as outlined by **Nikolaou (1988a)** "during the 1960 - 1975 period the annual average rate of increase of the gross fixed industrial investment was 10.7% which enabled manufacturing output to rise four fold".

4.1.2 THE MANUFACTURING SECTOR IN THE 1980's

Greece's adaption to a fast changing international environment along with its full accession to the EEC demanded both economic and political transformations. It appears that the adjustment of the Greek industry in the 1980's under a prevailing strong recession in the national economy has been difficult if not impossible. According to the National Accounts the manufacturing sector's composition of the country's GDP from a peak level in 1980 (21.3%) declined sharply to an estimated (18.6%) in 1987. There has been a growing tendency of describing the 1980's Greek industry's era as its phase of disindustrialization. The prolonged recession in the national economy after the 1979 - 1980 oil crisis resulted in a stagnation pattern in the 1980's of the gross fixed capital formation growth rates in manufacturing, while some improvement was noted during the 1986 - 1987 economy's stabilization programme.

In Greece, the economic policy of the early 1980's has been governed by principles opposite to the international trends. The government's choices were differentiated from those of the OECD countries, where tight anti-inflationary policies were adopted to restore domestic monetary balance. The country's public sector continued to expand up to 1985, while the government measures, particularly the incomes policy and the labour market interventions, adversely affected industrial activity. The result was declining productivity, recession, rising unemployment, and

falling investment. Moreover, besides the large wage increases of 1982, the private sector had to bear the burden of maintaining surplus personnel due to the regulatory intervention in the labour market. The above, combined to the price controls created conditions of high costs, low efficiency and profit margins deterring investment activity.

On the other hand the government's policy of nationalization had direct and indirect effects. The expansion of the public sector to productive activity was limited, under the provisions of law N 1386/83, only to the 'problematic' enterprises. Growing rivalry and managerial incompetence resulted in rising deficits of the 'socialized' enterprises and contributed to the increase of the public deficits. At a time when the industrialized countries led to the trend towards de-nationalization, in Greece there was an expanding public sector. The indirect effect was the creation of a national climate of mistrust, which became more pronounced by the sharp deterioration of the trading environment. Furthermore the prevailing threat of nationalization had adverse effects in the industry's investment activity and in manufacturing output.

4.2 INDUSTRIAL INVESTMENT

4.2.1 TREND ANALYSIS

With reference to the National Accounts total investment, at 1970 prices, increased steadily in the 1960's, reached its peak in 1973 (100.1 billion drachmas), declined sharply after the first oil crisis, and partly regained strength in 1977 - 1980, having reached a 1979 peak (99.1 billion drachmas). In the 1980's the pattern changed dramatically and the gross fixed capital formation in Greece remained stagnant. The prevailing stagflation caused adverse effects in the growth of investment.

The long-term development of the gross fixed capital formation in the Greek manufacturing sector, as illustrated in **Appendix 42**, exhibited in the 1960's an ascending pattern reaching its highest growth rate in 1974 (14.9 billion drachmas), declined in the inter-oil crises period to an average annual level of 13 billion drachmas while reaching a new peak in 1980 (14.9 billion drachmas), declined thereafter gradually to around 11 billion drachmas in 1985. As a percentage to the total gross fixed capital formation, investment in manufacturing attained its peak level in 1974 (20%), declined eventually in the following years to (13.4%) in 1985, being in that year 26% below its level in 1980.

During the 1986 - 1987 economy's stabilization programme some signs of improvement were indicated, but as pointed out by **Zolotas (1983)** "only the combined effect of productive investment in manufacturing and a growing trend of exports in manufactures could make it possible for Greece to find its way out of recession". Industrial investment could eliminate the growing unemployment problem, by creating jobs nation-wide. It has been argued that the gradual decline of Greek industry's potential in 1980 - 1985 was caused primarly by the 1979 - 1980 oil crisis effects on the national economy, while the degree of its magnitude resulted from the macroeconomic policies adopted by the governments in the early 1980's. The return on capital employed in the manufacturing sector declined sharply due to increased operating costs and the drop of productivity. In many cases the growing costs were not counter balanced by price increases due the level of competition in a relative small home market, and because of the government's price freezes.

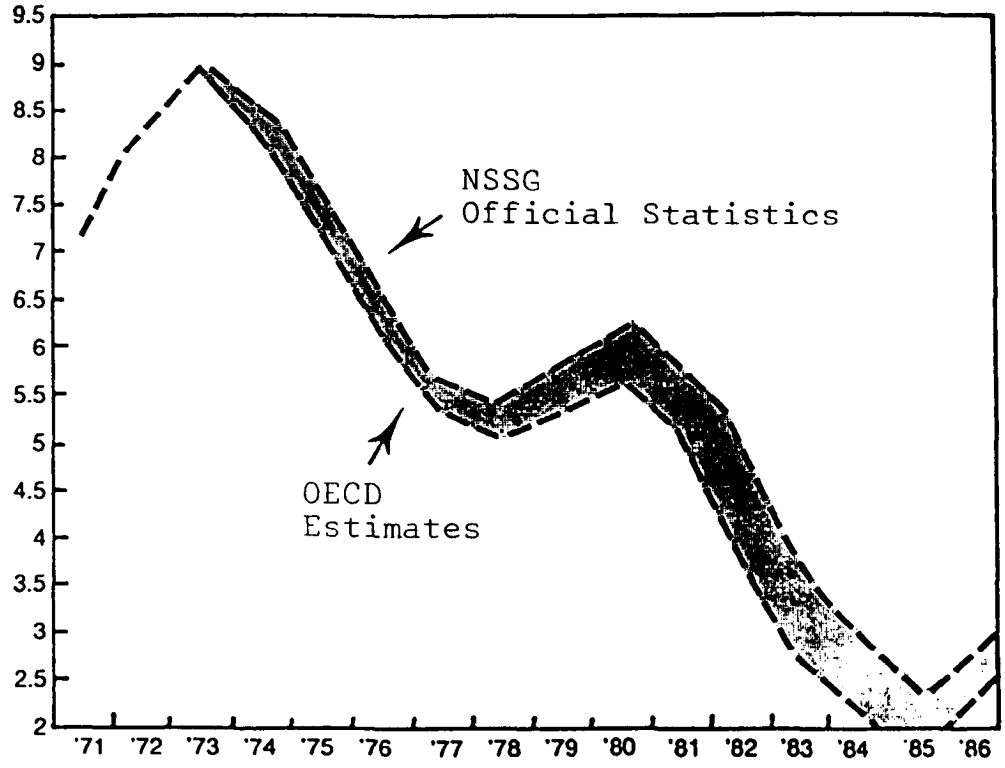
On the other hand the state intervention in the labour market prevented a rapid decline of industrial employment, but the system of wages indexation and the prevailing labour legislation had negative

effects on the Greek industry as manufacturing profits were squeezed and in 1982 overall losses were noted for the first time since the evolution of the industrial sector after the World War II. The net industry losses continued in the 1982 - 1985 period, as illustrated in **Appendix 43**, varying from 9.5 billion drachmas total net losses in 1982 to their peak level of 29.0 billion drachmas in 1985. As a result the industry's net profit to net worth ratio deteriorated sharply from -3.2% in 1982 to -11.4% in 1986. In addition the ratio of debt to total assets increased from 73.6% in 1982 to 87.3% in 1986.

The prevailing climate and industry's performance was far from appropriate for industrial investment. According to an 1986 European Council's economic study presented by **Nafteboriki (1986a)** "Greece is the sole EEC member state where long-run investment in its manufacturing sector indicate a declining trend", while in a similar vein the 1986 OECD Report reported by **Nafteboriki (1987h)** argued that "industrial investment declined in most western economies following the first oil crisis. Despite the long recession signs of improvement are apparent in many developing countries, but in the case of Greece there has not been any considerable development". The declining trend of net private investment in manufacturing during the period 1970 - 1986, according to OECD and NSSG statistics, is shown in **Chart 4.1.** A slight improvement in the 1978 - 1980 period was followed by a steady drop in early 1980's while some signs of an upswing were noticeable in 1986, due to the government's austerity policies.

CHART 4.1: NET PRIVATE INVESTMENT IN MANUFACTURING (1970-1986)

(in billion drachmas & at constant 1970 prices) (annual percentage changes)



Sources: OECD, NSSG statistics

Reference: Kefalakos, D. (1988) "Industrial Investment - A Lost Decade" Hellenews : Industry 1988 1 8

4.2.2 INDUSTRY TAXATION

The government's attitude towards the Greek industry has not been favourable in the years that followed the 1973 - 1974 oil crisis. A series of regular and/or exceptional taxation contributions were imposed directly or indirectly on manufacturing thus affecting its performance and creating an uncertain business climate discouraging investment. As discussed by SEB (1983) "additional taxation ranging from 10% - 20% was imposed on 1973 manufacturing profits exceeding 10 million drachmas. Taxation on the fixed assets in 1975 along with increased income tax on dividends from manufacturing from 30% to 33% (stock market shares) and from 38% to 41% (non-stock market shares). In addition non-distributed profits taxation rose from 30% to 35% and from 35% to 40% respectively. Extra taxation on manufacturing profits over 5 million drachmas was imposed in 1976, whereas in 1977 industry's fixed assets were revalued and the excess worth was taxed (10% tax coefficient for the land and 20% for the buildings). In 1978 extra taxation was contributed by the industry to cover the damages caused by the Thessaloniki earthquakes. Further increases in income tax on dividends from industrial activities incurred in 1982, for the stock market shares, from 33% to 42% (nominal shares) and from 41% to 45% (anonymous shares), while for the non-stock market shares the corresponding rises were from 43% to 47%, and from 47% to 53% respectively. The non-distributed profits taxation rose to 45% while the 1982 fixed assets revaluation was imposed (8% tax coefficient for the land and 20% for the buildings)".

Further tax burdens imposed in the 1980's such as the 1986 tax contribution to support the government's efforts to restore Kalamata, destroyed by earthquakes, and the additional taxation varying from 5% - 10% on the 1986 industry's profits. There is no government intention to

lower the income taxation on dividends from manufacturing enterprises; according to the Minister of Economics, as reported in **Nafteboriki** (1988ad) "despite SEB's suggestions that the existing gap differential - 42% to 45% in Greece compared to 35% in USA, Britain and France - is considerably large, the government seems to be attracted to industry's heavy taxation". It should be mentioned that such measures do not create any incentive for purchase of shares in the stock-market. Industry's poor performance over the last years has made the potential investors to go for the tax-free savings accounts and government bonds. Finally as from January 1st 1987 value added tax was established in Greece, 18% on most industrial products, which resulted in cash-flow problems in manufacturing companies. VAT was slightly lowered on January 1st 1988 to 16%.

4.2.3 INVESTMENT INCENTIVES

Incentives for investment in the Greek manufacturing sector are provided under the acts of the development law N 1262/82 along with its modifications and provisions under the laws N 1360/82, N 1479/84, N 1563/85 and N 1682/87. Incentives are offered only for productive investments such as: construction, extension and modernization of industrial plants, purchase of operating or factories under construction, acquisition of new mechanical or technical equipment, plant transfer to less developed regions, construction of new warehouses, purchase of new vehicles, and so on. The incentives range according to the location of the plant. These are four industrial areas ranked from A to D across the country; areas A to C are classified as developed regions whereas area D covers regions along Greece's frontiers. The incentives provided follow an ascending scale from area A to area D, while ministerial discretion may suggest certain priviledges to underdeveloped sectors within each region.

The incentives cover investment grants, interest allowances and increased depreciation rights, or tax-free discounts and depreciation rights. Investment grants are not usually available for area A, for area B range from 10-25% of the total expenditure, for area C are 15-40%, and for area D 20-50%. On the other hand the tax free discounts on the annual profits range from 60% to 75% and 90% for areas B, C and D respectively, while there is no such provision for area A.

Since the initiation of the development law N 1262/82 until the end of 1987 according to the Ministry of National Economy statistics, as discussed by **Diamantopoulos (1988)** and shown in **Appendix 44** "the total worth of the government approved investment projects accounted for 462.9 billion drachmas, while the realized total value over the 1982-1987 period reached 152 billion drachmas, 32.8% of the whole". The declining trend of the realized investment programmes in the manufacturing sector, under the N 1262/82 law indicates the magnitude of the problems which the Greek industry faces and most definitely unwillingness to carry out planned investment projects due to the deterioration of the prevailing business climate. On the other hand the delayed period for the accomplishment of the approved investment proposals, as indicated by SEB in **Nafteboriki (1987e)**, "caused by the existing bureaucratic procedures has been a restraining parameter in undertaking large scale industrial investment plans". Furthermore **Nafteboriki (1988x)** highlighted that "the realized investments in manufacturing during the first six months of 1988 have been only 14% of those realized in 1987, a sharply declining pattern which should alarm the government". The ex-Minister of the National Economy **Simitis (1986)** stated "91% of the investment programmes under the provisions of law N 1262/82 and by July 31st 1986, referred to the medium-sized companies, while 72% of the approved investment project

proposals were directed to development areas C and D". In addition, Nafteboriki (1988x) argued "investments under the provisions of law N 1262/82 have been a very small percentage of the total private investment in manufacturing, having declined from 13.4% in 1984 to just 6.7% in 1987".

As illustrated in **Appendix 44** the approved investment proposals rose considerably in 1987 compared to the previous years, the reason being that the EEC IMPs have been included along with the ones under the practices of law N 1262/82. As pointed out in **Nafteboriki (1988f)** "the Ministry of the National Economy has approved so far 97 investment project proposals submitted along with the IMPs scheme, of total value 42.9 billion drachmas". A considerable proportion of the IMPs scheme investment proposals was directed to the industry's traditioal sectors such a textiles and food products sector". The deadline for investment submission under the IMPs scheme has been extended from 31.5.1988 to 31.12.1988 "as indicated in **Nafteboriki (1988j)** which highlights the fact that despite the existing attractive incentives, the prevailing uncertain business climate has made potential investors reluctant to undertake long-term investment programmes.

At this stage it should be mentioned that in Greece there is also the law ND 2687/1953 in reference to the investment and protection of foreign capital, under the provisions of act 107 of the 1975 Constitution. As a result productive foreign investment in Greece is safeguarded, and there is a possibility of legal foreign currency return, on an annual basis, in order to cover dividend payments abroad; but not exceeding 10% of the initial capital's value. Recently the legislative act PD 270/1986 has completed the prevailing law ND 2687/1953 for the gradual harmonization of the capital movement within the EEC member states, along with the recent Bank of Greece Governor's act 825/25.7.86

which covers foreign investment procedures from non-EEC origin sources. As argued by **Drillerakis (1986)** "the so called 'privileges' offered by the law ND 2687/1953 do not create a preferential business enviroment to attract foreign investors and additional measures would be required in order to achieve higher levels of foreign investment in Greece".

As illustrated in **Appendix 42,** in the early 1980s, industrial investment - at constant 1970 prices and national currency - declined sharply while growing fear of a decreasing trend of the Greek manufactured products' competitiveness arose. Furthermore a prolonged recession in the economy and persisting lack of investment in manufacturing could result in a technologically obsolete industrial structure. Recent NSSG and Ministry of National Economy statistics, presented by **Rylmon (1988c),** "indicate a relative stagnant situation in the imports of manufacturing equipment and machinery over the last years". A further deterioration in the technological gap between a number of Greek industrial sectors and the corresponding ones in other EEC member states would amplify the present difficulties in approximately three years time when in January 1992 there will be open competition in a Single European Market. As argued by **Vlaxos (1987)** "at a national level and with reference the 1992 task, investment in manufacturing will be the key development factor". It appears that the private sector will have to fund industrial investment programmes. On the other hand the governments should concentrate on the improvement of services, while supporting the investment activities. Certain positive steps have been taken in this direction, while as discussed by **Anagnostopoulos (1987),** "the legislative acts of law N 1622/86 entered in to power in 1987 aiming for a united regional development of Greece for the accomplishment of the 1992 task". As a result the country was divided into 13 autonomous peripheries and some

privileges were provided by central administration to the local authorities for their regions' progress.

In early 1988 the Greek medium-sized manufacturing companies classification criteria were modified, thus allowing a greater number of enterprises to benefit from the Bank of Greece's special reserves under the act NE 197/70. The following two prerequisites would have to be sustained:

(i) the average sales turnover over the last three years should not exceed 350 million drachmas (previous limit was 250 million drachmas)

(ii) the average annual level of employment over the last three year period should not exceed 100 persons (previous limit was 50 persons)

Finally the most recent policies on the investment front have been, as presented by **Nafteboriki (1988e)**, "the allowance of 1% credit for medium-term loans to the medium-sized companies - under the provisions of the Bank of Greece's act 45755/789/29.5.1988 - for productive investment in the manufacturing sector", and the incentives offered by the National Economy's ministerial act on 22.2.1988 for the formation of special tax-free capital reserves from the 1987 manufacturing profits; provided that at least 1/4 of that could be used during 1988 for realized investment programmes to be completed within a three year period. As argued by **Korfiatis (1988b)** "many companies being short of cash were unable to take advantage of the ministerial act's provisions, others emphasized their inability to place orders abroad and secure delivery and installation of machinery and equipment at such short notice, while it appears that most industrialists are reluctant to undertake any large investment projects, despite the attractive incentives, due to the uncertain business climate".

4.3 EXPORTS OF MANUFACTURED GOODS

4.3.1 TREND ANALYSIS

The total value of the Greek exports, according to the Bank of Greece Statistical Bulletins and Annual Reports, increased continously during the 1961-1981 period. Between 1961 and 1973 exports increased more than five fold, whereas between 1974 and 1981 the increase was almost three fold. The Greek exports' stagnation in the early 1980s following the peak 1981 level ($2.4 billion) forced the government to adopt austerity policies during the 1986-1987 stabilization programme.

The most dynamic group of exported goods has been the manufactures. Exports of manufactures in 1973 were 57 times the 1961 level and continued to rise up to 1981, as shown in **Appendix 41.** During the 1982-1985 period exports remained stagnant, while in 1986 and 1987 regained strength and reached a total of $2.2 and $2.9 billion respectively. Their participation in total exports indicate their relative importance to the Greek economy; since their contribution from 3.6% in 1961 rose continously to 36.5% in 1970 whereas in 1980 reached a peak level of 54.9%. In the 1981-1987 period exports of manufactures as a percentage of total exports declined sharply to 44.7% in 1985, while under the 1986-1987 stabilization programme rose to 49.9% and 51.2% in the corresponding years.

The exports development of the main manufactured goods over the period 1975-1986, is illustrated in **Appendix 45.** The most essential industry group, since the early stages of the development of the country's modern industrial structure, has been textiles. Exports of textile products, predominantly cotton yarns and knitted fabrics, are directed mainly to other EEC member states. Metals are the second traditional industry sector in Greece along with the mineral (non-metallic) group.

The most important product of the mineral industry is cement which has been primarily exported to the Middle-East. Following the oil price collapse the relative importance of this contribution declined. Chemicals and pharmaceuticals are among the leading goods, having an increasing participation in the country's total exports, whereas aluminium exports look promising given bauxite resources and the prevailing favourable international demand. The share of textiles to total exports of manufactures despite their slight decline, as argued by Gourgiotis (1987), "during 1984 regained their strength and continued thereafter to remain the leading and most important among the industrial exports by reaching a total of $731.3 million exports' worth in 1986 and $970.1 million in 1987, 38.1% and 43.1% of the total over the corresponding periods".

4.3.2 EXPORT SUBSIDIES

The 15% devaluation of the drachma on 11 October 1985, followed by a policy of sliding depreciation to maintain the effective exchange rate against a basket of currencies, gave a competitive boost to the Greek exports of manufactures, which in 1987, according to the Bank of Greece statistics, scored the most successful performance of the last seven years, from $2.4 billion in 1981 to $2.9 billion in 1987. The Greek authorities began to dismantle export subsidies, under the provisions of NE 1574/70 act, on 1.1.1987 when subsidies were cut to 45% of previous levels, and are to be completely eliminated in three equal stages by 1990 for the EEC member states exports and by 1992 for all other countries. The gradual elimination of export subsidies has to be completed in order to comply to EEC regulations.

Eventhough the government has announced a package of export promotion measures intended to compensate for the loss of the subsidies, including exemption from VAT and improved export financing services, the declining export benefits, as argued by **Sepengis (1988)** "would indicate lost competitiveness for the exported Greek manufactures and possibly cash shortage problems might arise for many companies since the NE 1574/70 acts priviledges are weakening". In a similar vein **Politis (1986)** argued about "the expected burdens for the seven traditional Greek export products - textiles, cement, fruits and vegetables, footwear, leather and fur, marble and beverages-", according to a study carried out by the Bank of Greece and presented by **Economicos (1987a)** indicated "the average levels of export subsidies provided for each export commodity under the status of NE 1574/70 : 16.1% for textiles, 12.0% for cement, 16.0% for fruits and vegetables, 24.0% for footwear, 16.9% for leather and fur, 15.7% for marble, 15.0% for beverages whereas for chemicals and pharmaceuticals the export subsidy was 8.1% for aluminium 8.0% and for metals 10.8%".

4.3.3 INDUSTRIAL EXPORTS DEVELOPMENT

Appendix 46 illustrates recent Ministry of National Economy's statistics regarding the import penetration and the exports orientation of the Greek industry during the 1960-1985 period. At first it should be highlighted that import penetration though decreased in the 1970s rose sharply in the 1980s reaching 27.4% of the industrial product's domestic demand in 1985. The development appears to be more pronounced in the textiles sector where the increase was, from 9.9% in 1980 to 19.3% in 1985. Similar patterns were shown in clothing and footwear, the leather and fur and the furniture sectors, while considerable imports penetration,

although less pronounced was noted in the food products, beverages, paper and paper articles, plastic and rubber, mineral (non-metallic), electrical equipment and appliances and the transport equipment sectors.

As far as exports orientation is concerned, with reference to Appendix 46, the industrial exports as a percentage of the domestic output has been significantly increased since 1960, but the rate of growth declined after 1975 and particularly in the 1980s, reaching a 18.5% level in 1985. The individual industrial groups performance has been far from uniform. The food products, textiles and the mineral (non-metallic) sectors presented a sound and ascending exports trend. The pattern was ever increasing from the 1960s gradually to the 1980s. A number of sectors declined in the 1980s whereas industrial groups such as: leather and fur, beverages, metals and transport equipment partly recovered there export levels from 1980 to 1985. However according to IOBE, as issued by SBBE (1988), "many Greek export industries can be expected to suffer burdens in 1988 while in 1989 the situation will become critical for a number of companies which might have to close down".

4.4 INDUSTRIAL OUTPUT

4.4.1 TREND ANALYSIS

Over the past two decades, most industrial countries have experienced a structural shift away from manufacturing. As argued by the Economist (1985b) "the big gainers have been the services such as retail trading, transport and communications, leisure activities and the booming financial sector. Much of the shift reflects the fall in prices of manufactures relative to services, and also the growing demand for various services as countries become more affluent". As illustrated in Appendix 47, the annual average percentage change of industrial production in the

EEC(12) over the 1961-1970 period was 5.3% while in the succeeding decade, 1971-1980 dropped to 2.4%. Since 1981, it has grown by an annual average of 0.9% a year, an indication that the European industry's pace of expansion has slown down in the 1980s following the second oil crisis. It appears that West Germany and Italy will probably continue their drive to industrial recovery followed by Britain and France.

On the other hand in Greece there was a setback in 1974 and a sharp fall in 1977, the volume growth of the industrial production was higher in 1975-1976 and 1978, but then decelerated up to 1981. It should be emphasized that the growth of industrial production in the EEC(12) during the 1970s was about 1/3 of that achieved in Greece, but the data for the industrial sector during the 1979-1980 period suggest that the seemingly more favourable trends in Greece simply reflected a longer time lag in the adjustment process. Thus the gross output continued to rise in the early 1980s, but remained at levels lower than in 1980, surpassing it only slighty in 1982 and 1984. Despite the temporary improvement of the Greek industrial production volume growth in 1985, the average annual percentage change over the 1981-1986 period was only 1.1%, highlighting the poor performance of the Greek industry during a long phase of virtual stagnation in output and investment.

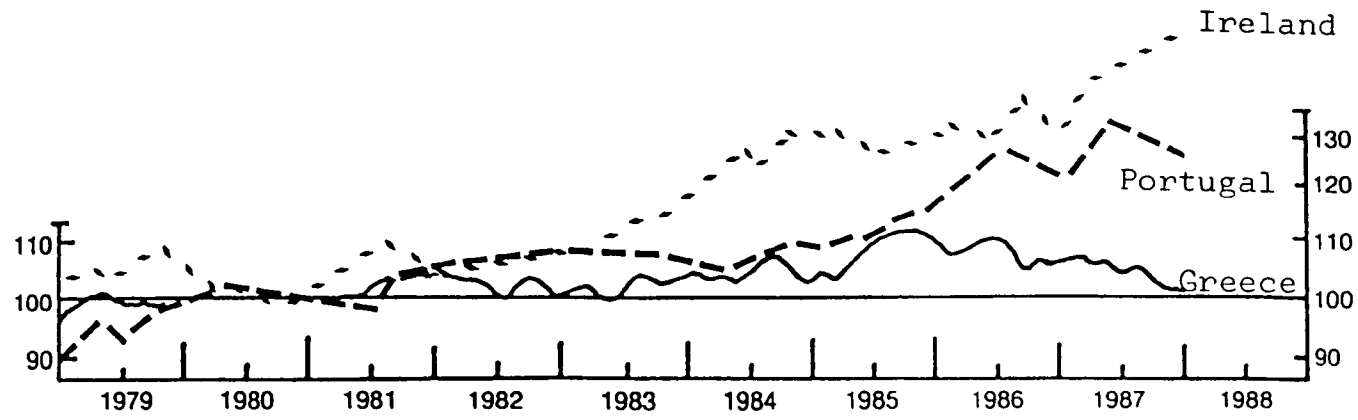
Rylmon (1987b) commented on a recent European Council's industry report; in which data are examined between the four biggest economies in the EEC - West Germany, Britain, Italy and France - and Greece provided an analysis of their manufacturing sectors' performance during the 1972-1979 and the 1979-1985 periods. The value added in Greek industrial sector from a 6.3% annual average rate of growth during the first period declined to -0.6% over the second, while the aggregated data for the four leading industrial nations in the Community were 2.3% and

0.2% respectively". In addition it was noted that though the Greek manufacturing output per employee grew prior to 1979 by a higher average annual rate with respect to the 4 main industrial EEC member states, thereafter declined and experienced a continous falling trend. **Kefalakos (1988)** presented OECD latest study on the recent industry performance in the OECD - Europe region. As shown in **Chart 4.2**, industrial output in Greece ever since 1982 has grown by slower rates compared to the other two EEC member states, Ireland and Portugal, which appear to have similar structural characteristics with the Greek economy. The country's pace of industrial expansion slowed down in 1979-1981, while from 1982 onwards the gap widend in favour of the other two countries. Under the prevailing economic climate it seems unlikely that Greece will reach growth rates similar to those achieved during the 1970s by the late 1980s.

4.4.2 MANUFACTURING SECTORS PATTERNS

After four years of preparation, as argued by **Papalexandrou (1986)** "the National Statistical Society in Greece (NSSG) presented the new index of industrial production (1980=100) formed on the same principles as the old index (1970=100). The new index was based on a random selection of 2053 companies, as compared to 1600 used for the previous index, with an effective 79.9% coverage". The weightings of the new production index, as allocated for the twenty industry groups is presented in **Appendix 48.** Textiles and food products industry branches are heavily represented. The long period of recession, combined with the permanent structural weaknesses of the Greek industry has led, as shown in **Appendix 49,** to its present state; the manufacturing output in 1986 was only 0.3% above its 1980 level. Throughout the 1980-1986 period the most dynamic sectors were the beverages (30.1%), the paper industry (56.0%),

CHART 4.2: INDUSTRIAL OUTPUT (GREECE compared to PORTUGAL and IRELAND (1979-1988)



Source: OECD

Reference: Kefalakos, D. (1988) "Industrial Investment - A Lost Decade" Hellenews : Industry 1988 1 8

the chemical industry (15.7%) and the miscellaneous industries (40.0%). The largest falls in growth rates occurred in clothing and footwear, wood and cork, furniture and fixtures, leather and furs, and transport equipment. In contrast, food processing, tobacco, rubber and plastics were more resilient.

The reasons for these developments in the Greek industry are, however, far from uniform. As discussed in **Epilogi (1988)** "the decline in the growth of basic metals is due to the exhaustion of new opportunities of expansion in the aluminium industry, where productive capacity had increased extremely rapidly (under the impetus of massive foreign investments) during the 1960s and 1970s. Another exceptional sector is non-metallic minerals where the large capacities created during the building boom of the early 1950s and late 1960s provided a base for exports to the oil producing countries to which Greece was also exporting public works' expertise. The contraction of this industrial group took place in recent years following the collapse in oil prices. In contrast the wood and cork and the furniture and fixtures branches were unable to offset the effect of the end of the domestic building boom with exports. Since the development of the Greek industrial structure in the 1960s, the textiles sector has shown a considerable advance both in output and employment, while its growth rates remained positive after 1973, which could reasonably lead to the conclusion that its potential was not completely exhausted. In the early 1980s textiles were hit badly by the wage increases in industry during 1982, combined with a decline in productivity which led to successive falls in its output levels, whereby in 1986 the manufacturing production was 2.0% above its 1980 level. Other branches have shown a more common cyclical behaviour: consumers' goods branches proved more resilient while capital goods were more affected by the declining rates of domestic investment".

4.4.3 AN OVERVIEW OF CAUSES AND EFFECTS

The Greek manufacturing output remained stagnant in the 1980s; an issue that has got to be related to the decline of the industry's competitiveness and the drop of private investment programme. As argued by **Nafteboriki (1988c)** "in consideration of the 0.9% drop of the private consumption - at constant prices - and the decline of the public investment by 10% - at constant prices - the manufacturing output fall by 2.0% in 1987 was as expected".

In 1980-1987 GDP in Greece rose by 7.4%, while the manufacturing index declined to 98.3, (1980=100), as illustrated in **Appendix 50**, which indicates that the agriculture, or the services, or both sectors share of GDP has increased. Since the agricultural production - at constant prices - remained substantially constant over the 1980-1987 period, the 7.4% GDP rise was produced by the services sector alone. As presented in the previous chapter the fall in manufacturing's share of GDP has been steepest and services followed an ascending trend in the 1980s. As shown in **Appendix 50** the consumer goods branches of manufacturing (55.9% of the total industrial output) maintained their share of GDP development during the 1980-1987 period, while capital goods (31.5%) and the consumer durable goods (51%) declined sharply.

According to NSSG industrial production (1980=100) index weightings are: mines and quarries (5.8%), manufacturing (87.8%) and electricity (6.4%). **Pictogram 4.1** illustrates the development of the total industy's production index annual percentage changes over the 1975-1987 period. The 5.1% decline in 1982 was followed by a gradual improvement in 1983-1984, but during the stabilizaton programme in 1986-1987, the corresponding falls were -0.3% and -1.5% respectively. It appears that despite the continuous slide of the national currency and the real fall of the wages, industrial

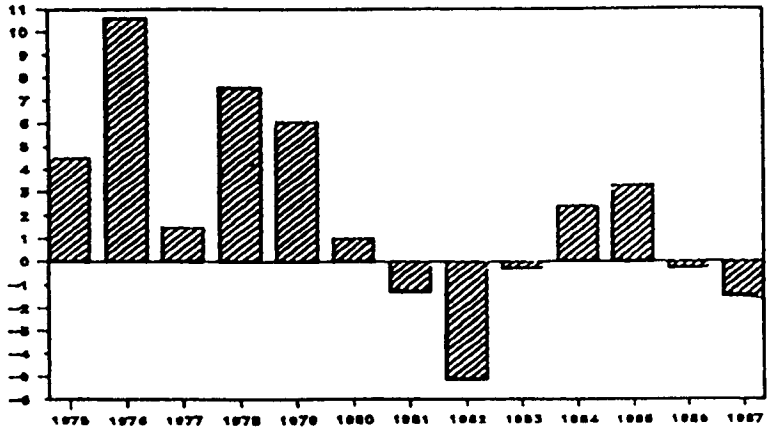
production has declined mainly due to the drop in domestic demand for manufactured products.

As argued by **Rylmon (1988b)**, "the 0.9% decline of private consumption in 1987 indicated a decrease of the consumers' purchasing power, while the 1.5% increase in import penetration was not counter-balanced with the manufactured goods exports increase". On the other hand IOBE statistics on the industry's finished goods inventories, illustrated in **Appendix 51**, indicate that although dropped in recent years, they do still remain above the industrialists' accepted normal levels. In particular the textiles and the mineral (non-metallic) sectors' finished goods stocks have remained throughout the 1980s at considerably higher levels, compared to the total industry's situation, indicating the fall in domestic demand.

The development of the volume increase of the retail prices in Greece during the 1975-1987 period, as shown in **Pictogram 4.2**, highlight the prevailing pattern of the declined demand. As discussed by **Paratiritis (1985)** "the combined effect of the retail price index fall along with the increasing imports penetration to the home market would make it quite difficult for a recovery of the industrial production in Greece". According to **SBBE (1988)** appraisal of the Greek manufacturing sector during 1987 "indicated that production rose in only 7 industry groups - textiles, wood and cork, paper, leather and furs, petroleum and coal, non-metallic products and the miscellaneous industries - whereas in the remaining 13 declined".

PICTOGRAM 4.1: INDEX OF INDUSTRIAL PRODUCTION IN GREECE (1975-1987)

(annual percentage changes)

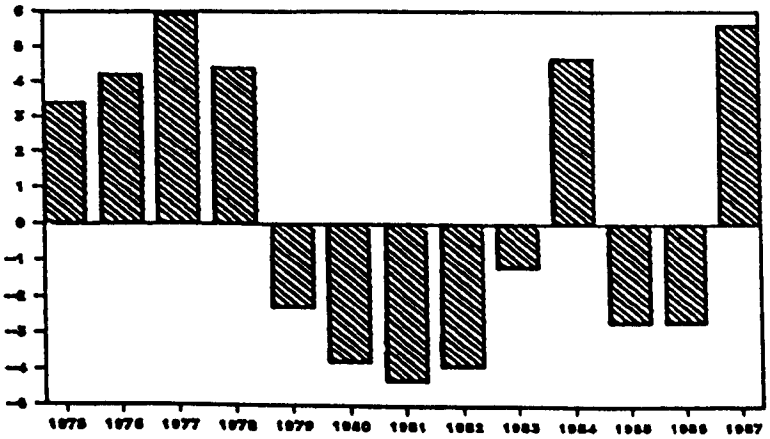


Source: NSSG

Reference: Epilogi (1988g) "Industrial Production in Greece" 7 331

PICTOGRAM 4.2: VOLUME OF RETAIL PRICES IN GREECE (1975-1987)

(deflated by CPI)



Source: NSSG

Reference: Epilogi (1988f) "Volume of Retail Prices" 7 331

4.5 INDUSTRIAL EMPLOYMENT AND PRODUCTIVITY

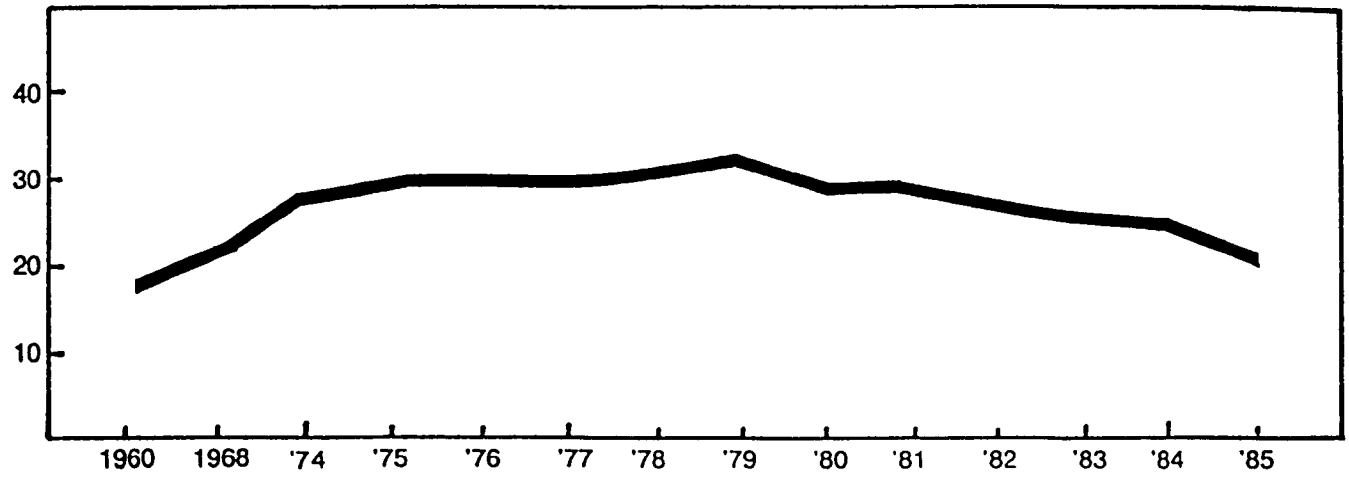
4.5.1 TREND ANALYSIS

The developments of industrial employment as percentage of total employment in Greece during the 1960-1985 period, are presented in **Graph 4.1**, as published by OECD and issued in **Hellenews (1988b)**. It becomes apparent that employment in the Greek industry during 1985 fell to its 1968 level. The prevailing phenomenon of the employment contraction in the Greek industry becomes less pronounced when compared to the OECD - total and OECD - Europe statistics. As illustrated in **Chart 4.3**, industrial employment in Greece has declined in the 1980s, but with a relatively smooth trend compared to the sharp OECD region's drop following the second oil crisis in 1979-1980.

As shown in **Appendix 52**, employment in manufacturing during the 1970-1975 period rose by 14.1%, but over the following 5 year period its rate of increase was 8.8%. Finally in 1980-1986 employment declined, while current forecasts indicate that the prevailing pattern will continue in the near future. It should be highlighted, as discussed by **Epilogi (1988b)** that "the rate of increase of the net capital stock fell from an average 7.2% in the 1973-1977 period, to 5.0% in 1978-1981, and 2.6% in the 1982-1986 period. Moreover, the part of the capital stock that consists of machinery has been increasing at considerably lower rates throughout the period". The business climate that existed in Greece during the post 1975 period has not been favourable, while the cost fluctuations in the home market, particularly after the 1979-1980 oil crisis, did not motivate the Greek industrialists to renew their equipment with modern technology. Thus the net capital percentage growth in relation to employment in manufacturing does not indicate a rise in productivity.

The development of industrial employment during the 1975-1987 period is presented in **Pictogram 4.3.** According to NSSE statistics, the annual percentage change of the total number of persons employed by the industry is illustrated during the period. The restrictions in labour shedding and the financial difficulties of manufacturing companies, made compensation of personnel extremely difficult, and played an important role in preventing an even higher rate of decline in industrial employment during the 1980s.

GRAPH 4.1: EMPLOYMENT IN THE INDUSTRY AS A PERCENTAGE OF TOTAL EMPLOYMENT IN GREECE (1960-1985)

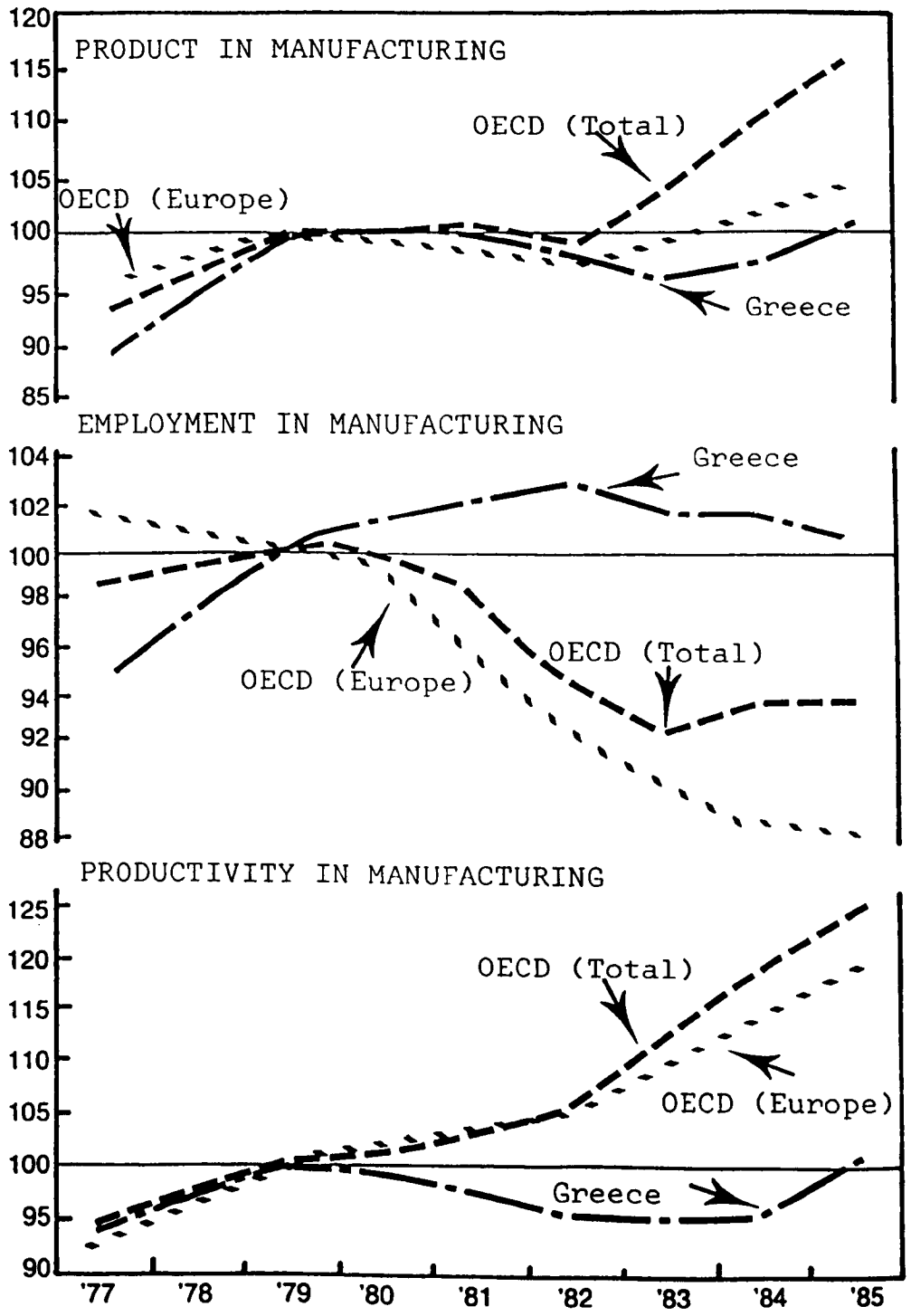


Source: OECD

Reference: Hellenews (1988b) "Industry and Employment" Supplement : Industry 1988 1 27

CHART 4.3: DEVELOPMENT IN MANUFACTURING (1979 = 100)

(OECD - total, OECD - Europe vs. Greece)



Source: OECD

Reference: Hellenews (1988b) "Industry and Employment" Supplement : Industry 1988 1 27

4.5.2 INDUSTRY GROUPS DEVELOPMENT

A number of industry groups found themselves during the 1980s, in severe difficulty, mainly because of basic changes in the demand for their products, and possibly; though to a lesser extent, due to technological developments. According to NSSG 1984 industry census the worst hit industry groups appear to be textiles, paper and paper articles and electrical equipment and appliances. **Appendix 53** presents comparative data on the manufacturing sector's potential - number of companies, number of employees, productive capacity - during the 1973, 1978 and the latest 1984 industry census. As argued by **Xasid (1987)** "in terms of employment the most important industry branches according to the 1984 NSSG census are the food products, clothing and footwear, transportation equipment and textiles".

4.5.3 PRODUCTIVITY IN MANUFACTURING

Another crucial factor in the manufacturing sector's development has been both capital and labour productivity. The 1970-1986 productivity growth in manufacturing is illustrated in **Appendix 54**, where capital, labour and total productivity indices are shown (1970=100). The productivity of capital - output per unit capital - after 1973 is continually declining, and in the 1980s at an accelerating pace. On the other hand labour productivity - output per employee - followed an increasing pattern between 1970 and 1979; an overall 47.2% rise throughout that period. In the 1980s it declined and only slightly in 1985 and 1986 surpassed the 1979 level. The productivity of the two factors combined increased throughout the previous decade, but in the 1981-1986 period constantly remained below the 1980 level.

After the first oil crisis, investment in manufacturing varied at levels lower than that of 1984, reaching it only in 1980, while after that year the trend has been declining, having restored slightly during the 1986-1987 stabilization programme. Despite the government's stated intention to improve the Greek industry's competitiveness, the wages indexation system continues to exist, while there is no sign of an official attempt to correlate wages to productivity. In the author's view such an approach could increase the employees earnings and strengthen the viable companies market position. On the other hand, **Appendix 55** provides a clear view of the industry's lost competitiveness from 1973 onwards, whereby Greece's industrial performance (production/productivity) is related to the OECD total averages during the following three distinct periods: 1960-1973, 1973-1979 and 1979-1985.

4.6 WAGES, COST AND PRICES IN MANUFACTURING

4.6.1 TREND ANALYSIS

The long-run development of real wages in manufacturing, in enterprises with 10+ employees, according to a Bank of Greece study **[Epilogi(1983c)]** showed that "real weekly wages in the 1960s doubled in a period that CPI rose only by 21%. The pattern though less pronounced continued in the 1970s when the corresponding increases were 444% and 268%". The rate of increase of real wages in manufacturing remained flat, or declined in the EEC member states during and after the oil crises, whereas in Greece an expanding incomes policy was followed by all governments since 1973-1974. According to Eurostat figures, discussed by **Marinopoulos (1988c)** "from 1973 onwards, real average hourly earnings in manufacturing rose faster in Greece than in the EEC and OECD area. Analytically during the 1973-1979 period were increased by 6.9% in Greece,

as compared to EEC 3.6% average, in the 1979-1982 period the corresponding increases were 4.7% and 0.2%, whereas in 1984 and 1985 real average hourly earnings in manufacturing rose by 2.7% and 1.4% in Greece against 0.8% and 1.0% in the Community". Although convergence exists in most statistical aggregates it appears that considerable differences exist in some statements issued and accounts between the official Greek authorities and the EEC Eurostat service. The prevailing absence of agreement results from the techniques and methods selected by each.

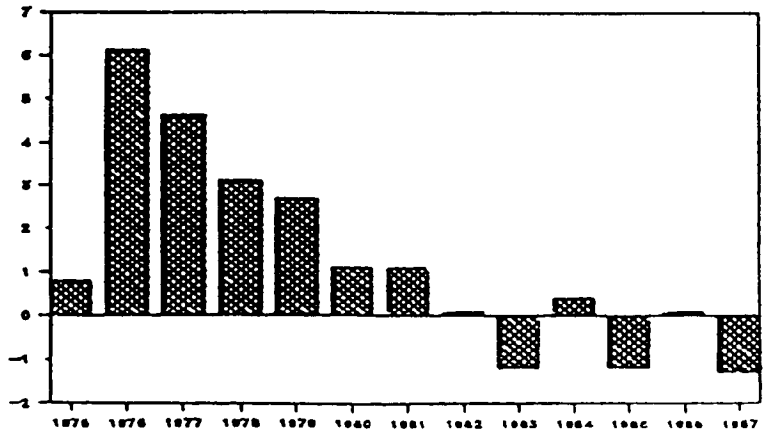
With reference to the Bank of Greece Governor's 1987 Report, issued in **Epilogi (1987f)** "real weekly earnings in manufacturing rose by 7.8% in 1982, during the 1983 wages freeze period declined by -0.8%, though increased by 5.7% and 3.1% in 1984 and 1985 respectively, dropped during the 1986-1987 stabilization programme by -7.5% in 1986, and recently released data indicate on 2.4% rise in 1987". Possibly a clearer view is illustrated by **Pictogram 4.4** where a related growth pattern of the CPI and the weekly nominal earnings in industry are shown according to NSSG statistics. It appears that during the 1975-1980 period (conservatives' rule) weekly nominal earnings exceeded the CPI level from 1975 to 1978, but marginally in 1979 and 1980. In the 1980s and during the 1981-1987 period (socialists' rule) the annual percentage change of the weekly nominal earnings in manufacturing rose to 30.3%, 25.3% and 23.1% in the corresponding 1982, 1984 and 1985 periods. These are well above the inflation rates. In the 1983 and 1986-1987 wages freezes imposed by the governments the weekly nominal earnings annual percentage changes fell to 19.2%, 13.8% and 9.8% respectively. The introduction of the inflexible wages indexation system resulted in the decay of the prevailing labour productivity schemes in industry, and contributed to the increase in the labour costs per unit output.

The government's 1982-1985 incomes policy was the outcome of the prolonged strikes during 1979-1980, as highlighted in **Appendix 26**, which consumed the economy's power and resulted in increased inflationary pressures. Under the syndicates' inducement the government granted pay rises to employees in both public and private sectors. On the other hand during the 1980s the growing public sector deficits increased the need for higher taxation which added to the deterioration of the business climate and to the industry's reluctance to invest. As argued by **Epilogi (1984a)** "labour costs during this period have played a determining role in the development of the profit margins. At a time of flagging production, the wage increases combined with rising social security employers' contributions and reduced working hours have led to a 154% increase in labour costs per unit of output between 1980 and 1984".

In assessing the effects of the labour cost increases the production costs, the changes in productivity should be taken into account. Since productivity during the 1980-1986 period rose by **4.8%**, as illustrated in **Appendix 56** - according to the SBBE statistics -, it can be clearly seen that the considerable wage increases were not matched by increased productivity. Moreover these increases seem not to have been counterbalanced by restraints in the development of the remaining cost elements. Finally, as shown in **Appendix 57**, there have been deviations in the nominal monthly wages of salaried employees and the daily wages of workers among the main industry groups, but it should be emphasized that under the establishment of the wages of workers indexation system, the improvement in the wages of workers was relatively larger in 1981-1986 than that of the salaried employees. In addition the increases granted to the female personnel were higher, in the context of the measures taken for equal opportunities for men and women. On the other hand, industry in

PICTOGRAM 4.3: INDEX OF INDUSTRIAL EMPLOYMENT (PERSONS) (1975-1987)

(annual percentage changes)

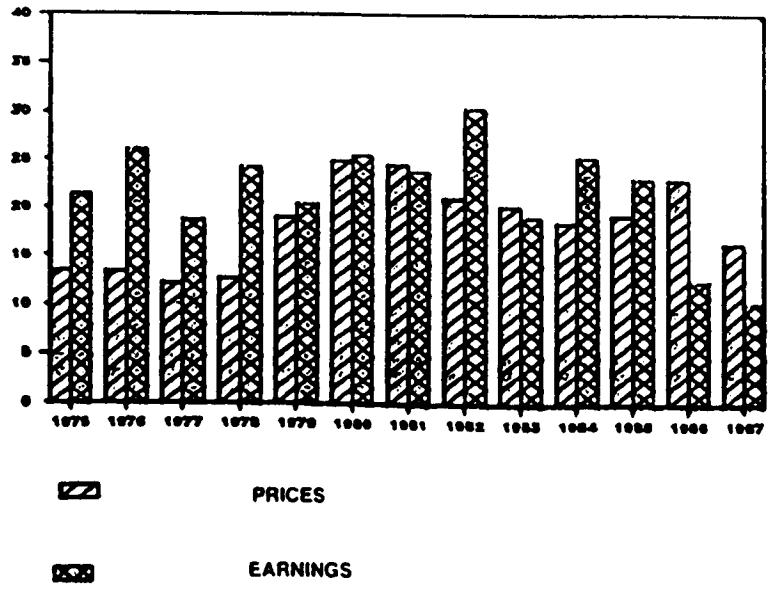


Source: NSSG

Reference: Epilogi (1988h) "Industrial Employment" 7 331

PICTOGRAM 4.4: CPI AND WEEKLY NOMINAL EARNINGS OF WORKERS IN INDUSTRY (1975-1987)

(annual percentage changes)



Source: NSSG

Reference: Epilogi (1988i) "Prices and Earnings" 7 331

Greece has benefited from the two years virtual freeze of wages and salaries in the public and private sector, imposed by the government in October 1985, which halted the rapid escalation of labour costs marking the previous four years.

4.6.2 COST AND PRICES DEVELOPMENT

Appendix 58 illustrates the cost and prices development in manufacturing during 1975-1987, from official Greek sources. Sufficient data for the main cost components - raw materials, fuel and unit labour costs - in manafacturing were available for comparison, presented by **Epilogi (1988e).** It appears that the annual percentage changes of the domestically produced manufacturers' prices in the 1975-1978 period rose moderately by an average 10% which reflected the level of increases of the raw materials and fuel costs during that period. However, unit labour costs at the same time rose by approximately 20% per annum. The second oil crisis had an impact in both prices and cost formation in the Greek manufacturing sector.

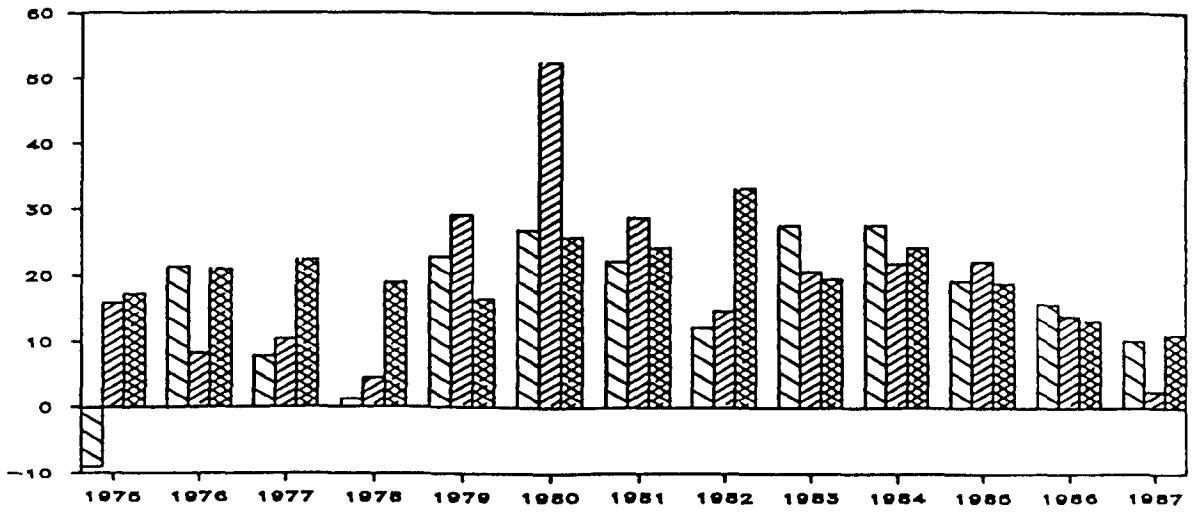
In the three year period 1979-1981, a noticeable ascending trend in the raw materials cost was noted, but it was more pronounced in the case of the fuel cost which reached a total level of 52.7% in 1980. In addition to the heavy raw materials and fuel cost rises, the considerable unit labour costs' increases continued in that period. On the other hand the prices of manufactured goods for home comsumption rose by 30.4% in 1980, while remaining at high levels during 1979-1981 following the general trend. Raw materials and fuel costs' growth rates declined in 1982, but in the same year a 33.3% rise in the unit labour cost took place.

In the case of the manufacturing companies not making profits, the increases in labour costs above those of productivity, must have added

to their financial troubles. **Appendix 43** shows that, industry's total performance during the 1982-1985 period was very disappointing. In 1983-1985, as illustrated in **Appendix 58**, raw materials and fuel costs continued to rise, undoubtedly affected by the drachma devaluations which influenced the imported goods' price formation. As argued by **Gribogiannis (1984)** "the drachma's devaluation in January 1983 resulted in the increase of the imported goods value and has seriously contributed to the manufacturing companies' operating costs rise. As a result the industry's purchasing power declined". The unit labour costs' pace fell to the prevailing levels prior to 1982, while according to **Nafteboriki (1985a)** "their percentage contribution to the CPI level dropped from 6.4% in 1985 to 4.4% and 4.0% in 1986-1987". Finally during the stabilization period all cost components growth rates decelerated, as shown in **Appendix 58** and **Pictogram 4.5**, which reflected a decline in the domestically produced manufacturers' prices; 7.1% in 1987 as illustrated in **Pictogram 4.6**. The prevailing patterns, as presented by **Nafteboriki (1988b)**, reflected to "the gradual decline of the WPI; from 21.4% and 20.6% in 1984 and 1985 respectively to 17.9% and 9.2% in 1986 and 1987".

The conclusion from this overview is that the prices of the domestic industrial production rose at a fast pace after the 1979-1980 oil crisis. Their level was not determined in a uniform way, but was subjected to the different effects of the inflationary process; particularly of the incomes and the foreign exchange policies. The economy's 1986-1987 stabilization measures affected the domestically produced manufactures' price formation, since major inflationary pressures relaxed resulting in gradual fall in all cost components.

PICTOGRAM 4.5: COST COMPONENTS IN MANUFACTURING (1975-1987)
(annual percentage changes)



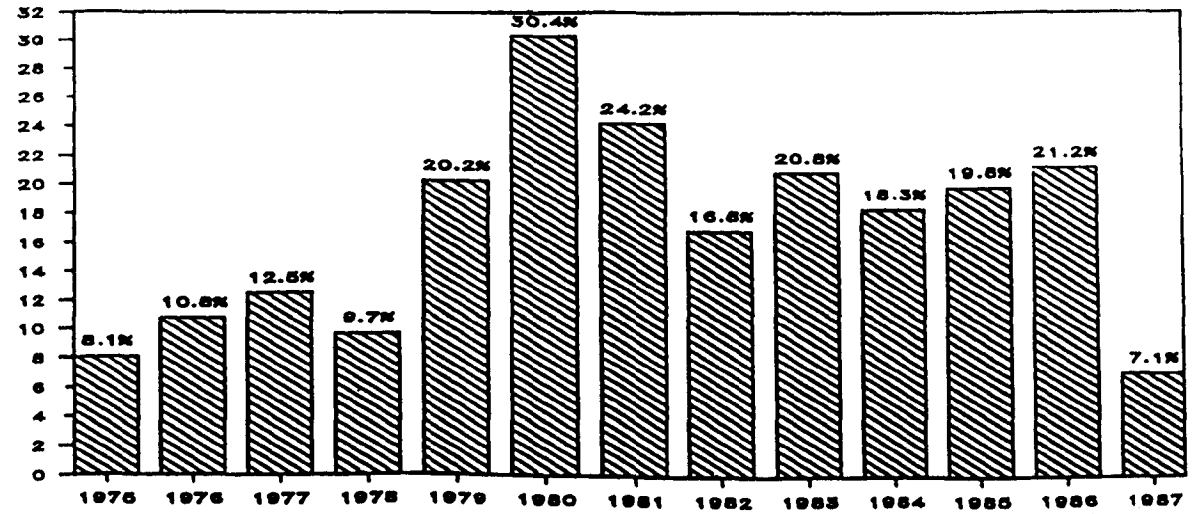
Raw materials Fuel Unit labour cost

Source: Bank of Greece

Reference: Epilogi (1988e) "Industry's Profits 1975-1987" 6 255

PICTOGRAM 4.6: DOMESTICALLY PRODUCED MANUFACTURES' PRICE DEVELOPMENT (1975-1987)

(annual percentage changes)



Source: NSSG

Reference: Epilogi (1988e) "Industry's Profits 1975-1987" 6 255

CHAPTER 5

THE IMPORTANCE OF THE TEXTILE INDUSTRY

5. THE IMPORTANCE OF THE TEXTILE INDUSTRY

5.1 TRENDS IN WORLD PRODUCTION OF TEXTILE FIBRES

The classification of textile fibres in natural and man-made is presented in **Appendix 59.** Natural fibres are subdivided in two main categories: animal and vegetable. Man-made fibres' basic groups are: the synthetics and the cellulosics. The global trend in fibre production both in total and in terms of its three main components - cotton, wool and man-made fibres - is illustrated in **Appendix 60.** In the 1970s world fibre output rose by about 40%, much less than in any previous ten year period since the WWII. Following the second oil crisis the corresponding increase in 1980-1986 was squeezed to 15.6%. In addition there has been a substantial difference in the trend growth rate, throughout the period, for natural as opposed to synthetic fibres.

The twentieth century brought upheaval in the fibre world. Man-made fibres were introduced and ever since, as shown in **Appendix 61,** claimed a larger share of the fibre market. The growth of the nylons, the polyesters and the acrylics has been rapid; the world-wide increase in the production of MMF saw market share exceed 40% of the total world fibres production in the early 1970s.

As discussed in **Moncrieff (1975)** "with the worldwide increase in the production of synthetic fibres there has come a sharp fall in their prices, particularly in those of the polyesters, which were made in the early 1970s much more cheaply than polyamides. Just as cheap rayon brought down the price of cotton in the 1950s, so now we are seeing the cheap synthetic fibres bring down the price of wool". Nevertheless, wool prices have continued to rise to date, while cotton prices remained low, and only recovered towards the end of 1987. Cotton and wool are two of the finest fibres and their prices in the international markets tend to

fluctuate significantly according to the world demand for natural fibres. As presented in **Epilogi (1981a)** " wool prices rose from 118.30 cents/kg on average during 1970 to 429.93 cents/kg in 1980; an overall 3.6 times increase, whereas the corresponding figures, provided by the IMF, for cotton prices were 28.93 cents/kg in 1970 to 93.73 cents/kg in 1980, a 3.2 fold rise. It is important to highlight that the oil prices during the same period increased by 22.1 times from $1.30 to $28.67 a barrel".

5.1.1 COTTON FIBRES

There have been shifts in cotton production since the beginning of this century. Raw cotton's share in the world production of fibres gradually declined due to the sharp rise of MMF, but on the other hand considerable improvement in recent years has been carried on two fronts: increase in output and improvement of staple characteristics. Cotton accounts for approximately half the world's fibre production, as presented in **Appendix 61**, while an uptrend is indicated during the 1980s due to its aesthetic appearance, its comfort and the consumers' preference shift to natural fibres. It is claimed by **Afzal and Shariq (1985)** that "up to 1900 the USA produced about 2/3 of the total world cotton but its share subsequently declined at the beginning of WWII to 1/2. After 1965 became a residuary producer with about 1/6 of the total world crop. Major gains in production took place in USSR and China which between them now produce about 45% of world output".

Appendix 62 presents world production of different staple length during 1984/85 cotton season. The majority of cotton production is in the 1-1/32 to 1-3/32 inch group. Cotton yield variations depend strongly on soil characteristics, weather conditions and cultural practices. The two major cotton exporting countries during the last two

decades have been the USA and the USSR. Current estimates, according to the **Textile Horizons (1984c)**, indicate that "in the early 1980s USA accounted for about 33.5% of world cotton exports, followed by the USSR with 18.5%".

5.1.2 WOOL FIBRES

Wool production percentage share of world fibres output has fallen during the twentieth century, from 18% in 1900, as shown in **Appendix 61**, to 5.6% in the 1970s, and just above five percent in 1981-1986. An overview of the wide range covered by different types of wools, and the variety of qualities which may be found on an individual fleece is provided in **Appendix 63** which shows the different amounts of each sort obtained from various wool classes. There is close correlation between fleece weights and seasonal conditions. Wool sorting is a valuable process, its value being reflected in the better prices obtained for the finer qualities. As discussed in **Spibey (1969)** "the number of grades into which the clip is divided depends both on the size of the flock and on the average characteristics of the fleeces in it". Wool qualities are classified by fibre length and regularity, soundness, yield, colour, and also the attribute known as style covering features as handle, lustre, and crimp.

According to IWTO and demonstrated by references **Textile Horizons (1985c)** and **ITS (1984b)** the five major leading wool exporting countries are Australia, New Zealand, South Africa, Uraguay and Argentina. The highest quality wool is produced in Australia followed by New Zealand. Australian merino wools rank top in fleece qualification, whereas New Zealand's crossbred wools rank second. South-West African and South-American karakul wools rank last in quality and lowest in price.

Wool blending is frequently carried out in order to obtain certain blend properties from wools of similar qualities, but from different sources. It also helps to stabilize the blend characteristics from one season to another.

The world-wide raw wool clip for 1984/85 was estimated by the British Commonwealth Secretariat around 1.6 million tonnes (washing basis). That was practically the same production level as the previous years. **Textile Horizons (1985e)** stated "the 1984/85 wool-selling season has turned out to be one of the best in recent years", but as illustrated in **Appendix 60** the world wool production has remained reasonably constant throughout the 1980s . Having examined the production growth developments of wool, it should be noted that other principal animal fibres which are employed by the textile industry are silk, mohair, cashmere, alpaka, and camel hair.

5.1.3 MAN-MADE FIBRES

The world MMF production rose steadily in the twentieth century to 11.6 million tonnes in 1973 surpassing in every single previous decade the average growth rates achieved by either cotton, or wool fibres. Its percentage share to total fibres output in the world reached that attained by wool fibres by 1940; 12.1% its growth pattern continued thereafter reaching 43.5% of global fibres production in 1973, **(Appendix 61)**. Following the first oil crisis the world MMF production declined in 1974-1975 regaining momentum thereafter, as illustrated in **Appendix 60**, and reaching 14.3 million tonnes world output in 1980. MMF world dominance was achieved and maintained throughout the 1978-1981 period leaving cotton in the second place. But production costs worldwide for MMF had risen steeply in the early 1980s; the principal cause being

the high price oil after 1979-1980. After a serious setback in 1982, when MMF production dropped by 6.1% compared to 1981, world man-made fibres production showed a rising trend once more.

MMF are classified mainly to the synthetics and the cellulosics, as shown in **Appendix 60.** Cheap rayon (viscose/cellulosics) as stated by **Moncrieff (1975)** "brought down the price of cotton in the 1950s", but the cellulosics dominance over the synthetics lasted up to the 1960s when the rapid development of polymer science and the wide applications of the synthetics fibres brought the change in the prevailing trend. Worldwide, the synthetics achieved the biggest production increases during the 1970s, having more than doubled their global output while during the same period staple fibres outperformed continuous filaments. In 1980 these amounted to 5.9 million tonnes as opposed to 4.8 million tonnes attained by the filaments. Similar developments characterized the cellulosics staple growth patterns, despite their virtual output stagnation during the 1970s. The growth of world MMF production was attributable only to synthetic fibres, while as discussed in the **Economist (1987a)** "the world's biggest synthetic fibre producers have been, during the last decades, the following companies: Du Pont (USA), Monsanto (USA), Akzo (Netherlands), Toray (Japan), Taijin (Japan), Hoechst (W. Germany), Bayer (W. Germany), Rhône Poulenc (France), ICI (UK) and Courtaulds (UK)".

Despite world oversupply, MMF production continued to rise in the 1980s and reached a new maximum of 16.7 million tonnes in 1986. Of this quantity, 13.5 million tonnes were synthetics and the remaining 3.2 million tonnes were regenerated cellulose fibres. This indicates a 2.8 times rise in world synthetic fibre production since 1970, and an almost twenty-fold increase since 1950, and makes up about 40% of the world total fibres production in 1986. Synthetics production grew by 3%, while

cellulosic fibre production hardly changed in 1986 compared to the previous year. As a result, the share of synthetic fibres increased further. **Textile Horizons (1987a)** argued that "a further decline in the total production of cellulosic fibres was avoided by a recovery in the USA, but production in W. Europe and Japan continued to decrease. Other producers who account for almost half world production, showed some increase where staguation had occured in previous years". Worldwide, growth was achieved only by staple (+5%) whereas filaments remained stagnant in both 1985 and 1986. In the case of synthetic fibres, world production of staple showed a stronger growth (+31%) than for filament (+8%) during the 1981-1986 period and as claimed by the **Textile Horizons (1985d)** "the decisive influence on the development of staple comes from the largest producer the USA, which accounts for about 60% of total world production". The world output of man-made fibres, as presented in **Appendix 64**, highlights the growing superiority of synthetics over cellulosics since 1970.

Chart 5.1 presents the long-run development of world MMF production, during the 1970-1986 period. USA, W. Europe and Japan's MMF output dropped in 1975 following the first oil crisis, although USA showed signs of a strong recovery in 1975-1979 MMF production levelled - off in W. Europe and Japan. The second energy crisis has a serious impact in all three which resulted in output fall 1982. The constant improvement of the 'rest of the world' continued throughout the period, achieving as discussed in the **Textile Horizons (1985d)**, "in the past decade the average growth rate of 8% per annum".

Of the three main synthetic fibres namely nylon, polyester and acrylic, the most important recent trend, as shown in **Appendix 65**, has been the increasing share of polyester staple and filament in roughly

equal proportions. **Cable and Baker (1983)** stated that "polyester production has increased by about 5 million tonnes over the period 1967-1981 to a point where it provided half the world total of synthetic fibre. Acrylic and nylon - mainly filament - have had a corresponding reduction in their share, though acrylic staple has almost held its own and is particularly well established in the West European knitwear industry. Nylon producers have been beset by over capacity and the need for closures, especially in Europe. The main reason for the switch to polyester is its technical suitablity for important uses, mostly in cotton blends (dresses, shirts and trousers, and net curtains). It is also well established in household and industrial uses".

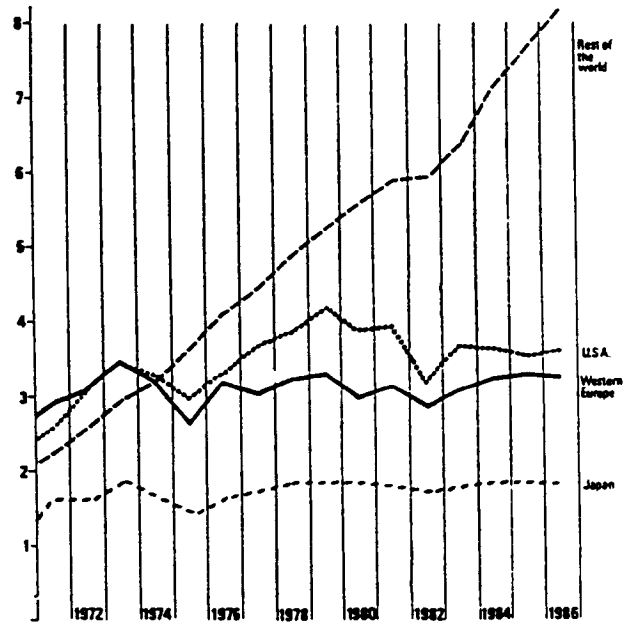
The world production developments of synthetic fibres in 1976-1986 is illustrated in **Pictogram 5.1** where is shown that the strongest growth was scored throughout the period by polyester fibres, followed by polyamide and polyacrylics. Other synthetic fibres (eg polypropylene, PVC, elastane) account for less than 5% of the world total synthetic fibre production in the 1970s, but their share appears to be increasing in the 1980s.

The geographical breakdown of world production of synthetic fibres during 1986 appears in **Chart 5.2.** World MMF production showed an upswing in 'other countries' whose share as argued by ENKA in the **Textile Horizons (1987a),** "rose by 2% to 47% in 1986 with South-East Asia and Latin America accounting for around 90% of this total". Furthermore the shipments of synthetic fibres development in Western Europe over the 1974-1986 period is illustrated in **Chart 5.3.** Following a sharp fall in 1974, during the first oil crisis it recovered but as a result of the prevailing economic and business climate after the second oil crisis, declined in the 1980s. The drop of man-made fibres production in Western

Europe was discussed in **Textile Month (1982)** "after 1973 the fall is due primarily to the substantial increase in imports of the low-priced textile and apparel combined with stagnating textile consumption". On the other hand it is feared that favourable export prospects will result in a further production decline in W. Europe and a future increase in textile and clothing consumption will largely benefit imports from the developing countries.

CHART 5.1: WORLD MMF FIBRE PRODUCTION (1970-1986)

(in million tonnes)

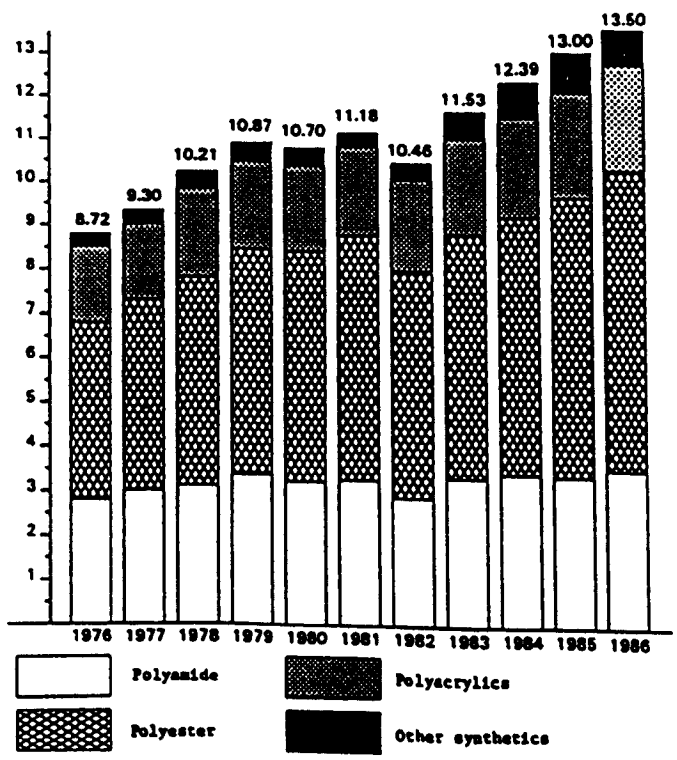


Source: ENKA

Reference: Text. Horizons (1987a) "Man-Made Fibres : Outlook for W. Europe" 7 (4) 33

PICTOGRAM 5.1: WORLD PRODUCTION OF SYNTHETIC FIBRES (1976-1986)

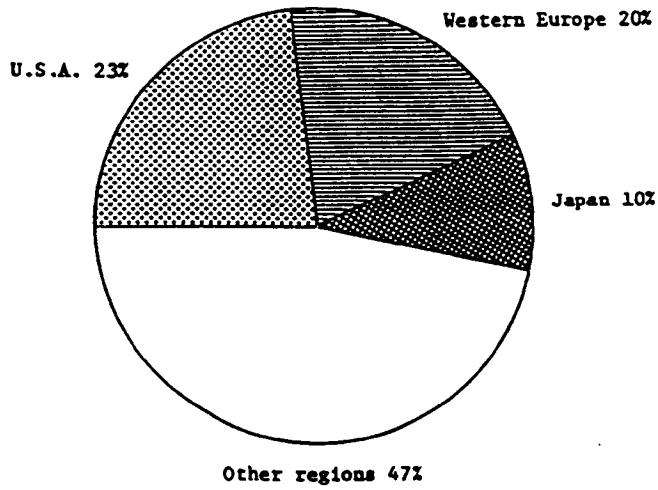
(in million tonnes)



Source: ENKA

Reference: Text. Horizons (1987a) "Man-Made Fibres : Outlook for W. Europe" 7 (4) 34

CHART 5.2: GEOGRAPHICAL BREAKDOWN OF WORLD PRODUCTION SYNTHETIC FIBRES IN 1986

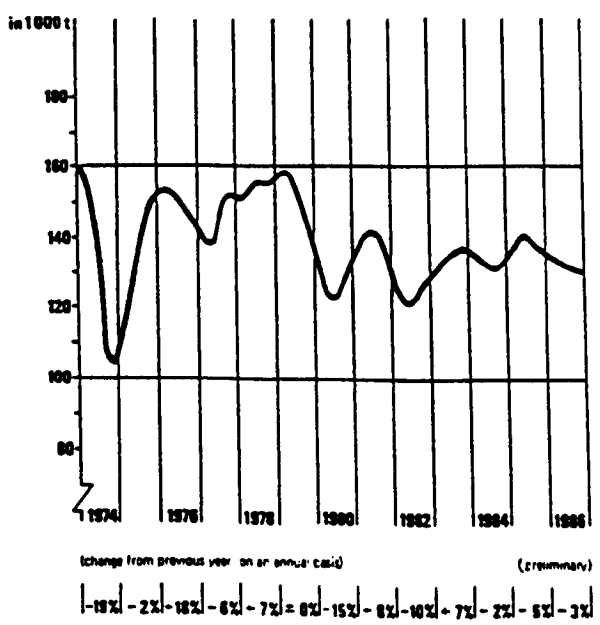


Source: ENKA

Reference: Text. Horizons (1987a) "Man-Made Fibres : Outlook for W. Europe" 7 (4) 34

CHART 5.3: SHIPMENTS OF SYNTHETIC FIBRES IN WESTERN EUROPE (1974-1986)

(adjusted for seasonal and random fluctuations, monthly)



Source: ENKA

Reference: Text. Horizons (1987a) "Man-Made Fibres: Outlook for W. Europe" 7 (4) 33

5.2 DEVELOPMENTS IN TEXTILE PROCESSING

5.2.1 INTRODUCTION

World synthetic fibre production tended to shift away from Western Europe and North America to developing countries and the centrally planned economies during the 1970-1986 period. Similar trends were noticeable in the increase of world cotton production, while, as argued by **Cable and Baker (1983)** "virtually none is accounted for by the USA, whose world market share has slipped from 37% in the early 1930s to under 20% in the 1980s. Two thirds of the increase is accounted for by the Communist block, by the USSR and China in roughly equal measure". Once again as in the case of wool production "the Communist block has even more dramatically increased its share in world production from just over 10% after WWII to almost 30%. This has been mainly at the expense of the USA where production has fallen, in absolute terms, to a quarter of the wartime and pre-war level; and also of some traditional producers - Uruguay, Argentina and South Africa. Australia and New Zealand now dominate 'free world' production, accounting in the last few years for almost 70% of the total".

The world textile industries have undergone massive change during the post-WWII period, both in the nature of products that are manufactured and the materials and machinery which are used. Understandably, the location of large sections of the textile manufacturing industry has also changed particularly during the 1970s and the early 1980s, as a direct consequence of the social and economic shifts that have taken place.

5.2.2 TECHNICAL DEVELOPMENTS

Technical progress in the 1960s and 1970s has increased the speed and reduced the complexity of the traditional stages of textile production - fibre preparation and spinning, weaving and finishing. Major improvements in the past have come from improved mechanical efficiency. Stimulus to innovation for the textile manufacturing industries in the Western countries has been to economize on labour costs thus to compete more effectively with the low cost developing countries.

5.2.2.1 YARN AND FABRIC FORMING

The most important developments in the yarn processing have been in the spinning of staple fibres, where successive advances in the traditional technologies resulted in the reduction in the number of drafting processes and improvement in the quality of spun yarns. The growing penetration of OE machines in cotton processing was a worldwide phenomenon, since OE rotors are considerably faster than the ring spindles. Perhaps the most dramatic change in the 1960s and early 1970s was the switch from weaving to knitting machines, which encouraged the use of synthetics, while new technologies made it possible for the knitting machines' speeds to increase, while achieving greater flexibility and wider range of fashionable items than the traditional shuttle looms. On the other hand the development of shuttleless looms in some way balanced the competitive disadvantage against knitting, while the introduction of the multiphase weaving along with increased weft insertion rates led to a switch back to weaving from knitting in new investment plans in the late 1970s. As pointed out by **Cable and Baker (1983)** "knitting has an advantage in terms of the strain put upon yarns, and in speed : a fast shuttleless loom produces only one eighth the fabric volume in a given

time of a modern circular weft knitting machine. The OE rotors are considerably faster-by a factor of 3 to 4 over the ring spindles". Finally in textile finishing there have been important advances in most operations regarding machine flexibility, labour cost reduction by increased speeds and improved fabrics quality.

5.2.2.2 AUTOMATION, QUALITY AND PROCESS PERFORMANCE

During the past two decades, the most significant development in textile machinery and methods used for the production of textile products has been, as stated by **Munden and Wayne (1988)** "the application to traditional methods of manufacture of labour - saving and automatic devices, which has transformed the textile production operation from labour-intensive to a machinery-intensive industry. This, in turn, has stemmed the exodus of the textile industry from the developed countries where labour costs have always been uncompetitive with those in the third world".

Major steps towards improved quality and process performance in the textile industry has been shown at the ITMA exhibitions of the textile machinery since the 1979 ITMA in Hannover. The 1983 ITMA in Milan was characterized by the machinery automation, whereas the most recent 1987 ITMA in Paris was regarded as the VDU era of the world's textile industry. As discussed by **Holme (1987)** "the 1987 ITMA was an evolutionary show, in which new standards of computerized process control, robotics, automation, and management-information systems were integrated to produce higher-quality yarns and fabrics, more productively, at lower operating costs. The range of large-scale machinery was complemented by some interesting developments in pilot-scale and laboratory equipment in which the control of process parameters has been given detailed attention and microprocessor control units were universally used".

5.2.3 INVESTMENT IN THE TEXTILE INDUSTRY

In view of the fast geographical expansion of textile manufacturing, world textile machinery investment information became more important. As discussed by **Strolz (1981)** "the inadequacy of the textile investment data base internationally became fully apparent in the 1970s. Booming textile markets everywhere led many textile businessmen into investment decisions which could hardly be sustained on the grounds of long-term planning". Order books of textile machinery manufacturers lengthened appreciably in the early 1970s to reach delivery periods which occansionally exceeded three full years, but the world market for textile machinery was hit by the depression particularly following the second energy crisis in 1979-1980. **ITS (1982b)** highlighted the analysis presented by ITMF regarding the world market for textile machinery in 1981. It was pointed out that there has been a sharp reduction in investment on the part of the textile industry.

An ITMA update on the world scene for sales of spinning and weaving machinery is presented in **Appendix 66.** As argued in the **Textile Horizons (1986d)** "the overall picture is that shipments of short-staple spindles fell slightly in 1985; there was a 63% rise in number of long-staple spindles shipped; rotor shipments rose by 10% overall; shuttle looms fell by 31%; and the market for shuttleless looms was down by 7%". **Appendix 66** shows that Asia & Oceania continued to dominate the short-staple spindles demand and that the Comecon countries were the leading purchasers of OE rotors. In addition the principal increases in sales of short-staple spindles were to North America, Africa and South America whereas Asia & Oceania recorded an increase in installations of long-staple spindles and bought twice as many OE rotors

in 1985 compared to 1984. On the other hand there was a serious set back in shuttle looms shipments worldwide with the sole exception of South America, while Europe was the leading investor in shuttleless looms in 1985.

5.3 THE EUROPEAN COMMUNITY TEXTILE INDUSTRY

5.3.1 AN APPRAISAL OF THE TEXTILE AND CLOTHING SECTORS

Textile and clothing sectors cover all activities which produce, finished products from natural or man-made fibres, i.e. cloths and articles for domestic or industrial use. The industry's position has suffered in the last twenty years from the rising cost of labour in relation to the added value of the manufactured goods, the slowdown in economic growth during the 1970s and the rising competition from the low-cost developing countries. As highlighted by the **European Documentation (1985)** "the textiles sector's output may be 15% up on the 1960s, but it has fallen dramatically from its 1973 peak".

Despite the strong impact of both internal and external factors the industry continues to be at the forefront of the European manufacturing sector, as presented by **KEEM (1982)**, with reference to 1979 Comitextil statistics, "the European Community's textile and clothing branches employed over 2.4 million people, 9.6% of the total EEC manufacturing industries workforce, contributed 6.4% of the value added in the industrial sector, and accounted for 6% of the Community's exports of manufactured goods".

The European textile industry, although declining sharply in the 1970s, continues at present to account for good proportion of the Community's industrial output. Furthermore it plays an indispensible role in the social and regional equilibrium. Following Greece, Spain and

Portugal's accession to the Community in the 1980s - the textile industry, according to the **European Documentation** (1985) "employed 2.5 million people, more than 10% of the EEC industrial workforce". On the other hand in some twenty five regions, as shown in **Appendix** 67, it employs more than 12% of the working population, highlighting its structural breakdown, traditional development and regional importance. In recent years as argued by **Comitextil** (1980) "companies in the Community's textile industry have made considerable efforts to adopt to the ever-changing pattern of textile demand". Nevertheless, growing competition - both foreign and between the EEC member states - has resulted in a competitive environment and the need for public intervention. The industry's branches are: the synthetic fibres sector which is highly integrated and capital intensive, the spinning and weaving sector which employs high-capacity machinery and large numbers of workers and the clothing sector which includes the hosiery and ready-to-wear branches both of which are labour intensive with a very low per capita level of capital investment.

5.3.2 RESTRUCTURING AND MODERNIZING SCHEMES

As discussed in **European Documentation** (1982) "the difficulties facing the textile industry are far from recent. Job-shedding began some twenty years ago and has been accelerating ever since"... "as early as 1971 the Commission sent a communication to the member states explaining that schemes to aid the industry shall encourage it to adjust and should not be designed merely to maintain uncompetitive production or to increase production capacity in sectors already beset with serious adjustment problems". The EEC member states had to adopt a number of measures to control the decline of textile industry. Their governments have put forward schemes to aid various sectors of the textile and clothing industries to restructure and improve their competitiveness.

As presented by Cable and Baker (1983) "Ireland has given aid to both industries by providing subsidies for setting up new firms and for re-equipping, modernizing and improving existing firms. The Netherlands has given grants to its cotton, linen and rayon sectors, while its knitwear and hosiery sector received a payroll grant to help its restructuring. West Germany took regional promotion measures provided subsidies for investment and loan guarantees. In Denmark both textiles and clothing sectors have benefited from regional development grants. Italy employed extensive schemes for its textile and clothing industries to restructure and reorganize both industries; investment grants and interest relief on loan for the establishment of new firms or the reopening or extension of existing firms along with schemes to reduce the level of unemployment insurance of small firms and low interest loans for reorganization and restructuring. Firms in the industry also often benefit from the state paying a proportion of national health insurance contributions. Belgium introduced interest free loans for ailing firms in its clothing industry and for certain firms in its knitwear sector to help them reorganize. In France aid to its textile and clothing industries took the form of strict import controls and ad hoc help for ailing firms; in addition there was also help to maintain employment in textile and clothing firms and subsidised social security contributions by textile companies in return for commitments on employment and new investment. Finally the British government carried out a major restructuring of the cotton and man-made fibre industry between 1959 and the mid 1960s to reduce surplus capacity and encourage firms to reequip. The wool sector also benefited, in the 1970s, from structural adjustment assistance loans from the government to reequip, diversify and write off obsolete or excess capacity, while under the clothing industry scheme, introduced in 1975, the reorganisation and rationalization within firms was encouraged".

The decline of the textile industry in the Community has affected all member states. In the EEC (12), the textiles balance of payments has been in deficit, even though Greece and Portugal have had an export surplus. As EEC consumption of textile and clothing products is likely to increase moderately and growing competition from the 'rest of the world' is to be expected, it appears that the European textile industry will require to further fundamental restructuring. To reduce manufacturing costs, technological changes need to be introduced in the most labour intensive branches. At Community level there has been support for modernization and restructuring in recent years, while finance provided was mainly directed towards the development of new technologies and investment in small and medium-sized businesses.

The future of Community firms seems to lie mainly in areas requiring substantial capital investment, advanced technology, skilled workforce and a high level of creativity. Only under these circumstances will it be possible to overcome the cost-disadvantages in Europe, compared to the low labour cost countries. However the European textile industry might suffer a further drop in production capacity and experience substantial job losses until an equilibrium stage is reached. The social and regional problems will continue to be serious in the traditional textile areas and justify public invervention. As presented in the **European Documentation (1982)** "the Community shows that it is concerned about the social and regional aspects of restructuring the textile industry; ESF is therefore granting aid for the retraining of workers leaving the industry to work in other industries and for the training of workers still employed by the textile industry, particularly in areas of high unemployment". ERDF has also been giving considerable help to regions where the textile and clothing industries play an important role;

account for more than 10% of employment in industry, while in the author's view these various forms of assistance from the Community budget may have to be increased.

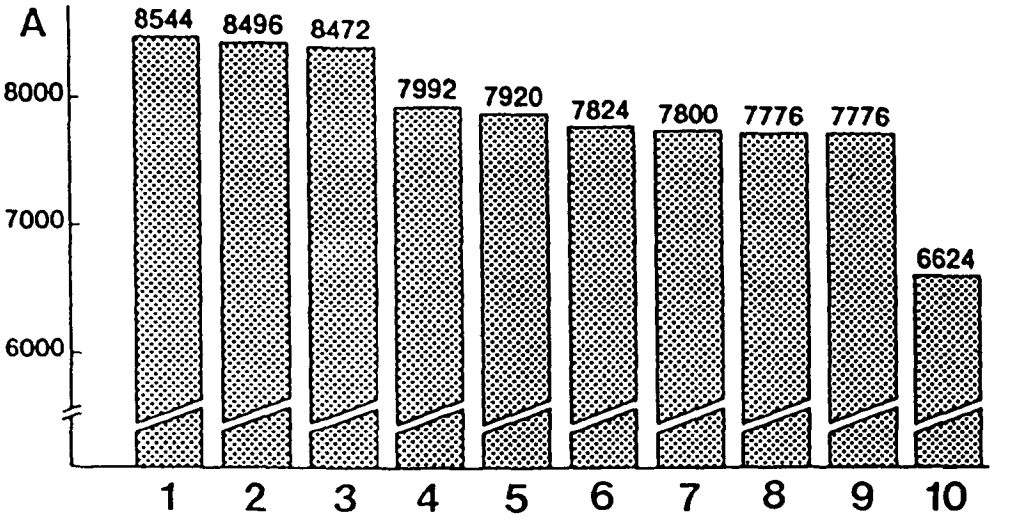
5.3.3 THE IMPACT OF FOREIGN COMPETITION

5.3.3.1 TRENDS IN EARNINGS AND WORKING HOURS

The industry's main difficulties had their origin in foreign competition from the low-cost developing counties. **Appendix 68** shows the prevailing situation in 1980 regarding earnings and working hours in textiles. Labour cost between the industrialized world and the Third World countries vary enourmously. As discussed by **Cable and Baker (1983)** "in the most labour intensive processes, as in the clothing industry, there is little scope for high cost producers to compete even if they have considerable advantages in productivity". West Germany being, according to **Textile Horizons (1984b)** "the world import leader for textiles and clothing", has managed to offset the labour cost competitiveness differential with the LDCs by subcontracting the most labour intensive processes, as stated in **Cable and Baker (1983)** "to East Germany and North Africa".

Chart 5.4 provides Gesamttextil data on the average working hours in some important textile producing countries of the world, while **Schlotterer (1988)** emphasized that "in low labour cost countries, textile industry plant and machinery is operated on average 8500 hours per year, as opposed to West Germany which reveals the largest cost-competitiveness disadvantage, the annual machine operating time averaging 6600, and therefore being 1100 to 1300 hours less than other European countries".

CHART 5.4: AVERAGE YEARLY WORKING HOURS IN SOME IMPORTANT TEXTILE PRODUCING COUNTRIES OF THE WORLD



A Hours/year

1	Taiwan	6	Switzerland
2	Hong Kong	7	Belgium
3	South Korea	8	Italy
4	Great Britain	9	France
5	Portugal	10	FR of Germany

Source: Gesamttextil, FR of Germany

Reference: Schlotterer, H. (1988) "Logistics and 'just in time' Potential for Rationalisation in the Textile Industry", ITS Fabric Forming 2 31

5.3.3.2 FIBRE CONSUMPTION AND INCOME CORRELATION

Appendix 69 illustrates the correlation between fibre consumption and per capita income for 1980 in fifty-five textiles processing countries. **Appendix 70** presents the fibre consumption per capita in selected areas of the world as calculated by FAO for 1974 and 1980. **Cable and Baker (1983)** stated "per capita consumption of man-made fibres is relatively greater in rich countries than poor ones. In LDCs over two thirds and in India and China over 80% of demand is met by natural fibres. In the USA the ratio is about one third, and it is 50% in the EEC. Cotton's share is highest in the under-developed countries and least in the developed, with Eastern Europe in between. The reverse order is true for man-made fibres. The USSR and other Eastern European countries had the highest woollen share followed by the developed countries".

Furthermore, **European Documentation (1985)** emphasized the prevailing international trends "world consumption of textile fibres has doubled in the last two decades with the growth of population and, up to a point, the improvement of the standard of living. In parallel the Third World has increased textile production which has grown from 30% of world output at the start of the 1960s to 45% in 1983. Production growth virtually halted in industrialized countries after 1973 with the exception of Eastern Europe. In addition during the 1970s Third World textile exports to industrialized countries doubled overall and quadrupled in the clothing sector".

5.3.3.3 MFA AGREEMENTS. CAUSES AND EFFECTS

As the largest trading block in the world, EEC prosperity is closely bound to international trade. As suggested in the European Documentation (1985) "Nonetheless, the European Community has had to respond to the surge of textile imports from low-pay countries which threatened to completely overwhelm its own textile industry". "The loss of jobs in the European textile industry can be traced to the rising tide of imports from the rest of the world and especially from developing countries - it is estimated that during the last twenty years the share of the European market held by imports has grown from 20% to 45% - and to the stagnation of European consumption in recent years; consumption rose steadily until 1973 but fell back in 1974, in 1977-1978 and after 1980".

The arrangement regarding trade in textiles, commonly known as MFA, was concluded under the auspices of the GATT on 20 December 1973 for a period extending from 1 January 1974 to 31 December 1977 in order to try to solve the specific problems of the international textiles trade. The MFA-1 covered cotton, wool and MMF textile products. As discussed in UN (1981) "fifty-one countries (including several socialist countries) representing 85% of world textile trade signed the 1974 MFA-1". European Documentation (1982) highlighted that "the signatories of the MFA-1 undertook not to impose any further unilateral or bilateral restrictions. The MFA-1 nevertheless contained explicit safeguard clauses (Article 3) and above all permitted the negotiation of bilateral agreements (Article 4). It was on this article that the Community based its textile policy, concluding bilateral agreements with suppliers, chiefly in accordance with the principle of the signatory states imposing their own limits on exports of a limited number of products, and gradually increasing the quantities authorized".

Under MFA-2, which ran from 1 January 1978 to 31 December 1981, the European Community invented a device called the 'basket extractor' which allowed it to extend restrictions to any fast growing textile product, even those not previously covered in a bilateral agreement. These measures were intended to enable the EEC textile industry to adapt to the new changing environment and as stated in the 11th General Report of the **European Communities** (1977) "should give the Community textile industry breathing space to intensify and speed up the process of structural reform". Moreover the issues involved in the MFA-2 emphasized "the importance of textiles production and trade particularly for the developing countries, the unsatisfactory situation of the textiles trade for the exporting countries as a result of the proliferation of restrictive import measures and the need to avoid market disruption in the importing countries resulting from an abrupt rise in imports". The conduct of a common external trade policy gave the European countries greater bargaining strength than individual negotiations. The prime purpose of the MFA extension and the bilateral agreements negotiated under it with 34 low-cost supplier countries, as stated in **Ifansis** (1977), "was to limit trade growth in most items to a maximum of 6% per annum".

On the other hand, the 12th General Report of the **European Communities** (1978) highlighted that "it is essential for the Community to have a highly efficient textiles and clothing industry which is competitive at international level and capable of providing a large number of jobs over a long period, but a strong competitive position might require cuts in the present number of jobs and the social problems that may arise will have to be tackled". The arbitrary base rate of 6% set in the MFA-2 could not be strictly applied in the Community's import growth rates and as stated in **Eyilon** (1981) "imports into the Community

accounted for 41% of European consumption in 1979, against only 21% in 1973. Exports rose only by 16% which resulted in the deterioration of the EEC net trade in textiles and clothing", while the **Textile Institute and Industry (1981)** emphasized "the loss between 1973 and 1979 of 433,000 jobs in textiles and 274,000 in clothing and the closure of 4,000 firms". The prevailing picture became worse in the following year, as claimed by **Cable and Baker (1983)** "employment in the industry declined seriously between 1973 and 1980, 512,000 jobs were lost in textiles (28% of the total) and 333,000 were lost in clothing (26% of the total)". There have been arguments for the adoption of a more flexible approach towards liberation of trade in world textiles at a time when the European textiles and clothing industries experienced plant closures, reduction in profit margins, or even huge losses. As discussed by **Ellis (1979)** "the textile industry of a developed country is often a target for some planner who may at times even suggest disposing of it for various reasons; less developed countries, they say, could deal with European textile and clothing needs and then our other technologies could supply them with rather more specialised products".

MFA-3 valid from 1 January 1982 to 31 July 1986 provided as outlined in the 16th General Report of the **European Communities (1982)** "new agreements for differential treatment of supplying countries, in terms of quota levels, growth rates and flexibility on their level of development and competitiveness". As discussed in **Ifansis (1981)** and **ITS (1982a)** "under the MFA-3 the quotas of the previous lending suppliers have been reduced to give new textile exporting countries better market access", while **Rogers (1983)** argued that "four years of comparative stability of textile imports has been predicted by the EEC Commission in the review of last year's MFA negotiations". The new

element indroduced under the provisions of MFA-3, was, as presented by Katsardis (1986) "the anti-surge mechanism for protection against rapid and considerable changes in the 'sensitive' products import growth rates". The framework of voluntary restraint agreements signed with the low-cost exporting countries, as claimed by the European Documentation (1985) "resulted in a 28% increase of imports from these countries between 1977 and 1984, compared to 75% between 1974 and 1977. Significantly, imports from the newly industrialized countries in Asia and Latin America have been stabilized at their 1977 level". This view is shared by the UNIDO (1985) where is argued that "up to 1973 the market in the North expanded and there was a steady growth of imports from developing countries. After that, import quotas began to cover textiles made from the full range of fibres as well as cotton and a wider range of categories of clothing. As a result the South's share of the North's total imports of textiles, which increased from 11.8% in 1970 to 13% in 1975, failed to increase between 1975 and 1979. Since 1979, the growth of the South's exports of both textiles and clothing to the North has slowed down". In that global report 27 countries were considered as part of the North while 48 corresponded to the South.

In 1984, as presented by Ifansis (1985) "imports in textiles and clothing accounted for 43% of EEC consumption against 24% in the USA". Nevertheless despite the 'protection' of the MFA, the Textile Horizons (1985a) argued that around 1.5 million jobs have been lost in the EEC textile and clothing industries since its introduction in 1973". Furthermore as issued in Textile Horizons (1985b) "Lord Barber refers to increasing evidence that MFA has outlived its purpose, that it was doing little to preserve jobs in the industrial countries, while greatly increasing the prices of textiles and clothing paid by consumers in the

Community. A concerted effort should be made to phase out the MFA in the shortest time practicable". Moreover these views have been supported by the UK Consumers Association as reported in the **Textile Horizons (1986b)** where is argued that "the Community should commit itself to a firm plan for phasing out the MFA and MFA quotas in a few years' time cease to be a significant constraint on trade". Recovery in the consumption of textiles and clothing, which began in 1985, gained further momentum as the EEC member states have managed to overcome the economic recession which succeeded the second oil crisis in 1979 - 1980. As discussed in the **Textile Horizons (1987b)** "higher demand largely benefited imports which increased substantially, spurred on by a weaker dollar. European exports deteriorated considerably and this resulted in a substantially higher negative trade balance for textiles and clothing compared to the previous year".

The MFA was last renewed in December 1986, the current agreement, MFA-4 came into operation on 1 January 1987 and expires on 31 December 1991. To the list of controlled fibres, according to the **Economist (1987c)** have been added "silk, linen, ramie and jute". The MFA-4 provided some relaxation of restrictions since some products previously under quota were liberized, but certain others were restricted. Although the new MFA is now valid for a period of five years, there are conflicting positions among the EEC member states regarding the future of the Multi-fibre Arrangement. As discussed in **Nafteboriki (1988k)** "W. Germany, Britain, Denmark and the Netherlands have suggested the acceptance of disciplines which free trade in textiles and clothing will entail in order to expand their service industries in the developing countries markets, whereas France, Italy, Ireland, Belgium and Luxembourg seem to be more conservative at present and the Southern members, Greece, Spain and Portugal strongly oppose the abolition of the MFA".

The drift towards the 'emigration' of textile activity to the most advanced Third World countries was recognized by a recent EIU report discussed in **Nafteboriki (1988s)** but it was emphasized that "co-existence of the textiles and clothing industries in both developed and the developing countries might be possible while the textile trade will continue to grow". Recent EEC statistics presented by **Nafteboriki (1988ab)** suggest that "although the Community's textiles and clothing industries continue to be among the most important in the international scene, their market share has declined by 12.5% between 1960 and 1986". Latest reports issued in **Nafteboriki (1988i)**, indicate that "the EEC is inclined on gradual abolition of the MFA, but it is widely recognized that the future of the European textile industry depends strongly on the advanced technology investments, the production of fashionable goods with high value added and the increased inter-Community textile trade".

5.4 THE GREEK TEXTILE INDUSTRY'S PROFILE

5.4.1 EMPLOYMENT AND SIZE DISTRIBUTION

The textile and clothing industries are among the leading traditional sectors within the Greek industrial structure. According to the latest available 1978 NSSG industry census - at present the 1988 NSSG industry census is being conducted, but data are not yet published - textiles accounted for 11.5% whereas clothing 9.7% of the total industrial employment in Greece. As illustrated in **Appendix 71** the two sectors together exceeded 21% of manufacturing jobs, being among the most labour-intensive industry groups. On the other hand both the textile and clothing industries are made up of a large number of small and medium-size firms, as shown quite clearly in **Appendix 72**. The textile industry companies accounted for approximately one third of the clothing industry's

total, while representing just 3.9% of the Greek manufacturing units as a whole. Furthermore a classification of the textile and clothing industries in terms of employment is shown in **Appendix 72** where 80.4% and 92.5% firms respectively are small handicraft units with up to nine employees. The number of companies with one hundred or more employees accounted for only 3.3% and 0.4% corresponding to 164 textile and 64 clothing firms respectively.

Appendix 73 illustrates the aggregated employment distribution in the textiles industrial group in comparison with the Greek manufacturing sector as a whole - Corporations and Limited Liability enterprises alone - over the period 1965 - 1986. Processed data from the ICAP publications presented by firm size: large-sized companies (500 + employees), medium-sized companies (100 - 499 employees) and small-sized companies (2 - 99 employees) indicated a decreasing trend in the number of large and medium-sized firms in terms of employment. In the 1980's small firms have shown a growth pattern from 254 firms in 1980 to 338 in 1986, while total employment in this category rose from 12,296 persons to 17,574.

5.4.2 THE TEXTILES INDUSTRY GROUP DYNAMICS

A breakdown of the textiles industry group ranked by activity is illustrated in **Appendix 74.** It is apparent that the three main sub-groups are: the wool spinning and weaving sector, the cotton spinning and weaving sector along with the knitting sector. In terms of employment - according to the 1978 NSSG cencus - these accounted for 19.5%, 28.9% and 24.1% respectively, a total of 72.5% which corresponded to 57,423 persons.

The textile industry is the most dynamic branch of the Greek manufacturing sector and it grew steadily from the early 1960's up to the late 1970's. Thereafter it was seriously affected by the recession which

hit the national economy following the second oil crisis in 1979 - 1980. Industry recession was experienced by most industry groups in the early 1980's, as discussed in the previous chapter, but the textile industry found itself in great difficulty having to operate in an ever changing competitive environment. Domestic and foreign factors influenced further growth while continued viability was in question.

As argued by **Hellenews (1988a)** "textiles contributed significantly to the manufacturing industry's GDP development since the early 1960's", while as shown in **Appendix 75** textiles GDP declined in the early 1980's and remained low during 1982 - 1985. On the other hand the sector's growth although smaller; continued to account for nearly 17%, during the stabilization programme in 1986 - 1987 reached 17.8% and 18.5% respectively, as indicated in the National Accounts of Greece and illustrated in **Appendix 75.** Textiles account for 16.1% of the new 1980 = 100 NSSG manufacturing production's index, as shown in **Appendix 48.** As discussed earlier and presented in **Appendix 49** the textiles industry group's output stagnated during the 1980 - 1985 period, while signs of a moderate recovery were predicted in 1986 when there was a 6.8% increase compared to the previous year.

5.4.3 TEXTILE TRADE DEVELOPMENT

The textile industry's exports orientation has been shown earlier in **Appendix 46. Epilogi (1983b)** stated "there have been fast growth rates ever since the mid - 1960's following the beneficiary status after Greece's association agreement with the EEC in 1961 (customs free imports in the European Community). On the other hand under Greece's import barriers to 'sensitive' products, the domestic market has been protected from the EEC and Third-World countries exports to Greece". The main

parameters that have assisted the rapid growth of textiles and clothing exports have been: the import protectionism and the prevailing advantage of the labour cost gap differential with the major competitor countries.

As argued by **Adraktas (1982)** "the volume increase of the Greek textiles exports during the 1975-1980 period accounted for 75% for spun yarns, 200% for fabrics and about 800% for ready to wear garments", while as emphasized by the **Textile Horizons (1986a)** "the undoubted success of the Greek textile industry in recent years cannot be ascribed to any single factor, but the growth of garment exports following the entry of Greece into the EEC must have been important. Of course, clothing manufacturers were quick to see the growth in the market for casual wear in Europe and relate this to the strengths of the Greek cotton textile industry".

It is important to note that the decline of the textile industry in Europe since the 1970s has affected all the northern Community countries including France, but the southern countries namely: Italy, Greece, Spain and Portugal experienced the effects of recession in the 1980s. In the Community of Twelve as a whole, the textiles balance of payments has been in deficit during the recent years, but Greece enjoyed a surplus in the textiles trade throughout. **Appendix 76** presents an analysis of Greece's imports and exports of the textile products during the period 1980-1986. In the case of the raw materials textile trade balance, imports accounted about 4.5 times the worth of exports thus the net balance appears in deficit. Nevertheless its effect on the country's textiles balance of payments remains of minor importance since the textiles manufactures trade balance is in surplus and its coutribution has dominated the raw materials textiles trade balance.

Greece as discussed in KEEM (1982) study of textiles and clothing, was the third major EEC supplier after the USA and Hong Kong in 1980 representing 6.1% of the EEC volume imports and 5.7% in value, while the country's volume exports of textiles and clothing are mainly concentrated in MFA Group I (cotton yarns, cotton and synthetic fabrics, knitted underwear, and so on)". Although Greece is on the northern fringe of the cotton - growing regions of the world, it has a long history of cotton production described by the **Textile Horizons (1986a)** "EEC's cotton country". Local production is sufficient to supply approximately three-quarters of the country's textile industry, thus as argued by **KEEM 1982)** "Greek raw material imports account about 47% for cotton, 27% for animal fibers and about 26% for MMF, while its exports represent around 83% cotton yarns and fabrics"... "In 1981 the exports breakdown of the Greek textile and clothing industries was: 32% knitwear, 12% woven garments and 56% textile manufactures".

5.4.4 TEXTILES INDUSTRY OUTLOOK

5.4.4.1 COTTON SPINNING AND WEAVING INDUSTRY

The textiles industry in Greece has developed on the sound basis of low labour cost, comparatively protected domestic market and predominantly on the good quality cotton. As discussed in the **Textiles Horizons (1986a)** "A quick look at the Greek fibre and textiles industry is all that is required to reveal the situation is dominated by cotton. Local wool production of only 4Mkg per annum is supplemented by about 8Mkg of imported raw wool and 3Mkg of tops. The man-made fibre industry with an annual production exceeding 20Mkg is significant in some areas. But Greece is unique in Europe as an impotant cotton - growing country, ranking not far behind Sudan; it is among the top five European cotton

spinners, and has emerged as a significant producer of apparel from knitted and woven cotton"... "Greek cotton lies within the group of medium-long staple and 93% of production is 28-29mm staple: 90% is in the micronaire region 3.5-4.9, the remainder being mainly finer". The quality of the Greek cotton in terms of colour, strength and uniformity provides favourable spinning properties and yarn characteristics and make it particularly desirable for knitting yarns.

The Greek cotton industry is highly export orientated, around half the production of yarns, as mentioned in **KEEM (1982)**, "being destinated mainly within the EEC". As discussed in **VIMA (1987)** 'the cotton and handicraft industries employ about 110,000 persons in 1,000 firms while another 80,000 cotton - growing farmers should be taken into consideration in the cotton processing system"... "Cotton yields are among the highest in the world (80kg per stremma compared with 60kg in USA)", while according to the Hellenic Cotton Board, presented in **Tsoupanopoulos (1981b)** "problems in cotton growing include adverse weather conditions, early autumnal rains and small widely disributed land holdings. Thus ginned cotton production in Greece was 110 tonnes in 1970 and 130 tonnes in 1975 falling to 116 tonnes in 1980 due to bad weather. The cotton spinning mills annual cotton requirements are approximately 150 tonnes and hence they do have to import cotton for blending with the domestic raw cotton production, from countries such as Egypt, USA, Syria, Turkey and Israel"... "During the 1962-1980 period the number of spinning heads (spindles and open-end rotors) tripled to a total of about 1.5 million in 1981. The distribution of the spinning heads accounts for three main areas: Greater capital area 36%, Macedonia 19% and Peloponnesos 17% whereas the number of weaving looms rose from around 7,000 in 1975 to 8,000 in 1980 concentrated mainly in the Greater capital area, where 80%

of cotton weaving is located". The ratio of weaving looms to spinning heads is low indicating the extended horizontal structure of the textile industry.

The cotton industry in Greece provided the upswing in the textile and clothing industries during the 1986-1987 period. Following recession the industry's outlook became very prosperous, as stated by **Kefalas (1988)** "the main reasons being the dramatic fall of the cotton prices internationally - during the second half of 1986 cotton prices dropped to around 30 cents/lb; the lowest level in the last decade - along with the labour cost freeze over the 1986-1987 stabilization programme. On the other hand the growing demand for cotton products resulted in significant exports prices increases, while the continuing drachma's 'slide' provided profits for cotton processing exporters in Greece". During 1988 the international scene changed; raw cotton prices rose to an average of 65-70 cents/lb by mid-1987 (raw cotton imports are placed at least six months in advance) following an ascending trend, the export prices declined sharply due to a drop in demand in the main cotton consuming European countries. On the other hand the Greek government's export subsidies (under the provisions of NE 1574/70) were diminished and in addition the incomes policy freezes relaxed and wages in manufacturing rose.

A recent EIU study, presented by **Nafteboriki (1988ac)**, indicated that "in the long-run cotton prices are expected to fall: from an average price level of 72 cents/lb in 1987-1988 to 65 cents/lb in 1991-1992 returning to 68 cents/lb during 1992-1993". Among the recent arguments is the raw cotton price established by the Public Enterprise KYDEP; which collects and trades most of the domestic ginned cotton production. As stated by the President of the Greek Textile Industrialists, **Kourtalis (1988)** "cotton prices offered by KYDEP

exceeded the international prices, producing an environment which threatened the textile industry".

5.4.4.2 WOOL SPINNING AND WEAVING INDUSTRY

The wool spinning and weaving industry in Greece consists of a few vertically integrated firms for men's fabrics and large number of small and medium-sized companies for women's fabrics. Most of the firms are located in the Greater capital area. The decline of the industry according to the President of the Federation of Wool Industrialists in Greece, **Efremoglou (1985)** "has its origins in the drop of working hours in the manufacturing sector, the sharp fall in productivity which resulted in the deterioration of the sector's competitiveness, the rising tide of wool yarns' imports and the unfair domestic competition of small producers, mainly in the blanket manufacturing, where regenerated wool is used for products sold under the IWS Pure New Wool label". Furthermore as discussed by **Nafteboriki (1988h)** additional problems that the Greek wool industry has faced in the 1980s are the high bank lending rates which deter investment, drop in home consumption due to the decline of the average consumer's disposable income, and the abolition of the NE 1574/70 exports subsidies' system. Suggested possible courses of action could enable the manufacturing firms to apply the hourly-payment system along with the possibility of a 4th shift which together with some relaxation of the law N 1264/82 might lead to improved competitiveness for most wool processing firms".

In recent years, as argued by **Kourtalis (1987)**, "the consumers' preference has been directed to high quality products, made from natural fibres and in the case of wool a wide range of textiles and clothing articles currently enjoying increased demand carry the Wool Trade Mark".

The shift to wool textiles such as ready-to-wear garments, household textiles, upholstery fabrics, drapery fabrics and so on, has been universal. This led to sharp increases in raw wool prices as stated in **Nafteboriki (1987g)** "from $4.3/kg in mid-1986 to $8.7/kg in mid-1987, a result of the growing demand for woollen articles".

Recently the Federation of Wool Industrialists in Greece, **Nafteboriki (1988m)**, claimed that "the government's intervention is currently required to preserve the wool industry which is near to collapse. Among other suggestions it was proposed that a five year 50% tax free allowance on the non-distributed profits be introduced, the approval of equipment depreciation at replacement cost rather than historical cost be adopted by the current system of accountancy in Greece and the relaxation of the prevailing high interest lending rates".

5.4.4.3 KNITTING INDUSTRY

The Greek knitting industry consists, as stated in **KEEM (1982)**, "of about 2000 units, mainly small-sized firms located in the Athens and Thessaloniki areas". Knitwear, as presented in the **Textile Horizons (1986a)**, "accounts for about 42% of total textile exports by weight. Germany imports about 55% of exported knitwear, whereas EEC accounts for 80% of total knitwear exports". The knitting industry has benefited considerably in recent years from the popularity of cotton while a significant proportion of cotton knitted articles are manufactured on commission for companies in Germany. The main advantage of the clothing industry in Greece has been the low labour cost compared to the other EEC member states and the high quality cotton yarns produced from domestic raw materials.

Greece is the sole cotton producing country in the Community and thus had the possibility of expanding its knitting industry, becoming EEC exports orientated and so preserving employment in the industry. According to the latest statistics exports of textiles and clothing, data presented in **Vima (1987)** "the knitting industry currently represents 42-43% of the total export of manufacturers", being among the most dynamic in textiles.

5.4.5 FUTURE TRENDS IN TEXTILES AND CLOTHING INDUSTRIES

According to **Hellenews (1988a)** "the total volume increase of textiles and clothing between 1980 and 1987 period accounted for 62.1%, against 44% rise in imports". On the other hand the growing import penetration of textiles in the domestic market from the Third World countries might lead to the gradual decline of Greece's most dynamic traditional industry. As argued by **Kourtalis (1987)** "fabrics imported from low-cost countries range from 10-40% cheaper than the home produced articles while presenting an extensive variation in designs and colour combinations, at relatively good quality standards".

Greece opposes any MFA relaxation, as discussed in **Nafteboriki (1988aa)**, and it is considered that the gradual abolition of the import quotas, established by the European Community against rapid increases from the low-cost countries, would harm the Greek textile industry. In such a case the approval of a transitional period will be required by Greece in order to modernize and restructure its textile industry. The prevailing MFA has benefited the textile and clothing industries in Greece, since there was a possibility, to expand exports to the Community. Greece had no import quotas in contrast to the Third World countries' exports to the EEC. In view of the prevailing climate, the Federation of the Textile

Industrialists has proposed, as discussed in **Express (1986a)**, that "the textile industry in Greece should be regarded as a 'national industry group' of major importance", while as described in **Express (1987a)**, it was suggested that "the whole industry would have to be included under the provisions of the high investment allowances (8 degrees) for the extensive use of the current investment law N 1262/82. This would promote the industry's re-equipment efforts and provide the means for the adoption of high-technologies in the textile and clothing industries".

Export of textiles and clothing are of great importance to the country's foreign currency requirements to finance its significant external debt and to ease the balance of payments deficit. According to the recent NSSG data, published in **Kathimerini (1988a)** "the total worth of textiles and clothing exports in 1987 accounted for 226 billion drachmas out of which textiles contributed 34.7% and clothing the remaining 65.3%". Although the government in its 1983-1987 textile industry's appraisal study, discussed by **Rylmon (1985)**, has highlighted most of the prevailing weaknesses "there have not been any worth mentioning - despite the nationalization of 13 major firms - measures which could promote investment in the Greek textile industry in order to maintain and possibly expand its position within the European Community".

In view of the unification of Europe, having to meet the 1992 challenge the Greek Textile industry must overcome a number of problems. In the author's view the most important and influential problem areas are highlighted below:

(i) Increased imports from the low-cost developing countries. EEC's inclination to the gradual abolition of the MFA.

(ii) Limited application of the 'economies of scale' in the industry. The textile and clothing industry is made up of a large number of small and medium-sized firms.

(iii) The prevailing labour cost differential advantage tends to diminish, while labour and capital productivity has declined during the 1980s.

(iv) The high interest rates deter investment. Industry has to invest in high-technology equipment in order to restructure and develop its position in the international scene.

(v) The dependence on imported raw materials such as MMF and wool, and to a certain extent cotton.

(vi) The dependence on imported textile machinery and accessories. Greece does not have a textile machinery industry.

(vii) The significant drop of demand in the domestic market, due to the prolonged reccession in the Greek economy.

(viii) Unfair competition of the nationalized textile firms.

(ix) The non-existence of a textiles higher education system in Greece.

(x) The limited availability of information from 'data-base' systems. Except for the Hellenic Cotton Board there are no Institutes, or Research Centres in Greece.

CHAPTER 6

MATERIALS MANAGEMENT

6. MATERIALS MANAGEMENT

As stated by Ramalingham (1981) "materials are commodities used in producing a product or service and include raw materials, components parts, work in progress, finished goods, packaging materials, supplies and equipment items". As a modern vertical company OR. SALIARIS S.A. processes raw materials through a sequence of manufacturing operations, as illustrated in Chart 6.1. Natural and man-made fibres are made into end-products: acrylic and woollen blankets. At the initiation of this work it was believed that the establishment of an effective materials management system could benefit the business. Developing planning and control of materials was aimed at solving problems experienced in the past.

6.1 MATERIAL INPUTS INTO THE SYSTEM

6.1.1 ACRYLIC BLENDS

For the manufacture of acrylic blankets the company purchased acrylic fibres mainly from West European companies. The raw materials used for the Dralon ^{R} blend are acrylic bright staple fibres 3.3 decitex, 60mm long mixed together with 6.0 decitex, 60mm long fibres. The blend proportion has traditionally been 2/3 and 1/3 respectively. The fibres' supplier is BAYER A.G., W. Germany, following an exclusive franchise agreement for Dralon ^{R} blanket production in Greece by OR.SALIARIS S.A. The raw materials employed in the Elacryl blend are acrylic bright staple fibres 3.3 decitex and 6.0 decitex, 60mm long mixed in the same proportion as for the Dralon ^{R} blend. Among the main fibre suppliers are ANIC Spa, Italy and VOMVICRYL S.A., Greece.

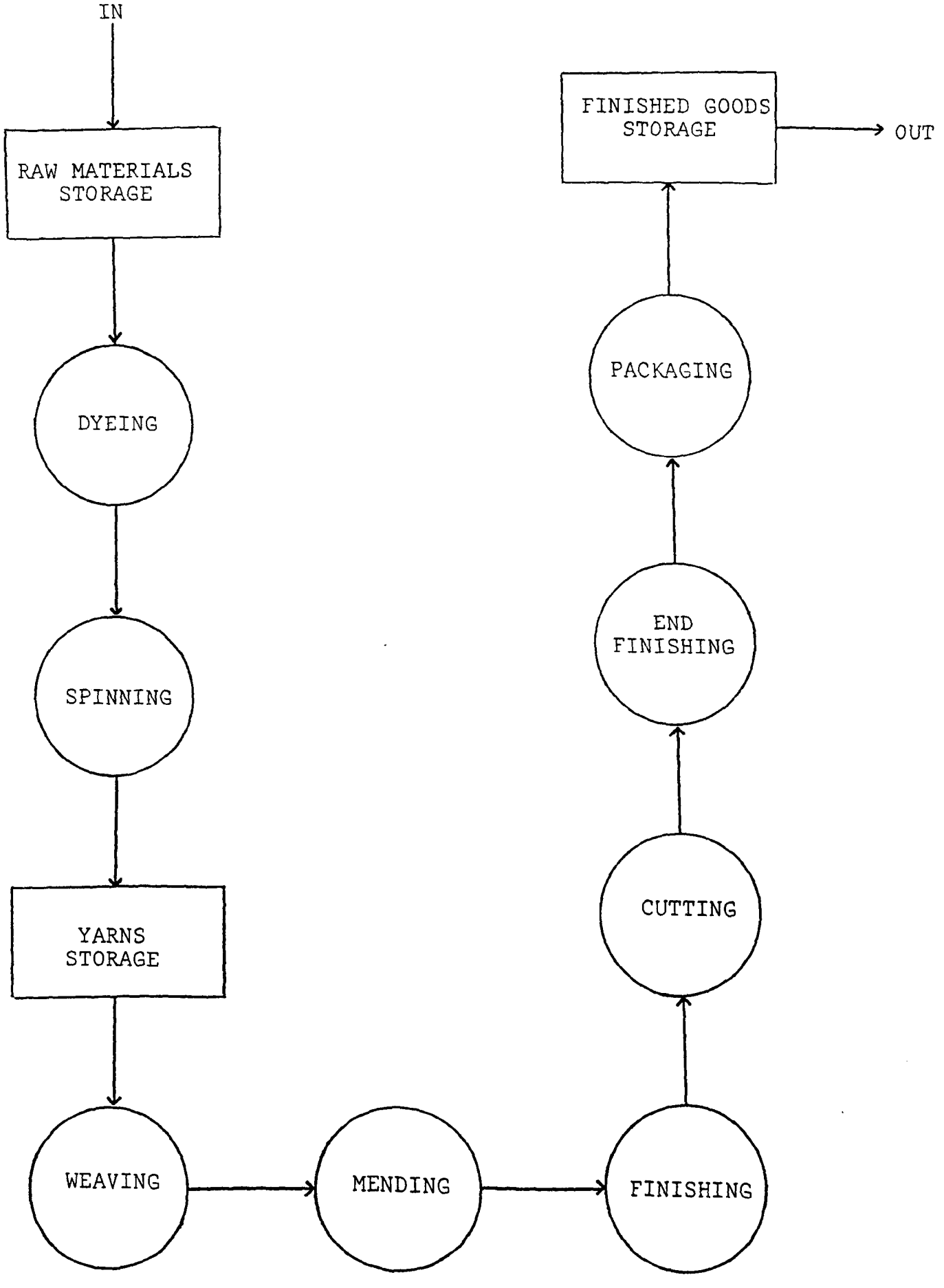
6.1.2 WOOL BLENDS

For the production of woollen blankets the raw material used is Pure New Wool fibres purchased in specific quality batches from New Zealand and West European suppliers. The type of fibres selected for blanket manufacture are 56's first clip wools under the New Zealand's government quality type 114. Blending proportions for wool fibres require considerable experience and expertise in order to achieve uniform batch formation on a continuous basis. Equal fibres proportions from three successive raw material deliveries are blended to ensure standard quality characteristics in all production lots processed.

6.1.3 OTHER TEXTILE MATERIALS

For the production of acrylic and woollen blankets supplementary textile materials are purchased - process additives - from both home and foreign suppliers. In dyeing of batches of fibres, dyestuffs, acids, softners, and/or moth proof additives are employed while during spinning of the dyed fibres into yarns chemicals such as lubricants and anti-statics are used. During weaving of fabrics the company employs open-end warp cotton yarns of count Ne 14 for the manufacture of the acrylic blankets, while in the case of the woollen blankets warp worsted yarns of count Nm 2/32 are used. Furthermore in the subsequent stages of finishing and end-finishing materials such as sewing threads, ribbons and labels are purchased and employed for the manufacture of the business end-products.

CHART 6.1: OR. SALIARIS S.A. BLANKET MANUFACTURE.
MATERIAL FLOWS THROUGH THE SYSTEM



6.2 MATERIALS FLOWS THROUGH THE SYSTEM

6.2.1 YARN FORMING

The raw materials are transported from their storage area to the dyeing department and blended manually in the appropriate mixtures and compressed in hot water into bulk form of about 225 to 350 kgs depending on blend type. The fibres are dyed in a fully automatic high pressure dyeing unit in batch form, about 900 - 1400 kgs at a time depending on the material. Dyeing time varies depending on the fibres blend characteristics, the required degree of colour penetration, and whether a colour is of dark or light shade. The dyed material is dried mechanically to remove capillary water and in the case of hydrophilic fibres this is followed by thermal drying. Afterwards the blend is transported pneumatically and stored in one of the six storage rooms, between the dyeing and the spinning departments, where it is kept for 1-2 days for relaxation. An opening and blending operation takes place through the fearnaught machine, where appropriate lubricants and anti-statics are added to the batch before the material is transferred pneumatically to the spinning department.

In the carding machine the raw material batch is transformed to a web and subsequently in the condenser to slubbings of Nm 2.40 count for the acrylics, and Nm 2.50 for the wool blend. Yarns are spun in the spinning frames to Nm 1/2.70 count and transferred from bobbins to cones in the winding machine. Six cones of yarn are packaged into plastic bags and stored in the weaving department's yarn warehouses.

6.2.2 FABRIC FORMING

Blankets are woven in the automatic looms in the weaving department. During weaving picks are selected from the firm's wide range of yarns in terms of quality and colour shade, while ends are made up from purchased cotton open-end yarns, or worsted yarns for fabric forming of the acrylic and woollen blankets respectively. Following mending, where all manufactured woven blankets' rolls are visually inspected for weaving faults, the materials are transferred to the finishing department. In the case of the acrylics, finishing takes place in the Thessaloniki plant, while for woollen blankets the production process is carried out in Trikala.

The acrylic blankets are raised from both sides of the fabric in an open width format; four rolls of woven material being processed in the raising machines at a time. During processing in the finishing department tne duration, the number of passages and the machine settings depend on the product quality and type of the processed fabrics. Woollen fabrics are felted in the initial stages of operations and dried mechanically in a rope format while the subsequent stages of raising and heat-setting are done in an open-width format. Finishing of the woollen blankets is performed on both sides of the woven fabric while once more variations during processing may take place according to the product quality characteristics. The behaviour of the wool material during this final stage of blanket manufacturing is quite different from acrylics and it is demanding to achieve quality standards.

Following cutting of the finished rolls into individual units, a selvedge is sewed round each blanket's perimeter and a label is added showing the product quality and the use instructions. Finally, the blankets are packaged into boxes and stored in the finished goods warehouses.

6.2.3 BLANKET MANUFACTURE: MATERIAL FLOWS

Table 6.1 presents the material flow process symbols, according to Wild (1980). Appendix 77 illustrate the acrylics: Dralon and Elacryl blends as well as the woollen blend flow process chart for OR. SALIARIS S.A. The method of presentation selected is the material flow process chart, possibly the most familiar method in manufacturing for recording procedures studies in production and operations management. In each case the operations, transportations, inspections, storages and delays within the system are recorded and presented.

6.3 PROBLEM INDENTIFICATION

6.3.1 INTRODUCTION

A close examination of the materials flows within the organisation highlighted a number of issues. First it became apparent that the use of men and machinery had declined. Up to 1981 the business was operating on a three shift basis, six days a week. In 1982 due to the decline in the demand for household textiles, the company employed a 2 shift basis while as from 1983 onwards production dropped to 11/2 shift on average.

The management's policy for increased productivity - output/manhour - continued to prevail while a lack of synchronization between production and sales inevitably led to the storage of increased stocks, both in terms of volume and value. Bottlenecks in production processing had eventually been relaxed, but that could be seen as a likely effect of the factory's over capacity.

Second an accute transportation problem was noted with finished stocks. The increased inventories of blankets could no longer be stored in the main factory premises and were accommodated in the new premises, formerly designed for business expansion.

TABLE 6.1: MATERIAL FLOW PROCESS SYMBOLS

Symbol	Material Flow Process Chart
o	Operation
⇨	Transportation
▭	Inspection
▽	Storage
D	Delay

Notes:

Operation: Indicates the main steps in a process, method or procedure

Transportation: Indicates the movement of materials from place to place

Storage: Indicates a controlled storage in which material is received into or issued from store under some form of authorisation

Delay: Indicates a delay in the sequence of events, for example work waiting between consecutive operations

Inspection: Indicates an inspection for quality and/or a check for quantity

Source-Reference: Wild, R. (1980) "Essentials of Production and Operations Management" Holt, New York 7 95

Third, the degree of inspection for quality of the processed materials was being done implicitly in certain areas while in others there was a lack of quality control procedures.

Fourth, delays were noted in the materials flows through the system, there was not a comprehensive co-ordinated approach to production scheduling. It was not quite clear who was responsible for major functions. The lack of closed-loop controls was the major cause of the problem. In many cases unachievable and clear objectives, often conflicting one another, made things even worse.

Fifth, overstocking was prevalent, particularly yarns and blankets. It was difficult to know what the inventory breakdown was in terms of colours and designs. At the early stages of the project, therefore, the magnitude of the problem and the likely consequences were difficult to establish. There was no indication of the time duration of materials storage, while access to different type of physical stock was not always easy. The levels of inventories were exessively high for some products while for others there was a constant problem of stock-out. Furthermore no detailed data on the mobility of the stock was available since there was no detailed reporting system.

6.3.2 THE NEED FOR A SYSTEMS APPROACH

Production inter-system transport, storage and allocation constituted a whole and had to be interrelated and run smoothly. The distribution from the production process end to the goods consignment had to be planned in a coherent way to ensure that the materials flow could proceed without major delays, or prolonged and unjustified storage. It seemed likely that in certain cases improper decision making, incorrect forecasts, the fluctuating demand for the company's end-products and

shifts of the customers' buying preferences had caused unacceptably high stocks of yarns and finished goods over the last few years. At the initiation of the research work there were 148,976 kgs of yarns and 84,421 blankets in stock as at 31, December 1982. Forecasting the future demand for any of the company's products looked hazardous at the time, particularly, due to lack of primary data. Nevertheless, forecasts were required for major business decisions, in preparing production plans and in replenishing stocks.

At the conception of the project the magnitude of the problems was not possible to be realized nor to be measured in any way, while the prime task of the intended work was the management of the existed material problems. The company's main strength was thought at the time to be the business image in the home market in terms of a wide annual finished goods collection and the comprehensive customer service. On the other hand the organisation's inability to diversify into new product development and new markets was its major weakness. It appeared at the time that changes in procedures and policies had to be made, based on a coherent and systematic approach to the problems, aiming to facilitate the company's operations by means of improved decision making.

6.4 THE COMPANY INVENTORIES DEVELOPMENT: 1978-1987

6.4.1 BREAKDOWN OF STOCKS

In the early stages of this work it became apparent that the stocking and warehousing policies employed by the management of the company were inefficiently managed. It was thought that appropriate information flows could facilitate decision making and play an important role in reducing costs and make an increasing contribution to overall corporate effectiveness. Skillful inventory management had to be adopted

aiming to minimize the costs of holding inventories. A variety of stocks was observed at the company's premises, namely:

(i) stocks of raw materials,

(ii) stocks of yarns,

(iii) stocks of work in progress,

(iv) stocks of finished goods,

(v) stocks of process chemicals,

(vi) stocks of jackquard designs,

(vii) stocks of warp beams,

(viii) stocks of spare parts,

(ix) stocks of ribbons and labels,

(x) stocks of packaging materials, and

(xi) stocks of re-cycled waste.

Inventories had been the company's largest current assets' component in recent years and it was believed that in an effort to improve the business liquidity it was essential to reduce their level both in physical and financial terms. **Appendix** 78 illustrates the value breakdown of stocks for the period 1978-1987 where the long-run development of the various types of stocks, as grouped by the company's accounting department, are presented. Group I covers the main inventories: raw materials, yarns, work in progress and finished goods, which accounted for more than 80% of the tied capital in stocks on average. The predominant problem was the fast growth of the finished goods stocks followed by the yarn stocks, caused by the drop in demand for blankets and the company's policy for increased productivity. Group II covers the remaining types of stocks where the largest component was process additives. It appeared that the first signs of increasing stocks, at levels well above any rational expectation, could be traced back to

1980. The magnitude of the problem became intolerable by 1982, as shown in **Appendix 78,** and highlighted by **Saliaris (1982).** A volume breakdown of stocks, in the main inventory types under Group I - for 1978-1987, is presented in **Appendix 79.** The dramatic increase of the raw materials and yarns inventories during 1979-1981 was followed by the corresponding increase of the finished goods stocks over the 1980-1982 period.

6.4.2 STOCK-HOLDING POLICIES

The development of stock growth over the ten year period, 1978-1987 appears in **Figure 6.1** where the company's annual inventories value are presented as at the end of each financial year on the 31st of December. The management's reasons for holding stock as suggested by Jackson (1980) were:

" (i) to smooth out short-term fluctuations of demand and maintain plant activity at a constant level,

(ii) to permit efficient production of items which are not continously produced,

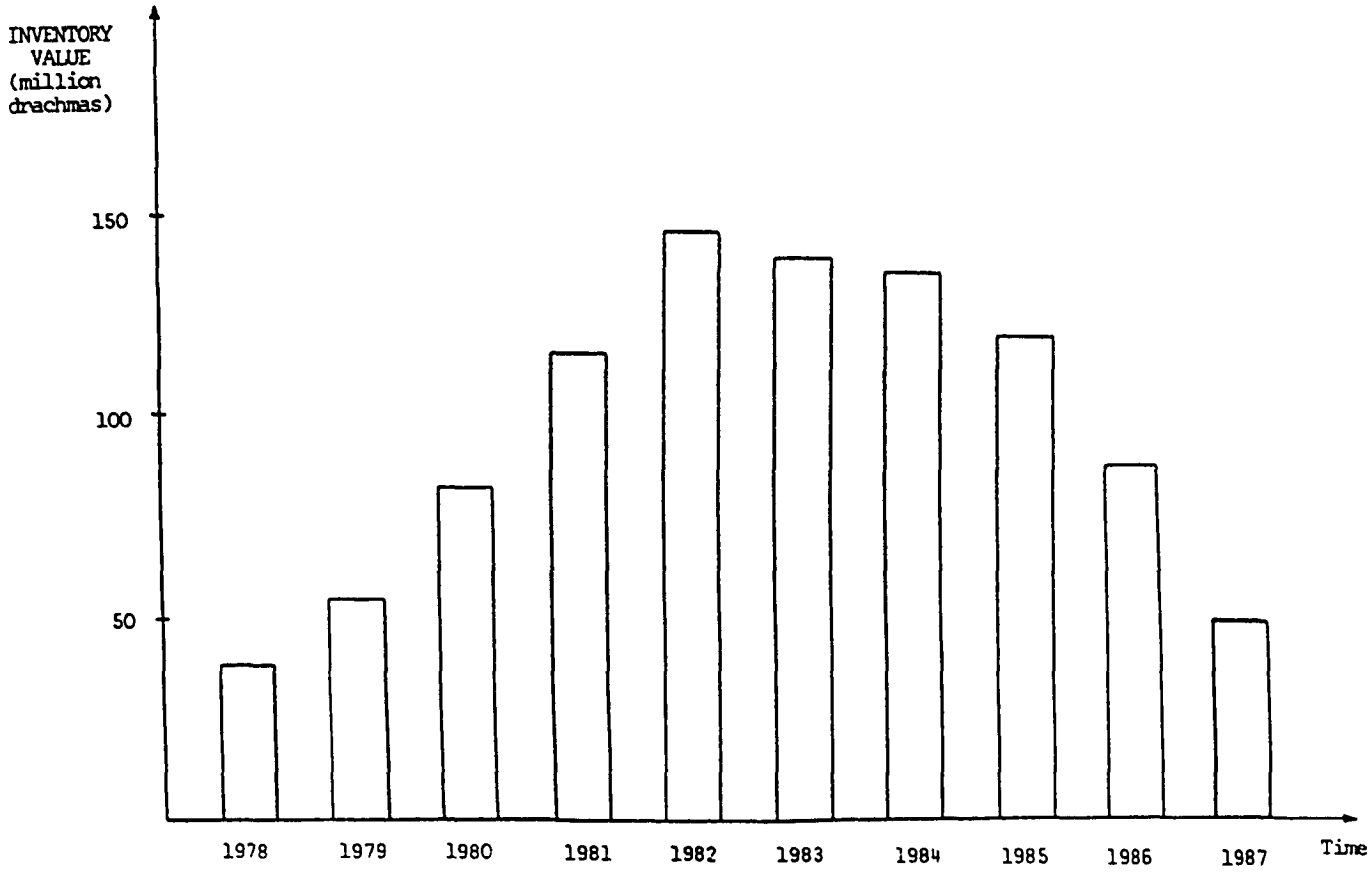
(iii) to enable customers demands to be met without delay,

(iv) to ensure against unforseen changes in the pattern, or level of demand,

(v) to ensure against unforseen failures in production".

During the 1979-1982 period the company continued to operate on a full scale production level which resulted in increased inventories of yarns and finished goods. The high stocks problem required the establishment of a modified inventory policy to be based upon control over stock inputs to satisfy unpredictable demand or output. Given a forecasted output or usage rate per unit time and the variability of that

FIGURE 6.1: OR. SALIARIS S.A. BLANKET MANUFACTURE.
ANNUAL INVENTORY LEVELS AS AT 31st DECEMBER



output rate, the following inventory options, as suggested by Wild (1980) were examined:

"(i) for intermittent stock replenishment:

(a) either reorder level or interval, and

(b) order quantities

(ii) for continuous replenishment

(a) input rate, and

(b) average stock level required".

6.5 MATERIALS HANDLING SYSTEMS

6.5.1 RAW MATERIALS

One priority was to examine the company's raw materials flow patterns. As from early 1983, the raw materials were mainly acrylic and wool fibres stored in bales in the raw materials storage area. The selection of the raw materials' suppliers was done by the management of the company. Contract agreements were based on the quality of the materials, terms of payment, price and delivery time. Little needed to be done to improve the raw materials storage and the location facilities since there was no space limitation in the warehouse, nor any indication of uneccessary materials transportation through the system. The bales are transferred by a fork-lift truck to the dyeing department which is located next to the raw materials storage area.

In order to maintain proper control over the in-and-out-of-stock handling of the raw materials a company ledger was implemented to include only necessary and sufficient information. Table 6.2 provides the raw materials ledger for one particular Dralon batch in 1985. The entire batch was recorded on an individual card at the time of arrival of the raw materials in the factory's warehouse. The average number of bales per

TABLE 6.2: RAW MATERIALS LEDGER (IN-OUT SYSTEM)

OR. SALIARIS S.A.
BLANKET MANUFACTURE

Year: 1985
Page: 1
Warehouse: A

Quality: Dralon
Characteristics: Bright, 60mm, 3.3 decitex

Import Code Number: C101a
Weight List Code Number: C101b

RAW MATERIALS LEDGER (IN-OUT SYSTEM)

Bale No.	IN Net Weight (kgs)	OUT Dyeing Batch (Instruction No.)	Bale No.	IN Net Weight (kgs)	OUT Dyeing Batch (Instruction No.)	Bale No.	IN Net Weight (kgs)	OUT Dyeing Batch (Instruction No.)
1	251.2	C11	31	251.4	C26	61	257.2	C48
2	250.1	"	32	243.9	"	62	251.2	"
3	253.1	"	33	250.9	"	63	260.1	"
4	251.3	C12	34	260.1	C31	64	250.8	C49
5	247.4	"	35	251.9	"	65	248.9	"
6	248.3	"	36	255.3	"	66	245.7	"
7	250.6	C13	37	248.7	C32	67		
8	251.4	"	38	260.3	"	68		
9	246.8	"	39	250.3	"	69		
10	242.9	C14	40	247.4	C36	70		
11	251.6	"	41	249.3	"	71		
12	243.4	"	42	248.6	"	72		
13	247.3	C15	43	250.1	C37	73		
14	250.8	"	44	256.1	"	74		
15	247.1	"	45	244.3	"	75		
16	251.3	C16	46	251.6	C38	76		
17	255.1	"	47	248.1	"	77		
18	248.6	"	48	246.7	"	78		
19	249.3	C17	49	247.9	C41	79		
20	254.9	"	50	251.3	"	80		
21	250.4	"	51	250.7	"	81		
22	246.8	C23	52	246.9	C42	82		
23	247.3	"	53	251.8	"	83		
24	251.6	"	54	245.7	"	84		
25	250.7	C24	55	247.8	C44	85		
26	248.9	"	56	250.4	"	86		
27	246.1	"	57	249.2	"	87		
28	243.8	C25	58	251.1	C47	88		
29	242.9	"	59	248.4	"	89		
30	245.3	"	60	249.3	"	90		

Total Net Weight (kgs)	Date
16,385.7	16.01.85

Remainder (kgs)	Date	Remainder (kgs)	Date
7,244.9	31.01.85	-	28.02.85

batch varied from around 25 for the wool to 85 on average in the case of Elacryl. Each in-coming batch was reported separately on an individual card, and all necessary and appropriate data was coded and the out-going bales of raw materials were recorded immediately so at any given time sufficient information was available on the number of bales in stock, their characteristics and location.

At the end of the month a management report was drawn by the author to the Board of the company including stock levels of the various raw materials stored at the factory premises, while the accounting department issued a similar report on the stock levels at the Customs House in the port of Thessaloniki. Expected deliveries of raw materials from the business suppliers were also reported. Stock-holding decisions were taken by the company's senior management on a monthly basis while the Board of Directors' aim in recent years was to decrease the raw materials carrying costs by detailed sales forecasting plans issued for a six month period twice per annum. The information flows and the established reporting procedures appear in **Diagram 6.2.** From 1983 onwards buffer stocks were introduced for the different types of raw materials. This resulted in reduced inventories as can be seen in **Figure 6.2,** where the stock value at cost as at 31st December is presented pictorially for the 1978-1987 period.

6.5.2 YARNS

At the start of the project it was noticeable that part of the problem was excessive numbers of yarn qualities and colour shades contained in the company's various yarn warehouses. Once yarns were spun there was little room for anything else other than to be woven at some stage into blankets. Once woven fabrics were produced eventually these were finished into blankets. Some form of rationalization and

standardization of the yarn counts and colour shades was required, whereby the processed batches had to be dyed and spun in economic quantities within an acceptable lead time. Furthermore buffer stock levels had to be introduced to avoid unwanted and unmanaged rises in yarn stocks.

Close-loop controls had to be established within the system in order to exercise effective management over the material flows. Furthermore the necessary and sufficient information flows had to be provided to the company's Board of Directors to enable improved decision making to take place. The management of the organisation had to know in advance, what was to be dyed and spun and why. How many colour shades were necessary for the company's annual collection. Why one colour shade was to be selected and not another one. How could the colour shades be best distributed in the standard quality lines which the firm was producing. How could the colour shades match the designs employed by the business. The materials utilization plan was a task to be accomplished by the production scheduling department and it was the author's duty to design the appropriate methods and procedures to enable improved handling of the processed materials. It was thought that flexibility could enable improved decisions to be made, thus avoiding problems experienced in the past throughout the production line.

6.5.2.1 DOCUMENTATION AND CONTROL OF STOCKS

A systems approach was adopted from 1983 onwards by the management of the company in an attempt to rationalize procedures which no longer met the needs of the business. As at 31st December 1982, there were 43 Dralon yarns' colour shades, 22 for Elacryl yarns and 16 for the woollen yarns, 81 in total. A colour distribution analysis of both acrylics and woollen yarns is shown in **Table 6.3.** The prevailing

breakdown in the colour shades for the Dralon yarns caused difficulties. Furthermore the weaving department's three main yarn warehouses contained a number of tails of stocks: sample yarns, defective yarns, out of use colours or counts, different quality or even unidentified type of yarn inventories.

The first task was to collect the necessary data on the yarn qualities breakdown in terms of yarn counts and colour shades. In addition detailed information was required about the actual yarn quantities in stock, their location and the storage facilities for each individual case. Yarns were grouped by the author in two main categories and stored in seperate storage areas as shown below:

(a) yarns of high and moderate demand - stored in warehouses A and B

(b) yarns of insignificant or no demand - stored in warehouse C

Thus on the first monthly management report issued on the 30.9.1983, a grouped presentation is shown in Table 6.4, the yarns of high and moderate demand were 55,841 kgs, while the yarns of insignificant or no demand accounted for 16,520 kgs, 22.8% of the company's total yarn inventories at that time. Careful planning in both yarn production scheduling and yarn consumption by the weaving department was required to minimize yarn stocks. Following the collection of the required primary data the complete picture of the yarns inventories as at 30.9.1983, indicated a total of 72,361 kgs in three main qualities, in 113 different colour shades spread over 3 warehouses in a disorderly manner which made the situation chaotic.

TABLE 6.3: OR. SALIARIS S.A. BLANKET MANUFACTURE. COLOUR DISTRIBUTION ANALYSIS OF THE YARN QUALITIES

(as at 31st December 1982)

Colour Groupings	ACRYLICS				WOOLLEN	
	DRALON		ELACRYL		WOOL	
BROWN SHADES	1	Brown	1	Brown	1	Tamba
	2	Brown Light	2	Tamba	2	Tamba Light
	3	Mocca	3	Mocca	3	Beige
	4	Chocolate	4	Chocolate	4	Beige Light
	5	Chocolate Light	5	Dore		
	6	Teza Dark	6	Beige		
	7	Teza				
	8	Mustard				
	9	Beige Dark				
	10	Beige				
	11	Beige Light				
GREEN SHADES	12	Green Dark	7	Green Dark	5	Green
	13	Green	8	Olive Dark	6	Mantzana
	14	Green Light	9	Olive	7	Pistachio-Nut
	15	Olive Dark	10	Mantzana		
	16	Olive				
	17	Olive Light				
	18	Raton Dark				
	19	Veraman				
	20	Mantzana				
	21	Mantzana Light				
RED SHADES	22	Ambar	11	Ambar	8	Pink
	23	Bordeaux	12	Grena	9	Pink Light
	24	Grena	13	Fuxia	10	Fuxia
	25	Fuxia	14	Pink		
	26	Bright Pink				
	27	Pink				
BLUE SHADES	28	Azzuro	15	Azzuro	11	Souri
	29	Turquoise	16	Grey Blue	12	Souri Light
	30	Grey Blue	17	Light Blue	13	Light Blue
	31	Marine Blue			14	Plomo
	32	Greenish Blue				
	33	Light Blue				
	34	Plomo				
OTHER SHADES	35	Honey	18	Honey	15	Apricot
	36	Orange	19	Apricot	16	White
	37	Apricot	20	White		
	38	Black	21	Creamy White		
	39	White	22	Cream		
	40	Creamy White Dark				
	41	Creamy White				
	42	Cream				
	43	Sugar				

TABLE 6.4: OR. SALIARIS S.A. BLANKET MANUFACTURE. YARN QUALITIES BREAKDOWN. FIRST MANAGEMENT REPORT ISSUED ON 30 SEPTEMBER 1983

Yarn Classification	Yarn Quality Characteristics	Colour Shades	YARN INVENTORIES BREAKDOWN		
			Sub-Group Weight(kgs)	Group Weight(kgs)	Percentage Distribution
High and Moderate Demand	Dralon Nm 1/2.70	33	35,837	55,841	77.2
	Elacryl Nm 1/2.70	22	12,548		
	Mantacryl Nm 1/2.70	7	5,088		
	Woollen Nm 1/2.70	16	2,368		
Insignificant or No Demand	Dralon Nm 1/3.30	13	7,940	16,520	22.8
	Dralon Nm 1/2.70	11	3,400		
	Dralon Nm 2/3.30	4	1,400		
	Elacryl Nm 1/2.70	2	1,560		
	Alpaca Nm 1/2.70	1	260		
	Woollen Nm 1/2.70	2	1,080		
	Mantawool Nm 1/2.40	2	880		
				72,361	100.0

6.5.2.2 DESIGN OF A REFORMED WAREHOUSING SYSTEM

Among the first measures taken to modify the storage facilities were:

(i) storage of the Dralon and woollen yarns of high and moderate demand in warehouse A (407 m^2), Dralon yarns in white plastic bags allocated against the A_1 wall, whereas woollen yarns packed in light blue plastic bags and stored against the A_2 wall of the warehouse. The Dralon and woollen plastic bags of yarns were allocated against either sides of warehouse A by means of colour groupings: brown, green, red, blue and the other colour shades.

(ii) storage of the Elacryl and Mantacryl yarns of high and moderate demand in warehouse B (260 m^2), Elacryl yarns in light green plastic bags and Mantacryl yarns in light brown plastic bags. The Elacryl yarns were allocated against the B_1 and part of the B_2 walls of the warehouse, while the Mantacryl yarns in the remaining area against the B_2 wall, both classified in terms of colour groupings.

(iii) storage of all other yarns, of insignificant or no demand in an orderly manner in warehouse C (130 m^2). A detailed presentation of the storage areas for the yarns of high and moderate demand is illustrated in **Drawing 6.1.**

The second series of measures was to ensure that each plastic bag had its technical characteristics on an individual card where the dyeing and spinning batch code numbers, the yarn count, quality and colour were recorded. A FIFO methodology was adopted for the approved standard quality of the acrylics and wool yarn batches for their rate of usage in the weaving shed. In the case of the insignificant demand, or no demand

yarns stored in warehouse C, all batches were tested against quality standards and every chance was explored for their use. Trials were carried out to ensure that the necessary modifications in weaving would not alter the products dimensional stability, weight, or pattern during the subsequent processing.

By the end of each month a yarns inventory management report was issued by the author where all yarn qualities were presented in terms of their colour shades distribution in number of plastic bags and total weight. **Appendices 80 A-B** illustrate the 30.11.1983 management report where it can be seen that certain colour shades of moderate demand had been withdrawn a decision taken by the management of the company, while intensive efforts were required in order to eliminate the tails of old yarn stocks. Along with the standard yarns management monthly report there was an appraisal of the out of collection yarns inventory levels, where all stocks of insignificant demand or no demand were listed. Such an example is shown in **Appendices 81 A-B** where for the same period, month ended on 30.11.1983, the analytical breakdown of qualities, colour shades, number of plastic bags stored and their total weight is shown. In this case the work was carried out week by week reporting developments to the Board , since the management wished to reduce these stocks to an absolute minumum within a six month period. The yarns of insignificant or no demand from a total of 16,520 kgs in the end of September 1983 were reduced to 7,720 kgs as at 31 March 1984 whereas by the end of April 1984 the figure was down to 3,900 kgs. These remaining obsolete yarns were Mantawool Nm 1/2.40 and eventually were made into cheap woollen jackquard design blanket which was sold during the peak sales period at a very low price. The established reporting procedures appear in the end of this chapter in **Diagram 6.2.**

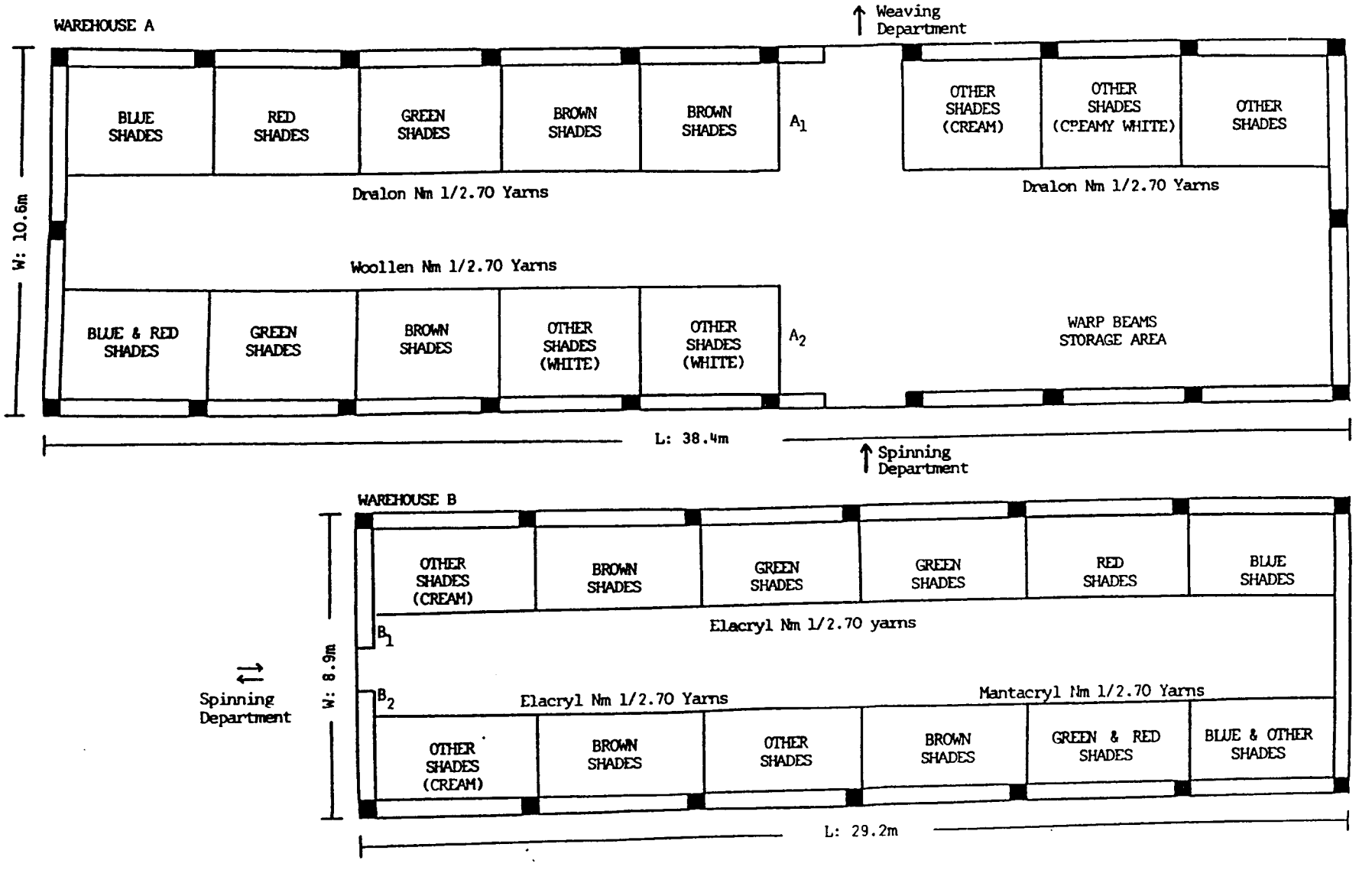
In an effort to improve the warehousing system certain issues were taken into account. First, the storage facilities for the different yarn qualities. The building drawings were studied carefully, updated where necessary, improvement was made in lighting system and safety measures were taken against unforseen disasters such as: fire, flood and so on. Second, the comodities stored were bags of yarns containing six cones each, their total weight varying from 20 - 36 kgs each depending on the type of material. The bags were stored against the walls of the warehouses in columns of 6 bags at a time, in rows along the interior of the storage area. Yellow lines were drawn in each warehouse providing a corridor of 3 m wide in the middle of the warehouse which had to be clear at all times to facilitate transportation. In addition each colour shade was allocated space such that the high demand yarns were to be situated nearer to the warehouses entrance in order to minimize $S_i = S\ W_i \times D_i$ where: W_i = weight of commodity i and D_i = distance that i had to travel to the weaving shed.

Furthermore, since warehouse A was closer to the weaving department it was decided that the Dralon yarns and the woollen yarns, having an average bag weight of 23.8 kgs and 34.0 kgs respectively, were to be accomodated in the main warehouse. The storage capacity of yarns warehouse A was estimated to be about 85,000 kgs, while as shown in Drawing 6.1 space was provided for the allocation of the weaving shed's warp beams. The Elacryl and Mantacryl yarns were stored in a similar manner in warehouse B, their average bag weight being 25.5 kgs and 26.0 kgs respectively. The maximum storage capacity in warehouse B was estimated to be about 60,000 kgs. Taking into account that the real storage capacity, given that the area provided for each colour shade never exceeded a 60% coverage, there was adequate space for about 87,000 kgs in total for all four types of yarns to be stored in warehouses A and B.

DRAWING 6.1: YARNS WAREHOUSES A AND B

OR. SALIARIS S.A.
BLANKET MANUFACTURE

YARNS WAREHOUSES A AND B



6.5.2.3 ESTABLISHMENT OF CLOSED-LOOP CONTROLS

Having designed a yarns allocation scheme the following immediate requirement was efficient control of the yarn inventory mobility within the system. Access to the yarn warehouses was restricted to authorized personnel while all records of materials in and out of the storage areas were recorded in a yarns inventory ledger. The documentation of yarn stocks was established by the author in late 1983 and a number of deficiencies in the early stages of operation had to be ironed out. Table 6.5 provides an example of the reporting system. In the stock ledger individual colour shades per yarn quality were filed in seperate sheets. The in-and-out-of-stock system operated on a monthly basis where all movements were documented daily enabling the production scheduling department to know the yarn stocks breakdown, their characteristics, usage rates and precise reporting of their in-and-out-of-stock movement at any given time. As from mid-1984 buffer stock levels were established for each colour shade yarns within all product qualities according to the weaving department's expected consumption, as estimated by the 6 month sales forecasting studies.

Appendices 82 A-B provide the development in the company's colour annual collections for both the acrylics and wool yarns throughout the period of the project. The 1983 - 1984 annual collection was designed on standard lines, by providing an extensive range of colour shades. The task in analyzing the usage rate of each individual stock level during 1983 enabled the management of the company to adopt a concise and coherent policy in the subsequent years aiming to reduce the yarn inventories.

In the 1984 - 1985 annual collection new colour shades and a soft style approach was introduced, supported by both IWS and BAYER fashion departments. For the first time the colour shades preparation time took

TABLE 6.5: YARNS INVENTORY LEDGER (IN-OUT SYSTEM)

OR. SALIARIS S.A.
BLANKET MANUFACTURE

Quality: Dralon
Count: 1/2.70

Twist: 159 t.p.m.
Tensile Strength: 2,800 grms

Year: 1985
Month: October
Warehouse: A
Plastic Bags of 6 connes

YARNS INVENTORY LEDGER (IN-OUT SYSTEM)

COLOUR SHADE : CREAM

	Batch (No.) : 232 Weight (Kgs) :1,071 Plastic Bags (No.) : 45 Mean Weight Per Plastic Bag (Kgs):23.8			Batch (No.) : 277 Weight (Kgs) :1,004 Plastic Bags (No.) : 42 Mean Weight Per Plastic Bag (Kgs):23.9			Batch (No.) : 278 Weight (Kgs) :1,025 Plastic Bags (No.) : 44 Mean Weight Per Plastic Bag (Kgs):23.3			Batch (No.) : Weight (Kgs) : Plastic Bags (No.) : Mean Weight Per Plastic Bag (Kgs):			Batch (No.) : Weight (Kgs) : Plastic Bags (No.) : Mean Weight Per Plastic Bag (Kgs):			Batch (No.) : Weight (Kgs) : Plastic Bags (No.) : Mean Weight Per Plastic Bag (Kgs):			Total Inventory By The End Of The Day
	IN	OUT	R	IN	OUT	R	IN	OUT	R	IN	OUT	R	IN	OUT	R	IN	OUT	R	
b/f			26			-			-										26
Date																			
1 Tuesday	-	-	26	-	-	-	-	-	-										26
2 Wednesday	-	6	20	-	-	-	-	-	-										20
3 Thursday	-	5	15	-	-	-	-	-	-										15
4 Friday	-	-	15	42	-	42	-	-	-										57
5																			
6																			101
7 Monday	-	-	15	-	-	42	44	-	44										93
8 Tuesday	-	8	7	-	-	42	-	-	44										82
9 Wednesday	-	6	1	-	5	37	-	-	44										81
10 Thursday	-	1	-	-	-	37	-	-	44										73
11 Friday	-	-	-	-	8	29	-	-	44										
12																			73
13																			67
14 Monday	-	-	-	-	-	29	-	-	44										67
15 Tuesday	-	-	-	-	6	23	-	-	44										62
16 Wednesday	-	-	-	-	-	23	-	-	44										59
17 Thursday	-	-	-	-	5	18	-	-	44										
18 Friday	-	-	-	-	3	15	-	-	44										
19																			51
20																			44
21 Monday	-	-	-	-	8	7	-	-	44										44
22 Tuesday	-	-	-	-	7	-	-	-	44										37
23 Wednesday	-	-	-	-	-	-	-	7	37										32
24 Thursday	-	-	-	-	-	-	-	5	32										
25 Friday	-	-	-	-	-	-													
26																			32
27																			26
28 Monday	-	-	-	-	-	-	-	6	26										20
29 Tuesday	-	-	-	-	-	-	-	6	20										17
30 Wednesday	-	-	-	-	-	-	-	3	17										
31 Thursday	-	-	-	-	-	-													17
c/f			-			-			17										

three months, hundreds of samples were dyed and tested against standards in the dyeing department's laboratory. During the screening stage of the work the samples were tested against the soft appeal approach indicated by the 1984 - 1985 fashion outlook, the theme being the importance of colour degradation patterns in five colours, matching new geometrical designs for both the acrylics and the wool collection. As a result of these policies the management of the company succeeded in restricting yarn colour shades to the essential level avoiding piling of stocks. Emphasis was given to what had to be dyed to meet the market needs for a fashionable outlook and, being market orientated it was possible to dye and spin colour shades of high and moderate demand in economic production batches.

Furthermore in the 1985 - 1986 colour shades collection there was additional effort to compromise on existing lines by following the successful practices and procedures adopted in the previous year. Thus, an extensive variety of colour combinations the acrylic shades were reduced to 17 while the wool shades remained at 14, although significant changes in colour shades took place going for a soft and gentle handle. The selected 31 colour shades in total for both acrylics and wool, accomplished the management's goal for a successful market approach to the new fashion outlook, in contrast to the 116 different colour shades in 1983.

Nevertheless, systems required continuous awareness of a fast changing environment and an on-going effort was required to improve facilities and provide the necessary and relevant data to the management of the company. During the implementation stage of the reformed management reports certain defficiencies had to be overcome and a concise monthly report was presented to the Board where major policy issues were discussed. The improved yarns inventory levels, as appears in **Appendices 83 A-B**, presented the prevailing picture at the end of April 1985 the total yarn stocks have been squeezed to 18,038 kgs reflecting the measures and policies.

Figure 6.3 provides the development during the 1978 - 1987 period of the annual yarn stock levels at their closing financial date. The rate of growth of the yarn inventories values although halted in 1984 grew once more in 1985 the major reason being that the purchasing cost of wool, significantly higher than acrylics, and despite the rationalization in the physical stocks breakdown the amount of tied capital in yarn stocks remained high. The yarn stocks were reduced significantly during the 1986 - 1987 period both in terms of volume and value, and reached levels well below the established buffer stocks. Financial limitations constrained production operations and reflected an overcapacity plant.

6.5.3 WORK IN PROGRESS

Work in progress at OR.SALIARIS S.A. consists of batches of fibres in the dyeing department during some stage of processing accomodated for relaxation purposes at the storage rooms following dyeing, or being processed for yarn manufacture in the spinning department. Materials have been transformed from fibres to web, slubbings to yarns in stages of operations allowing limited time for delays since there in a single processing line for dyeing and spinning. Fear of machine breakdown in the 'hot' bottleneck areas made the management of the company adopt intensive quality control schedules and maintenance programmes as will be discussed in the following chapter. After the weaving of the acrylic and woollen yarns to fabrics, work in progress is noticeable in the process stages of mending, finishing, cutting and end-finishing, as shown in **Diagram 6.1.** This is followed by end-products storage in the finished goods warehouses.

Work in progress in physical terms, as shown in **Appendix 79,** has remained throughout the 1978 - 1987 period at levels well below those of the

three main typed stocks: raw materials, yarns and finished goods. Their relative increase in the 1980's corresponds mainly to the introduction of the woollen blankets production in addition to the acrylics line. The semi-finished weight of a woollen Venus double blanket is about 3.5 kgs compared to main product, the Dralon double blanket for which the semi-finished weight is approximately 2.4 kgs. Furthermore, woollen blankets moved to and from the Trikala finishing plant and round-trip transportation takes place on average once a week. The printing of the woollen stamped double blankets is done in Athens. Thus material flows, as illustrated in **Diagram 6.1**, exist between the Thessaloniki, the Trikala plant, and the printing company in Athens. In the latter case the stamped woollen blankets were sent to the Trikala plant for finishing and back to Thessaloniki where cutting and end-finishing of all products takes place.

The major factor in the design of closed loop controls, for woollen blankets was the compromise between the lead time required for each process and the despatch of economic batches. The material flows efficiency, for the woollen range, could not achieve the material process rates for the acrylics. Woollen blankets require careful handling, since wool is considerably more expensive and sensitive to environmental conditions compared to acrylics.

Figure 6.4 highlights the long-run development, during 1978 - 1987 for the work in progress inventory levels as at 31st December, at the end of each financial year. Furthermore, **Appendix 78** illustrates the significant contribution of the work in progress value to the total inventory worth, over the 1983 - 1986 period when woollen blankets were produced next to the acrylics range. The decline by the end of 1987 was due to a management policy to restructure operations management.

FIGURE 6.2: OR. SALIARIS S.A. BLANKET MANUFACTURE.
ANNUAL RAW MATERIALS STOCK LEVELS AS AT 31st DECEMBER

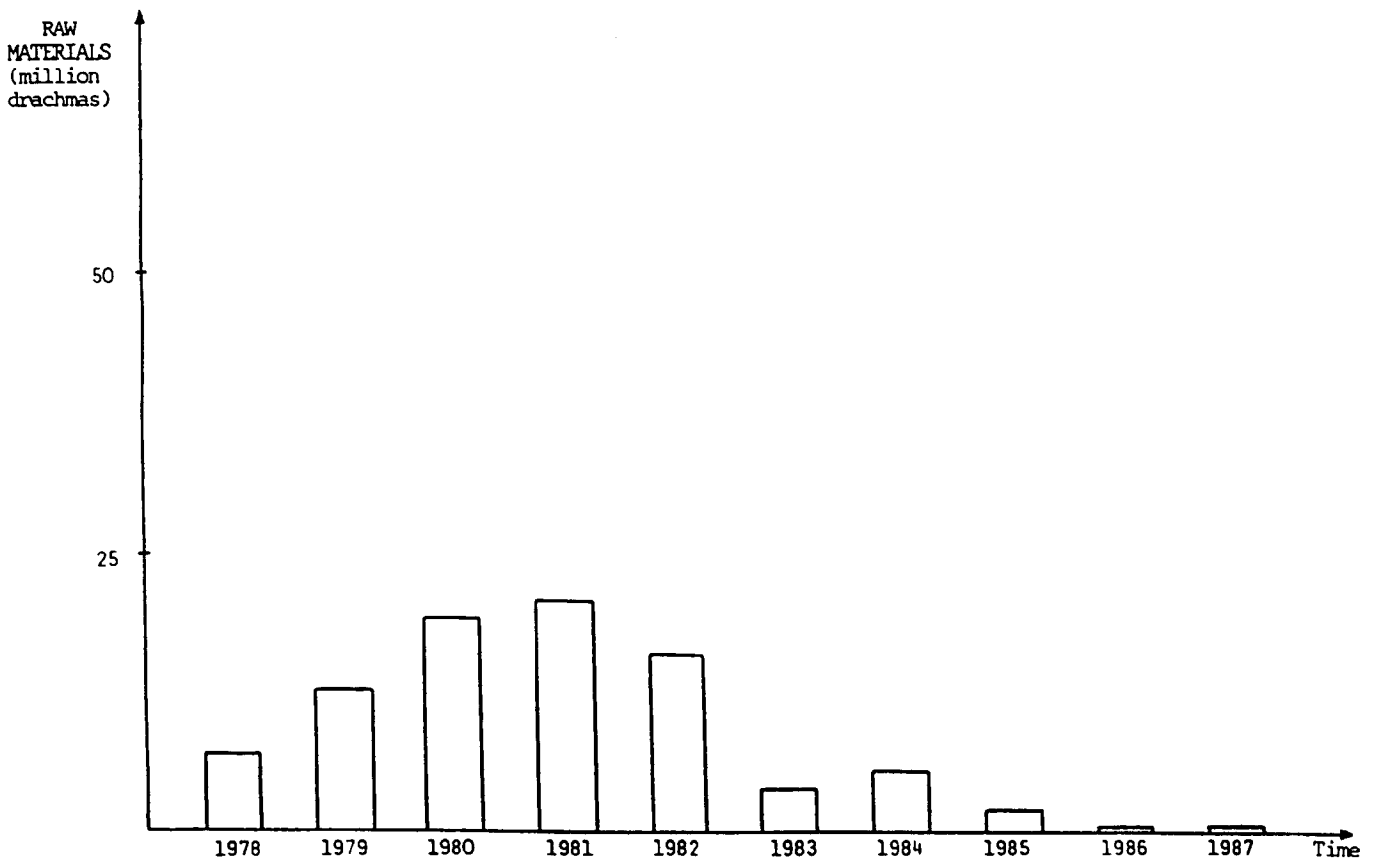


FIGURE 6.3: OR. SALIARIS S.A. BLANKET MANUFACTURE.
ANNUAL YARN STOCK LEVELS AS AT 31st DECEMBER

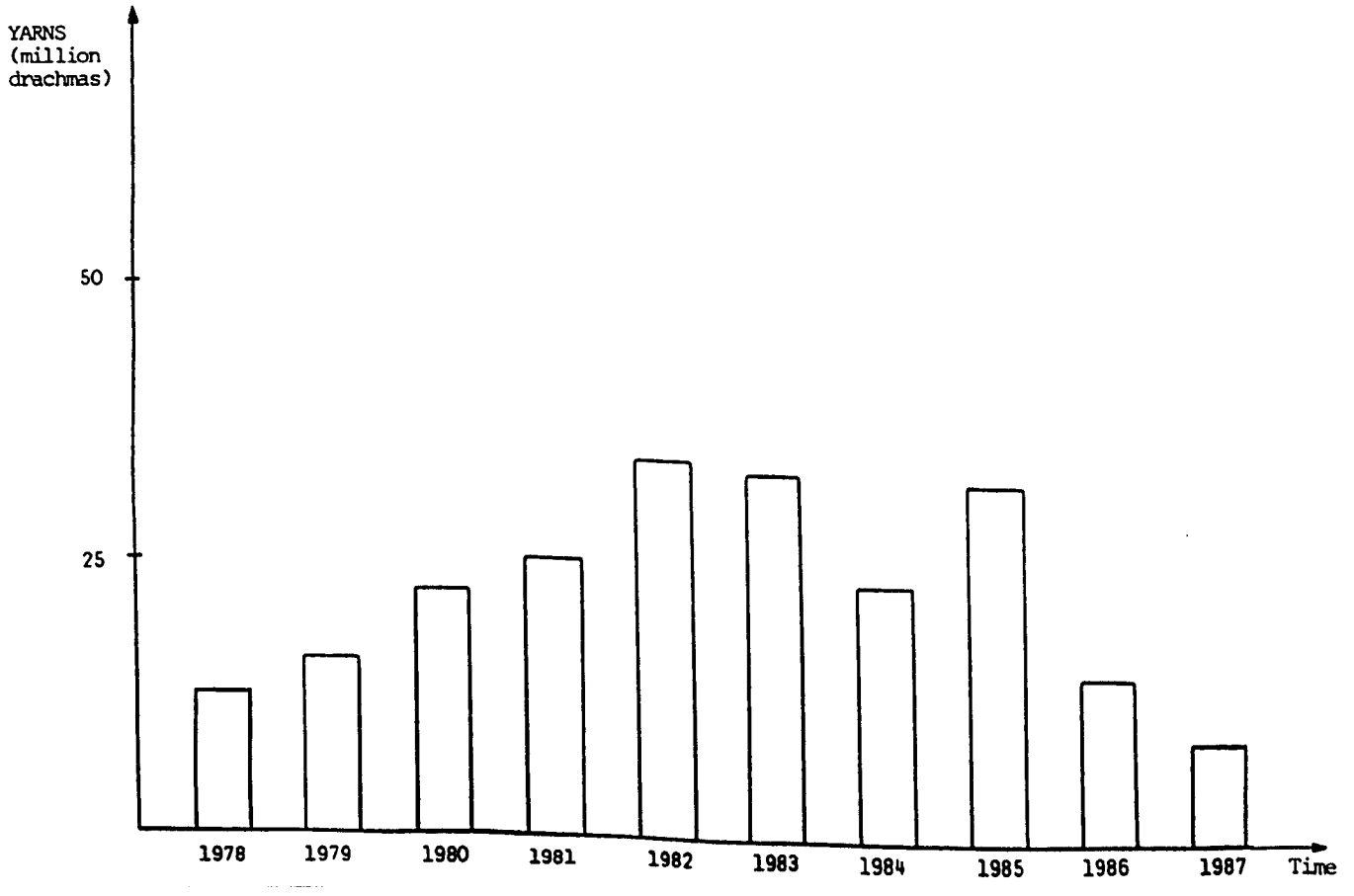
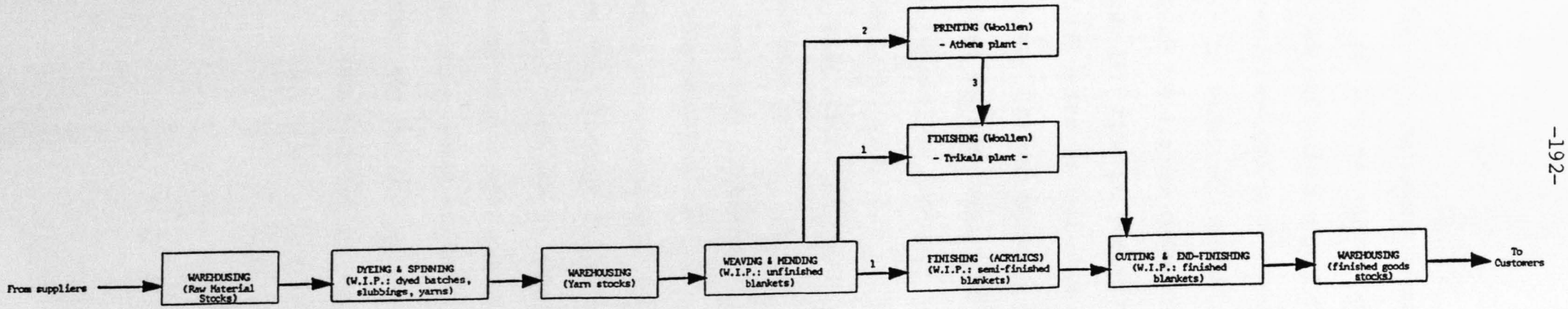


DIAGRAM 6.1: OR. SALIARIS S.A. BLANKET MANUFACTURE.
BUILD-UP OF WORK IN PROGRESS THROUGH THE SYSTEM



Notes:
1. jackquard design fabrics (multi-colour)
2. plain weave fabrics (uni-colour)
3. stamped fabrics (multi-colour)

→ MATERIALS FLOW

6.5.4 FINISHED GOODS

In the early 1980's the management encouraged demand in the home market by the provision of greater variety of blankets in terms of designs, colour combinations and packaging profile. Since supply exceeded demand, the end result was a fast growth of the company's inventory levels of finished goods both in terms of volume and value. **Appendix 79** highlights the magnitude of the problem quite clearly. From 46,720 units in stock in the end of the 1979 finacial period the total volume inventory of blankets rose to 82,396 units in 1981 remaining almost flat in 1982 when at 31 December there was a slight increase to 84,421 units. In value terms the prevailing picture was even worse. From a total of 20.7 million drachmas back in 1979 the figure increased steadily to 74.8 million drachmas at the end of 1982, as illustrated in **Appendix 78.**

It was evident that effort was required to establish inventory control over the finished goods stocks. At the initiation of the work, in early 1983, there have been both allocation and storage problems. There was an inability to provide immediate answers to such questions as: what was stored and where, why a certain quality, design or colour combination was selected, what were the criteria in decision making regarding the total finished goods flows. There was no information on when a line of goods entered a given warehouse, or what was actually the stock level at any time. These inefficiencies added to the prevailing problems; at one end a declining home demand and the other growing productivity through the production line which resulted in increasing inventory.

6.5.4.1 DESIGN OF REFORMED WAREHOUSING FACILITIES

The first task was to modernize the warehousing facilities, and impose a policy regarding the in/out of the mobility of stock. An area of $2,500m^2$ was allocated in the new plant for the storage of the finished goods. The drawings of the warehouse were studied by the author. Factors such as aisle widths were taken into account in designing the location of the finished goods storage facilities. Over a four month period the warehouse floor was racked using dexion (see **Drawing 6.2**). Dralon single and double blankets, Superfil, Velour, Elacryl double and single and the Mantacryl double and single blankets were stored in new warehouse A in the $2,500m^2$ area. The storage facilities seemed excellent for the accomodation of the five blanket boxes. On the A4 side of the warehouse 30 dexion compartments were installed for the accomodation of the Dralon double blankets while opposite them in the A3 side the Dralon single boxes were stored in 15 dexion compartments. The remaining product qualities were accomodated in the other locations as shown in **Drawing 6.2.**

The breakdown of the finished goods was accomplished in terms of designs and colour combinations. Each compartment had a maximum storage capacity of 72 boxes in the lower deck while another 72 could be stored in the upper deck. Given a maximum storage capacity of 12,960 boxes, or 64,800 blankets there seem to be no problem in orderly and efficient storage of finished goods. Taking into account that the cover factor of the area would not exceed 65%, there was adequate space for 42,120 blankets to be stored throughout warehouse A. Each compartment had a card which indicated what was to be situated in the specified area in terms of product quality and design. Within that area there was a further breakdown in terms of colour combinations.

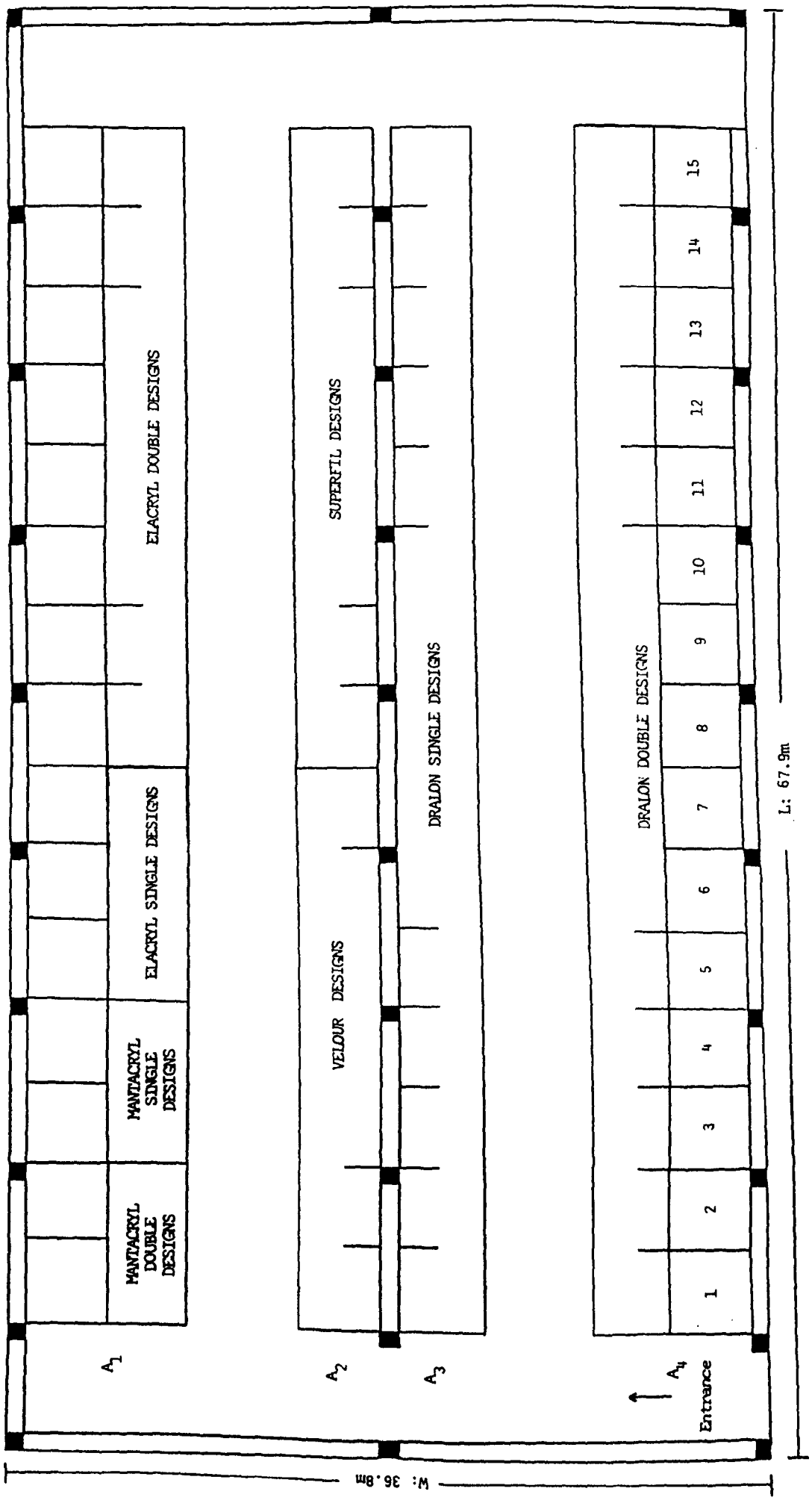
Each box entering the warehouse had all necessary and sufficient information regarding the content in terms of design and colour combination written on it. In addition, from 1983 a code was attached which indicated the month and year of production. Thus a box marked All indicated that the goods were manufactured in November 1983. It became possible to know exactly how long each box was stored in the warehouse, while it was also feasible in case of customer complaint or during random quality control sampling of the finished goods to trace the production batch. Work done in this area will be presented in the next chapter.

The transportation of goods in the warehouse was done by means of a fork-lift truck which carried a specially designed platform. Access to the stockroom was limited to the despatch departments's personnel and the senior management of the company. Particular emphasis was given to the improvement of the storage facilities; safety regulations, proper lighting, telephone installation, insurance of goods, clear corridors, and tidy and clean enviroment. The aim was to safeguard the finished goods flows during their movement and storage. The despatch manager of the company was responsible for the assembly of the blankets, and the supervision of in-works transportion, stockeeping and finished goods packaging.

Apart of the main finished goods warehouse located opposite the factory, there were three small warehouses in the main building next to the end-finishing department. Storage area B, 465m^2, was to woollen double and single blankets, packed in boxes of 5 pieces each, storage area C, 280m^2, where all the defective blankets were stored and storage area D, 190m^2, where the Elacryl and woollen teenage and baby blankets were stored in boxes of 8 and 20 pieces respectively.

DRAWING 6.2: FINISHED GOODS WAREHOUSE A

OR. SALIARIS S.A.
BLANKET MANUFACTURE



Woollen blankets, being very delicate, require excellent storage facilities; using only artificial light to prevent yellowing of wool, constant room temperature, and non-humid environment. Their excessive weight suggested limited transportation. The value of the woollen blankets was an additional constraint since transportation could damage the product.

As far as the teenager and baby blankets were concerned there was the problem of their packaging which would have created allocation problems if were to be placed in warehouse A where boxes of 5 pieces were stored. Finally the defectives, specific samples and products needed to be accommodated near to the despatch department, enabling day-to-day pressure for the management to sell them.

6.5.4.2 DOCUMENTATION AND CONTROL. REPORTING SYSTEMS

Following the organisation of the warehouses it was necessary to establish a finished goods inventory ledger (in/out system), which would provide all required data about the mobility of the stock. **Table 6.6** provides an example for the case of the Dralon double blanket, design 930, produced in four colour combinations: 105, 108, 124 and 136. The system operated on individual cards for each product quality design. It covered a calendar month and then it was carried over to the following period. All individual transactions on a daily basis were recorded by the stock-controller, supervised by the author and reported to the sales department as shown in **Diagram 6.2.** The readings represented the number of boxes entering or despatched from the finished goods warehouse. It became possible to know in detail at any given moment what was actually in stock and where it was located. Furthermore it was easy to find out for how long a given product has been in stock and appropriate measures could

TABLE 6.6: *FINISHED GOODS INVENTORY LEDGER (IN-OUT SYSTEM)*

OR. SALIARIS S.A.
BLANKET MANUFACTURE

Quality: Dralon Double Design: 930
Dimensions: 190 x 230 cm Weight/Unit: 2,480 grms

Year: 1985
Month: October
Warehouse: A
Carton boxes of 5 pieces

FINISHED GOODS INVENTORY LEDGER (IN-OUT SYSTEM)

	COLOUR:105			COLOUR:108			COLOUR:124			COLOUR:136			COLOUR:			COLOUR:			COLOUR:			TOTAL INVENTORY BY THE END OF THE DAY
	IN	OUT	R	IN	OUT	R	IN	OUT	R	IN	OUT	R	IN	OUT	R	IN	OUT	R	IN	OUT	R	
b/f			91			34			62			84										271
Date																						
1 Tuesday	91		91	42		42	74	3	71	88	12	76										280
2 Wednesday	99	5	94	46	9	37	71	4	67	76	4	72										270
3 Thursday	94		94	37		37	67		67	72		72										270
4 Friday			94			37			67			72										270
5																						
6																						
7 Monday	94		94	37		37	67		67	72		72										270
8 Tuesday	94	14	80	37	12	25	67	9	58	72	17	55										218
9 Wednesday	80		80	25		25	58		58	55		55										218
10 Thursday	80	2	78	29	7	22	64	3	61	59	6	53										214
11 Friday	86	37	49	34	19	15	77	12	65	61	25	36										165
12																						
13																						
14 Monday	57		57	27		27	65	1	64	40		40										188
15 Tuesday	57		57	27		27	64		64	40		40										188
16 Wednesday	57	12	45	27	7	20	64	9	55	40	14	26										146
17 Thursday	45		45	20		20	55		55	26		26										146
18 Friday	45	19	26	20	10	10	55	13	42	26	12	14										92
19																						
20																						
21 Monday	26		26	22		22	42		42	22		22										112
22 Tuesday	38	23	15	30	7	23	42	11	31	22	14	8										77
23 Wednesday	15		15	23		23	31		31	8		8										77
24 Thursday	15	9	6	23	11	12	31	14	17	8	8	-										35
25 Friday	6		6	12		12	17	2	15	-		-										33
26																						
27																						
28 Monday	22	2	20	16	1	15	15	3	12	16	12	4										51
29 Tuesday	32	11	21	19	3	16	16	7	9	4	4	-										46
30 Wednesday	21		21	23	2	21	9		9	-		-										51
31 Thursday	21	5	16	21		21	17	2	15	8	3	5										57
c/f			16			21			15			5										57

be taken when the monthly report, of finished goods inventory levels, reached the Board of Directors. The documentation and reporting system was introduced in the last quarter of 1983 and continued ever since with necessary modifications and improvements.

Appendices 84 A-D present the monthly report on the finished goods breakdown for September 1983. This original report was designed on A3 covering all product qualities, designs and colour combinations for the finished goods in stock. From a total of 84,421 pieces of blankets at the end of the 1982 financial year, as shown in **Appendix 79,** the total number in stock at 30.9.1983 was down to 43,170 pieces, but during the peak sales period the company was unable to minimize its total inventory of finished goods, due to the growing recession in Greece and the decline in home demand for household textiles. As a result the total number of blankets in stock at 31st December 1983 reached 67,232 pieces, a 20.4% reduction compared with the previous year.

In late 1983 there were 13 product qualities, 80 different designs and 406 colour combinations in total. The magnitude of the problem was significant, since many of the blankets in stock had insignificant or no demand at all. There had to be rationalization and careful planning during the selection of the new blankets' collection. **Appendix 85** illustrates the breakdown of the 1984-1985 collection, where it can be seen that there were 8 new designs, considerable modifications in the acrylics and an attempt to improve the woollens. The management's scrutiny of the designs/colour combinations range resulted in the 1984-1985 collection in having 19 different qualities 44 designs and 204 colour combinations. Although the qualities increased from 13 to 19 the designs/colour combinations range declined by half in an attempt to

establish greater control over the finished goods inventories and at the same time provide a high quality range to the company's customers.

6.5.4.3 IMPLEMENTATION OF MODIFIED PROCEDURES

In an effort to improve the management awareness of the finished goods inventory problem, the in/out of stock ledger was providing information for company stock holding policy. At the end of each month a full report on the prevailing situation was issued illustrating the breakdown of the stocks. It was thought that the A3 presentation was not the most convenient and as a result the finished goods inventory levels on a monthly basis were modified to A4 format.

Appendices 86 A-E illustrate the finished goods stocks report where all the qualities were presented seperately in terms of designs and colour combinations. The September 1984 report showed a total of 19,114 pieces in stock compared to 43,180 pieces at the same period during 1983. The significant decline was mainly due to the decision to introduce a seperate monthly report on the out of collection finished goods inventory levels which included withdrawn designs and defectives. The corresponding monthly report of September 1984, shown in Appendices 87 A-C, indicated another 8,646 pieces in total, 3,261 blankets being defective. Thus the company's finished goods policy produced a 35.7% drop between September 1983 and September 1984.

Real de-stocking of tails of goods, defectives and withdrawn designs was possible in 1985 only by the means of sales incentives, quantity discounts and exports at reduced prices. Finished goods stock levels declined both in physical and value terms.

In October 1984 the new factory premises were sold to meet financial obligations and as a result new warehousing procedures adopted in the old plant. Warehouse A was transferred to the ground floor of the

main building below the stock areas C, B and D. The dexion system of warehousing was introduced in all four warehouses and in addition a conveyor was used to transfer boxes from the upper to the lower floor level in the new warehouse A ($260m^2$). The same principles as before were adopted. Entrance to the warehouses was limited to authorized personnel and the senior management. Given the limitations in space, there had to be a number of modifications in the storage of the various qualities. Thus storage area A provided for the Superfil and Velour blankets; storage area B ($465m^2$) for the Dralon double and single blankets; storage area C ($280m^2$) for the Elacryl and Mantacryl double and single blankets. Storage area D ($190m^2$) was used for the woollen blankets. In an area next to the end-finishing department; warehouse E ($430m^2$) was designed, where Elacryl and woollen teenager and baby blankets were stored while in the other dexion compartments all the remaining tails of goods were placed. These alterations created some problems at first, but the system was soon in operation again and in every compartment there was a card indicating the quality, design and colour combinations while the in/out of stock system continued to operate throughout the period.

The considerable reduction in the stock levels enabled these tranformations to take place in an orderly manner, but there was no room for excessive numbers of blankets. Given a 65% storage cover factor the corresponding maximum number of blankets allocated to the warehouses A, B, C and D were: 5,500, 9,900, 6,000 and 4,100 pieces respectively a total of 25,500 blankets for the main product range. In warehouse E adequate space was provided for the storage of up to 9,200 pieces for the baby and teenager blankets in one side and the defectives in the other. Obviously limitations existed compared to the new building's storage area, since the

corridors between the dexion compartments were narrower, but unecessary movement of the finished goods stocks was reduced since transportation took place within the same building. A number of deficiencies, particularly in the assembly of orders for despatch had to be resolved, but the system was implemented and improved to match the new reduced warehousing facilities. Statistical data regarding the mobility of stock was readily available, while the monthly progress reports indicated a gradual reduction of all tails of goods, as in the case of the yarns of insignificant or no demand.

Following a period of destocking by means of discounts and special offers a new initiative in the design of the new collection was required. The fashionable outlook of the 1985-1986 collection, the soft colour shades along with the new geometrical and asymmetrical designs made a breakthrough in the home market. **Appendices 88 A-C** illustrate the corresponding designs and colour combinations collection, where in both acrylics and wool a total of 18 qualities, 41 designs were presented in 150 colour combinations. The value of the company's finished goods having increased constantly ever since 1978, when OR. SALIARIS S.A. went public, as shown in **Figure 6.5**, reached its peak in 1983, 84.4 million drachmas worth. Following the liquidation of the old stock lines and the consistent de-stocking policy it was made possible to achieve a reduction (both physical and financial) in the inventory levels during 1985-1987, having reached a total of 10,755 pieces, 24.2 million drachmas worth in 1987 as shown in **Appendices 78 and 79 respectively.**

FIGURE 6.4: OR. SALIARIS S.A. BLANKET MANUFACTURE
ANNUAL WORK IN PROGRESS STOCK LEVELS AS AT 31st DECEMBER

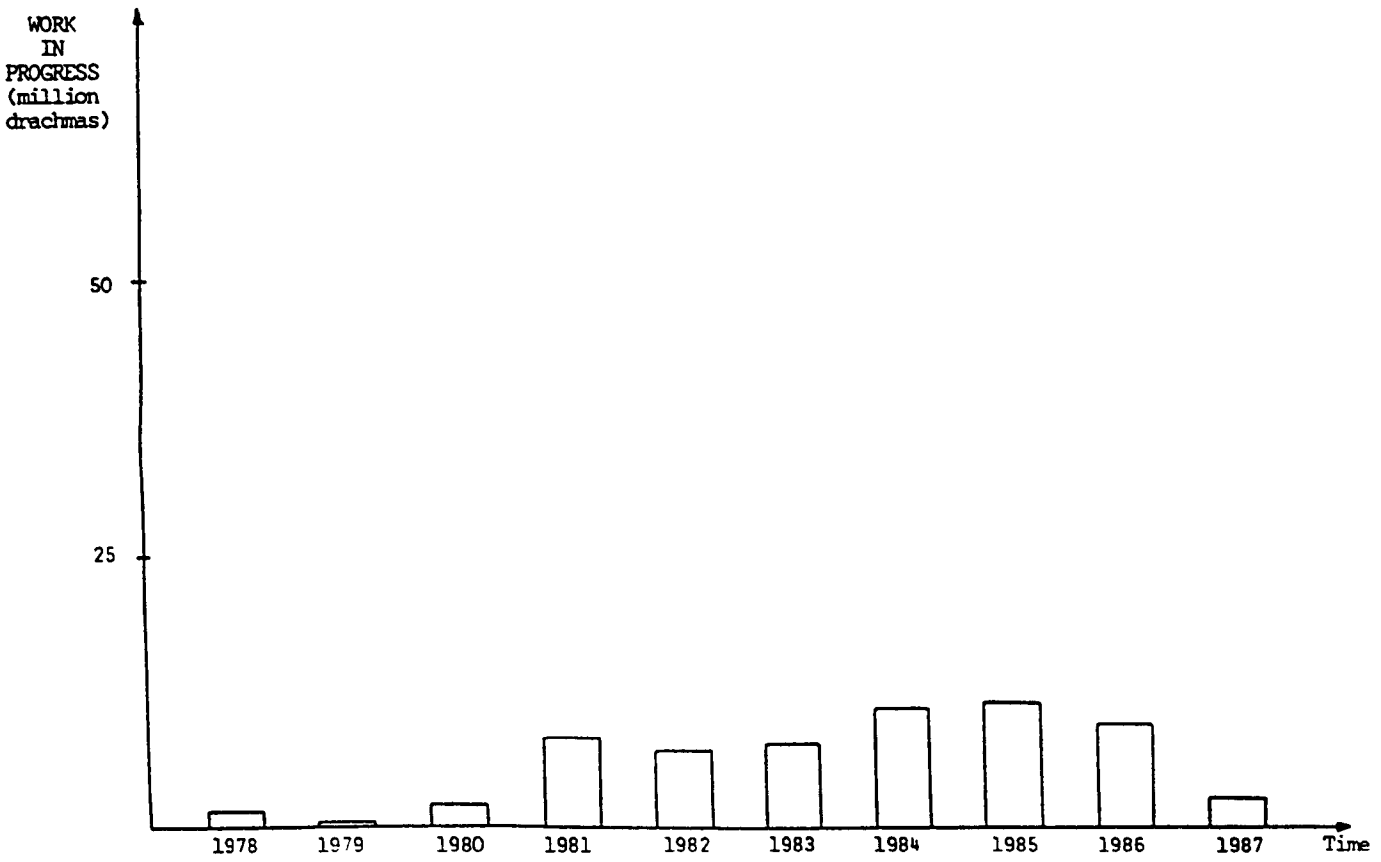
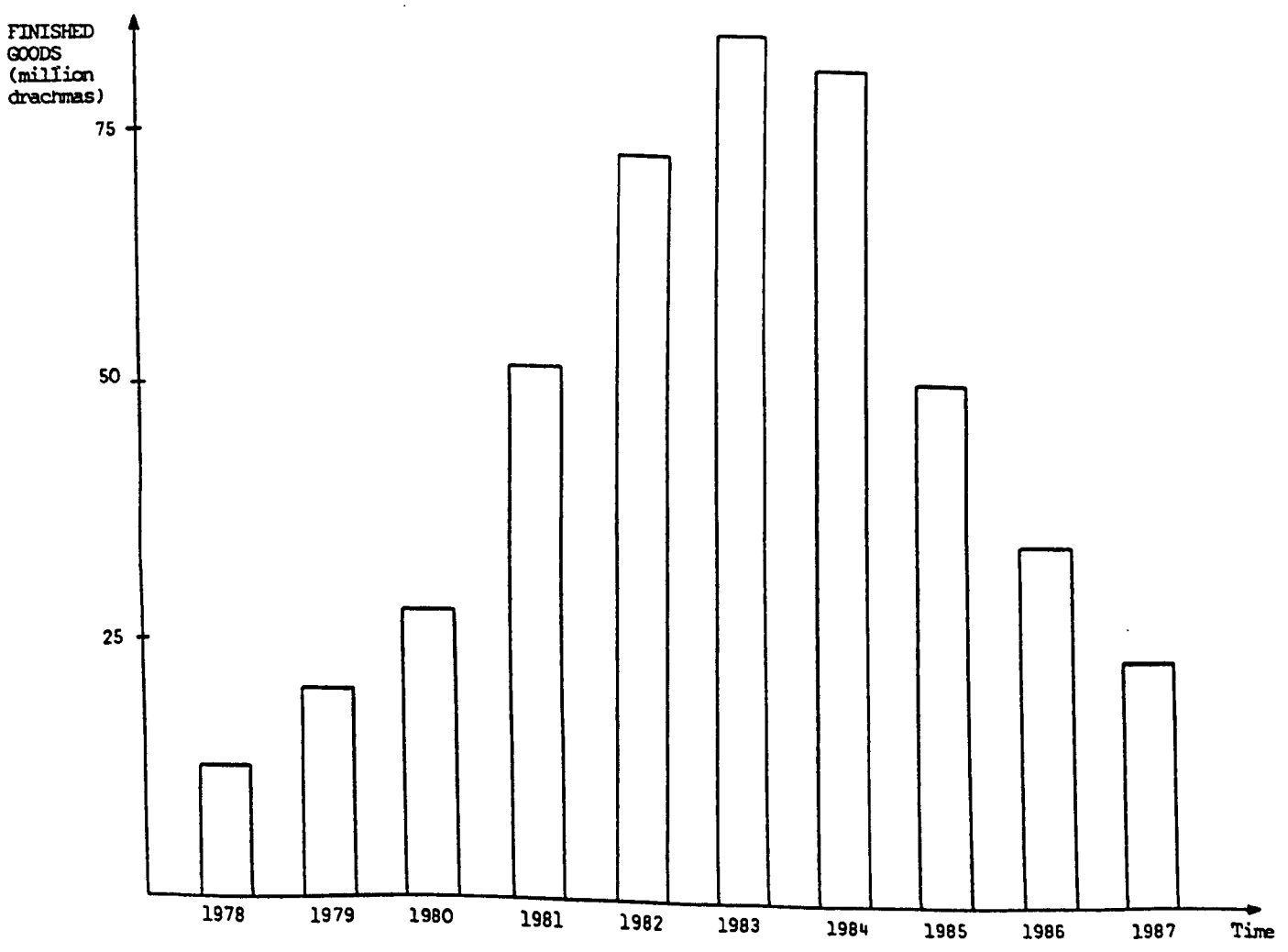


FIGURE 6.5: OR. SALIARIS S.A. BLANKET MANUFACTURE.
ANNUAL FINISHED GOODS STOCK LEVELS AS AT 31st DECEMBER



6.5.5 OTHER MATERIALS

In blanket processing there are additional material flows within the system. The major group of such materials are presented in the company accounts as process additives. Among them are chemicals used in the production process throughout the system, spare parts for machinery, threads, ribbons and labels, warp beams and jackquard designs' punch cards.

6.5.5.1 PROCESS CHEMICALS

In the case of the chemicals such as: softeners, dyestuffs, acids, bleaching agents, lubricants, anti-statics, moth-proof additives, detergents, and cleaning liquids there is a warehouse in the dyeing department where all of them are stored. The materials were recorded and organized efficiently while the stock-keeping was done by the head of the dyeing department. Re-order levels were established which had to be modified from time to time depending on the workload of the production line. For chemicals going to the various departments there was a procedure for issue of an order by the head of the appropriate department, approved by the chief of technical services. In-coming chemicals needed the approval of the financial department on the suggestion by the stock-keeper that a re-order level had been reached.

6.5.5.2 SPARE PARTS

The spare parts warehouse covered only the necessary and basic components such as gears and belts. The company's maintenance team issued an order for the required materials to the finance department on the approval of the chief of technical services. There was no need to invest heavily in components since there is quick service from the local market. As discussed in the following chapter there were weekly, monthly basic

maintenance schedules while the main maintenance of all machinery took place annually, during the holiday period. Prior to that orders of expensive spare parts such as garnitures for the spinning and finishing departments were placed with manufacturers. The procedure involved the technical and financial management of the company having to examine the required expenditure alternatives.

6.5.5.3 RE-CYCLED WASTE

In the case of the spinning department's re-cycled waste: card slubbing, spinning and winding ends the materials were gathered following each production batch, packed in white plastic bags and stored in dexion compartments next to the fearnaught machine to be used at a later stage. Each plastic bag, as in the case of the yarns, had the batch code number, the production characteristics: quality, colour and shade, reported in a ledger in the production scheduling department. The sequence of operations, demanded a considerable lead time for the materials stored in the spinning department. These were to be used only in a blend of the same specification. This could take from 15 working days up to three months. Nevertheless these stocks would be dyed black for low priced yarns sold to local manufacturers of woven handicraft textiles. Since the demand for such yarns varied seasonally there was a documentation and reporting system for these stocks in terms of volume and value. At a later stage other options were explored when the company started trading yarns to a wide range of customers.

6.5.5.4 WARP BEAMS

The company purchased cotton oped-end yarns of count Ne 14 and wool worsted ring-spun yarns of count Nm 2/32 which were used in weaving as warp yarns. Although such yarns contributed about 10% by weight they correspond to a significant component in blanket processing. At a time when the factory was operating on a three-shift basis there had to be stocks of warp beams always available, since there was a warp beam change almost every day. Their usage rate on a three-shift basis lasts approximately one calander month, or about 20 working days.

Table 6.7 illustrates the adopted in/out of stock documentation procedure for the single, double and extra-double warp beams. The technical specifications of each in-coming beam was reported in the ledger under the appropriate card, in addition to the date of arrival and storage in warehouse A next to the weaving shed. The out-going warp beams movement was reported in the ledger, thus providing closed-loop control of information to the production scheduling department of the company. Eventhough re-order levels were difficult to set, given the seasonality of the weaving department's operation in recent years, adjustable buffer stocks were decided by the management of the company, and as a result at least one type of warp beam is held in stock at all times.

In the case of cotton yarns used for warp in the acrylic blanket processing, sizing and beaming is subcontracted while for wool yarns warping takes place on the company's premises. In each case the lead times involved between issuing an order and having the warp beam stored in the warehouse is less than 10 working days on average.

TABLE 6.7: WARP BEAMS INVENTORY LEDGER (IN-OUT SYSTEM)

OR. SALIARIS S.A.
BLANKET MANUFACTURE

Year: 1985
Page: 1

WARP BEAMS INVENTORY LEDGER (IN-OUT SYSTEM)

	TYPE OF WARP BEAM : S - D - E/D				LOOM : SOMET			
	Raw Material : 100% Cotton O.E. yarns Yarn Count : Ne 14 No. of Threads : 2,430 Running Meters : 3,782 Net Weight (kgs) : 492.7		Raw Material : 100% Cotton O.E. yarns Yarn Count : Ne 14 No. of Threads : 2,430 Running Meters : 3,857 Net Weight (kgs) : 502.5		Raw Material : 100% Cotton O.E. yarns Yarn Count : Ne 14 No. of Threads : 2,430 Running Meters : 3,740 Net Weight (kgs) : 487.2		Raw Material : 100% Cotton O.E. yarns Yarn Count : Ne 14 No. of Threads : 2,430 Running Meters : 3,912 Net Weight (kgs) : 509.6	
	DATE	ALLOCATION	DATE	ALLOCATION	DATE	ALLOCATION	DATE	ALLOCATION
IN (To The Warehouse)	16.01.85	Warehouse A	16.01.85	Warehouse A	16.01.85	Warehouse A	12.02.85	Warehouse A
OUT (To The Weaving Shed)	7.02.85	Loom 3	19.02.85	Loom 11	26.02.85	Loom 4		Loom

	TYPE OF WARP BEAM : S - D - E/D				LOOM : SOMET			
	Raw Material : 100% Cotton O.E. yarns Yarn Count : Ne 14 No. of Threads : 2,430 Running Meters : 3,717 Net Weight (kgs) : 484.3		Raw Material : Yarn Count : No. of Threads : Running Meters : Net Weight (kgs) :		Raw Material : Yarn Count : No. of Threads : Running Meters : Net Weight (kgs) :		Raw Material : Yarn Count : No. of Threads : Running Meters : Net Weight (kgs) :	
	DATE	ALLOCATION	DATE	ALLOCATION	DATE	ALLOCATION	DATE	ALLOCATION
IN (To The Warehouse)	12.02.85	Warehouse A		Warehouse		Warehouse		Warehouse
OUT (To The Weaving Shed)		Loom		Loom		Loom		Loom

6.5.5.5 JACKQUARD DESIGNS

In the case of jackquard design' punched cards, a thorough control was required since their replacement value varied from 100 to 200 thousand drachmas. Furthermore there have been so many designs in recent years, that there was general confusion on design code numbers, or where a particular one was stored. In addition such punched cards are delicate and require good conditions to be preserved and remain operational. In case of minor or major problems the end result could be a repetiton of a sequence of faults in the weaving loom.

Thus it was important to create a stock-room for the punched cards where warehousing conditions would be appropriate. Hence, the total number of designs, were marked and coded, packed in individual packages and accomodated in dexion compartments in an area next to the weaving shed. With all characteristics written on them the possibility of weaving the wrong pattern was diminished. It should be noted that one reason for an increased number of defectives or unsaleable blankets was weaving of the wrong design, usage of wrong colour combinations, or use of defective punched cards sets.

Appendices 89A-B present the business designs classification for the 1985-1986 collection, a total of 40 different code numbers; their characteristics being reported and documented in a ledger. Issues such as design grouping, quality and type, year of introduction, and the number of punched cards' sets in stock were mentioned for each individual case. Furthermore, the head of the department had to present monthly reports on operational conditions, allocation and storage. Necessary implementation was carried out by the author following consultation with the technical management of the company. **Appendices 90A-D** illustrate the complete ledger of the withdrawn designs, the punched cards breakdown, design

characteristics and life cycle. The procedure was implemented annually when the Board of Directors made policy decisions on the creation of the following year's collection.

6.5.5.6 THREADS, RIBBONS AND LABELS

Materials such as threads, ribbons and labels are employed in the end-finishing department. The author studied usage patterns, quality characteristics and location, and recommended a storage area, next to the production processing line. Having classified these according to their demand, they were stored in dexion compartments. The materials of insignificant, or no demand were either sold or used on special occasions.

A ledger was created reporting the in/out of stock movements, on a daily basis. This was the responsibility of the head of department. By the end of 1984 all tails of stock, obsolete material, unfashionable colours, or withdrawn materials, were fully utilized. Furthermore, re-order levels were established for products while the quality control procedures introduced were a prerequisite for all in-coming materials, prior to their allocation to stock.

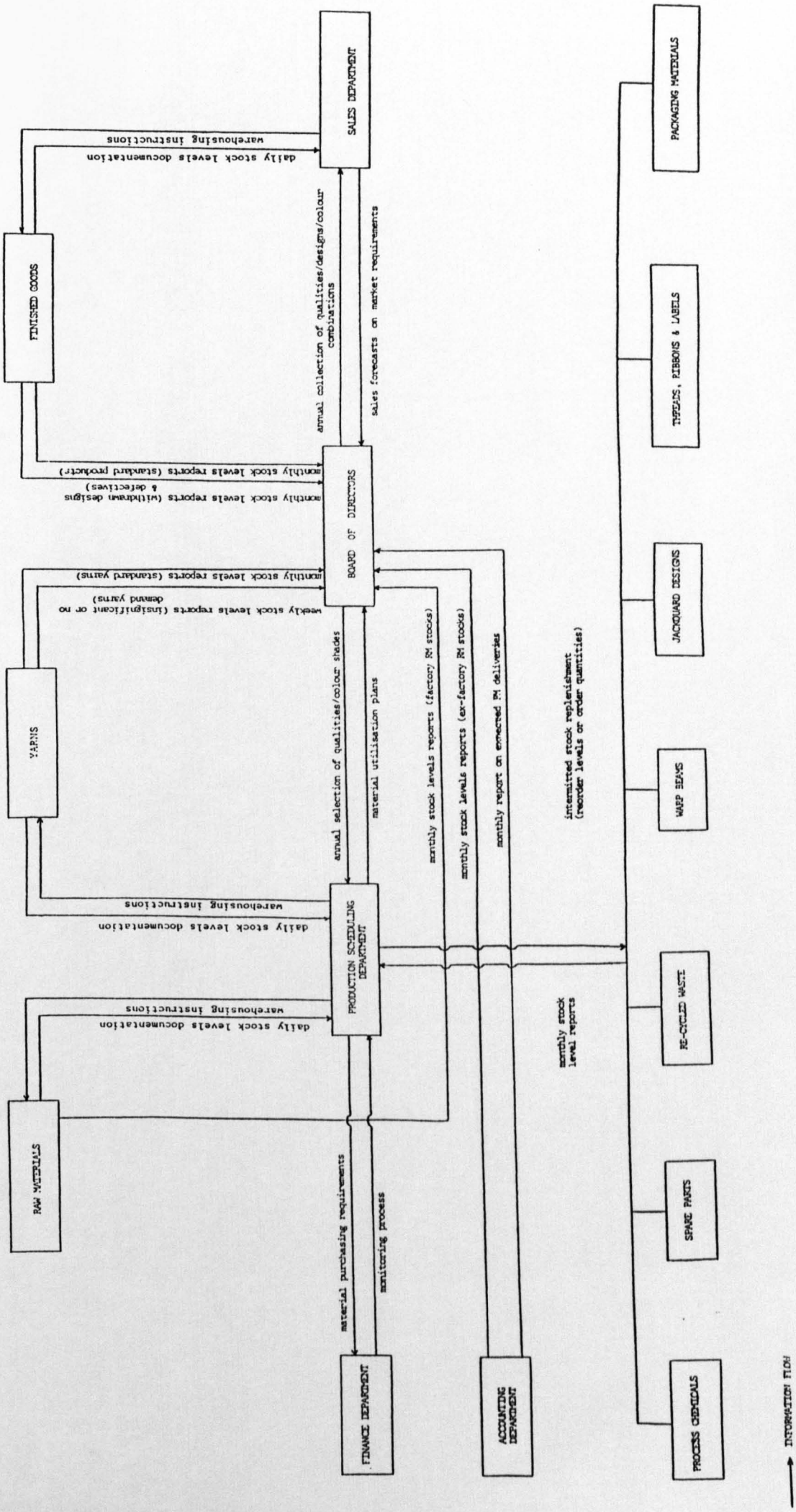
6.5.5.7 PACKING MATERIALS

Finally, another area of importance in materials management at company level was the packaging materials. The two main classifications were the plastic bags used in yarns and blankets, and the boxes employed for the finished goods. In the first case a ledger was designed for recording the in/out of stock material movement, while re-order levels were established for each colour shade of plastic bag. Since there was the opportunity to select among a number of suppliers in the local market there was no need to hold excessive stocks. Low re-order levels were

selected, and the tied capital in this type of stock was reduced. On the other hand, in the case of boxes the situation was out of control. Thirteen different types of boxes were in use in early 1983, with huge stocks which were disorganized. It was clear that rationalization was required. The boxes were classified into two main categories, the ones currently in use and the remaining ones were withdrawn.

Ledgers were adopted indicating the mobility of the stock, instructions were issued by the management for the use of the withdrawn boxes and by the end of 1984 there were none left in the packaging materials warehouse. The author designed four new types of boxes for multiple use, and, using special designs on the side of each box it was possible for the Dralon, Elacryl, Mantacryl and woollen Venus double blankets to be stored in the same type of box rather than in four different ones. The same applied for the single blankets. In the third type of box Superfil and Velour blankets were stored, while in the fourth carton box the teenager and baby blankets. In the first three types of boxes the finished goods were stored in multiples of 5 pieces, whereas in the latter there were 8 pieces in for teenager blankets and 20 pieces for the corresponding baby blankets. Having minimized the overall stock levels, re-order levels were established for each type of box while by transferring all finished goods warehousing to the main building there was an improvement in damage through transportation.

DIAGRAM 6.2: OR. SALIARIS S.A. BLANKET MANUFACTURE.
INFORMATION FLOW IN INTEGRATED MATERIALS HANDLING SYSTEMS



CHAPTER 7

PRODUCTION AND OPERATIONS MANAGEMENT

7. PRODUCTION AND OPERATIONS MANAGEMENT

7.1 THE SUB-SYSTEMS

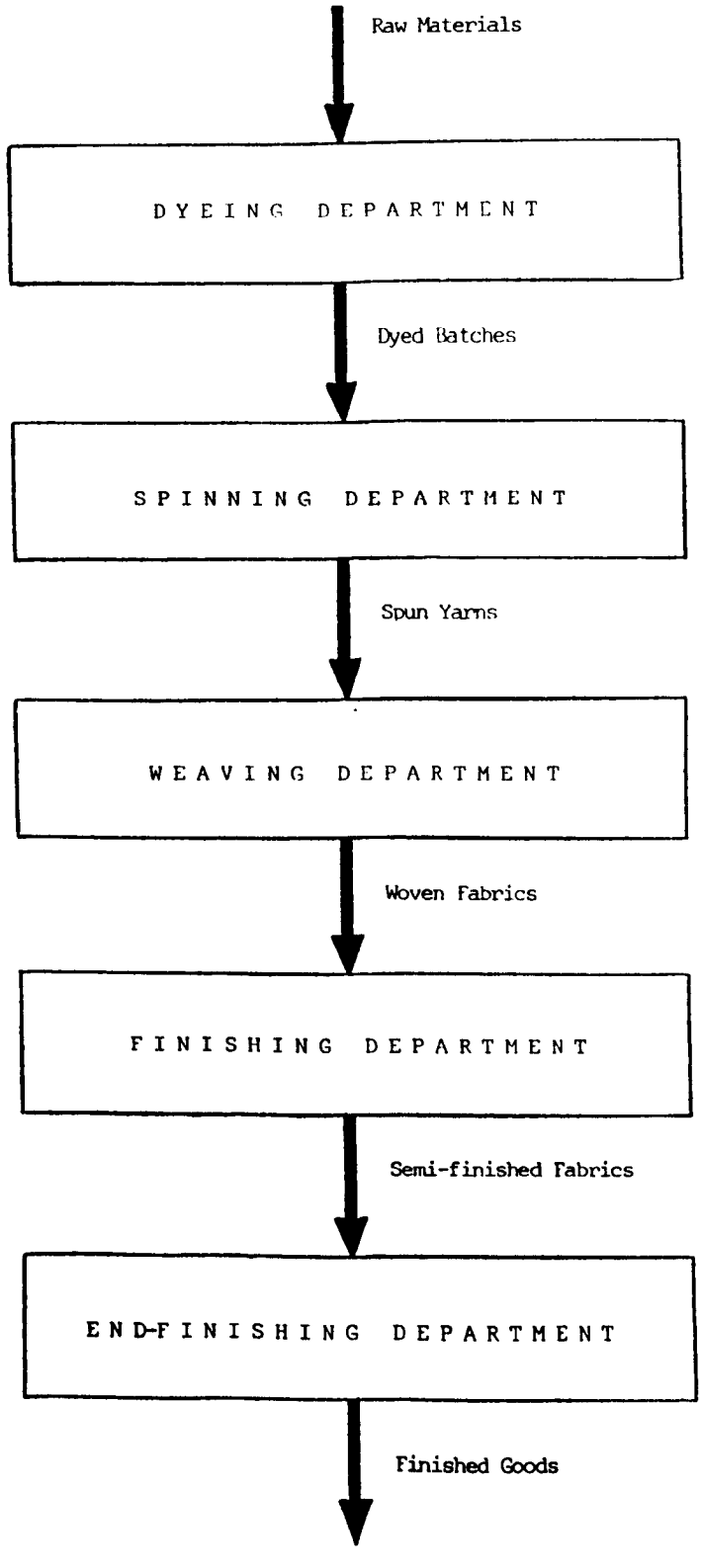
Throughout the system a sequence of operations are carried out whereby the in-coming raw materials, acrylic and wool fibres, are dyed and spun into yarns, woven into fabrics and finally finished into the end-products: blankets. As a modern vertical blanket manufacturing company, OR. SALIARIS S.A. employs a wide range of machinery and equipment in the production processes of dyeing, spinning, weaving, finishing and end-finishing, in the manufacture of acrylic and woollen blankets.

The production flow block diagram is illustrated in **Chart 7.1** where the processing operations are shown. The manufacturing process is highly integrated and all activities interdependent. The complexity of interactions within the organisation and between its different components caused management's concern to modify procedures to establish a coherent production methodology by critical examination of the company's manufacturing operations.

7.1.1 THE DYEING DEPARTMENT

The dyeing department is one of the most capital-intensive sub-systems and least labour-intensive of the organisation. It employs a 86.5 HP high pressure and temperature dyeing machine where different type of fibres, or fibre blends are dyed to any desired colour shade. The dyeing plant was installed in 1975 and has provided the company with a significant degree of flexibility in the processing of a wide range of raw materials. The successful launch of both the acrylics and woollen collections in the home market used existing dyeing facilities. Colour shades and colour matching is performed in test batches in the laboratory apparatus followed by half, or a quarter of a production batch in the

CHART 7.1: OR. SALIARIS S.A. BLANKET MANUFACTURE. PRODUCTION FLOW. BLOCK DIAGRAM

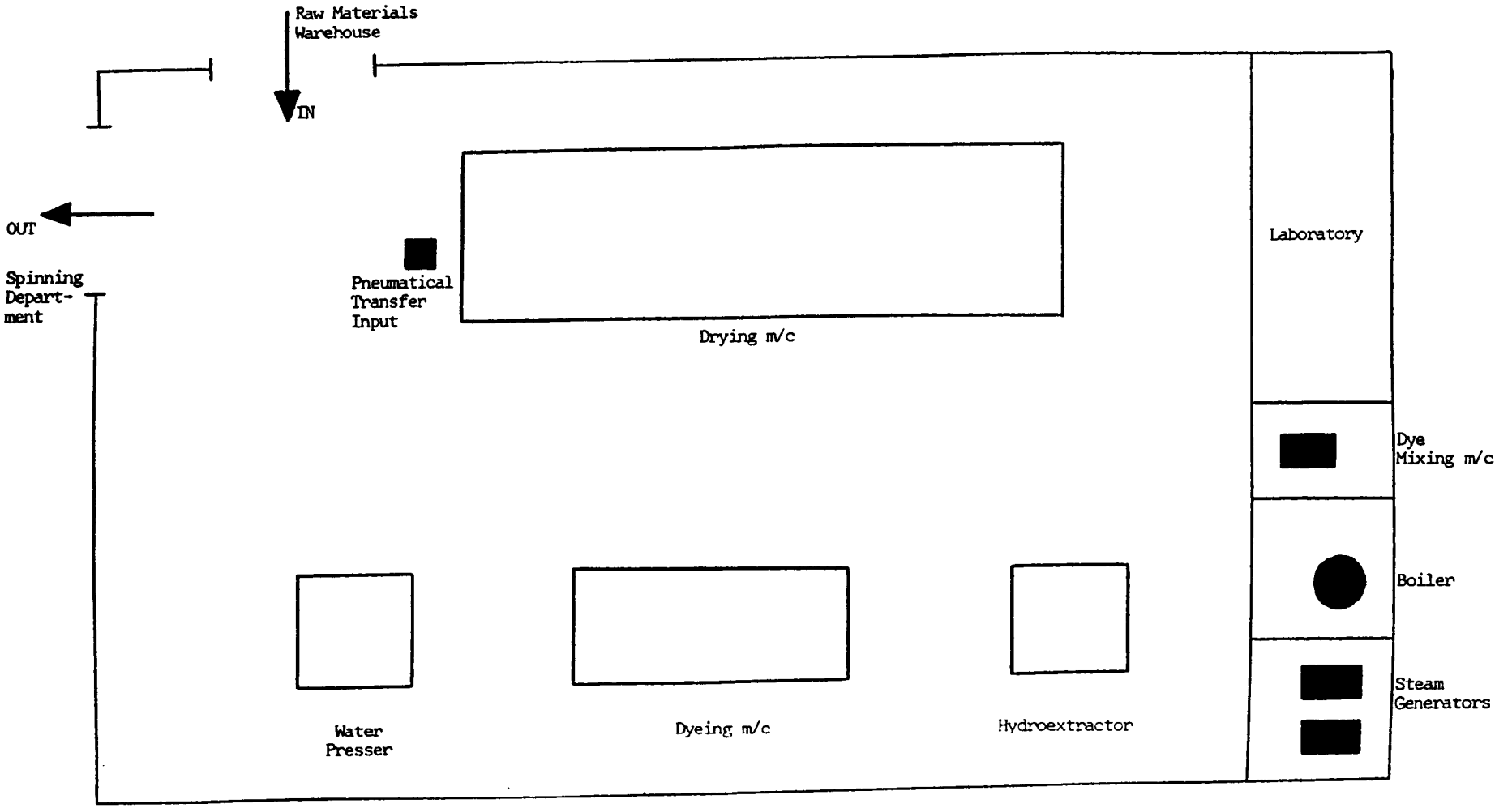


development stage. Following the successful combination of designs and colour patterns the system operates thereafter on full scale production.

It is important to highlight the materials handling requirements in the dyeing operation. The approved colour shades have to be re-produced in subsequent fibres blends and at the same time to be ensured that the colouring will be of the required standard of levelness, penetration and colour fastness. Furthermore, wet processing of textile materials, particularly in the case of wool fibres, can modify the fibres physical and chemical characteristics. Standard procedures are adopted by the management of the company in order to preserve the fibres strength, elasticity, bulkiness and lustre. To ensure the presence of the required high standards of the processed materials a number of tests are carried in the laboratory prior to and after the dye of each batch. As will be discussed in a subsequent section, among the most important parameters examined are the colour and light fastness the dye absorption and the colour uniformity.

The dyeing department is listed in **Appendix 91A**, where the sequence of operations involve the initial blending of the fibre mixture followed by the hot water pressing to form a plate. Four plates, make up a full batch, approximately 1,250kgs for the acrylics and 900kgs for the wool fibres, which is then transferred by means of a crane to the dyeing m/c and later spin dried individually remove the capillary water. Having met all quality characteristics the dyed raw materials are processed - if necessary - through the thermal drying machine where the whole batch is dried thoroughly, and transferred pnenumatically to one of the six storage areas, between the dyeing and spinning departments for relaxation. The duration of the operations is dependent on the type of material processed, the required colour shade, the environmental conditions and the

DRAWING 7.1: OR. SALIARIS S.A. BLANKET MANUFACTURE.
DYEING DEPARTMENT MACHINERY LAY-OUT



operational requirments in the dyeing plant. When working one shift 2 complete batches can be processed on average. Furthermore it should be emphasized that wool is far more delicate than acrylics and require both mechanical and thermal drying, while blending of the various raw materials is important, requiring considerable experience.

The department's lay-out, as shown in **Drawing 7.1**, was carefully planned, while engineering work was completed for a future installation of a second dyeing machine - for dyeing yarns on cones or muffs -. Although there have not in the past been any significant material flow problems there has been concern about the equipment, where machine breakdown stops production completely. The management of the company has therefore, invested in preventive maintenance schedules.

7.1.2 THE SPINNING DEPARTMENT

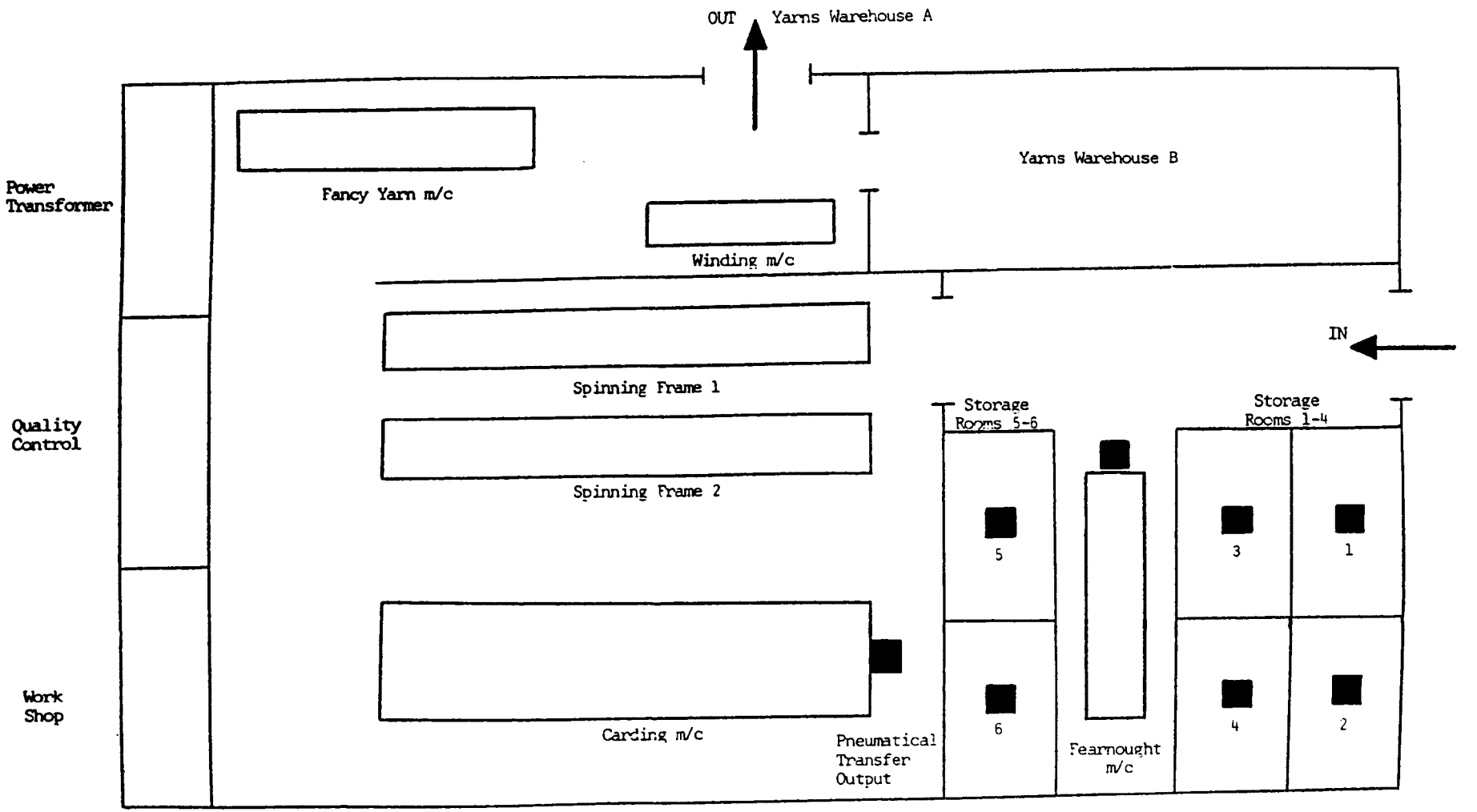
The spinning department is both capital and labour intensive. The capacity of the machinery involved in yarn forming is illustated in **Appendix 91A**, the department's total power consumption is 208.5 HP. The most capital intensive machinery are the carding machine and the spinning frames. The department employs six employees per shift, normally operating 2-3 shifts per working day, while the maximum capacity per shift is around 1,000kgs. When acrylics were processed alone in the production line there were three shifts to card and spin the material dyed in the dyeing plant over one shift. For wool processing the ratio is 1 to 2 or 1 to $1^1/_2$ depending on the batch characteristics. During the peak demand period varying from July to November the spinning department required three or even four shifts to meet the weaving department's usage rate.

There are limitations on the production capacity and bottlenecks could arise in case of a machine breakdown, particularly a carding machine failure. Even though such occasion have very rarely been observed in the past years, the company has invested in yarn stocks in order to secure the full employment of the subsequent departments. Despite high production rates, management has insisted on the quality characteristics rather than machine output alone.

Following the transfer of a dyed batch to one of the storage rooms between the dyeing and spinning departments, a blending routine operation takes place pnenumatically when the fibres are processed through the fearnaught machine. In order to sustain the desired quality of the processed material, homogeneous spraying of the oil additive and the antistatic agent are required. The water/process additives ratio during opening of the batch by the fearnaught machine aims to achieve materials uniformity in all batches. Furthermore, the determination of the cleanliness of the batch and the assessment of its regain level prior to carding are important for the behaviour of the fibres during processing and the quality of the spun yarns.

Following blending and opening the materials are transferred to the hopper of the carding machine and eventually fed uniformly to the carder. The complete machinery lay-out of the spinning department appears in **Drawing 7.2.** During the first carding operation the settings of the doffer and the workers to the shift is important. Expertise is required to ensure that the across the card irregularities of the web, as well as the nep formation will be kept within the acceptable range as suggested by BAYER and IWS technical advisors. In addition at this early stage of carding the automatic feeding of the carder by means of an electronic device must set according to production requirements, thus avoiding the possibility of along the card irregularity. This produces appropriate

DRAWING 7.2: OR. SALIARIS S.A. BLANKET MANUFACTURE.
SPINNING DEPARTMENT MACHINERY LAY-OUT



tensile strength and eveness characteristics of the carded slubbings.

During carding the disentanglement of fibres takes place, as in the final stages of operations the condition of the stainless steel elastic garniture of the rollers and the appropriate settings of the workers, stripers, doffer and the fancy to the swift is a determinant factor for the smooth production of the batch. All necessary measures have got to be taken at all times to ensure that the fibre structure's properties such as: tensile strength, resilience, crimp and lustre are not affected due to the machinery. Finally the web is transformed in the condenser into 144 slubbings - 16 rolls consisting of 9 slubbings each -. Both spinning frames have a total of 47.5 HP each and spin 14 rolls at a time in their 126 spindles. It should be emphasized that output limitations exist within the yarn manufacture sub-system since the spinning frames can process almost twice as much the carding machine's output depending upon the type of material, blend characteristics and required count of the slubbing.

The carded material is drafted and spun in the spinning frames, while twist is inserted to the yarns to provide them with the necessary strength to withstand the high tensions during weaving. Count and twist are both important in the design of textile structures, such as woven blankets, and to a large extent they govern the appearance and behaviour of the resulting materials. For blanket manufacturing the more twist inserted in the ring spun yarns the better for weaving since twist gives additional strength to the yarns. In terms of finishing the less twist present in the weft floats, the easier it becomes to raise the woven blanket and the more luxurious it looks. In the case of acrylics, pile appearance and cover factor are among the most important quality characteristics. Following spinning of slubbings into yarns the bobbins

are made into cones. It takes 9 yarn bobbins to make up a cone while its weight depends on the processed material. Six cones are packed into plastic bags and stored in the yarns warehouse.

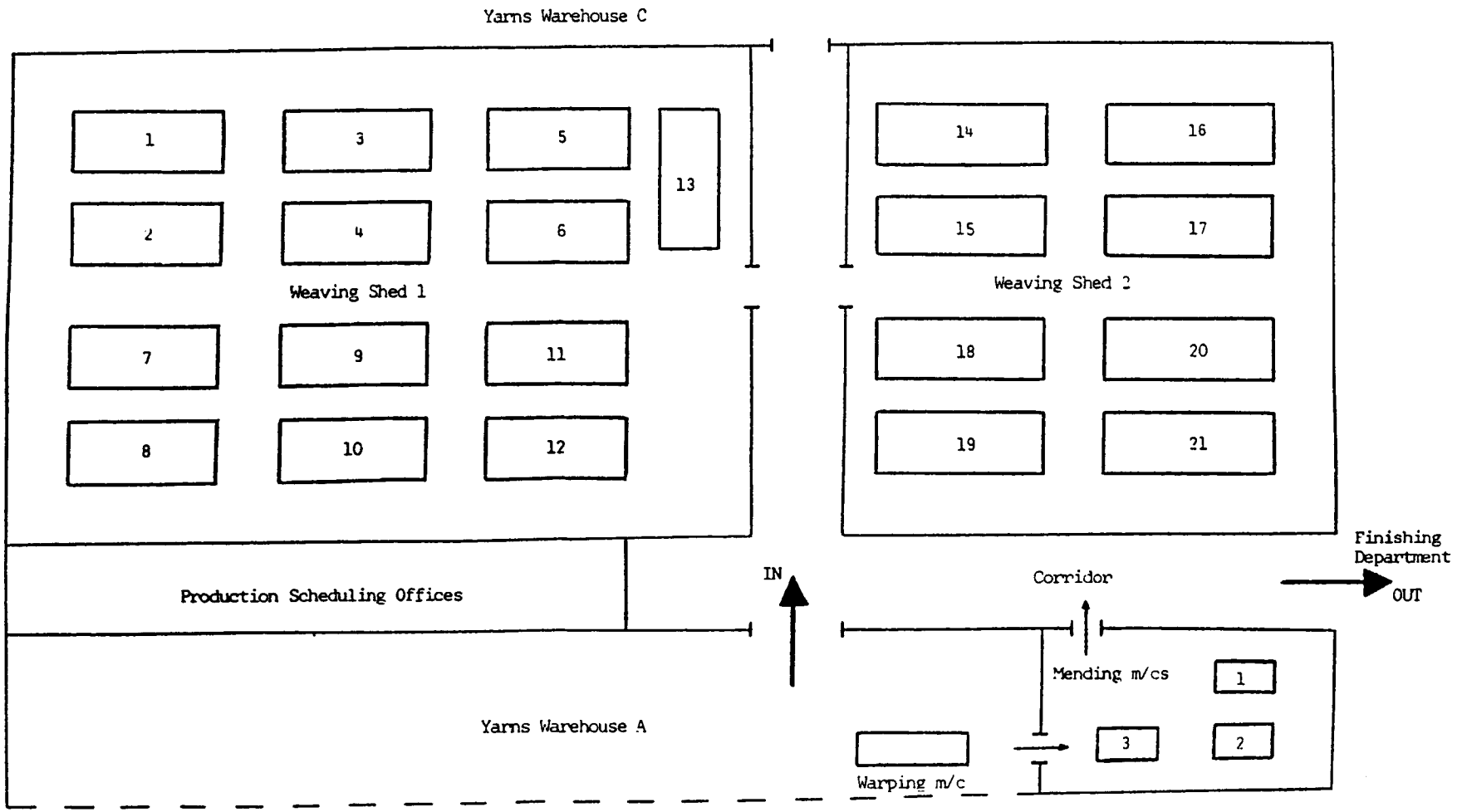
It should be highlighted that the spinning frames' output although matched with the winding machine's input rate it is not quite the same in relation to the carding machine's capacity. Taking into account the production limitations through carding and the restricted output of 1,000kgs per shift, the spinning frames' maximum capacity output can reach around 1,900kgs of the same material. Maintenance of the carding machine is important and frequent operation on a three or even four shifts basis is required. There have been times during the peak demand period when the company purchased yarns in order to meet the weaving shed's requirements.

7.1.3 THE WEAVING DEPARTMENT

The weaving department employs 21 shuttleless looms, twenty having a double-jackquard, one having a dobby system. There are three different type of looms namely: SOMET, SMIT and METEOR, 13 being double; 2.40m working width, whereas the remaining 8 are extra-double; 3.05m working width. The first are located in weaving shed A and the second in weaving shed B as illustrated in **Drawing 7.3.** In the last few years 2-3 out of the 13 double-size looms have been employed for the production of single blankets, operating with 2.00m working width. There is no limitation on the number of looms for weaving single blankets, while double blankets have been woven in the extra-double looms.

The main constraint is warp beam which once installed in a loom must be used for weaving a given number of blankets depending on the length of warp threads. When operating on a three shift basis there was a warp beam change once every month, a period of around 20 working days, or

DRAWING 7.3: OR. SALIARIS S.A. BLANKET MANUFACTURE.
WEAVING DEPARTMENT MACHINERY LAY-OUT



1,000-1200 blankets. The jackquard system provides the company with flexibility to weave complete designs. There is no difficulty in weaving simpler structures, in any of the looms. Furthermore each loom can employ up to 8 different picks enabling the weaving of multi-coloured designs.

The weaving department is both capital and labour intensive. The weaving looms' power varies from just 5.5 HP to 7.1 HP. As a whole the machinery employed in this department, as shown in **Appendix 91 B**, has a total of 142.3 HP capacity. The warp piecening machine is used for the automatic piecening of the warp threads when a new warp beam replaces the previous one while the warping machine is used for the production of woollen warp beams. In the case of the cotton warp beams used for the production of the acrylic blankets both sizing and beaming operations of the purchased open-end yarns is done elsewhere, since the company would not invest in machinery not fully utilized. It has been important to control the technical specifications of the cotton and worsted warp theads, as well as the quality of the in-coming warp beams. Parameters such as: the tensile strength, irregularity, yarn hairiness and twist can influence the quality of the woven fabrics, and further more it could result in an increase of the machine downtime.

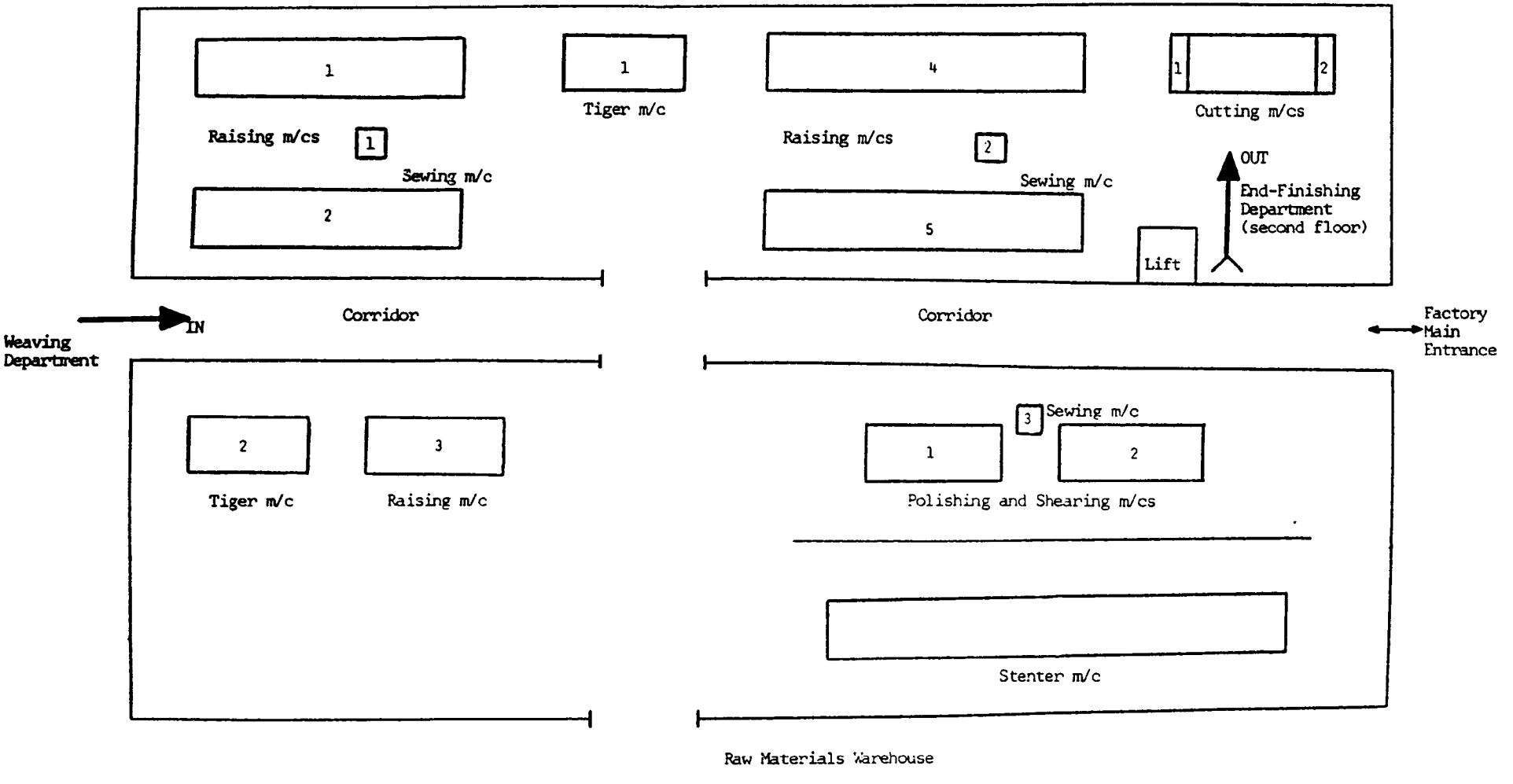
Apart from a warp failure which could be handled in an average time of 11/2 minute, a weft failure would take approximately 1 minute, a colour change around 3 minutes and in the case of a design change about 30 minutes. A warp beam change requires 2-3 hours on average depending on the loom location while additional machine breakdown problems could occur due to mechanical or electrical failures. Up to late 1982 the looms' efficiency has remained high. The management of the organisation has always considered the weaving department as the heart of the business and applied intensive machine utilization programmes to achieve an increase in

productivity on an annual basis. Preventive maintenance programmes have been used to keep the number of defective woven blankets to a minimum. The looms high beat-up speeds ranging from 145 picks/min in the old double size looms to 161 picks/min in the new extra-double size looms created production faults which had to be controlled and corrected during mending.

7.1.4 THE FINISHING DEPARTMENT

The company employs two finishing plants; the acrylic blankets finishing operation takes place in the company's premises in Thessaloniki, while woollen blanket finishing is done in the Trikala factory. The company has built up a reputation in the home market for reliability and quality, over the full range of blankets produced. Emphasis on high technology in the finishing of both acrylics and wool blankets, produced investment in the most modern and sophisticated textile machinery. The sub-system's capacity of 336.5 HP includes five raising machines, two tiger machines, two polishing and shearing machines and a stenter. The remaining machinery provides support to the finishing line. The machinery lay-out is shown in **Drawing 7.4A**, illustrating the complexity of operations. The department is more capital than labour intensive and employs imported machinery to aquire recent technology in blanket finishing. The employed machinery is shown in **Appendix 91c**.The main finishing plant is geared to produce a high value added, high quality acrylic blanket by means of strict control of procedures through the entire sub-system. Capacity is in line with the weaving department's output, maximum production per shift is approximately 350 pieces - corresponding to double size blankets -. Thus whenever the weaving department was employed on a three shift basis the finishing department was adjusted to the same level of activity to achieve continuous flow of the processed materials; without the creation of excessive work in

DRAWING 7.4A: OR. SALIARIS S.A. BLANKET MANUFACTURE.
FINISHING DEPARTMENT MACHINERY LAY-OUT (ACRYLICS)



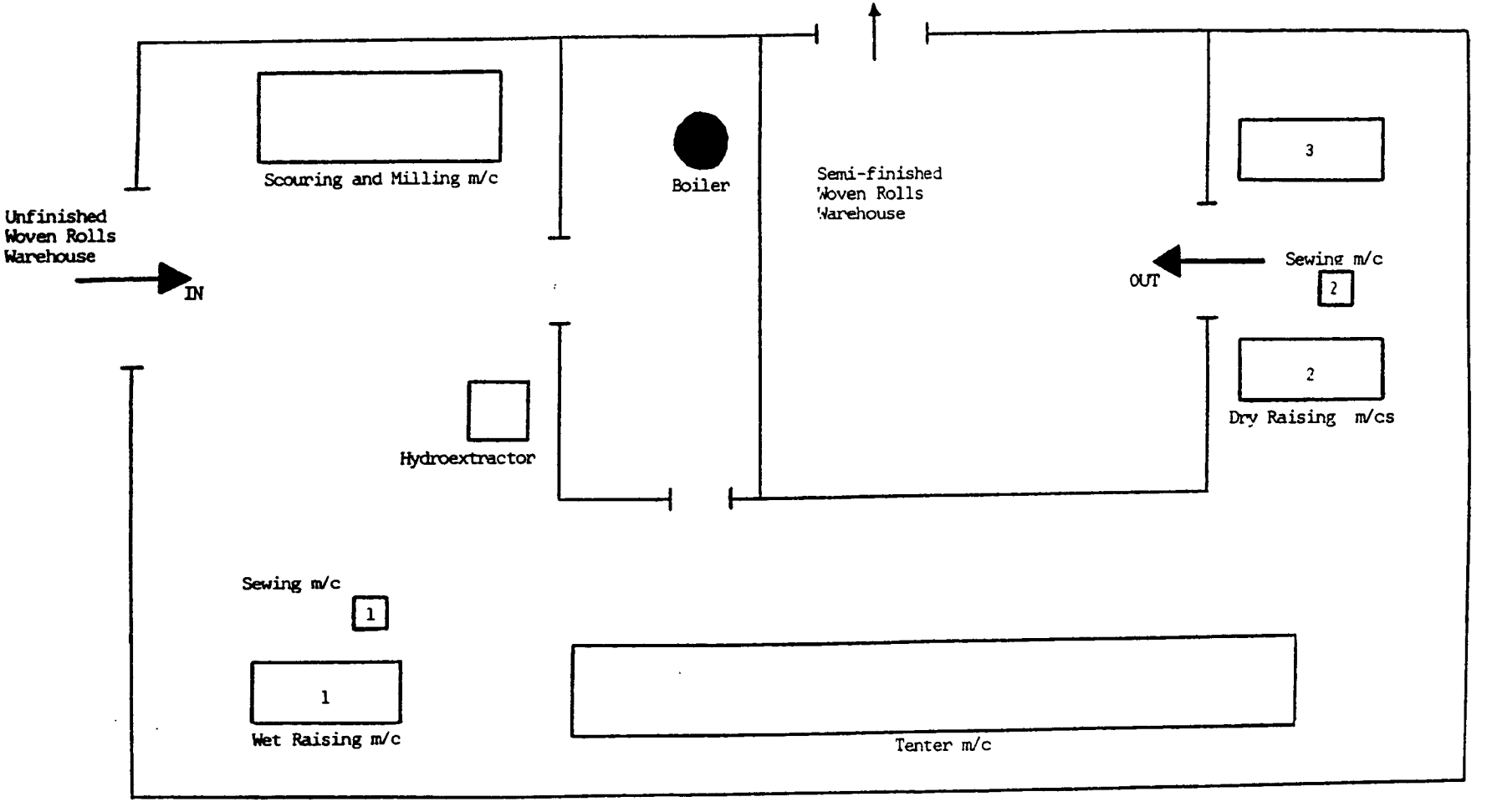
progress. Obviously at peak production times there have been material flows problems, mainly arising because of inability to cope with increased complexity and due to lack of feed-back in information flows.

The availability of closed-loop controls and the lack of FIFO materials handling procedures often resulted in delays and operational problems. One of the major constraints during finishing is that batches of 4 rolls of woven blankets are processed together in the raising machines whereas during shearing, polishing and stentering 8 rolls are on line. To achieve uniformity and high standards of quality it has been most appropriate to process the same quality in terms of designs and colour combinations, preferably in the sequence of their production flow from the weaving loom. Such flexibility in operations scarcely occurred in the past due to severe limitations in the material flows, resulting in difficulties at times of a three shift operation.

In 1981 another factory at Trikala was acquired, namely a woollen blanket finished plant. There was a growing demand for high quality woollen blankets and the company could not meet the change in customers' preference without investing in machinery for wool finishing. Since wool behaves differently from acrylics and requires wet treatment in order to be felted and acquire the appropriate bulkiness in the cloth. Afterwards a dry finishing process is required similar to that of the acrylics. It was evident that different technology for wet treatment and appropriate garniture were demanded.

The Trikala finishing plant is capital-intensive. The machinery lay-out shown in **Drawing 7.4B.** Overall capacity of 182.0 HP, is illustrated in **Appendix 91C.** The sequence of operations are initiated from the scouring and milling machine where 4 rolls at a time are processed, followed by spin drying of each individual roll of blankets in

DRAWING 7.4B: OR. SALIARIS S.A. BLANKET MANUFACTURE.
FINISHING PLANT MACHINERY LAY-OUT (WOOLLEN)



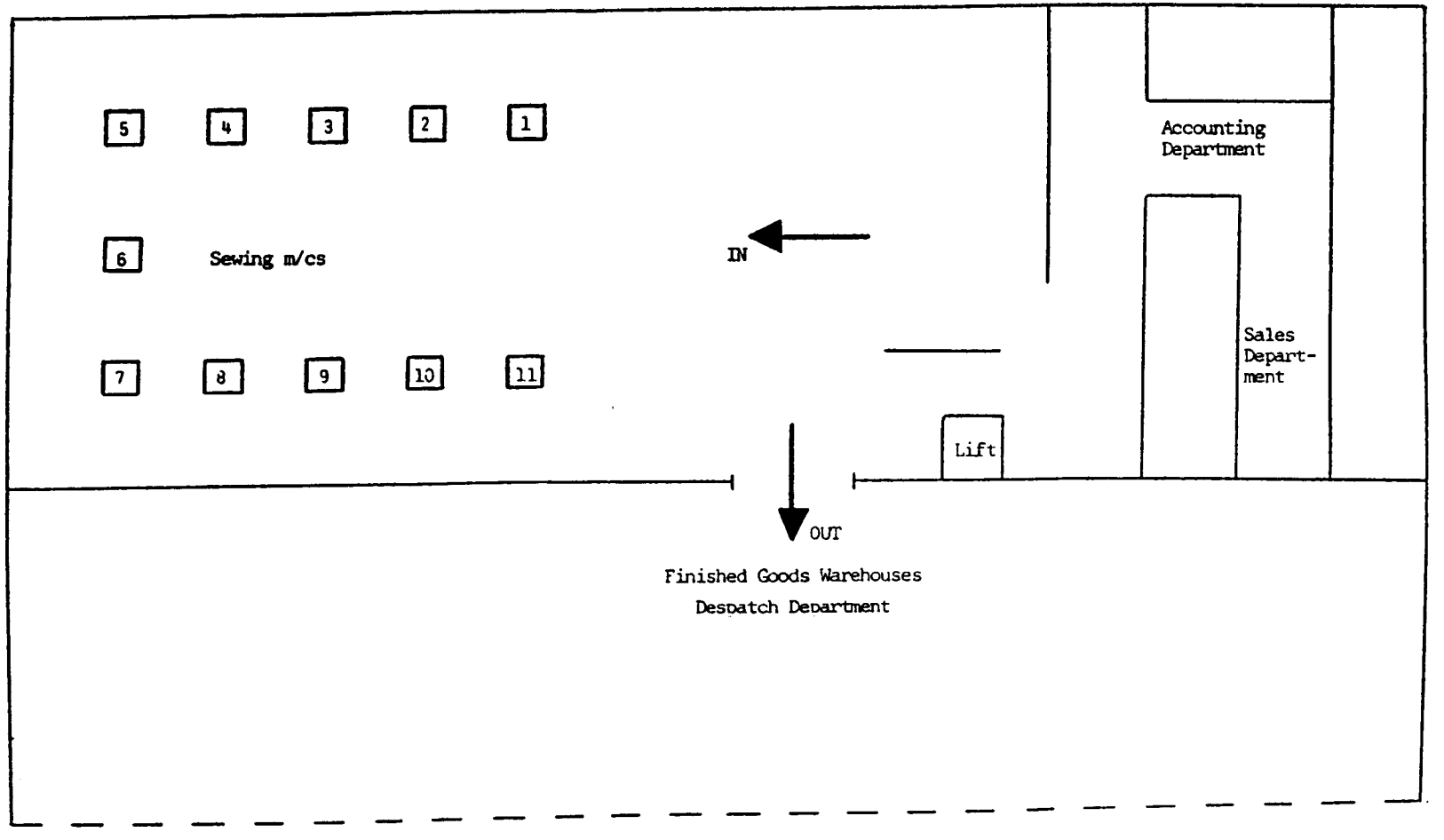
the hydroextractor for removal of the capillary water. During wet raising the fabrics are slightly raised in open width followed by tentering in the 45 HP tenter machine. Width dimensions, temperature, speed of the fabric - 4 rolls are processed on line - are among the most important parameters determining the quality characteristics of the end-product. During dry raising the counter rollers' raising power is far greater than that in acrylics processing due to the type of material being handled and the end-finish of the fabric in a felted manner, rather than of a lustre pile cut appearance as in acrylics. The woollen blankets finishing plant reached an average output of approximately 100 pieces per shift -corresponding to double size blankets-.

7.1.5 THE END-FINISHING DEPARTMENT

The final stage of operations in blanket processing consists of cutting the finished rolls into separate units, the selection of the appropriate type of colour and quality of ribbon to be sewn along the perimeter of the blanket together with a label indicating specifitions used instructions. The blankets are packed in plastic bags and placed in boxes of 5, 8 or 20 pieces according to their size. The end-finishing department is the company's most labour intensive one, with machinery capacity of just 9.7 HP.

As shown in **Appendix 91D**, there are 2 cutting and 11 sewing machines in the department; the process is time consuming and varies depending on the machine type, the employees' experience and motivation, the fabric's weight and dimensions, as well as the type of ribbon and sewing thread employed. If acrylics were to be processed alone the average output per shift is around 1,100 pieces, while a theoretical case of woollen blankets processing alone the estimated average is approximately 650 pieces per shift. Product characteristics such as

DRAWING 7.5: OR. SALIARIS S.A. BLANKET MANUFACTURE.
END-FINISHING DEPARTMENT MACHINERY LAY-OUT



dimensions, weight, design and colour combinations matching, handle and drape are among the most important parameters of blanket quality. Furthermore there is inspection for weaving and finishing faults and defective blankets are separated.

It should be noted that although cutting of the rolls into individual blankets takes place on the ground floor, a natural extension of the production flow, semi-finished products are taken by lift to the second floor where the final end-finishing operations are done. Drawing 7.5 illustrates the machinery lay-out. The finished goods are packed in boxes of the appropriate size, the product's characteristics are marked outside each carton box and transported to the warehouse by the department's personnel.

7.2 INITIAL APPRAISAL OF THE COMPANY

7.2.1 PRODUCTION PHILOSOPHY

The first task of the work was the close examination of the material flows within the system, followed by a detailed lay-out study of the machinery throughout the company's manufacturing line in an effort to evaluate operational characteristics. The management's policy up to 1982 was continuous effort to increase machine efficiency to maximize output in each one of the five different production departments. Productivity in terms of each sub-system's output per man-hour had been increasing year by year resulting in extensive numbers of items, mainly yarns and blankets, in a variety of product qualities.

During the period 1978-1982 the annual production output exceeded 275,00 pieces of acrylic blankets on average, creating significant transportation and allocation problems. Work was done on a 3 shift basis, 6 days a week throughout the calendar year. As a result material handling

problems arose and the management was involved daily in smoothing out production flows within the plant. In early 1979 investment in new machinery and premises was seen as a solution to material flow problems as well as operational problems. The company acquired 34 thousand m^2 of land opposite the factory's premises and started construction work, to build a 5,000m^2 new factory which was completed in late 1982. There were plans for investing in new technology machinery and equipment, extending the existed line of production while at the same time modernizing a number of machines.

7.2.2 COMPANY INVESTMENT PROGRAMME

The re-equipment and modernization programme of the plant was to introduce slight changes and modifications in the dyeing department, and to invest heavily in the spinning department. The facilities of the carding machine were to be extended by the addition of one extra swift, Such machine alteration would allow production of low quality wool carding - by the installation of a peralta rollers system - and by the replacement of the garniture it would be possible to process low quality regenerated acrylics, while operating at a machine speed of 30-35m per hour. In addition to these modifications it was decided to acquire a worsted carding machine which along with a new spinning plant could enable the production of a wider range of yarn counts and qualities. Furthermore the imbalances in machine outputs were to be reduced, while the company was to diversify its spun yarns collection by producing knitwear textiles as well as the standard line of carded yarns. The main theme was that with considerable investment in the spinning department, flexibility would enable the company to produce Dralon blankets at 16 picks/cm, reaching even higher quality standards in blankets. On the other hand there was at

that time growing demand for high metric count acrylic yarns in knitting both in the home market and abroad.

In the case of the weaving department all the old double looms were to be replaced with high-technology extra-double weaving looms, employing double jackquard systems, with tension controllers, and additional electronic devices to ensure higher quality standards. The entire weaving department, 24 shuttleless looms was to be installed in the new premises. Modern technology finishing machinery was to be acquired and installed in the new premises. Each one of these departments was to be located in a 1,250m^2 pillar free area while it was believed that material handling problems would be reduced significantly. The end-finishing and despatch departments were to follow while both yarns and finished goods warehousing facilities were to be situated in the new storage areas. The old building would accomodate the dyeing and spinning departments. Additional ambitious plans included investment in carpet and quilt manufacturing.

7.2.3 THREATS AND WEAKNESSES

Both external and internal factors have influenced the investment plans. By the end of 1982 there was strong indication of recession in the Greek economy which resulted in a sharp decline in demand for household textiles. At the initiation of the work the company leadership passed to the director of technical services, following the Managing Director's withdrawal from the business. Under the new management an approach was introduced to over come the growing threats to viability. The plant's re-equipment and modernization programme was postponed in view of the deterioration in the trading environment both at home and abroad.

On January 9th 1983 there was a 15% official devaluation of the

Greek drachma against the US dollar, and the other major currencies which made any investment plan impossible due to the increase in drachma expenditure. Thus the decision to purchase new technology in textile machinery and equipment from abroad was abandoned. The national currency devaluation imposed additional financial problems on the business and created increased cash out-flows. Furthermore, to cope with the drop in demand, the company attempted to reduce the number of employees. Industrial action resulted and took almost three months to resolve, threatening viability.

7.2.4 STRATEGIC APPROACH

The aim of the research work was therefore to study the interactions between the different sub-systems, to indicate problem areas and to establish the checks and cross-checks, to ensure accountability and improved decision making. The element of feedback in information flows would result in improved operational functions between directly related centres. Closed-loop controls were required among the integrated over-lapping areas to reduce inconsistency in the information provided. By critical examination of what was a major or a minor issue in decision making throughout the system, questions were to be asked on what was really important, to whom and why. A system of internal reporting was to be initiated to allow the top management of the company to make better policy decisions at a time of growing uncertainty and increased complexity due to both internal and external changes.

7.3 DESIGN OF CLOSED-LOOP CONTROL SYSTEMS

7.3.1 CENTRAL AND CO-ORDINATED QUALITY CONTROL

The management of the company adopted a policy of providing high customer service, to produce acrylic and woollen blankets which would satisfy the consumer's requirements in terms of product quality and serviceability throughout the home market. As suggested by **Wild (1980)** "the quality of a product is the degree to which it satisfies customers' requirements.

It is influenced by:

(i) product design quality,

(ii) product manufacture quality, and

(iii) product reliability".

The organisation invested heavily in terms of product design quality by adhering to the philosophy of manufacturing high value blankets and by providing increasing number of designs and colour combinations year after year. In terms of manufactured product quality, it became evident at the initiation of the project that there was room for improvement by adopting coherent quality control from the appropriate blending of the incoming raw materials, during all stages of processing to the end of the production line. Product reliability had to be reached not by establishing a strict acceptance control in the final stage of processing alone, but throughout the material flows pattern to minimize the number of defectives in each individual sub-system while at the same time maximizing efficieny of machinery.

As argued by **Holme (1978)** "the benefits of the appropriate materials handling systems coupled with optimum machine design and plant lay-out are derived from the maximum utilization of the plant, particularly under multi-shift working conditions". The company's

materials handling system had to remain flexible in order to respond to market changes and at the same time careful planning of production was required to facilitate a reduction in tied capital in stocks without damaging the company's position in the home market. A strategy of quality improvement, as pointed out by **Kotler (1980)** should "aim at increasing the material functional performance of the product". The creation of a production scheduling department was to overcome problems and provide for effective planning and control of manufacturing.

The comparative success of the quality control system was achieved during the implementation stage of the procedures with co-operation between the technical management and the production personnel. It was believed that the quality control staff - the organisation's production managers at the initiation of the work - had to have not only a complete understanding of the operating principles of the machinery used in the processing line, but also the communication skills to enable them to transfer information to the machine operators. Having established a coherent quality control scheme, emphasis was given to training the production managers of the dyeing, spinning, weaving, finishing and end-finishing departments to improve performance. The system's characteristics were studied by the author and the company's chief of technical services. All quality control procedures had to contain only necessary and sufficient testing operations. Answers had to be given to the questions: Why do we test? What do we test? When do we test? Who does the test?

At the commencement of this work inadequate quality controls existed along the system's manufacturing line, while prevailing deficiencies had to be substituted by an actionable co-ordinated quality control scheme. Tests had to be carried out at regular intervals, by

authorized personnel alone, and results to be analyzed and documented, while reports to the technical management of the company would result in immediate corrective actions where appropriate and necessary. There was an urgent need to appoint someone with the appropriate qualifications to supervise the quality control schemes, document and report in an orderly manner. Before assuming the overall supervision of the quality control schemes, the selected candidate had to become acquainted with the machinery, nature of work, and the system's operational characteristics.

Instructions for the satisfactory accomplishment of quality control were presented by the author and the manager of the quality control department, to the key production personnel where the timing of the appropriate tests was outlined. The main theme of the quality control scheme established at OR. SALIARIS S.A. was based upon two principles: first, primary emphasis was given to controlling the manufacturing process rather than the product acceptance, second, a methodology was established to prevent deviations from specifications, rather than correct them.

Taking into account that the management of the company was at that time getting into demanding export markets, and also ready for the launch of the woollen blankets into the home market, quality control assumed considerable importance. The schemes were modified, where necessary and new testing standards were established to control the material flows through the system. Interpretation of the procedures resulted in improved information flows since all testing results had to be presented and communicated in an understandable form.

The operations of the production system were grouped in two main areas. First, the processing of raw materials namely: acrylic and wool fibres, through dyeing and spinning to the form of yarns. Second, the weaving of yarns into fabrics followed by the subsequent finishing operations to the end-product: the blankets.

7.3.1.1 RAW MATERIALS DYEING AND YARN FORMING

Prior to initial blending of the raw materials a series of tests were carried out, in order to examine and document the fibre characteristics. These included both quantitative and qualitative procedures. In the case of the acrylic in-coming fibres to the dyeing department, a qualitative assessment was established for handle, a visual examination of their colour and brightness, followed by a quantitative measurement of the mean staple length, fineness and crimp. For the wool fibres the visual examination of the cleanliness of each new batch was introduced followed by the assessment of the handle, lustre, and soundness. A procedure was established where by acceptance sampling the purchased raw materials were compared thoroughly against both the standard New Zealand government type, the original and shipment samples. Furthermore prior to dyeing the measurement of the wool regain in atmospheric conditions, the calculation of the mean fibre length, the fibre crimp and fineness were done. The selection of the most appropriate raw materials for blanket manufacturing, the testing and documentation of their characteristics was regarded as important for the subsequent processing of the fibres into yarns and finally into finished fabrics. As argued by the **Textile Industries (1980)** "the question of materials management goes far beyond raw materials purchasing alone and involves practically all departments". For both wool and acrylic fibres a testing procedure was introduced to establish coherent quality control.

Wool fibres:

(i) % grease content calculation in the scoured wool.

(ii) visual examination of the wool cleanliness; foreign matter and impurities present in the batch.

(iii) handle assessment; bulkiness, resilience, softness.

(iv) visual examination of the colour; wool fibres lustre.

(v) regain measurement; materials humidity absorbtion.

(vi) soundness assessment; fibres tenacity and strength.

(vii) mean fibre length calculation; materials evenness.

(viii) measurement of the fibre crimp; fibres entanglement.

Acrylic fibres

(i) visual examination of colour; acrylic fibres lustre.

(ii) visual examination of brightness; fibres shininess.

(iii) assessment of the handle; material bulkiness and softness.

(iv) measurement of the fibre crimp; fibre entanglement.

(v) calculation of the mean fibre length; materials evenness.

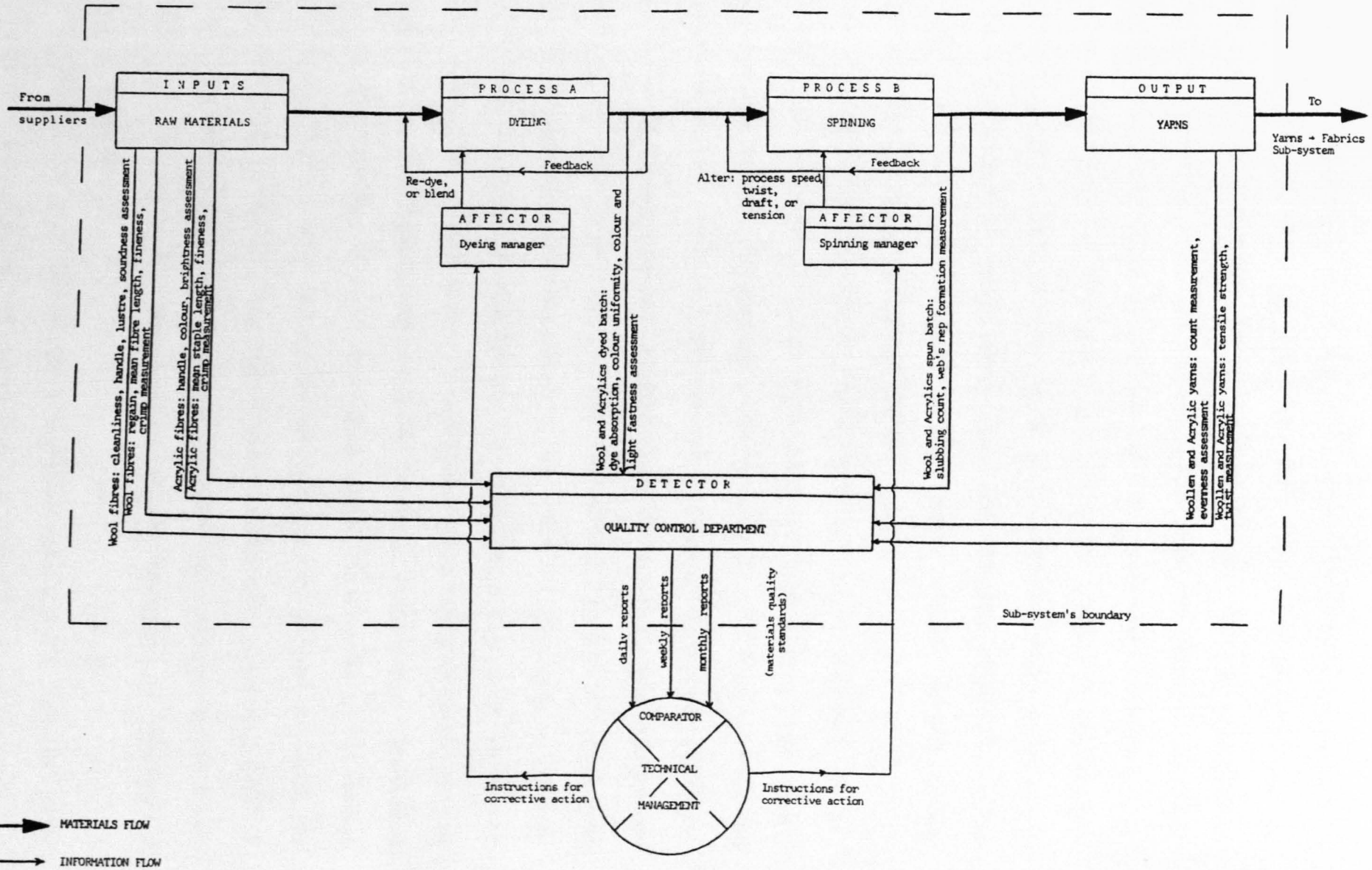
The quality control standards adopted in the manufacturing stages were provided by IWS, BAYER and the Hellenic Cotton Board. Acceptance sampling procedures were introduced for all batches of fibres, monitored in the quality control department by the appointed personnel - the author and the head of the dyeing department-, all involved in these procedures having knowledge and experience in textile testing and control. The management of the company invested heavily in the modernization of the dyeing department's laboratory where, in addition to the standard wool and acrylic fibres testing, identification of unknown fibre mixtures were often done by means of dye and stain tests, burning tests and microscopic fibre identification. All procedures were reported and filed enabling traceability.

Regain affects the weight of the wool fibres in particular, and it was essential for certain tests to be carried out in a standard testing atmosphere, relative humidity of 65% ± 2% and temperature of 20% ± 2%. In the case of government tenders, or special export requirements additional tests were carried out at the IWS Athens branch, or the Hellenic Cotton Board Thessaloniki branch. As highlighted by Booth (1968) "many physical properties of the wool fibre are affected by the amount of water absorbed - dimensions, tensile strength, elastic recovery, electrical resistance, rigidity, and so on". Among other things, the regain of the processed wool fibres depended upon the amount of moisture present in the surrounding air. The company invested in sensitive room hygrometers and thermometers for the dyeing and spinning departments where the atmospheric conditions were recorded on a daily basis and production additives and necessary controls used to maintain the standards.

The characteristics of each batch of in-coming raw materials were documented by the quality control department, as shown in Diagram 7.1 enabling the management of the company to have access to all relevant data on request. Operational instructions for each type of materials processed were issued in written form and distributed to the quality control, and the dyeing department. The dyeing manager was responsible for the application of the procedures; machine loading, duration of processing, technical specifications of processed materials, machine operating characteristics: temperature, pressure, speed, and so on. The quality controller had to test the materials against the standards at the required check points.

Thus following dyeing of any batch there were colour fastness and colour uniformity assessments, dye absorbtion and light fastness testing in the dyeing department's laboratory. In case of any batch not meeting the

DIAGRAM 7.1: OR. SALIARIS S.A. BLANKET MANUFACTURE.
FIBRES TO YARNS PROCESSING QUALITY CONTROL SUB-SYSTEM



required specifications, action was taken either by re-dyeing the material, or blending the batch with another one with the appropriate quality characteristics to establish uniformity in colour shade. Following pneumatic blending and the relaxation of each dyed batch, adequate process additives had to be sprayed uniformly, while the type of softener, lubricant and antistatic agent was noted and reported by the quality control department, allowing necessary operations to take place at subsequent stages knowing the detailed characteristics of each batch. It was thought that corrective measures could be adopted much easier at the early stages of processing, particularly during dyeing of raw materials.

In the spinning department tight controls were required on all in-coming materials while at the same time providing detailed daily, weekly and monthly quality control programmes. The daily controls were carried out by the head of department and included the machine operating characteristics; i.e. speed, weight loading, process duration and so on, while the weekly and monthly programmes were carried by the quality controller. Thus the measurement of the average slubbing count of any material was done on a daily basis by the head of spinning department, or the supervising foreman of the shift. For each shift there were 10 slubbing count measurements of the selected condenser's tape which was regarded as batch indicator. Consistent slubbing count measurements of half the total number of slubbings, 72 centre tapes, took place once a week while the total number of slubbings, all 144 tapes, was done once a month. The batch was classified as unacceptable if more than the suggested count measurements exceeded the set upper and lower warning limits. In such a case the necessary changes in production processing were adopted.

A factor which was likely to affect the quality of the processed batch and reflect the degree of slubbings uniformity is the type and condition of the swifts, workers, strippers, doffer and fancy rollers of each

carding section. Furthermore, the rollers' settings are of considerable importance for achieving a high quality of slubbing, free of excess irregularity thin and thick places along the material and nep formation. During the materials processing, machines drift out of adjustment, bearing become worn, components get damaged, while lubrication systems become blocked with waste matter, dirt or grease. Necessary actions had to be introduced to prevent excessive waste and materials damage in yarn manufacture. Apart from the regular daily cleaning of the machinery, the weekly and monthly quality control schedules facilitated the process of preventive maintenance of the production line.

The company carried out major maintenance programmes twice a year, the main one during the summer holidays of the employees, and the second one at the end of the year, usually the last week of December. Cases of emergency were noted during the monthly preventive quality control schedules using a number of tests. First, the card's feeding speed was controlled by the weighing of 20 successive lots of the material fed into the carding machine, aiming to eliminate variations in web weight along the machine. Second, assessment of the web's across the machine variation using 10 successive measurements of the weight per unit area of the web (grms/m^2), followed by the examination of the nature and number of neps present in the web. Documentation of the results and comments of the possible causes and the likely effects of excessive and uneven distribution of neps was noted and discussed. Third, the measurement of the average slubbing count of all 144 slubbings was accomplished by collecting 100m of processed material. Distribution of the counts provided the end-to-end irregularities of the slubbings due to tape division, while the thin and thick places along each slubbing detected in the black/white board indicated different tape tensioning. As a result

corrective actions were taken as necessary. The variation across the condenser was minimized by adjusting the appropriate machine devices.

Inevitably, a certain amount of irregularity is likely to be found in spun yarns and the woven fabrics produced by them will possess irregularity in appearance. The variations on fabrics' surface can give a desirable affect when they exist to a small extent, or in other cases might be insignificant, but, in excess they produce a fabric of objectionable appearance. Factors likely to affect the spinability of the yarns at OR. SALIARIS S.A. are: fibre length, fibre diameter, twist, fibre strength, rigidity, extensibility, crimp, surface properties of the fibres and the spinning conditions. A broad classification of the causes of yarn irregularity has been given by **Martindale (1950)**

"(i) properties of raw materials,

(ii) inherent shortcomings in yarn making and preparatory machinery,

(iii) mechanically defective machinery, and

(iv) external causes due to working conditions and inefficient operation".

Count, twist, tensile strength, yarn irregularity and hairiness are of prime importance in blanket processing since to a large extent they govern the appearance and behaviour of the spun yarns and the woven blankets. Thus yarn count and tensile strength measurements were carried out on a daily basis by the head of the spinning department, or the shift's foreman and 10 different samples are taken from the selected spindle. Weekly quality controls are carried when 100m of material processed samples are collected from half the number of spindles, 126 at a time, and tested for evenness, strength, count and appearance. On a monthly basis all 252 spindles' bobbins are tested, when the same amount

of yarn is taken and tested against standards. Furthermore a thorough evenness test is carried out on a black/white board to detect the efficiency of slub removal, yarn thin and thick places, type of knots, and yarn hairiness.

Since tension during winding of bobbins into cones affects the quality characteristics of the yarns it was suggested by the author that it would be appropriate in the future, under a re-equipment programme in the spinning department, to invest in automatic piecening devices where the problem of inappropriate knots, excessive yarn hairiness and tension during winding could be eliminated. In addition installation of a new spinning system, with higher metric count acrylic and woollen yarns to be spun, the company could invest in automatic piecening and doffing systems, minimizing labour cost and eliminating operators's error during materials processing. It is also possible to install a web detector prior to the condenser so that automatic correction of the card speed would provide an even web, resulting in uniform slubbings almost free from thin and thick irregularities. These modifications require improvement in the home market. Given the finacial and operational limitations, quality procedures were improved without imposing additional costs.

Table 7.1 illustrates the established documentation procedure of each production batch throughout the system. The technical specifications of the processed materials are indicated in different stages of operation. The quality controller used the quality control systems, to identify possible options during processing, based on the technical characteristics of each batch. In addition to the daily and weekly reports, a management report was issued every month by the quality control department, as indicated in **Diagram 7.1**, highlighting the performance of materials and operations in the dyeing/spinning sub-system

TABLE 7.1: COLOUR SELECTION TECHNICAL SPECIFICATIONS. COMPARATIVE SAMPLES THROUGH THE PRODUCTION FLOW

OR. SALIARIS S.A.
BLANKET MANUFACTURE

COLOUR SELECTION TECHNICAL SPECIFICATIONS.
COMPARATIVE SAMPLES THROUGH THE PRODUCTION FLOW

Colour Shade: Dore
Production Quality: Dralon
Colour Shade Code Number: 220
Dyeing/Spinning Batch Number: 243
Weaving/Finishing Batch Number: 3512
Date: 29 October 1985

	BLEND COMPOSITION		PERCENTAGE BREAKDOWN	TYPE OF FIBRE	FIBRE LENGTH	FINENESS
A	DRALON FIBRES	786.4 kgs	68.1%	Bright	60mm	3.3 decitex
B	DRALON FIBRES	368.2 kgs	31.9%	Bright	60mm	6.0 decitex
C	- -	- kgs	-	-	-	-
D	- -	- kgs	-	-	-	-
E	- -	-	-	-	-	-
	BLEND TOTAL WEIGHT	1,154.6 kgs	100.0%			

1. DYED RAW MATERIAL

Lubricant: Belfasin
Softener: Duranol
Antistatic: Duron
Moth proof additive: -

10 grms
Dyed raw material sample

2. YARN SLUBBING

Count: Nm 2.40

10m
Carded yarn slubbing sample

3. YARN

Count: Nm 2.70
Twist: 159 t.p.m.
Tensile strength: 2,800 grms

10m
Spun yarn sample

4. FABRIC

Weight/m²: 554 grms

10cm x 10cm
Finished blanket sample

statistically. The procedures enabled corrective action to be taken by the technical management early in processing leaving major issues to be tackled by the senior management of the company.

7.3.1.2 FABRIC FORMING AND END-FINISHING

In the subsequent stages of processing the incoming materials were yarns of the following main qualities: Dralon, Elacryl, Mantacryl and Woollen of count Nm 1/2.70. All materials were checked against standard quality specifications, as indicated in Diagram 7.2 using random sampling prior to weaving into blankets. In the weaving department the appropriate selection of designs and colour combinations was important, so a ledger containing illustrations of blankets' designs was introduced to identify colour of yarns to be used. These were on a notice board in both weaving sheds. Precautions were taken to avoid weaving inappropriate fabrics which could be difficult to sell along with the annual range of products. Furthermore the design punched cards were carefully controlled to keep defectives to an absolute minimum.

Faults likely to be observed during weaving of blankets are summarized below:

(i) missing pick - the unitentional omission of one complete length of weft thread across the full width of the blanket-,

(ii) wrong picking - an incorrect sequence of weft insertions-,

(iii) mixed weft - an unintentional mixing of two or more weft yarns-,

(iv) end-out - a line, running warp-way through part or all of a blanket caused by a missing warp thread-,

(v) tight-end - a warp thread or part of a warp thread that is tighter than the adjacent normal ends-,

(vi) wrong number of picks per unit length - wrong setting of the ratchet wheel-,

(vii) marks - a dotted line, running through part or all of the blanket caused by a non-functioning needle of the jackquard mechanism-,

(viii) uneven selvedge formation - variations in weft tension or lack of control of the warp ends-,

(ix) inappropriate blanket's dimensions after weaving - fewer warp threads present across the width of the blanket, or less punched cards in the selected design-,

(x) inappropriate weight of the woven blanket - wrong weft yarn count used for the weaving of the fabric, or wrong setting of the ratchet wheel-, and/or

(xi) wrong design and/or colour combination - ambiguous instructions provided or insufficient attention paid by the weaver and the head of the weaving department-.

In an effort to minimize non-human errors, preventive maintenance schedules were introduced in the weaving department in late 1983. Daily, weekly and monthly procedures were designed whereby all moving components were greased and detection of the condition of the easily worn-out parts such as: elastic tapes, threads, gears, bearings and belts had to be carried out. In addition, the head of the department, or the foreman of

each shift had to supervise and ensure that the materials processed were meeting the required specifications. Following weaving the net weight of each roll of blankets was calculated and a card was attached which indicated all technical characteristics of the fabric: quality, design, colour combination, dimensions and weight along with its serial code number which corresponded to the date of production and loom employed. This card followed the material during all subsequent operations until cutting when the roll of woven blankets was transformed to individual pieces. During mending the correction of fabric faults, such as yarn knots, missing threads and improper selvedge formation, took place while at the same time the number of woven blankets per roll was reported and checked against the expected total.

Among the tasks of a coherent quality control system was the documentation of technical specifications during all stages of processing. **Appendix 92,** shows the work done for each type of quality employed, either for the home market or for exports. The product's characteristics namely: dimensions and weight were stated according to the loom type on which the blanket was woven. Furthermore the technical specifications such as the loom gear; ratchet wheel setting, operational width, and effective length of woven fabric, were stated clearly and handed by the author to those concerned - the weaving department's manager and the quality control manager-.

Following mending the acrylic rolls are transported to the finishing department within the factory's premises while the woollen rolls are finished at the Trikala plant. In both cases the importance of a FIFO system was discussed in the early stages and gradually established

throughout the production line. The results of finishing in blanket processing are largely dependent on the type of material used, the woven fabrics characteristics and the required end-products' quality in terms of dimensions, weight, bulkiness, pile cover factor or type of finishing approach. As stated by Spibey (1969) "the object of finishing is to improve the cloth as received from the loom thereby rendering it more acceptable to the buyer and more suited to the purpose for which it is intended". The criteria for good finish of acrylic and woollen blankets were more severe than those adopted in earlier stages of processing, because of the strong competition in the home market and the growing sophistication of customers and ultimate consumers. OR. SALIARIS S.A. has built up a reputation for product reliability and quality, over the full range of blankets. Emphasis has always been given to customer satisfaction, but at the stage of this work it was suggested that the cost of such policy was too high to pay if a coherent quality control system was not to be established throughout the production line covering areas of material and machine interactions.

Finishing is a delicate process and high standards of quality have to be reached by means of appropriate settings of the machinery. The main type of faults observed in woollen and acrylic blankets processing are listed below:

A. Woollen blankets: defects in milling

(i) fabric becoming permanently creased during excessive milling in the folds; as a result streaks running length ways in the blanket.

(ii) uneven milling due to non-uniform distribution of milling liquor.

B. Acrylic blankets: defects in shearing

(i) poor appearance of the blanket due to inadequate setting up, excessive speed, temperature or processing time.

(ii) uneven shearing due to non-uniform distribution of moisture or oil additives in the processed material.

C. Acrylic and Woollen blankets: defects in raising and stentering.

(i) streaks caused by uneven tension in the warp or weft threads or different weft yarns' quality characteristics in terms of count, twist, process additives, etc.

(ii) weak cloth due to over-treatment.

(iii) uneven pile due to over-raising and under-raising parts of the cloth caused by different types of materials being processed together and stopping and restarting the raising machine.

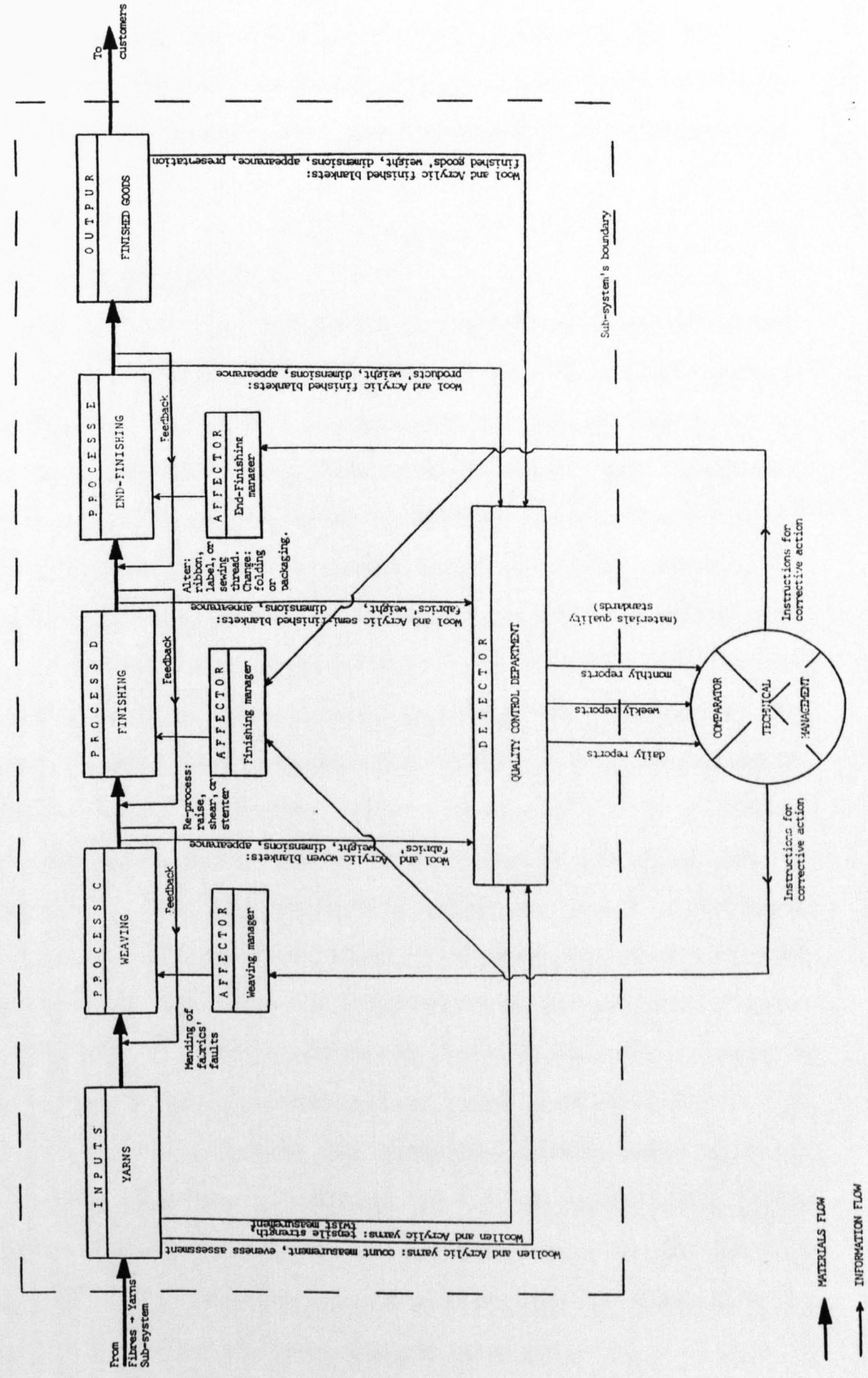
Preventive maintenance programmes were adopted on a monthly basis whereby all vulnerable parts in each machine; gears, belts, chains and bearings were checked to avoid machine failure, bottlenecks, or defective lots. Faults in finishing such as: over-treatment during processing, or wrong sequence of operations, or inappropriate machine settings: temperature, speed, level and degree of penetration can result in lean cloths, or uneven pile, or an overall poor appearance of the end-product. In such cases there is not very much that can be done in the last stage of operations, thus clear and actionable instructions had to be issued in advance for each product type processing operations, containing all necessary information regarding the machine loading and operational characteristics. The written instructions were prepared by the author and

presented by the head of the finishing department to all operators of the machinery concerned, after consultation with the technical management of the company. An important factor for acrylic and woollen blanket finishing is the body (fullness) of the product, followed by the aesthetic appearance of the blanket in terms of the specified characteristics of each product quality.

Appendix 92 illustrates the semi-finished blankets technical specifications, drawn by the author and adopted by the quality control department in terms of dimensions and weight for each different quality manufactured. It should be noted that purely quantitative controls do not achieve this, even if the results of the tests fall within the specified range of the accepted technical specifications. Qualitative appraisal is required involving experience and an understanding of the market in terms of consumers preferences and quality satisfaction.

Finally in the end-finishing department a 100% inspection was adopted for each unit produced in terms of dimensions and weight while the qualitative approach was introduced in ribbon colour matching, type of blanket folding and selection of packaging materials. Additional tests were carried out occasionally in the laboratories of IWS, BAYER, WIRA and the Hellenic Cotton Board. Such tests included: abrasion resistance, air permeability, durability, thermal conductivity, biological resistance, diamensional stability, laundering, pilling and so on. Certificates of quality were issued so that products could be guaranteed when of advertising. Daily, weekly and monthly quality control reports were

DIAGRAM 7.2: OR. SALIARIS S.A. BLANKET MANUFACTURE.
YARNS TO FABRICS PROCESSING QUALITY CONTROL SUB-SYSTEM



issued by the quality control department and presented, as shown in Diagram 7.2, to the technical management of the company which issued all necessary corrective actions to the weaving/finishing/end-finishing sub-system.

7.3.1.3 THE PROCEDURES ADOPTED

Taking into account the quality of conformance to specifications of both acrylic and woollen blankets manufactured by OR. SALIARIS S.A. , it could be suggested that a 100% inspection of the processed materials at all stages of production would have been desirable, but, acceptance sampling was introduced in most areas of quality control. As argued by ASTM (1975) "acceptance sampling, which could be called rejection or decision sampling, is the process of choosing a portion of a lot or unit of production to test for acceptability". The only way between the two extremes, 100% inspection or no inspection at all, was to establish the idea of sampling, which it was thought that could provide an estimation of the company's processed fibres, yarns and fabrics. By employing acceptance sampling in dyeing and spinning processing the management of the company was in position to decide whether to accept a batch of material or not, and to issue a policy on rejected materials either by re-processing or selling them. As highlighted by Jackson (1980) "there is always the risk to reject a satifactory batch of material (producer's risk) and also to accept an unsatisfactory batch (consumer's risk)". In addition, the risk of adjusting the production process when it is in control, or not to adjust it when it is out of control, but having established a coherent methodology of closed-loop controls and multiple checks throughout the production line these risks were optimized by having set the appropriate limits for each stage of processing.

The seven main requirements of a quality control scheme as suggested by **WIRA (1968)** and adopted by the company are summarised below:

"(i) good management is essential to ensure that relevant facts are collected systematically.

(ii) production personnel must be brought into any scheme at its beginning, to enable understanding to grow between them and the testing personnel.

(iii) good presentation and correct interpretation of results ensure understanding and co-operation.

(iv) adequate feed-back of information to the production department about the capabilities of the machinery and the product performance is essential.

(v) well-maintained machinery is a basic requirement if quality is to be maintained.

(vi) realistic control of the process is necessary to obtain a product of the required specification.

(vii) quality control must be fully integrated with production control".

7.3.2 SUB-SYSTEMS INTERACTIONS

7.3.2.1 PRODUCTION SCHEDULING FOR BATCH PROCESSING: DYEING AND SPINNING

A coherent approach was required in production scheduling to make best use of resources. A critical examination of what was happening in the past did not provide satisfactory answers on who decided on what was to be processed, when materials had to be dyed and spun, how much was the appropriate batch size, which data had to be recorded and why. The lack of co-ordinated control, delegation of authority and responsibility resulted to a considerable rise in yarn inventories in a variety of

qualities, counts and colour shades, the outcome of which was the increased value of the company's tied capital, without preventing stock-out.

At the initiation of the research work the author's first task was detailed analysis of the yarn colour shades usage rate in the weaving shed. This enabled the classification of colour shades of each annual collection into yarns of high demand and yarns of moderate demand. In addition the seasonality of the company's products in the home market reflected the required production rates in the weaving department. Yarn buffer stocks had to be established for the high demand period and adjustable levels for the remaining months of the year. Furthermore production batch sizes had to be determined for each colour shade, thus minimizing the overall stock levels, the consequent stockholding costs and storage area. On the other hand stock-outs in yarns of moderate demand was deemed acceptable from 1983 onwards, particularly during the low demand period.

In the case of the Dralon or Elacryl yarns it was established that on average, 50% of the total yarn consumption during weaving was based on the creamy white and cream colour shades (approximately 20% and 30% respectively). In the case of Woollen yarns the white colour shade corresponded to around 60% of the total usage rate in the weaving department. Thus buffer stocks were set for the main colour shades equivalent to one month's estimated demand in the weaving shed. The exercise covered both the acrylics and wool covering the entire range of the high demand yarns. For the moderate demand colour shades re-order levels were established equal to one production batch, but during the low demand period half batches were processed since it was calculated that rises in operational costs were significantly lower than yarn stockholding costs [(S_h = S q_i v_i x monthly lending interest rate); where q_i

equals quantity in stock of a yarn colour shade i and v_i equals value at cost of yarn colour shade i].

A FIFO methodology was established in yarn stocks consumption while the production scheduling department, as indicated in **Diagram 7.3**, issued two week production orders to the dyeing and spinning departments twice each month. The designed system as highlighted in **Table 7.2**, represents the implementation approach to the production scheduling procedures. The batches required in terms of qualities, colour shades sequence and actual batch sizes were issued by the production scheduling department to the yarn forming manager. Work was started by dyeing and spinning managers, after approval by the technical management. The procedures were followed carefully and material flows were monitored by the chief of technical services, the managers of the related production departments, and the quality controller. In-coming materials to the yarn warehouses, acrylic and woollen yarns, were recorded daily in the yarn stock ledgers, providing closed-loop control of the manufacturing process.

The outcome of the evaluation, re-design and implementation was the creation, of a production management information system whereby all relevant data were documented. The introduction of systematic internal reporting to the top management of the company aimed to facilitate decision making and to exercise the appropriate control of the production operations. The element of the feed-back in information flows as well as clear instructions on what had to be done, by whom and how enabled improved materials flows while at the same time the number of defectives at each stage of production were minimized by improving the use of available resources.

TABLE 7.2: TWO WEEK PRODUCTION SCHEDULING FOR THE DYEING AND SPINNING DEPARTMENTS

OR. SALIARIS S.A.
BLANKET MANUFACTURE

Year: 1985
Date of instruction issued: 1/2
Instruction serial no: C3

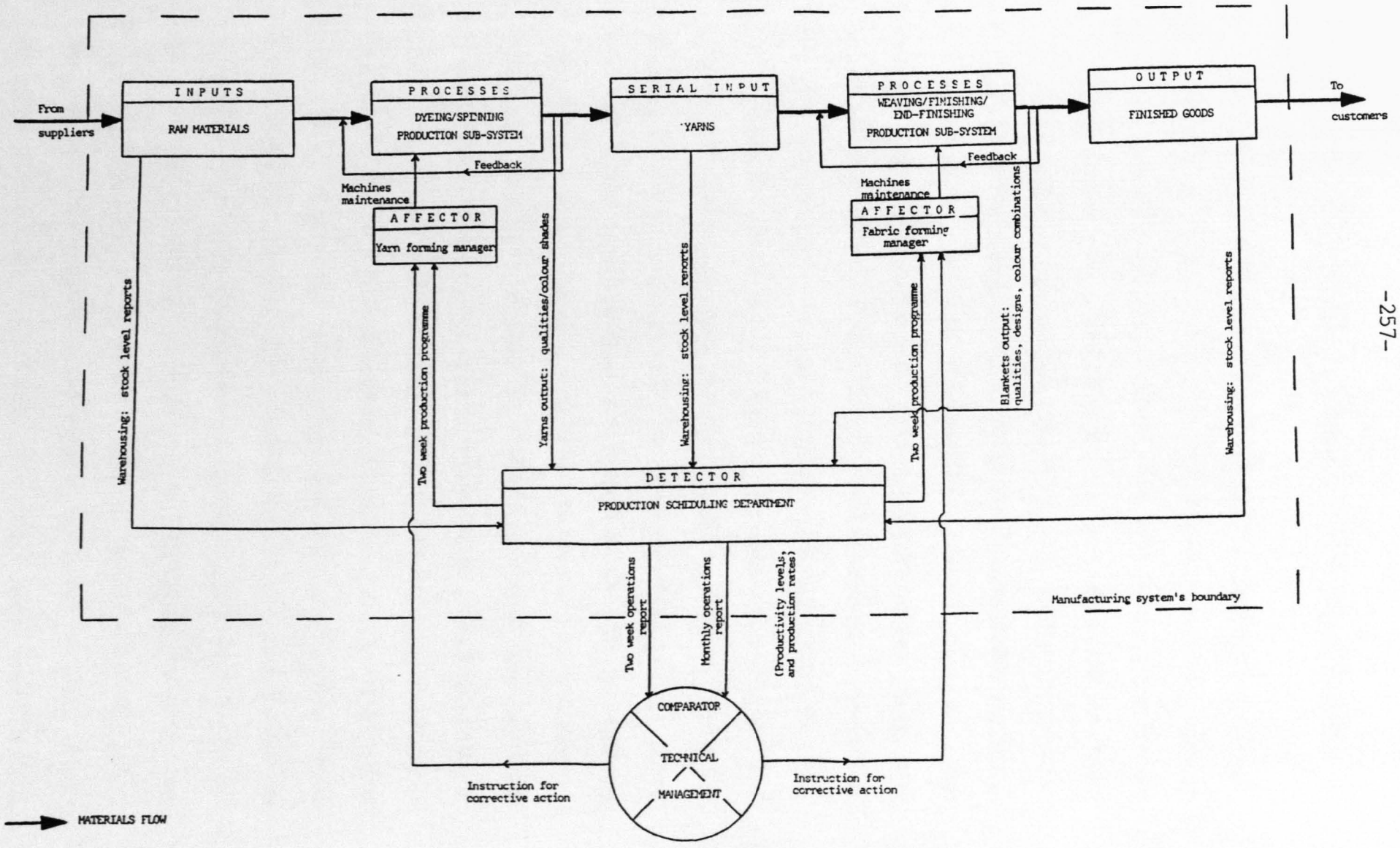
TWO WEEK PRODUCTION SCHEDULING FOR THE DYEING AND SPINNING DEPARTMENTS

Working Days (No.)	Colour Shade Code No.	Colour Shade	Quality	Blend Total Weight (kgs)	Batches No.	Yarn Count
1	103	Cream	Elacryl	2,800	2	1/2.70
2	203	Cream	Dralon	1,150	1	1/2.70
	204	Creamy White	Dralon	1,150	1	1/2.70
3	233	Grey Blue	Dralon	1,150	1	1/2.70
	131	Light Blue	Elacryl	1,400	1	1/2.70
4	243	Ambar	Dralon	1,150	1	1/2.70
	160B	Mantzana	Elacryl	1,400	1	1/2.70
5	153	Olive	Elacryl	1,400	1	1/2.70
	120	Dore	Elacryl	1,400	1	1/2.70
6	118	Tamba	Elacryl	1,400	1	1/2.70
	318	Tamba	Wool	900	1	1/2.70
7	307	Beige	Wool	900	1	1/2.70
	315	Apricot	Wool	900	1	1/2.70
8	340	Pistachio-Nut	Wool	900	1	1/2.70
	371	Souri Light	Wool	900	1	1/2.70
9-10	300	White	Wool	3,600	4	1/2.70

OR. SALIARIS — PRODUCTION SCHEDULING DEPARTMENT (YARNS) — THE HEAD OF DYEING DEPARTMENT

Signature — Signature — Signature

DIAGRAM 7.3: OR. SALIARIS S.A. BLANKET MANUFACTURE.
FIBRES TO FABRICS PRODUCTION SCHEDULING SUB-SYSTEM



7.3.2.2 PRODUCTION SCHEDULING FOR BATCH PROCESSING. WEAVING, FINISHING, AND END-FINISHING

The over-lapping sub-systems activities of weaving/finishing/end-finishing departments required closed-loop control to ensure appropriate material flows. The problem was what had to be produced in the weaving department and why. Furthermore, it was important to know whether the observed data matched that expected. A coherent systems approach was introduced following detailed analysis of the sales patterns and the in-coming orders breakdown in terms of qualities/designs/colour-combinations. A two week instruction sheet was issued by production scheduling to the fabric forming manager, supervised by the technical management of the company and notified to the corresponding production managers. Table 7.3 A-B highlights the procedure, whereby a two week schedule was issued for a 2 shift operation of the weaving shed. The sequence of the production flow per loom, quality, design and colour combination was indicated clearly by stating the number of woven rolls required in each case. These production schedules aimed to overcome ambiguities resulting from the previous systems based mainly on verbal instructions and lacking effective control over the material flows.

According to the instruction sheet, cards were issued for a two week loading of the corresponding looms, one card for each woven roll of 20 pieces in the required order. Each production lot was supervised by the head of the department during processing aiming to meet all technical specifications and avoid cases of machine and/or operators faults. All woven rolls of blankets were examined against specifications during mending. Thereafter, the processed materials followed a FIFO system through subsequent operations in the finishing and end-finishing

departments. A LIFO approach was authorized by the senior management of the company only in the case of the new collection development, and export batches, government tenders or specific make to order deliveries for hospitals, hotels etc. The latter had to be of considerable batch size, limited available time to adopt LIFO.

Table 7.4 illustrates the procedure for daily control of blanket processing during cutting. Each woven roll when cut into individual blankets has its quality, design, colour combinations, serial number and roll code number recorded in a ledger. This facilitated the quality controller knowing the actual number of units during cutting compared to the number in the two week production schedule of the weaving department. Furthermore it was easy to detect the material flows lead-times from the day the instruction for weaving until the day of arrival of the finished goods in the end-finishing department. In addition the number of defectives per role was noted on the ledger and a monthly management report was issued by the quality controller to the technical management of the company. Statistical results were reported for quality during the subsequent stages of yarns transformation into fabrics and finally into finished goods. The systems approach benefitted the decision making by the documentation of all necessary data, as shown in Diagram 7.3, during the materials processing, while the closed-loop controls improved information flows within the system facilitating stock reduction in both work in progress and finished goods.

TABLE 7.3A: TWO WEEK PRODUCTION SCHEDULING FOR THE WEAVING DEPARTMENT

OR. SALIARIS S.A.
BLANKET MANUFACTURE

Year: 1985
Date of instruction issued: 1/10
Instruction serial no: C19

TWO WEEK PRODUCTION SCHEDULING FOR THE WEAVING DEPARTMENT

LOOM 1/SOMET DOUBLE (2.4m)				LOOM 2/SOMET DOUBLE (2.4m)				LOOM 3/SOMET DOUBLE (2.4m)				LOOM 4/SOMET DOUBLE (2.4m)			
QUALITY: Dralon				QUALITY: Woollen				QUALITY: Dralon				QUALITY: Elacryl			
DIMENSIONS: 190 x 230cm				DIMENSIONS: 200 x 240cm				DIMENSIONS: 190 x 230cm				DIMENSIONS: 190 x 230cm			
No. of Shifts: 1/(2)/3				No. of Shifts: 1/(2)/3				No. of Shifts: 1/(2)/3				No. of Shifts: 1/(2)/3			
Design	Colour	Rolls	Gear	Design	Colour	Rolls	Gear	Design	Colour	Rolls	Gear	Design	Colour	Rolls	Gear
830	108	4	11½	161	336	3	13	930	105	6	11½	730	14	4	11½
"	112	2	"	"	308	1	"	"	108	4	"	"	18	2	"
"	124	2	"	"	320	1	"	"	124	4	"	"	26	2	"
"	153	2	"	"	323	2	"	"	136	6	"	"	56	2	"
870	105	3	"	5150	304	7	"					770	14	4	"
"	106	2	"	"	308	3	"					"	18	2	"
"	124	2	"	"	368	3	"					"	15	2	"
"	136	3	"									"	56	2	"

LOOM 5/SOMET SINGLE (2.0m)				LOOM 6/SOMET SINGLE (2.0m)				LOOM 7/SOMET DOUBLE (2.4m)				LOOM 8/SOMET DOUBLE (2.4m)			
QUALITY: Dralon				QUALITY: Elacryl				QUALITY:				QUALITY:			
DIMENSIONS: 155 x 225				DIMENSIONS: 155 x 225				DIMENSIONS:				DIMENSIONS:			
No. of Shifts: 1/(2)/3				No. of Shifts: 1/(2)/3				No. of Shifts: 1/2/3				No. of Shifts: 1/2/3			
Design	Colour	Rolls	Gear	Design	Colour	Rolls	Gear	Design	Colour	Rolls	Gear	Design	Colour	Rolls	Gear
920	105	6	11½	148	2	6	11½								
"	108	6	"	"	26	4	"								
"	124	4	"	"	50	4	"								
"	153	4	"	"	56	6	"								

LOOM 9/SOMET DOUBLE (2.4m)				LOOM 10/SMIT DOUBLE (2.4m)				LOOM 11/SMIT DOUBLE (2.4m)				LOOM 12/SOMET DOUBLE (2.4m)			
QUALITY:				QUALITY:				QUALITY:				QUALITY:			
DIMENSIONS:				DIMENSIONS:				DIMENSIONS:				DIMENSIONS:			
No. of Shifts: 1/2/3				No. of Shifts: 1/2/3				No. of Shifts: 1/2/3				No. of Shifts: 1/2/3			
Design	Colour	Rolls	Gear	Design	Colour	Rolls	Gear	Design	Colour	Rolls	Gear	Design	Colour	Rolls	Gear

OR. SALIARIS
Signature

PRODUCTION SCHEDULING DEPARTMENT (FINISHED GOODS)
Signature

THE HEAD OF WEAVING DEPARTMENT
Signature

TABLE 7.3B: TWO WEEK PRODUCTION SCHEDULING FOR THE WEAVING DEPARTMENT

OR. SALIARIS S.A.
BLANKET MANUFACTURE

Year: 1985
Date of instruction issued: 1/10
Instruction serial no: C19

TWO WEEK PRODUCTION SCHEDULING FOR THE WEAVING DEPARTMENT

LOOM 13/SOMET DOUBLE (2.4m)				LOOM 14/METEOR E/DOUBLE (3.05m)				LOOM 15/METEOR E/DOUBLE (3.05m)				LOOM 16/METEOR E/DOUBLE (3.05m)			
QUALITY: Woollen Stamped				QUALITY: Dralon				QUALITY: Velour				QUALITY: Superfil			
DIMENSIONS: 200 x 240cm				DIAMENSIONS: 190 x 230cm				DIMENSIONS: 200 x 240cm				DIMENSIONS: 210 x 240cm			
No. of Shifts: 1/2/3				No. of Shifts: 1/2/3				No. of Shifts: 1/2/3				No. of Shifts: 1/2/3			
Design	Colour	Rolls	Gear	Design	Colour	Rolls	Gear	Design	Colour	Rolls	Gear	Design	Colour	Rolls	Gear
530	305	20	13	189	104	2	11½	6050	305	6	11	2030	302	12	11
				"	124	4	"	"	324	2	"	"	353	4	"
				"	108	4	"	"	356	2	"	5160	304	2	"
				167	108	2	"	"	366	6	"	"	308	1	"
				"	118	4	"	5120	308	2	"	"	324	1	"
				"	136	4	"	"	318	1	"				
								"	324	1					

LOOM 17/METEOR E/DOUBLE (3.05m)				LOOM 18/METEOR E/DOUBLE (3.05m)				LOOM 19/METEOR E/DOUBLE (3.05m)				LOOM 20/SMIT E/DOUBLE (3.05m)			
QUALITY:				QUALITY: Elacryl				QUALITY: Dralon				QUALITY: Velour			
DIMENSIONS:				DIMENSIONS: 190 x 230cm				DIMENSIONS: 190 x 230cm				DIMENSIONS: 200 x 240cm			
No. of Shifts: 1/2/3				No. of Shifts: 1/2/3				No. of Shifts: 1/2/3				No. of Shifts: 1/2/3			
Design	Colour	Rolls	Gear	Design	Colour	Rolls	Gear	Design	Colour	Rolls	Gear	Design	Colour	Rolls	Gear
				134	2	5	11½	830	108	4	11½	5145	304	5	11
				"	26	5	"	"	118	4	"	"	308	5	"
				"	50	5	"	"	136	2	"	"	336	10	"
				"	56	5	"	840	118	4	"				
								"	124	2	"				
								"	156	4					

LOOM 21/SMIT E/DOUBLE (3.05m)				LOOM 22/				LOOM 23/				LOOM 24/			
QUALITY:				QUALITY:				QUALITY:				QUALITY:			
DIMENSIONS:				DIMENSIONS:				DIMENSIONS:				DIMENSIONS:			
No. of Shifts: 1/2/3				No. of Shifts: 1/2/3				No. of Shifts: 1/2/3				No. of Shifts: 1/2/3			
Design	Colour	Rolls	Gear	Design	Colour	Rolls	Gear	Design	Colour	Rolls	Gear	Design	Colour	Rolls	Gear

OR. SALIARIS
Signature

PRODUCTION SCHEDULING DEPARTMENT (FINISHED GOODS)
Signature

THE HEAD OF WEAVING DEPARTMENT
Signature

TABLE 7.4: DAILY STATISTICAL CONTROL OF THE BLANKET MANUFACTURE (MATERIAL FLOW FROM WEAVING TO END-FINISHING DEPARTMENT

OR. SALIARIS S.A.
BLANKET MANUFACTURE

Year: 1985
Month: November

DAILY STATISTICAL CONTROL OF THE BLANKET MANUFACTURE
(MATERIAL FLOW FROM WEAVING TO END-FINISHING DEPARTMENT)

Serial No.	Date	Roll Code No.	Quality	Design	Colour Combination	Number of Pieces		
						Weaving Expected	Cutting Observed	
							Approved	Rejected
1	1.11.85	3918	Dralon D	880	108	20	20	-
2	"	4141	Superfil	2030	302	20	20	-
3	"	3982	Elacryl D	730	14	20	20	-
4	"	3985	Elacryl D	730	14	20	20	-
5	"	3996	Elacryl D	770	18	20	16	4
6	"	3962	Dralon D	930	105	20	20	-
7	"	3966	Dralon D	930	105	20	20	-
8	"	4122	Velour	6050	305	20	21	-
9	"	3990	Elacryl D	770	14	20	20	-
10	"	4127	Velour	6050	324	20	13	8
11	"	3920	Dralon D	880	112	20	20	-
12	"	3986	Elacryl D	730	18	20	20	-
13	"	4152	Superfil	2030	302	20	20	-
14	"	4137	Velour	5120	308	20	20	-
15	"	4129	Velour	6050	356	20	21	-
16	"	3926	Dralon D	870	105	20	18	2
17	4.11.85	3821	Venus D	161	336	20	20	-
18	"	3839	Venus D	161	323	20	20	-
19	"	3801	Venus D	5150	304	20	19	-
20	"	3784	Venus D	163	88	20	15	5
21	"	3823	Venus D	161	336	20	20	-
22	"	3807	Venus D	5150	304	20	20	-
23	"	3787	Venus D	163	88	20	18	2
24	"	3840	Venus D	161	323	20	20	-
25	"	3804	Venus D	5150	304	20	17	2

OR. SALIARIS

Signature

THE HEAD OF THE QUALITY CONTROL DEPARTMENT

Signature

CHAPTER 8

LABOUR MANAGEMENT

8. LABOUR MANAGEMENT

8.1 MAN-POWER AVAILABILITY AND EMPLOYMENT POLICY

8.1.1 PERSONNEL DISTRIBUTION

The growing demand for high quality textile household products in the home market in the 1970s made the management of OR. SALIARIS S.A. decide to modernize and re-equip the weaving and finishing plant. With the installation of the dyeing and spinning plants in 1974-1975 the company's personnel increased considerably. From around 40 employees in the early 1970s the total labour force reached its peak of 143 during the peak demand period in late 1978. The distribution of man-power during the 1978-1987 period is shown in **Appendix 93,** where the breakdown by activity highlights the prevailing pattern.

The company's personnel as at 31st December each year showed an increasing trend up to 1978, a period of moderate stability during 1979-1981 and a gradual decline thereafter. The company operated 3 shifts in the departments of spinning, weaving and finishing during 1977-1981, at a time when there was a favourable trading environment. From 1982 onwards due to the deterioration of the business climate in the home market there were on average 2 shift machine/labour utilization in 1982-1983, 11/2 shift in 1984-1985 and 1 shift from 1986 to the present.

8.1.2 MAN-POWER PLANNING

In the late 1970s the enterprise experienced increased space limitations, which caused material flow problems. In an effort to overcome the operational deficiencies it was decided to invest in land, machinery and equipment. The new premises were ready by late 1982, 40% rise was anticipated in the company's productive capacity and an estimated 50% increase in personnel. The deepening recession of the Greek economy along with the austerity policies brought investment plans to a halt. At

the early stages of the research work the company's Board of Directors had decided that the most appropriate policy in the medium-term would be to cut the plant capacity by half, to keep demand higher than supply and to reduce the labour force to 70. These plans were not realised due to the opposition to any redundancy schemes. Furthermore changes in labour legislation in early 1982 made drastic measures impossible.

The company's philosophy up to 1982 was to provide higher wages and salaries to its personnel compared to the market situation, offer incentives for increased productivity, finance training programmes both at home and abroad, acquire expertise and know-how from various sources, and establish an overall climate of trust and co-operation between the management and the employees. By doing so it had a highly trained and skilled work force which reflected added value and high standards of quality of the acrylic blankets.

Each department had its own foreman, while in the case of spinning, weaving, and finishing there were shift superintendents for smooth running on a 3 shift basis. The transformation of the business to a public company as from 1.1.1978 increased accounting requirements so indirect labour was employed, decreasing flexibility and imposing extra overheads. The trend is shown quite clearly in **Appendix 93.**

8.1.3 THE COMPANY'S FUNCTIONS AND ORGANISATIONAL STRUCTURE AS AT 31.12.1982

The company's organisational plan as at 31.12.1982, prior to the initiation of this study, is shown in **Table 8.1.** Thus at the time of the project's conception, there were two executive directors: the Managing Director, responsible for financial and administrative issues, and the

Chairman, responsible for production planning and control. The company operated under this joint leadership for a period of approximately 30 years. The Board of Directors apart from the executive directors was formed by two persons with considerable experience and knowledge of their fields. One non-executive member of the Board had knowledge of production issues and the other of economic matters. The formulation of the business policy of the company as shown in **Diagram 8.1** was the responsibility of the Board of Directors. The two executives had to implement the policy, on the day-to-day operating schedules of the business. Both production and administration areas of responsibility were well defined. They presented no cause for concern since the functions were discharged with diligence. It was the interface between the two areas where improvements were required. As noted in **Table 8.1** there were functions where work was done explicity while in other cases it was carried out implicity.

At the initiation of the project it appeared that there were areas of responsibility within the operations which were not clearly defined. Furthermore there have been company activities where it was difficult to identify the degree of delegation of authority. Although the distribution of the company's employees at each level as at 31.12.1982 is shown in **Table 8.1**, there were, throughout the year, flexible workers within the different production sub-systems. It should be highlighted that at the conception of this work there was no job description system which could provide the required information for the personnel's area of responsibility, the significance of their work and their actual delegation of authority. It was suggested that company policy had to be transferred through managers and foremen to the employees so that clear objectives and targets set by the senior management could be followed by all involved in the smooth running of the business. Close examination of operations

DIAGRAM 8.1: OR. SALIARIS S.A. BLANKET MANUFACTURE.
THE MANAGEMENT FUNCTION AT COMPANY LEVEL

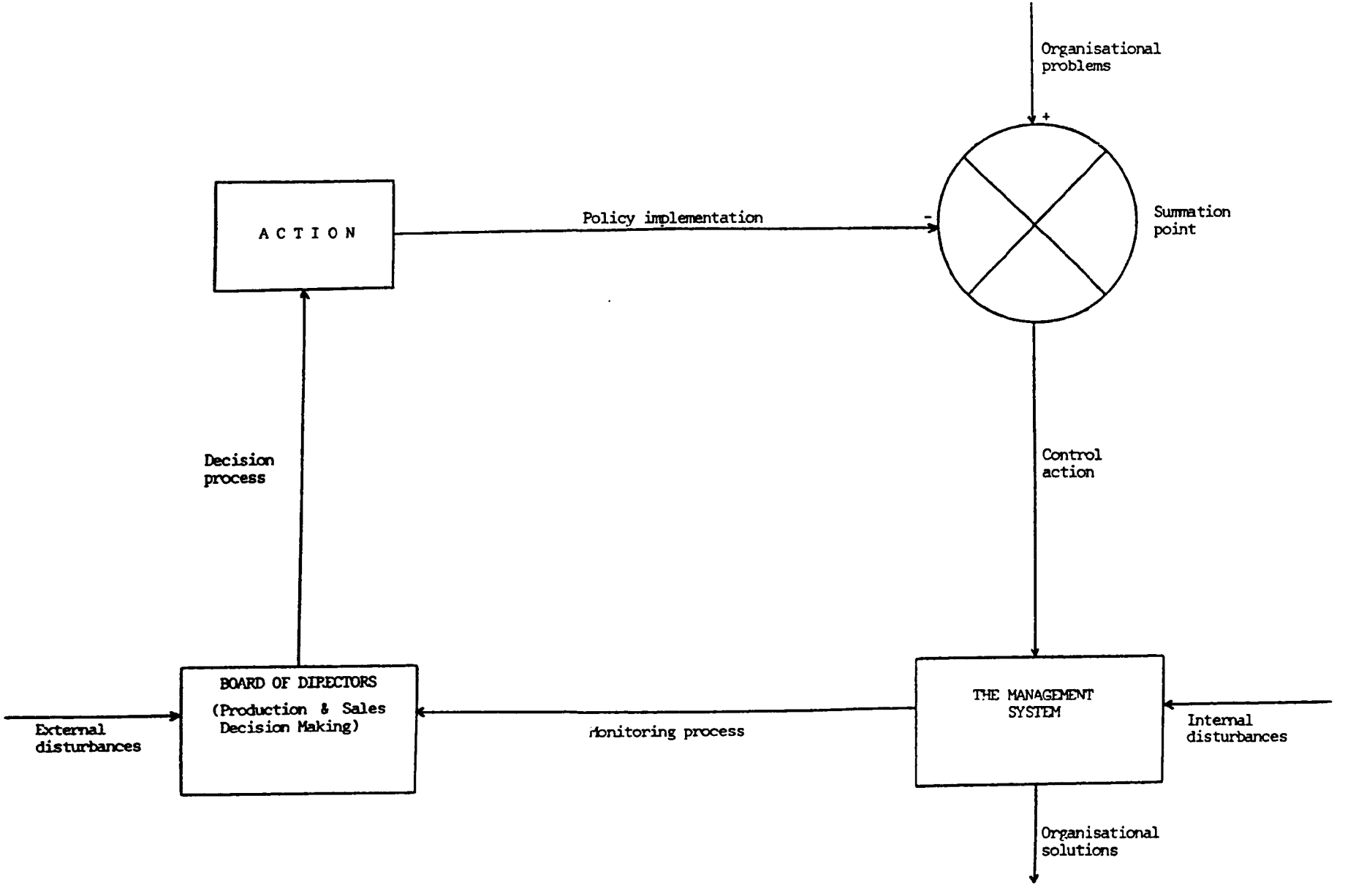
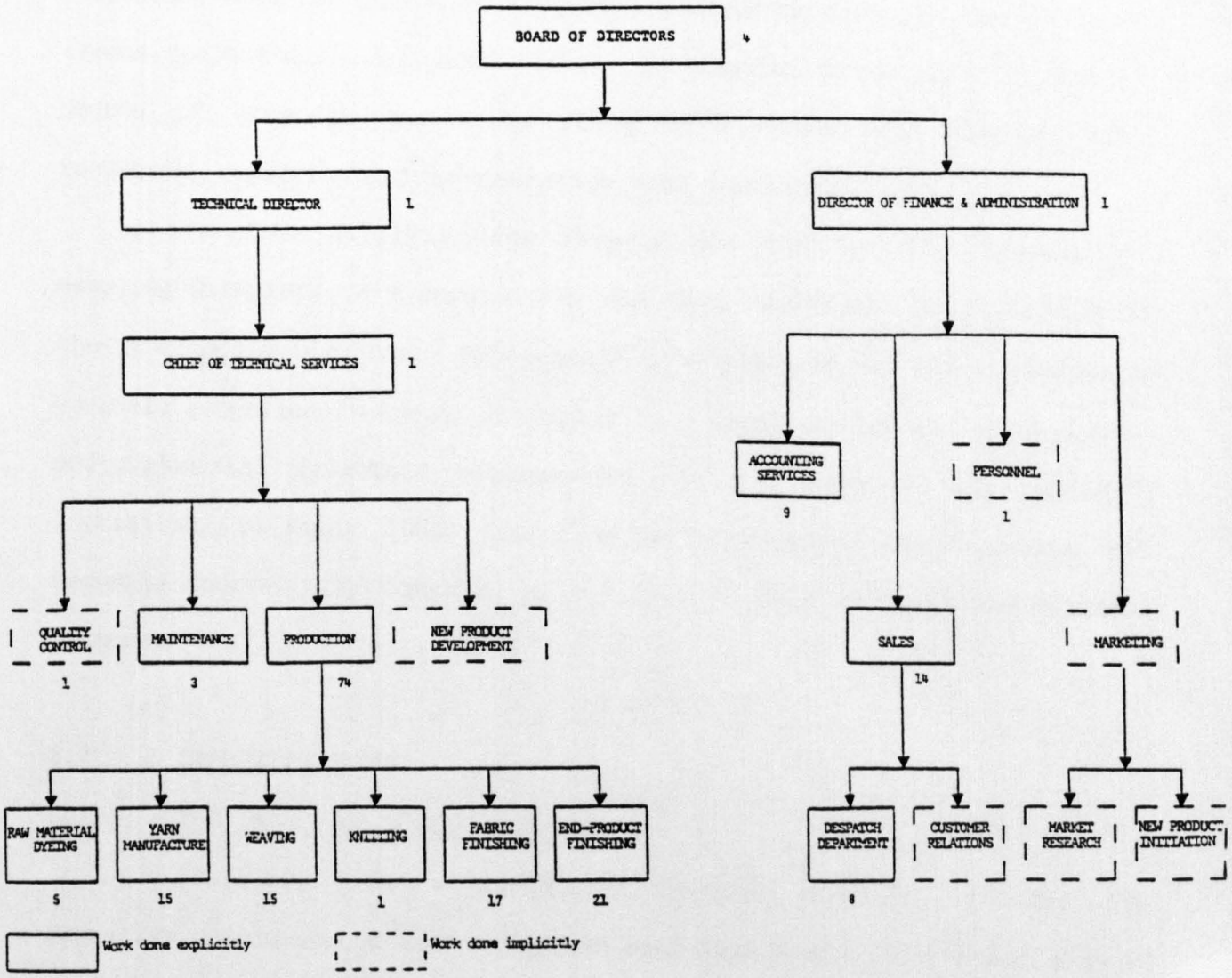


TABLE 8.1: OR. SALIARIS S.A. BLANKET MANUFACTURE.
COMPANY'S ORGANISATIONAL PLAN AS AT 31.12.1982



revealed barriers of communication in the company's hierarchical structure, caused by lack of clear and actionable objectives, and prevailing structural imbalances. It became evident that there was an increasing need for action to establish a sound methodology whereby policy issues could follow delegated flows. Information flows had to present a degree of coherent continuity along with closed-loop control where feed-back, reporting and documentation were a priority.

As from 1.1,1983, the company was run by the Chairman and Managing Director. His appointment was made following the retirement of the ex-Managing Director. This change took place at a time of deepening economic recession in Greece resulting in a deteriorating business climate and industrial relations environment. At the time of the project's initiation, in early 1983, the problems surrounding the business were becoming increasingly complex, as a result of both internal and external factors.

8.2 LABOUR PROBLEMS

8.2.1 THE IMPACT OF SOCIAL CHANGES

Following PASOK's 18.10.1981 general election victory, the socialist government of Greece imposed many legislative acts which changed labour legislation and created a new system of interactions in the Greek industrial sector. The textile industry, being among the most labour intensive industry groups, found itself in period of deepening world recession, unprepared to tackle the magnitude of change.

Among the first measures adopted was inflexible wage indexation introduced in 1982. The automatic adjustment of the wages and salaries to the consumer price index along with the annual adjustment of the income tax scales favoured low-paid employees, while the gap between the salaried

employees and the workers gradually diminished. The regulatory interventions in the labour market continued during the years to date, when under the government's counter inflation policies wage freezes were adopted in 1983, and during the 1986-1987 stabilization programme. Following the sharp increases in wages during the 1982-1985 period, as illustrated in **Appendix 56** labour cost in manufacturing rose substantially which damaged competitiveness and reduced ability to recruit new personnel. In the textiles industrial branch the average monthly wages of the salaried employees, as calculated by NSSG, rose from 31,895 drachmas in 1981 to 71,020 drachmas in 1985 while the corresponding daily wages increase of the textile workers was from 875 drachmas in 1981 to 2,134 drachmas in 1985, as shown in **Appendix 57.** Furthermore the unit labour cost development in manufacturing, as presented in **Appendix 58,** rose by 33.3% in 1982 alone, followed by average increases exceeding 20% in the subsequent years to 1985.

At a period of declining home market demand, the organisation's selling prices rose at a pace significantly lower than the level of inflation in Greece, and furthermore the company had to cope both with the higher fuel cost, following the second oil crisis, and with sharp rises in wages. Another factor which influenced competitiveness was the gradual decline of the weekly working hours from 48hrs/wk in 1970 to 45hrs/wk in 1975, and eventually to 40hrs/wk from 1983 onwards on a five day week. On the other hand in 1982, the annual vacation period was extended to 4 weeks for all employees. This affected the management's production scheduling plans and imposed additional costs on the business.

A vital regulatory intervention in the labour market was the substantial security provided to trade unions in 1982, when under the provisions of the law N 1264/82, stikes and industrial disputes were

safeguarded, while lock-out was made illegal. Furthermore, the group redundancies permit of 4% dropped to 3% on mid-1981 and even further to 2% on mid-1982. These measures reduced the company's labour shedding ability and made the structure inflexible in a period of growing recession. The government interventions caused increased labour disputes (as illustrated in **Appendix 25**), during 1982-1985. The total number of strikes, number of people on strike and number of working hours lost during the 1980s, (as shown in **Appendix 26**) reflected the prevailing situation in the labour market.

8.2.2 COMPANY LABOUR DISPUTES

Taking into consideration the prevailing business climate the company's Board of Directors decided to proceed with group redundancies of the personnel in late December 1981. Under the prevailing legislation and the acts regarding the size of the enterprise the 2% redundancy permit was adopted and 6 employees were made redundant in the period January to March 1982. The company's personnel reacted by establishing a business trade union on 10.1.1982 which was founded by 25 employees and had a 7 members action committee. In April 1982 in an attempt to proceed with the redundancy scheme the management was faced with strong opposition by the company's trade union which took the form of industrial action of 2 hours machine stoppage per shift. As a result the Board of Directors withdrew its policy on personnel redundancies for the rest of the year.

Once more in early June 1982 there was a serious disagreement between the management and the representatives of the trade union on the time and duration of the personnel summer holidays. The business policy had been that the most convenient time for the personnel vacation period was June, a time that there has traditionally been negligible demand for

blankets in the home market. It should be mentioned that ever since the foundation of the company there had been no arguments on that issue, all parties concerned accepting seasonal demand. There was only a small maintenance team during the two week holidays period. With the government's legislation on 20.5.1982 the annual vacation period was extended to four weeks and the management of the company failed to realise the magnitude of the change.

It was considered impossible to provide the whole vacation period to all employees at the same time - as required by the trade union - because the annual designs/colour combinations selection was at the development stage and the incoming orders for execution from July onwards had to be prepared and despatched. It was argued that any delays in production and the screening of the annual collection could seriously damage the business credibility in the home market. Once more the personnel opposed the management's views with 2 hours machine stoppages during all 3 shifts on 2-3.6.1982. On the company's application to the local labour arbitration office it was suggested 3 weeks holidays from 14.6.1982 to 3.7.1982 and a 1 week from 20.12.1982 to 24.12.1982. The management's efforts were unsuccessful and finally the 4 week summer holidays period was given to all the personnel simultaneously as from 14.6.1982 to 10.7.1982 which imposed a serious set-back on management. Following the growing demands of the company's trade union, the personnel manager withdrew from the business on 24.8.1982 and the company's technical director assumed responsibility for labour issues. A lengthy procedure of correspondence and formalties was adopted in an effort to have a complete documentation of the proceedings.

The situation became worse when on 3.9.1982 the trade union's action committee delivered on ultimatum to the senior management of the

company demanding a 20% rise in the basic wages and salaries, reduction in the working hours, and a mid-shift break for all employees. The mamagement's response was a document noting wage increases from 1.1.1982 to 31.8.1982 exceeding 30% due to the government's wages indexation; a reduction in working hours was due early 1983 when the 40hrs/wk was to be introduced by the legislation and machine stoppage during the shift could cause increases in electricity costs and would affect the quality of the processed materials. It should be highlighted that the climate spread in most manufacturing companies of the country at the time, while the labour intensive textile firms in particular faced severe labour disputes and financial problems.

8.3 1983: INDUSTRIAL RELATIONS ISSUES AND IMPLICATIONS

8.3.1 CAUSES AND EFFECTS OF THE PERSONNEL STRIKE

Following the official devaluation of the Greek drachma against the USD and the major currency block on 9.1.1983, a severe financial burden was imposed on the business, since all raw materials were imported from abroad on credit. The Board of Directors decided to follow a rationalization approach to operations and proceed with personnel redundancies on the 2% monthly permit. A detailed document was drawn by the senior management, emphasising the situation and providing a number of senarios in order to overcome the growing company difficulties. The management's proposals were passed to the trade union's action committee for consideration while suggesting that the full support of the employees in tackling the external threats to the system was required to secure the viability of the business. Once again the trade union opposed redundancy schemes offered by the management and proceeded with a 4 hours industrial action on 2.3.1983 and a 24 hours strike on 4.3.1983. This action

followed the redundancy of two employees on 28.2.1983. The company's Board of Directors was not prepared to withdraw its position and followed a firm policy which resulted in strike action 10.3.1983 to 31.5.1983. The dispute could not be resolved with the guidance of the government local labour officials and the case was brought to court. On 19.5.1983 the first degree administrative arbitration tribunal of Thessaloniki issued the 2471/3.5.83 verdict that the personnel strike was illegal and unreasoning since it exceeded the legislative contents of the law N 1264/82. Furthermore the 2436/3.5.83 verdict issued on 18.5.83 imposed a penalty on employees involved in the illegal picket of the factory's entrance, preventing the flow of incoming and outgoing materials and threatening the personnel who wanted to work. Despite the court's decisions the strike continued and the management of the company had to warned all parties about violation of the business rights, and the heavy costs imposed by failure to recognise the court's decisions.

After careful examination of the prevaling economic and political environment, it could be suggested that the external factors to the Greek economy along with the political climate at the time made the operation of the manufacturing companies extremely hard; an issue reflected in increased industrial actions and bankruptcies. At company level the strike was only resolved when the management accepted the terms of the personnel's action committee, supported by the Textile Workers Union of Greece, to withdraw the redundancies, provide a 10,000 drachmas compensation fee to every employee, and sign a three party agreement in the Ministry of Labour in Athens - suggested by the Ministry's Secretary - whereby all future redundancy schemes would be avoided. Following the termination of the strike the labour force was divided into three groups and successively offered the full summer holidays, a procedure which lasted until the mid- August 1983.

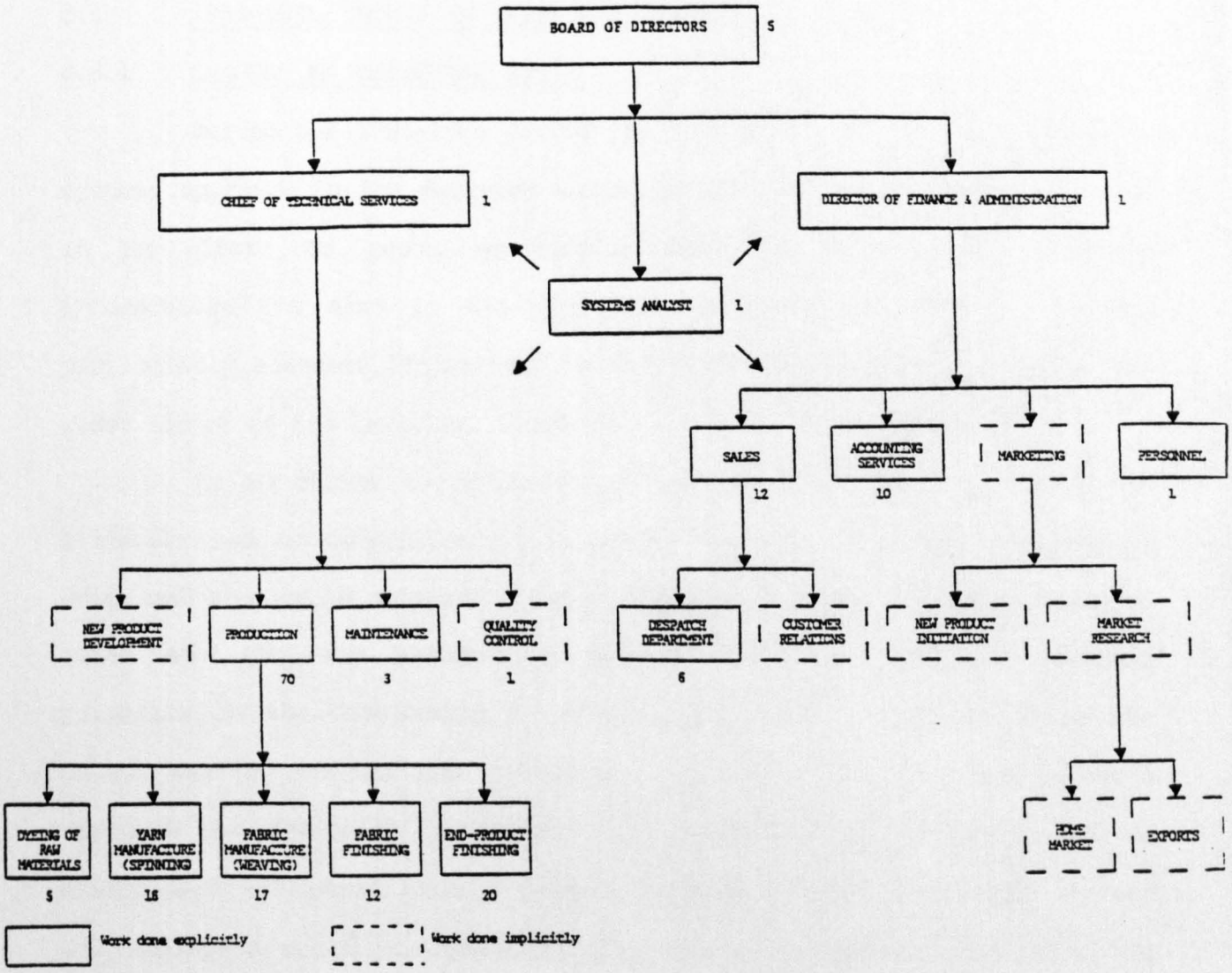
8.3.2 POST-STRIKE PERIOD

As a result of the three month strike period, and the prevailing situation, the company experienced severe financial problems during the post-strike months and suffered losses for the first time in the financial year which ended on 31.12.1983. At that time the total number of employees was down to 99 people, while a new business policy was required to cope with the increased complexity. The formulation of the company policies was made by the new Board of Directors which as shown in Table 8.2 was formed by 5 persons namely the two executive directors of OR. SALIARIS S.A: the company's Chairman and Managing Director, the Technical Director, along with three non-executive members, a consultant on financial and economic issues, a consultant on legal aspects and the company's analyst.

The business objective was the establishment of a good industrial relations environment to overcome the growing external threats in a united manner so that the business weaknesses, the strong seasonal demand at home, and inability to finance future investment in stocks could be overcome. The selling strategy aimed to finance the smooth running of the business during the low-demand period, and secure the jobs of the personnel.

The company's organisational plan as at 31.12.1983, shown in Table 8.2, highlights how improvements can be attained by establishing a vertical hierarchical structure. Job descriptions were required to phase out limitations of the knowledge and nature of each separate group of activities, while the barriers to communication, were to be eliminated by providing a sound and coherent management structure. Furthermore new demanding requirements such as the areas of materials quality control, the new product development, the production scheduling and the marketing

TABLE 8.2: OR. SALIARIS S.A. BLANKET MANUFACTURE.
COMPANY'S ORGANISATIONAL PLAN AS AT 31.12.1983



function of the business had to be fulfilled by capable persons, either by internal selection, or by recruiting new key personnel.

8.4 1984-1985: DESIGN OF A REFORMED SYSTEM

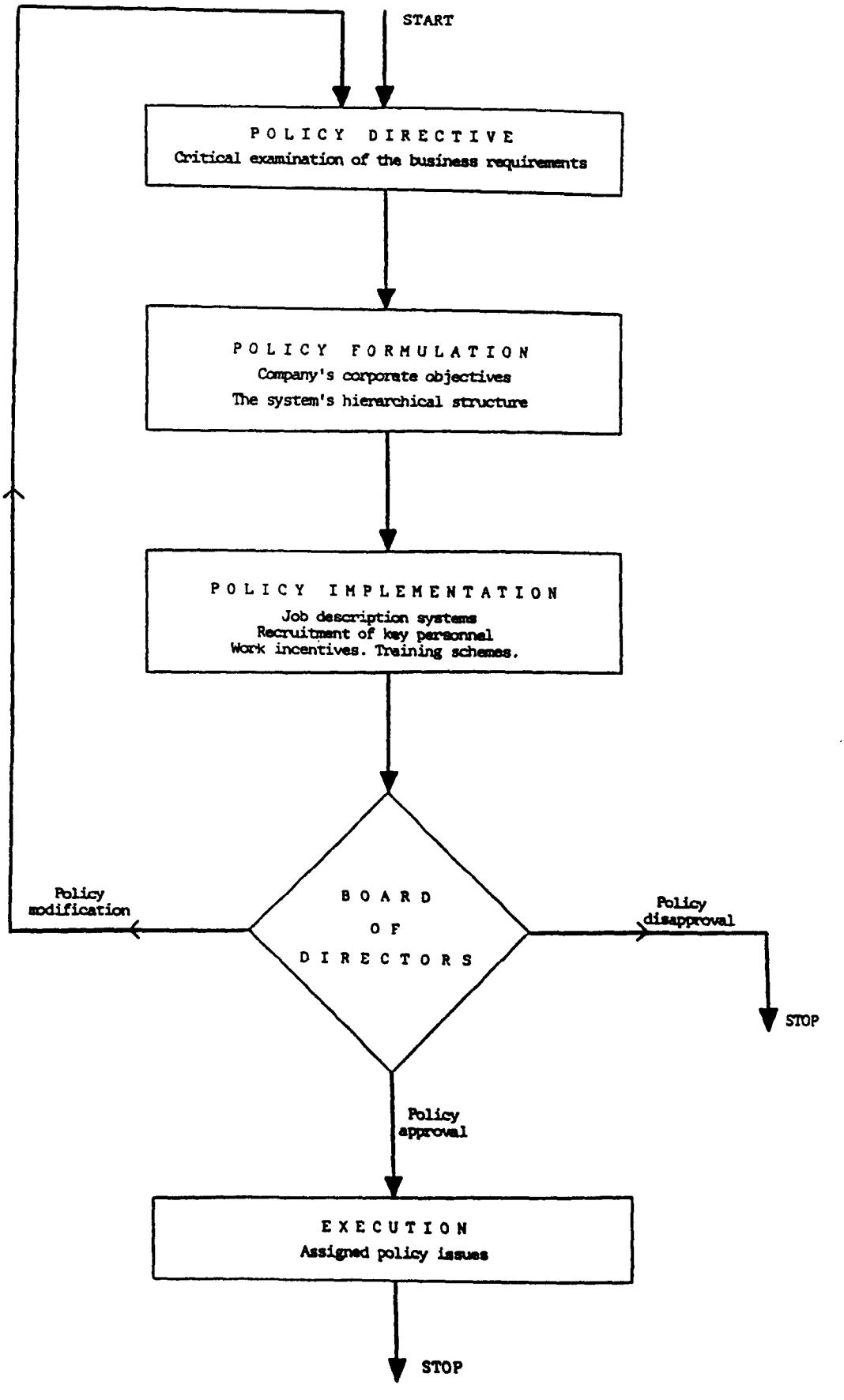
8.4.1 CHANGES IN MANAGEMENT STYLE

During the 1984-1985 period the management of the company used a systems approach in its decision making process as shown in **Diagram 8.2**, in an effort to reach equilibrium both in the internal complex interactions and also in the system's dependency on external issues, particularly economic, financial, social and political issues within the wider sector of the textiles, industrial and economic system in Greece.

In an effort to maximize the business resources, the Board of Directors had to compromise aiming to bridge the gap between the trade union and the senior management of the company. Among the first measures taken were that the Director of Technical Services would be involved primarily in the development of woollen blankets collection, while the author was to consider the industrial relations function. The author's approach to personnel management was based in the creation of an environment of mutual trust, respect, understanding and support whereby all employees would be encouraged to achieve corporate objectives: the viability of the business to provide a continuity and security of employment. It was believed that all had this common interest in the business.

The management had to make-up for the 1983 company losses, but it was to be achieved by improved profitability and increased cash-inflows, since there were not to be any reduction in labour in the near future. The expected rise in cash out-flows had to be covered by the generation of increased sales revenue. Launching the new product collection presented the possibility of sales increases greater than inflation and within the

DIAGRAM 8.2: OR. SALIARIS S.A. BLANKET MANUFACTURE. DECISION MAKING PROCESS AT COMPANY LEVEL



required gross profit margins. The co-operation and the enthusiasm of the workforce was essential to success in overcoming the prevailing problems.

8.4.2 EMPLOYMENT OF KEY PERSONNEL

The management required to recruit personnel to fill the areas of responsibility where work in the past had been done implicitly. A marketing department was introduced and among the first recruited was an Exports Manager. The person combined both academic qualifications and extensive experience in related areas. In addition a market analyst was employed to assist business effort to explore marketing opportunities at home and abroad. The supervising Marketing Manager was a former Managing Director of the ELLAIF S.A. company a competitor which had been producing acrylic blankets in the home market for almost the same period as OR. SALIARIS S.A. The management team, therefore had expertise in sales management with experience in promoting acrylic blankets in the Middle-East and the Western European countries. Furthermore, knowledge in the blanket processing and management related areas was important to the company. On the production side, a textile technologist was recruited to fulfil the business requirements for that managerial position. Materials quality control throughout the manufacturing stages for both acrylic and woollen blankets processing was his main responsibility.

It should be emphasized that these recruitments to managerial positions within the company's infra-structure were made on the basis of matching academic background and/or experience to the key areas of responsibility. The selection of the persons was made under critical examination of the company's needs at the time, a procedure which had not always been used in the past. Furthermore, there was the commitment of

the senior management to train key personnel, introduce them into the environment and the complex operations to ensure success.

8.4.3 DELEGATION OF AUTHORITY THROUGH JOB DESCRIPTIONS

Extensive work study data concerning the company's operations and information flows, were collected and examined carefully by the author. A result of this procedure was a job description system which evolved from each identifiable group of employees within the company. The system required a vertical hierarchical structure whereby each employee could identify his immediate superior. All barriers of communication had to be eliminated, and closed-loop control was adopted in an attempt to establish delegated responsibilities at each level of authority: employee/operative, activity foreman, head of department, production manager and Director of Technical Services. The establishment of clear actionable job descriptions required modifications to be made in both the financial and technical sectors of the company.

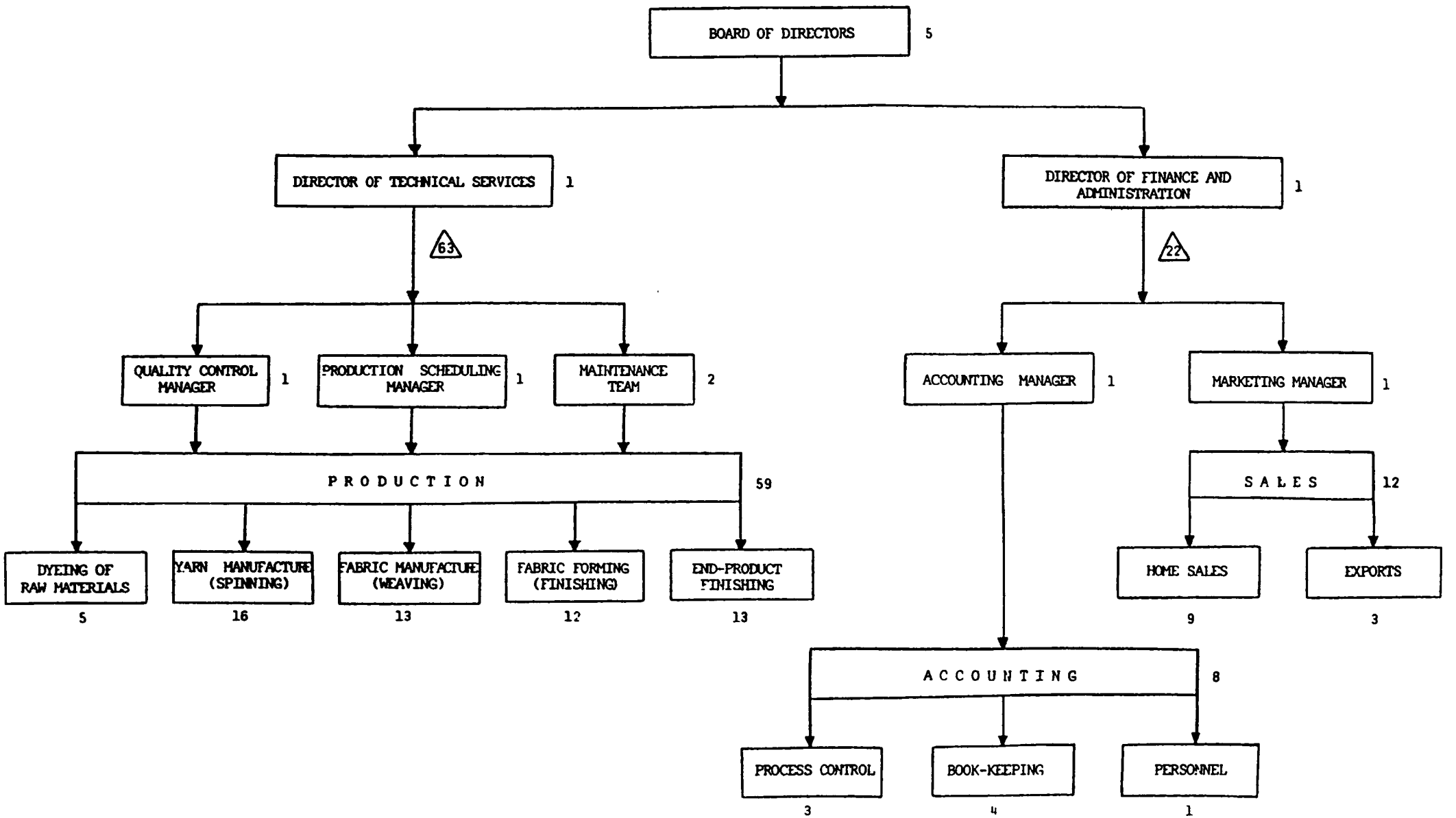
On the technical side, the Director of Technical Services took the lead in presenting the Board of Directors prevailing policies. He also supervised the operations of the woollen blanket finishing plant at Trikala which employed 15 persons. His two immediate deputies: the company's quality control manager and the production scheduling manager were charged with controlling the procedures and practices within manufacturing. The delegation of authority and the identification of the areas of responsibility within the technical side was through the heads of the departments, responsible for the smooth running of the material flows within their areas. On the day-to-day issues they had to consult the production manager and supervise departmental foremen and the machine operatives. The departments of spinning, weaving and finishing which

often operated on 2 shift basis had a second foreman who was charged with the operation of the second shift.

On the financial and administrative side, the two areas of delegation of authority were traditionally the accounting and sales departments. Following the establishment of a marketing department within the company's structure the accounting manager and the newly appointed marketing manager had to report and discuss policy issues with the Director of Finance and Administration, the company's Managing Director. This was designed to produce accountablity of persons in positions of responsibility particularly for the implementation of company policy. The established systems of closed-loop controls were achieved by changes in policies and procedures within the organisation. Verbal communications was replaced by adequate documentation introduced at each level of activity. Management reports were issued on a monthly basis for the consideration and policy decision making of the Board of Directors. Furthermore for all key personnel a job description card was produced defining their work, its task, the immediate supervisor and the required documentation and reporting, on a series of issues, lead-time, FIFO methodology, deadline dates per month etc. Each job description card was signed by the employee, his immediate supervisor and the Director of Finance and Administration.

The company as at 31.12.1985 employed 87 persons, as shown in **Appendix 93**, 63 employees in the production side of the business, 22 in finance and administration and 2 in the senior management of the company. The firm's organisational plan as at 31.12.1985 is illustrated in **Table 8.3** where the company's hierarchical structure is clearly defined. The Board of Directors was composed by 5 members, two executive members namely: the company's Chairman and Managing Director and the Director of

TABLE 8.3: OR. SALIARIS S.A. BLANKET MANUFACTURE.
COMPANY'S ORGANISATIONAL PLAN AS AT 31.12.1985



Technical Services, together with three non-executive members; consultants on financial, economic and legal issues.

8.4.4 FLEXIBLE WORKING SYSTEMS THROUGH TRAINING SCHEMES

The management in tackling the high flactuations in the products' demand adopted a different policy from the early 1984 onwards. Instead of employing additional personnel resulting in either redundancy or excess workforce in the low demand period, leading to increased operational costs, it was decided to establish extensive training schemes to improve employee flexibility. There have been times that the volume of the subcontracted work, particularly in dyeing and spinning, required the formation of a skilled group of flexible workers to form an extra shift in both these departments. The people from weaving and finishing provided their services when required, thus maximizing the output of individual sub-systems during periods of high demand. In addition to key personnel, department heads and foreman worked overtime during the peak demand period. The company overcame the problem of excess labour, while those employed increased their earnings. The whole exercise demonstrated the skills of a number of employees and their flexibility.

8.4.5 SAFETY AND CONTROL MEASURES

From 1984 onwards improved working conditions and the establishment of safety standards throughout production were a priority. The management invested in fire prevention and control systems, a team of employees was trained for emergencies, while at the same time signs related to good operational practice were placed in appropriate areas in each department. The technical management of the company issued a number

of bulletins on safety and control to all machine operatives, their supervisors and production managers.

8.4.6 WORK INCENTIVES AND PRODUCTIVITY SCHEMES

Productivity bonus schemes had been established in late 1970s. Individual incentives were provided to the loom-operatives in the weaving department for highest productivity levels achieved on a monthly basis, while other forms of financial rewards included bonuses, attendance fees, and pay rises twice a year for most employees which were considerably above the government's base standards. In 1983 all forms of bonus were abandoned because of economic austerities imposed by the government. The only legal provisions have been the quarterly cost of living increased in base wages or salaries according to the national scheme.

In early 1984 after negotiations between the management of the company and the trade union a system of productivity schemes was established for each level of activity within the firm. As illustrated in Table 8.4, all departments were set financial rewards for increased levels of productivity. The system was designed on an achievable production level based on a 2 shift operation with a given number of employees allocated to each department. Thus in the case of the dyeing department the system operated on 4 employees/machine operatives, for spinning 13, weaving 6, finishing 16 and end-finishing 17. In the calculations of the new productivity bonus schemes only the direct labour was taken into account, while modifications to the number of machine operatives, or number of shifts per month indicated the change of the base scale by the relevant factor. The remaining employees in each department, the foremen and head of the department were allocated the equivalent bonus rate achieved by the direct labour in the area of productive

TABLE 8.4: OR. SALIARIS S.A. BLANKET MANUFACTURE.
PRODUCTIVITY BONUS SCHEMES AT COMPANY LEVEL
(as established in early 1984)

DEPARTMENT	PRODUCTIVITY BONUS SCHEME	Drachmas per Employee per Day
DYEING	From 2,900 kgs to 3,150 kgs per 2 Shifts	50
	" 3,151 kgs " 3,500 kgs " " "	100
	" 3,501 kgs " 3,750 kgs " " "	150
	" 3,751 kgs and more " " "	200
SPINNING	From 1,650 kgs to 1,750 kgs per 2 Shifts	50
	" 1,751 kgs " 1,850 kgs " " "	100
	" 1,851 kgs " 1,950 kgs " " "	150
	" 1,951 kgs and more " " "	200
WEAVING	From 840 pcs to 900 pcs per 2 Shifts	50
	" 901 pcs " 960 pcs " " "	100
	" 961 pcs " 1,020 pcs " " "	150
	" 1,021 pcs and more " " "	200
FINISHING	From 600 pcs to 680 pcs per 2 Shifts	50
	" 681 pcs " 740 pcs " " "	100
	" 741 pcs " 820 pcs " " "	150
	" 821 pcs and more " " "	200
END-FINISHING	From 905 pcs to 1,010 pcs per 1 Shift	50
	" 1,011 pcs " 1,114 pcs " " "	100
	" 1,115 pcs " 1,219 pcs " " "	150
	" 1,220 pcs and more " " "	200

activity. The employees involved in mending were allocated the same bonus per month as the weaving department's personnel, while the personnel in the cutting and despatch activities were given the corresponded bonus rate achieved by the employees in the end-finishing department. All remaining personnel received the aggregated average achieved by the five productive departments monthly.

The employees succeeded in gaining maximum rewards, not only during the peak demand period, but on a number of other occasions producing batches for exports, or government tenders. The system of departmental productivity bonus schemes had to be abolished in 1986-1987 when the two year stabilization programme was introduced and wage freezes were imposed by government. During these years once again, only legal earnings rises were authorized by the Ministry of Labour on a quarterly basis (Wages indexation system).

8.5 RECENT DEVELOPMENTS

8.5.1 MANAGEMENT'S OPTIONS FOR COMPANY VIABILITY

In late 1985, the management of the company expressed the view that despite the continuing economic recession in Greece and the prevailing business climate, the prospects for the financial year ended at 31st December 1985 showed an overall improvement in the company's operations and a decelerating trend in the growth of the annual losses. The efforts to enter export markets, increased government tenders, and the successful 1985-1986 collection in both acrylics and woollen range of blankets indicated a possible up-turn in 1986. On the other hand on 11th October 1985 the government announced the two year stabilization programme involving a 15% devaluation of the currency, advance import payments, credit restrictions and a two year wages freeze. The company had been

weakened by drachma's devaluation on 9th January 1983 and faced a second blow in less than three years.

The Board of Directors of OR. SALIARIS S.A. after a thorough appraisal of the weaknesses made a policy decision to stay small and all activities had to be scrutinized. An unavoidable measure was to cut the man-power by half, which indicated a workforce not exceeding 45. To achieve this policy, the management of the company had long discussions with the trade union's representatives. Among the possibilities were a half-pay system for excess personnel - under the provisions of the existing labour legislation -, a package of automatic exchange of 20% of monthly earnings for company shares giving a gradual participation in the business operations and control, the provision of considerable redundancy incentives including a package of blankets and money exceeding the employees legal redundancy payment by a factor between 2 and 3, and/or a system of reduced working time and earnings. This would mean personnel working 24 hours and being paid for 32 hours per week. As illustated in Appendix 93, the company employed on 31.12.1985 87 persons, 63 on the technical side of the business, 22 in finance and administration, while the remaining 2 were executive directors.

8.5.2 TRADE UNION'S OPPOSITION

The trade union's response to the management's offer was to take time to consider the packages on offer. The management, having experienced the 3 month strike in 1983, decided that there was no way to solve the problems with lengthy discussions particularly when the trade union's action committee engaged in external consultations. The Board of Directors insisted on an internal solution of the problem by the acceptance of any one of the packages on offer, aiming to maintain industrial

relations. Management took the view that external influences on the company's trade union made the chances of agreement to a package almost negligible.

Within the existing labour legislation and under the provisions of the law N 1264/82 the management of the company provided a 10 day advance notice to 40 employees that the half-pay scheme, was to be established, a procedure which was to be introduced from 20.3.1986. The maximum duration of a half-pay system in Greece is, by law, 3 months, a period that the employee does not work in the company, but still gets half of his previous earnings modified with all ATA provisions made by the government. This could only be offered once a year for each employee, but it was considered as the most viable option at the time. The management's intention was to provide the scheme for the 40 employees from 20.3.2986 to 20.6.1986, followed by the second group of employees from 23.6.1986 to 23.9.1986 thus covering the entire low demand period by employing half the company's personnel.

The trade union opposed to the half-pay scheme and declared a 2 day industrial action on 17-18.3.1986 followed by a 3 day strike from 19-21.3.1986. The management's unwillingness to give in and the trade union's reluctance to recognize cash flow problems with wages resulted in 2 and 3 day strikes covering each subsequent week. The employees appeared to be divided, since almost half of them were willing to work, but they were reluctant to cross picket lines. In late April 1986 a small group of employees, about 15 in total, decided to return to work but they were faced with an entrance blockade by the remaining strikers, around 30 at a time, and entered the following day only under strong police protection. The management of the company protested to the court about the violation of the right to operate the business and the freedom of employees who wanted to work.

In late May 1986 the first degree administrative arbitration tribunal of Thessaloniki by its verdict 8887/86 provided the constitutional right of all employees willing to work and imposed a 4 months imprisonment to all persons involved in the violation of the freedom to work. Following these unpleasant developments a team of 18 employees along with the senior management of the company initiated work soon afterwards, in weaving, mending, finishing and end-finishing while yarns had to be spun elsewhere. The despatching of orders to customers followed immediately in an effort to return back to business and bridge the gap during the three months strike.

8.5.3 POST-STRIKE MEASURES

Despite the strong opposition of a small group of employees including the trade union's action committee, increasing number of persons returned to work following the court's verdicts. By mid-June 1986 the strike collapsed and the picketers expressed their willingness to return to their jobs. The management of the company selected a total of 30 employees, the most skillful and capable to operate the production line on one shift basis, provided the summer holidays to 18, made 2 employees redundant and provided the remaining 35 with the half-pay scheme from 12.6.1986 to 12.9.1986. The Board of Directors continued to exercise the 2% monthly redundancy permit, offered considerable redundancy incentives to a number of employees, and under the provisions of the prevailing legislation made no redundancy payments to employees convicted by the court.

Under the law N 1264/82 and the ministerial acts of the Ministry of Labour, manufacturing companies were permitted to make 2% of their labour force redundant per month in companies with 76 and more employees.

In between 50-75 they can make redundant only one person per month, while under 50, 5 persons per month. By the end of October 1986 the senior management of the company had personnel down to 49 by offering 8.5 million drachmas in redundancy payments in 1986 alone.

8.5.4 THE MODIFIED STRUCTURE

From late October 1986 to the end of the financial year the most skillful employees on the technical side of the company were transfered to the newly formed company, the Textile Mills of Thessaloniki S.A. which operated all productive departments dyeing, spinning, weaving and finishing and employed at 31.12.1986 14 employees, 3 in the dyeing department, 7 in the spinning department, 2 in the weaving and 2 in finishing, all persons being flexible workers. As a result output was able to meet the demand which existed.

The main company - OR. SALIARIS S.A. - continued to control the end-finishing department, where the incoming materials acrylic blankets from the Textile Mills of Thessaloniki S.A. and woollen blankets from Lanafin S.A., the woollen blankets' finishing plant, were controlled and following cutting, sewing of label and ribbon, folding and packaging were despatched to meet the in-coming orders from the company's customers in the home market, or to be exported abroad. Along with the accounting and sales department OR. SALIARIS S.A. employed 14 at the end of the 1986 financial year.

CHAPTER 9

SALES AND COST MANAGEMENT

9. SALES AND COST MANAGEMENT

9.1 AN APPRAISAL OF COMPANY PHILOSOPHY

9.1.1 BUSINESS GOALS AND OBJECTIVES

The post 1975 goals of the firm were the production, promotion and physical distribution of a high quality, high added value range of acrylic blankets. The organisation succeeded in making the best use of the available resources producing top quality Dralon blankets for the retailing sector of the Greek market. At the conception of the project it was evident that the management's main objective was the promotion of the company's image in the home market by the provision of high service levels to customers rather than shareholders' dividends.

9.1.2 COMPANY APPROACH TO THE SEASONALITY OF SALES

9.1.2.1 HOME MARKET DEMAND

The growing recession in the Greek economy in the early 1980s amplified the home sales seasonality problem. The company traditionally managed to ease problems by constant production output throughout the year, stocking the manufactured excess capacity during the low demand period while gradually de-stocking the accumulated finished blanket inventories during the sales period July to February. The high demand period traditionally had two maxima. The highest level was observed during July - November. The peak value year by year gradually slipped to a later month due to the business climate. The second peak level was reached in January - February when repeat orders were placed to meet demand of the annual February sales in retailing.

9.1.2.2 COMPANY POLICY

When interest rates were low and demand for high quality household textiles was growing, it was reasonable to invest in stocks and thus meet a satifactory percentage of demand during the sales period. Furthermore, there was relative monetary stability and low devaluation of the drachma against the major international currencies. The company had a considerable credit facility, 1.7 million DM credit from BAYER A.G. alone, and took advantage of the rising raw material prices to make speculative purchases of volume fibres. With six month credit from all foreign suppliers, the business made purchasing gains, while at the same time the company's selling prices followed inflation in Greece resulting in a trading profit up to 1981.

The management of the company was aware that high production was required to keep the cost of resources per unit product manufactured at an acceptable level. The infra-structure of the company required manufacturing throughout the year and it was quite clear that the business could not compete in the home market in the lower price sector of the market.

9.1.3 RATIONALITY AND FLEXIBILITY. THE NEED FOR CHANGE

During the post 1981 period, a sharp deterioration in the economic environment coupled with political and social changes resulted in a need to modify business policy. The company could no longer use labour as a flexible resource, recruiting and shedding as the demands of the market dictated. Furthermore, investment in inventories by short-term borrowing of working capital from the banking sector was restricted due to the decline in demand for the company's products and the sharp rise of the lending interest rates. Thus the management of the company could no longer finance stockholding.

From 1982 onwards the price increases of the company's range of acrylic blankets did not keep pace with the general rate of inflation, and the management used de-stocking to solve the short term liquidity problems by offering quantity discounts. The launch of the woollen range of blankets in the home market was accompanied by rationalization in decision making whereby, the selection of the annual collection of designs and colour combinations was planned to avoid large stocks of finished goods. In addition the organisation managed to increase subcontracted work, get into export markets and compete for government tenders.

9.2 SALES STRATEGY AND SALES DISTRIBUTION

9.2.1 SALES PATTERNS. DIVERSIFICATION AND PRODUCT PROMOTION

The sales pattern of the main blanket products during the period 1978-1987 is illustrated in **Appendix 94.** In the acrylics range of finished goods the main product type, the Dralon double blanket reached a peak sales value of approximately 103 million drachmas in 1980, declined gradually soon afterwards and stabilized at an average annual sales level of 44 million drachmas during the 1983-1985 period. The sharp fall in 1986 and 1987 reflect the financial limitation in purchasing Dralon^{R} fibres due to a drastic reduction in credit facilities. The acrylic blanket sales continued to increase in value up to 1982 when they reached a total sales turnover of 274 million drachmas. Despite increased efforts to maintain a high sales turnover, by means of a new collection annually, price discounts and extended customer credit facilities, the prevailing business climate and the growing recession in Greece defeated the selling strategies.

The full-scale launching of the woollen blankets range in 1983 prevented an immediate collapse of trading activity and provided a break

through in the home market enabling OR. SALIARIS S.A. to become among the top Greek woollen blanket manufacturers. The firm anticipated the customers' preference shift to natural fibres and, after product development and testing during 1980-1982, presented a range of woollen blankets, and provided product diversification through the Venus quality and the stamped woollen blanket. Experience of blanket processing, and use of modern finishing facilities at the Trikala plant enabled the production of a range of woollen blankets which met the market's demand for soft colours in geometrical and asymmetrical designs.

The continuous support from IWS enabled the company to project a modern outlook in the international bedding market. As discussed in the **Textile Horizons (1985f)** "the company launched the 'streamers' collection in a printed jackquard type of woollen blanket, by the creation of simple geometrical style in deep rich colours". The blankets represented Greece's fashionable outlook in interior textiles styling and were dislayed by IWS at the Heimtextil fair in Frankfurt, W.G. As reported in **Textile Horizons (1986c)** both OR. SALIARIS S.A. and LANAFIN S.A. followed IWS trends in blanket collection for 1986-1987 whereby "under the IWS colour magic series, OR. SALIARIS S.A. launched the 'wishing well' collection". The woollen blankets' range was promoted in the home market by distributing advertizing material and regular agents visits to customers. The company offered a high quality, high value added product alongside the established acrylics range of blankets. Selling points such as the prestige of IWS and BAYER, made the company's products, marketable in a competitive home market enviroment.

The comparative success of the company's marketing department is shown in **Appendix 94** highlighting the trend whereby the woollen blankets sales value rose sharply from 36 million in 1983 to an annual average of

104 million drachmas in 1984-1985. The introduction of the new annual collections of product qualities, designs, and colour-combinations sustained the viability of the company and brought cash injections into the system from the home market. On the other hand, the sharp decline in the demand for acrylic blankets, partly due to over-supply, made the management adopt a policy of liquidation of old stocks by means of quantity discounts. The corresponding 13.1% and 13.2% ratios shown in **Appendix 94**, mainly reflect incentives offered during the 1983-1984 period.

Following the government's austerity policies in October 1985 and the second 3 month strike in 1986 the firm experienced severe financial problems, which coupled with credit restrictions, made it impossible to meet the market demand for either acrylic of woollen blankets. By the late 1986 the business policy was changed to 'make to order', lowering customer service in the short-run, but aiming to reduce operating costs.

9.2.2 TRENDS IN HOME SALES

9.2.2.1 AGENT NETWORK

Since the early 1960s the company's home market selling strategy has been the segmentation of the market into seperate distinct areas and the selection of agents for the promotion and sales of the company's blankets, initially viscose, acrylics from the mid-1970s and both acrylics and woollen blankets from the early 1980s. Traditionally the three main selling regions have been:

(i) Sector 1: Thessaloniki and Northern Greece (Macedonia, Thrace),

(ii) Sector 3: Greater capital area (Attica, Viotia, Evia), and

(iii) Sector 4: Western Peloponnisos and North-West Greece (Achaia, Ilia, Aetolia, Akarnania & Ionian Islands).

The agents appointed were authorized to provide customer back-up services, visit the company's customers regularly, and promote the annual designs and products collection promptly. They were required to transfer the customers' orders, special requests or complaints to the management and to seek any form of assistance, or personal contribution of the business sale force at any time. Their task was to maximize effort and improve the company's market position to be reflected in increasing numbers of orders and annual sales turnover. The agents' payment system was a straight commission, a percentage of the product's net sales value varying in the range 3% to 4%. The payment system of straight commission has both advantages and disadvantages. As highlighted by **Cannon (1980)** the strengths of the system are:

"(i) the agent maximizes effort.

(ii) the system provides powerful reward-stimulus learning pattern.

(iii) the system leads to attempts to fully exploit major accounts.

(iv) all costs are tied to returns".

on the other hand the system's weaknesses are summarized below:

"(i) the system may cause jealousy and antagonism among the staff.

(ii) there might be danger of short-term pay-offs with accounts rather than long-term relationship being emphasized.

(iii) there is little incentive for missionary work.

(iv) the system may deter some applicants.

(v) the system may create some financial distress when performance is poor".

The management of the company was aware of the other alternative systems of payment, (sales staff being paid a salary alone, or being offered a salary plus commision - bonuses), but believed in the strengths of the payment system of straight commission, and experienced, little or none of the system's weaknesses up to 1984. The company's agents were accustomed in having high quality, high value added products, and high customer service level. Their interests were best served by the company adhering to the philosophy of increased number of qualities/designs/colour combinations and above all the delivery ex-stock of most, if not all blankets. Their motivation was purely financial and became apparent that a number of the company's agents preserved their own high earnings at the expense of the business. The deterioration of the trading environment reflected a decline in agents' performance and unwillingness to compromise. As a result, measures were taken among which was the replacement of some key agents to implement the management's policies and preserve the company. Agreements had to be signed whereby, the management of the company maintained the right to accept or reject any order, if payment terms were not in keeping with policy. There were regular sales meetings. The base commission was set at 3.5% for net agents annual sales turnover up to 40 million drachmas, 4% in between 40-50 million drachmas, and 4.5% for sales exceeding 50 million drachmas.

Table 9.1 presents the ten areas in the home market. Sectors 1, 3 and 4 are clearly important. By the end of 1985 the number of registered customers in these sectors was 955, 979 and 1,013 respectively. It should be emphasized that only OR. SALIARIS S.A. paid straight commission while the two main competitors VETLANS-NAOUSSA S.A.,

TABLE 9.1: OR. SALIARIS S.A. BLANKET MANUFACTURE.
AREAS OF AGENTS DELEGATION IN THE HOME MARKET

Sectors	Geographic Areas of Agents Delegation of Authority	Total Number of Registered Customers*	Number of Agents
1	Thessaloniki & Northern Greece (Macedonia, Thrace)	955	2
2	Central Greece (Thessalia, Phiotis)	246	2
3	Greater Capital Area (Attica, Viotia, Evia)	979	2
4	Western Peloponnisos & North-West Greece (Achaia, Ilia, Aetolia, Akarnania & Ionian Islands)	1,013	2
5	Eastern Peloponnisos (Argolis, Arcadia, Korinthia, Laconia, Messinia)	251	1
6	Western Crete (Rethymno, Chania)	95	1
7	Eastern Crete (Iraclion, Lassithi)	108	1
8	Aegean Islands (Lesvos)	41	1
9	" " (Chios)	24	1
10	" " (Dodecanese, Cyclades, Samos)	97	1
		3,809	14

Note : * As at the end of 1985

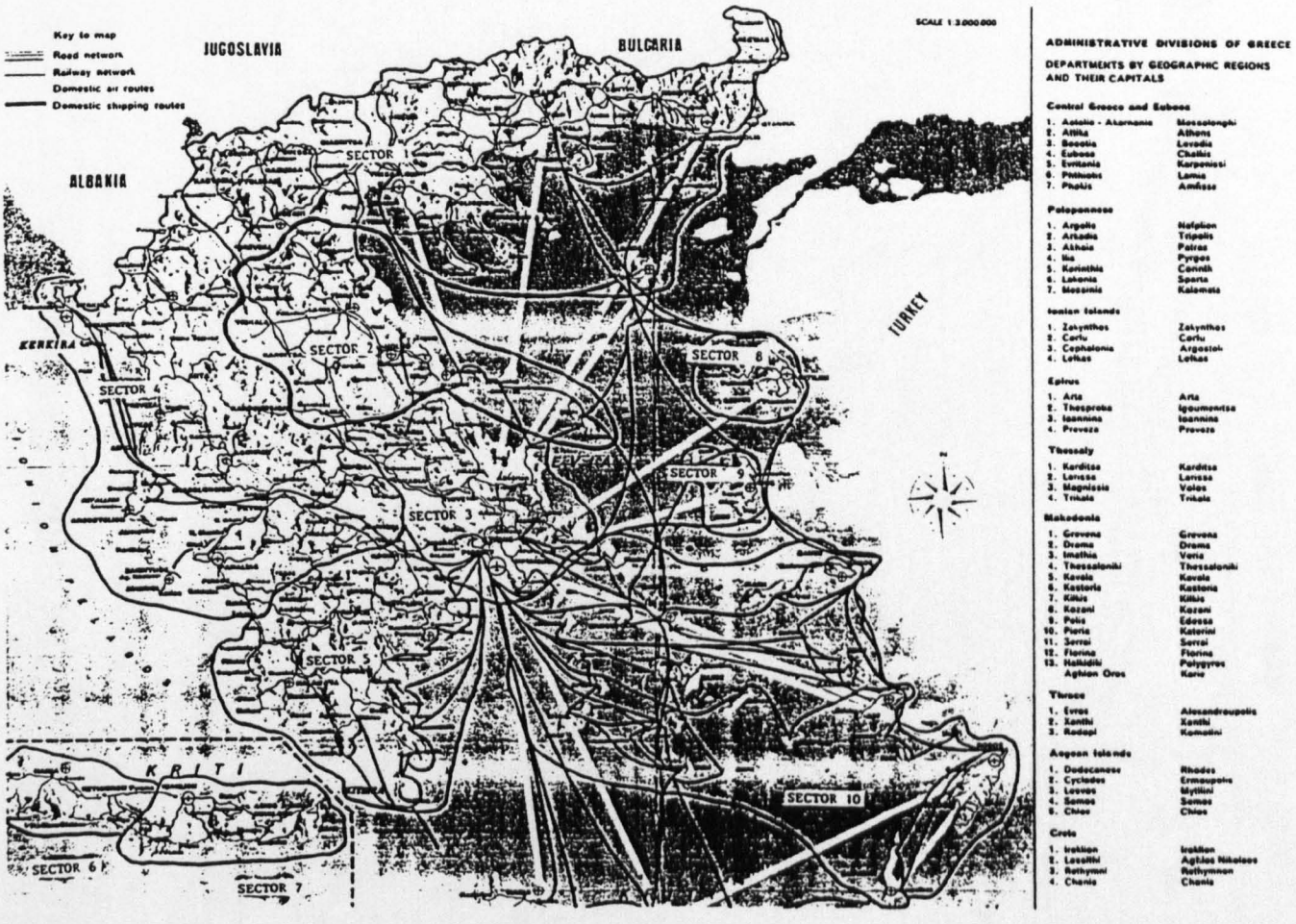
and ARISTON S.A. adopted different policies. The former used a combined system of salary plus commission, while the latter paid a salary. Furthermore the company sold on credit terms and offered 5-10% price discounts for cash. This was intended to increase cash-inflows from potential retailing outlets. In recent years price discounts were offered to most customers in an effort to increase sales. This change resulted from trading conditions and strong market antagonism; most competitors flooded the home market with their over-capacity often at prices well below the cost of manufacturing.

9.2.2.2 REGIONAL SALES DEVELOPMENT

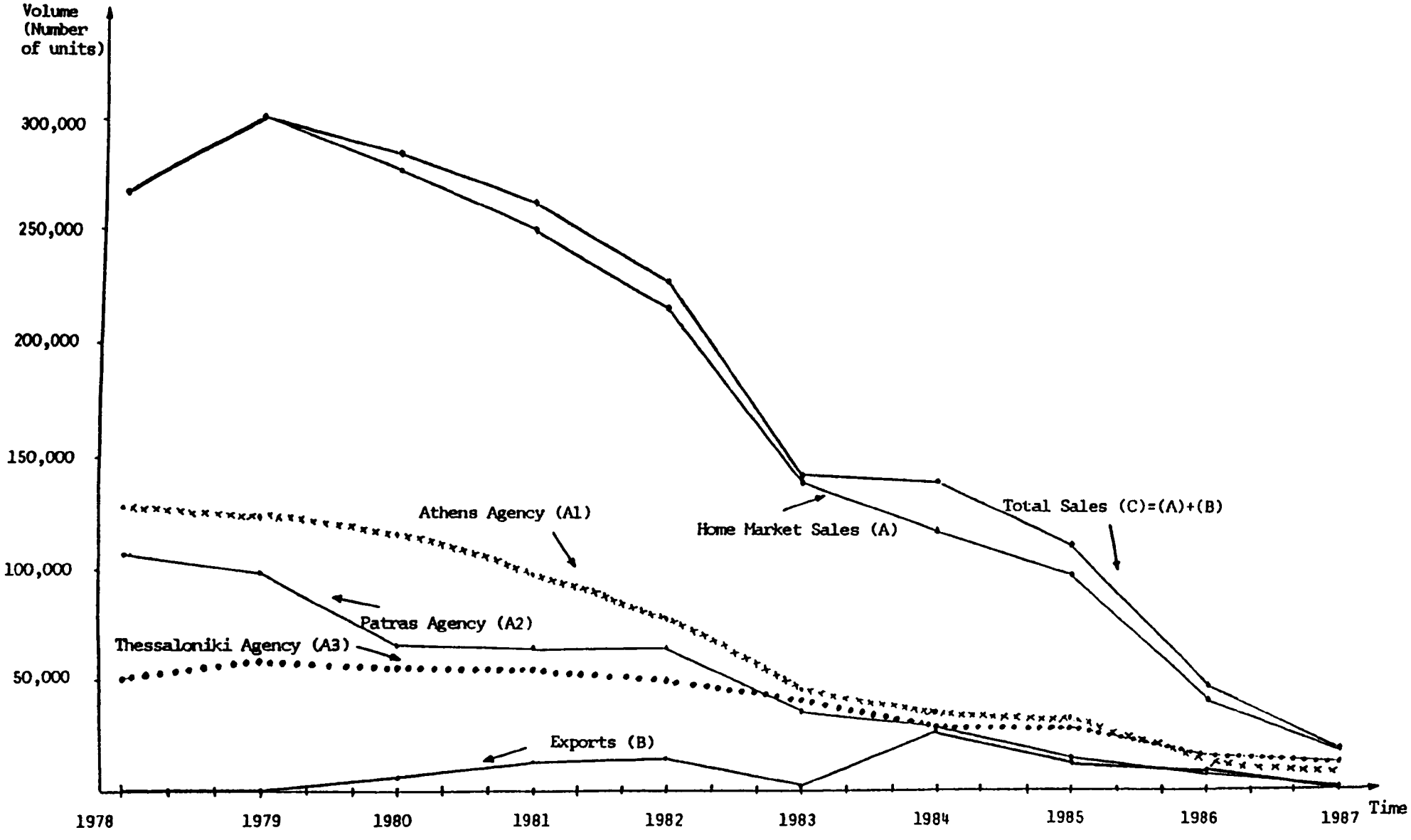
The company's regional sales areas are illustrated in Figure 9.1, showing the 10 areas marked in closed-loops. Appendix 95, presents the breakdown of the finished goods total net sales. During the ten year life-time of OR. SALIARIS S.A. (1978-1987) the home market's sales peak was reached in 1982, a total of 241 million drachmas, but areas deviated from the trends due to particular characteristics of each region, agents' motivation, degree of competition, and company's customer selection. In sector 1 a peak of 69 million drachmas was observed in 1984, while in sector 3 a maximum level of 91 million drachmas was reached in 1981. On the other hand in sector 4 a total of 68 million drachmas was achieved in 1982, whereas for the remaining sectors the peak was in 1985. Some of the peaks resulted from the return of company personnel to areas which had been neglected.

Following the financial limitations all sectors declined during 1986-1987 at a time of rationalization. Orders were selected for delivery only if payment terms were satisfactory. The sharp decline in the demand is illustrated quite clearly in Graph 9.1, where during the period

FIGURE 9.1: OR. SALIARIS S.A. BLANKET MANUFACTURE. REGIONAL SALES AREAS IN THE HOME MARKET. AREAS OF AGENTS DELEGATIONS



GRAPH 9.1: OR. SALIARIS S.A. BLANKET MANUFACTURE.
SALES VOLUME DEVELOPMENT (HOME MARKET & ABROAD) 1978-1987



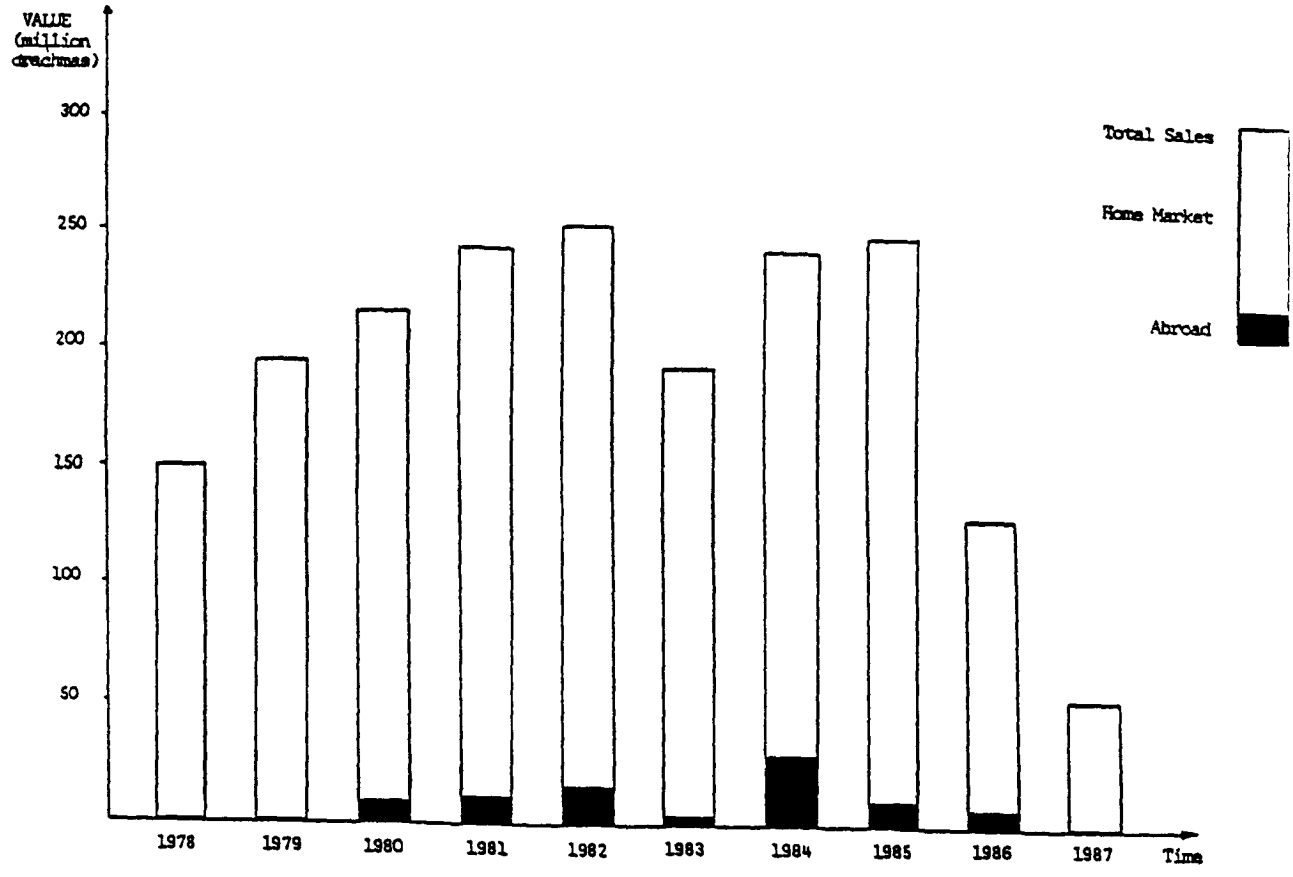
1978-1987 the sales volume development is shown for all three main sales sectors. From a total of 300,973 units sold in 1979 the trend indicates a considerable decline thereafter reaching a total of just 19,062 in 1987. The individual developments in each one of the three traditional major sales sectors illustrated for the ten years period in **Graph 9.1** highlighting the overall business climate in Greece. All sectors responded in the same manner, indicating the prevailing pattern from 1979 onwards. On the other hand, **Figure 9.2** presents the sales value development during the same period indicating the prevailing pattern. The sharp fall in sales in 1983 reflects the impact of the strike, while during 1986-1987, the government austerity policies and the second strike imposed a severe financial burden, increasing liquidity problems and producing a drastic decline in sales turnover.

Appendix 96 shows the sales and production figures, for the ten year period, for the acrylics and woollen ranges. The pattern is illustrated in **Graph 9.2.** Following a long period of investment in finished goods stocks, (1978-1982), some rationalization succeeded in de-stocking during 1983-1984, mainly achieved by discounts. Thereafter the management adopted production scheduling during 1985-1987 at a time when the production output remained below sales levels, and the customer service level was lowered in the short-run by adopting a 'make to order' policy.

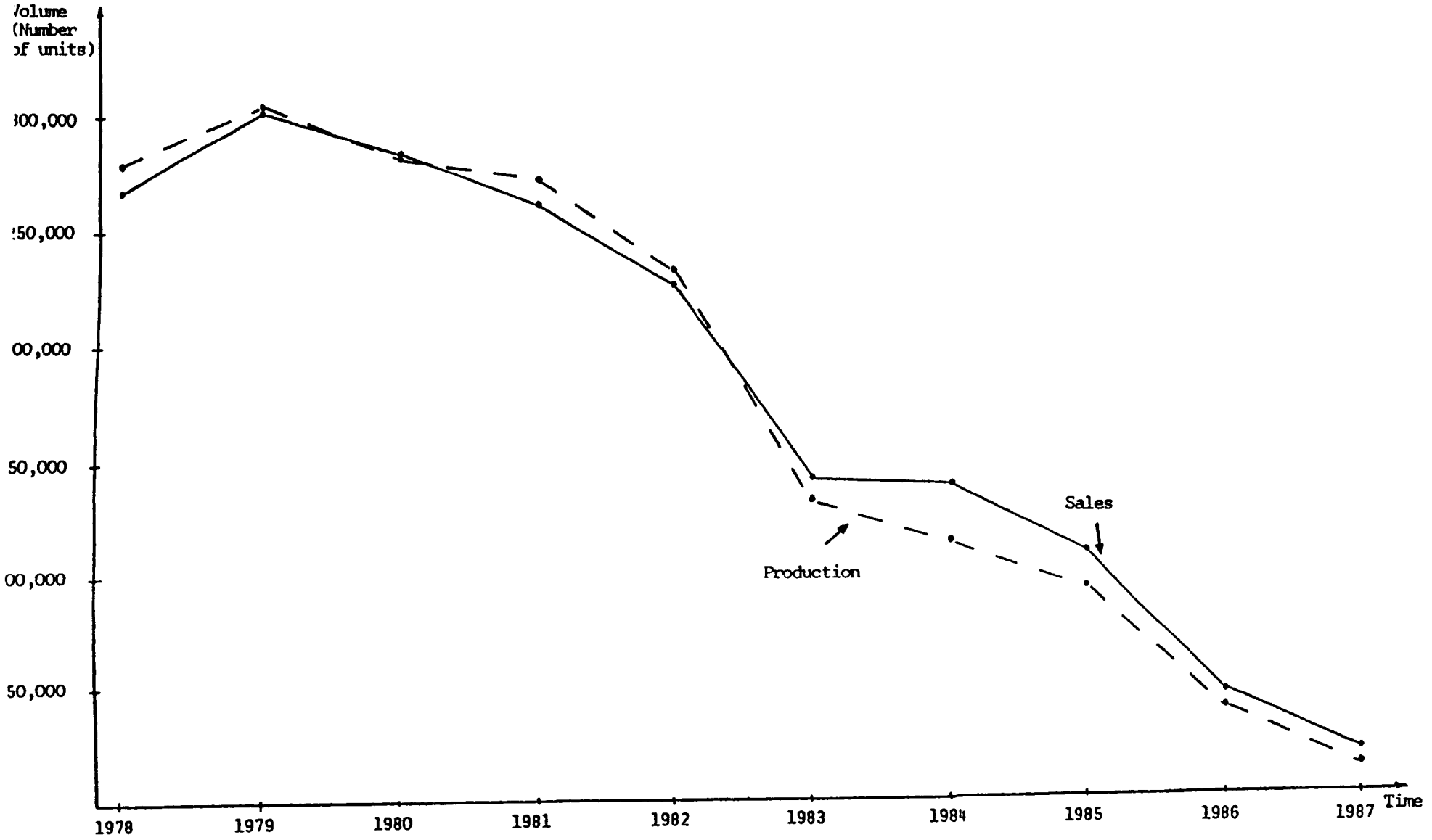
9.2.3 EXPORTS

OR. SALIARIS S.A. has sought exports since the mid-1970s, but with limited success. The management of the company faced increased demand in the home market in the 1970s and as a result little was done in

FIGURE 9.2: OR. SALIARIS S.A. BLANKET MANUFACTURE. FINISHED GOODS SALES VALUE DEVELOPMENT (HOME MARKET & ABROAD) 1978-1987



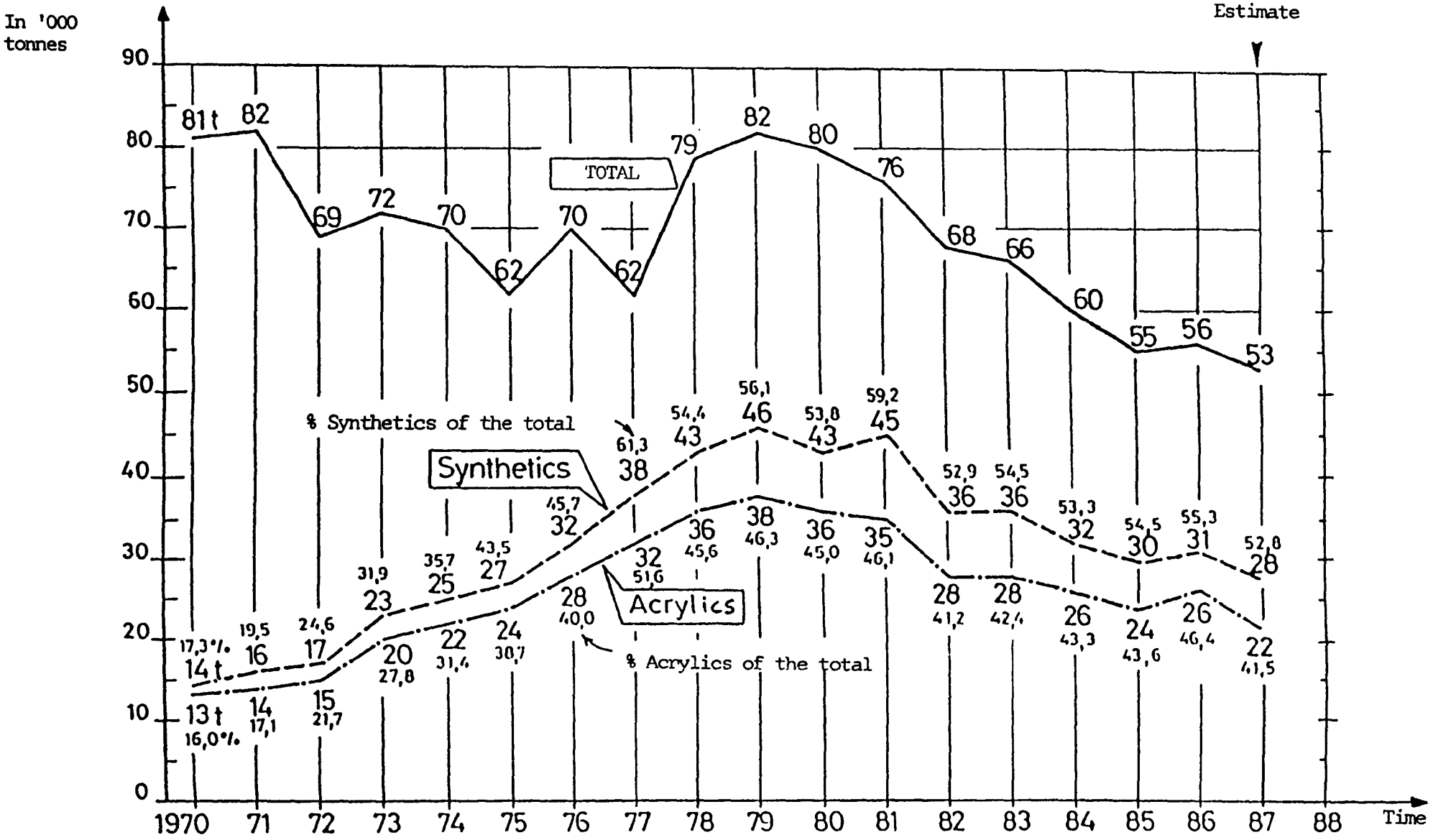
GRAPH 9.2: OR. SALIARIS S.A. BLANKET MANUFACTURE.
SALES vs. PRODUCTION VOLUME DEVELOPMENT 1978-1987



exploring potential export markets. Concentration on key markets (i.e. the Middle-East), or opportunities (i.e. a possible contract agreement with a West-European bulk importer, or commercial outlet of retailing chain) could have provided the company with a chance to build stronger foundations, maximize plant capacity by processing large batches, and adhering to a price diversification policy, rather than depending on price discounts in the home market. If the company had long-term marketing presence in export markets it could have minimized costs, be less vulnerable to the drachma's exchange rates flactuations, avoiding the extreme short-term capital requirement borrowed to finance stock-building, possibly easing the seasonality problem, while maximizing the returns from individual markets.

The West European market for all type of blankets, "begun to contract from its peak of 82 thousand tonnes in 1979 to an estimated total of 53 thousand tonnes in 1987", as presented by **Bayer A.G. (1988)** and illustrated in **Graph 9.3.** The drop has been continuous due to the European economic recession, following the second oil crisis. As far as the acrylic blankets are concerned, "from their peak in 1977, 51.6% of the total production declined sharply to an estimated 41.5% in 1987", approximately 22 thousand tonnes. In woollen blanket manufacturing as stated in the **Textile Horizons (1985f)** "wool was the significant blanket fibre up to the main post-war period but, as in other products, was supplemented by the strong growth of synthetic fibres, particularly acrylic in the case of blankets. Since 1978-1980, when all fibres peaked at a figure of 142 Mkg in what IWS defines as its 8 major countries (Belgium, France, Germany BRD, Italy, Japan, Netherlands, UK and USA), wool seems to have settled in the range of 15-18% of the total fibre market".

GRAPH 9.3: PRODUCTION OF BLANKETS IN WESTERN EUROPE



Source-Reference: Bayer, A.G. (1988) "Production of Blankets in Western Europe" Report GB FS-V/MSI 3

Furthermore, it should be highlighted that among the different types of bedding textiles; such as bed linen, quilts, duvets, covers and blankets in the traditional blanket manufacturing European countries the more recent fashionable preference of the quilt has effectively opposed a possible revival of the blanket business. Following the collapse in oil prices it became very difficult to penetrate the Middle-East market, while at the same time the Spanish and Portugese were flooding these export markets, at prices well below the manufacturing cost of OR. SALIARIS S.A.; possibly aiming to preserve employment and reduce their own liquidity problems.

Appendix 95 illustrates the long develpoment (1978-1987) of the company's exports, while at the same time highlighting their small contribution to net sales turnover. From just 0.1% in 1978-1979, exports of finished goods reached a level of 5.7% in 1982, corresponding to 14.5 million drachmas. In the post 1983 period the management maximized exporting efforts, and organised an exports department. The personnel carried a detailed search of sources of information; National Exports Bureau, trade commissioners in Greek foreign embassies, Greek Exports Organisation Board, export agencies, and by advertising in magazines, bulletins, directories, promotion of goods in international household textiles fairs and exhibitions. Samples, price-lists and advertising material were posted to all potential customers. Despite the economic recession and competition entry was gained into a number of markets, and export orders were obtained in Western Europe and the Middle-East, and also the USA, Canada and Australia.

The relative growth of exports was achieved in the acrylic blankets alone. There was little or no interest in woollen blankets, and most customers required technical specifications quite different from

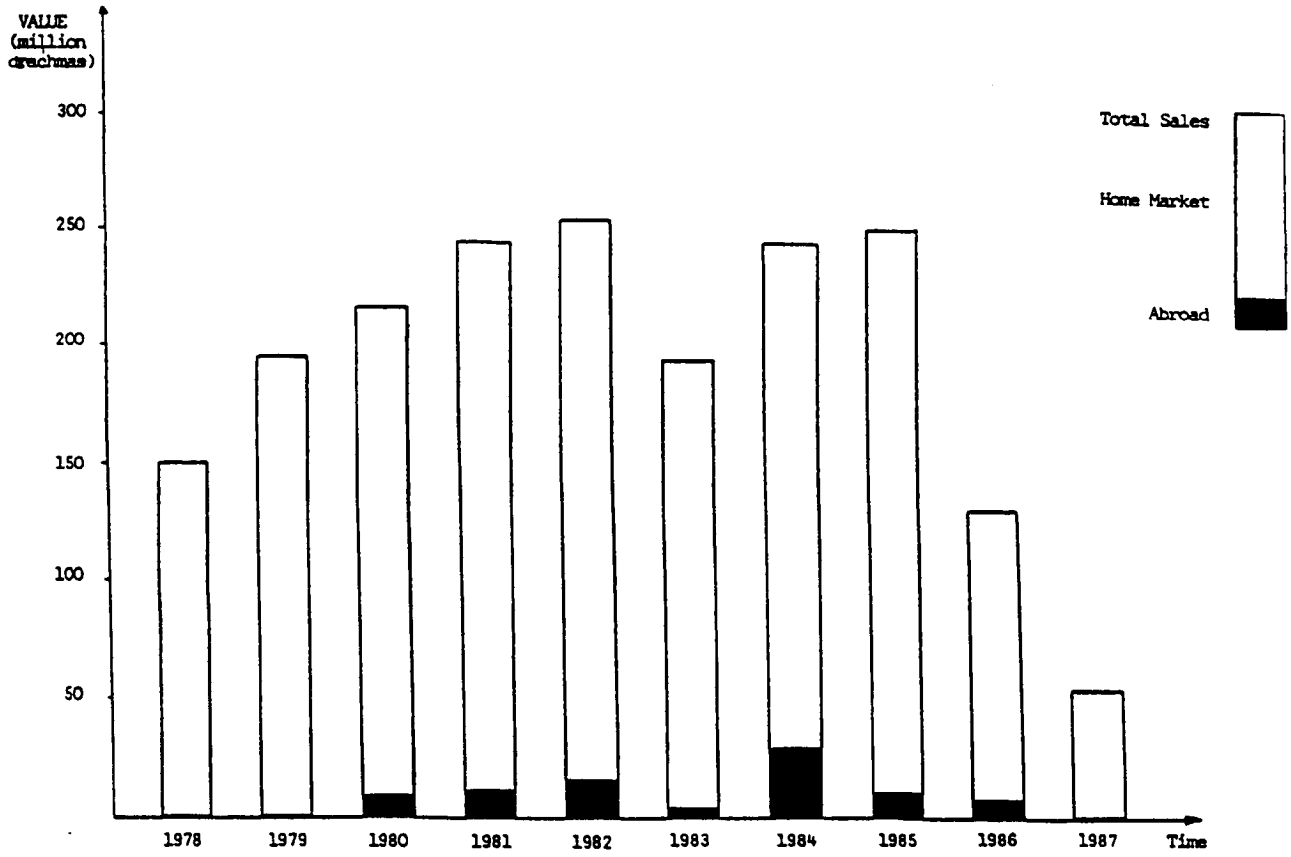
those manufactured for the home market (eg weight/m^2, dimensions, packaging, etc). In 1984 exports contributed 11.5% of the company's total net sales turnover and reached a level of 28 million drachmas. Despite the efforts the prices achieved had been marginal, or at a loss and as a result the cash-inflows generated simply financed day-to-day operations at the traditional low-demand sales period in the home market. The Cyprus project of 20,00 pieces of cheap, light single blankets in May 1984 highlights the prevailing situation. At a CIF price of $7.0 the management of the company liquidated old tails of yarns, ribbons, labels and boxes.

The volume limitation of the blankets and the extremely low prices offered by foreign competitors made future plans difficult. A possible long-term co-operation with the West-German textile manufacturing firm ZOEPPRITZ A.G. was abandoned in early 1986 due to the low prices. Despite the consistent effort by the marketing department, performance was modest due to the economic and trading enviroment, particularly in the blankets business. **Figure 9.2** illustrates the exports contribution in the organisation's annual finished goods sales turnover for the period 1978-1987. Recently the management of the company has been more selective, concentrating on high value added, high quality blankets mainly in the extra-double acrylics collection.

9.2.4 SUBCONTRACTED WORK

The excess capacity of the dyeing plant in the late 1970s led the management of the company to exploring the opportunity for subcontracted work. In the early stages the cash-inflows were insignificant, but the processing of a wide range of textile fibres; cotton, wool, acrylics, nylons,polyesters and various blends provided extensive knowledge of the

FIGURE 9.2: OR. SALIARIS S.A. BLANKET MANUFACTURE. FINISHED GOODS SALES VALUE DEVELOPMENT (HOME MARKET & ABROAD) 1978-1987



behaviour of other textile materials. The management's decision to invest in the re-equipment of the dyeing plant laboratory, with precision apparatus and equipment, provided high quality standards for processing textile fibres. The growing importance of the subcontracted work to the business is shown in Table 9.2A. In the early 1980s the range of customers for the dyeing of raw materials became broader, reflecting increased subcontract workload and cash-inflows.

In the post-1983 period the factory low demand made it necessary to explore subcontracted work for the departments of dyeing, spinning, weaving and finishing. Gradually, it was possible to get production orders for the dyeing and spinning of yarns for other textile processing firms; rugs and carpet manufacturers, small local blanket producers, export batches for other companies and so on. All the textile material flows within the system operated on FIFO, made use of the company's resources and the cash in-flows contributed to operational costs.

The management had additional experience in subcontracted work from the operations of the Trikala plant. Since 31.5.1983 the business operated under the name of LANAFIN S.A and subcontracted woollen blankets finishing for a number of customers throughout Greece. In the main factory, small blanket producers purchased yarns from the existing colour range. The blankets were produced to their designs, and so provided subcontracted work through the entire processing line. In the acrylics finishing plant at OR. SALIARIS S.A. a number of customers, small local acrylic blanket producers, made use of the company's plant to produce a higher added value end-product. Careful selection of customers ensured payment, and preserved the quality of products produced, and methods of trading, to minimize the possibility of increased rivalry.

TABLE 9.2A: OR. SALIARIS S.A. BLANKET MANUFACTURE.
SUB-CONTRACTED WORK (1978-1987)
(Financial data in million drachmas)

	Dyeing Department	Spinning Department	Weaving Department	Finishing Department	Total Sub-Contracted Work
1978	1.064	-	-	-	1.064
1979	1.596	-	-	-	1.596
1980	1.193	-	-	-	1.193
1981	3.104	-	-	-	3.104
1982	4.067	-	-	-	4.067
1983	2.176	3.438	-	0.447	6.061
1984	5.732	0.324	-	0.425	6.481
1985	9.439	4.226	1.520	0.592	15.777
1986 [1]	6.674	1.163	0.387	0.192	8.416
1987	-	-	-	-	-

Note : 1. The dyeing and spinning departments were leased from OR. Saliaris S.A. to the Textile Mills of Thessaloniki S.A. on 17.10.1986, whereas the weaving and finishing departments on 3.12.1986

TABLE 9.2B: TEXTILE MILLS OF THESSALONIKI S.A.
SUB-CONTRACTED WORK (1986-1987)
(Financial data in million drachmas)

	Dyeing Department	Spinning Department	Weaving Department	Finishing Department	Total Sub-Contracted Work
1986	2.172	1.490	0.348	0.257	4.267
1987	17.733 [1]	9.405	2.116	2.187 [2]	31.441

Notes : 1. Dyeing of cotton fabrics corresponds to a total of 4.345 million drachmas

2. Finishing of cotton fabrics corresponds to a total of 0.273 million drachmas

Following developments in 1986, the management of OR.SALIARIS S.A. offered the production system to an affiliated company, TEXTILE MILLS OF THESSALONIKI S.A. On 17.10.1986 the dyeing and spinning departments were leased to this company while the weaving and finishing departments were transferred on 3.12.1986. Table 9.2B illustrates the subcontracted work after TEXTILE MILLS OF THESSALONIKI S.A. took over. The services offered were extended by investment in a new dyeing plant for processing cotton fabrics.

Under the new system operations were carried out as before by a skilled and flexible workforce. Day-to-day activities were financed by the cash-inflows from the subcontracted customers payments. The most important characteristic of the new infra-structure was a considerable reduction in indirect labour costs. All costs, including rent, payment in arrears, process additives, salaries and wages were linked to the plant's output level, varying proportionally.

9.3 COST FORMATION

9.3.1 THE SYSTEM'S COST OBJECTIVES

The management's cost policies were governed by conflicting objectives. Emphasis was placed on the purchasing function along with the operational manufacturing costs. However the cost of borrowing increased excessively. Careful selection of raw materials and process additives was implemented by the technical management of the company. The firm was provided with expertise and know-how from the business suppliers, organisations and institutions, aiming to obtain not only high quality in-coming materials, but also the most beneficial credit and payment terms.

The company's operational costs were monitored effectively during periods of high production, aiming for reduction in the unit product cost by means of increased labour and machine productivity. Since the early 1980s, declining capital productivity has been a problem as a result of changes in the trading environment. The growing cost of borrowed capital, mainly used to finance the stock-holding policy, created increased cash out-flows, to meet interest and principal payments at a time when the company's selling prices were not keeping pace with inflation in Greece. Furthermore, the extended credit offered to customers produced delayed cash-inflows and caused increased concern to the management of the company at the conception of this project.

9.3.2 COST ADMINISTRATION

Prior to the initiation of the recent research work the operational characteristics of the system were controlled on a daily basis by the company's two executive directors. Despite their joint management there were policy issues which presented a conflict at the interface between the two well defined areas of authority. The efforts to maximize the system's output at a period of deepening economic recession was financed with costly capital producing declining flexibility.

In the 1980s the dis-investment in stocks using price discounts decreased the company's current assets value. The late interest payments, or inability to meet the scheduled cash-outflows increased short term liabilities and resulted in a gradual deterioration in working capital. Following the change in senior management in early 1983 a different approach was required to exercise effective control over the business operational and financial cost centres.

9.3.3 CLASSIFICATION OF COST

9.3.3.1 MANUFACTURING COST DEVELOPMENT

The manufacturing costs are made-up by the purchasing costs; raw materials and process additives, and the operational costs; direct labour costs and a number of costs listed by the accounting department under the heading various costs; including maintenance costs, and payment in arrears. **Appendix 97** illustrates the development of the company's manufacturing costs during 1978-1987. It can be seen that the raw material costs have always been ahead of all other costs, corresponding to an average level of 46% over the ten year period. The company's philosophy has been the production of high priced, high value added textile products, accomplished to a certain extent by purchasing high quality and expensive raw materials. Following the political and economic changes in the surrounding wider system, the post-1982 period has had negative effects on the operations of the company. Manufacturing cost components rose dramatically threatening viability.

The two devaluations of the drachma against the USD and the main foreign currencies imposed heavy financial burdens on the company because of liabilites to foreign raw material suppliers. The devaluation increases were on average 20% both in early 1983 and in late 1985. The exchange rates policy adopted by the government influenced the smooth running of the Greek manufacturing sector and the financial position of most companies deteriorated during the 1982-1985 period. In early 1986 OR. SALIARIS S.A. was forced to negotiate delayed payments of principal foreign promissory notes on imported raw materials. The continuous 'slide' of the Greek drachma imposed a rise in over-due payments from 30% to almost 100% for drafts remaining unsettled. Credit restrictions were imposed by most foreign suppliers thereafter. This resulted in a sharp fall in output due to lack of raw materials.

On the other hand the government's system of wage indexation increased labour costs as illustrated in **Appendix 97**, and from an average contribution of 22% to the firm's total operational costs rose to around 30% in recent years. Furthermore increased payments in arrears, exceeding in many cases the general level of inflation, imposed additional cash-outflows and the company's financial position deteriorated.

9.3.3.2 COST OF BORROWED CAPITAL

The second influential factor in the financial problems which the business experienced in the 1980s was the considerable increase in the cost of borrowed capital, both in terms of lending interest rate rises and excess interest attached to delayed payments and non-payments of interest and principal. **Appendix 98** shows the development of the related issues during the 1978-1987 period. The interest payments from the company to the lending banks is presented in two parts: cost of borrowing for short-term loans offered to finance the business for working capital and long-term loans offered for investment in plant and machinery.

Total interest payments in the 1978-1981 period reflect the ascending trend in the growing capital requirement, while in the subsequent years the dramatic rise in cash out-flows indicate the excessive payments incurred in servicing short-term liabilities to the banking sector. At the initiation of the project it was becoming clear that the observed cycle was caused by the inability to meet scheduled obligations. During 1978-1979, total interest payments accounted for 7.9% of the company's total net sales turnover, increased to 11.4% during the 1980-1982 period, whereas in the post-1983 years up to 1987 the level reached 17.7%. It should be highlighted that under the interest rates prevailing in Greece, inability to meet these financial obligations to the banking sector produces a doubling of the capital due in about 3 years.

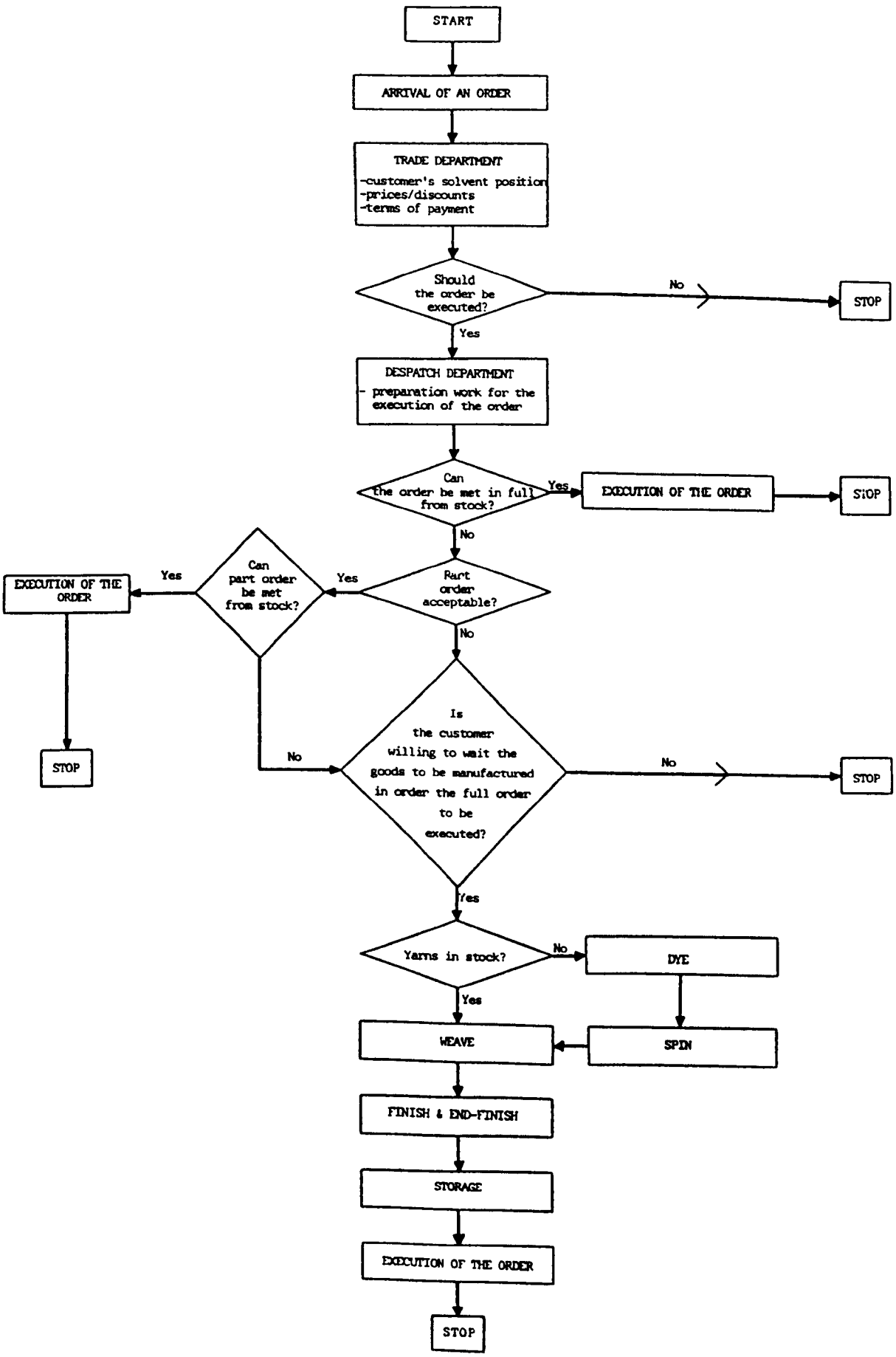
9.4 BUSINESS ADMINISTRATION. DESIGN OF CLOSED-LOOP CONTROLS

Careful examination and study of the business operations suggested that the company required a coherent approach to managing both cash in-flows into the system and also cash out-flows. Particular emphasis had to be given to the modification of the practices which lacked the element of closed-loop controls, or operated in a manner which imposed barriers to communications. The prevailing problems arose mainly from the lack of clear and actionable objectives and the non-systematic information collection, documentation and reporting among the various levels of hierarchy.

9.4.1 ANALYSIS AND DOCUMENTATION OF SALES MANAGEMENT

At that stage of the work, operations and procedures were examined thoroughly from the other end of the business. The analysis indicated the need for a close study of the in-coming orders into the system and the practices designed to meet the customers' demand for the OR. SALIARIS S.A. products. **Chart 9.1** illustrates the sequence of operations introduced using in a flow-block diagram, whereby any orders received by the trade department had to be checked thoroughly against the customer's past history, the credit and payment terms offered, the stock availability and so on. It became apparent that experience alone could not provide management with the appropriate tools for the selection of customers, the products promotion, the required quality standards of the range of the blankets, the prompt execution of the orders and the effective debt collection.

CHART 9.1: OR. SALIARIS S.A. BLANKET MANUFACTURE. SYSTEM'S SEQUENCE OF OPERATIONS DESIGNED IN A FLOW-BLOCK DIAGRAM



The system lacked appropriate documentation of the required data to facilitate decision making. There was a customer card system, operating on a day-to-day basis, where the accounting procedures were carried out explicity within each financial year. The first task was to exert closed-loop control on the in/out system for custmers' orders. As illustrated in **Table 9.3,** a ledger was designed to facilitate the availabilty of detailed information to the sales management of the company, on when an order was issued, the customer's data and the value of the order received. The filing system introduced operated on a continuous basis and was compiled by the company's secretary who received the mail daily. The orders were documented by the marketing department in serial number sequence and given to the Director of Finance and Administration for consideration before execution.

Approved orders were returned to the company's secretary and passed to the head of the marketing for double-checking. This sequence of operations thereafter is shown in **Diagram 9.1.** On a daily basis all dispatched orders were recorded in the in/out customers' orders ledger providing closed-loop control of information on the lead time required in each individual case, whether the order was dispatched in full or in part to be executed later. All recordings were made at the appropriate time. Systematic examination of the efficiency of the system indicated required actions. The ledger procedures were modified to accommodate telephone orders, or direct orders. These were issued on a normal order sheet and processed through the system in the same way as the ones received by mail. Furthermore statistical data on the total number of orders, their value, distribution by agents' areas and so on, became available on a monthly report issued to the senior management of the company.

TABLE 9.3: OR. SALIARIS S.A. BLANKET MANUFACTURE. CLOSED-LOOP CONTROL ON THE IN/OUT CUSTOMERS' ORDERS

OR. SALIARIS S.A.
BLANKET MANUFACTURE

Year : 1985
Code : C

CLOSED-LOOP CONTROL ON THE IN/OUT CUSTOMERS' ORDERS

Serial No.	Date of Receipt	Customer	Customer Code	Value of Received Order (in drachmas)	Date of Despatch	Value of Despatched Order (in drachmas)	Value of Remaining Order (in drachmas)	Date of Despatch
1	14.01.1985	Koulis T.	4	181,330	25.01.1985	181,330	-	-
2	14.01.1985	Manthopoulos V.	7	83,675	12.02.1985	83,675	-	-
3	14.01.1985	Coringelis P.	16	52,875	8.02.1985	52,875	-	-
4	15.01.1985	Vithoulcas A.	25	347,675	22.02.1985	202,610	145,065	26.02.1985
5	17.01.1985	Paisios C.	68	45,490	8.02.1985	45,490	-	-
6	17.01.1985	Liapis D.	121	70,650	8.02.1985	70,650	-	-
7	18.01.1985	Mourelatos X.	165	24,000	12.02.1985	24,000	-	-
8	19.01.1985	Kotsanis N.	236	44,000	8.02.1985	44,000	-	-
9	19.01.1985	Karacostas P.	395	152,065	19.02.1985	91,645	60,420	26.02.1985
10	15.01.1985	Solomon X. & Son	4019	74,135	1.02.1985	74,135	-	-
11	15.01.1985	Papanicolaou S.	4028	285,320	22.02.1985	135,715	149,605	5.03.1985
12	15.01.1985	Christodoulakis N.	4448	159,245	19.02.1985	159,245	-	-
13	16.01.1985	Kanelopoulos S.A.	4468	64,780	29.01.1985	64,780	-	-
14	17.01.1985	Veriopoulos N.	4590	37,925	1.02.1985	37,925	-	-
15	19.01.1985	Gerolymatos Bros.	4662	225,745	15.02.1985	143,725	82,020	5.03.1985
16	21.01.1985	Pertsinidis A.	4703	186,210	5.02.1985	186.210	-	-
17	22.01.1985	Kechris J.	4771	92,015	15.02.1985	92,015	-	-
18	22.01.1985	Kechris C.	4772	86,245	15.02.1985	86,245	-	-
19	22.01.1985	Kechris E.	4060	92,725	5.02.1985	92,725	-	-
20	23.01.1985	Moraitis & Sons O.E.	4929	91,010	5.02.1985	91,010	-	-

The need for comprehensive customer documentation became apparent in the early stages of this work. The system had long operated with emphasis on accounting practices and procedures in accordance with the prevailing Greek legislation and had underestimated, and in certain cases neglected, what both the marketing and the management functions required in terms of necessary and sufficent data presented clearly and promptly. The business had over 4,500 registered customers in its filing system. Simple directories had been in operation since the early 1960s. All business customers in each one of the agent areas were presented using a serial number providing the customer's code number, name, address and telephone number if any. These directories were re-designed and improved in order to update customers' data. The procedure established was time consuming and extremely difficult to complete satisfactorily.

The re-design of customer sales ledger, was done to provide the sales department and the senior management of the company with the appropriate tools. As shown in **Table 9.4**, the ledger was designed so that the past three year record of each individual customer was recorded in one row. This was completed in early 1985 prior to the peak sales demand period and was available for the three main sectors: 1, 3 and 4. The breakdown of the individual sub-regions within each area was done to facilitate documentation and use by the senior management of the company, the sales department and the agents. **Table 9.4** presents a page of the Athens region, one out of the thirty-two regions within sector 3. In the Athens region 87 customers were recorded at the time, the selection criterion was customers who had at least one business transaction with OR. SALIARIS S.A. during the 5 year period, 1980-1984.

The design of the ledger was on A4 format, 20 customers per page, and used the customer code number and identity - travelling salesman or shop - , while for each year during the 1982-1984 period customers' total

TABLE 9.4: CUSTOMERS' SALES LEDGER
(Financial data in million drachmas)

OR. SALIARIS S.A.
BLANKET MANUFACTURE

CUSTOMERS' SALES LEDGER

Sales Area : Greater Capital Area, Attica, Viotia and Evia Region : Athens					Agent: G. Canonis					Agent: S. Vrondisis					Agent: S. Vrondisis				
Serial No.	Customer	Code Number	T	S	1982					1983					1984				
					Sales Turnover	C	P	C'	P'	Sales Turnover	C	P	C'	P'	Sales Turnover	C	P	C'	P'
21	Pandelidis G.	4046		*	147	100%				35	100%				-				
22	Kladis S.	4050		*	-					28		100%			-				
23	Iliopoulos Bros.	4065		*	-					496	100%				293	100%			
24	Litras Bros.	4067		*	425	100%				147	100%				710	100%			
25	Petrochilos D.	4073		*	193	100%				154		100%			201	100%			
26	Scala Bros. Ltd.	4130		*	131	100%				204	60%	40%			172	100%			
27	Paraskevas D.	4369		*	-					56		100%			-				
28	Kouloupoulou S.	4377		*	-					43	100%				103	100%			
29	Theodoridis C.	4396		*	-					-					-				
30	Menos G.	4400	*	*	66	100%				-					-				
31	Athinea S.A.	4414		*	390	100%				-					-				
32	Christodoulakis N.	4448		*	1,567	100%				-					676	100%			
33	Karagiannis E.	4449		*	288	60%	40%			168	100%				-				
34	Ganas A.	4452		*	316		100%			-					-				
35	Mauromataki Bros.	4465		*	40	100%				395	100%				-				
36	Kanalopoulos S.A.	4488		*	399	100%				513	100%				202	100%			
37	Pesam Ltd.	4497		*	379		100%			297		100%			58		100%		
38	Plessas S.	4516		*	-					-					-				
39	Diamandi Bros. S.A.	4566		*	263	100%				93	100%				-				
40	Kolokithas S.	4585		*	-					-					-				

Notes: T: Travelling salesman
S: Shop
C: payment by cash or cheques
P: payment by promissory notes
C': non-payment of cheques
P': non-payment of promissory notes

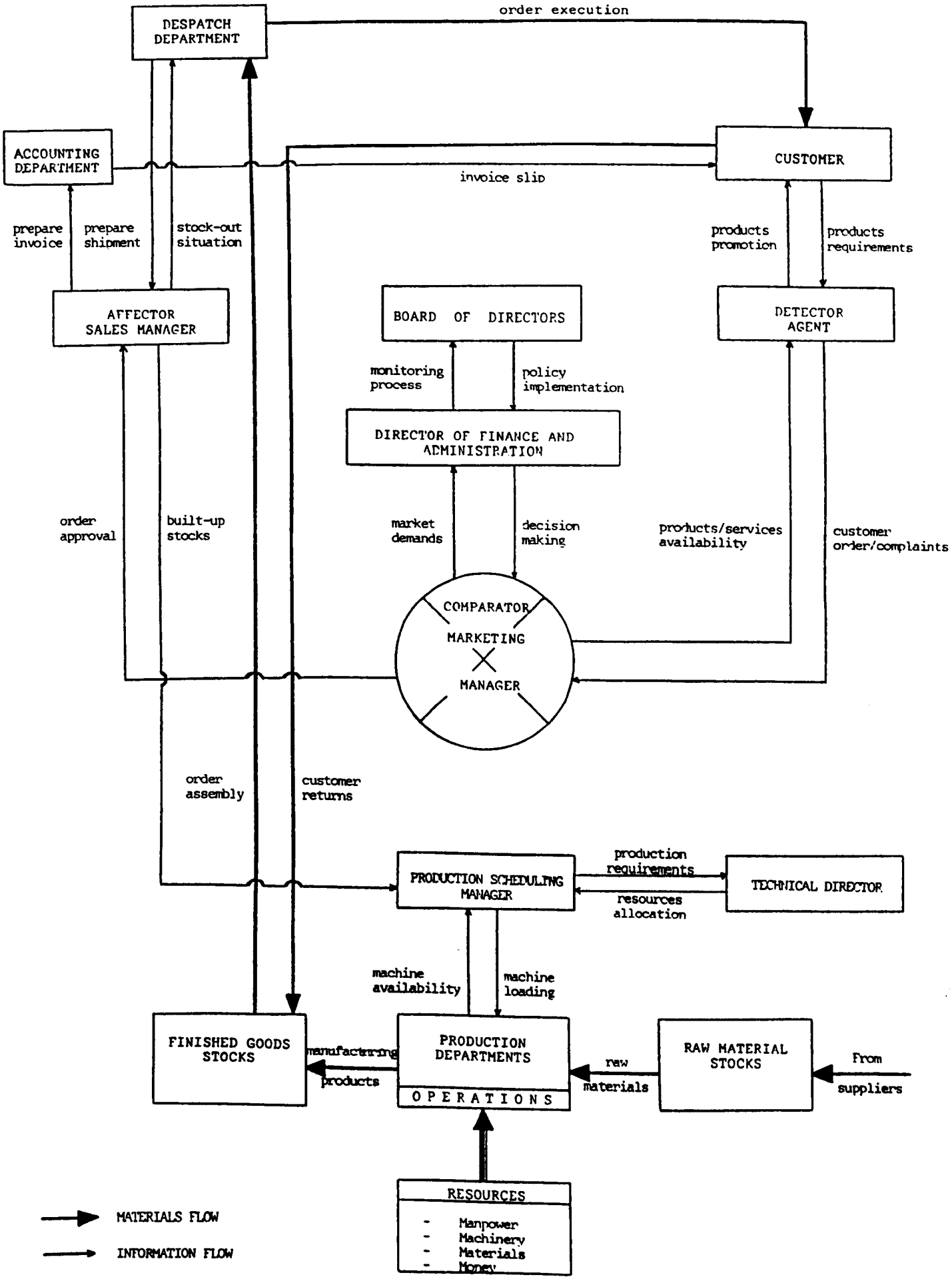
sales turnover was shown along with payment settlement, ie cash or cheques as cash payments while payment by promissory notes was indicated in a separate column, or in case of payment by means of both methods the corresponding percentage breakdown was recorded. Furthermore, any bad transaction in the past such as the non-payment, or delay in honouring cheques, or promissory notes was indicated in a separate column, highlighting individual problem areas. The system was implemented in the course of 1985 and extended to all ten sectors of the home market.

The revised customers' sales ledger, as shown in **Appendix 99** was presented in A3 format and included 35 customers per page. The ledger operated in the same manner as the previous one, but presented additional data such as the customers' address, telephone number and taxation serial number, or identification card number. The extra information facilitated immediate control and appropriate measures to be taken on any occasion while visiting customers. Furthermore modifications to relevant data were made during the subsequent period in cases of a change of address, telephone number, etc. The new customers' ledger presented a five year customers' sales record, 1981-1985. The procedures and documentation methods used were as before, while the entire exercise proved important to the company, particularly in a turbulent business period. By the end of 1985 there were 955 customers recorded in the sector 1,979 in sector 3 and 1,013 in sector 4. In all ten sectors the number of registered customers reached a total of 3,809 meeting the prerequisite requirement of having at least one business transaction with the company during the 1981-1985 period. **Appendix 99** shows the first page of the Patras sub-region within sector 4, an area having 150 registered customers as at 31.12.1985. Sector 4, had 19 sub-regions, 1,013 registered customers in total.

The customers' sales ledgers were studied in depth by the author who presented reports to the Board of Directors highlighting a number of individual problems in each agent's area. Emphasis was placed on examining the reasons for declining sales in different sectors, or regions within the sectors. The availability of data such as customers' past sales data and the company's breakdown of finished goods stocks - monthly reports - enabled the organisation sales staff to increase the company's sales turnover in most problematic regions. The results of the effort are reflected in the factor of 3.5 times sales increase of the sectors other than sectors 1, 3 and 4 as shown in **Appendix 95.**

Monthly company sales figures for each agent's area were noted in a ledger, as illustrated in **Appendix 100.** The monthly report indicated the value of the sales - the aggregated sum of invoices issued - provided data on the cash in-flow breakdown in terms of cash, or promissory notes payments, the prices discounts offered for cash settlement, and the customer returns. Furthermore the debtors balance at the end of each month was recorded indicating expected cash in-flows into the system. This procedure was carried out for all 10 sales sectors individually and was built up gradually on a monthly basis providing the financial year's overview for each case. **Appendix** 100 shows the complete 1985 report for sales sector 3, providing all necessary information. The strong seasonality of the business is immediately apparent, the period September to October 1985 corresponded to 72% of the annual sales, and 66% of the cash in-flows. The company was forced, in the case exhibited, to offer price discounts for cash settlements during the months February, April, August and December 1985 in order to meet increased cash out-flows at that time.

DIAGRAM 9.1: OR. SALIARIS S.A. BLANKET MANUFACTURE. CUSTOMER ORDER FLOW THROUGH THE SYSTEM. ASSOCIATED DECISION MAKING PROCEDURES



9.4.2 PLANNING AND CONTROL FOR SALES AND COST MANAGEMENT

In order to facilitate the organisation's production scheduling function, an exercise of in-coming orders classification was introduced by the author for the 1984 peak demand period and implemented in the subsequent months. **Table 9.5** illustrates the established procedure, whereby the two week in-coming orders classification for October 1985 appears for the acrylic blanket collection; product quality: Superfil, design 5160. In that case and for the colour combinations 304, 308 and 324 their daily inventory levels were recorded, as in the finished goods in/out stock ledger, while additional information was provided by the closed-loop control in the weaving, finishing and end-finishing sub-system's for work-in-progress. Having established buffer stock levels for each design and colour combination, corrective action was taken when necessary, as in the case of the exercise illustrated. The work done in this area involved documentation of all the 1985-1986 collection's product qualities, each on an individual A4 card.. The procedure was carried out day by day and by the end of the two week period the results of the orders classification were discussed and action was taken prior to issuing the two week production schedule card for the weaving department. The exercise was essential, but difficult since it had to make use of all relevant established ledgers. Furthermore synchronized operations were required, while its successful operation contributed to the efforts to avoid investment in slow moving stocks of finished goods.

On the other hand, a monthly report was issued providing comparative data on the number of units produced and sold for each individual product quality. In addition the total sales turnover generated for each seperate category was reported along the line. **Appendix 101** provides the aggregated annual report for the financial

TABLE 9.5: A TWO WEEK IN-COMING ORDERS CLASSIFICATION (in pieces)

OR. SALIARIS S.A.
BLANKET MANUFACTURE

Year: 1985
Month: October
From: 1/10 to: 15/10
Quality: Superfil

A TWO WEEK IN-COMING ORDERS CLASSIFICATION (in pieces)

Design	Colour Combinations	Buffer Stock Levels	Date	Within The System				Week 1 (a1+a2+a3+ =X)					A1	Week 2 (B1+B2+B3+ =Y)					A2	Week 3 (c1+c2+c3+ =Z)					A3	
				In Stock (A)	W.I.P. (B)	Total (C)=(A)+(B)	Comments	M	T	W	T	F	C-X	M	T	W	T	F	A1-Y	M	T	W	T	F	A2-Z	Comments
								1	2	3	4			7	8	9	10	11		14	15					
5160	304	150	1	187	-	187		5					182													
			2	187	-	187			-				182													
			3	172	-	172				-			167													
			4	172	-	172						10	157													
			7	172	-	172	Exceeds Buffer Stock Level							-					157							Action Required
			8	167	-	167									15				137							
			9	167	-	167										30			107							
			10	167	-	167											-		107							
			11	167	-	167												25	82							
			14	132	40	172														30				57		
			15	132	40	172															25				32	
	308	100	1	152	-	152		10					142													
			2	127	-	127			-				117													
			3	127	-	127				-			117													
			4	127	-	127						-	117													
			7	147	-	147	Exceeds Buffer Stock Level							-					137							Action Required
			8	137	-	137									10				117							
			9	137	-	137										20			97							
			10	137	-	137											-		97							
			11	122	-	122												15	67							
			14	122	-	122														15				52		
			15	122	20	142															5				67	
	324	50	1	98	-	98		5					93													
			2	98	-	98			-				93													
			3	98	-	98				-			93													
			4	98	-	98						5	88													
			7	98	-	98	Exceeds Buffer Stock Level							-					88							No Action Required
			8	78	-	78									5				83							
			9	78	-	78										10			53							
			10	63	-	63											-		38							
			11	63	-	63												5	33							
			14	83	-	83														10				43		
			15	83	20	103															10				53	

year ended - 31st December 1984, whereby the statistical data presented illustrate the individual problem areas. The management's efforts to dis-invest the high stocks of acrylics is highlighted in the considerable differnce between the number of units produced and those sold particularly in the case of the Dralon double and Dralon single product qualities. Attention was given to careful planning of the woollen blanket production scheduling to produce the designs and colour combinations which matched with the market's preference and avoid the creation of increased inventories, as was the case with acrylics.

Another statistical monthly report was issued by the author covering the production and labour cost for each individual department. As shown in **Appendix 102,** where the May 1985 report is illustrated, the parameters taken into account were: the labour cost, the working hours and output. In the case of the dyeing and the spinning departments the corresponding production was measured in terms of kgs while in the weaving, mending, finishing, cutting, end-finishing and despatch activities, output was calculated in terms of pieces processed per month. This exercise enabled the management to have an accurate knowledge of the use of its resources and the problem areas, when and why there has been cause for concern.

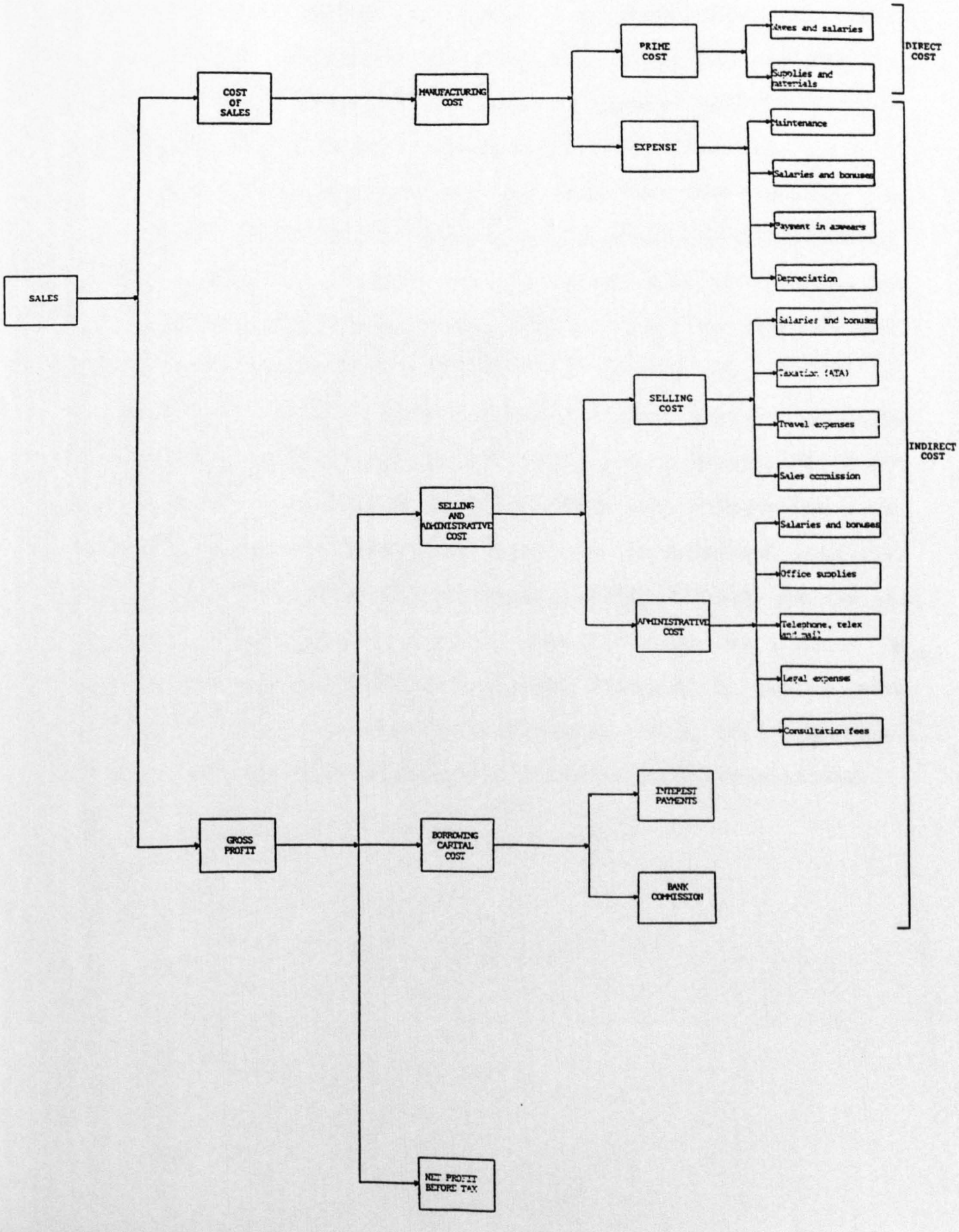
In recent years there has been a significant drop in both labour and machine productivity due to capital limitations, particularly during the low demand period, which imposed heavy burdens on the firm. Since almost the entire plant and equipment has been fully depreciated, the management's concern has been the excess personnel and the inability to reduce the monthly wage bill, at a time when labour costs rose due to wages indexation. As shown in **Diagram 9.2** for the purpose of this study, the author separated direct from indirect costs and tried to

examine their effects independently. The introduced statistical monthly report on production and labour cost change, highlighted the weaknesses and indicated the growing need for specific actions by the management.

Following the first strike in 1983, the business experienced severe financial problems which resulted in a cash flow crisis. The management required funds urgently to finance the day-to-day operations and had to apply for additional borrowed capital from the banking sector. The author prepared a cash flow budget for the second half of 1983 which was to be presented to the three main banks, namely: the National Bank of Greece, the Continental Bank of Chicago and the Bank of Macedonia and Thrace.

The first cash-flow budget issued, as illustrated in **Appendix 103**, presents a production scheduling plan. The labour force distribution and the expected production levels of each activity parameters; such as machine efficiencies and limitations, and personnel annual summer holidays were considered. The expected sales in terms of volume were calculated taking into account historical sales data, the management's and the agent's sales expectations. A set of assumptions underpinned the calculation of the expected cash in-flows, based on customers' credit provisions and the methods of payment. The cash-inflows, per product quality and month were estimated, grouped in major categories, and projected along the time period. The cash flow budget was submitted to the banks on 21.6.1983 applying for a 30 million drachmas loan, issued for a period of 5 months, in order to finance the company's operations. The June 1983 cash-outflow indicated a 13 million drachmas deficit while the study pointed out another 17 million drachmas deficit in July and August 1983. From the three banks, the National Bank of Greece agreed to provide the loan, but with personal guarantees. These

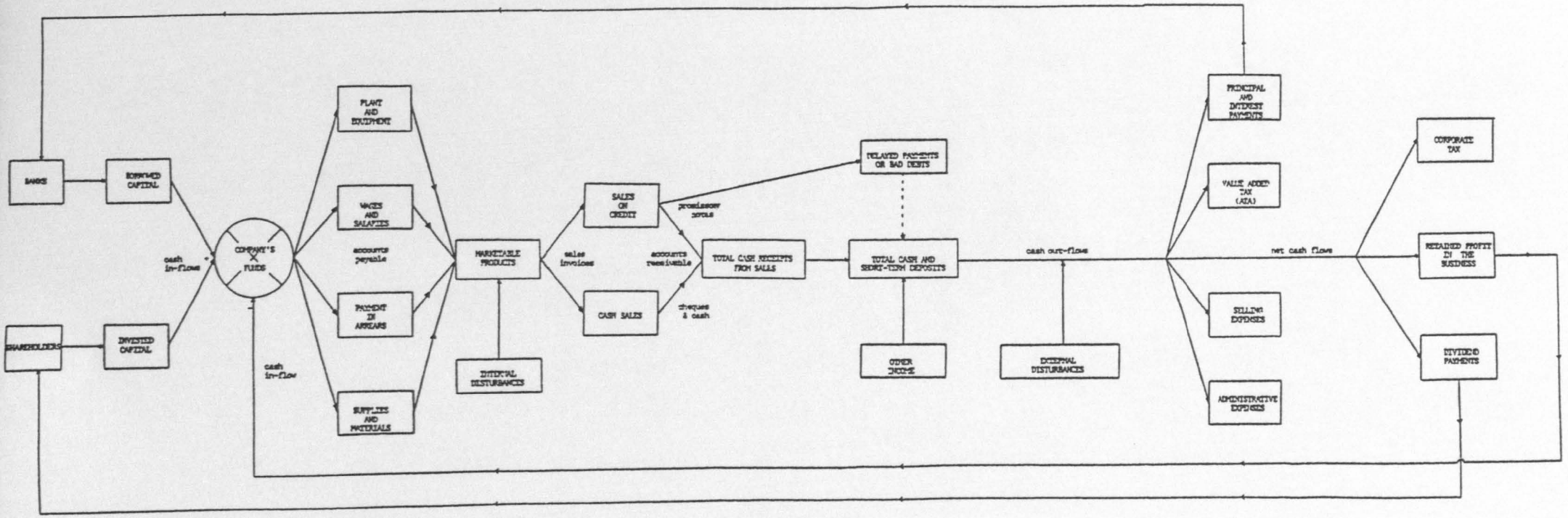
DIAGRAM 9.2: OR. SALIARIS S.A. BLANKET MANUFACTURE.
THE ORGANISATION'S COST SYSTEM



guarantees were unacceptable and the company was forced to operate in business periods with no external financial support. The organisation's funds flow system appears in **Diagram 9.3,** highlighting the three possible options. To meet current liabilities during 1983 and 1984 the business liquidated increased inventories of finished goods by offering cash incentives to the company's customers to finance operations.

Cash-flow budgets were prepared twice each year covering the first and the second half of each financial period providing forecast sales and expected cash in-flows into the system. Both cash in-flows and cash out-flows actual figures were presented next to expected thus offering senior management a realistic view of the magnitude of the differences on a monthly basis. Furthermore the projected cash-flow budgets were increasingly used for financial decision making. The Board of Directors had to exercise control over increasingly complex operations and adopt appropriate policies and procedures to safeguard viability. Decision making under conditions of uncertainty was difficult and the net cash-flows budgets provided necessary support information. Given the financial limitations from 1983 onwards, management's efforts were concentrated on the achievement of equilibrium, making use of resourses and aiming to minimize losses during the recession in the Greek economy.

DIAGRAM 9.3: OR. SALIARIS S.A. BLANKET MANUFACTURE.
THE ORGANISATION'S FUNDS FLOW SYSTEM



CHAPTER 10

FINANCIAL MANAGEMENT

10. FINANCIAL MANAGEMENT

10.1 FINANCIAL STATEMENTS

The company's financial period starts on 1, January and ends on 31, December each year. The accounting procedures were carried out by the firm's accounting department under the provisions of the Greek legislation, and audited by external chartered accountants. **Appendix 104** illustrates OR. SALIARIS S.A. consolidated balance sheets for the ten year period of its existence as a public company; from 1 January 1978 to 31 December 1987. The company's share capital increased from 52 million drachmas in 1978 to 84 million drachmas in 1982, under the law N 1249/82 relating to buildings' market value appreciation. On the other hand the business reserves declined in 1984 to 52 million drachmas due to fixed assets liquidation, remaining thereafter at that level reflecting lack of business profits. As shown in **Appendix 104** the company's long-term liabilities have gradually declined in the 1980s because of the inability to invest in plant and machinery as a result of the economic and trading conditions in Greece.

It should be noted that the firm has almost fully depreciated its machinery and equipment by a cover factor of 81%, but following the building up of annual losses in 1983 and 1984, the depreciation practices stopped as from 1.1.1985. The company was forced to sell its new factory premises in October 1984 along with some machinery in the acrylic blanket finishing department, which is reflected in the 1984 balance sheet. In 1987 a small investment was made in the dyeing department for knitted cotton fabrics' dyeing, bleaching and heat-setting operations. The business suffered losses since 1983, as shown in **Figure 10.1**, an aggregated total of 170 million drachmas by the end of the 1987 financial year.

The economic recession in Greece in the early 1980s was coupled with the political changes and resulted in a sharp deterioration of the business climate which is reflected in the heavy net losses incurred during the 1982-1985 period by the Greek manufacturing sector. The corresponding behaviour of the textiles branch has been discussed earlier, while the financial profile in the 1980-1986 period of the major blanket manufacturing companies in Greece - number of people employed exceeding 50 persons per annum and annual sales turnover 100 million drachmas and more - is illustrated in **Appendix 105.** The acrylic and/or woollen blanket manufacturers are presented in terms of employment and profits (losses) as issued in the end of each financial period, and shown in the ICAP annual publications. From the 13 companies listed in **Appendix 105,** 5 are under liquidation, 2 under government control -under the provisions of law N 1386/83-, VETLANS NAOUSSA S.A. and PELLA-OLYMPOS S.A. are affiliated companies - the first has suffered considerable losses according to recently published audited accounts; 1986 losses exceeding half a billion drachmas - ANATOLIA INC. has been under extreme financial difficulties, OR. SALIARIS S.A. faces severe liquidity problems, while the remaining two companies namely: BIOCARPET S.A. and PERSIKA S.A. produce mainly carpets and have not been directly affected by the downturn in the blanket business.

The company's current assets development, as presented in **Appendix 104,** reflect a continuous growth of inventory value, a process which continued from 1978 to 1985, but drastic measures adopted by the management of the company resulted in a significant stocks liquidation during 1986-1987. Furthermore on-going monitoring procedures and production planning and control prevented a further stock value rise. The business debtors, cash and short-time deposits are related to the organisation's annual sales turnover and reflect the prevailing sales

philosophy. Ever since 1983 the company could no longer provide extended credit to its customers and demanded prompt payment in order to finance the day-to-day operations and to meet external demands and pressures which have caused increased concern. As a result the firm's current liabilities have increased dramatically during 1978-1985 due to financial difficulties, but following strict policies and procedures the management of the company lowered the current liabilities value to 237 million drachmas by the end of the 1987 financial year.

The company experienced a cash-flow crisis in late 1982, for the first time since it went public in 1978, the main reason was not the market, but the withdrawal of working capital - around 20 million drachmas in cash - to satisfy the retirement compensation package of the company's ex-Managing Director. The organisation experienced a declining gross profit pattern from 1983 onwards, as shown in **Figure 10.2,** but the shortage of cash and the urgent need to meet the company's liabilities was amplified by the two devaluations in 1983 and 1985 along with the two 3 month personnel strikes in 1983 and 1986. In the author's view the extreme financial problems experienced by new management was predominantly caused by cash out-flow in late 1982. As shown in **Appendix 104** the considerable decline of the business debtors at the end of the 1982 financial year, as compared to the previous year, mainly reflect the excessive cash incentives offered to the customers during the last 4 months of 1982. From an estimated 8 million drachmas profit before taxation, provisional balance sheet on 31.08.1982, the business broke even at the end of the financial year and thereafter experienced both internal and external problems which resulted in increased losses and a negative net current assets value during the 1985-1987 financial periods.

FIGURE 10.1: OR. SALIARIS S.A. BLANKET MANUFACTURE. ANNUAL NET PROFIT BEFORE TAXATION PATTERN

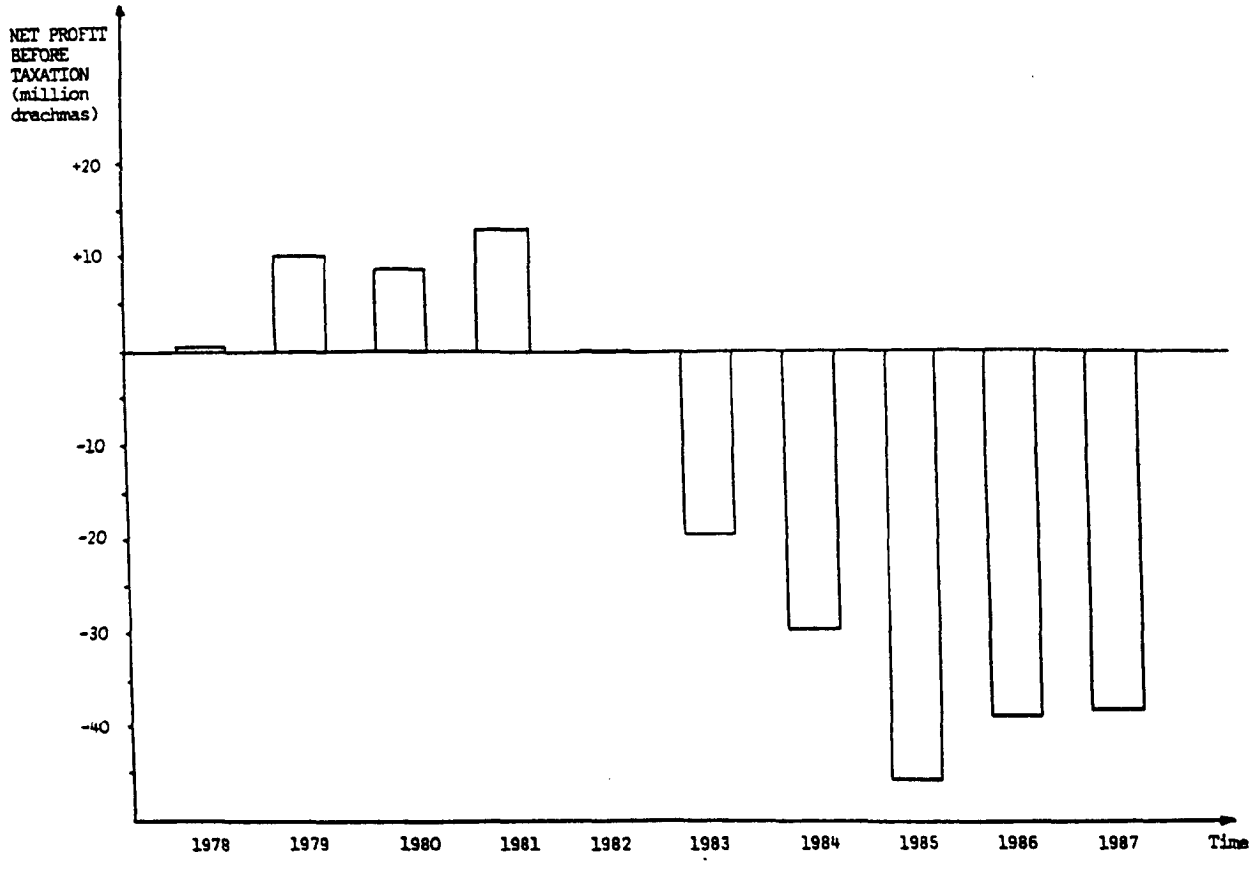
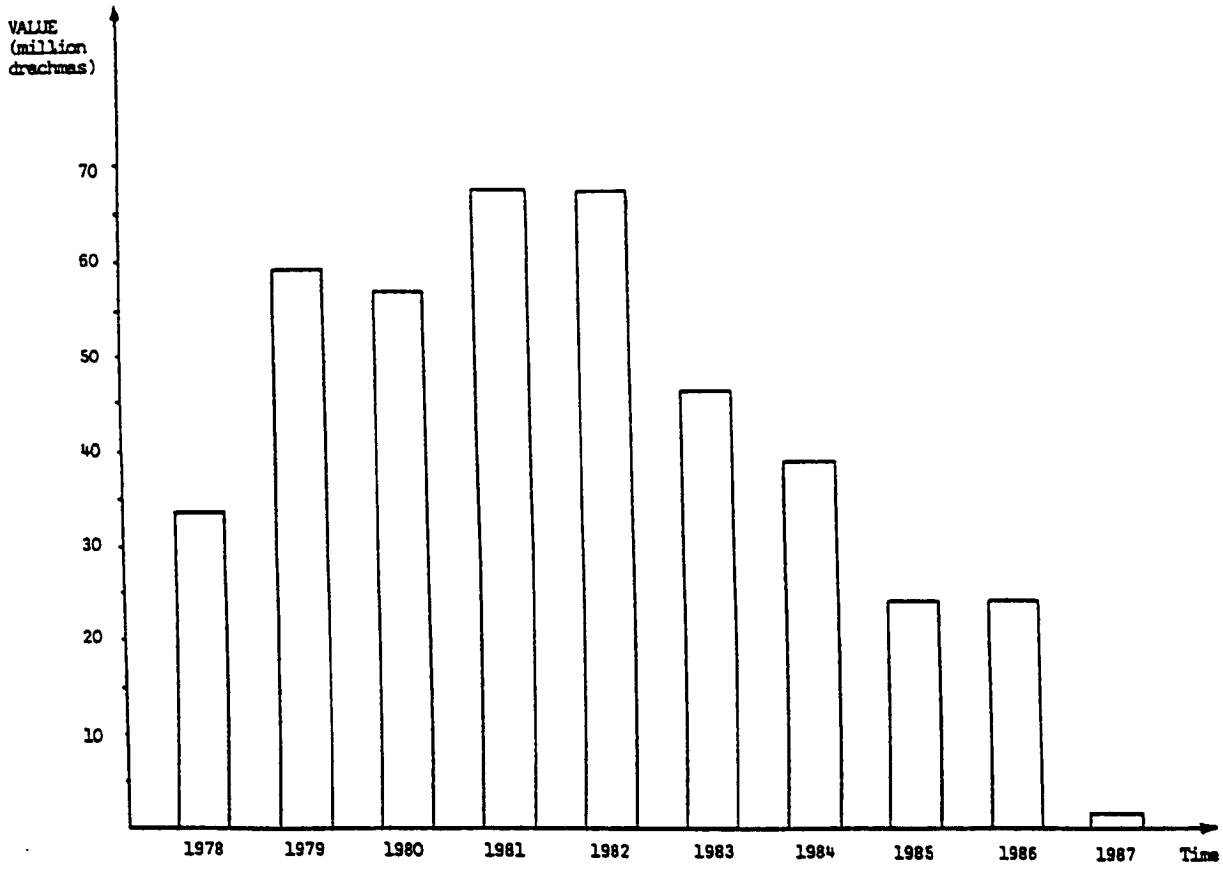


FIGURE 10.2: OR. SALIARIS S.A. BLANKET MANUFACTURE. ANNUAL GROSS PROFIT PATTERN



10.2 ACCOUNTING RATIOS' ANALYSIS

10.2.1 INVESTMENT MEASURES

The company was a profitable enterprise up to 1982, as shown in **Appendix 106**, but thereafter its return on equity grew gradually negative. Since its establishment as a public company the business provided a 60 drachmas per share dividend for the consolidated 1978-1979 financial year, and the 1980 and 1981 periods. The management's policy was to attribute to the shareholders the 6% of the share capital as a prerequisite set in the company's memorandum. The remaining profits were retained to finance business activities. From 1983 onwards the lack of profits has produced no dividend payments to the company's shareholders.

10.2.2 MEASURES OF PERFORMANCE

The accounting ratios selected are presented explicitly in **Table 10.1.** The analysis for the business performance is illustrated in **Appendix 106.** The return on net assets ratio reached a peak value of 20.8% in 1981, as shown in **Figure 10.3,** declined thereafter and eventually became negative in 1985-1987. Similarly the profit margin achieved its peak in 1980, 14.9%, but has gradually fallen in the subsequent years and once more turned negative from 1985 onwards. On the other hand the asset turnover was 1.8 times in 1985 highlighting the organisation's success in a period when the launching of a collection in the soft outlook in both acrylics and woollen ranges of blankets produced increased sales turnover. It should be noted that about 20% of the customer orders in hand in late 1985, 50 million drachmas worth, were not despatched due to the drachma's devaluation and the need for a selling price rise.

Similarly, although stock turnover achieved its maximum value in

1978, 3.8 times, reflecting the business climate at the time, it declined thereafter, but rose gradually once again during 1984-1985. The management's wish to minimize the customers' credit facility and increase cash in-flows, is reflected in the debtor turnover position. A peak level was reached in 1982, 5.5 times, but remained on average 4.6 fold thereafter. The company gross profit (%) pattern is illustrated in **Figure 10.4.** Following the maximum ratio level of 29.5% achieved in 1979, the trend indicated a gradual decline due to the cost rises. The sharp fall of the company's total net sales turnover during 1986-1987 had a negative influence on the fixed costs distribution. Finally the selling and administrative costs/sales (%) remained on an average level of 11.8% during the 1978-1985 period as shown in **Figure 10.5,** but rose sharply in 1986 and 1987 due to the rise of the administrative expenses to meet the business specific and urgent financial obligations.

10.2.3 MEASURES OF FINANCIAL STATUS

The business solvency position highlights a gradual decline of the debt/capital employed ratio to just 9.6% in 1986 and 1987 due to the repayment of the long-term loans and also because some of the ETEBA investment loans have been transferred in the recent years to the current liabilities account reflecting overdue short-term loans. Thus the relatively low debt ratio does not provide the company with the expected high level of safety since the liquidity measures indicate the shortage of business working capital and the hidden cash flow crisis. Furthermore the current ratio indicates the extent to which the company's short-term assets were adequate to meet the short-term liabilities. The ratio shows that current assets 'turned over' 1.7 times back in 1980 the highest figure observed during the 10 year period, but remained well above the break-even level throughout the 1978-1985 period being on average 1.4 times. During the 1986 and 1987

TABLE 10.1: OR. SALIARIS S.A. BLANKET MANUFACTURE.
ACCOUNTING RATIOS' ANALYSIS

1. INVESTMENT MEASURES

(a) Return on Ordinary Shareholders Funds (Return on Equity)

$$\frac{\text{Profit after loan interest and tax}}{\text{Ordinary shareholders' funds}}$$

(b) Earnings per Share

$$\frac{\text{Earnings attributable to ordinary shareholders}}{\text{Number of ordinary shares in issue}}$$

2. MEASURES OF PERFORMANCE

(a) Return on Net Assets

$$\frac{\text{Profit before loan interest}^1 \text{ and tax}}{\text{Net assets}}$$

(b) Profit Margin

$$\frac{\text{Profit before loan interest}^1 \text{ and tax}}{\text{Sales}^2}$$

(c) Asset Turnover

$$\frac{\text{Sales}}{\text{Net assets}}$$

(d) Stock Turnover

$$\frac{\text{Sales}}{\text{Stock}^3}$$

(e) Debtor Turnover

$$\frac{\text{Sales}}{\text{Debtor}}$$

(f) Gross Profit (%)

$$\frac{\text{Gross profit}}{\text{Sales}}$$

(g) Selling and Administrative Costs/Sales (%)

$$\frac{\text{Selling and administrative costs}}{\text{Sales}}$$

3. MEASURES OF FINANCIAL STATUS

A. SOLVENCY

(a) Debt/Capital Employed (%)

$$\frac{\text{Long-term loan}}{\text{Capital employed}}$$

B. LIQUIDITY

(a) Current ratio

$$\frac{\text{Current assets}}{\text{Current liabilities}}$$

(b) Acid test

$$\frac{\text{Liquid assets}}{\text{Current liabilities}}$$

Notes: 1 loan interest = interest on short-term and long-term loans

2 sales = total net sales turnover

3 stock = stock in hand and ex-factory stock

FIGURE 10.3: OR. SALIARIS S.A. BLANKET MANUFACTURE. ANNUAL RETURN ON NET ASSETS PATTERN

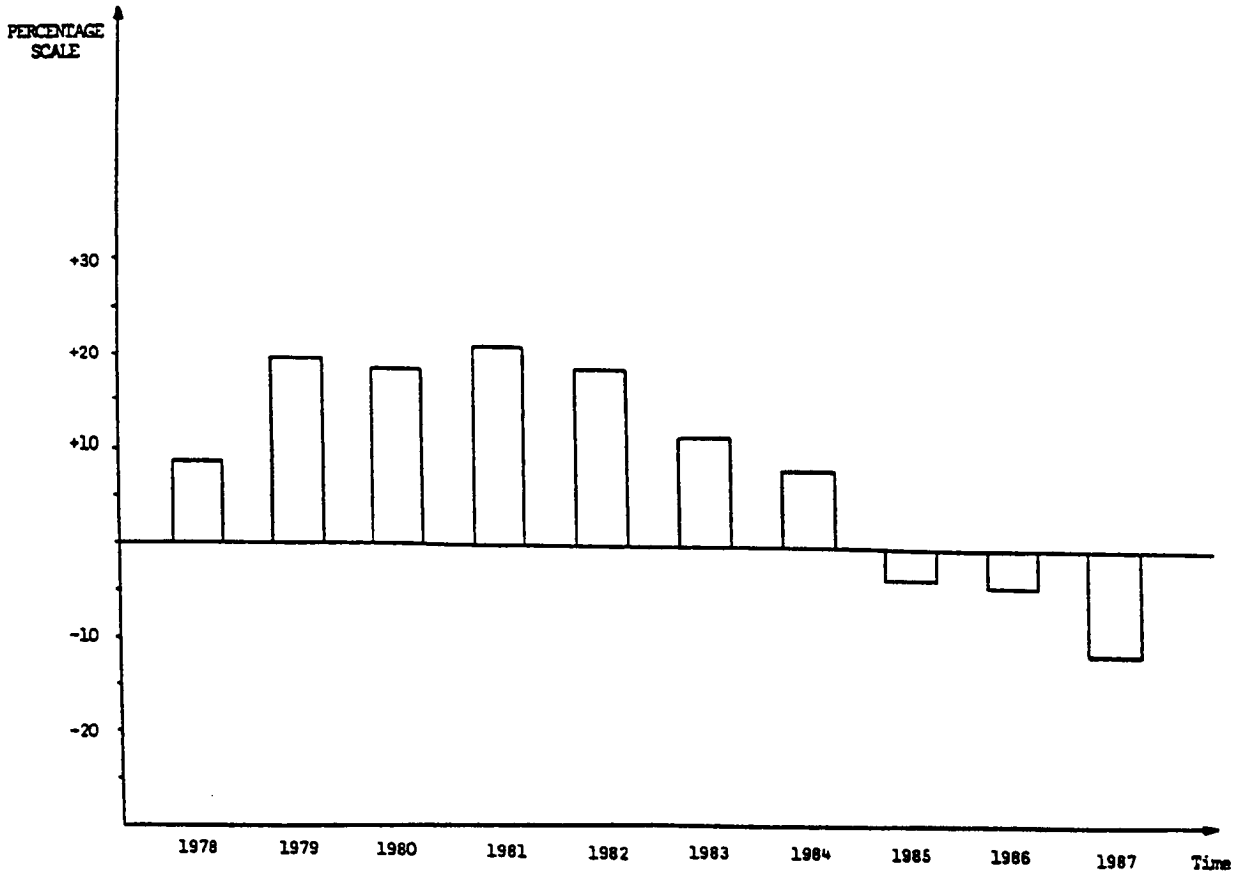


FIGURE 10.4: OR. SALIARIS S.A. BLANKET MANUFACTURE. ANNUAL GROSS PROFIT (%) PATTERN

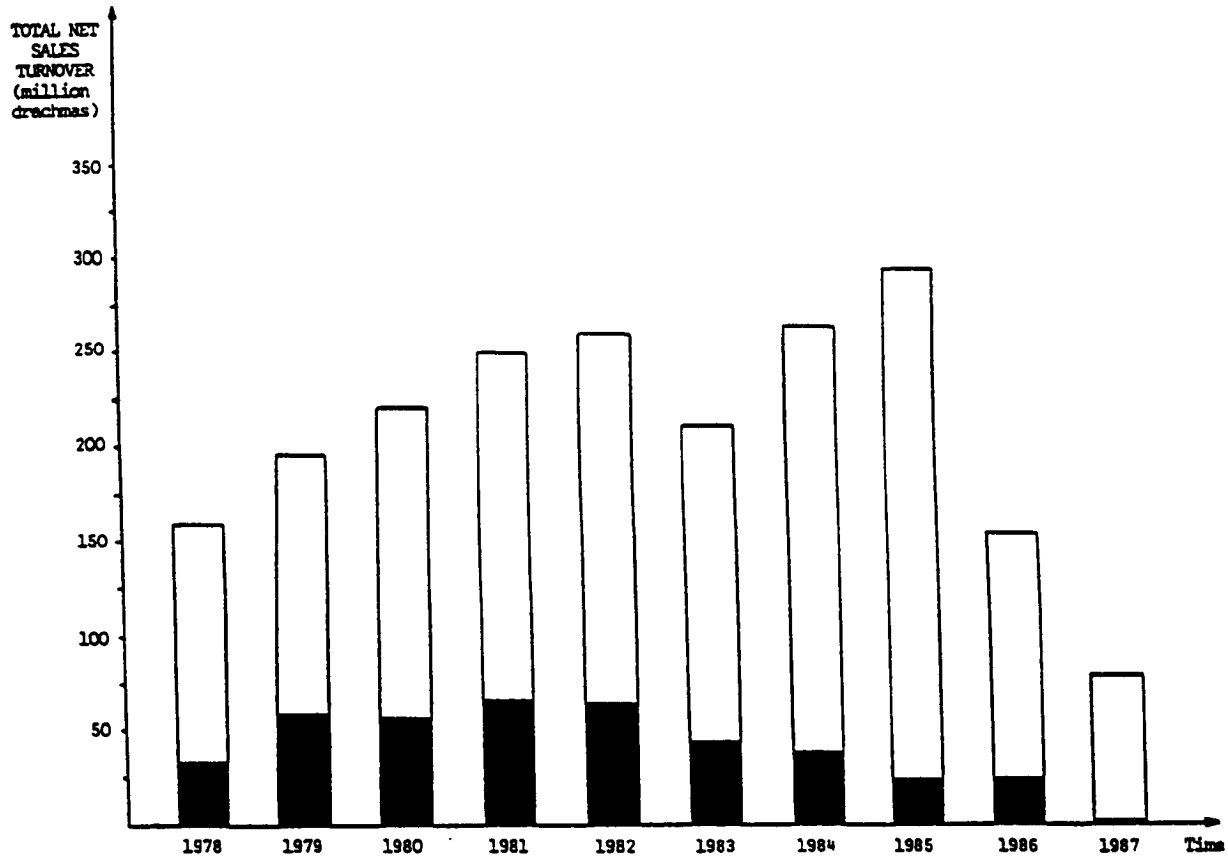
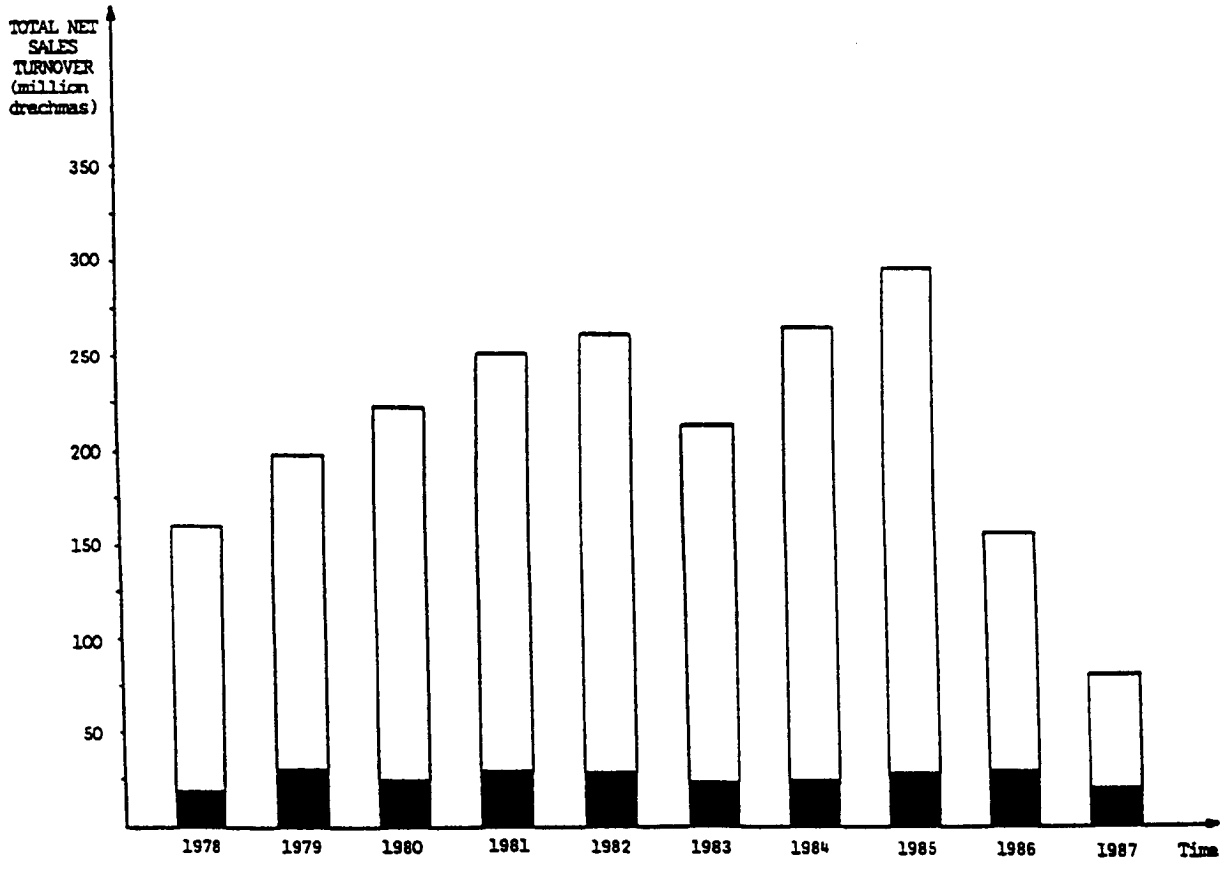


FIGURE 10.5: OR. SALIARIS S.A. BLANKET MANUFACTURE.
ANNUAL SELLING AND ADMINISTRATIVE COSTS/SALES (%)



financial years the current liabilities of the business could not be fully covered by the current assets and the management was faced with increased pressure from both lenders and creditors.

Finally the acid test was used in examining the business liquidity position, the strictest test adopted in this study, to measure the company's financial status. The acid test excludes the stock figure in calculating the short-term resources available to meet the short-term liabilities on the grounds that stocks would take several months to turn into cash. The company has always lacked an acid test value well above 1 which could provide the management with security, as it can be seen in **Appendix 106**, but since the 1981 the situation has deteriorated and recently has been, during 1986 and 1987, only 0.2 indicating the degree of cash shortage.

10.3 COMPANY LIABILITIES

The development of both short-term and long-term liabilities during 1978-1987 is presented in **Appendix 107.** As higlighted before, the management's investment in new premises was a financial decision which imposed severe restrictions on the company's operations through increased cash out-flows at a period of deepening economic recession in Greece. The deterioration of the trading environment resulted in a sharp fall in demand and reflected declining revenues.

In 1980 the ETEBA's long-term loans increased by 2.5 times to a total of 68.2 million drachmas at 31st December 1980. On the other hand the short-term liabilities rose by 1.3 times to a total of 173.2 million drachmas at the end of the 1980 financial year and highlight the management's policy of stock-building using short-term borrowing when interest rates in Greece were high and demand declining. Furthermore, selling prices did not keep pace with the rate of inflation and market trends indicated no improvement in the near future. Up to 1982 extra short-term borrowing was provided, not

only to finance the day-to-day operations of the firm, but also to meet interest payments of past loans.

In late 1982, prior to the retirement of the previous Managing Director the business was unable to pay a principal loan installment to the ETEBA bank and required a time extension for delayed payment. At that stage the problems were becoming visible, but immediate measures were not taken due to the change in the company's leadership, the following depreciation of the national currency on 9.1.1983 and the personnel strike. In the subsequent years the business experienced severe financial problems due to the organisation's inflexible structure and the magnitude of the policies and measures adopted by the company's management earlier.

During the 1983-1987 period the company has not been offered the financial support by the banking sector as was the case up to late 1982. The increased cash out-flows for interest payments has limited the financial flexibility of the firm. As a result of the delayed payments or the inability to meet the principal re-payment dates, the interest and penalties increased the company's total liabilities to 288 million drachmas by the end of the 1985 financial year. The 31.3% increase between 1984 and 1985 corresponds mainly to the second devaluation of the drachma, on 11.10.1985, which reflected a 2.1 times rise in the foreign promissory notes payable to raw material suppliers. The company was forced to negotiate bank loans re-structuring by offering additional securities, mortgages on fixed assets and by providing finished goods and raw materials under bank pledge.

10.3.1 LONG AND SHORT-TERM LIABILITIES TO THE BANKING SECTOR

The company's liabilities development to the banking sector during the 1978-1987 period is presented in Table 10.2. The firm was granted long-term loans for investment in plant and machinery by the Athens located

ETEBA bank. In addition following the 1978 Thessalonki earthquake a long-term loan was issued by the National Bank of Greece for repairs to the buildings framework. The latter loan was repaid by 1986 while loans issued for investment in machinery were also fully repaid in the early 1980's. The former obligation corresponds to the 42 million drachmas loan issued in 1980 to be paid in 15 installments from 28.2.1982 to 28.2.1990. At that time the interest rate was 15.5% plus 0.5% bank commission. The management has offered to ETEBA bank a mortgage of 50.4 million drachmas on the company's fixed asets. Since 1980 the long-term interest rate has risen to 20% plus 1.0% bank commission. Inability to meet scheduled re-payment cash out-flows made the management of the company decide to sell the new factory's premises in October 1984 and make a bulk payment of 35 million drachmas to ETEBA.

Furthermore, two additional loans were issued at the time to cover delayed over-due payments of principal and interest, one 11 million drachmas loan and a 4 million drachmas loan both at 18% interest rate plus 0.5% bank commission. The package was to be paid in 17 installments from 31.12.1984 to 31.12.1992. At present the remaining principal payments stand at 14.5 million drachmas, while the overdue principal and interest outstanding payments attach a 26% interest rate plus 1% bank commission and have been transferred to the ETEBA bank's short-term loans accounts. The management of the company has accepted a re-payment scheme whereby 18 million drachmas are paid per annum as from 1987, but the heavy cost imposed to the outstanding balance make the financial burden extremely high, particularly during a period when the business faces cash shortage in its effort to finance the company's operations.

In the case of the short-term loans the total remaining balance on 31.12.1982 was 113.8 million drachmas as shown in Table 10.2 from just 26.5 million drachmas at the end of the 1980 financial year, there has been a 4.3

times increase during the 1981-1982 period reflecting the policy of financing the high production levels at the expense of short-term bank borrowing. At the initiation of the research work the company was financed from six different banks; namely the National Bank of Greece, the Continental Bank of Chicago, the Bank of Macedonia and Thrace, the Bank of Greece, the Commercial Bank of Greece and the ETEBA Bank. The Managing Director's philosophy was that more banks provided security and it was understood at a later stage that the idea was to finance the re-payment of the loans by the issue of other loans.

In a period of growing financial burdens the new management of the company had to pledge 11,700 pieces of finished goods in the PAEGA for additional security offered to the National Bank of Greece loans. The procedure adopted financed the business liquidity shortage at the time of low sales demand, and safeguarded viability. The financial problems reached a peak in January 1985 when the Continental Bank of Chicago demanded an immediate re-payment of the 31 million drachmas out-standing balance and there was concern that the other banks might proceed to bankruptcy. After discussions and consultation with the other two major banks: the National Bank of Greece and the Bank of Macedonia and Thrace an agreement was made which offered them a 35 million drachmas and a 40 million drachmas insurance for mortgage cover on the firm's fixed assets on 23.1.1985. On 5.2.1985 the Continental Bank demanded an immediate payment of all accounts by the 14.2.1985. The management sought to avoid the initiation of bankruptcy proceedings.

At that time both the management of the company and the trade union agreed on an appeal to the Ministries of Labour and National Economy for support and intervention. An analysis of the problems was presented to the authorities on 28.1.1985 and as recommended a group of financial consultants was employed and prepared a viability study by March 1985. This indicated

the company's strengths and weaknesses and immediate action was suggested for a freeze of the over-due bank balances under the provisions of the Bank of Greece act 341/84 whereby re-payment could be made over 8 years. The two first years free from any interest payments. Furthermore, it was proposed that since the Continental Bank of Chicago was closing all customers' accounts in a decision made to withdraw from Greece, another bank could facilitate the problem area and finance the 31 million drachmas required for immediate payment. In addition a 15 million drachmas long-term loan was required under the conclusion and recommendations of the viability study as working capital. Although there has not been any financial provision made to the business, the actions eased the situation and by late 1985 the company paid 7 million drachmas in cash to the Continental Bank of Chicago, pledged another 7 million worth finished goods in PAEGA for the bank's security and agreed on a re-payment package of 1 million drachmas per month as from January 1986.

Following the personnel strike in March 1986 and the company's financial difficulties in the post-strike period the business was unable to meet the agreed payments and once more bankruptcy threatened. Intensive negotiations resulted in a final package whereby on 24.2.1987 the Continental Bank of Chicago agreed to delete the mortgage registered in the plant and equipment after full and final payment of 4 million drachmas made by OR. SALIARIS S.A. and return of the remaining 2 million drachmas worth PAEGA titles to the firm.

Finished goods were pledged to the Bank of Greece covering their over-due balance, but by the end of 1987 the management had liquidated these stocks and made a final and full payment to the above mentioned bank. In January 1987 the company stopped auction plans for the Trikala plant made by the Bank of Macedonia and Thrace, when 5 million drachmas worth of raw materials were pledged in PAEGA for bank security. Following the settlement

of that account at the end of 1987, as a result of lengthy negotiations, a package agreement was signed whereby payments of 5 million drachmas were made on agreed dates; end of March 2 million and end of June, August and October 1 million respectively followed by an 8 year re-payment of the remaining 26 million drachmas on 0.4 million drachmas per month as from January 1989, and no interest attached into the remaining balance.

At present the company holds accounts on short-term loans with ETEBA Bank and the National Bank of Greece, all other banks have been repaid. The management of the firm seeks to honour the 8 year re-payment scheme with the above banks on the remaining balance. It should be mentioned that excessive attachments of extra - interest to delayed or non-payments have resulted in an average annual cost of 26% on the company's short-term loans. The total short-term liabilities to the banking sector as at 31.12.1987 were 125.9 million drachmas as indicated in **Table 10.2** whereas the corresponding long-term liabilities remained at 14.5 million drachmas. **Figure 10.6** presents the total bank debt development as a percentage of OR. SALIARIS S.A. total liabilities during the ten year period, 1978-1987. It can be seen that the company's bank liabilities have always exceeded half of the total, but reached an average of 71.3% during 1982-1984 indicating the magnitude of the problem.

10.3.2 SHORT-TERM LIABILITIES TO HOME AND FOREIGN CREDITORS

Table 10.3 provides the company's development during 1978-1987 regarding home foreign suppliers of machinery and equipment, raw materials and process additives. There have been delayed payments on promissory notes by the firm to home suppliers in the post - 1983 period due to financial problems, particularly following the austerity policies and the 1986 three month strike. Despite the liquidity shortages the management succeeded in settling all home creditors' accounts and by 1987 the remaining balance as at 31st December was 5.4 million drachmas.

TABLE 10.2: OR. SALIARIS S.A. BLANKET MANUFACTURE. LONG & SHORT-TERM BANK LIABILITIES AS AT 31st DECEMBER (1978-1987)

(Financial data in million drachmas)

Years	Short-Term		Long-Term		Total	
	Value	Annual % Increase	Value	Annual % Increase	Value	Annual % Increase
1978	30.956	+55.9	35.515	-13.7	66.471	+8.9
1979	39.425	+27.3	32.734	-7.8	72.159	+8.5
1980	26.476	-32.8	73.184	+123.6	99.660	+38.1
1981	53.480	+102.0	59.601	-18.6	113.081	+13.5
1982	113.808	+112.8	47.579	-20.2	161.387	+42.7
1983	114.118	+0.3	57.582	+21.0	171.700	+6.4
1984	125.246	+9.7	40.796	-29.1	166.042	-3.3
1985	143.886	+14.9	28.281	-30.7	172.167	+3.7
1986	124.552	-13.4	14.450	-48.9	139.002	-19.3
1987	125.879	+1.0	14.450	-	140.329	+1.0

FIGURE 10.6: OR. SALIARIS S.A. BLANKET MANUFACTURE.
TOTAL BANK DEBT AS % OF TOTAL LIABILITIES

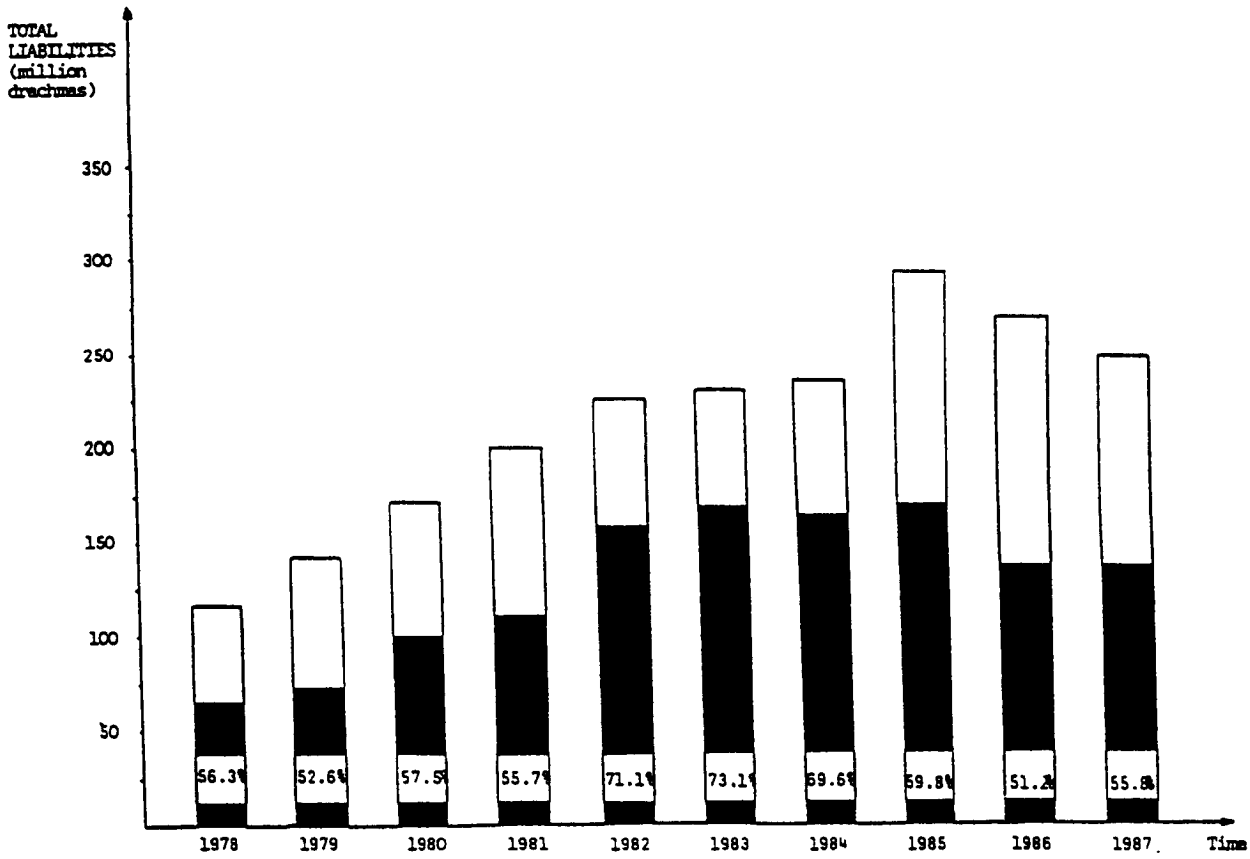


TABLE 10.3: OR. SALIARIS S.A. BLANKET MANUFACTURE.
HOME & ABROAD SUPPLIERS OF RAW MATERIALS,
MACHINERY & EQUIPMENT, PROCESS ADDITIVES (1978-1987)

(Financial data in million drachmas)

Years	Home Creditors		Foreign Creditors		Total	
	Value	Annual % Increase	Value	Annual % Increase	Value	Annual % Increase
1978	23.853	+19.3	19.610	+25.5	43.463	+22.0
1979	31.415	+31.7	22.639	+15.4	54.054	+24.4
1980	31.880	+1.5	27.284	+20.5	59.164	+9.4
1981	32.109	+0.7	40.922	+49.9	73.031	+23.4
1982	32.548	+1.4	22.348	-45.4	54.896	-24.8
1983	19.105	-41.3	35.069	+56.9	54.174	-1.3
1984	23.684	+23.9	42.296	+20.6	65.980	+21.8
1985	20.518	-13.4	90.705	+114.4	111.223	+68.6
1986	13.636	-33.5	112.082	+23.6	125.718	+13.0
1987	5.440	-60.1	102.959	-8.1	108.399	-13.8

In the case of the foreign creditors, a severe financial burden was caused by the second drachma devaluation on 11.10.1985. There were unsettled foreign promissory notes payable to raw material suppliers both in acrylics and wool. The dramatic rise of the remaining balance on 31.12.1985 shows a total of 111.2 million drachmas. The foreign drafts were issued in DM at a time when the value of the currency fluctuated moderately with regard to the drachma. At present the drachma value of the remaining unpaid promissory notes correspond to a total value more than double the estimated worth at the acceptance of the drafts back in 1985. In the case of the acrylic fibres' foreign suppliers, the company made gradual installment payments in recent years and the remaining balances are at present considerably lower than their peak levels in 1985 and 1986.

The two main acrylic fibres' suppliers BAYER A.G. and ANIC Spa have provided credit facilities once more and by late 1988 the company appeared to be in position to produce Dralon and Elacryl qualities of finished goods. In the case of the wool fibres' the foreign suppliers situation has been more difficult to resolve. Out of six different creditors remaining unsettled in 1986, one has been fully paid, two have been serviced according to re-payment schedules, but in the case of the other three negotiations seek an 8 year re-payment scheme. Furthermore agreement had to be reached on the value of the remaining balance acceptable to both sides.

By the end of 1987 the company's total liabilities to foreign raw materials suppliers declined to a sum of 102.9 million drachmas. Table 10.3 highlights the effects of the two drachma's devaluation on 1983 and 1985. The remaining balance in the end of each financial year reflected a total increase by 56.9% and 114.4% respectively, as compared to the previous year, to a great extent caused by the effects of the national currencies depreciation.

10.3.3 SOURCES AND APPLICATION OF FUNDS

An analysis of the organisation's sources and applications of funds during the ten year period, 1978-1987, is illustrated in **Appendix 108.** Traditionally finance has come from the Greek banking sector, its shareholders' funds and in recent years, through self-financing, new product development - woollen blankets range - , and offering of services - subcontracted work in various processing stages - . The financial losses, since 1983, resulted in a continuous cash shortage, a problem which the management was forced to ease by de-stocking of excessive finished goods. Urgent needs to meet short-term liabilities to the banking sector and to the firm's home and foreign creditors resulted in decision making whereby, not the best course of action was selected, but the least harmful, given the restricted alternatives and the company's objective of viability.

Following the inability to generate profits since 1982, there have been no dividends. The management intensified its efforts to meet the liabilities. Having succeeded in the first place in lowering the long-term loans to the banking sector, attention was focused on short-term liabilities. The movement in working capital, as shown in **Appendix 108,** highlights the allocation of funds; primarily meeting interest payments followed by repayment of principal wherever feasible, in addition to servicing the foreign drafts. As a result of the policies adopted in late 1985 by the Greek government, the organisation lacked funds to finance its operations. It was unable to meet the home market demand for its products in full. On the other hand finished goods inventories were reduced and debtor collection time improved as well as increasing cash and short-term deposits. Ever since 1987, the management of the company has directed its efforts to finance short-term liabilities by negotiating with the banks and creditors on mutually acceptable repayment packages.

CHAPTER 11

INDUSTRY'S FINANCIAL APPRAISAL

11 INDUSTRY'S FINANCIAL APPRAISAL

11.1 BANK CREDIT AND INTEREST RATES

11.1.1 THE BANKING SYSTEM IN GREECE. CREDIT EXPANSION

The alternatives for private savings in Greece, in contrast to other countries, are limited almost exclusively to deposits with the commercial banks and the special credit institutions due to the very small and poorly performing stock market. Return on such deposits is a function of their size and interest rates are an important adjustment tool in the hands of the government. Since the banking system in Greece does not operate in a competitive basis, the rate of return depends on the monetary and more general economic policy. The commercial banks have traditionally attracted the bulk of private deposits. Their type distribution - savings, time deposits and others - as argued by **Epilogi (1988)**, "have been characterised by a substantial rise of the time deposits from an average 12% level in the 1960's to 19% in the 1970's whereas currently in the 1980's they are about 28%". The overall increase of the deposits, according to **Epilogi (1985g)** "should not be attributed to income developments but mainly reflect the lack of other investment opportunities for individuals especially at a period of declining investment in housing".

Interest rates have not changed significantly in the 1980's, differentiation depending substantially on the type of deposit. The general average annual interest rate for private deposits, a weighed average rate of the various categories of savings and time deposits, according to **Epilogi (1986a)** "has ranged from 15.6% in 1983 to 17% in 1984 and 1985". Although slight alterations have taken place since then, the average rate remains the same to date. It should be emphasized that real interest rates have all been negative in recent years so private deposits, not only had no real returns, but the purchasing power they

represented has fallen. The government was aware that a possible decline in deposits would create serious difficulties in the implementation of its 1986-1987 programme. To avoid obstacles in the path to stabilization, interest rates remained at high levels while there was competition among the state and the banking sector for the attraction of higher private deposits. It is important to note that state banks account for about 80% of the market in Greece with foreign and small private banks sharing the remainder.

According to **SBBE (1988)** "total bank credit growth rates to the private sector of the economy declined from 12.9% and 15.8% in 1985 and 1986 respectively, to 9.5% in 1987 well below the 11% government's target". On the other hand there was a growing public sector credit expansion, as discussed in **Nafteboriki (1987f)** "from 27.4% in 1985 to 37.7% in 1986 and possibly surpassing the estimated 43.6% 1987 growth rate". The long-run development of the bank credit expansion to the private sector by branch of economic activity, was presented by **Epilogi (1984)** "the credit to the manufacturing sector increased by almost 12.5 fold during the 1960-1975 period". In the subsequent period, as illustrated in **Appendix 109**, the bank credit to manufacturing increased constantly reaching a peak level of 52.0% of the total credit to the private sector in 1981, but declined in the following years to an estimated 49.5% level in 1986. The slowdown in the annual rate of increase of the bank credit to the manufacturing sector in Greece, as pointed out by **Nafteboriki (1987f)** "derived mainly from the considerable cut in the short-term finance provisions to the industry from 19.2% in 1985 to just 13.5% in 1986". The view is shared by **SBBE (1987)** where it is argued that according to an IOBE 1987 economic study "the major issue which prevented business activity in the manufacturing sector in Greece has been the shortage of short-run capital.

11.1.2 COST OF BORROWING. INTEREST RATES DEVELOPMENT

Despite the excess deposits made available by the Greek banking system, the majority of the industrial units regarded that the cost of borrowing from the commercial banks as too high considering the business climate. On the other hand self-financing was limited due to industry's 1982-1985 aggregated total 65.1 billion drachmas losses **Appendix 43** shows processed data from the ICAP publications. The 1986 14.1 billion drachmas overall profits covered only 21.6% of the previous years' losses. The severe credit squeeze coupled with the prevailing high lending rates have resulted in a virtual standstill in industrial production in recent years. Expensive money combined with slack demand and price controls has led to inactivity not only with respect to industrial investment, but also manufacturing output. The maintenance of high interest rates, was not unrelated to the public sector deficits, which aborb the largest part of the private savings through the banking system.

The short-term lending rate development in Greece since 1974, for the industry appears in **Table 11.1.** Industry's interest rates remained high in the 1980's while in October 1985 the commercial banks' lending rates were set to 21.5% (20.5% base rate + 1% bank commission) for both manufacturing classified groups - industry and handicrafts - . Furthermore, **Appendix 110** presents the pattern of the short-run and long-run nominal lending rates to the Greek industry during 1970-1987, figures issued by the Bank of Greece.

SEB hoped that in course of 1987, the Bank of Greece would be able to meet industry's long standing demand for a reduction in lending rates, but the authorities view has been that lending rates will be brought down when deposit rates become positive relative to inflation. This was expected in 1988 when inflation was to fall to 10% compared to 16.3% in 1987. As argued by **Sepengis (1988)** "inflation according to government sources is currently

TABLE 11.1: SHORT-TERM LENDING RATES DEVELOPMENT IN GREECE (INDUSTRY/HANDICRAFT) (1970-1988)

Year	Industry	Handicraft
1974/9	13.0	12.5
1975/10	12.5	12.0
1977/1	13.0	12.5
1978/6	15.5	13.5
1979/6	17.0	14.5
1979/9	21.0	18.5
1980/7	23.5	20.0
1981/6	21.5	20.0
1985/10	21.5	21.5

Source: Bank of Greece, Statistical Monthly Bulletin

Reference: Epilogi (1985j) "Lending Interest Rates" 10 699

running at an annual 14% rate, but there is no sign in lending rates reduction. On the other hand interest rates for the provision of short-run capital to the industry, when taxation and the various expenses and contributions are taken into account, reach a level of 27% at a time when Greece's international competitors offer lending rates in the range 5% to 8%". On the other hand considering the country's structural problems and the economic imbalances the government's high lending rates are understandable.

In early 1987 a committee of Bank of Greece and the Ministry of National Economy officials unveiled a comprehensive package of proposals for the liberation of the Greek banking sector. This involved dismantling the existing complex system of reserve requirements and regulated interest rates. The reform package suggested the development of an active capital market in three phases, but there has not been a specific timetable for the implementation of the proposals.

11.2 ANALYSIS OF COMPANY RESULTS: 1980-1986

11.2.1 INTRODUCTION

The data presented in **Appendices 111 - 118** illustrate an analysis of the Greek industry's financial results over the 1980-1986 period for the manufacturing enterprises included in the ICAP Financial Directories during the corresponding period. It should be emphasized that only the industrial organisations in the form of Corporations and Limited Liability companies are required, under the laws N 2190/1920 and N 3190/1955 respectively, to publish their financial results annually in the daily and economic press as well as in the government's gazette (FEK). The published financial data include the firms' balance sheets, along with their profit and loss accounts, but there is no information regarding major policy issues, since liability for presenting an Annual Business Report is limited only to public companies and organisations trading in Athens stock market.

As presented in **Epilogi (1987c)** "the Athens stock-market's capitalisation from a total of 112.9 billion drachmas in 1985 rose to 156.5 billion drachmas in 1986". Its operation is based upon the provisions of law N 3632/1928 and there is a recognized need for modifications and improvement. On the other hand as discussed by **Nanopoulos (1988)** "there are 116 companies operating in Greece under the prevailing rules of the Athens stock-market and the value of all shares traded during 1987 reached $460 million". Obviously compared to the world's biggest stock-market - Wall Street in New York - it is apparent that Athens is relatively small.

11.2.2 INDUSTRIAL SIZE BREAKDOWN

The manufacturing companies included in the ICAP publications represent all major companies within each industrial group. The number of companies analyzed annually by ICAP depend on the published data received by the government gazettes. **Appendix 111** illustrates the total number of companies in all 20 Greek industry groups over the 1980-1986 period. Widely spread industry groups in the home market, in terms of total number of companies operating as Corporations and Limited Liabilty enterprises, were primarily the food products and textiles, followed by the clothing & footware, chemicals, metals, and hardware manufacturing branches. On the other hand the number employed by the industrial companies from a peak 1981 level of 322,849 persons declined gradually to a total of 279,600 persons in 1986.

As shown in **Appendix 112** a number of industrial groups such as: textiles, leather & fur, plastics & rubber, mineral (non-metallic), hardware, machinery & appliances, electrical equipment & appliances, attained their maximum employment level in 1980 whereas in the years up to 1986 their decline has been sharp. Employment in textiles was down by 21.0%, in leather & fur by 40.6%, in plastics & rubber by 19.3%, in mineral (non-metallic) by

26.6%, in hardware by 18.3%, in machinery & appliances by 37.3% and in electrical equipment & appliances by 24.3%. It appears that 12 out of the 20 industrial groups in Greece attained maximum employment levels during the 1980-1981 period, whereas a few branches maintained their employment levels throughout the 1980s, and only three reached their peak level of employment in 1986, namely: clothing & footwear, printing & publishing, and petroleum & coal products.

Total assets of manufacturing firms, have increased steadily in the 1980-1986 period, as illustrated in **Appendix 43**, from 284 billion drachmas in 1975 to 2,325 billion drachmas in 1986. Their growth has been financed by a relatively small rise of net worth, and a substantial expansion of the companies debt. **Appendix 113** presents the total assets per employee in each industry branch. The petroleum & coal products group has been more capital intensive than any other industry group, followed only by the metals and transportation equipment groups. On the other hand clothing & footwear was the most labour intensive group throughout the 1980s, followed by the furniture, printing & publishing, and the miscellaneous industry groups.

11.2.3 INDUSTRIAL BRANCHES PERFORMANCE. PROFITS, ROE, INDEBTNESS

The industry's overall gross and net profits before taxation appear in **Appendix 43**, while the individual industry groups performance during the 1980-1986 period is shown in **Appendix 114.** The industry's peak value, during 1980-1986, was achieved in 1980, when total net profits before taxation reached 16.3 billion drachmas. In the course of the recession the aggregated net losses in 1985 amounted to 29.1 billion drachmas, while during the first year of the stabilization programme in 1986 were there net profits of 14.1 billion drachmas. Industry's overall losses in 1982 were the combined result of the severe increase in the unit labour cost, price controls, lack of investment, slack home demand, high debt levels and the

growing competition from abroad. These developments continued during 1982-1985, and by 1986 the total net losses in manufacturing had reached 65.1 billion drachmas.

Throughout the 1980-1986 period seven industry groups namely: food products, tobacco, clothing & footwear, leather & fur, petroleum & coal products, plastics & rubber, and the miscellaneous industries achieved profitability despite the business climate. On the other hand the transportation equipment industry group suffered net losses over the entire 1980-1986 period. Heavy losses were experienced most of the time in the following industrial branches: beverages, textiles, wood & cork, paper & paper articles, printing & publishing, mineral (non-metallic), metals and machinery & appliances. During 1982-1986 on an annual basis nine to eleven industrial groups were running net losses, whereas in 1980 there were only three, namely: paper & paper articles, machinery & appliances and transportation equipment. Although the 1986 total net profits indicated an upswing of the Greek manufacturing sector, the case was not a dynamic change in pattern. Seven out of the twenty industry groups suffered losses, and it was the improvement in textiles - 14.0 billion drachmas net profits in 1986 - which balanced out all incurred losses.

Following the prevailing industry's declining profit pattern in 1981 the return on stockholder's equity, as shown in **Appendix 115**, dropped sharply to 4.7%, and became negative in 1982-1985 when it reached a total of - 11.4%. Despite the industry's improved financial results, the return on net worth among all manufacturing branches remained, at just 3.7% in 1986. Severe problems were experienced in the paper & paper articles industry, a manufacturing sector where four of the biggest companies were taken into public control under the provisions of law N 1386/83. Most industrial groups experienced major financial problems in the 1980's while only seven industry groups managed to maintain an annual positive return on their stockholders'

equity throughout the 1980s', namely: food products, tobacco, clothing & footwear, leather & fur, plastics & rubber, petroleum & coal product and the miscellaneous industries. The latter one along with tobacco achieved the highest return rates in 1986.

The decline of the industry's profits and the huge losses in 1982-1985 resulted in growing capital requirement to finance the business operation. Industry's indebtness rose gradually in the 1970s, but as illustrated in **Appendix 43**, the situation became critical in the 1980s due to the growing pace of the recession. As highlighted by **Aggelopoulos (1983)** "the causes of the industry's over-indebtness were the absence of a stock-market in Greece where industries could seek long-term capital to finance their operations; the prevailing credit policies whereby industry had to borrow expensive capital and offer credit to the commercial sector, and finally the high lending rates which diminished profits and the possibility of expansion". These views are shared by **Express (1986b)** where was argued that "the capital shortage is linked to the limited self-financing opportunities under the prevailing business climate and the total industry's 65.1 billion drachmas accumulated net losses over the 1982-1985 period".
The industry's debt to total assets ratio for each individual group appears in **Appendix 116.** Having been on average slightly over 80% during the 1980's, in 1985 reached an overall 87%, an indication of the industry's poor performance. The worst picture was presented by paper & paper articles manufacturing whereby the debt ratio exceeded 170% in 1985 and 1986. Despite the apparent improvement in a number of industry sectors in 1986, their debt levels remained high, an alarming and critical situation for the future of the Greek manufacturing sector in an increasingly competitive environment. Taking into account the 3.7% return on the stockholders' equity and the high interest rates it appears that an adverse investment climate will prevail.

11.2.4 MANUFACTURING COMPANIES' CLASSIFICATION

Appendices 117 A-C present the aggregated data of the Greek manufacturing companies ranked by firm size (number of employees) during 1983-1986. **Appendix 117A** highlights the picture of the companies with a total number of empoyees greater than 500, **Appendix 117B** shows the corresponding data for companies with 100 to 499 employees, whereas **Appendix 117C** presents the small companies employing 10 to 99 persons. Both the number of companies and total number of employees in the large-sized companies declined during 1983-1986, but remained unchanged in the medium-sized companies and grew in the small-sized companies. As expected total and fixed assets followed a descending pattern from a high level observed in the large companies to a low level in the small companies. A similar trend appeared in the total liabilities. As a result, debt ratios were high during the period in both large and medium-sized companies and relatively low in the case of the small-sized companies.

The most important issue was the huge losses of the large companies, a total of 101.2 billion drachmas over 1983-1986, whereas both medium-sized and small-sized companies had profits throughout the period of 23.3, and 35.7 billion drachmas respectively. Obviously a similar pattern has prevailed in net profit, return on net worth, whereby from a disappointing position in the large-sized companies, the medium and small-sized companies have shown potential.

It should be emphasized that a considerable proportion of the large companies came under state control during 1983-1986 - approximately 30% of the total - whereas as argued by **Kolmer (1986)** "60% of the Greek manufacturing companies empoying more than 1,000 persons are currently under government control". On the other hand **Korfiatis (1988b)** commented "on the recent dynamic small-sized companies' performance which could lead the whole industry to recovery". This view is shared also by **Papagiannakis (1987)** by

presenting a similar analysis based on ICAP figures on selected years 1972, 1982 and 1985 in an attempt to highlight the long-run growth pattern of the small business sector.

All ICAP financial data after 1975 on the Greek manufacturing sector shows a long steady growing pattern in the small companies in Greece. It appears that staying small made these companies less vulnerable to external factors in the course of the recession in the 1980s. Furthermore it should be mentioned that the degree of flexibility varies among the different industry groups; in certain cases due to the state of market competition, government's intervention level and a number of specific internal and/or external factors influencing each particular industry branch.

Finally **Appendices 118 A, B** present data on the 10 and 100 largest Greek manufacturing companies respectively, ranked by total assets, during 1980-1986. Previous arguments and conclusions drawn for the large-sized companies become clear by examination of the data presented in these Appendices. The 10 largest manufacturing companies, as shown in **Appendix 118A**, represented -when ranked by their total assets-, about 0.3% of the industry's aggregated size, whereas the 100 largest companies, presented in **Appendix 118B**, indicated on average 3.3% of the whole. Taking into account their level of indebtness, both groups showed considerable financial burdens throughout the 1982-1986 period, when total net losses in the case of the 10 largest companies accounted for 40.7 billion drachmas, the corresponding figure for the 100 largest companies being 118.7 billion drachmas.

11.3 A FINANCIAL APPRAISAL OF THE TEXTILE INDUSTRY

In this section a financial presentation of the Greek textiles manufacturing companies - Corporations and Limited Liability enterprises - will be attempted. The result of the analysis based on the ICAP annual publications - Corporations and Limited Liability companies - are presented

in the Appendices. **Appendix 119** highlights the higher capital intensity of the large-sized firms compared to the medium and small-sized enterprises, but also the higher return on stockholders' equity and the smaller indebtness ratio of the latter ones. A comparison of the textiles industry's financial position in 1985-1986 period as compared to the total Greek industries average indicated smaller total assets per employee, but much higher return on stockholder's equity during 1986 due to the favourable conditions in the Greek cotton processing sector.

On the other hand, **Appendix 120** shows a financial appraisal of the fifteen largest textile companies, ranked by total assets, during the 1982-1986 period, while their 1986 profile looks quite different compared to the previous years, due to government intervention in the over-indebted large-sized textile enterprises. **Appendix 121** provides a presentation of the 13 over-indebted textile firms - 5 of them included in the fifteen largest textile manufacturing companies-. These textile firms are among the 43 manufacturing companies nationalized under the provisions of law N 1386/83 Piraiki-Patraiki Cotton Mfg Inc. -Greece's largest textile firm and the biggest single employer- was split during 1986 into 10 separate and independent units as part of a reconstruction that was focused on debt-capitalization and cuts in workforce. A breakdown of the fifteen largest textile manufacturing companies, ranked by total assets, appears in **Appendix 122**, over the period 1982-1986.

Appendix 123 shows as analysis of the Greek textile companies -Corporations & Limited Liability enterprises - which had total assets 50 million drachmas and more in 1986. The financial presentation was split into the ten geographic regions of Greece, while the work highlighted the importance of textile processing in three regions: Greater capital area, Macedonia and Peloponnesos. On the other hand **Appendix 124** illustrates a breakdown of the Greek textiles sector's activity classification, while

Appendix 125 highlights the horizontal structure of the industry and its concentration - textile manufacturing companies having total assets total 50+ million drachmas in 1986 - in Attica and Macedonia. **Appendix 126** illustrates an analysis of the financial data of the Greek textile companies having total assets 2 billion drachmas and more in 1986, while **Appendix 127** shows the developments for the companies having total assets 1 to 2 billion drachmas in 1986. In both cases the 1986 results are compared with those in 1982, while in **Appendix 128** an overall presentation of the Greek textile industry - Corporations and Limited Liability companies - appears for 1986 compared with 1982. The main feature which is apparent in **Appendix 128** is the potential growth of the small-sized companies compared to the medium and large-sized ones which suffered inflexibility and recession in the 1980s.

11.4 FUTURE PROSPECTS

11.4.1 CAUSES AND EFFECTS. AN OVERVIEW

The present conditions in Greece are not unrelated to the economic policy stance adopted in recent years. The governments' policies of expanded public sector differed from the international trends towards restoring free market operations and denationalization programmes. The state intervention in Greece, with measures unsuited to the economy's structural characteristics, adversely affected investment, obstructing trading conditions.

The Greek industrial sector experienced the governments' incomes policy and the interventions in the labour market since 1982, a year characterized by the large wage increases. Throughout the 1982-1986 period besides the increased labour costs, the private sector and particularly manufacturing companies, had to bear the burden of maintaining surplus personnel due to the regulatory intervention in the labour market. That, combined with price controls created conditions of high costs, low efficiency

and profit margins deterring interest in undertaking investment activity. As argued in **Epilogi (1983a)** "the first Panhellenic Industrial Conference on 9-10.2.1983 highlighted industry's critical situation in the early 1980s an outcome from the combined unfavourable domestic and international conditions". The Federation of Greek Industries's (SEB) major complaint against the government was the expansion of the public sector at the expense of the private, and argued for decisive steps to dismantle interventionist state controls. The public sector's dominant role continued in the 1980's but the government often blamed industrialists for a lack of the entrepreneurial spirit on which the future of the Greek economy largely depended. As presented in **Express (1986b)** the Greek Prime-Minister Papandreou, "recently called for a new class of entrepreneurs to move Greece's industry forward".

In fact it was the combination of both external and internal factors that caused problems in the Greek manufacturing sector during the 1980s. At first there was limited preparation time and perhaps lack of skillful management among the Greek industrialists to prepare their companies and defend them in a growing competitive and fast changing trading environment after Greece's accession to the EEC, and the world recession which followed the second oil-crisis. On the other hand the formulation of a state dominated environment in the internal market, with its continuous interventions and regulations, created a negative business climate and added to industry's declining profile which deteriorated sharply during 1982-1985. This resulted in total net losses of 29.1 billion by 1985.

11.4.2 INDUSTRIAL ENTERPRISES UNDER GOVERNMENT CONTROL

While de-regulation and privatization continued to grow in many western economies - particularly in Britain, France and Spain - in Greece there has been increased government intervention in the 1980s, extended

public bureaucracy, an unflexible tax system, and restricted credit facilities. Above all there has been growing competition from the public enterprises and organisations, the government controlled cooperative companies and the so called 'problematic' industrial enterprises under state control. In the course of 1983 the government proceeded to develop a commercial intervening organisation [**Express (1983b)**], the establishment of the socialized enterprises [**Express (1983a)**], the industry's supervisory consuls and the creation of the manufacturing sector reforming organisation [**Express (1983c)**].

The developments in the 'problematic' enterprises - manufacturing companies under government control by the provision of law N 1386/83 - are illustrated in **Appendix 129**, where in the 44 companies total losses rose from 18.6 billion drachmas in 1981 to 236.0 billion drachmas in 1986, figures presented by the OECD and the Ministry of National Economy. To illustrate the situation in the major 'problematic' companies'; their financial results, as published in the government's gazettes are shown below for 1986. In the textiles branch: PIRAIKI-PATRAIKI COTTON MFG INC (20.5 billion drachmas), VELCA SPINNING CO., S.A. (6.0 billion drachmas) MICHAILIDIS, S., S.A. (3.8 billion drachmas), in the paper & paper, articles branch: MEL MACEDONIAN PAPER CO., S.A. (11.3 billion drachmas), ATHENS PAPER MILL S.A. (25.1 billion drachmas), in the minerals (non-metallic) branch: HERACLES GENERAL CEMENT CO., S.A. (9.2 billion drachmas), HALKIS CEMENT COMPANY S.A. (17.6 billion drachmas), in the metals branch: LARCO S.A. (12.8 billion drachmas) and the transportation equipment branch: ELEUSIS SHIPYARDS S.A. (12.1 billion drachmas). The above nine 'problematic' enterprises had total accumulated losses of 118.4 billion drachmas in 1986 half of the 44 companies total accumulated losses in that period. LARCO S.A. is the only one of the above 'problematic' enterprises that was placed in liquidation along with the remaining twenty non-viable companies.

As discussed by **Mantagos (1988)** (president of the manufacturing sector's reforming organisation) "the problematic' enterprises in operation under the provisions of law N 1386/83 account for one third of the Greek manufacturing sector and in the case of the paper and paper articles industry group cover 63% of the sector potential, 55% of the manufacturing output, and 77% of the industrial exports, whereas in the case of the minerals (non-metallic) industry group the corresponding figures are 44%, 43% and 45%". Recently as pointed out by **Korfiatis (1988c)** "it appears that the non-viable enterprises are to be sold to the Greek private sector, whereas there has been growing interest for the acquisition of a number of viable 'problematic' enterprises by foreign investors". On the other hand **SEB (1988)** presented" a 9.3% industry's net profit to net worth ratio for 1986 when the 'problematic' enterprises were not taken into account". Thus the 3.7% industry overall ratio according to ICAP 1988 publication carried the 'problematic' enterprises burden during 1986.

11.4.3 INDUSTRIAL AND COMMERCIAL SECTORS. TREND ANALYSIS

Comparitive data of the aggregated financial situation of the Greek manufacturing sector, as compared to the commercial sector, appears in **Appendix 130**, for the years 1986 and 1987. This provisional ICAP presentation in **Nafteboriki (1988z)** "covers approximately 75% of the total industry and commerce". Although the full picture is not yet published, it is apparent that the favourable developments of profits in the Greek industrial sector continued during 1987, while from the companies' balance sheets -as analyzed by ICAP- there are significant improvements in the magnitude of the industry's profits: 25.2 billion drachmas in 1987 compared to 10.4 billion drachmas in 1986 for the 1614 companies included in the ICAP study.

The considerable difference in terms of total capital employed between industry and commerce in Greece can be noted, while despite the 27% decline of the commerce's profits in 1987 due to the stagnant demand and the drop of the real disposable income, its profitability is greater compared to that in Greek industry. It seems that the improving business sentiment reflects a recovery in the Greek manufacturing companies and it is likely to attract foreign investment in the near future. Such developments might mark the beginning of a new era in the country's private sector, which could prepare the economy's adjustment to the European integrated market. The single European act has generated a unique opportunity, but in January 1992 Greek industry will have to compete successfully with the other member states industries, a challenge for the manufacturing companies to overcome their structural weaknesses in a changing environment.

CHAPTER 12

DISCUSSION AND CONCLUSIONS

12. DISCUSSION AND CONCLUSIONS

12.1 INTRODUCTION

The project was initiated in January 1983 following a preliminary study which was carried out by the author during the summer of 1982. That initial piece of work provided evidence that the organisation required a systems approach to its operations aiming to identify areas where the procedures and practices which evolved over the years no longer met the needs of the production-sales system.

The company's gearing to the manufacture of a high quality, high value added range of acrylic blankets, along with its history of high customer service were regarded at the time as major strengths. On the other hand the high inventories observed, along with the inadequate stock control procedures appeared to be its major weakness. The magnitude of the problems was amplified by the relatively poor quality of information throughout the system, and the communication barriers between the production and sales functions of the firm - caused mainly by undefined job requirements-, and the non-existent organisational plan for the company. The strong seasonal home market demand for blankets at a period of growing recession was not counter balanced with a company policy for product diversification, nor increased exports and was seen as the system's main constraint in pursuing high production levels and substantial yarns and finished goods stockholding practices. Furthermore, changes in the economic cirumstances in which the enterprise was trading and the political environment in which it operated at the conception of the project highlighted the need to modify business policy.

The author concentrated predominantly in the examination of the relations between the system/organisation components focusing attention on the growing interactions and interdependencies among their

elements and attributes. Aiming to study the company's infra-structure; the material, information, cash and personnel flows between the different sub-systems were looked at carefully. The objective of the research work was the development of an open-system which would maintain dynamic equilibrium with its surrounding environment. It was thought that internal factors which the management of the enterprise had a high degree of control were considered to be the system's major resources: personnel, materials, equipment and capital.

Primarily the study's intention was to improve the operations of the production-sales system by efficient planning and control of the company's functions. The adoption of systems thinking in the management of the organisation was an effort to improve the overall business performance. To facilitate decision making an integrated management information system was set up within the enterprise to provide a continuous flow of information between the company sub-systems. That task was accomplished by the creation of three new departments: production scheduling, quality control, and marketing thus establishing closed-loop systems which overlapped areas within the company's framework.

At the conception of the project the impact of the external wider system was underestimated. The firm was trading in a dynamic environment which exterted considerable influence on the system/organisation's behaviour. Among the uncontrollable external factors which the management of the company had to tackle in the post-1982 period were changes in labour legislation, currency devaluations, government austerity policies, and growing competition in a home market which was small and badly hit by the recession. Thus, the complexity of the operations which evolved during the course of this project were predominantly the effect of the external system's influence in the governing functions of the enterprise.

Hence, the prime goal of the work was directed in the creation of a flexible business system, aiming to safeguard the firm's viability in turbulent times.

12.2 DEVELOPMENT IN THE EXTERNAL WIDER SYSTEM

12.2.1 THE IMPACT OF THE ADOPTED POLICIES. INDUSTRY'S PERFORMANCE

The prolonged recession in the Greek economy following the second oil crisis was to a great extent a result of government economic and political choices in the early 1980s. The policies were characterized by principles opposite to those adopted by most OECD countries, where counter-inflation measures were introduced to restore monetary stability. The growing bureaucracy of an expanding public sector and the decline in the quality of services offered, combined with the government's will towards greater nationalization of the Greek industry created a climate of mistrust which became more pronounced by the sharp deterioration of the trading environment. Greece's pace of industrial expansion slowed down in the 1980s, whereas the country's economic outlook presented a virtual stagnation, governed by high inflation and rising unemployment.

The cost of borrowing remained high, coupled with a severe credit squeeze and low demand, leading to inactivity not only with respect to industrial investment, but also manufacturing output. Profits declined in 1982 and net losses were noted in the Greek industrial sector for the first time in the post World War II period. It should be emphasized that the regulatory interventions in the labour market along with the price controls introduced by the government created a situation of high cost in manufacturing, low efficiency and profit margins deterring investment. Industry adjustment in the 1980s under the prevailing recession in the national economy was extremely difficult. The net losses continued in the

1982-1985 period, while production remained stagnant an issue that has to be related to the decline of the industry's competitiveness.

The growing public deficits increased the state's propensity to higher industry taxation which added to the deterioration of the business climate and proved to be investment adverse. On the other hand the governments wages indexation system resulted in considerable labour cost rise in manufacturing which was not matched with increased productivity. Furthermore, the growing imports penetration to the home market has not been counter-balanced with the manufactures exports increase, whereas the two official drachma devaluations along with the continuing national currency 'slide' against the major currency block has influenced the imported raw materials price formation and created in the post-1982 period heavy financial burden on many manufacturing companies.

It could be argued that during 1986-1987 economy's stabilization programme the Greek manufacturing sector has benefited from the virtual freeze of wages abd salaries, which halted the rapid escalation of labour costs during 1982-1985. Despite the moderate improvement, the national economic imbalances remain, and in the author's view Greece might have to experience in the years to come a structural shift away from manufacturing.

12.2.2 AN APPRAISAL OF THE GREEK TEXTILE INDUSTRY

The textile industry in Greece has developed since the early 1960s on the sound basis of low labour cost in a protected domestic market. Although production is spread over a wide range of end-products it has traditionally been dominated by cotton yarns and fabrics manufacturing. Both textiles and clothing industry groups remain labour intensive and are characterized by a large number of small horizontal single phase structure companies mainly concentrated in the Greater

capital area and Thessaloniki. Both branches gained their dynamic role within the Greek manufacturing sector by their intense exports orientation, mainly in cotton yarns and knitted fabrics. The main factors which have assisted the rapid growth of the textile and clothing exports have been the imports protectionism and the prevailing advantage of the labour cost gap differential with the main competitor countries.

The textiles branch of the industry was seriously affected in the 1980s by the overwhelming recession which hit the national economy following the second oil crisis. Domestic and foreign issues influenced further growth while its own existence was threatened. As a result of the poor financial performance during 1982-1985, thousands of textile jobs were lost despite the government's interventions in the labour market.

The status of export subsidies to the industry - under the provisions of NE 1547/70 - were deminished in 1988 and following the completion of the 1986-1987 economy's stabilization programme the incomes policy freezes relaxed and wages in manufacturing rose. It is well accepted that the textile industry cannot compete against imports in most low-cost areas of production. As a result the future policy directive should be the concentration on the most capital intensive - high quality and value added - areas of processing that are best suited to exports.In the author's view in case of a MFA relaxation and the gradual abolition of the import quotas in the EEC, Greece should demand the approval of a transitional period in order to modernize and restructure its textile industry.

12.3 EVALUATION OF THE COMPANY POLICIES AND PROCEDURES

12.3.1 AN OVERVIEW OF THE INTERNAL SYSTEM

At the initiation of the project it was evident that the system/organisation suffered from the high flactuating demand for its end-products and the shifts in the consumer's buying preferences. It appeared that improper decision making and the management's incorrect forecasts on the magnitude of structural changes in the Greek bedding market caused unacceptably high stocks of yarns and finished goods to accumulate.

12.3.2 STOCKHOLDING AND WAREHOUSING POLICIES

Stocking and warehousing policies employed by the enterprise at the conception of this work were inefficiently managed. It was noticed that products of high demand, or usage rate, were often out of stock whereas those of moderate, or insignificant importance were being built up, irrespectively of requirements. It was understood that procedures which no longer met the needs of the organisation had to be rationalized.

The lack of primary data resulted in the inability to forecast the future demand of any of the company's products. The author focused his attention at first in the most predominant problem areas: the yarns and finished goods inventories. It became apparent that substantial stocks had to be ledgered, buffer stocks to be established, and furthermore a coherent and actionable disposal policy for the low demand products to be introduced. Thus, yarns usage rates were analyzed, the colour shades both in acrylics and woollen were scrutinized and buffer stocks were agreed, in terms of weaving shed requirements to avoid unwanted and unmanaged rises in inventories. In the case of the finished goods, the effort was directed at creating fashionable annual collections,

in terms of qualities, designs, and colour combinations, in a soft and gentle outlook as dictated by the market needs. Colour degradation patterns were established in the acrylic and woollen blankets' range of products, whereas emphasis was given to controlling the stock mobility aiming to reduce the tied capital.

In the post-1983 period, both financial and physical limitations exercised considerable influence to the growth of stocks. The business could no longer finance stockholding to the extent it was once able. Furthermore, the system had to make best use of the processed materials. The documentation and control of stocks became a task of prime importance. Since, there was no reporting system available regarding inventories mobility and stock duration time, there was an urgent need to design stock ledgers for all major types of company inventories. The goods in/out ledgers provided the necessary information required for planning and control of the system/organisation's operations. Data were provided on a daily basis of the actual stocks breakdown in terms of product qualities, colours, designs, and so on. During the implementation stage certain deficiencies of the control systems were identified and appropriate modifications were made.

The author concentrated his efforts in designing a reformed warehousing system for the company's major types of inventories. Comprehensive yarns and finished goods allocation schemes were adopted in order to overcome space limitations and to ensure high operational facility. The warehouses were carefully studied and parameters such as: material characteristics, stock mobility, safety and ease of access were taken into account.

12.3.3 MATERIALS HANDLING SCHEMES

Examination of the material flows through the system indicated apart from storage and allocation problems, inconsistent transportation, non-managed flows, excessive delays and bottlenecks in production processing. Most issues noted arose because a lack of clear objectives set by the management. For example, during the low demand period, high production rates were pursued while both physical and financial stocks reduction was desired. A decline in the yarns stocks corresponded to the time of increased work in progress and finished goods inventories. A coherent FIFO methodology was set up which resulted in a continuous and managed material flows through the system. It should be highlighted that bottlenecks in production processing eventually relaxed, a development which favoured the establishment of reformed procedures, but that was predominantly the outcome of the factory's underutilization.

The materials handling system introduced had to remain flexible in order to respond to market changes and at the same time careful planning of the plant's facilities was required to accomplish the reduction of the tied capital in stocks without lowering the company's image in the home market. During the peak sales demand period and at times of export orders and/or subcontracted work the system managed to perform satisfactorily by avoiding problems experienced in the past. Both quality standards and lead times were met according to the customers' requests. The comparative success of the rationalization of acrylics range along with the launching of the woollen blanket collection can be seen as the outcome of the newly established practices. In meeting the established procedures for improved planning and control of materials, emphasis was given not only in the transportation, storage, inventory control, and processing, but also in the purchasing, quality and marketing functions.

12.3.4 PRODUCTION MANAGEMENT SYSTEM

At the initial stages of the project it was strongly believed that the company required an actionable production management system which could benefit the enterprise to improve its position in the Greek market. In early 1983, at a time of growing uncertainty and organisational complexity due to both internal and external factors, the plant's re-equipment and modernization programme was postponed.

Thus, the aim of the work was focused in the study of the interactions between the various production sub-systems to highlight problem areas within the organisational structure. Solutions here could result in improved accountability of the manufacturing operations and would facilitate decision making. The enterprise had to be safeguarded from situations of uncontrolled material flows, unreasonable delays and excessive inventories, problems experienced in the past throughout the company's production line. It was thought that closed-looped controls had to be established among the integrated overlapping areas in blanket processing, aiming to reduce the inconsistency in the information flows.

During the implementation stage certain deficiencies of the reporting systems had to be surpassed, and concise monthly reports were drawn up by the author and presented to the company's Board of Directors. The outcome of a production management system installation was improved information flows within the organisation which facilitated a systems approach in the senior management's business stategy formulation. Furthermore, the MIS introduced played an important role in getting production costs down, and made an increasing contribution to overall corporate effectiveness.

12.3.5 PRODUCTION SCHEDULING FUNCTION

The creation of the production scheduling department provided the grounds for effective planning and control of manufacturing operations. By the establishment of a materials utilization plan, it was possible to ensure that manufacturing operations were executed satisfactorily by the production sub-systems: from fibres to yarns to fabrics, and material flows proceeded without any major delays, or prolonged and unjustified storage.

Serial, random and feedback inputs into the company's processes: dyeing and spinning of raw materials, weaving and finishing of fabrics, and finally end-finishing of both acrylic and woollen blankets,were monitored carefully, whereby instructions for corrective action were provided by the technical management of the firm wherever necessary and appropriate. The closed-loop controls for the two production sub-systems: yarn manufacture and fabric forming achieved the desired accountability within the company operations. Information flows circulated from and to the production scheduling department (detector), the technical management (comparator) and the yarn and fabric forming managers (affectors).

12.3.6 QUALITY CONTROL FUNCTION

For blanket manufacturing the organisation has adopted the strategy of selecting top quality, expensive raw materials such as the acrylic Dralon^{R} and Pure New Wool fibres, in an effort to ensure high product quality. As a result both equipment and labour force were geared to the quality end of the market. The management of the firm adopted the policy of providing high customer service, in terms of the product quality and serviceability. The procedures and practices of the production-sales system indicated that such policies were accomplished through substantial stockholding of finished goods on the part of the business.

In designing a reformed quality control system the author focused his attention on achieving a high degree of inspection for all materials. In the fibres to yarns, and yarns to fabrics quality control sub-systems, acceptance sampling procedures were established, following the development of a coherent testing methodology. The comparative success of these practices was achieved by firm co-operation between the technical management and the production personnel.

12.3.7 INDUSTRIAL RELATIONS

Close examination of functions showed barriers to communication within the company's hierarchical structure. The problems were amplified by the lack of an actionable job description system, which would have clarified to the employees the significance of their work and their delegation of authority within the enterprise. The company's personnel policy was determined in the seperate areas of production and sales by the two executive directors whose personal involvement in these seperated areas of responsiblity was not governed by an overall business policy directive.

In early 1983, both internal external factors exercised considerable influence in the operations of the company. Following the change in leadership the production-sales system was modified to a modern business structure based on an organisational plan. The considerable changes in the external wider system imposed new economic and social rules on the firm's functions. At that time the company was not prepared to tackle major changes in its trading environment. The labour legislative acts opposed the personnel shedding policies. In a turbulent political period the organisation experienced industrial action for the first time

in its history, a matter which took almost three months to resolve. During the summer of 1983, the system had to overcome the post-strike liquidity problems, along with the departure of some 'key' employees.

In the post-1983 period it became evident that the company could no longer use labour as a flexible resource, recruiting and shedding as the demands of the market place dictated. Policy directive, formulation, implementation and execution had to be accomplished by the Board of Directors in a coherent manner. The reformed organisation was designed to produce accountability. Thus, some changes in company personnel policy had to by introduced. Among the first measures taken were a sound job description system and a productivity scheme. Furthermore, regular meetings between the senior management and the company trade union were launched to overcome internal issues, such as: improvement in working conditions and safety standards, recruitment and shedding policies, annual vacation periods, and so on. The management of the firm offered work incentives and training schemes aiming to improve the company performance and increased labour flexibility. A systems approach to the business functions highlighted the need for adequate documentation, and a move away from purely verbal communication. The procedures aimed to provide satisfactory solutions to organisational problems. It should be emphasized that maximum effort was given to ensure that the modified schemes, although based on experience, were independent of it for operation. The author concentrated on the actual running of the systems, focusing attention on system/users familiarity, following a training programme. Furthermore, in recent years the appointment of 'key' personnel to managerial positions was accomplished by careful matching of the people to specific company requirements.

Once more the economy stabilization programme in late 1985, imposed severe financial burden to the enterprise. The management of the organisation was forced to apply a half-pay shedding scheme for the business manpower aiming to minimize labour costs and meet the increased financial obligations to foreign creditors. The three months industrial action imposed additional problems. The post-strike period is characterized by a change in business policy and the creation of a modified company structure.

12.3.8 SALES AND COST FUNCTIONS

A close examination to the company's functions pointed out that the system had operated giving greater attention to the accounting practices rather than viewing the organisational needs as a whole. In the author's opinion the management of the enterprise, although applying firm control over the company's operational costs, suffered from high financial costs caused by excessive short-term borrowing from the banking sector to support its stockholding policy. Furthermore, the business executives had underestimated, in certain cases neglected, the importance of the marketing function. As a result, the system favoured high output levels to keep the cost of resources per unit produced at an acceptable level, but the blankets did not always match with the customers requirements. Thus, fast-selling products were often out of stock whereas slow-selling finished goods were stocked, amplifying the problem of increasing tied capital in inventories.

The post-1983 period was marked with a significant change in company policy. In adhering to the market demand for soft colours in geometrical and asymmetrical designs the organisation provided to its customers product diversification by the introduction of the woollen range of blankets. Selling points such as the prestige of IWS and BAYER made

the business products under the Pure New Wool and Dralon^{R} trade marks marketable in a competitive home environment, strengthening the company's image in the home market. Furthermore, great emphasis was given to exploring export market opportunities and potential of subcontracted work, mainly in areas of dyeing and spinning. Despite the marketing department's intensive efforts limited success can be claimed in the export function due to the deepening international recession in the blankets bedding market and growing rivalry from foreign competitors, whereas major contribution to the system's fixed costs was achieved by subcontracting.

Within the organisation synchronized operations between the marketing/sales, and production scheduling departments were introduced, a policy issue which contributed to avoiding investment in slow moving stocks. The established information flows had to follow defined routes. The element of feedback, reporting and documentation safeguarded the close-loop controls and facilitated decision making. During the annual peak demand periods the in-coming customer orders were classified, checked against stock availability, and by comparison with the established buffer stock levels provided the necessary tools for effective production scheduling. In addition, a customer's documentation system was designed which along with the finished goods monthly ledgers offered ample assistance to the company agent network.

Price increases in the company's products did not keep in pace with general inflation, while increases in the company's costs were ahead of the CPI in the post-1982 period. The governments wages indexation system increased labour costs, the two drachma devaluations boosted financial obligations to foreign suppliers, while high interest rates deteriorated the business economic profile. The company was forced to use

de-stocking to solve short-term liquidity problems by offering discount incentives to its home market customers and/or applying price differentiation policy in export orders. Projected cash-flow budgets were introduced by the author aiming to provide a medium-term financial perspective and assist the senior management's decision making. As a result of the growing cash-flow crises, and the limited self financing options, in late 1986 the business policy was changed to 'make-to-order', lowering customer service in the short-run, but aiming to safeguard viability in the long-run.

12.3.9 FINANCIAL CONSIDERATIONS

The organisation in the post-1983 period suffered considerable losses, an outcome caused mainly by imprudent management decisions, and the prolonged recession in the national economy. The company is no longer offered the financial support from the banking sector, as in the early 1980s, and the increased cash out-flows to meet interest payments to the banks limited the firm's operational flexibility. The ex-Managing Director's policy to finance high production levels and building of stocks at the expense of the business growing dependence on short-term borrowing had adverse affects on the company's financial performance during turbulent times. Following the official devaluation of the national currency on January 9th, 1983 the enterprise experienced a sharp rise in its debt to foreign raw material suppliers. Furthermore, severe liquidity problems had to be resolved in the summer of 1983 after the first personnel strike. The management of the company used de-stocking of finished goods by means of quantity discounts to the business customers in order to finance its operations and meet increased obligations at home and abroad.

During the 1983-1985 period OR. SALIARIS S.A. was forced to offer additional securities to the lending institutions for the accumulated debt. Thus, increased mortgages on the firm's fixed assets were given to the main banks, along with provisions of raw materials and finished goods under bank pledge to secure business liabilities. The growing financial problems made the Board of Directors to pursue the sale of the new factory premises in late 1984. Despite the considerable improvement of the financial performance in 1985, a result of the successful woollen blankets launch in the home market, the second devaluation of the Greek drachma against the major currency block on October 11th, 1985 offset a possible bussiness revival. The company's inability to meet foreign promissory notes payable to raw material suppliers abroad increased the likelihood of bankruptcy. Furthermore, the shortage of cash reflected in delayed payments to the banking sector, whereas the attached interest and penalties imposed a rise in short-term liabilities. The management's efforts to cut expenditure met severe opposition by the company's trade union. The industrial action caused additional burden, but the policies of the summer of 1986 marked the beginning of a new era.

The labour redundancies which followed the personnel dispute at company level, were accompanied by a self-financed investment in the dyeing and finishing of cotton fabrics. The affiliated enterprise concentrated on production issues, whereas the main company continued its blankets' business. The output was subcontracted to the TEXTILE MILLS OF THESSALONIKI S.A., which leased the plant and equipment from OR. SALIARIS S.A., hence not only effective planning and control of manufactured blankets was possible, but also delivery and price stability on the agreed quantities were guaranteed over fixed periods in time. Ever since 1987 the management of the organisation has directed its efforts to finance

operations by careful selection of the business customers aiming to achieve satisfactory payment terms of the delivered high value added, high quality products, securing increased cash-inflows at favourable selling prices. Furthermore, all outstanding home creditors' accounts were settled, and efforts were intensified to negotiate mutually acceptable re-payment packages with banks and foreign creditors. Thus, along the course of 1988 the management reached agreements for future installment payments with most creditors. Despite the gradual re-building of the company's goodwill - acrylic fibres suppliers offered credit facilities once again in late 1988 - the business lacks capital to finance its operations. Furthermore, the trading enviroment does not show any significant improvement so far, and most economic aggregates indicate a continuing stagnation.

12.3.10 FUTURE PROSPECTS

Although the organisation's strength on the home market has improved by formulating and implementing strict policies in supply, discounting and credit control, the company needs primarily a business environment where profitable trading can be carried out. At present the expansion of a privileged public sector continues at the expense of the private. There is increased government intervention, extended public bureaucracy, growing industry taxation and restricted credit facilities. In the author's view the challenge for the Greek industry to overcome its structural weaknesses in a fast changing environment - the Single European Act has generated a unique opportunity - can only be met by decisive political will to dismantle the interventionist state control, restore business confidence and provide the necessary tools for growing industrial investment in export orientated industries.

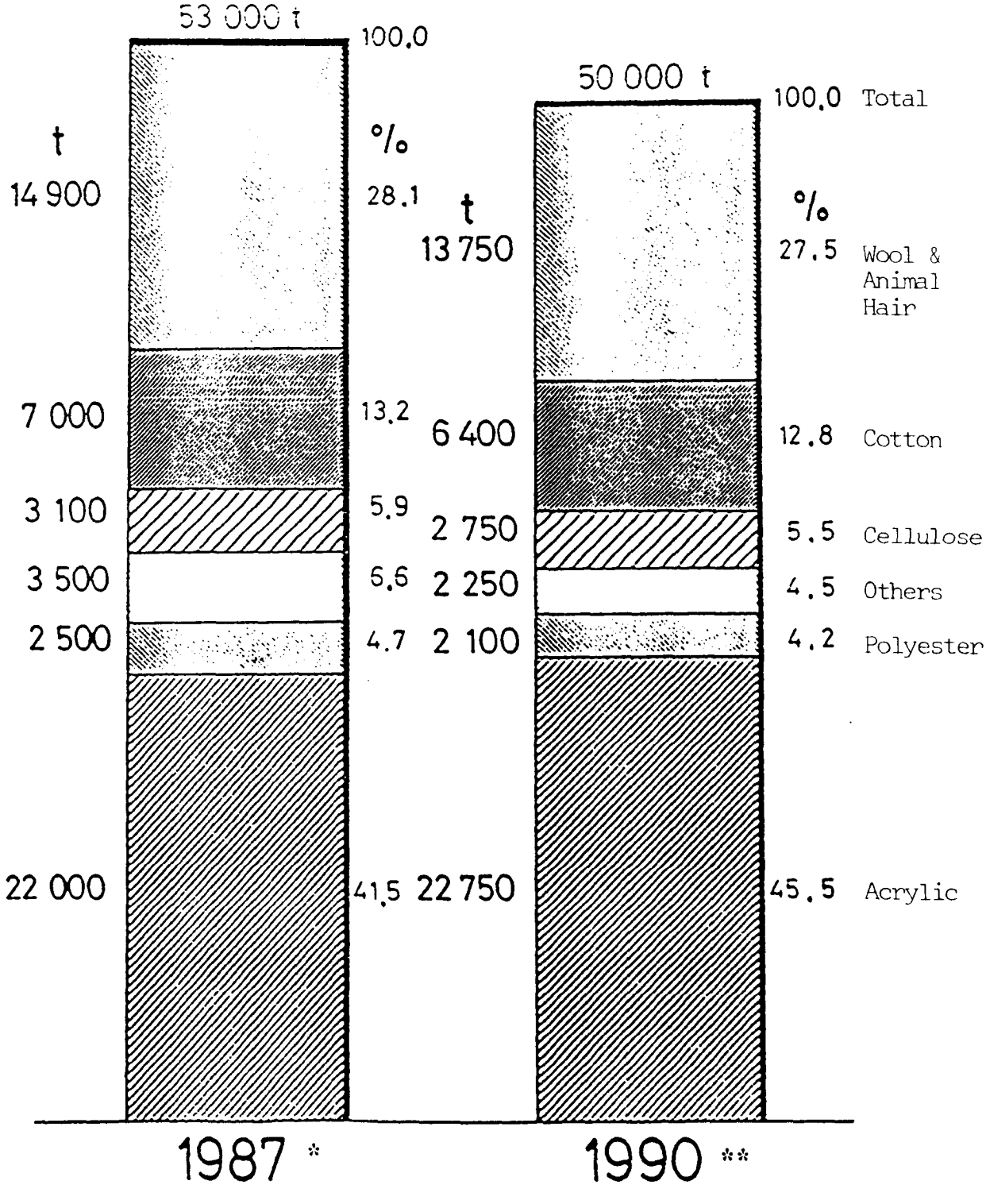
The company cannot compete on price alone, because of its gearing and any attempt to go down market to low quality low value added products should be avoided. The business inability at present to meet the home market demand for high quality blankets will remain as long as the organisation lacks credit and financial support. The management has been considering possible senarios such as the possibility of merger with a potential foreign textile group, or even an exchange of company shares for an increase in its working capital. On the other hand, the small investment in dyeing and finishing of cotton knitted fabrics concentrated on the provision of services to the Greek exporting hosiery firms, while efforts to explore additional subcontracted work in yarns and fabrics manufacture has proved vital in financing the company's heavy cash-outflows to its creditors and banks on the agreed re-payment schedules.

Recent forecasts on the blankets production in Western Europe, as illustrated in **Pictogram 12.1**, indicate a further output contraction, despite the expected moderate improvement in the acrylics. The management of the company has examined possible investment options in other areas of textile processing which could provide the business with increased flexiblity and would make the enterprise competitive in foreign markets. Even if the economic situation in Greece improves, the burden of borrowing still poses serious problems. The long lasting slowdown in the trading environment and the prevailing high interest rates deter investment activity.

Having examined the company's infra-structure, as it appears within a small business sector which is predominant in Greece, projections of this work were drawn to cover the developments, in the national industrial sector. The organisation has been regarded as a case study

which represents the Greek industry in microcosm. The experience gained from this project is not merely applicable to the textile industry, but in the author's view provides a framework for problem solving in the manufacturing sector.

PICTOGRAM 12.1: BREAKDOWN OF BLANKETS PRODUCTION IN WESTERN EUROPE



Note: * Estimates
** Forecasts

Source-Reference: Bayer A.G. (1988) "Production of Blankets in Western Europe" Report GB FS-V/MSI 3

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APPENDICES

APPENDIX TABLE 1: KEY FINANCIAL STATISTICS OF THE GREEK ECONOMY (1970-1987)

(at constant prices) (annual percentage changes)

	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987
Gross Domestic Product	8.0	7.1	8.9	7.3	-3.6	6.1	6.4	3.4	6.7	3.7	1.8	0.1	0.4	0.4	2.8	3.0	1.3	-0.6
Consumer Prices	2.9	3.0	4.3	15.5	26.9	13.4	13.3	12.1	12.6	19.0	24.9	24.5	21.0	20.2	18.5	19.3	23.0	16.3
Private Consumption	8.8	5.6	7.0	7.6	0.7	5.5	5.3	4.6	5.7	2.6	-0.6	0.9	3.1	0.9	1.4	3.8	0.8	-0.9
Public Consumption	5.9	4.9	5.7	6.8	12.1	11.9	5.1	6.5	3.5	5.8	0.2	6.8	2.3	2.7	3.0	2.8	0.0	2.0
Gross Fixed Capital Formation	-1.4	14.0	15.4	7.7	-25.5	0.2	6.8	7.8	6.0	8.8	-6.5	-7.5	-1.9	-1.3	-5.7	5.1	-4.9	1.4
Volume of Exports of Goods & Services	12.4	11.9	22.9	23.4	0.1	10.6	16.4	1.8	16.4	6.7	6.9	-5.9	-7.2	8.0	16.9	1.3	14.1	2.5
Volume of Imports of Goods & Services	6.2	7.6	15.4	32.2	-16.3	6.3	6.1	8.0	7.2	7.2	-8.0	3.6	7.0	6.6	0.2	12.8	3.6	1.3
Total Employment	-0.1	0.3	0.5	1.0	0.1	0.1	2.3	0.8	0.4	0.6	1.3	4.9	0.8	1.1	0.3	1.0	0.3	-1.0
Average Nominal Earnings	n.a.	n.a.	13.4	18.0	20.0	21.1	21.3	22.8	23.3	23.4	16.1	21.5	27.8	21.3	21.2	21.7	13.7	12.5
Current Account Balance (as a per cent of GDP)	n.a	n.a	-3.2	-7.3	-6.1	-4.5	-4.1	-4.1	-3.0	-4.9	-5.5	-6.5	-4.9	-5.4	-6.3	-9.8	-4.3	-2.7
Public Sector Deficit (as a per cent of GDP)	n.a	n.a	-0.3	-1.4	-2.2	-3.4	-2.6	-2.1	-1.7	-2.8	-2.9	-10.9	-7.6	-8.1	-9.9	-13.5	-10.7	-10.6

Sources: OECD Economic Outlook 42 Dec.1987; EEC European Economy 32 Nov.1987; Ministry of National Economy

Reference: Roumeliotis, P. (1988a) "The Adaption of the Greek Economy to the World's Economic Changes" Economicos 34 (1790) 21

APPENDIX TABLE 2: GROSS DOMESTIC PRODUCT, PER CAPITA IN THE EEC MEMBER STATES (EEC-12 = 100)

Year	B	DK	D	GR	E	F	IRL	I	L	NL	P	UK	EEC
1970	99.5	116.7	113.6	51.7	72.3	106.1	61.4	100.6	125.3	117.3	47.4	108.0	100.0
1975	103.0	111.3	109.6	57.1	80.1	110.4	63.0	97.7	122.7	116.3	50.3	105.7	100.0
1977	101.9	112.3	112.3	57.2	78.0	111.3	62.9	97.9	119.4	115.6	51.7	104.0	100.0
1979	101.2	111.0	113.9	58.4	73.8	111.9	63.9	99.1	120.2	113.3	52.6	104.1	100.0
1980	104.4	109.5	114.2	58.4	73.8	111.6	64.7	102.0	120.5	112.4	54.3	100.7	100.0
1981	103.1	108.9	114.6	57.9	73.2	111.9	66.3	103.4	119.5	111.3	54.3	99.8	100.0
1982	104.6	111.9	113.5	57.2	73.4	112.9	66.3	103.0	121.0	108.8	55.5	100.5	100.0
1983	102.9	113.3	114.1	56.4	73.3	111.8	63.7	101.8	123.2	108.5	54.9	102.8	100.0
1984	102.5	114.8	115.2	56.4	72.7	110.6	64.5	102.9	127.0	108.3	52.4	102.6	100.0
1985	101.7	116.7	116.0	56.1	72.3	109.0	63.8	103.2	127.5	107.3	52.6	103.9	100.0
1986	101.7	117.9	116.2	55.4	72.4	108.7	62.8	103.5	127.4	106.5	53.3	103.9	100.0
1987[1]	101.1	115.2	115.7	53.8	72.6	107.8	62.4	104.6	127.3	105.7	53.7	104.9	100.0
1988[2]	101.2	113.3	115.7	52.7	72.9	107.7	62.1	105.2	126.7	104.1	53.8	105.2	100.0

Notes: [1] Provisional estimate; [2] Forecast. Source: European Commission

Reference: Economicos (1987b) "The Economic Gap Between Greece and the EEC Becomes Wider" 42 (1745) 51

APPENDIX TABLE 3: MACRO-ECONOMIC AGGREGATES IN GREECE AND THE EEC (12)

(average period percentage changes)

	1961-1970	1971-1980	1981-1987
GDP at constant prices			
GREECE	7.6	4.7	1.1
EEC 12	4.8	2.9	1.7
GDP price deflator at market prices			
GREECE	3.1	13.7	19.4
EEC 12	4.4	10.9	7.4
Current Account Deficit as a percent of GDP			
GREECE	-3.1	-0.7	-5.8
EEC 12	0.3	-0.2	0.2

Source: European Commission

Reference: Nafteboriki (1988p) "Greek Economic Aggregates Prior and After Greece's Accession to the EEC" 6 (17768) 20

APPENDIX TABLE 4: PRIVATE CONSUMPTION IN THE EEC MEMBER STATES (EEC-12)

(at constant prices and national currency) (annual percentage changes)

Year	DK	D	F	IRL	I	NL	B	L	UK	GR	E	P	EEC
1970	3.0	7.4	4.3	2.9	7.6	7.7	4.4	5.9	2.7	8.8	4.2	2.6	5.4
1961-70	4.3	5.1	5.4	3.7	6.4	6.2	3.7	4.4	2.4	6.7	7.2	5.6	4.9
1971	-0.8	5.5	6.6	3.2	2.9	3.3	4.7	5.6	3.1	5.6	4.9	12.7	4.6
1972	1.7	4.9	6.1	5.1	3.4	3.5	5.9	4.7	6.1	7.0	8.3	4.0	5.3
1973	4.8	3.5	5.8	7.2	5.9	4.0	7.8	5.7	5.2	7.6	8.0	12.0	5.5
1974	-2.9	1.3	2.9	1.6	2.6	3.7	2.6	4.5	-1.5	0.7	5.2	9.7	1.9
1975	3.7	3.8	3.4	-2.7	-1.6	3.3	0.6	5.3	-0.6	5.5	2.4	-0.9	1.6
1976	7.9	3.9	5.6	2.8	3.4	5.3	4.7	3.0	0.3	5.3	4.7	3.5	3.7
1977	1.1	3.9	3.1	6.8	1.4	4.6	2.3	2.1	-0.5	4.6	2.5	0.6	2.3
1978	0.7	3.9	4.2	9.0	2.7	4.3	2.6	2.9	5.5	5.7	1.3	-2.0	3.7
1979	1.4	3.5	3.5	4.5	4.9	3.0	4.5	3.3	4.5	2.6	1.2	-0.2	3.6
1980	-3.7	1.5	1.5	0.4	4.8	0.0	1.9	2.8	-0.3	-0.5	1.3	3.9	1.6
1971-80	1.3	3.6	4.3	3.7	3.0	3.5	3.8	4.0	2.1	4.4	4.0	4.2	3.4
1981	-2.3	-0.1	2.1	1.8	1.5	-2.5	-0.4	1.6	-0.2	1.0	-0.6	1.9	0.4
1982	1.4	-1.3	3.1	-7.7	1.0	-1.2	1.0	0.2	0.9	3.0	0.2	2.1	0.7
1983	2.6	1.6	0.9	-1.7	0.2	0.9	-1.6	0.8	4.0	1.0	0.3	-1.0	1.3
1984	2.7	1.9	0.8	-0.5	2.4	-0.4	1.2	0.8	2.1	1.7	-0.5	-3.0	1.4
1985	4.9	1.9	2.3	1.6	2.9	1.6	1.5	2.5	3.5	2.9	1.8	1.0	2.5
1986*	4.2	4.2	2.9	1.8	3.2	3.3	3.1	3.3	4.7	1.0	3.9	6.8	3.9

Source: Commission of the European Communities - European Economy, July 1987
* - Estimates

Reference: Epilogi (1988) "The Greek Economy in Figures", Electra Press Publications, Athens 37

APPENDIX TABLE 5: PUBLIC CONSUMPTION IN THE EEC MEMBER STATES (EEC-12)

(at constant prices and national currency) (annual percentage changes)

Year	DK	D	F	IRL	I	NL	B	L	UK	GR	E	P	EEC
1970	6.9	4.3	4.2	7.5	2.6	6.0	3.1	4.1	1.7	5.9	5.2	7.0	3.6
1961-70	6.0	3.9	4.1	4.2	4.0	3.1	5.5	3.4	2.1	6.3	4.2	8.6	3.6
1971	5.5	3.8	3.5	8.7	5.7	4.4	5.5	3.9	3.0	4.9	4.7	6.4	4.1
1972	5.7	2.3	2.7	7.5	5.3	0.8	5.9	4.3	4.2	5.7	5.5	8.6	3.8
1973	4.0	3.7	3.2	6.8	2.4	0.8	5.3	3.9	4.3	6.8	6.7	7.8	3.7
1974	3.5	2.4	1.2	7.6	2.8	2.2	3.4	5.2	1.9	12.1	8.2	17.3	2.8
1975	2.0	1.5	4.7	6.5	3.2	4.1	4.5	6.7	5.6	11.9	5.3	6.6	4.1
1976	4.5	-0.2	6.2	2.6	2.2	4.1	3.7	2.4	1.2	5.1	5.3	7.0	2.7
1977	2.4	1.7	1.4	2.1	2.8	3.4	2.3	2.6	-1.7	6.5	4.1	11.8	1.5
1978	6.2	3.7	4.3	8.2	2.3	3.9	6.0	2.1	2.3	3.5	5.5	4.4	3.6
1979	5.9	3.6	1.8	4.5	1.6	2.8	2.5	2.9	2.1	5.8	4.2	6.3	2.7
1980	4.3	2.1	1.8	7.2	2.1	0.6	1.5	3.1	1.5	0.2	4.4	7.9	2.1
1971-80	4.4	2.5	3.1	6.1	3.0	2.7	4.1	3.7	2.4	6.2	5.4	8.4	3.1
1981	2.6	1.2	2.4	0.0	2.7	2.0	1.2	1.4	0.2	6.8	1.9	2.8	1.7
1982	3.1	-0.7	2.4	3.2	2.9	0.7	-1.4	0.6	1.1	2.3	4.9	2.8	1.6
1983	0.0	0.1	1.5	0.4	2.8	1.2	0.0	2.2	1.9	2.7	3.9	2.7	1.6
1984	-0.9	1.1	1.1	0.1	1.9	-0.7	0.6	0.4	0.8	3.9	2.9	2.5	1.2
1985	2.2	1.7	1.4	0.8	3.4	1.1	1.4	2.5	0.4	2.3	4.4	1.7	1.8
1986*	-0.7	2.5	1.9	2.0	2.9	0.8	0.2	1.3	1.2	0.0	4.0	2.0	1.9

Source: Commission of the European Communities - European Economy, July 1987

Reference: Epilogi (1988) "The Greek Economy in Figures", Electra Press Publications, Athens 39

APPENDIX TABLE 6: GROSS FIXED INVESTMENT IN THE EEC MEMBER STATES (EEC-12)

(at constant prices and national currency) (annual percentage changes)

Year	DK	D	F	IRL	I	NL	B	L	UK	GR	E	P	EEC
1970	2.2	9.4	4.6	0.3	3.0	7.5	8.4	7.5	2.5	-1.4	3.0	11.5	5.0
1961-70	7.0	4.4	7.8	9.8	5.1	6.7	5.8	3.4	5.2	9.3	11.2	6.9	6.0
1971	1.9	6.1	7.1	8.8	-3.2	1.5	-1.9	10.8	1.9	14.0	-2.9	9.8	2.5
1972	9.3	2.7	7.2	7.4	0.9	-2.3	3.4	6.9	-0.3	15.4	15.9	13.5	4.0
1973	3.5	-0.3	6.1	16.2	7.7	4.2	7.0	12.3	6.5	7.7	14.3	9.5	5.7
1974	-8.9	-9.6	0.9	-11.6	3.3	-4.0	6.9	-6.1	-2.5	-25.6	6.6	-7.0	-2.1
1975	-12.4	-5.3	-3.2	-2.6	-12.7	-4.4	-1.9	-6.9	-1.7	0.2	-3.9	-11.3	-5.7
1976	17.1	3.6	3.7	13.6	2.3	-2.2	4.0	-3.8	1.6	6.8	-2.0	0.8	2.5
1977	-2.4	3.6	-0.8	4.1	-0.4	9.7	0.0	-1.1	-1.8	7.8	-0.2	12.0	1.0
1978	1.1	4.7	1.5	16.9	-0.1	2.5	2.8	1.3	3.1	6.0	-2.3	7.1	2.2
1979	-0.4	7.2	3.7	13.4	5.8	-1.7	-2.7	4.1	2.9	8.8	-4.5	-2.2	3.5
1980	-12.6	2.8	3.2	-4.7	9.4	-0.9	4.6	11.4	-5.0	-6.5	1.3	8.6	2.2
1971-80	-0.8	1.4	2.9	5.9	1.1	0.2	2.2	2.7	0.4	2.8	2.0	3.8	1.5
1981	-19.2	-4.8	-1.1	9.5	-2.3	-10.4	-16.3	-6.0	-9.5	-7.5	-3.3	5.1	-4.7
1982	7.1	-5.3	0.7	-5.6	-5.7	-4.1	-1.7	-0.3	4.3	-1.9	0.5	2.9	-1.8
1983	1.9	3.2	-3.6	-9.0	-1.6	2.1	-4.3	-8.3	5.2	-1.9	-2.5	-7.5	0.2
1984	10.5	0.8	-2.3	-2.4	4.4	5.5	2.2	-1.3	8.2	-4.7	-5.1	-18.0	1.6
1985	11.9	-0.1	1.1	-4.4	3.3	5.1	1.2	2.1	3.1	3.4	3.9	-1.8	2.3
1986*	16.8	3.1	3.0	-2.3	1.2	7.2	4.8	4.8	0.3	-4.8	11.9	9.9	3.4

Source: Commission of the European Communities, Annual Economic Report 1987, N6
* Estimates

Reference: Epilogi (1988) "The Greek Economy in Figures", Electra Press Publications, Athens 41

APPENDIX TABLE 7: GROSS CAPITAL FORMATION IN GREECE BY SECTOR AND BRANCH OF ACTIVITY

(in million drachmas, at constant 1970 prices)

	1979	1980	1981	1982	1983	1984	1985*	1986**
Fixed Capital	99,121	92,705	85,750	84,100	83,000	78,300	82,290	78,300
Private	76,385	70,465	63,495	60,300	56,000	48,570	49,600	52,100
Public	22,736	22,240	22,255	23,800	27,000	29,730	32,690	26,200
Change in Stocks	18,200	19,280	10,305	9,420	3,420	8,400	9,000	12,000
Private	17,157	16,634	5,670	8,018	5,436	8,460	9,982	12,383
Public	1,043	2,646	4,635	1,402	-2,016	-60	-982	-383
Gross Capital Formation	117,321	111,985	96,055	93,520	86,420	86,700	91,290	90,300

Notes: * Provisional data ** Estimates

Source: Ministry of National Economy, National Accounts

Reference: Epilogi (1988) "The Greek Economy in Figures" Electra Press Publications, Athens 140-141

APPENDIX TABLE 8: CONSUMER PRICES IN THE OECD COUNTRIES (1980-1987)

(annual percentage change)

	1970	1975	1980	1981	1982	1983	1984	1985	1986	1987**
United States	5.9	9.1	13.5	10.4	6.1	3.2	4.3	3.5	2.0	3.7
Japan	7.7	11.8	8.0	4.9	2.7	1.9	2.2	2.1	0.4	-0.2
Germany	3.4	6.0	5.5	5.9	5.3	3.3	2.4	2.2	-0.2	0.2
France	5.2	11.8	13.6	13.4	11.8	9.6	7.4	5.8	2.7	3.1
United Kingdom	6.4	24.2	18.0	11.9	8.6	4.6	5.0	6.1	3.4	4.2
Italy	5.0	17.0	21.2	19.5	16.6	14.6	10.6	8.6	6.1	4.6
Canada	3.4	10.9	10.2	12.5	10.8	5.9	4.3	4.0	4.2	4.4
Total G7 countries	5.7	10.8	12.2	10.0	7.0	4.4	4.4	3.8	2.0	2.8
Total OECD Europe*	n.a	n.a	n.a	12.1	10.5	8.3	7.4	6.5	4.0	3.8
Total OECD	5.6	11.3	12.8	10.5	7.8	5.2	5.2	4.5	2.5	3.2

Source: OECD statistics

References: Epilogi (1987) "The Greek Economy in Figures"
Electra Press Publications, Athens 325

*Klavdianos, P. (1985) "Increasing Growth Rates and Inflation Drop for the Western Countries"
Economicos 46 (1645) 17

** Klavdianos, P. (1988b) "Inflation in Rich and Poor Countries"
Economicos 16 (1772) 61

APPENDIX TABLE 9: GDP PRICE DEFLATOR IN THE EEC MEMBER STATES (EEC-12)

(at market prices) (annual percentage changes)

Year	DK	D	F	IRL	I	NL	B	L	UK	GR	E	P	EEC
1970	8.3	7.6	5.6	8.9	6.9	6.2	4.6	15.1	7.3	3.9	6.8	2.0	6.7
1961–70	6.4	3.7	4.4	5.4	4.5	5.2	3.4	4.1	4.2	3.1	6.4	3.0	4.4
1971	7.7	8.0	5.8	10.6	7.2	8.1	5.6	-1.0	9.4	3.2	8.0	5.0	7.5
1972	9.2	5.3	6.2	13.5	6.3	9.4	6.2	5.8	8.3	5.0	8.7	7.8	6.9
1973	10.7	6.4	7.8	15.3	11.6	9.0	7.2	11.8	7.1	19.4	11.8	9.5	8.7
1974	13.1	7.0	11.1	6.1	18.5	9.2	12.6	16.9	14.9	20.9	16.6	18.9	13.0
1975	12.4	6.0	13.4	22.4	17.5	10.2	12.1	-1.9	27.1	12.3	16.7	16.2	15.3
1976	9.1	3.6	9.9	21.0	18.0	9.0	7.7	12.5	15.0	15.4	16.7	16.3	11.6
1977	9.4	3.7	9.0	13.3	19.1	6.7	7.5	0.9	13.9	13.0	22.8	26.4	11.9
1978	9.9	4.3	9.5	10.5	13.9	5.4	4.3	5.3	11.3	12.9	20.2	21.7	10.3
1979	7.6	4.0	10.4	13.7	15.9	3.9	4.6	5.7	14.5	18.6	16.7	18.9	11.0
1980	8.2	4.8	12.2	14.7	20.6	5.7	3.8	7.6	19.7	17.7	13.9	20.7	13.2
1971–80	9.7	5.3	9.5	14.0	14.8	7.6	7.1	6.2	14.0	13.7	15.1	16.0	10.9
1981	10.1	4.0	11.8	17.4	18.5	5.5	4.9	8.1	11.5	20.0	12.0	16.1	11.0
1982	10.6	4.4	12.6	15.7	16.2	6.0	7.0	10.6	7.7	24.9	13.8	22.2	10.6
1983	7.6	3.3	9.5	11.3	15.3	1.9	6.4	7.7	5.0	19.1	11.6	23.7	8.5
1984	5.7	2.0	7.2	6.3	10.2	2.2	5.0	6.3	4.1	20.1	10.9	25.1	6.5
1985	3.3	2.2	5.9	5.0	8.8	2.4	5.1	3.4	5.8	17.6	8.7	21.6	6.1
1986*	4.9	3.1	4.6	5.2	8.0	0.2	4.8	6.0	3.7	19.0	11.3	17.4	5.6

Source: Commission of the European Communities European Economy July 1987
* Estimates

Reference: Epilogi (1988) "The Greek Economy in Figures", Electra Press Publications, Athens 42

APPENDIX TABLE 10: DEFLATORS OF THE GREEK DOMESTIC PRODUCT

(1970 = 100)

	Deflators							
Year	1	2	3	4	5	6	7	8
1970	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
1971	103.2	107.5	104.7	101.8	95.6	101.4	99.9	103.1
1972	108.5	119.2	109.3	105.2	84.9	103.3	107.7	107.5
1973	130.0	170.5	119.0	124.4	87.4	120.5	133.9	121.5
1974	156.9	187.0	141.2	152.5	104.8	147.3	171.9	149.9
1975	174.5	195.6	173.2	166 4	108.3	160.9	185.8	182.5
1976	202.2	243.3	202.3	187.8	123.4	181.8	218.1	197.9
1977	227.6	273.1	218.6	208.9	129.5	200.6	260.7	224.2
1978	257.5	309.5	249.4	226.8	133.1	216.9	317.2	254.9
1979	304 4	369.6	302.5	268.0	158.9	256.9	402.8	298 1
1980	365.0	446.4	373.9	333.2	175.2	315.7	492.3	351 8
1981	444 7	553.3	480.5	406.6	261.2	391.9	587.9	426.2
1982	549.3	696.4	686.0	486.1	366.9	482.0	680.5	529.2
1983	646.8	833.5	817.6	588.9	418 5	579.7	815.5	617 1
1984	773.3	995.7	984.6	711.0	475.3	696.1	976.1	735.7
1985	920.9	1,176.6	1,120.8	839.8	609 9	825.1	1,167.7	881.1
1986	1,083 1	1,335.5	1,000.0	1,011.1	833.1	983.4	1,418.6	1,037.6

Columns
(1) = Gross domestic product at factor prices
(2) = Primary Sector (Agriculture, animal husbandry forestry, fisheries)
(3) = Mining and quarrying
(4) = Manufacturing
(5) = Electricity, gas and water
(6) = Total industry (3.4.5)
(7) = Construction
(8) = (Services)

Source Ministry of National Economy-National Accounts

Reference: Epilogi (1988) "The Greek Economy in Figures", Electra Press Publications, Athens 322

APPENDIX TABLE 11: ANNUAL PERCENTAGE CHANGES OF PRICES IN GREECE (1970-1986)

PRICES	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986
GDP Deflator (at market prices)	3.9	3.2	5.0	19.4	20.9	12.3	15.4	13.0	12.9	18.6	17.7	20.0	24.9	19.1	20.1	17.6	19.0
Wholesale Prices - total	3.8	4.5	6.3	21.9	31.3	8.3	14.0	13.7	10.3	21.0	28.4	25.9	16.0	19.8	21.4	20.6	23.4
Consumer Prices - total	2.9	3.0	4.3	15.5	26.9	13.4	13.3	12.1	12.6	19.0	24.9	24.5	21.0	20.2	18.5	19.3	23.0

Source: Ministry of National Economy

Reference: Roumeliotis, P. (1988a) "The Adaption of the Greek Economy in the World's Economic Changes" Economicos 34 (1790) 24

APPENDIX TABLE 12: CONSUMER PRICE INDEX IN GREECE

Annual Averages (1982 = 100)

1970	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	
14.9	15.7	16.3	19.8	25.2	28.2	32.1	36.7	41.9	49.8	63.5	82.6	100.0	118.0	139.6	166.8	200.6	Food
31.8	31.8	31.9	33.2	37.9	44.4	48.2	51.0	55.1	60.8	70.3	81.2	100.0	118.6	141.5	162.4	196.4	Alcohol beverages and Tobacco
18.7	18.9	19.6	22.4	27.3	30.4	34.4	38.9	44.3	54.2	64.4	78.3	100.0	122.3	154.3	188.4	236.2	Clothing and Footwear
20.1	20.2	20.5	21.9	27.9	31.2	34.6	38.7	43.1	51.5	66.4	84.4	100.0	113.7	130.5	152.8	184.6	Housing
22.3	22.9	23.7	26.8	34.0	36.2	40.1	44.1	47.9	54.0	67.4	82.7	100.0	125.5	149.5	180.1	233.9	Durable goods and household supplies
15.2	15.5	16.8	19.7	24.5	29.6	36.9	41.4	48.2	57.2	70.6	83.5	100.0	121.6	145.1	166.7	201.1	Medical & Personal care
16.7	17.2	18.2	21.1	27.2	31.5	36.5	42.1	48.4	55.5	67.4	83.5	100.0	126.2	152.4	188.7	230.1	Education - Recreation
19.4	20.0	21.6	23.9	32.8	39.2	43.8	47.0	50.0	62.2	76.3	86.7	100.0	121.0	135.1	157.8	199.9	Transport & communication
11.9	12.2	13.1	15.2	18.8	22.0	24.1	28.2	34.1	44.0	60.6	75.5	100.0	134.0	161.6	199.0	251.4	Other goods and services
17.5	18.0	18.8	21.7	27.6	31.2	35.4	39.7	44.7	53.2	66.4	82.7	100.0	120.2	142.4	169.9	209.0	General index

Source: National Statistical Service of Greece (Data referring to the period prior to 1974 have been obtained by correlating the old and the new indexes)

Reference: Epilogi (1988) "The Greek Economy in Figures", Electra Press Publications, Athens 323-324

APPENDIX TABLE 13: CONSUMER PRICE INDICES WEIGHTINGS IN GREECE

BASE YEARS 1979(old) and 1982(new)

GOODS AND SERVICES	1974*	1982**
Food	0.3555	0.3244
Alcohol Beverages and Tobacco	0.0423	0.0365
Clothing and Footwear	0.1194	0.1283
Housing	0.1327	0.1306
Durable Goods and Household Supplies	0.0787	0.0855
Medical and Personal Care	0.0485	0.0625
Education - Recreation	0.0819	0.0874
Transport and Communication	0.1249	0.1300
Other Goods and Services	0.0161	0.0148
General Index	1.000	1.000

Source: NSSG

References:

* Epilogi (1984) "The Greek Economy in Figures" Electra Press Publications, Athens 301

** Epilogi (1985b) "The New 1982 Consumer Price Index" Supplement 1 183

APPENDIX TABLE 14: THE SYSTEM OF WAGES INDEXATION (ATA) IN GREECE (1982-1988)

DATE	ATA	Annual Compensation for Inflation
1.5.1982	7.3%	9.3%
1.9.1982	2.0%	
1.1.1983	8.8%	19.0%
1.9.1983	10.2%	
1.1.1984	8.9%	
1.5.1984	6.9%	18.0%
1.9.1984	2.2%	
1.1.1985	8.2%	
1.5.1985	6.6%	16.9%
1.9.1985	2.1%	
1.1.1986	4.5%	
1.5.1986	1.3%	10.5%
1.9.1986	4.7%	
1.1.1987	4.1%	
1.5.1987	1.0%	9.6%
1.9.1987	4.5%	
1.1.1988	4.5%	
1.5.1988	1.5%	12.5%
1.9.1988	6.5%	

Source: Ministry of National Economy

Reference: Gatos, G.H. (1986) "The Cost of Living has Doubled" Mesimvrini 10 (3700) 15

APPENDIX TABLE 15: CONSUMER PRICE INDEX AND REAL LABOUR EARNINGS IN GREECE (1975-1987)
(annual percentage changes)

YEAR	CPI	PRE-TAX BASE EARNINGS		
		35.000	55.000	80.000
1975	13.4	16.36	12.60	11.31
1976	13.3	13.47	8.40	6.09
1977	12.1	6.19	2.63	1.86
1978	12.6	8.13	4.98	2.95
1979	19.0	4.90	2.54	2.27
1980	24.9	14.51	12.58	11.23
1981	24.5	14.82	16.17	16.49
1982	21.0	21.18	10.80	11.17
1983	20.2	13.80	12.47	8.53
1984	18.5	22.18	17.47	14.60
1985	19.3	19.55	18.46	18.88
1986	23.0	9.40	7.85	6.03
1987	16.3	10.57	9.25	7.29

Source - Reference: Strogilis, J. (1988)
"Austerity Policies and Real Labour Earnings"
Economicos 38 (1794) 30-31

APPENDIX TABLE 16: INDICES OF LABOUR COST PER UNIT PRODUCT IN GREECE AND ITS COMPETITORS

(1980 = 100)
(in USD)
(quarterly figures)

Year	Quarters	GREECE	WEST GERMANY	FRANCE	USA	JAPAN	BRITAIN	14 MAIN RIVALS AVERAGE	GREECE/ 14 MAIN RIVALS
1980	1	101.2	97.5	97.0	95.0	90.3	88.1	94.5	107.1
	2	98.4	99.5	98.7	100.0	96.5	96.2	98.7	99.6
	3	102.7	104.5	104.3	103.0	105.1	106.5	104.3	98.4
	4	97.9	98.1	100.1	102.0	109.8	109.7	102.6	95.4
1981	1	102.4	89.0	94.1	103.0	112.5	108.1	99.4	103.0
	2	92.6	84.7	86.3	105.0	108.2	97.4	95.7	96.8
	3	91.0	78.5	82.9	107.0	101.7	86.8	91.8	99.2
	4	96.2	86.8	89.5	111.0	104.0	89.8	97.1	99.1
1982	1	103.0	83.0	89.0	115.0	104.9	89.8	97.2	105.9
	2	110.2	82.6	89.6	116.0	103.1	88.0	97.1	113.5
	3	105.9	81.5	83.3	116.0	98.1	86.0	94.9	111.6
	4	103.0	81.4	83.2	117.0	100.4	83.6	95.1	108.3
1983	1	96.5	81.6	89.0	112.0	110.6	75.5	94.5	102.1
	2	99.3	79.0	85.0	111.0	107.9	78.1	93.0	106.8
	3	95.0	75.0	82.7	109.0	104.7	75.3	90.1	105.5
	4	91.6	72.8	82.3	110.0	106.5	74.2	89.7	102.0
1984	1	97.6	73.3	82.4	108.0	107.0	73.2	89.2	109.4
	2	96.9	72.5	83.8	108.0	106.7	71.6	88.9	109.0
	3	91.1	66.0	79.1	109.0	99.7	67.3	85.3	106.8
	4	86.7	63.2	76.8	110.0	97.7	63.3	83.6	103.6
1985	1	91.7	59.8	73.4	111.0	95.0	58.2	81.5	112.5
	2	91.8	63.1	79.1	111.0	96.8	66.1	84.6	108.6
	3	94.9	68.4	86.9	111.0	102.6	74.2	89.0	106.6
	4	81.8	76.1	96.6	112.0	121.5	79.2	95.9	85.3
1986	1	98.1	84.5	106.8	111.0	135.2	81.4	101.4	96.7
	2	96.8	89.9	109.0	111.0	149.3	84.9	105.4	91.9
	3	103.8	97.7	116.2	111.0	164.5	83.5	110.2	94.1
	4	103.2	102.4	120.9	111.0	161.3	80.2	111.4	92.6
1987	1	115.5	113.8	130.3	110.0	165.8	87.9	117.4	98.4
	2	113.6	114.9	133.7	109.0	176.4	93.3	119.9	94.8
	3	114.4	112.8	132.2	108.0	168.2	91.3	117.5	97.4
	4	112.7	122.7	142.3	109.0	183.7	100.4	125.2	90.0

Source: OECD data processed by KEEM

Reference: KEEM (1988) "Stable Labour Cost per Unit Product in Greece Over a Medium-Term Period" Economicos 33 (1789) 53

APPENDIX TABLE 17: AVERAGE HOURLY EARNINGS IN VARIOUS COUNTRIES IN SPRING 1987

(in USD)

Labour cost comparison, Spring 1987		
1	Switzerland	15.70
2	Holland	13.75
3	Sweden	13.69
4	Belgium	13.66
5	Denmark	13.46
6	Germany (BRD)	12.98
7	Norway	12.87
8	Italy	12.67
9	Austria	12.59
10	Japan	11.99
11	Finland	10.70
12	France	9.99
13	Canada	9.85
14	US	9.24
15	Australia	7.83
16	UK	7.09
17	Ireland	6.70
18	Spain	4.78
19	Syria	4.29
20	Greece	4.00
21	Tunisia	2.56
22	Venezuela	2.35
23	Taiwan	2.09
24	Brazil (S. Paulo)	2.07
25	Uruguay	1.97
26	Hong Kong	1.93
27	Brazil (South)	1.90
28	Portugal	1.83
29	South Korea	1.77
30	Colombia	1.66
31	Argentina	1.60
32	Peru	1.40
33	Turkey	1.28
34	Egypt	1.19
35	Brazil (North)	0.90
36	Mexico	0.83
37	South Africa	0.82
38	Morocco	0.74
39	India	0.65
40	Kenya	0.62
41	Thailand	0.58
42	Philippines	0.57
43	Nigeria	0.48
44	Pakistan	0.37
45	Sri Lanka	0.31
46	Ethiopia	0.29
47	China	0.23
48	Indonesia	0.20

*US = 100

Source: Werner International

Reference: Werner International (1988) "Labour Cost Comparison, Spring 1987" Text. Horizons 8 (5) 41

APPENDIX TABLE 18: ECONOMICALLY ACTIVE POPULATION IN GREECE AS % OF TOTAL POPULATION

Year	Economically Active Population as % of Total Population
1960	43.2
1970	39.0
1975	38.0
1976	38.2
1977	37.8
1978	37.5
1979	35.3
1980	37.7
1981	39.7
1982	39.8
1983	40.5
1984	38.5
1985	39.2
1986	39.0

Sources: EEC Commission 1984, Report 18 on Social Developments, and

NSSG Statistical Yearbooks

References: Economicos (1985b) "Economically Active Population in Greece" 26 (1625) 24

Nafteboriki (1985) "The Unemployment Problem" 6 (16910) 19

Rylmon, P.L. (1988d) "Greece: Economic Aggregates 1960-1986" Economicos 33 (1789) 52

APPENDIX TABLE 19: LABOUR FORCE* BY SEX AND AGE GROUPS IN 1986
(in thousand)

Age Groups	Male	Female	Total	%
14 years	8.0	2.8	10.8	0.3
15-19 "	89.7	72.2	161.9	4.1
20-24 "	189.5	159.1	348.6	9.0
25-29 "	277.0	174.9	451.9	11.6
30-44 "	902.0	494.3	1,396.3	35.9
45-64 "	948.3	434.9	1,383.2	35.6
65 " and over	90.2	44.8	135.0	3.5
Total	2,504.7	1,383.0	3,887.7	100.00
%	64.4	35.6	100.0	

Note: * Unemployed included

Source: NSSG Labour Force Survey for the year 1986

Reference: Epilogi (1988) "Greek Economy in Figures" Electra Press Publications, Athens 152

APPENDIX TABLE 20: TOTAL EMPLOYMENT IN GREECE (1970-1987)
(annual percentage changes)

Year	
1970	- 0.1
1971	0.3
1972	0.5
1973	1.0
1974	0.1
1975	0.1
1976	1.2
1977	0.8
1978	0.4
1979	1.1
1980	0.6
1981	0.7
1982	- 0.6
1983	0.5
1984	0.3
1985	0.4
1986	0.3
1987	- 1.0

Source: Processed data from NSSG Statistical Yearbooks, National Accounts, OECD Labour Force Statistics

References: UN (1986) "Economic Survey of Europe in 1985-1986" Secretariat of the Economic Commission for Europe, Geneva, ISBN 92-1-116367-6 286

Nafteboriki (1988o) "Labour Cost Developments 1980-1986" 6 (17756) 14

APPENDIX TABLE 21: PERSONS EMPLOYED IN 1986 BY OCCUPATIONAL STATUS AND AGE GROUPS (thousand)

Age groups	Employers	%	Self employed	%	Unpaid family members	%	Salaried employees	%	Total	%
14 years	-	-	0.1	0.0	5.1	0.9	3.9	0.2	9.1	0.3
15-19 "	0.3	0.1	5.1	0.5	49.8	9.0	62.9	3.5	118.1	3.3
20-24 "	4.0	2.0	26.9	2.5	58.8	10.6	179.0	10.1	268.7	7.5
25-29 "	11.7	5.8	69.3	6.5	55.5	10.0	265.6	15.0	402.1	11.2
30-44 "	85.2	42.2	352.0	32.9	145.1	26.2	740.9	41.8	1323.2	36.7
45-64 "	88.0	43.6	534.2	49.9	211.1	38.1	511.9	28.8	1345.2	37.3
65 " and over	12.7	6.3	82.8	7.7	28.9	5.2	10.0	0.6	134.4	3.7
Total	201.9	100.0	1070.4	100.0	554.3	100.0	1774.2	100.0	3600.8	100.0
%	5.6		29.7		15.4		49.3		100.0	

Source: NSSG, Labour Force Survey for the year 1986

Reference: Epilogi (1988) "Greek Economy in Figures" Electra Press Publications, Athens 155

APPENDIX TABLE 22: EMPLOYMENT IN GREECE AS COMPARED TO THE EEC BY SECTOR OF ACTIVITY 1960-1986

	1960	1970	1980	1983	1986
Greece					
Agriculture	57.0	38.0	28.7	28.4	27.5
Industry	18.0	23.8	28.7	27.2	26.0
Services	25.0	37.2	42.6	44.4	46.5
Total	100.0	100.0	100.0	100.0	100.0
EEC (10)					
Agriculture	18.2	11.2	7.8	7.5	8.4
Industry	41.0	41.8	37.2	34.6	33.0
Services	40.8	47.0	55.0	57.9	58.6
Total	100.0	100.0	100.0	100.0	100.0[1]

Note 1 EEC (12) statistics

Sources: European Commission, March 1985, and NSSG Statistical Yearbooks

References: Nafteboriki (1985) "The Unemployment Problem" 6 (16910) 19

Epilogi (1987i) "Employment and Productivity" 12 775

APPENDIX TABLE 23: EMPLOYMENT IN GREECE BY SECTOR OF ACTIVITY 1960-1986

	1960-1967	1968-1973	1974-1979	1980-1986
Agriculture	51.9	40.3	33.6	29.5
Industry	19.9	25.4	28.9	28.6
Services	28.2	34.3	37.5	41.9
Total	100.0	100.0	100.0	100.0

Source: OECD Historical Statistics, Paris 1988

Reference: Rylmon, P.L. (1988d) "Greece: Economic Aggregates 1960-1986" Economicos 33 (1789) 52

APPENDIX TABLE 24: MAJOR CHANGES IN LABOUR LEGISLATION IN GREECE (1981-1987)

(i) The System of Wages Indexation (ATA) (Ref: 14)

On 25 January 1982 the Minister of National Economy issued the 9019/295 act whereby ATA was established for the public servants, which entered into force as from 1 January 1982, and was legislated under article 55 law N 1249/82. On 10 March 1982 under the procedure of collective negotiations verdict 1/82 was issued by the second degree administrative arbitration tribunal of Athens and ATA was extended to the private sector employees.

(ii) Employee's Annual Vacation Period (Ref: 2,8,14,16)

With the act of legislative context on 20 May 1982 the normal 4 weeks annual vacation period was established for all employees having worked for at least 12 months under the same employer. The act entered into force on 1 January 1982.

(iii) Group Redundancies (Ref: 2,3,8,17)

Following the 75/129 EEC Commission (17.8.1975) directive on group redundancies, laws AN 99/1967, AN 173/1967 and ND 206/1974, the level of group redundancies was transferred to the Labour Minister's authority, who expressed the prevailing government's labour policies. Thus the 4% redundancy permit was reduced to 3% on 30 June 1981, and further to 2% on 30 June 1982.

(iv) Syndicate Rights (Ref: 14)

Substantial security was provided to the trade unions when on 1 July 1982 the so-called "anti-330" law N 1264/82 was established, whereby strikes and industrial disputes were safeguarded, while lock-out was illegal.

(v) Retirement Schemes (Ref: 2,8)

Normal retirement is 65 for males and 60 for females while early retirement is possible under certain pre-conditions at 60 for males and 55 for females. Early retirement requires arduous work, or 10,000 days of insurance. There is the recent 82/857 EEC Commission (10.12.1982) suggestion on the age of retirement agreement, but differences still exist in the schemes among the EEC member states.

(vi) Labour Disputes and Public Enterprises (Ref: 7,9,11,13,15)

Under article 4 - law N 1365/83 - labour rights provided by article 20 - law N 1264/82 - were abolished and any form of labour dispute was to be agreed by the organisation's trade union general committee. Any other shape, or form of dispute was illegal and likely to be subject to prosecution.

(vii) Working Hours per Week (Ref: 2,4,8,14,16)

On 14 September 1983 the second degree administrative arbitration tribunal of Athens issued its verdict 25/83 whereby as from 1 April 1983 5 days - 40 working hours per week - were established for all industrial workers. It should be mentioned that following the 75/457 EEC Commission (22.1.1975) directive for 4 weeks annual vacation period and 40 working hours work per week, Greece had to introduce new reforms in labour legislation. Thus from 48 hours per week in 1970 and 45 hours per week in 1975 the second degree administrative arbitration tribunal of Athens reached a verdict with the following schedule:

As from 1 October 1979 working hours per week were to be reduced to 44
" " 1 October 1980 " " " " " " " " " 43
" " 1 October 1981 " " " " " " " " " 42

(viii) Wage Freezes (Ref: 14)

Under the government's counter inflation policies and with reference to article 27 of law N 1320/83 wage freezes were adopted, being followed by the austerity policies under the 1986-1987 economy's stabilization programme.

(ix) The Principle of Equality between Male and Female in Labour Issues (Ref: 1,2,5,16)

Following the 75/117 EEC Commission (10.2.1975) and the 76/206 EEC Commission (9.2.1976) directives regarding earnings equality between male and female employees for the same kind of work, the laws N 754/78 and N 104/80 were modified on 2 February 1984 when law N 1414/84 was established. As a result maternity leave was extended from 12 to 14 weeks and the female - after the child's birth - was to be safeguarded against dismissal for a period of one year.

(x) Strikes (Ref: 14)

By the establishment of law N 1483/84 illegal strikes were not to be considered in future as part of the penal legislation.

(xi) Unemployment Benefits (Ref: 4,6)

Under article 3, law N 3464/55, employees were eligible for unemployment benefits on completing 125 working days or more over the last 14 months prior to their dismissal. According to the government's incomes policy this limitation varied among various professional groups. From 18 April 1984, OAED announced that the duration for unemployment allowance - for the registered unemployed labour force - was to be doubled from 6 months to 1 year and the daily unemployment compensation ranged from 400-700 drachmas, while in 1986 it was increased to 800-1800 drachmas.

(xii) Health and Safety (Ref: 2)

The law N 1568/85 regarding the health and safety at work of the industrial employees was established in 1985 and became applicable for companies with an average annual number of employees of 150 and over, while certain articles were not compulsory for the small (20-50 employees) companies and the medium sized (51-150 employees) companies.

(xiii) Overtime Work (Ref: 8,10,11)

Under the 1984 EGSSE - signed on 14 February 1984 - law N 1505/84, and the 1986 EGSSE - signed on 13 March 1986 - normal weekly working hours are 40 and any extra working period was overtime. There was a burden to be paid ranging from 25%-75% on top of the normal wage or salary depending on the overtime duration.

(xiv) International Labour Agreement (Ref: 15)

In mid-October 1987 KYSYM announced the abolition of article 4 under law N 1365/83 and the adoption of the 135 International Labour Agreement.

References:

1. Economicos (1985a) "Woman's Place in the Greek Society" 13 (1612) 53-57

2. Economicos (1988d) "EEC Labour Legislation" 38 (1794) 23

3. Epilogi (1981b) "Labour Redundancies" 7 701

4. Epilogi (1983d) "5 Working Days, 40 Hours per week" 9 793

5. Epilogi (1985a) "Male and Female Equality Labour Rights" Supplement 1 65

6. Epilogi (1985c) "Unemployment Benefits' Duration is Doubled" Supplement 1 207

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9. Leventis, G. (1984) "Labour Disputes in State Enterprises" Business Administration Bulletin 213 (23) 594-599

10. Nafteboriki (1987d) "Overtime Work" 7 (17503) 1

11. Nafteboriki (1988g) "Overtime Work Legislative Issues" 5 (17743) 3

12. Siomopoulos, I.K. (1983a) "Compulsory Arbitration" Economicos 15 (1562) 19

13. Siomopoulos, I.K. (1983b) "Article 4 and Labour Disputes" Economicos 30 (1525) 27-28

14. Siomopoulos, I.K. (1984) "Social Changes in Greece 1981-1984" Vima 11 (1511) 45

15. Taxydromos (1987) "Article 4" 44 (1746) 10

16. Tsoupanopoulos, C. (1980) "40 Hours Work per Week and 4 Weeks Annual Holidays Under Greece's Accession to the EEC" Eyilon 9 42-46

17. Tsoupanopoulos, C. (1981a) "Group Redundancies" Eyilon 2 40-42

APPENDIX TABLE 25: LABOUR DISPUTES (1981-1987)

	1981	1982	1983	1984	1985	1986	1987
Total Number of Disputes	15,992	24,574	22,831	22,583	19,674	17,158	15,816
Classification							
(a) Dismissal from work	4,340	7,229	6,124	5,636	4,811	4,302	3,728
(b) Wages and salaries	2,418	4,198	4,038	4,386	3,794	3,495	3,090
(c) Delayed payments	4,682	6,139	6,098	6,076	5,787	5,110	5,045
(d) Other causes	4,546	7,008	6,571	6,485	5,282	4,251	3,953
Results after Intervention							
(a) Resolved issues	7,496	11,760	10,742	10,652	9,368	8,147	7,372
(b) Not resolved issues	4,332	6,695	6,687	6,725	5,787	5,073	4,485
(c) Withdrawn issues	4,164	6,119	5,402	5,206	4,519	3,938	3,959

Source: Ministry of Labour

References:

Interim (1988b) "Labour Disputes Decrease While Strikes Increase" Economicos 22 (1778) 63

Smailis, L. (1987b) "Increased Number of People on Strike, and Number of Resolved Labour Disputes in 1986" Economicos 21 (1724) 25

APPENDIX TABLE 26: STRIKES (1975-1987)

Year	Total Number of Strikes	Total Number of People on Strike	Total Number of Working Hours Lost
1975[1]	142	46,374	1,743,353
1976	829	241,142	5,187,783
1977	401	399,572	6,217,264
1978	405	349,969	6,477,117
1979	372	638,635	9,950,074
1980	472	1,317,917	20,494,944
1981	313	361,106	5,341,961
1982	447	246,543	7,892,094
1983	361	148,174	2,986,957
1984	268	107,957	2,690,789
1985	453	785,725	7,660,879
1986	213	1,106,330	8,839,363
1987	235	1,576,520	16,353,463

Note: [1] Sept.-Dec. 1975

Source: Ministry of Labour

Reference: Interim (1988b) "Labour Disputes Decrease While Strikes Increase" Economicos 22 (1778) 64

APPENDIX TABLE 27: EMPLOYMENT AND LABOUR PRODUCTIVITY 1951-1986

(average period percentage changes)

	1951-1961	1961-1971	1971-1981	1981-1986
Employment	3.39	-1.45	1.81	0.35
Labour Productivity	2.58	8.29	2.30	0.89

Source-Reference: Voloudakis, E. (1987) "Sources of Growth and Structural Changes of the Greek Economy 1951-1986" Nafteboriki 4 (17435) 8

APPENDIX TABLE 28: UNEMPLOYMENT RATES AS % OF TOTAL EMPLOYMENT

(annual percentage changes)

Year	EEC[1]	OECD[2]	GREECE[3]
1981	8.3	7.1	4.0
1982	9.6	8.5	5.8
1983	10.7	8.8	7.8
1984	11.2	8.5	8.1
1985	11.9	8.4	7.8
1986	11.8	8.3	7.4
1987	11.6	7.9	7.4

Sources:

[1] Eurostat Statistics

[2] OECD Economic Outlook 1986

[3] NSSG

References:

UN (1986) "Economic Survey of Europe in 1985-1986"

Secretariat of the Economic Commission for Europe, Geneva, ISBN 92-1-116367-6 287

Smailis, L. (1988) "Attack the Unemployment Problem" Economicos 38 (1794) 15

APPENDIX TABLE 29: OAED REGISTERED UNEMPLOYMENT 1975-1986 (annual average in thousand)

Year	Registered Labour Force	Registered Number of Unemployed
1975	1,144.7	34,970
1976	1,213.6	28,440
1977	1,296.4	27,670
1978	1,397.5	30,918
1979	1,432.6	31,587
1980	1,513.8	37,200
1981	1,534.0	42,108
1982	1,534.0	50,643
1983	1,539.5	61,647
1984	1,604.3	71,216
1985	1,647.3	88,973
1986	1,694.4	109,722
1987[1]	1,725.0	128,332

Note: [1] First six months average

Source: OAED

References:

Rodopoulos, D. (1983) "Unemployment Problem and Prospects" Economicos 17 (1512) 62

Smailis, L. (1987a) "Unemployment Rose by 1% in 1986" Economicos 12 (1715) 29

Nafteboriki (1988y) "Unemployment Rate" 9 (17786) 3

APPENDIX TABLE 30: UNEMPLOYMENT RATES AS % OF TOTAL EMPLOYMENT
(OAED, NSSG and EEC statistical data)
(annual percentage changes)

Year	OAED[1]	NSSG[2]	EEC[3]
1975	3.0	2.6	2.3
1976	2.1	2.0	1.9
1977	2.1	1.6	1.7
1978	2.2	1.7	1.8
1979	2.2	1.8	1.9
1980	2.5	2.8	2.6
1981	2.7	4.0	4.1
1982	3.2	5.8	5.3
1983	3.8	7.8	7.2
1984	4.2	8.1	8.1
1985	5.1	7.8	7.8
1986	6.1	7.4	7.4
1987	7.2[1]	7.4	7.4

Note: [1] First six months average

Sources: [1] OAED

[2] NSSG

[3] Eurostat Statistics

Reference: Rylmon, P.L. (1984b) "Is the Unemployment Calculations in Greece Accurate?" Economicos 31 (1578) 71

APPENDIX TABLE 31: STRUCTURE OF THE UNEMPLOYED LABOUR FORCE BY AGE GROUPS AND SEX IN 1986

(thousand)

Age groups	Male	%	Female	%	Total	%
14 years	1.0	0.8	0.8	0.5	1.8	0.6
15-19 "	13.4	10.5	30.4	19.0	43.8	15.3
20-24 "	31.2	24.5	48.6	30.4	79.8	27.8
25-29 "	22.2	17.5	27.6	17.2	49.8	17.4
30-44 "	34.2	26.9	39.0	24.4	73.2	25.5
45-64 "	24.6	19.4	13.4	8.4	38.0	13.2
65 " and over	0.5	0.4	0.1	0.1	0.6	0.2
Total	127.1	100.0	159.9	100.0	287.0	100.0

Source: NSSG, Labour Force Survey for the Year 1986

Reference: Epilogi (1988) "Greek Economy in Figures" Electra Press Publications, Athens 157

APPENDIX TABLE 32: SUMMARY PRESENTATION OF THE BALANCE OF PAYMENT OF GREECE (1975-1987)

(in million USD) (at market prices)

	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987**
1. Exports (FOB)	2,029	2,227	2,522	2,998	3,932	4,094	4,771	4,141	4,105	4,394	4,293	4,512	5,614
2. Imports (CIF)	5,066	5,556	6,410	7,338	10,110	10,903	11,468	10,068	9,491	9,745	10,561	10,198	12,556
3. Trade Balance (1-2)	-3,037	-3,329	-3,888	-4,340	-6,178	-6.809	-6,697	-5,927	-5,386	-5,351	-6,268	-5,686	-6,942
4. Invisible Receipts	2,725	3,024	3,497	4,422	5,663	6,159	6,482	6,098	5,529	5,289	5,260	6,512	8,463
5. Invisible Payments	765	787	877	1,038	1,367	1,566	2,206	2,056	2,019	2,068	2,268	2,598	2,825
6. Balance on Invisibles (4-5)	1,960	2,237	2,620	3,384	4,296	4,593	4,276	4,042	3,510	3,221	2,992	3,914	5,638
7. Balance on Current Account (3+6)	-1,077	-1,092	-1,268	-956	-1,881	-2,216	-2,421	-1,885	-1,876	-2,130	-3,276	-1,772	-1,304
8. Current Account balance (as a per cent of GDP)*	-4.5	-4.1	-4.1	-3.0	-4.9	-5.5	-6.5	-4.9	-5.4	-6.3	-9.8	-4.3	-2.7

Source: Bank of Greece, Annual Reports, and Provisional Balance of Payments

References: Epilogi (1988) "The Greek Economy in Figures" Electra Press Publications, Athens 6 343

* Roumeliotis, P. (1988a) "The Adaption of the Greek Economy to the World's Economic Changes" Economicos 34 (1790) 20

** Chalkias, D. (1988) "Bank of Greece 1987 Annual Report" Nafteboriki 4 (17719) 5

** Epilogi (1988m) "Statistical Series of the Greek Economy" 7 398

APPENDIX TABLE 33: TRADE BALANCE (WITHOUT FUELS) OF GREECE AND CURRENT ACCOUNT BALANCE (WITH AND WITHOUT EEC NET CASH FLOWS

(in million USD)

Year	Imports (1)	Exports (2)	Trade Balance (3)=(2-1)	Balance on Invisibles (4)	Balance on Current Account (5)=(3+4)	EEC Net Cash Flows (6)	Balance on Current Account (7)=(5+6)
1975	4,228	1,942	-2,286	2,086	-200	-	-200
1976	4,534	2,154	-2,380	2,401	21	-	21
1977	5,364	2,418	-2,946	2,823	-123	-	-123
1978	6,137	2,768	-3,369	3,384	15	-	15
1979	7,857	2,467	-5,390	4,296	-1,094	-	-1,094
1980	7,921	3,846	-4,075	4,592	517	-	517
1981	7,782	3,988	-3,794	4,128	334	148	482
1982	7,290	3,493	-3,797	3,492	-305	550	245
1983	6,844	3,381	-3,463	2,676	-787	834	47
1984	6,665	3,501	-3,164	2,506	-658	715	57
1985	7,373	3,459	-3,914	2,123	-1,791	869	-922
1986	8,412	4,001	-4,411	2,522	-1,889	1,392	-497
1987	10,210	5,068	-5,142	3,973	-1,169	1,665	495

Source: Bank of Greece, Monthly Statistical Bulletins

Reference: Epilogi (1988c) "Current Account Balance. A Critical Problem" 5 194

APPENDIX TABLE 34: GREECE's TRADE DEFICIT AND OIL DEPENDENCE

(in million USD)

Year	Imports of Fuel (1)	Trade Deficit (2)	(1) as a per cent of (2)
1975	837.6	3,035.7	27.6
1976	1,022.0	3,028.5	30.7
1977	1,045.8	3,887.4	26.9
1978	1,200.7	4,339.2	27.7
1979	2,252.8	6,177.8	36.5
1980	2,982.4	6,809.5	43.8
1981	3,686.1	6,696.8	55.0
1982	2,778.2	5,926.9	46.9
1983	2,647.3	5,385.9	49.2
1984	3,079.8	5,350.8	57.6
1985	3,188.1	6,267.9	50.9
1986	1,786.3	5,685.8	31.4
1987*	2,346.0	6,942.0	33.8

Source: Bank of Greece, Exchange Currency Statistics

References: Epilogi (1987b) "Trade Deficit and Oil" 1 60

*Epilogi (1988c) "Current Account Balance. A Critical Problem" 5 194

APPENDIX TABLE 35: INDICES OF THE VALUE OF THE DRACHMA AGAINST THE DOLLAR, THE GERMAN MARK, THE FRENCH FRANC AND THE POUND STERLING (1974 = 100)

Year	$	DM	FF	£
1974	100	100	100	100
1975	93.2	89.4	84.0	99.2
1976	81.6	80.2	82.0	106.7
1977	80.9	73.4	82.8	109.5
1978	81.1	63.7	77.0	99.7
1979	80.5	57.7	72.2	89.3
1980	69.9	49.7	62.3	70.7
1981	54.3	48.1	62.2	63.5
1982	45.1	42.8	62.4	60.8
1983	34.2	34.2	55.0	53.2
1984	26.7	29.8	49.3	47.3
1985	21.8	24.8	41.1	39.5
1986	21.6	18.3	31.4	34.6

Reference: Epilogi (1987e) "The Dollar and the Drachma Recent Trends in Exchange Rates" 8-9 396

APPENDIX TABLE 36: DRACHMA's AVERAGE ANNUAL RATE AGAINST THE US DOLLAR (1950-1986)

Year	Drachma's Average Annual Rate per Dollar
1950	15.0
1960	31.7
1970	30.1
1974	30.1
1975	32.3
1976	36.9
1977	37.2
1978	37.1
1979	37.4
1980	43.1
1981	55.4
1982	66.8
1983	87.9
1984	112.7
1985	138.2
1986	139.5

Source: Bank of Greece, Monthly Statistical Bulletin

References:

Dimas, G. (1983) "The Development of Drachma's Exchange Rates 1950-1983" Economicos 11 (1506) 17

Papandropoulos, A.X. (1983) "Gold and Dollar Preference" Economicos 52 (1547) 72

Nikolaou, N. (1985) "Dollar and the Greek Economy" Economicos 8 (1607) 9

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APPENDIX TABLE 37: EXCHANGE RATES USED FOR THE CALCULATION OF ECU VALUES

(Counterpart of 1 ECU in national currency)

Year	DM	FF	LIT	HFL	BFR	UK	IRL	DKR	DR	PTA	ESC	USD
1970	3.7414	5.6777	638.9	3.7005	51.112	0.42593	0.42593	7.6667	30.67	71.36	29.38	1.0222
1971	3.6457	5.7721	647.4	3.6575	50.866	0.42858	0.42858	7.7526	31.43	72.57	29.64	1.0478
1972	3.5768	5.6572	654.3	3.5999	49.361	0.44894	0.44894	7.7891	33.65	72.00	30.48	1.1218
1973	3.2764	5.4677	716.5	3.4285	47.801	0.50232	0.50232	7.4160	36.95	71.81	30.27	1.2317
1974	3.0835	5.7339	775.7	3.2022	46.399	0.50980	0.50980	7.2593	35.78	68.82	30.25	1.1927
1975	3.0494	5.3192	809.5	3.1349	45.569	0.56003	0.56003	7.1227	39.99	71.16	31.50	1.2408
1976	2.8154	5.3449	930.1	2.9551	43.165	0.62158	0.62158	6.7618	40.88	74.74	33.62	1.1181
1977	2.6483	5.6061	1006.8	2.8001	40.883	0.65370	0.65370	6.8557	42.04	86.85	43.59	1.1411
1978	2.5561	5.7398	1080.2	2.7541	40.061	0.66391	0.66389	7.0194	46.78	97.43	55.86	1.2741
1979	2.5109	5.8295	1138.5	2.7486	40.165	0.64639	0.66948	7.2091	50.77	91.97	67.04	1.3706
1980	2.5242	5.8690	1189.2	2.7603	40.598	0.59849	0.67600	7.8274	59.32	99.70	69.55	1.3923
1981	2.5139	6.0399	1263.2	2.7751	41.295	0.55311	0.69102	7.9226	61.62	102.68	58.49	1.1164
1982	2.3760	7.4312	1323.8	2.6139	44.711	0.56045	0.68960	8.1569	65.34	107.56	78.01	0.9797
1983	2.2705	6.7708	1349.9	2.5372	45.438	0.58701	0.71496	8.1319	78.09	127.50	98.69	0.8902
1984	2.2381	6.8750	1381.8	2.5233	45.442	0.59063	0.72594	8.1465	88.34	126.57	115.68	0.7890
1985	2.2263	6.7950	1448.0	2.5110	44.914	0.58898	0.71517	8.0188	100.74	129.16	130.25	0.7631
1986	2.1282	6.7998	1461.9	2.4009	43.798	0.67154	0.73353	7.9356	137.42	137.46	147.09	0.9842

Source Commission of the European Communities Annual Economic Report 1985 - 86

Reference: Epilogi (1988) "The Greek Economy in Figures", Electra Press Publications, Athens 44

APPENDIX TABLE 38: GREECE TOTAL EXTERNAL DEBT (PRIVATE AND PUBLIC) INTEREST AND AMORTIZATION PAYMENTS

(in million USD)

Year	Total External Debt	External Debt Payments			Debt Service Ratio[2] (%)
		Interest	Amortization	Total	
1980	6,399[1]	466	498	964	9.4
1981	7,876	823	647	1,470	12.9
1982	9,499	784	689	1,473	14.5
1983	10,562	874	698	1,572	16.0
1984	12,318	1,082	786	1,868	19.1
1985	15,529	1,237	864	2,101	22.0
1986	18,032	1,356	1,085	2,441	21.8
1987	20,707	1,420	2,191	3,611	25.5

Notes:

[1] Data available for the public external debt alone

[2] Interest and amortization as per cent of export receipts

Source: Bank of Greece Publications

References:

Klavdianos, P. and Papagiannidis, A. (1985) "The Central Current Account's Problem and the External Debt" Economicos 23 (1622) 22

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Rylmon, P.L. (1988f) "The Development and the Composition of the External Debt" Economicos 42 (1798) 64

APPENDIX TABLE 39: GREECE's PUBLIC SECTOR DEFICITS AND BORROWING REQUIREMENTS (as % of GDP)

Year	Public Sector Deficit[1] (% of GDP)	Net PSBR[2] (% of GDP)	Budget Deficit[1] (% of GDP)
1980	11.4	-2.3	5.7
1981	15.1	-9.8	12.8
1982	12.9	-8.0	9.4
1983	11.5	-8.4	9.9
1984	15.5	-9.8	10.3
1985	17.6	-13.2	14.0
1986	13.7	-10.5	11.4
1987	13.5	-8.6	12.1

Note: Estimates

Sources: [1] NSSG Bank of Greece, Government Budget

[2] OECD Statistics

References:

Epilogi (1987g) "The Austerity Programme - 2 Years After 8-9 454

Papagiannidis, A.D. (1987) "International Comparisons for Greece's Public Deficits" Economicos 7 (1710) 17

Stergiou, D. (1987) "Budget Deficits 1977-1988" Economicos 50 (1753) 9

APPENDIX TABLE 40: KEY ECONOMIC AND INDUSTRIAL INDICATORS IN GREECE AND THE EEC (1960-1987)

(At constant prices) (Annual percentage changes)

	1960-1968		1968-1973		1973-1979		1979-1982		1983		1984		1985		1986		1987	
	Greece	EEC	Greece	EEC	Greece	EEC	Greece	EEC	Greece	EEC	Greece	EEC	Greece	EEC	Greece	EEC	Greece	EEC
Gross Domestic Product	7.3	4.6	8.2	4.8	3.7	2.4	0.4	0.4	0.4	1.5	2.8	2.4	3.0	2.5	1.3	2.6	-0.6	2.4
Industrial Production *	8.8	5.1	11.8	5.2	3.3	1.7	-2.9	-2.1	-0.1	0.9	1.6	2.2	3.4	3.4	-0.2	2.0	n.a.	n.a.
Gross fixed investment	9.5	5.5	10.6	4.7	-0.2	0.5	-6.4	-1.7	-1.9	0.2	-4.7	1.6	3.4	2.3	-4.8	3.4	1.4	n.a.
Volume of exports of goods and services	10.0	7.1	16.1	9.1	8.5	5.1	-2.4	2.3	8.0	n.a.	16.9	n.a.	1.3	n.a.	14.1	n.a.	2.5	n.a.
Consumer prices	2.3	3.3	5.4	5.9	15.0	9.8	21.0	10.9	20.2	7.5	18.5	7.0	19.3	5.9	23.0	3.7	16.3	3.2

Note: * Volume growth

Sources: EEC Statistics, Ministry of National Economy

References:

Paulopoulos, P. (1987) "Greek Industry : Past, Present and Future Options" Hellenews: Industry 1987 11 32

Epilogi (1988) "The Greek Economy in Figures" Electra Press Publications, Athens 31, 41

Roumeliotis, P. (1988a) "The Adaption of the Greek Economy to the World's Economic Changes" Economicos 34 (1790) 23

APPENDIX 41: GROSS FIXED CAPITAL FORMATION IN MANUFACTURING (at current prices and national currency) AND EXPORTS OF MANUFACTURES (in USD) (1960-1987)

	Gross Fixed Capital Formation in Manufacturing (in billion drachmas)		Exports of Manufactures (in million USD)	
Years	Value	As % of the Total	Value	As % of the Total
1960	2.0	9.9	8.4[3]	3.6
1965	5.8	14.9	33.8	10.2
1970	10.0	14.2	223.8	36.5
1975	26.6	19.0	981.6	48.3
1980	65.8	15.9	2,249.5	54.9
1981	72.5	15.9	2,374.3	49.8
1982	78.2	15.2	2,011.1	48.6
1983	90.4	14.5	1,905.7	46.4
1984	103.8	14.8	2,002.9	45.6
1985	112.8[1]	12.8	1,919.2	44.7
1986	162.1[2]	15.7	2,250.8	49.9
1987	n.a.	n.a.	2,879.0	51.2

Notes:
1 Provisional data
2 Estimates
3 1961 figure

Sources: National Accounts, Ministry of National Economy

References: Epilogi (1984) "The Greek Economy in Figures" Electra Press Publications, Athens 112, 323-324

Epilogi (1988) "The Greek Economy in Figures" Electra Press Publications, Athens 130, 345-346

APPENDIX TABLE 42: GROSS FIXED CAPITAL FORMATION IN MANUFACTURING (1960-1987)

(in billion drachmas and constant 1970 prices)

	Gross Fixed Capital Formation		
	Manufacturing	Total	
Years	A	B	A as % of B
1960	2.9	29.1	10.0
1965	7.0	49.0	14.3
1970	10.0	70.7	14.1
1971	11.2	80.6	13.9
1972	13.2	93.0	14.2
1973	14.4	100.1	14.4
1974	14.9	74.5	20.0
1975	13.1	74.7	17.5
1976	13.3	79.7	16.9
1977	12.6	85.9	14.7
1978	12.2	91.1	13.4
1979	13.8	99.1	13.9
1980	14.9	92.7	16.1
1981	14.0	85.7	16.3
1982	13.1	84.1	15.6
1983	12.2	83.0	14.7
1984	12.1	78.3	15.4
1985[1]	11.0	82.3	13.4
1986[2]	12.6	78.3	16.1
1987	n.a.	79.4	-

Notes: [1] Provisional data

[2] Estimates

Sources: National Accounts, Ministry of National Economy

References: Epilogi (1984) "The Greek Economy in Figures" Electra Press Publications, Athens 112

Epilogi (1988) "The Greek Economy in Figures" Electra Press Publications, Athens 132

APPENDIX TABLE 43: MAJOR DEVELOPMENTS IN THE INDUSTRY GROUPS OF GREECE (1975-1986)

(Financial data in million drachmas)

Data \ Years	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986
No. of Companies	2,142	2,392	2,680	2,944	3,002	3,082	3,210	2,624	2,834	2,959	2,997	3,210[1]
No. of Employees	269,411	266,316	306,689	317,186	322,395	319,254	322,849	291,087	299,934	299,519	288,761	279,600[2]
Total Assets (Capital employed)	284,556	369,238	429,367	495,453	603,225	755,344	925,287	1,116,979	1,348,466	1,732,612	2,002,845	2,324,620
Fixed Assets	183,825	242,732	278,457	316,636	374,341	443,273	551,029	773,115[3]	891,798	1,041,890	1,162,275	1,262,598
Accumulated Depreciation	63,802	87,269	105,519	124,742	148,394	174,841	211,298	300,051[3]	350,256	425,839	488,994	532,142
Total Liabilities (Debt)	196,120	250,857	297,354	353,327	444,506	579,741	721,124	821,765	1,039,538	1,457,044	1,748,014	1,947,248
Net Worth	88,395	118,628	132,220	142,184	158,967	175,581	205,128	295,351[3]	308,229	275,936	255,079	377,399
Gross Profit	49,185	63,052	75,117	87,275	115,246	143,420	182,427	187,591	248,076	296,608	365,736	472,515
Net Profit	5,867	7,851	6,868	6,264	14,370	16,343	9,804	(9,461)	(7,801)	(18,812)	(29,067)	14,122
Net Profit/ Net Worth %	6.6	6.6	5.2	4.4	9.0	9.3	4.7	(3.2)	(2.5)	(6.8)	(11.4)	3.7
Debt/ Capital employed %	68.9	67.9	69.2	71.3	73.7	76.7	77.9	73.6	77.1	84.1	87.3	83.8
Foundation Permits	994	996	902	939	761	920	769	467	581	779	2,183	3,006
Expansion Permits	596	579	551	651	542	553	538	354	538	706	907	1,916

Notes:
1. The increase in the number of companies between 1985 and 1986 is mainly due to the computerisation of all departments of the "Government Printing Office" in 1987. Thus ICAP received the gazettes - with listed balance sheets - much sooner, and was in position to analyze financial figures for a larger number of companies.
2. The decrease in the number of employees in manufacturing, is mainly due to two reasons:
   (i) the diversification of the activities of the textiles group "Piraiki-Patraiki S.A." being transferred to a number of newly established affiliated companies, which have not been included in the 1986 statistical tables because they did not publish 1986 balance sheet.
   (ii) the "Financial Mining Industrial and Shipping Corporation" of the Skalistiric group has been included in the mining sector, thus its data have not been used for the 1986 statistics of the manufacturing sector.
3. Revaluation of fixed assets under the provisions of law N 1249/82

Source-Reference: ICAP Annual Publications

APPENDIX TABLE 44: INVESTMENT IN MANUFACTURING UNDER THE PROVISIONS OF THE DEVELOPMENT LAW N 1262/82 (1982-1987)
(in billion drachmas)

Years	INVESTMENTS		
	Approved	Realised	
	A	B	B as % of A
1982	6.9	6.4	92.7
1983	63.7	41.1	64.5
1984	71.5	30.3	42.4
1985	71.5	30.3	42.4
1986	104.7	34.9	33.3
1987	144.6	9.0	6.2

Source: Ministry of National Economy

Reference: Diamantopoulos, G. (1988)
"Investment Prospects"
Hellenews: Industry 1988 1 29

APPENDIX TABLE 45: EXPORTS OF MAIN MANUFACTURED GOODS (1975-1986)
(in million USD)

	Textiles		Cement		Chemicals Pharmaceuticals		Aluminium		Metals		Manufactures	
Year	Value	%	Value	%	Value	%	Value	%	Value	%	Value	%
1975	254.4	25.9	131.6	13.4	66.7	6.8	n.a.	-	138.8	14.1	981.6	100.0
1976	369.6	31.8	131.1	11.3	65.1	5.6	52.5	4.5	139.6	12.0	1160.2	100.0
1977	442.6	33.9	155.8	11.9	96.9	7.4	89.0	6.8	134.3	10.3	1305.2	100.0
1978	538.3	34.9	184.5	12.0	87.1	5.6	106.6	6.9	151.1	9.8	1542.1	100.0
1979	675.2	34.5	205.2	10.5	113.6	5.8	138.5	7.1	198.6	10.1	1957.9	100.0
1980	784.6	34.9	248.9	11.1	163.8	7.3	137.5	6.1	265.4	11.8	2249.5	100.0
1981	749.2	31.6	274.1	11.5	160.5	6.8	186.5	7.9	276.0	11.6	2374.3	100.0
1982	706.5	35.1	264.8	13.2	123.7	6.1	130.1	6.5	221.9	11.0	2011.1	100.0
1983	698.7	36.7	210.3	11.0	128.1	6.7	137.6	7.2	197.5	10.4	1905.7	100.0
1984	718.8	35.9	178.9	8.9	142.5	7.1	184.0	9.2	212.5	10.6	2002.9	100.0
1985	731.3	38.1	150.9	7.9	144.6	7.5	141.4	7.4	185.0	9.6	1919.2	100.0
1986	970.1	43.1	62.0*	-	61.2*	-	36.4*	-	84.2*	-	2250.8	100.0

Note: * January to May 1986 only

Source: Bank of Greece Publications

References: Epilogi (1982) "Changes in the Greek Exports Pattern" 11 854
Epilogi (1985f) "Industry Today" 5 380
Epilogi (1988) "The Greek Economy in Figures" Electra Press Publications, Athens 346

APPENDIX TABLE 46: IMPORTS PENETRATION AND EXPORTS ORIENTATION OF THE GREEK INDUSTRY (1960-1985)

	IMPORTS PENETRATION					EXPORTS ORIENTATION				
	IMPORTS/Domestic Demand					EXPORTS/Production				
Industry Groups	1960	1970	1975	1980	1985	1960	1970	1975	1980	1985
20 Food Products	7.1	5.2	8.3	6.6	10.9	2.2	5.8	10.1	11.7	13.0
21 Beverages	0.6	1.3	1.5	2.5	6.5	1.2	11.5	9.1	7.0	8.3
22 Tobacco	0.04	0.2	0.2	0.8	2.7	0.1	0.1	0.1	0.02	0.7
23 Textiles	14.3	12.1	11.8	9.9	19.3	1.4	7.0	9.7	18.1	19.7
24 Clothing & Footwear	1.4	1.6	1.8	2.9	22.6*	0.5	5.5	29.3	29.2	70.6*
25 Wood & Cork	32.0	22.4	14.7	14.2	24.6	0.8	0.7	3.4	3.9	5.5
26 Furniture	0.6	1.6	1.6	2.8	23.6	0.2	0.4	1.5	1.0	0.8
27 Paper & Paper Articles	33.8	31.9	43.3	35.0	45.7	0.4	2.2	3.8	11.5	5.6
28 Printing & Publishing	2.4	4.1	3.8	4.9	3.4	1.6	1.7	1.6	1.5	2.2
29 Leather & Fur	10.3	24.7	29.4	24.0	63.1	9.4	22.2	36.0	30.2	33.1
30 Plastics & Rubber	25.5	14.5	12.4	12.0	14.5	0.3	3.9	4.6	3.7	4.3
31 Chemicals	29.5	43.5	41.8	43.7	43.2	10.3	18.2	17.2	24.0	13.7
32 Petroleum & Coal Products	23.0	21.3	12.8	7.1	16.6	0.01	4.3	28.1	32.3	24.3
33 Mineral (non-metallic)	9.0	10.1	11.0	9.8	12.1	1.5	3.0	18.7	19.5	23.9
34 Metals	69.6	40.4	35.3	38.3	38.8	5.3	40.7	28.8	30.7	34.1
35 Hardware	16.0	17.8	13.3	14.5	15.4	0.5	1.9	12.0	11.6	10.4
36 Machinery & Appliances	67.9	76.4	73.8	74.5	75.8	4.5	1.4	9.4	7.0	10.6
37 Electrical Equipment & Appliances	39.3	33.3	35.1	34.8	37.4	0.1	2.3	7.2	10.1	9.6
38 Transport Equipment	42.9	46.3	21.6	36.1	52.2	0.8	1.9	7.0	3.3	5.2
39 Miscellaneous	53.8	61.3	78.4	69.8	60.6	6.1	16.8	65.9	26.2	24.1
TOTAL	21.7	23.5	22.4	21.7	27.4	2.0	8.0	14.4	16.9	18.5

Note: * In the clothing and footwear industry group, subcontracted work has been included since 1981

Source: Ministry of National Economy

Reference: Rylmon, L.P. (1987a) "Imports' Penetration and Exports' Orientation of the Greek Industry" Economicos 39 (1742) 50

APPENDIX TABLE 47: INDUSTRIAL PRODUCTION, VOLUME GROWTH IN THE EEC MEMBER STATES (EEC-12)

(annual percentage changes)

Year	DK	D	F	IRL	I	NL	B	L	UK	GR	E	P	EEC
1970	2.5	6.1	5.3	4.4	6.5	8.7	3.1	0.5	0.5	10.5	10.0	6.3	4.9
1961-70	6.2	5.8	5.3	6.6	7.1	6.2	5.0	2.4	2.8	...	...	...	5.3
1971	2.4	1.4	4.8	3.7	-0.6	5.5	1.7	-1.1	-0.2	11.3	3.2	7.8	1.9
1972	4.4	4.2	6.7	4.3	4.9	5.1	7.5	4.2	2.2	14.1	15.9	13.0	5.8
1973	3.4	7.2	6.7	9.8	9.7	7.7	6.2	11.9	8.7	15.3	15.2	11.8	8.6
1974	-0.8	-1.1	2.3	3.0	4.0	4.7	4.0	3.5	-2.4	-1.5	9.2	2.8	1.5
1975	-6.0	-6.2	-7.5	-6.1	-8.9	-5.1	-9.8	-21.9	-4.7	4.3	-6.5	-4.9	-6.6
1976	9.6	7.4	8.7	8.7	11.6	7.7	7.8	3.8	2.7	10.6	5.1	3.4	7.3
1977	0.8	2.1	1.9	8.0	0.0	0.5	0.5	0.5	4.7	1.5	5.3	13.1	2.5
1978	2.3	3.0	2.4	7.9	2.1	0.8	2.4	3.2	3.8	7.5	2.3	6.9	2.8
1979	3.6	5.1	4.1	7.7	6.7	3.1	4.5	3.4	3.9	6.0	0.8	7.2	4.5
1980	0.2	0.2	-0.5	-0.8	5.0	-0.1	-1.3	-3.3	-6.7	0.9	1.2	5.4	-0.3
1971-80	1.9	2.3	2.8	4.5	3.3	2.9	2.2	0.0	1.1	6.9	5.1	6.5	2.4
1981	0.0	-1.9	-1.4	5.4	-2.2	-2.1	-2.7	-5.7	-3.4	0.8	-1.0	0.5	-1.9
1982	2.7	-2.9	-0.3	-0.9	-3.1	-3.7	0.0	0.9	1.9	1.1	-1.1	4.6	-1.2
1983	3.2	0.6	-0.1	6.6	-2.4	2.9	2.0	5.4	3.5	-0.1	2.7	1.6	0.9
1984	9.7	3.0	0.4	12.4	3.3	4.5	2.5	13.3	1.3	1.6	0.8	-0.1	2.2
1985	4.2	5.7	0.8	2.3	1.4	3.3	2.5	6.9	4.8	3.4	2.0	10.9	3.4
1986*	4.2	2.1	0.7	2.7	3.2	0.9	1.5	2.8	1.8	-0.2	3.1	4.7	2.0

Source: Commisson of the European Communities - European Economy, July 1987
*Estimates

Reference: Epilogi (1988) "The Greek Economy in Figures", Electra Press Publications, Athens 31

APPENDIX TABLE 48: MANUFACTURING PRODUCTION NEW INDEX WEIGHTINGS
(1980 = 100)

	Industry Groups	Weightings
20	Food Products	11.9
21	Beverages	3.7
22	Tobacco	2.3
23	Textiles	16.1
24	Clothing & Footwear	6.1
25	Wood & Cork	2.2
26	Furniture	1.2
27	Paper & Paper Articles	1.9
28	Printing & Publishing	2.6
29	Leather & Fur	0.8
30	Plastics & Rubber	3.9
31	Chemicals	7.8
32	Petroleum & Coal Products	2.8
33	Mineral (non-metallic)	8.6
34	Metals	6.5
35	Hardware	6.4
36	Machinery & Appliances	1.9
37	Electrical Equipment & Appliances	4.7
38	Transportation Equipment	8.0
39	Miscellaneous	0.6
Total		100.0

Source: NSSG

Reference: Papalexandrou, C. (1986) "The New Industrial Production Index" Nafteboriki 11 (17317) 13

APPENDIX TABLE 49: INDICES OF MANUFACTURING PRODUCTION 1980 = 100 (1980-1986)

Branches	1980	1981	1982	1983	1984	1985	1986
Total Industry	100.0	100.7	98.6	97.2	98.5	101.0	100.3
Food	100.0	106.1	105.8	107.0	117.6	120.6	109.1
Beverages	100.0	104.5	105.4	105.9	111.8	125.8	130.1
Tobacco	100.0	94.0	105.3	114.2	107.1	119.3	110.3
Textiles	100.0	100.5	93.8	92.0	92.0	95.5	102.0
Clothing and footwear	100.0	92.0	86.8	79.9	78.5	85.1	84.0
Wood and cork	100.0	83.8	81.7	80.8	71.4	62.3	61.0
Furniture and fixtures	100.0	123.9	129.6	85.3	78.8	88.0	83.9
Paper	100.0	95.1	93.7	104.8	116.9	135.4	156.0
Printing and Publishing	100.0	103.2	104.2	104.2	111.7	119.1	104.6
Leather and furs	100.0	94.9	81.9	81.0	76.1	74.9	75.8
Rubber and plastics	100.0	107.2	110.6	116.0	114.7	121.6	109.0
Chemicals	100.0	97.9	98.0	105.4	114.0	121.6	115.7
Petroleum products and coal	100.0	106.7	98.8	97.7	96.5	95.1	106.8
Non - metalic mineral products	100.0	95.8	94.5	91.2	92.8	90.4	93.3
Basic metal industries	100.0	92.4	83.0	90.5	92.5	94.0	90.2
Metal products	100.0	100.5	102.9	101.8	100.7	89.7	96.3
Machinery and appliances	100.0	113.9	115.9	105.0	93.0	100.9	90.3
Electric machinery and appliances	100.0	106.2	102.6	97.2	90.5	104.5	105.2
Transport equipment	100.0	105.1	101.9	87.8	81.8	68.1	74.4
Miscellaneous industries	100.0	103.1	122.6	126.3	155.7	172.3	140.0

Source: NSSG Statistical Yearbooks, Monthly Statistical Bulletins

Reference: Epilogi (1988) "The Greek Economy in Figures", Electra Press Publications, Athens 236

APPENDIX TABLE 50: INDICES OF MANUFACTURING PRODUCTION 1980 = 100 AND GDP DEVELOPMENT (1980-1987)

	1980	1981	1982	1983	1984	1985	1986	1987
1. GDP	100.0	100.1	100.5	100.9	103.7	106.7	108.0	107.4
2. MFG Production (100.0)	100.0	100.7	98.6	97.2	98.5	101.0	100.3	98.3
2.1 Capital Goods (31.5)	100.0	88.2	87.4	82.9	81.8	81.2	79.3	75.9
2.2 Consumer Durable Goods (5.1)	100.0	105.2	103.1	94.6	87.4	97.4	101.5	89.1
2.3 Consumer Goods (55.9)	100.0	107.3	104.4	105.2	108.0	111.4	111.6	110.?

Sources: NSSG, Ministry of National Economy

Reference: Nafteboriki (1988c) "Developments in the Manufacturing Sector 1980-1987" 4 (17700) 8

APPENDIX TABLE 51: FINISHED GOODS INVENTORIES (1981-1987)
(percentage deviation from the average stock level)

					MAIN INDUSTRY GROUPS				
	Industry Total	Consumer Goods	Capital Goods	Consumer Durable Goods	Food Products Beverages Tobacco	Textiles	Chemicals	Mineral (non-metallic)	Metals
Year									
1981	+ 26	+ 12	+ 52	+ 29	+ 4	+ 31	+ 13	+ 47	+ 70
1982	+ 20	+ 14	+ 43	+ 16	+ 2	+ 32	- 6	+ 1	+ 35
1983	+ 13	+ 12	+ 49	+ 10	+ 4	+ 34	- 4	+ 14	- 13
1984	+ 14	+ 17	+ 20	+ 17	+ 3	+ 22	+ 7	+ 44	+ 4
1985	+ 10	+ 5	0	+ 15	+ 7	+ 35	+ 1	+ 20	- 4
1986	+ 12	+ 5	0	+ 15	+ 11	+ 29	+ 14	+ 9	+ 12
1987	+ 11	+ 17	+ 3	+ 14	+ 3	+ 25	+ 6	+ 28	- 14

Note: + finished goods' stocks percentage units above average
- " " " " " below "

Source: IOBE

Reference: SBBE (1988) "Industry's 1988 Outlook - IOBE Prospects -" 3-4 (263-264) 39

APPENDIX TABLE 52: PRODUCTIVE COEFFICIENTS DEVELOPMENT IN MANUFACTURING (1970-1986)

Year	Net Capital Stock*	Employment	(A) as % of (B)
	A	B	
1970	100	100	100
1971	110.5	103.8	106.5
1972	123.2	108.4	113.7
1973	137.1	110.1	124.5
1974	151.0	113.5	133.0
1975	161.6	114.1	141.6
1976	172.1	114.6	150.2
1977	181.1	118.1	153.3
1978	189.3	120.8	156.7
1979	199.5	122.7	162.8
1980	210.8	124.2	169.7
1981	220.3	125.0	176.2
1982	228.2	124.4	183.4
1983	234.4	122.1	192.0
1984	240.1	121.6	197.5
1985	244.1	121.2	201.4
1986	250.1	120.8	207.0

Note: * net capital increase in one year equals gross investment minus depreciation

Source: NSSG

Reference: Epilogi (1988b) "The Real Capital in Manufacturing" 2 97

APPENDIX TABLE 53: GREEK INDUSTRY GROUPS KEY INDICATORS CLASSIFICATION

(NSSG 1973, 1978, 1984 Census)

Industry Groups	Number of Companies						Number of Employees						Productive Capacity (in HP)					
	1973	%	1978	%	1984	%	1973	%	1978	%	1984	%	1973	%	1978	%	1984	%
20	16,499	19.59	16,222	18.71	17,992	15.52	82,207	15.53	84,896	14.68	93,860	14.89	527,391	13.99	662,627	14.66	928,360	15.09
21	1,046	1.24	939	1.08	1,040	0.89	10,584	2.00	11,552	2.00	11,791	1.87	60,685	1.61	80,808	1.78	97,614	1.58
22	91	0.11	60	0.07	73	0.06	7,773	1.41	8,568	1.48	9,433	1.49	23,842	0.63	22,300	0.49	36,084	0.57
23	3,840	4.56	4,036	4.65	3,729	3.21	62,256	11.76	74,202	12.83	61,330	9.75	251,386	6.67	497,133	10.99	567,568	9.22
24	11,023	13.09	9,406	10.85	15,587	13.45	54,807	10.35	68,231	11.80	88,599	14.05	33,703	0.89	67,164	1.48	92,394	1.50
25	9,419	11.18	10,505	12.11	12,392	10.69	31,186	5.89	30,274	5.23	31,305	4.96	179,169	4.75	214,509	4.74	320,896	5.21
26	8,630	10.24	8,955	10.4	10,260	8.85	27,410	5.18	28,189	4.87	30,299	4.80	90,740	2.41	120,896	2.67	167,793	2.72
27	310	0.37	338	0.39	453	0.39	7,465	1.41	10,444	1.81	9,982	1.58	97,418	2.59	223,794	4.95	278,788	4.53
28	1,913	2.27	2,151	2.48	2,607	2.25	13,583	2.57	13,175	2.28	14,522	2.30	26,845	0.71	32,282	0.71	51,446	0.83
29	2,426	2.88	3,198	3.68	4,306	3.71	12,466	2.35	14,448	2.50	16,489	2.61	22,036	0.58	32,296	0.71	41,717	0.67
30	1,541	1.83	1,710	1.97	2,758	2.38	15,023	2.84	17,796	3.08	19,153	3.1	104,677	2.77	146,931	3.25	223,504	3.63
31	521	0.62	658	0.75	861	0.74	17,485	3.30	22,413	3.88	23,899	3.72	251,232	6.66	321,702	7.11	400,885	6.51
32	91	0.10	87	0.10	167	0.14	3,326	0.63	4,315	0.75	5,482	0.86	79,234	2.10	96,885	2.14	192,886	3.13
33	3,790	4.50	3,705	4.27	4,647	4.01	33,325	6.29	34,768	6.01	35,513	5.63	454,894	12.07	666,110	14.73	1,094,957	17.6
34	21	0.02	33	0.03	91	0.07	7,678	1.45	9,087	1.57	10,874	1.72	371,252	9.85	547,777	12.12	621,177	10.1
35	10,000	11.87	11,594	13.37	13,979	12.09	43,072	8.14	48,229	8.34	49,596	7.86	236,662	6.28	296,458	6.56	396,972	6.45
36	3,450	4.10	3,718	4.28	4,679	4.08	22,572	4.26	20,152	3.48	23,540	3.73	96,984	2.57	109,252	2.41	167,289	2.72
37	1,494	1.77	1,481	1.71	2,407	2.08	25,385	4.79	22,794	3.94	20,639	3.27	55,383	1.47	125,402	2.76	137,713	2.24
38	5,902	7.01	6,239	7.19	14,850	12.80	42,292	7.99	47,622	8.23	64,293	10.19	792,643	21.03	239,563	5.39	305,749	5.29
39	2,230	2.65	1,662	1.91	2,994	2.58	9,518	1.80	7,198	1.24	9,772	1.55	13,812	0.37	16,029	0.35	27,004	0.44
Industry Total	84,237	100.0	86,697	100.0	115,872	100.0	529,413	100.0	578,353	100.0	630,370	100.0	3,769,988	100.0	4,519,918	100.0	6,150,246	100.0

Source: NSSG, Industry Census (1973,1978,1984)

Reference: Xasid, I. (1987) "Greek Industry's Outlook", Economicos 30 (1733) 50

APPENDIX TABLE 54: DEVELOPMENT OF THE PRODUCTIVITY INDICES IN MANUFACTURING (1970-1986)

Year	Capital Productivity	Labour Productivity	Total Productivity
1970	100.0	100.0	100.0
1971	100.3	106.7	102.4
1972	97.0	110.2	101.2
1973	102.5	127.6	110.6
1974	90.3	120.3	100.1
1975	89.1	126.2	102.8
1976	92.0	138.2	110.8
1977	88.7	136.0	108.8
1978	90.4	141.7	112.3
1979	90.5	147.2	114.7
1980	85.8	145.7	111.3
1981	81.9	144.3	108.5
1982	77.3	141.9	104.8
1983	74.0	142.0	103.0
1984	73.1	144.3	103.4
1985	74.5	150.1	106.7
1986	73.1	151.3	106.4

Source: NSSG

Reference: Epilogi (1988b) "The Real Capital in Manufacturing" 2 99

APPENDIX TABLE 55: PRODUCTION AND PRODUCTIVITY INDICES IN GREECE AND THE OECD REGION (1960-1985)

(average period percentage changes)

	1960-1973		1973-1979		1979-1985	
	OECD	GREECE	OECD	GREECE	OECD	GREECE
Production	5.2	8.4	2.9	3.5	2.3	1.2
Capital Productivity	4.1	9.1	1.6	3.1	1.4	0.1
Labour Productivity	-0.2	0.7	-1.3	-2.5	-1.3	-3.0

Source: OECD Economic Outlook, Dec. 1987

Reference: Rylmon, P.L. (1988a) "Historical Decline of Productivity in the OECD Area" Economicos 3 (1759) 50

APPENDIX TABLE 56: EMPLOYMENT, PRODUCTIVITY AND UNIT LABOUR COST IN MANUFACTURING (1980 = 100) (1981-1986)

Year	Employment	Productivity	Unit Labour Cost	Average Working Hours Per Week	Average Hourly Earnings
1980	100.0	100.0	100.0		
1981	101.1	102.6	124.0	39.52	130.3
1982	101.3	102.6	165.5	38.61	173.9
1983	100.1	102.4	197.9	38.53	207.6
1984	100.4	105.4	245.3	38.19	262.2
1985	99.2	105.3	290.8	39.26	314.2
1986	99.3	104.8	329.7	39.19	354.1

Source: SBBE

Reference: SBBE (1988) "Industry's 1988 Outlook - IOBE Prospects" 3-4 (263-264) 40

APPENDIX TABLE 57: DEVELOPMENT OF THE WAGES (SALARIED EMPLOYEES AND WORKERS) IN THE MANUFACTURING SECTOR (1980-1986)

(average annual figures in drachmas)

	MAIN INDUSTRY GROUPS											
	Industry Total		Food Products Beverages Tobacco		Textiles		Chemicals		Mineral (Non-Metallic)		Metals	
Year	A	B	A	B	A	B	A	B	A	B	A	B
1980	29,095	764	27,259	704	26,032	698	30,229	823	30,475	861	44,621	1,334
1981	36,482	952	33,803	919	31,895	875	38,722	1,071	38,016	1,054	54,442	1,537
1982	44,686	1,217	41,657	1,200	39,349	1,162	47,862	1,383	47,555	1,348	66,653	1,966
1983	51,073	1,421	49,137	1,438	46,056	1,384	56,282	1,533	52,762	1,655	74,478	2,242
1984	63,394	1,785	62,468	1,811	56,866	1,730	71,287	1,955	65,936	2,057	100,757	2,935
1985	77,969	2,142	74,777	2,136	71,020	2,134	85,214	2,245	77,062	2,648	114,202	2,977
1986	84,899	2,405	79,553	2,365	76,181	2,375	88,773	2,505	85,022	2,736	121,317	3,826

Notes: A. Monthly wages of salaried employees
B. Daily wages of workers

Source : NSSG

Reference: SBBE (1988) "Industry's 1988 Outlook - IOBE Prospects -" 3-4 (263-264) 40

APPENDIX TABLE 58: COST AND PRICES IN MANUFACTURING (1975-1987)

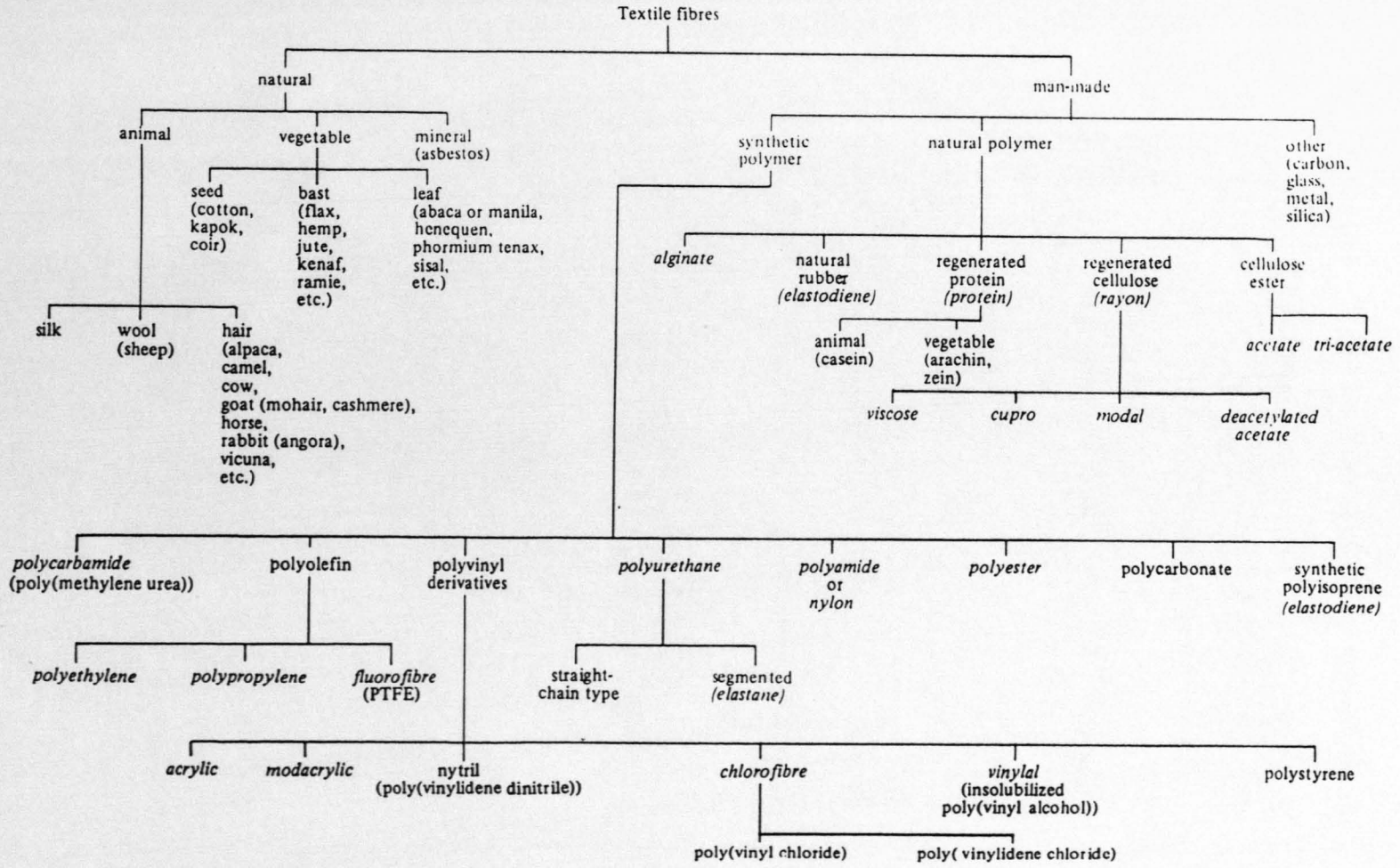
(annual percentage changes)

Year	Domestically Produced Manufacturers' Price Development	Cost Components		
		Raw Materials	Fuel	Unit Labour Cost
1975	8.1	-9.0	15.9	17.3
1976	10.8	21.3	8.3	21.0
1977	12.5	7.8	10.5	22.4
1978	9.7	1.2	4.5	18.9
1979	20.2	22.9	29.3	16.6
1980	30.4	27.0	52.7	25.9
1981	24.2	22.2	28.8	24.2
1982	16.8	12.1	14.7	33.3
1983	20.8	27.5	20.6	19.5
1984	18.3	27.5	21.7	24.1
1985	19.8	19.1	22.0	18.7
1986	21.2	15.6	13.9	13.3
1987	7.1	10.2	2.6	11.1

Source: NSSG, Bank of Greece

Reference: Epilogi (1988e) "Industry's Profits 1975-1987" 6 254

APPENDIX TABLE 59: CLASSIFICATION OF TEXTILE FIBRES (NATURAL AND MAN-MADE)



Source: The Textile Institute

Reference: Farnfield, C.A. and Alvey, P.J. (1975) "Textile Terms and Definitions", The Textile Institute, Manchester 228

APPENDIX TABLE 60: WORLD PRODUCTION OF COTTON, WOOL AND MAN-MADE FIBRES (1900-1986)
(in million tonnes)

	Raw Cotton	Wool	MAN-MADE FIBRES					TOTAL OF ALL FIBRES
			Synthetics		Cellulosics		Total	
			Filament	Staple	Filament	Staple		
1900	3.2	0.7	-	-	0.001	-	0.001	3.9
1940	6.9	1.1	0.001	0.004	0.5	0.6	1.1	9.1
1950	6.6	1.1	0.054	0.015	0.9	0.7	1.7	9.4
1960	10.1	1.5	0.4	0.3	1.1	1.5	3.3	14.9
1970	11.8	1.6	2.4	2.4	1.4	2.2	8.4	21.8
1971	13.0	1.6	2.9	2.8	1.4	2.2	9.3	23.9
1972	13.7	1.5	3.2	3.2	1.3	2.4	10.1	25.3
1973	13.7	1.4	3.8	3.9	1.4	2.5	11.6	26.7
1974	14.0	1.5	3.8	3.7	1.3	2.4	11.2	26.7
1975	11.8	1.5	3.8	3.7	1.1	2.1	10.7	24.0
1976	12.6	1.5	4.2	4.6	1.2	2.3	12.3	26.4
1977	14.0	1.5	4.4	4.9	1.2	2.4	12.9	28.4
1978	13.0	1.5	4.7	5.5	1.2	2.4	13.8	28.3
1979	14.3	1.6	5.0	5.9	1.2	2.5	14.6	30.5
1980	14.2	1.6	4.8	5.9	1.2	2.4	14.3	30.1
1981	13.8	1.6	5.0	6.2	1.1	2.4	14.7	30.1
1982	14.2	1.6	4.6	5.9	1.0	2.3	13.8	29.6
1983	14.6	1.6	5.1	6.5	0.9	2.3	14.8	31.0
1984	15.0	1.6	5.3	6.8	0.9	2.3	15.3	31.9
1985	16.5	1.6	5.4	7.7	0.9	2.2	16.2	34.3
1986	16.5*	1.6*	5.4	8.1	0.9	2.3	16.7	34.8

Note: * Estimates

Sources: Cotton - International Cotton Advisory Committee. Wool - Commonwealth Secretariat, London; Manmade Fibres - Textile Organon, Textile Economics Bureau Inc., New York.

References: Cable, V. and Baker, B. (1983) "World Textile Trade and Production Trends" EIU Special Report No 152, London 2
ITS (1984a) "Peak of Cotton Processing Anticipated" Dyeing/Printing/Finishing 2 4
Text. Horizons (1985d) "Man-Made Fibres in 1984" 5 (4) 42

APPENDIX TABLE 61: WORLD PRODUCTION OF COTTON, WOOL AND MAN-MADE FIBRES (1900-1986)

(percentage share of fibre by type)

	Raw Cotton	Wool	MMF	Total of All Fibres
1900	82.0	18.0	(a)	100.0
1940	75.8	12.1	12.1	100.0
1950	70.2	11.7	18.1	100.0
1960	67.8	10.1	22.1	100.0
1970	54.1	7.4	38.5	100.0
1971	54.4	6.7	38.9	100.0
1972	54.2	5.9	39.9	100.0
1973	51.3	5.2	43.5	100.0
1974	52.4	5.6	42.0	100.0
1975	49.2	6.2	44.6	100.0
1976	47.7	5.7	46.6	100.0
1977	49.3	5.3	45.4	100.0
1978	45.9	5.3	48.8	100.0
1979	46.9	5.2	47.9	100.0
1980	47.2	5.3	47.5	100.0
1971-1980	49.9	5.6	44.5	100.0
1981	45.8	5.3	48.9	100.0
1982	48.0	5.4	46.6	100.0
1983	47.1	5.2	47.7	100.0
1984	47.0	5.0	48.0	100.0
1985	48.1	4.7	47.2	100.0
1986	47.4	4.6	48.0	100.0
1981-1986	47.2	5.1	44.7	100.0

Note: (a) Negligible contribution (0.02%) to the total fibres production

Source: Derived from Appendix Table 60

APPENDIX TABLE 62: COTTON: WORLD PRODUCTION OF DIFFERENT STAPLES

(1984/85 season from 1.8.1984 to 31.7.1985 in 1000 bales each being 478 lbs = 217 kgs)

Length	1000 bales	% of World
Under 13/16 inch	831	1.5
13/16 to 1 inch	10065	18.1
1-1/32 to 1-3/32 inch	32018	57.7
1-1/8 to 1-5/16 inch	9539	17.1
1-3/8 inch and above	3050	5.6

Source: Cotton Statistics, ICAC, Washington D.C.

Reference: Afzal, M. and Shafiq, A. (1985) "Cotton Production" Text. Horizons 5 (11) 33

APPENDIX TABLE 63: WOOL: FLEECE CLASSIFICATIONS

(percentage share of fleece by type)

Classed Fleece Grades		SORTED MATCHINGS									Total of All Fleece
		70s	64s	60s	58s	56s	50s	48s	46s	44s & various	
Australian Wool	70s	90	8	2	-	-	-	-	-	-	100
	64s	15	78	7	-	-	-	-	-	-	100
	60s	-	10	70	15	5	-	-	-	-	100
	58s	-	-	25	40	25	5	5	-	-	100
	56s	-	-	-	30	30	30	10	-	-	100
New Zealand Wool	58s	-	-	5	75	20	-	-	-	-	100
	56s	-	-	-	20	66	8	6	-	-	100
	50s	-	-	-	-	5	80	10	-	-	100
	48s	-	-	-	-	-	10	75	10	5	100

Source: Capt. R. P. Pitcher, of Airedale Combing Co. Ltd.

Reference: Spibey, H. (1969) "The British Wool Manual" Columbine Press, Buxton 50

APPENDIX TABLE 64: WORLD PRODUCTION OF MAN-MADE FIBRES (1970-1986)
(in million tonnes)

	1970	%	1975	%	1980	%	1981	%	1982	%	1983	%	1984	%	1985	%	1986	%
Cellulosics	3.6	43	3.2	30	3.6	25	3.5	24	3.3	24	3.2	22	3.2	21	3.1	19	3.2	19
Synthetics	4.8	57	7.5	70	10.7	75	11.2	76	10.5	76	11.6	78	12.1	79	13.1	81	13.5	81
Total man-made fibres	8.4	100	10.7	100	14.3	100	14.7	100	13.8	100	14.8	100	15.3	100	16.2	100	16.7	100

Source: Market research department, ENKA

References: Text. Month (1982) "MMF Output in 1981 - The Global Picture" 5 16
Text. Horizons (1984a) "Business Facts: Production of Synthetic Fibres" 4 (4) 9
Text. Horizons (1985d) "Man-Made Fibres in 1984" 5 (4) 41
Text. Horizons (1987a) "Man-Made Fibres: Outlook for W. Europe" 7 (4) 33

APPENDIX TABLE 65: GEOGRAPHICAL BREAKDOWN OF WORLD PRODUCTION OF SYNTHETIC FIBRES (1970-1986)

	1970	1975	1980	1981	1983	1985	1986
Polyamide							
Western Europe	32%	25%	20%	20%	19%	19%	18%
USA	32%	35%	34%	33%	35%	31%	33%
Japan	16%	11%	10%	10%	9%	9%	8%
Other countries	20%	29%	36%	37%	37%	41%	41%
World ('000 tonnes)	1,895	2,445	3,118	3,149	3,128	3,410	3,468
Polyester							
Western Europe	28%	19%	14%	14%	15%	14%	13%
USA	40%	41%	36%	35%	30%	23%	22%
Japan	19%	13%	12%	12%	11%	10%	9%
Other countries	13%	27%	38%	39%	44%	53%	56%
World ('000 tonnes)	1,635	3,359	5,090	5,400	5,391	6,474	6,833
Acrylics							
Western Europe	40%	38%	33%	35%	35%	35%	34%
USA	22%	17%	17%	15%	14%	12%	12%
Japan	26%	17%	17%	17%	17%	16%	16%
Other countries	12%	28%	33%	33%	34%	37%	38%
World ('000 tonnes)	1,006	1,401	2,046	2,112	2,167	2,390	2,409

Source: Market research department, ENKA

References: Text. Month (1982) "MMF Output in 1981 - The Global Picture" 5 17
Text. Horizons (1984a) "Business Facts: Production of Synthetic Fibres" 4 (4) 9
Text. Horizons (1987a) "Man-Made Fibres: Outlook for W. Europe" 7 (4) 34

APPENDIX TABLE 66: SPINNING AND WEAVING MACHINERY SHIPMENTS IN 1985

	DEVELOPMENTS IN TEXTILE MACHINERY SHIPMENTS IN 1985				
	Spinning			Weaving	
	Short-staple spindle	Long-staple spindle	OE rotors	Shuttle looms	Shuttleless looms
Africa	197,074	13,762	11,450	92	847
America, North	78,652	28,044	78,014	68	4,326
America, South	143,394	10,240	7,272	421	658
Asia & Oceania	1,318,068	174,992	81,774	10,676	16,070
Europe - EEC	130,016	144,530	62,650	16	9,802
Europe - EFTA	56,296	19,944	12,186	2	907
Europe - Comecon	3,432	15,914	536,784	3	5,215
Europe - Others	226,104	26,006	35,382	179	1,946
TOTAL	2,153,036	433,432	825,512	11,457	39,771

	CHANGES IN TEXTILE MACHINERY SHIPMENTS IN 1984-1985				
	Spinning			Weaving	
	Short-staple spindle	Long-staple spindle	OE rotors	Shuttle looms	Shuttleless looms
World	- 3%	+ 63%	+ 10%	- 31%	- 7%
Africa	+ 84%	+ 5%	+ 2%	- 62%	- 35%
America, North	+ 741%	+ 35%	+ 5%	- 68%	- 29%
America, South	+ 78%	+ 36%	+ 46%	+175%	- 4%
Asia & Oceania	- 22%	+361%	+103%	- 31%	- 13%
Europe	+ 25%	+ 11%	+ 4%	- 61%	+ 10%

Source: ITMA

Reference: Text. Horizons (1986d) "Textile Machinery: More Rotors, Fewer Looms" 6 (8) 6

APPENDIX TABLE 67: EEC REGIONS[1] WHERE EMPLOYMENT IN TEXTILES AND CLOTHING IS 12% OR MORE (1978)

EEC REGIONS	No. of Jobs in Textiles & Clothing ('000)	% of Total Manufacturing Jobs
Tuscany (I)	120.0	21.7
Abruzzi-Molise (I)	26.7	19.5
Veneto (I)	111.3	16.3
Basilicata (I)	6.8	15.8
Umbria (I)	16.7	14.5
Lombardy (I)	263.0	14.4
Piedmont (I)	120.3	13.6
Apulia (I)	39.4	13.2
East Flanders (B)	42.3	19.9
West Flanders (B)	31.0	18.1
Oberfranken (WG)	45.0	18.4
Tübingen (WG)	55.7	17.2
Northern Ireland (UK)	37.5	18.0
East Midlands (UK)	129.4	17.7
Yorkshire-Humberside (UK)	127.8	12.8
North-West (UK)	156.1	12.0
Nord-Pas-De-Calais (F)	112.3	17.5
Manche (F)	27.6	12.1
Catalonia (E)[2]	127.8	<20.0
Valencia (E)[2]	41.2	<12.0
Castello Branco (P)[2]	n.a.	<20.0
Porto (P)[2]	n.a.	<12.0
Braga (P)[2]	n.a.	<20.0
Athens (GR)[3]	33.0	11.7
Thessaloniki (GR)[3]	10.8	13.0

Sources:
1 EEC Commission EEC(9) 1978 data
2 Comitextil Spain, Portugal 1976 data
3 NSSG Greece 1978 data

Reference: Cable, V. and Baker, B. (1983) "World Textile Trade and Production Trends" EIU Special Report No 152, London 4 108

APPENDIX TABLE 68: EARNINGS AND WORKING HOURS IN TEXTILES (1980)

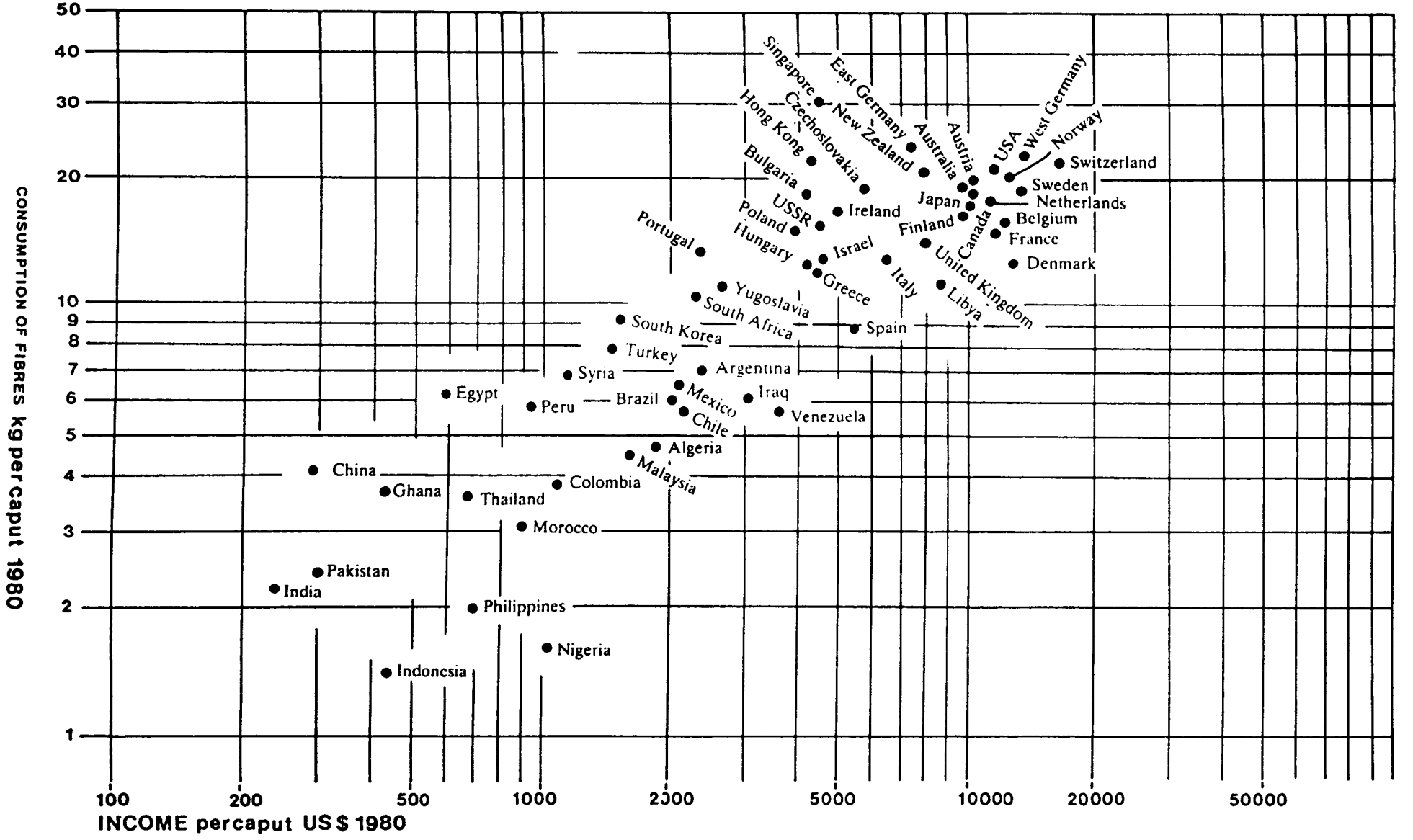
	Per caput income ($ pa)	Index	Gross earnings ($[a] per hr)	Index (US=100)	% social payments (firms)[b]	% social payments (labour)[c]	'Normal' hours per week	Annual hours	Index (US=100)	Index (UK=100)	Vacation (days)
Canada	9,640	90.7	5.5	104.0	14.6	18.4	42.0	2,016	88.5	115.9	10
USA	10,630	100.0	5.29	100.0	20.4	20.4	46.0	2,277	100.0	130.9	10
France	9,950	93.6	5.04	95.3	56.9	16.4	41.2	1,804	79.2	103.7	20
Ireland	4,210	39.6	4.5	85.1	14.0	21.3	40.0	1,896	83.3	109.0	15
Italy	5,250	49.4	6.6	124.8	38.0	23.4	37.5	1,717	75.4	98.7	20
West Germany	11,730	110.3	8.0	151.2	25.2	30.7	40.75	1,820	79.9	104.6	28
UK	6,320	59.5	5.11	96.6	10.2	21.6	37.5	1,740	76.4	100.0	18-20
Greece	3,960	37.3	2.98	56.3	17.1	12.5	46.5	2,311	101.5	132.8	18-24
Portugal	2,180	20.5	1.44	27.7	16.7	...	...	1,993	87.5	114.5	...
Spain	4,380	41.2	3.45	65.2	41.2	10.6	41.0	1,960	86.1	112.6	30
Egypt	480	4.5	.33	6.2	18.2	...	48.0	2,368	104.0	136.1	...
Syria	1,030	9.7	.83	15.7	16.0	...	48.0	2,240	98.4	128.7	...
Turkey	1,330	12.5	.95	18.0	d	44.0	48.0	2,400	105.4	137.9	26
Morocco	740	7.0	.72	13.6	18.1	...	45.0	2,145	94.2	123.3	...
Tunisia	1,120	10.5	.94	17.8	-	...	48.0	2,176	95.6	125.1	...
Argentina	2,230	21.0	2.5	47.3	32.8	15.0	45.0	2,100	92.2	120.7	10
Brazil	1,780	16.7	1.1	20.8	33.6	8.0	45.0	2,077	91.2	119.4	24
Chile	1,690	15.9	1.93	36.5	d	...	45.0	2,152	94.5	123.7	...
Uruguay	2,100	19.8	1.76	33.3	d	...	45.0	2,100	92.2	120.7	...
Honduras	530	5.0	.42	7.9	d	...	44.0	2,240	98.4	128.7	...
Mexico	1,640	15.4	2.49	47.1	24.1	4.0	44.0	2,200	96.6	126.4	10
Hong Kong	3,760	35.4	1.85	35.0	3.2		46.5	2,424	106.5	139.3	6
India	190	1.8	.6	11.34	d	...	48.0	2,232	98.0	128.3	...
Japan	8,810	82.9	4.35	82.2	d	10.4	46.5	2,023	88.8	116.3	15-19
Pakistan	260	2.4	.30	5.7	13.3	...	48.0	2,232	98.0	128.3	...
Singapore	3,830	36.0	.94	17.8	d	22.1	44.0	2,214	97.2	127.2	6
South Korea	1,480	13.9	.78	14.7	...	...	48.0	2,400	105.4	137.1	...
Thailand	590	5.6	.33	6.2	...	7.0	...	...	...	...	5-10

a Gross earnings equals basic wage plus all other payments made to the worker including holiday pay, bonuses (for long service etc) and various allowances (for sickness, meals etc) for a medium sized plant working on a three shift basis. b Firms' taxes and social services payments include payments assessed on labour employed, including payroll taxes and health, social and unemployment insurance. In the table these are given as a percentage of gross earnings. c Labour taxes and social services payments include income tax (calculated after giving consideration to standard allowances and deductions), and social services contributions (mandatory employee contributions for retirement, disability and unemployment insurance and employee contributions). Given as a percentage of gross earnings. d Included in gross earnings.

Sources: Werner International Management Consultants, spring 1980; Union Bank of Switzerland (data quoted in International Textile, Garment and Leather Workers' Federation, 'Employment of Women' - Discussion Document, October 1980); and World Bank Atlas.

Reference: Cable, V. and Baker, B. (1983) "World Textile Trade and Production Trends" EIU Special Report No. 152, London 53

APPENDIX TABLE 69: FIBRE CONSUMPTION AND INCOMES (percaput 1980 logarithmic scales)



Reference: Cable, V. and Baker, B. (1983) "World Textile Trade and Production Trends", EIU Special Report No. 152, London 3

APPENDIX TABLE 70: PER CAPUT FIBRE CONSUMPTION IN SELECTED AREAS

(in kgs)

	Synthetics		Total manmade fibres		Wool		Cotton		All fibres	
	1974	1980	1974	1980	1974	1980	1974	1980	1974	1980
Developed countries	5.3	6.5	7.9	8.6	1.0	1.1	6.4	6.3	15.9	16.6
Developing countries	0.9	1.4	1.3	1.8	0.2	0.2	3.0	3.1	4.5	5.1
EC	5.1	6.3	9.3	8.0	1.3	1.8	5.2	5.9	17.5	16.0
USA	11.2	12.0	15.6	13.6	0.3	0.5	7.7	6.8	23.3	21.0
USSR & Eastern Europe	2.2	3.4	5.2	6.5	1.1	1.2	6.8	6.8	14.6	15.7
Japan	3.7	6.8	6.5	8.7	1.2	0.8	6.7	6.8	14.5	16.5
Africa	0.4	0.5	0.6	0.7	0.1	0.1	1.2	1.1	1.9	1.9
Latin America	1.5	2.1	2.1	2.6	0.2	0.2	2.8	2.8	5.1	5.6
India	0.0	0.2	0.3	0.4	-	-	1.8	1.8	2.1	2.2
China	0.2	0.7	0.3	0.9	0.1	0.2	2.8	3.0	3.2	4.1
East & South East Asia	1.1	1.3	1.2	1.6	0.1	0.1	1.3	1.5	2.5	3.2
World	1.8	2.3	2.7	3.1	0.4	0.4	3.3	3.3	6.6	7.0

Source: FAO.

Reference: Cable, V. and Baker, B. (1983) "World Textile Trade and Production Trends" EIU Special Report No. 152, London 12

APPENDIX TABLE 71: THE GREEK TEXTILE INDUSTRY
(NSSG[1] 1978 census)

Industrial Structure	No. of Companies	%	No. of Employees	%
Manufacturing Industries	128,988	100.0	689,419	100.0
Textile[2]	5,049	3.9	79,218	11.5
Clothing[3]	14,729	11.4	66,636	9.7

Notes: 1 NSSG 30 September 1978 Industry-Handicraft-Commerce-Services Census
2 Industry Group Classification KA23
3 " " " KA243

Source: NSSG

Reference: Epilogi (1983b) "Textile Industry's Outlook Within the Community" 5 378

APPENDIX TABLE 72: THE GREEK TEXTILE INDUSTRY. COMPANIES' SIZE (Ranked by No. of People Employed)
(NSSG[1] 1978 census)

Employment Distribution	Textile[2]	%	Clothing[3]	%
No. of Companies	5,049	100.0	14,729	100.0
No. of Employees up to 4 persons	3,272	64.8	12,506	84.9
" " " 5-9 "	787	15.6	1,119	7.6
" " " 10-19 "	414	8.2	595	4.0
" " " 20-49 "	295	5.8	346	2.4
" " " 50-99 "	117	2.3	99	0.7
" " " 100+ "	164	3.3	64	0.4

Notes: 1 NSSG 30 September 1978 Industry-Handicraft-Commerce-Services Census
2 Industry Group Classification KA23
3 " " " KA243

Source: NSSG

Reference: Epilogi (1983b) "Textile Industry's Outlook Within the Community" 5 379

APPENDIX TABLE 73: EMPLOYMENT DISTRIBUTION IN THE TEXTILES INDUSTRIAL BRANCH COMPARISON WITH THE GREEK MANUFACTURING SECTOR AS A WHOLE (1965-1986)

(Corporations and limited liability companies)

			DISTRIBUTION OF STATISTICAL DATA FIRM-SIZE - EMPLOYED PERSONS			
			(500+)	(100-499)	(2-99)	TOTAL
1965	A1	No. of industrial companies	108	381	788	1,277
	A2	No. of people employed	75,642	71,973	22,035	169,650
	B1	No. of textile companies	16	78	148	242
	B2	No. of people employed	11,691	10,928	8,373	30,992
1975	A1	No. of industrial companies	102	487	956	1,545
	A2	No. of people employed	107,882	103,086	58,443	269,411
	B1	No. of textile companies	20	152	155	327
	B2	No. of people employed	19,323	24,617	9,035	52,975
1980	A1	No. of industrial companies	107	552	2,423	3,082
	A2	No. of people employed	122,500	111,612	85,142	319,254
	B1	No. of textile companies	22	148	254	424
	B2	No. of people employed	24,342	25,385	12,296	62,023
1981	A1	No. of industrial companies	113	548	2,549	3,210
	A2	No. of people employed	130,143	109,567	83,139	322,849
	B1	No. of textile companies	20	154	255	429
	B2	No. of people employed	24,087	30,097	6,652	60,836
1982	A1	No. of Industrial companies	102	506	2,016	2,624
	A2	No. of people employed	120,174	103,221	67,692	291,087
	B1	No. of textile companies	16	119	230	365
	B2	No. of people employed	14,555	26,226	13,023	53,804
1983	A1	No. of industrial companies	103	517	2,214	2,834
	A2	No. of people employed	121,834	106,592	71,508	299,934
	B1	No. of textile companies	15	105	264	384
	B2	No. of people employed	19,812	23,603	12,061	55,476
1984	A1	No. of industrial companies	99	517	2,343	2,959
	A2	No. of people employed	119,462	106,496	73,561	299,519
	B1	No. of textile companies	16	97	281	394
	B2	No. of people employed	20,648	21,243	12,817	54,708
1985	A1	No. of industrial companies	90	495	2,412	2,997
	A2	No. of people employed	110,334	103,603	74,824	288,761
	B1	No. of textile companies	12	82	296	390
	B2	No. of people employed	18,927	19,315	15,660	53,902
1986	A1	No. of industrial companies	89	501	2,620	3,210
	A2	No. of people employed	98,122	103,662	77,816	279,600
	B1	No. of textile companies	11	76	338	425
	B2	No. of people employed	13,061*	18,338	17,574	48,973

Note: * The decrease in the number of employees is due to the diversification of the activities of Piraiki-Patraiki S.A. being transferred to a number of newly established affiliated companies; these companies did not publish a 1986 balance sheet. It should be noted that Piraiki-Patraiki cotton manufacturing S.A. employed 7,161 people in 1985 as compared to 1,770 people in 1986.

Source: Processed data from ICAP Publications.

APPENDIX TABLE 74: THE GREEK TEXTILE INDUSTRY. BREAKDOWN OF THE TEXTILES INDUSTRY GROUP (KA23) RANKED BY ACTIVITY (NSSG[1] 1978 Census)

KA	Textiles Activity Classification	No. of Companies	%	No. of Employees	%
23	Textiles Industry Group	5,049	100.0	79,218	100.0
231	Wool Spinning & Weaving	1,294	25.6	15,450	19.5
232	Cotton Spinning & Weaving	680	13.5	22,898	28.9
233	Rayon and Nylon Spinning & Weaving	157	3.1	3,088	3.9
234	Synthetics other than Nylon Spinning & Weaving	153	3.0	4,802	6.1
235	Jute and Flax Processing	16	0.3	638	0.8
236	Knitting	1,996	39.5	19,075	24.1
237	Dyeing & Finishing	395	7.8	5,359	6.8
238	Treads and Lace Industries	124	2.5	3,363	4.2
239	Various Textiles Industries	234	4.6	4,545	5.7

Note: 1 NSSG 30 September 1978 Industry-Handicraft-Commerce-Services Census

Source: NSSG

Reference: Epilogi (1983b) "Textile Industry's Outlook Within the Community" 5 380

APPENDIX TABLE 75: GDP DEVELOPMENT IN THE TEXTILE INDUSTRY (1980-1987)
(in billion drachmas)
(at constant 1970 prices)

Year	Manufacturing Industry	Textile Industry	Growth Elasticity[1]
	A	B	B as % of A
1980	89.0	15.7	17.6
1981	88.9	16.0	18.0
1982	87.0	14.7	16.9
1983	85.4	14.4	16.9
1984	86.5	14.3	16.5
1985	89.6	14.9	16.6
1986	89.5	15.9	17.8
1987	87.5	16.2	18.5

Note: [1] The ratio of textiles branch rate of change to that for total manufacturing

Source: National Accounts of Greece

Reference: Epilogi (1988n) "Greece National Income: Statistical Series" 10 626

APPENDIX TABLE 76: ANALYSIS OF GREECE's IMPORTS AND EXPORTS OF TEXTILE PRODUCTS (1980-1986)

(in million USD)

	1980	1981	1982	1983	1984	1985	1986
Raw Materials	1,958.6	1,623.6	1,380.2	1,395.8	1,445.5	1,518.7	1,607.4
Wool	84.0	62.2	59.1	47.4	39.1	42.0	22.5*
Cotton & Other Fibres	169.2	131.8	106.2	120.0	120.4	143.0	54.9*
Manufactured Consumer Goods	2,251.8	2,581.6	2,481.6	2,320.3	2,215.2	2,530.3	3,014.8
Yarns & Threads	70.1	85.8	84.1	80.9	94.3	102.4	43.6*
Textile Products	171.0	187.5	237.6	230.4	198.4	241.6	112.8*
TOTAL IMPORTS	10,903.4	11,468.1	10,068.2	9,491.3	9,744.8	10,561.1	10.099.3
Raw and Semi-Processed Materials	125.7	128.7	111.1	138.4	135.4	140.9	122.7
Cotton	24.6	35.9	29.1	48.4	52.6	60.7	10.9*
Manufactures	2,249.5	2,374.3	2,011.1	1,905.7	2,002.9	1,919.2	2,250.8
Textiles	784.6	749.2	706.5	698.7	718.3	731.3	970.1
TOTAL EXPORTS	4,093.9	4,771.3	4,141.3	4,105.4	4,394.0	4,293.1	4,512.5

Note: * January to May 1986

Source: Bank of Greece Publications

APPENDIX TABLE 77: OR. SALIARIS S.A. BLANKET MANUFACTURE. MATERIAL FLOW PROCESS CHART

⇨ Raw materials arrival - fibres in bales -.

(D) approx. 250 kgs a bale; transportation by truck, 68 bales per batch on average
(E) " 225 kgs " " " " " 77 " " " " "
(W) " 500 kgs " " " " " sea container, 25 " " " " "

▽ Storage of each shipment in the Customs House at the port of Thessaloniki

▭ Inspection

(D) & (E) (no. of bales, net weight, fibres' fineness, tensile strength, bulkiness)
(W) (" " " " " " " " " " ,regain, colour)

o Customs clearance of the required no. of bales

⇨ Transportation from the Customs House to the factory premises

▽ Storage of the bales in the raw materials warehouse.

(W) careful selection of the storage location, since temperature and humidity affect the wool fibres quality.

⇨ Transportation of the bales, required for each fibres' blend, to the water press in the dyeing department.

A Dyeing of raw materials (acrylic & wool fibres)

▭ Inspection (fibres' specifications, blend proportions)

o Blending and water pressing of the fibres mixture

(D) 4 batches of approx. 287.5 kgs each. Water temperature ≈ 90°C
(E) 4 " " " 350.0 kgs " " " ≈ 90°C
(W) 4 " " " 225.0 kgs " " " ≈ 60°C

⇨ Transportation of the 4 batches to the dyeing m/c (one transfer every 20 mins approx.)

o Dyeing of the fibres mixture

(D) approx. 1,150 kgs in the lot. Dyeing time 3½ hrs on average
(E) " 1,400 kgs " " " " " 3½ hrs " "
(W) " 900 kgs " " " " " 2⅔ hrs " "

▭ Inspection (colour fastness, light fastness, colour absorption)

⇨ Transportation of the 4 batches to the spin dryer (one transfer every 5 mins approx.)

o Spin drying of the 4 batches (one every 15 mins approx.)

o Thermal drying of the 4 batches (one every 20 mins approx.)

(W) gradual build up of m/c temperature according to the environmental conditions

⇨ Transportation of the 4 dried batches (one transfer every 5 mins approx.)

(D) & (E) transported by means of a crank to the other end of the dyeing department

▭ Inspection

(D) & (E) colour uniformity, bulkiness
(W) " " , " , regain

⇨ Pneumatic transfer of the lot to one of the storing rooms of the dyeing department (Room 1 or 2)

D Possible delays (changes in material flow priorities)

⇨ Pneumatic transfer of the lot to the fearnaught m/c

B <u>Yarn manufacture (acrylic and wool blends)</u>

o Opening, blending and oiling of the material while being processed through the fearnaught m/c

⇨ Pneumatic transfer of the lot to one of the back store rooms in the spinning department (Room 3 or 4)

▽ Storage (approx. 24 hrs)

D Possible delays depending upon:

(i) number of shifts, and/or
(ii) changes in material flow priorities

⇨ Pneumatic transfer of the lot to one of the front store rooms in the spinning department (Room 5 or 6)

▽ Storage (approx. 8 hrs)

D Possible delays depending upon:

(i) number of shifts,
(ii) carding m/c breakdown, or
(iii) changes in material flow priorities

⇨ Pneumatic transfer of the lot to the hopper of the carding m/c

o Carding of the fibres mixture (split up into 144 slubbings, each of 9 ends)

(D) & (E) slubbings of Nm 2.40 count
(W) " " Nm 2.50 "

▭ Inspection (slubbings' regularity)

D Possible delays depending upon:

(i) number of shifts,
(ii) manpower availability, or
(iii) type of material processed

⇨ Transportation of the slubbing rolls to the spinning frames

o Spinning of the carded material. Drafting and twist insertion in the spun yarns. Ring spun yarns of Nm 1/2.70 count.

▭ Inspection (yarn regularity, tensile strength, twist level, count)

⇨ Transportation of the yarn bobbins from the spinning frames to the winding m/c.

D Possible delays depending upon:

(i) winding m/c breakdown, or
(ii) inadequate labour

o Winding of the yarn bobbins into connes (9 bobbins on average make up 1 conne)

▭ Inspection (yarn regularity, tensile strength, hairiness, knots)

o Packaging of every six connes in a plastic bag. Weighing of each bag and attaching the yarns' specifications

(D) average weight of a bag is 23.8 kgs
(E) " " " " " " 25.5 kgs
(W) " " " " " " 34.0 kgs

⇨ Transportation of the bags to the yarn warehouses

▽ Storage (each batch stored separately in the allocated area)

⇨ Transportation of the required no. of bags to the weaving department

C Fabric forming (acrylic and wool blankets)

o Weaving of blankets (woven rolls of approx. 20 pieces each)

▭ Inspection (appropriate design and colour combination, no. of picks per unit length)

⇨ Transportation of the woven blankets' rolls to the mending department

D Possible delays depending upon:

(i) inadequate personnel, and/or
(ii) excessive production

o Mending (correction of various weaving faults)

▭ Inspection (missing weft and/or warp threads, knots, number of blankets in each roll)

⇨ Transportation of the mended rolls of blankets to the finishing department

(D) & (E) acrylic blankets finishing takes place in the Thessaloniki plant
(W) woollen " " " " " " Trikala "

D1 Dralon and Elacryl blankets finishing

D Possible delays (changes in material flow priorities to meet customers' demand)

o Raising of the woven blankets. First passage (batch of 4 rolls)

▭ Inspection (width variability, pile appearance, cloth bulkiness)

o Polishing of the raised blankets' rolls

▭ Inspection (fabric appearance, shininess)

⇨ Transportation of the polished blankets' rolls to the stenter m/c.

o Steam setting in open width; fabrics dimentional stability (batch of 8 rolls)

⇨ (D) Transportation of the dralon blankets' rolls to the raising m/cs.

D (D) Possible delays (changes in material flow priorities)

o (D) Raising of the dralon blankets. Second passage (batch of 4 rolls)

▭ (D) Inspection (width variability, pile appearance, cloth bulkiness)

⇨ (D) Transportation of the dralon blankets' rolls to the stenter m/c.

o (D) Steam setting in open width; fabrics dimentional stability. Final passage (batch of 8 rolls)

⇨ Transportation of the (D) & (E) rolls to the shearing m/c.

o Shearing of the pile at the desired height (various product qualities)

▭ Inspection (fabric appearance, cloth bulkiness, shininess)

⇨ Transportation of the finished rolls for cutting into individual blankets

D2 Woollen blankets finishing

▭ Inspection (no. of blankets in each roll, weight, cloth dimensions, fabric design and colour combinations)

o Scouring and milling of the woollen blankets' rolls (batch of 4 rolls). Total processing time approx. 1½ hrs (scouring, milling, washing, rinsing, squeezing)

⇨ Transportation of the felted rolls from the scouring and milling m/c to the spin drying m/c.

o Mechanical drying of the 4 rolls (one every 6 mins approx.)

⇨ Transportation of the 4 dried rolls from the hydroextractor m/c to the wet raising m/c.

o Wet raising of the woven blankets (each roll processed separately). Raising time approx. 1½ hrs for each roll of woollen blankets

⇨ Transportation of the wet raised rolls to the tenter m/c.

o Thermal drying of the woollen blankets (batch of 8 rolls). Drying time approx. 18 mins for each roll of woollen blankets. Gradual build up of m/c temperature according to the environmental conditions

▭ Inspection (width variability, fabric appearance, cloth bulkiness)

D Possible delays depending upon:

(i) number of shifts,
(ii) man-power availability, or
(iii) changes in material flow priorities

⇨ Transportation of the woollen blankets' rolls to the dry raising m/cs.

o Dry raising of the woven blankets (each roll processed separately). Raising time approx. 3½ hrs for each roll of woollen blankets

▭ Final inspection (blankets' dimensions, weight, pile appearance, cloth bulkiness)

▽ Storage of the finished rolls of woollen blankets (approx. 3 days)

⇨ Transportation of a full truck batch of woollen blankets' rolls from the Trikala finishing plant to the main factory premises at Thessaloniki

E <u>Acrylic and woollen blankets end-finishing</u>

▭ Inspection (blankets' dimensions, weight, detection of possible finishing faults)

D Possible delays (changes in material flow priorities)

o Cutting of the rolls into separate blankets

⇨ Transportation of the blankets to the end-finishing department

D Possible delays depending upon:

(i) sewing m/cs breakdown,
(ii) inadequate labour, and/or
(iii) non-availability of the required ribbons, labels, or bags

▭ Inspection (product type and quality, materials specifications)

o Sewing of the appropriate colour and quality ribbon around the perimeter of each blanket, and the necessary label regarding the blanket's use instructions

▭ Inspection (final stage of quality control prior to folding and packaging)

o Folding each blanket and placing it into each own plastic bag

▭ Inspection (blankets of the same product quality/design/colour combination are assembled in order to be packed in the appropriate carton boxes)

o Packaging of blankets into boxes.

Extra-double, double and single blankets	:	5 pieces per box
Teenager blankets	:	8 " " "
Baby blankets	:	20 " " "

⇨ Transportation of the boxes to the finished goods warehouses

▽ Storage (each product quality/design/colour combination box in the allocated area)

▭ Inspection (storage and allocation of finished goods)

o Assembly of the required boxes to fill a customer's order

⇨ Transportation of the gathered boxes to the lorries for despatch

o Despatch of the customers' orders

Notes: (D) Dralon
(E) Elacryl
(W) Wool

APPENDIX TABLE 78: VALUE BREAKDOWN OF STOCKS AT COMPANY LEVEL AS AT 31st DECEMBER (1978-1987)

(Financial data in million drachmas)

OR. SALIARIS S.A.
BLANKET MANUFACTURE

VALUE BREAKDOWN OF STOCKS

	1978		1979		1980		1981		1982		1983		1984		1985		1986		1987	
	Value	%	Value	%	Value	%	Value	%	Value	%	Value	%	Value	%	Value	%	Value	%	Value	%
Raw Materials	6.991	16.8	12.266	20.9	19.000	21.9	20.931	17.3	15.812	10.4	3.587	2.4	5.253	3.7	2.133	1.7	0.302	0.3	0.337	0.7
Yarns	13.025	31.3	15.762	26.9	21.970	25.3	25.061	20.6	34.003	22.3	32.740	22.4	22.930	16.1	32.190	25.6	14.598	16.2	8.826	16.9
Work in Progress	1.331	3.2	0.203	0.3	2.080	2.4	8.357	6.9	7.158	4.7	7.839	5.4	11.059	7.8	11.616	9.3	9.389	10.5	2.767	5.3
Finished Goods	13.152	31.6	20.668	35.2	27.862	32.0	51.300	42.3	74.801	49.1	84.406	57.8	81.407	57.3	50.139	40.0	35.222	39.2	24.219	46.3
Group I Total	34.499	82.9	48.899	83.3	70.912	81.6	105.649	87.1	131.774	86.5	128.572	88.0	120.649	84.9	96.078	76.6	59.511	66.2	36.149	69.2
Process Additives	4.165	10.0	4.591	7.9	11.335	13.1	8.107	6.7	11.421	7.5	8.719	6.0	9.267	6.5	11.104	8.8	6.660	7.5	5.557	10.6
Packaging Materials	0.722	1.7	1.312	2.2	2.036	2.3	3.784	3.1	3.352	2.2	2.028	1.4	1.682	1.2	1.733	1.4	0.988	1.1	0.651	1.3
Articles of Commerce	0.381	0.9	0.370	0.6	0.308	0.3	0.400	0.4	1.617	1.1	1.232	0.8	0.994	0.7	0.384	0.3	0.379	0.4	0.157	0.3
Process Waste	0.485	1.2	0.631	1.1	0.736	0.8	1.007	0.8	1.148	0.8	1.148	0.8	2.110	1.5	2.265	1.8	0.632	0.7	1.550	3.0
Ex-Factory Stocks	0.942	2.3	2.193	3.7	1.562	1.8	2.248	1.9	2.962	1.9	4.401	3.0	7.456	5.2	13.918	11.1	21.699	24.1	8.161	15.6
Other Stocks	0.421	1.0	0.688	1.2	0.049	0.1	0.049	0.0	0.049	0.0	-	-	-	-	-	-	-	-	-	-
Group II Total	7.116	17.1	9.785	16.7	16.026	18.4	15.595	12.9	20.549	13.5	17.528	12.0	21.509	15.1	29.404	23.4	30.358	33.8	16.076	30.8
AGGREGATED TOTAL	41.615	100.0	58.684	100.0	86.938	100.0	121.244	100.0	152.323	100.0	146.100	100.0	142.158	100.0	125.482	100.0	89.869	100.0	52.225	100.0

APPENDIX TABLE 79: OR. SALIARIS S.A. BLANKET MANUFACTURE. VOLUME BREAKDOWN OF STOCKS* AT COMPANY LEVEL as at 31st DECEMBER (1978-1987)

(in number of units)

	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987
Raw Materials (kgs.)	101,046	139,680	131,764	140,157	87,613	17,156	20,424	4,158	422	520
Yarns (kgs.)	115,865	131,210	135,913	139,003	148,976	94,024	47,607	12,212	23,803	12,932
Work in Progress (kgs.)	9,895	4,945	10,509	19,206	13,615	12,352	16,997	14,506	9,748	2,853
Finished Goods (pcs.)	33,484	46,720	64,925	82,396	84,421	67,232	43,109	24,928	16,008	10,755

Note: * Stocks: Group I alone. Major inventories at company level as classified in Appendix Table 78

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APPENDIX TABLE 80A: YARNS INVENTORY LEVELS (PRINT-OUT)
(Plastic bags of 6 connes)

Product Quality	Yarn Count	Yarns Inventory Breakdown		
		Colour Shade	Plastic Bags (No.)	Weight (kgs.)
Dralon	1/2.70	Brown	49	1,136
"	"	Tamba	54	1,388
"	"	Dore	68	1,700
"	"	Chocolate Light	22	563
"	"	Teza Dark	44	1,320
"	"	Teza	131	3,050
"	"	Beige Dark	74	1,850
"	"	Beige Light	-	-
"	"	Green Dark	6	138
"	"	Olive Dark	52	1,248
"	"	Olive	39	1,010
"	"	Olive Light	64	1,560
"	"	Raton Dark	12	302
"	"	Mantzana	76	1,757
"	"	Mantzana Light	16	394
"	"	Ambar	18	450
"	"	Grena	33	858
"	"	Pink	-	-
"	"	Azzuro	19	414
"	"	Grey Blue	82	1,928
"	"	Plomo	103	2,570
"	"	Honey	11	264
"	"	Apricot	40	850
"	"	White	7	182
"	"	Creamy White	45	1,035
"	"	* Creamy White Dark	11	260
"	"	Cream	128	3,200
"	"	* Sugar	49	1,495
		Total Dralon Yarns:	1,253	30,922
		Total No. in Column:	1,253	30,922

Note: * Withdrawn colour shades

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APPENDIX TABLE 80B: YARNS INVENTORY LEVELS (PRINT-OUT)
(Plastic bags of 6 connes)

Product Quality	Yarn Count	Yarns Inventory Breakdown: Colour Shade	Plastic Bags (No.)	Weight (kgs.)
Elacryl	1/2.70	Brown	48	1,248
"	"	Tamba	-	-
"	"	Dore	75	2,070
"	"	* Chocolate	-	-
"	"	* Mocca	-	-
"	"	Beige	18	453
"	"	Green Dark	32	832
"	"	Olive Dark	10	267
"	"	Olive	49	1,191
"	"	Mantzana	32	928
"	"	Ambar	-	-
"	"	Grena	20	500
"	"	* Pink Light	-	-
"	"	Pink	25	650
"	"	Fuxia	-	-
"	"	Azzuro	33	844
"	"	Grey Blue	5	134
"	"	Light Blue	27	730
"	"	Honey	31	763
"	"	Apricot	40	1,080
"	"	White	-	-
"	"	Creamy White	66	1,716
"	"	Cream	65	1,690
		Total Elacryl Yarns:	576	15,096
Mantacryl	1/2.70	Brown	-	-
"	"	Beige	30	969
"	"	Green	12	288
"	"	Grena	16	728
"	"	Grey	-	-
"	"	Yellow	20	450
"	"	White	-	-
		Total Mantacryl Yarns:	78	2,435

continued

Woollen	1/2.70	Tamba	25	835
"	"	Tamba Light	-	-
"	"	Beige	31	1,029
"	"	Beige Light	6	210
"	"	Green	-	-
"	"	Mantzana	4	136
"	"	Pistachio-Nut	-	-
"	"	Pink	8	288
"	"	Pink Light	-	-
"	"	Fuxia	-	-
"	"	Souri	-	-
"	"	Souri Light	-	-
"	"	Light Blue	-	-
"	"	Plomo	16	544
"	"	Apricot	-	-
"	"	White	-	-
		Total Woollen Yarns:	90	3,042
		Total No. in Column:	744	20,573
		Total Inventory Volume:	1,997	51,495

Note: * Withdrawn colour shades

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APPENDIX TABLE 81A: OUT OF COLLECTION YARNS
INVENTORY LEVELS (PRINT-OUT)
(Plastic bags of 6 connes)

Product Quality	Yarn Count	Colour Shade	As at: 30/11 Plastic Bags (no.)	Weight (kgs.)	Weeks (December) 1 1 - 7	2 8 - 14	3 15 - 21	4 22 - 31
Dralon	1/3.30	Brown	17	353	-	-	-	-
"	"	Mocca	21	437	437	333	333	333
"	"	Beige	87	1,807	1,620	1,620	1,620	1,549
"	"	Green Dark	-	-	-	-	-	-
"	"	Green	-	-	-	-	-	-
"	"	Olive	25	519	457	457	457	436
"	"	Olive Light	78	1,620	1,620	1,620	1,620	1,620
"	"	Veraman	2	42	-	-	-	-
"	"	Grena	-	-	-	-	-	-
"	"	Grey Blue	-	-	-	-	-	-
"	"	Navy Blue	-	-	-	-	-	-
"	"	Light Blue	4	82	82	82	82	82
"	"	White	-	-	-	-	-	-
		Total 1/3.30 Dralon Yarns	234	4,860	4,216	4,112	4,112	4,020
Dralon	1/2.70	Chocolate	14	282	282	282	282	282
"	"	Beige Dark	65	1,309	1,309	1,208	1,208	1,208
"	"	Green Dark	18	362	362	362	362	362
"	"	Green	6	121	121	121	121	121
"	"	Macrilona	3	60	-	-	-	-
"	"	Grena	-	-	-	-	-	-
"	"	Fuxia	5	101	81	81	60	60
"	"	Malva	6	121	121	121	121	121
"	"	Lila	5	103	103	103	103	85
"	"	Orange	18	361	361	361	361	361
"	"	Orange (Vestan)	-	-	-	-	-	-
		Total 1/2.70 Dralon Yarns	140	2,820	2,740	2,639	2,618	2,600
		Total No. in Column	374	7,680	6,956	6,751	6,730	6,620

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APPENDIX TABLE 81B: OUT OF COLLECTION YARNS INVENTORY LEVELS (PRINT-OUT)

(Plastic bags of 6 connes)

Product Quality	Yarn Count	Colour Shade	As at: 30/11 Plastic Bags (no.)	Weight (kgs.)	Weeks (December) 1 1 - 7	2 8 - 14	3 15 - 21	4 22 - 31
Dralon	2/3.30	Brown	12	241	241	241	160	160
"	"	Beige	7	140	140	140	140	140
"	"	Green	4	85	85	-	-	-
"	"	Grena	5	94	94	-	-	-
		Total 2/3.30 Dralon Yarns	28	560	560	381	300	300
Elacryl	1/2.70	Mocca	26	580	580	468	468	468
"	"	Chocolate	23	400	332	332	332	332
		Total 1/2.70 Elacryl Yarns	49	980	912	800	800	800
Alpaca	1/2.70	Black	13	260	-	-	-	-
		Total 1/2.70 Alpaca Yarns	13	260	-	-	-	-
Woollen	1/2.70	Brown	30	663	663	663	663	663
"	"	Azzuro	6	57	57	57	57	57
		Total 1/2.70 Woollen Yarns	36	720	720	720	720	720
Mantawool	1/2.40	Grey	29	628	628	628	628	628
"	"	White	15	252	252	252	252	252
		Total 1/2.40 Mantawool Yarns	44	880	880	880	880	880
		Total No. in Column	170	3,400	3,072	2,781	2,700	2,700
		Total Inventory Volume	544	11,080	10,028	9,532	9,430	9,320

APPENDIX TABLE 82A: 1983-1986 COLOUR SHADES COLLECTIONS. THE ACRYLIC YARNS.

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BLANKET MANUFACTURE

1983-1986 COLOUR SHADES COLLECTIONS. THE ACRYLIC YARNS

Colour Groupings	1983-1984 COLLECTION Serial No.	Code No.	Colour Shades	1984-1985 COLLECTION Serial No.	Code No.	Colour Shades	1985-1986 COLLECTION Serial No.	Code No.	Colour Shades
BROWN	1	225	Brown (D)						
	2	125	Brown (E)						
	3	218	Tamba (D)	1	218	Tamba (D)	1	218	Tamba
	4	118	Tamba (E)	2	118	Tamba (E)			
	5	220	Dore (D)	3	220	Dore (D)			
	6	210	Dore (E)	4	120	Dore (E)	2	120	Dore
	7	214	Chocolate Light (D)	5	214	Chocolate Light (D)			
	8	265	Teza Dark (D)	6	265	Teza Dark (D)			
	9	210	Teza (D)	7	210	Teza (D)			
	10	209	Beige Dark (D)						
	11	209A	Beige Light (D)						
	12	107	Beige (E)						
							3	230	Beige
GREEN	13	258	Green Dark (D)						
	14	158	Green Dark (E)						
	15	259A	Olive Dark (D)	8	259A	Olive Dark (D)			
	16	159A	Olive Dark (E)						
	17	253	Olive (D)						
	18	153	Olive (E)	9	153	Olive (E)	4	153	Olive
	19	226	Olive Light (D)						
	20	260	Raton Dark (D)						
	21	260B	Mantzana (D)	10	260B	Mantzana (D)			
	22	160B	Mantzana (E)	11	160B	Mantzana (E)			
	23	260A	Mantzana Light (D)						
							5	270	Green
							6	280	Olive Light
							7	290	Pistachio-Nut
RED	24	243	Ambar (D)	12	243	Ambar (D)			
	25	143	Ambar (E)						
	26	240	Grena (D)						
	27	140	Grena (E)						
	28	238	Pink (D)						
	29	138	Pink Light (E)						
	30	136	Pink (E)	13	136	Pink (E)	8	136	Pink
	31	147	Fuxia (E)	14	147	Fuxia (E)			
				15	148	Fuxia Dark (E)			
							9	295	Cherry Dark
							10	150	Rose Light
BLUE	32	234	Azzuro (D)						
	33	134	Azzuro (E)	16	134	Azzuro (E)			
	34	233	Grey Blue (D)	17	233	Grey Blue (D)			
	35	133	Grey Blue (D)						
	36	131	Light Blue (E)	18	131	Light Blue (E)			
	37	230	Plomo (D)						
							11	140	Petrol
							12	250	Grey Blue
							13	135	Light Blue
OTHERS	38	116	Honey (E)						
	39	115	Apricot (E)	19	115	Apricot (E)			
	40	235	Apricot (D)						
	41	100	White (E)	20	100	White (E)	14	100	White
	42	200	White (D)						
	43	104	Creamy White (E)						
	44	204	Creamy White (D)	21	204	Creamy White (D)			
	45	266	Creamy White Dark(D)						
	46	203	Cream (D)	22	203	Cream (D)	15	103	Cream
	47	103	Cream (E)	23	103	Cream (E)			
							16	125	Gold
							17	260	Sahara

Note: (D) Dralon yarns' colour shade
(E) Elacryl " " "

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APPENDIX TABLE 82B: 1983-1986 COLOUR SHADES COLLECTIONS. THE WOOLLEN YARNS

Colour Groupings	1983-1984 COLLECTION			1984-1985 COLLECTION			1985-1986 COLLECTION		
	Serial No.	Code No.	Colour Shades	Serial No.	Code No.	Colour Shades	Serial No.	Code No.	Colour Shades
BROWN	1	318	Tamba	1	318	Tamba			
	2	319	Tamba Light	2	319	Tamba Light			
	3	307	Beige	3	307	Beige			
	4	309A	Beige Light						
							1	310	Tamba
							2	320	Beige
GREEN	5	380	Green	4	380	Green			
	6	360B	Mantzana	5	360B	Mantzana	3	360B	Mantzana
	7	340	Pistachio-Nut	6	340	Pistachio-Nut	4	340	Pistachio-Nut
							5	390	Green
							6	395	Green Light
RED	8	338	Pink	7	338	Pink			
	9	336	Pink Light	8	336	Pink Light			
	10	347	Fuxia	9	347	Fuxia			
							7	325	Fuxia
							8	335	Rose Light
BLUE	11	370	Souri	10	370	Souri	9	370	Souri
	12	371	Souri Light	11	371	Souri Light			
	13	331	Light Blue	12	331	Light Blue			
	14	330	Plomo						
							10	380	Bright Blue
							11	345	Lila
OTHERS	15	315	Apricot	13	315	Apricot	12	315	Apricot
	16	300	White	14	300	White	13	300	White
							14	350	Cream

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APPENDIX TABLE 83A: YARNS INVENTORY LEVELS (PRINT-OUT)
(Plastic bags of 6 connes)

Product Quality	Yarn Count	Yarns Inventory Breakdown		
		Colour Shade	Plastic Bags (No.)	Weight (kgs.)
Dralon	1/2.70	Tamba	7	171.5
"	"	Dore	6	150.6
"	"	Chocolate Light	31	815.3
"	"	Teza Dark	47	1,071.6
"	"	Teza	26	631.8
"	"	Olive Dark	28	700.0
"	"	Mantzana	-	-
"	"	Ambar	9	216.0
"	"	Grey-Blue	9	204.3
"	"	Creamy White	15	360.0
"	"	Cream	26	639.6
		Total Dralon Yarns:	204	4,960.7
Elacryl	1/2.70	Tamba	-	-
"	"	Dore	5	140.5
"	"	Olive	35	892.5
"	"	Pink	4	100.4
"	"	Fuxia	41	1,012.7
"	"	Azzuro	23	630.2
"	"	Light Blue	3	71.4
"	"	Apricot	36	975.6
"	"	White	13	326.3
"	"	Cream	-	-
		Total Elacryl Yarns:	160	4,149.6
		Total No. in Column:	364	9,110.3

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APPENDIX TABLE 83B: YARNS INVENTORY LEVELS (PRINT-OUT)
(Plastic bags of 6 connes)

Product Quality	Yarn Count	Yarns Inventory Breakdown: Colour Shade	Plastic Bags (No.)	Weight (kgs.)
Mantacryl	1/2.70	Brown	11	290.4
"	"	Beige	-	-
"	"	Green	-	-
"	"	Grena	-	-
"	"	Yellow	-	-
"	"	White	-	-
		Total Mantacryl Yarns:	11	290.4
Woollen	1/2.70	* Tamba	-	-
"	"	Tamba Light	13	421.2
"	"	Beige	9	321.3
"	"	* Green	-	-
"	"	Green Light	10	340.0
"	"	Mantzana	6	190.2
"	"	Pistachio-Nut	29	982.2
"	"	* Pink	-	-
"	"	Pink Light	23	816.5
"	"	Fuxia	20	702.0
"	"	Souri	25	832.5
"	"	* Souri Light	-	-
"	"	Light Blue	35	1,183.0
"	"	* Plomo	-	-
"	"	Apricot	20	672.5
"	"	White	11	420.2
		Total Woollen Yarns:	201	6,881.6
Mantawool	1/2.70	Brown	-	-
"	"	Green	5	150.5
"	"	Red	12	398.2
"	"	Azzuro	11	353.1
"	"	Grey	26	793.0
"	"	White	2	61.2
		Total Mantawool Yarns:	56	1,756.0
		Total No. in Column:	268	8,928.0
		Total Inventory Volume:	632	18,038.3

Note: * Withdrawn colour shades

APPENDIX TABLE 84A: FINISHED GOODS INVENTORY LEVELS (PRINT-OUT)

(Carton boxes of 5, 8 and 20 pieces)

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FINISHED GOODS INVENTORY LEVELS (PRINT-OUT)

Product Quality	Designs	*	**	COLOUR COMBINATIONS 1	2	3	4	5	7	8	15	18	24	26	31	50	55	56	68	69	81	83	84	86	89	154	Carton Boxes	Pieces
Elacryl Double	134		2		25					3	17		1	38		49		18									153	765
" "	138				39					4	48			25		39		24									179	895
" "	148				58									43		31		51									183	915
" "	155					14	70																				84	420
" "	163	*																			143	54	4				201	1,005
" "	710				4						11			29		3		10									57	285
" "	720										7			31		20											58	290
Elacryl Single	127	*	3											2		107											112	560
" "	134	*	7		20						29			17		53											126	630
" "	142	*	2		10											23		2									37	185
" "	148				37									46		24		16									123	615
" "	155			23		35	59																				117	585
" "	163	*																						1			1	5
" "	210	*	6																							24	30	150
" "																												
" "																												
Elacryl Teenager	75				6				40					96			35	44									220	1,760
" "																												
Elacryl Baby	33															5		3	11								19	380
" "	35				2		10									3											15	300
" "	37															16		14	16	18							64	1,280
" "	40														14	17		9									40	800
" "	50														11	10		12									33	660
" "																												
Mantacryl Double	120		3					31																			34	170
" "	124	*	4																								4	20
" "	125							4																			4	20
Mantacryl Single	125		1					76									85	10									172	860
" "	144	*	2								2																4	20
Total No. In Column:																											2,070	13,575

No. of Defectives (Boxes)	30
No. of Defectives (Pieces)	150

APPENDIX TABLE 84B: FINISHED GOODS INVENTORY LEVELS (PRINT-OUT)

(Carton boxes of 5 pieces)

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FINISHED GOODS INVENTORY LEVELS (PRINT-OUT)

Product Quality	Designs	*	**	COLOUR COMBINATIONS 150	156	301	302	304	306	307	308	310	313	314	315	318	324	329	330	336	350	353	356	Cream	White	Carton Boxes	Pieces
Superfil	2030						30															82				112	560
"	2090										10		9													19	95
"	Double Face									2		1	7		7		8	2	4					7	3	41	205
"	Various		129																							129	645

Product Quality	Designs	*	**	101	102	104	105	106	107	108	109	110	113	114	115	116	118	119	124	126	129	130	131	136	150	151	156	Cream	Carton Boxes	Pieces
Dralon Double	151	*			30					5		20						25				31			19				130	650
" "	152				15					26			7	21					32					36	49				186	930
" "	157	*				17																1							18	90
" "	161				10															14						8			32	160
" "	162	*								16							42		6			8		6					78	390
" "	166	*						29		4			31									15		1					80	400
" "	167									15				17			61					14		34			17		158	790
" "	168	*				1	8																						9	45
" "	169A	*				48		75			14				9														146	730
" "	169B	*				50		96			29				30					29									234	1,170
" "	171	*												2											152		53		207	1,035
" "	175	*																									21		21	105
" "	178	*					20			2									20			36		11	4				93	465
" "	180					48				16									30			33		25					152	760
" "	187					70		31		35		35	36			30		9	15			17							278	1,390
" "	189					17				36			3			2			16					12					86	430
" "	194	*		26						22			6						33			22		4					113	565
" "	198															31	22		44			61		32					190	950
" "	199	*				55								3															58	290
" "	810					13				7			14									15		18					67	335
" "	820					31				27			23											11					92	460
" "	Double Face					4	3						1	8	8						2	16		9	2			23	76	380
" "	Various		50																										50	250

No. of Defectives (Boxes)	179	Total No. In Column:	2,855 14,275
No. of Defectives (Pieces)	895		

APPENDIX TABLE 84C: FINISHED GOODS INVENTORY LEVELS (PRINT-OUT)

(Carton boxes of 5 pieces)

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FINISHED GOODS INVENTORY LEVELS (PRINT-OUT)

Product Quality	Designs	*	**	COLOUR COMBINATIONS 101	102	104	105	106	107	108	109	110	113	114	115	116	118	119	124	126	129	130	131	136	150	151	156	Cream	White	Carton Boxes	Pieces
Dralon Single	310														18		65							30			19			132	660
" "	315	*													27		60							20			112			219	1,095
" "	151	*			13										1										9					23	115
" "	152				33					14			16						29			12		45	55					204	1,020
" "	161				7															42						27				76	380
" "	166	*				38				28		12	30						22			10								140	700
" "	167									16		22		33			27					37		16			38			189	945
" "	168	*																						9						9	45
" "	169B	*				54		70			10				22															156	780
" "	180					54				32		9							22			10		66						193	965
" "	191	*			6																									6	30
" "	194			2						24			24						29			15		16						110	550
" "	195				15				62		5																			82	410
" "	198															12	37		2			16		61						128	640
" "	Double Face					7	23				4	2	9	3	12			1	8		1	9					7	15	5	106	530
" "	Various		158																											158	790

Product Quality	Designs	*	**	150	156	301	302	304	306	307	308	310	313	314	315	318	324	329	330	336	350	353	356	Cream	White	Carton Boxes	Pieces
Velour	5120										25			4			13		12							54	270
"	5130							35					38				6		18	18						115	575
"	5145							41			31		32	1			2		34	29						170	850
"	5150							8			16		9						14	24						71	355
"	5160												1				4									5	25
"	5166																				4		15			19	95
"	5190							12	11		49		15				19		31	21						158	790
"	Double Face							1			2	3	3	1												10	50
"	Various		135																							135	675

No. of Defectives (Boxes)	293	Total No. In Column:	2,668 13,340
No. of Defectives (Pieces)	1,465		

APPENDIX TABLE 84D: FINISHED GOODS INVENTORY LEVELS (PRINT-OUT)

(Carton boxes of 5, 8 and 20 pieces)

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FINISHED GOODS INVENTORY LEVELS (PRINT-OUT)

Product Quality	Designs	*	**	COLOUR COMBINATIONS 302	305	308	314	318	319	320	336	352	356	368	369	Cream	White	Carton Boxes	Pieces
Nobel	607			10				14					14			32	82	152	760
"																			
"																			
"																			
"																			
"																			

Product Quality	Designs	*	**	302	303	304	308	314	318	319	320	321	356	368	369		
Woollen Venus Double	5020															-	-
" " "	5095										2	5	1			8	40
" " "	5150						6	8		12	30					56	280
" " "	5180							10			7		4			21	105
" " "	5190					6		7			23	3	13			52	260
" " "	5198										10					10	50
" " "	Various		80													80	400
Woollen Venus Single	5198					12						4	3			19	95
" " "																	
Woollen Teenager	75															-	-
" "																	
Woollen Baby	33															-	-
" "	37															-	-
" "																	
Woollen Stamped Double	510															-	-
" " "	520															-	-
" " "																	
" " "																	

Total No. in Column:	398	1,990
Total Inventory Volume:	7,991	43,180

No. of Defectives (Boxes)	80
No. of Defectives (Pieces)	400

Notes: * Withdrawn designs
** Defectives

APPENDIX TABLE 85: 1984-1985 DESIGNS AND COLOUR COMBINATIONS COLLECTION

OR. SALIARIS S.A.
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1984-1985 DESIGNS AND COLOUR COMBINATIONS COLLECTION

Quality		Designs	Size	Colour Combinations
Velour		5120	E/D	308 314 318 324 330
"		5145	E/D	304 308 313 330 336
"		5150	E/D	304 308 313 330 336
"	New Design	6010	E/D	308 318 324 330 336
Superfil		2030	E/D	301 302 315 353
"		2090	E/D	308 313 318 330
Dralon		180	D & S	104 108 124 130 136
"		187	D	104 108 113 124 130
"		189	D	104 108 116 124 130 136
"		198	D & S	118 124 130 136
"		820	D	104 108 113 130 136
"	New Design	830	D	108 114 118 124 130 136
"	New Design	840	D	" " " " " "
"		310	D & S	115 118 136 156
Elacryl		134	D & S	2 15 26 50 56
"		710	D	2 15 26 50 56
"		720	D & S	2 15 26 50 56
"	New Design	730	D	14 18 26 15 56
"	New Design	740	D	14 15 18 26 56
"		148	S	2 26 50 56
Elacryl Baby		33	bebè	31 50 56 68 69
" "		35	bebè	1 2 4 5 6
" "		37	bebè	31 50 56 68 69
Elacryl Teenager		75	teens	2 18 26 55 56
Mantacryl		120	D	5 55 56
"		125	D & S	5 55 56
Woollen Venus		5150	E/D	303 308 314 320 323 356 368 369
" "		5190	E/D	" " " " " " " "
" "		5198	E/D & S	" " " " " " " "
" "	New Design	7010	E/D	" " " " " " " "
" "		161	E/D & S	303 314 323
" "		163	E/D & S	83 88 89
Woollen Baby		33	bebè	320 356 368 369
" "		37	bebè	" " " "
Woollen Teenager		75	teens	320 356 368 369
Woollen Stamped	White Background	520	E/D	305 308 336 352
" "	Coloured "	520	E/D	" " " "
" "	White "	530	E/D	305 308 336 352
" "	Coloured "	530	E/D	" " " "
Nobel Acrylic		607	D	302 318 356 368 369
Nobel Woollen		607	D	302 308 323 336 369
Fiorella		20	D	Cream White
Woollen Star		162	D	303 320 323 368 369 356
" "		168	D	" " " " " "
" "		175	D	" " " " " "
" "		198	D	" " " " " "

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APPENDIX TABLE 86A: FINISHED GOODS INVENTORY LEVELS (PRINT-OUT)

(Carton boxes of 5, 8 and 20 pieces)

Product Quality	Designs	Colour Combinations 2	7	13	14	15	18	26	50	56	Carton Boxes	Pieces
Elacryl Double	134	13				20		29	42	2	106	530
" "	710	30	4			18		38	41		131	655
" "	720	3		9		37		19	49	12	129	645
" "	730				3	23	5	5			36	180
" "	740				10	11	39				60	300
" "												
" "												
		Total Elacryl Double:									462	2,310

Product Quality	Designs	2	7	13	14	15	18	26	50	56		
Elacryl Single	134	19		9		30		6	17	15	96	480
" "	148			4				11	1		16	80
" "	720	18								2	20	100
" "												
		Total Elacryl Single:									132	660

Product Quality	Designs	2	7	18	26	55	56					
Elacryl Teenager	75		20	37	14		27				98	784
" "												
		Total Elacryl Teenager:									98	784

Product Quality	Designs	1	2	4	5	6	8	31	50	56	68	69		
Elacryl Baby	33						2	13	20	4	1	2	42	840
" "	35	10	3	10		2							25	500
" "	37								31	29	7	2	69	1,380
" "														
" "														
		Total Elacryl Baby:											136	2,720
		Total No. in column:											828	6,474

Elacryl Double: Carton boxes of 5 pieces
" Single: " " " 5 "
" Teenager: " " " 8 "
" Baby: " " " 20 "

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APPENDIX TABLE 86B: FINISHED GOODS INVENTORY LEVELS (PRINT-OUT)

(Carton boxes of 5 pieces)

Product Quality	Des.	Colour Combinations 104	106	108	113	114	116	118	124	130	136	168	Carton Boxes	Pieces
Dralon Double	180	25		9					11	20	1		66	330
" "	187	8			5				5	17			35	175
" "	189	57							2	39	1		99	495
" "	198							61	1	27	4		93	465
" "	820	49	16	21	66		3			18	8		181	905
" "	830			3		6		22	22	29	19		101	505
" "	840							15	1	16		4	36	180
" "														
" "														
		Total Dralon Double:											611	3,055

Product Quality	Des.	104	108	110	115	118	124	130	136	156		
Dralon Single	180	7	17	1			10	8	30		73	365
" "	198					8		3	38		49	245
" "	310				30	36				32	98	490
" "												
		Total Dralon Single:									220	1,100

Product Quality	Des.	5	26	55	56		
Mantacryl Double	120	12		30	42	84	420
" "	125	12	3		40	55	275
" "							
		Total Mantacryl Double:				139	695

Product Quality	Des.	5	55	56		
Mantacryl Single	125		55	4	59	295
" "						
		Total Mantacryl Single:			59	295
		Total No. in column:			1,029	5,145

Dralon Double: Carton boxes of 5 pieces
" Single: " " " 5 "
Mantacryl Double: " " " 5 "
" Single: " " " 5 "

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APPENDIX TABLE 86C: FINISHED GOODS INVENTORY LEVELS (PRINT-OUT)

(Carton boxes of 5 pieces)

Product Quality	Des.	Colour Combinations								Carton Boxes	Pieces
		301	302	308	313	315	318	330	353		
Superfil	2030	91	41			2			26	160	800
"	2090			2	2		10	15		29	145
"											
								Total Superfil:		189	945
Product Quality	Des.	304	308	313	314	318	324	330	336		
Velour	5120		28		14	24	15	21		102	510
"	5145	66	20	27				16	7	136	680
"	5150	77	13	75				38	11	214	1,070
"	6010			16		28	12	13	11	80	400
"											
								Total Velour:		532	2,660
Product Quality	Des.										
Imperial	880									-	-
"											
								Total Imperial:		-	-
Product Quality	Des.	Cream		White							
Fiorella	20	28		29							
								Total Fiorella:		57	285
Product Quality	Des.	302	318	356	368	369	Cream		White		
Nobel (Acrylic)	607	13	2	25	17	17	41		22	137	685
								Total Nobel (Acrylic):		137	685
Product Quality	Des.	302	303	308	323	336	368	369	Various		
Nobel (Woollen)*	607				2		2	2	5	11	55
" "											
								Total Nobel (Woollen):		11	55
								Total No. in column:		926	4,630

Superfil: Carton boxes of 5 pieces
Velour: " " " 5 "
Imperial: " " " 5 "
Fiorella: " " " 5 "
Nobel (Acrylic): " " " 5 "
Nobel (Woollen): " " " 5 "

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APPENDIX TABLE 86D: FINISHED GOODS INVENTORY LEVELS (PRINT-OUT)

(Carton boxes of 5, 8 and 20 pieces)

Product Quality	Des.	Colour Combinations 81	86	88	303	308	314	320	323	356	368	369	Carton Boxes	Pieces
Woollen Venus E/D	161				21		7		3		7	7	45	225
" " "	163	10	8	5									23	115
" " "	5150				2		16	13		9	14	4	58	290
" " "	5190				2		2	48	1	10	3	2	68	340
" " "	5198				8		19	16		17	13	4	77	385
" " "	7010				2			1		9		4	16	80
" " "														
		Total Woollen Venus E/Double:											287	1,435
Product Quality	Des.	303	304	308	314	320	323	356	368	369				
Woollen Venus S	161												-	-
" " "	5198	3	14		2	7		3	2	3			34	170
		Total Woollen Venus Single:											34	170
Product Quality	Des.	303	320	323	368	369	356							
Woollen Star D	162	7	4	3	4	5	6						29	145
" " "	168	6	1		4		4						15	75
" " "	175	6	7	4	4	4	3						28	140
" " "	198				4		3						7	35
		Total Woollen Star Double:											79	395
Product Quality	Des.	320	356	368	369									
Woollen Teenager	75	5											5	40
		Total Woollen Teenager:											5	40
Product Quality	Des.	320	356	368	369									
Woollen Baby	33		4	1									5	100
" "	37	2	7	7	2								18	360
		Total Woollen Baby:											23	460
		Total No. in column:											428	2,500

Woollen Venus Double: Carton boxes of 5 pieces
" " Single: " " " 5 "
" Star Double: " " " 5 "
Woollen Teenager: " " " 8 "
Woollen Baby: " " " 20 "

Note: E/D = Extra-double; D = Double; S = Single

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APPENDIX TABLE 86E: FINISHED GOODS INVENTORY LEVELS (PRINT-OUT)

(Carton boxes of 5 pieces)

Product Quality	Des.	Colour Combinations 305	308	336	352	Various	Carton Boxes	Pieces
Woollen Stamped Double								
(i) White background	520	10	15	6	8	2	41	205
(ii) Coloured "	520	2		1	1	5	9	45
(i) White "	530	1	4	2			7	35
(ii) Coloured "	530			1			1	5
						Total Woollen Stamped Double:	58	290
Product Quality	Des.	305	308	336	352			
Woollen Stamped Single								
(i) White background	520	7	2	2	4		15	75
(ii) Coloured "	520							
(i) White "	530							
(ii) Coloured "	530							
						Total Woollen Stamped Single:	15	75
Product Quality	Des.							
" "								
" "								
" "								
" "								
" "								
" "								
" "								
" "								
						Total No. in column:	73	365
						Total Inventory Volume:	3,284	19,114

Woollen Stamped Double: Carton boxes of 5 pieces
" " Single: " " " 5 "

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SIGNATURE

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APPENDIX TABLE 87A: OUT OF COLLECTION FINISHED GOODS INVENTORY LEVELS (PRINT-OUT)

(Carton boxes of 5 pieces)

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OUT OF COLLECTION FINISHED GOODS INVENTORY LEVELS (PRINT-OUT)

(Carton boxes of 5 pieces)

Product Quality	Designs	D*	Colour Combinations 101	102	104	105	106	107	108	109	110	113	114	115	118	119	124	126	130	136	150	Carton Boxes	Pieces
Dralon Double	151	27																				27	135
" "	152																					-	-
" "	157				5																	5	25
" "	161			14														18				32	160
" "	162														1				1			2	10
" "	166																					-	-
" "	167																					-	-
" "	168																					-	-
" "	169A													4				1				5	25
" "	169B																					-	-
" "	171																					-	-
" "	178																2			1		3	15
" "	194								20			16					7			19		62	310
" "	195			1														1				2	10
" "	199																					-	-
" "	810																					-	-
" "	1020																					-	-
" "	5198																					-	-
" "	Various	27																					
No. of Defectives (Boxes)		27																				Total No. in column: 138	690
No. of Defectives (Pieces)		135																					

Note: * Defectives

APPENDIX TABLE 87B: OUT OF COLLECTION FINISHED GOODS INVENTORY LEVELS (PRINT-OUT)

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(Carton boxes of 5 pieces)

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OUT OF COLLECTION FINISHED GOODS INVENTORY LEVELS (PRINT-OUT)

(Carton boxes of 5 pieces)

Product Quality	Designs	D*	Colour Combinations 105	109	110	112	113	114	115	124	126	129	130	Cream	White	Brown	Pink	Carton Boxes	Pieces
Dralon Double	Double Face		3		1		5	3	5	3	8	5	9	16	2	30	2	92	460
Dralon Single	" "		1				1		2		1		2	3	2	5	1	18	90

Product Quality	Designs	D*	101	102	104	106	107	108	109	113	114	115	116	118	124	126	130	136	150	151	156		
Dralon Single	152							2									11	5	5			23	115
" "	161			10																		10	50
" "	166																					-	-
" "	167										14			5			6	1			4	30	150
" "	168				1																	1	5
" "	169B					2			1													3	15
" "	191			3		1																4	20
" "	194							1														1	5
" "	195								1													1	5
" "	315																				21	21	105

Product Quality	Designs	D*	304	306	307	308	310	313	315	314	324	329	330	336	350	356	Cream	White					
Superfil	Double Face	5						7	5	4	6						6	4				37	185
Velour	" "	9										3		1								13	65
"	5130												2									2	10
"	5166																					-	-
"	5190		5					1			1											7	35

No. of Defectives (Boxes)	14	Total No. in column:	263	1,315
No. of Defectives (Pieces)	70			

Note: * Defectives

APPENDIX TABLE 87C: OUT OF COLLECTION FINISHED GOODS INVENTORY LEVELS (PRINT-OUT)

(Carton boxes of 5, 8 and 20 pieces)

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OUT OF COLLECTION FINISHED GOODS INVENTORY LEVELS (PRINT-OUT)

(Carton boxes of 5, 8 and 20 pieces)

Product Quality	Design	D*	Colour Combinations 2	4	5	7	9	26	50	52	56	83	Azurro	Beige	Fuxia	Olive	Carton Boxes	Pieces
Elacryl Double	138	12						1	4		12						29	145
" "	148																-	-
Elacryl Single	155			13									20	26	10	6	75	375
Elacryl Baby	40	17							16	13	11						57	1,140
" "	50								9	10	17						36	720
" Teenager	75	37															37	296
Mantacryl Double	195	80					3		47	16							146	730
Suncryl "	163	28															28	140
Vestan "	144	29			96							46					171	855
" Single	163													13			13	65
Crochet		140															140	700
Army Blanket		120															120	600

Product Quality	Design	D*	302	305	308	314	318	320	336	352	356	368	369	Carton Boxes	Pieces
Woollen Venus Double	5020							14						14	70
" " "	5097							17						17	85
" " "	5180							24			4			28	140
" " "	Various	59												59	295
" Stamped "	"	57												57	285

No. of Defectives (Boxes)	579	Total No. in column:	1,027 6,641
No. of Defectives (Pieces)	3,261	Total Inventory Volume:	1,428 8,646

Note: * Defectives

APPENDIX TABLE 88A: 1985-1986 DESIGNS AND COLOUR COMBINATIONS COLLECTION

OR. SALIARIS S.A.
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1985-1986 DESIGNS AND COLOUR COMBINATIONS COLLECTION

Quality	Dimensions (cm)	Designs*	Product Size	No. of Colour Combinations	Colour Code	Colour Combinations
Velour	E/D: 200x240	5120	E/D	(3)	308	Olive Light/Pistachio-Nut
"		"		"	318	Dore/Cream
"		"		"	324	Cherry Dark/Sahara
"		5145	E/D	(3)	304	Dore/Sahara
"		"		"	308	Olive Light/Pistachio-Nut
"		"		"	336	Petrol/Light Blue
"		6050*	E/D	(4)	305	Beige/Cream
"		"		"	324	Cherry Dark/Sahara
"		"		"	356	Green/Pistachio-Nut
"		"		"	366	Grey Blue/White
Superfil	E/D: 210x240	2030	E/D	(3)	302	Dore/Gold/Dore/Cream
"		"		"	353	Dore/Gold/Petrol/Cream
"		3160*	E/D	(3)	304	Dore/Sahara
"		"		"	308	Green/Pistachio-Nut
"		"		"	324	Cherry Dark/Sahara
Dralon	D: 190x230	107	D & S	(3)	108	Olive Light/Pistachio-Nut
"	S: 155x225	"			118	Dore/Cream
"		"		"	136	Petrol/Light Blue
"		189	D	(3)	104	Dore/Sahara/White/Cream
"		"		"	124	Cherry Dark/Sahara/White/Cream
"		"		"	108	Olive Light/Pistachio-Nut/Green/Cream
"		830	D	(3)	108	Green/Pistachio-Nut/White/Cream/Olive
"		"		"	118	Dore/Gold/White/Tamba/Cream
"		"		"	136	Petrol/Light Blue/White/Cream/Grey Blue
"		840	D	(3)	118	Cream/Dore/Gold/Beige
"		"		"	124	Cream/Cherry Dark/Sahara/Beige
"		"		"	156	White/Olive Light/Green/Olive
"		860*	D	(4)	106	Dore/Sahara
"		"		"	108	Olive Light/Pistachio-Nut
"		"		"	124	Cherry Dark/Sahara
"		"		"	153	Petrol/Light Blue
"		870*	D & S	(5)	105	Beige/Cream/Dore/Tamba/Gold
"		"		"	106	Sahara/Dore/Beige/Cream/Tamba
"		"		"	124	Sahara/Cherry Dark/Pink/Tamba/Rose Light
"		"		"	136	Grey Blue/Cream/Petrol/Light Blue/White
"		"		"	156	Cream/Green/Olive Light/Tamba/ Pistachio Nut
"		880*	D & S	(4)	108	Green/Olive Light/Pistachio-Nut/Cream/White
"		"		"	112	Dore/Tamba/Beige/Gold/Cream
"		"		"	124	Cherry Dark/Rose Light/Sahara/Cream/White
"		"		"	153	Petrol/Grey Blue/Light Blue/Cream/White
"		910*	D	(3)	105	Beige/Cream
"		"		"	136	Grey Blue/Cream
"		"		"	156	Green/Pistachio-Nut
"		920*	D & S	(4)	105	Beige/Cream
"		"		"	108	Olive Light/Pistachio-Nut
"		"		"	124	Cherry Dark/Sahara
"		"		"	153	Petrol/Light Blue
"		930	D & S	(4)	105	Beige/Cream/Dore/Gold
"		"		"	108	Pistachio-Nut/Cream/Green/Green/Olive
"		"		"	124	Rose Light/Cream/Cherry Dark/White
"		"		"	136	Grey Blue/Cream/Petrol/Light Blue

Notes: Designs*: New designs introduced in the annual collection

APPENDIX TABLE 88B: 1985-1986 DESIGNS AND COLOUR COMBINATIONS COLLECTION

OR. SALIARIS S.A.
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1985-1986 DESIGNS AND COLOUR COMBINATIONS COLLECTION

Quality	Dimensions (cm)	Designs*	Product Size	No. of Colour Combinations	Colour Code	Colour Combinations
Dralon	D: 190x230	310	S	(4)	115	Cherry Dark/Rose Light
"	S: 155x225	"		"	118	Dore/Cream
"		"			136	Petrol/Light Blue
"		"		"	156	Olive/Cream
Elacryl	D: 190x230	730	D	(4)	14	Tamba/Cream
"	S: 155x225	"		"	18	Dore/Cream
"		"		"	26	Petrol/Light Blue
"		"		"	56	Olive/Cream
"		770*	D & S	(4)	14	Tamba/Cream
"		"		"	18	Dore/Cream
"		"		"	15	Cherry Dark/Rose Light
"		"		"	56	Olive/Cream
"		780*	D	(4)	14	Tamba/Cream
"		"		"	18	Dore/Cream
"		"		"	26	Petrol/Light Blue
"		"		"	56	Olive/Cream
"		134	S	(4)	2	Dore/Gold
"		"		"	50	Dore/Cream
"		"		"	56	Olive/Cream
"		"		"	26	Petrol/Light Blue
"		148	S	(4)	2	Dore/Gold
"		"		"	50	Dore/Cream
"		"		"	56	Olive/Cream
"		"		"	26	Petrol/Light Blue
Thermocryl	E/D: 200x240	151	D & S	(3)	108	Green/Pistachio-Nut
"	S: 155x225	"		"	105	Beige/Cream
"		"		"	124	Cherry Dark/Sahara
"		161	D & S	(3)	114	Dore/Tamba/Beige/Cream/White
"		"		"	108	Olive/Green/Pistachio-Nut/Cream/White
"		"		"	136	Petrol/Grey Blue/Light Blue/Cream/White
"		163	D & S	(3)	81	Dore/Tamba/Beige/Cream/White
"		"		"	85	Cherry Dark/Rose Light/Sahara/Cream/ White
"		"		"	86	Petrol/Grey Blue/Light Blue/Cream/White
Elacryl Baby	90x115	33	bebè	(4)	31	Cream/Gold
"		"		"	50	White/Dore
"		"		"	68	White/Light Blue
"		"		"	69	White/Pink
"		37	bebè	(4)	31	Cream/Gold
"		"		"	56	White/Olive
"		"		"	68	White/Light Blue
"		"		"	69	White/Pink
Elacryl Teenager	130x180	75	teens	(3)	18	Dore/Cream
"		"		"	26	Petrol/Light Blue
"		"		"	55	Cherry Dark/Cream
Woollen Queen Size	E/D: 220x240	5150	E/D	(4)	304	Beige/Cream
"		"		"	307	Lila/White
"		"		"	323	Fuxia/White
"		"		"	308	Green/Green Light
Nobel (Acrylic)	D: 190x230	607	D	(5)	302	Dore/Gold
"		"		"	318	Dore/Cream
"		"		"	368	Light Blue/White
"		"		"	369	Rose Light/White
"		"		"	356	Olive Light/Cream

Notes: Designs*: New designs introduced in the annual collection

APPENDIX TABLE 88C: 1985-1986 DESIGNS AND COLOUR COMBINATIONS COLLECTION

OR. SALIARIS S.A.
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1985-1986 DESIGNS AND COLOUR COMBINATIONS COLLECTION

Quality	Dimensions (cm)	Designs*	Product Size	No. of Colour Combinations	Colour Code	Colour Combinations
Woollen Venus	E/D: 200x240 S: 165x225	161	E/D & S	(5)	336	White/Light Blue/Lila/Cream/Mantzana
"	"	"	"	"	308	Green Light/Green Pistachio-Nut/ Cream/White
"	"	"	"	"	320	White/Beige/Tamba/Cream/Apricot
"	"	"	"	"	323	White/Fuxia/Rose Light/Tamba/Apricot
"	"	"	"	"	368	White/Light Blue/Rose Light/Lila/ Mantzana
"	"	163	E/D & S	(5)	92	White/Apricot/Beige/Cream/Tamba
"	"	"	"	"	97	White/Cream/Lila/Souri/Mantzana
"	"	"	"	"	98	White/Cream/Green Light/Green/ Pistachio-Nut
"	"	"	"	"	88	Rose Light/Pistachio-Nut/White/ Apricot/Mantzana
"	"	"	"	"	81	Light Blue/Rose Light/Lila/White/ Mantzana
"	"	178	E/D	(3)	303	Souri/Mantzana/Light Blue/Lila/Cream
"	"	"	"	"	308	Green/Pistachio-Nut/Green Light/ White/Cream
"	"	"	"	"	320	Beige/Cream/Tamba/Apricot/Fuxia
"	"	5150	E/D	(3)	304	Beige/Cream
"	"	"	"	"	308	Green/Green Light
"	"	"	"	"	368	Light Blue/White
"	"	7010	E/D	(4)	304	Beige/Cream
"	"	"	"	"	307	Lila/White
"	"	"	"	"	308	Green/Pistachio-Nut
"	"	"	"	"	323	Fuxia/White
Woollen Baby	100x125	33	bebè	(4)	320	Beige/White
"	"	"	"	"	356	Green Light/White
"	"	"	"	"	368	Light Blue/White
"	"	"	"	"	369	Rose Light/White
"	"	37	bebè	(4)	320	Beige/White
"	"	"	"	"	356	Green Light/White
"	"	"	"	"	368	Light Blue/White
"	"	"	"	"	369	Rose Light/White
Woollen Teenager	130x180	75	teens	(3)	320	Beige/White
"	"	"	"	"	368	Light Blue/White
"	"	"	"	"	369	Rose Light/White
Woollen Anabelle	E/D: 200x240	540A	E/D	(3)	302	Apricot/White
"	"	"	"	"	303	Mantzana/White
"	"	"	"	"	308	Pistachio-Nut/White
Woollen Stamped	E/D: 200x240	530A	E/D	(3)	305	White Background
"	"	"	"	"	336	White "
"	"	"	"	"	352	White "
"	"	550A	E/D	(3)	305	White "
"	"	"	"	"	336	White "
"	"	"	"	"	352	White "
"	"	530B	E/D	(1)	352	Apricot "
"	"	550B	E/D	(1)	351	Apricot "
Woollen Imperial	E/D: 220x240	880	E/D	(3)	304	Tamba/Beige/Apricot/Cream/White
"	"	"	"	"	323	Fuxia/Rose Light/Apricot/Cream/White
"	"	"	"	"	368	Souri/Mantzana/Light Blue/Cream/White

Notes: A White background and stamped design
B Coloured " " " "

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APPENDIX TABLE 89A: PUNCHED CARDS ANALYTICAL LIST IN THE WEAVING SHED

DESIGNS IN ANNUAL COLLECTION: 1985-1986

No.	Design Code	Design Grouping[1]	Design Quality	Design Type[2]	Year of Introduction	No. of Punched Cards' Sets	Current Position[3]		
							Loom Employed	Stored in Warehouse	Send for Repair
1	5,120	F	Velour	E/D	1982	1	-	*	-
2	5,145	F	"	E/D	1982	1	19	-	-
3	6,050	F	"	E/D	1985	1	21	-	-
4	2,030	H	Superfil	E/D	1980	2	15	*	-
5	5,160	F	"	E/D	1982	1	20	-	-
6	167	F	Dralon	D & S	1982	2	14	-	-
7	189	G	"	D	1982	1	18	-	-
8	830	G	"	D	1983	1	16	-	-
9	840	F	"	D	1983	1	-	*	-
10	860	G	"	D	1983	1	-	*	-
11	870	G	"	D & S	1985	1	3	-	-
12	880	G	"	D & S	1985	1	4	-	-
13	910	F	"	D	1985	1	-	*	-
14	920	F	"	D & S	1985	1	5	-	-
15	930	G	"	D & S	1985	1	1	-	-
16	310	H	"	S	1980	1	-	*	-
17	730	G	Elacryl	D	1983	1	-	*	-
18	770	F	"	D & S	1985	1	6	-	-
19	780	F	"	D	1985	1	9	-	-
20	134	F	"	D & S	1982	2	17	*	-

Notes:

1 Design groupings
H = Human life
A = Animals
F = Flowers
G = Geometrical
N = Nature
D = Double colour

2 Design types
E/D = Extra-double
D = Double
S = Single

3 Monthly control of the designs by the head of the production scheduling department (as at 31.08.85)

APPENDIX TABLE 89B: PUNCHED CARDS ANALYTICAL LIST IN THE WEAVING SHED

DESIGNS IN ANNUAL COLLECTION: 1985-1986

No.	Design Code	Design Grouping[1]	Design Quality	Design Type[2]	Year of Introduction	No. of Punched Cards' Sets	Current Position[3] Loom Employed	Stored in Warehouse	Send for Repair
21	148	F	Elacryl	D & S	1981	1	-	*	-
22	151	A	Thermo-cryl	D & S	1978	1	-	*	-
23	161	G	"	D & S	1979	1	-	*	-
24	163	G	"	D & S	1979	1	2	-	-
25	33	A	Elacryl Baby	D	1982	1	11	-	-
26	37	N	"	D	1977	1	-	*	-
27	75	H	Elacryl Teenager	D	1982	1	-	*	-
28	161	G	Woollen Venus	E/D & S	1979	1	8	-	-
29	163	G	"	E/D & S	1979	1	7	-	-
30	178	G	"	E/D	1977	1	-	*	-
31	5,150	F	"	E/D	1982	1	-	*	-
32	7,010	F	"	E/D	1983	1	10	-	-
33	33	A	Woollen Baby	D	1982	1	-	*	-
34	37	N	"	D	1977	1	-	*	-
35	75	H	Woollen Teenager	D	1982	1	-	*	-
36	530	F	Woollen Stamped	E/D	1983	-[4]	13	-	-
37	550	F	"	E/D	1983	-	12	-	-
38	880	G	Woollen Imperial	E/D	1985	1	-	*	-
39	5,150	F	"	E/D	1985	1	-	*	-
40	607	F	Nobel (Acrylic)	D	1982	1	-	*	-

Notes: [4] No technical limitation: plain cloth woven in all available looms in the weaving sheds

APPENDIX TABLE 90A: PUNCHED CARDS ANALYTICAL LIST IN THE WEAVING SHED

				WITHDRAWN DESIGNS			
No.	Design Code	Design Grouping	Design Quality	Design Type	Year of Introduction	Year of Withdrawal	Current Situation*
1	150	A	Dralon	D & S	1978	1980	Obsolete
2	151	F	"	D & S	1978	1983	Obsolete
3	152	A	"	D & S	1982	1983	Obsolete
4	153	A	"	D & S	1978	1980	Obsolete
5	154	G	"	D & S	1978	1980	O.K.
6	155	A	"	D	1978	1980	O.K.
7	156	A	"	D	1979	1979	O.K.
8	157	A	"	D	1978	1978	Obsolete
9	158	A	"	D	1978	1981	O.K.
10	159	A	"	D	1979	1979	O.K.
11	160	G	"	D & S	1978	1980	O.K.
12	162	G	"	D	1978	1978	Has to be repaired
13	162	A	"	D	1982	1983	O.K.
14	164	G	"	D	1979	1979	O.K.
15	165	F	"	D	1979	1979	O.K.
16	166	A	"	D	1980	1980	O.K.
17	166	A	"	S	1982	1983	O.K.
18	167	F	"	D	1979	1979	O.K.
19	168	G	"	D & S	1980	1981	O.K.
20	169A	G	"	D & S	1981	1983	O.K.
21	169B	G	"	D & S	1982	1984	O.K.
22	170	H	"	D	1978	1979	Has to be repaired
23	171	F	"	D	1981	1983	O.K.
24	172	F	"	D	1980	1981	O.K.
25	173	N	"	D	1979	1979	O.K.

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APPENDIX TABLE 90B: PUNCHED CARDS ANALYTICAL LIST IN THE WEAVING SHED

WITHDRAWN DESIGNS							
No.	Design Code	Design Grouping	Design Quality	Design Type	Year of Introduction	Year of Withdrawal	Current Situation*
26	174	F	Dralon	D	1980	1983	O.K.
27	175	F	"	D	1980	1982	O.K.
28	176	F	"	D	1979	1981	O.K.
29	177	F	"	D	1978	1982	O.K.
30	179	N	"	D	1977	1979	O.K.
31	180A	F	"	D	1978	1979	O.K.
32	180B	F	"	D & S	1982	1984	O.K.
33	181	A	"	D & S	1979	1980	Has to be repaired
34	182	A	"	D	1979	1979	O.K.
35	183	A	"	D	1979	1980	O.K.
36	184	G	"	D	1979	1980	O.K.
37	185	A	"	D	1979	1981	O.K.
38	187A	F	"	D	1977	1978	O.K.
39	187B	F	"	D	1982	1984	Has to be repaired
40	188	F	"	D	1980	1981	O.K.
41	190	N	"	D	1978	1980	O.K.
42	191	H	"	D & S	1980	1980	O.K.
43	192	A	"	D & S	1980	1980	O.K.
44	194	G	"	D & S	1982	1984	O.K.
45	195	A	"	D & S	1980	1983	O.K.
46	196	H	"	D	1977	1978	O.K.
47	198	F	"	D	1982	1983	O.K.
48	199	A	"	D	1981	1982	Has to be repaired
49	1,020	A	"	D	1980	1980	O.K.
50	2,060	H	"	D	1980	1980	O.K.

APPENDIX TABLE 90C: PUNCHED CARDS ANALYTICAL LIST IN THE WEAVING SHED

WITHDRAWN DESIGNS							
No.	Design Code	Design Grouping	Design Quality	Design Type	Year of Introduction	Year of Withdrawal	Current Situation*
51	2,080	N	Dralon	D	1980	1980	O.K.
52	Double Colour	D	"	D & S	1976	1985	O.K.
53	315	H	"	S	1980	1984	Has to be repaired
54	120	F	Elacryl	D & S	1978	1980	Obsolete
55	121	G	"	D	1978	1979	Obsolete
56	122	G	"	D	1978	1979	Obsolete
57	125	F	"	D & S	1982	1983	O.K.
58	126	F	"	D	1979	1979	Obsolete
59	127	F	"	D & S	1980	1983	O.K.
60	128	F	"	D	1981	1982	Has to be repaired
61	132	F	"	D	1981	1982	O.K.
62	135	G	"	D	1979	1979	O.K.
63	138	F	"	D	1982	1983	O.K.
64	142	A	"	D	1980	1981	O.K.
65	143	F	"	D	1979	1981	O.K.
66	144	F	"	D & S	1978	1980	O.K.
67	149	F	"	D	1981	1982	O.K.
68	153	A	"	D & S	1981	1982	O.K.
69	155	A	"	D	1981	1982	O.K.
70	165	F	"	D	1980	1982	O.K.
71	172	F	"	D	1982	1982	O.K.
72	196	H	"	D & S	1981	1981	O.K.
73	197	F	"	D & S	1981	1982	O.K.
74	210	H	"	S	1978	1978	O.K.
75	35	H	Elacryl Baby	D	1978	1983	Has to be repaired
76	65	A	Elacryl Teenager	D	1979	1982	Has to be repaired

APPENDIX TABLE 90D: PUNCHED CARDS ANALYTICAL LIST IN THE WEAVING SHED

WITHDRAWN DESIGNS							
No.	Design Code	Design Grouping	Design Quality	Design Type	Year of Introduction	Year of Withdrawal	Current Situation*
77	1,020	A	Superfil	E/D & S	1977	1981	Has to be repaired
78	1,090	H	"	E/D	1980	1980	O.K.
79	2,010	H	"	E/D	1979	1981	O.K.
80	2,012	A	"	E/D	1981	1981	O.K.
81	2,015	F	"	E/D	1980	1982	O.K.
82	2,020	N	"	E/D	1979	1980	Has to be repaired
83	2,060	H	"	E/D	1980	1980	O.K.
84	2,070	H	"	E/D	1980	1980	O.K.
85	2,080	N	"	E/D	1980	1980	O.K.
86	2,090	F	"	E/D	1982	1983	O.K.
87	5,095	N	Velour	E/D & S	1981	1981	O.K.
88	5,097	A	"	E/D & S	1980	1981	O.K.
89	5,130	F	"	E/D	1982	1983	O.K.
90	5,150	F	"	E/D	1982	1983	O.K.
91	5,170	G	"	E/D	1979	1980	O.K.
92	5,180	F	"	E/D	1980	1981	O.K.
93	5,190	F	"	E/D	1982	1985	O.K.
94	5,198	F	"	E/D & S	1980	1985	O.K.
95	420	G	Chrochet	E/D & S	1981	1983	O.K.
96	425	G	"	E/D & S	1981	1983	O.K.
97	428	G	"	E/D & S	1981	1983	O.K.
98	445	G	"	E/D & S	1981	1983	O.K.
99	607	F	Nobel	E/D & S	1982	1985	O.K.
100	10	F	Fiorella	E/D	1978	1983	O.K.
101	20	F	"	E/D	1978	1983	O.K.
102	-	F	Florex	D	1978	1980	O.K.
103	120	F	Mantacryl	D & S	1981	1985	O.K.
104	125	F	"	D & S	1983	1985	O.K.

Note: * 4-month control of the design by the head of the production scheduling department (as at 31.08.85)

APPENDIX TABLE 91A: OR. SALIARIS S.A. BLANKET MANUFACTURE. DESCRIPTION OF MACHINERY AT COMPANY LEVEL

Department	Serial No.	Type of Machinery	Power (HP)	Country of Origin	Year of Installation	Purchase Cost Value (in million drachmas)
DYEING	1	Crane	6.0	Greece	1975	9.193
	2	Water Presser	4.5	Italy	1975	
	3	Dyeing m/c	86.5	W. Germany	1975	
	4	Dye mixing m/c	11.0	W. Germany	1977	
	5	Hydroextractor	20.0	Italy	1975	
	6	Drying m/c	40.5	Italy	1975	
	7	Presser	2.2	Greece	1976	
	8	Boiler	2.5	W. Germany	1975	
	9	Steam generators	19.0	Greece	1975	
	10	Water pump	4.0	Greece	1972	
	11	Sewage-works	3.0	Sweden	1977	
	12	Air-compressor	2.0	Italy	1977	
SPINNING	13	Crane	4.0	Greece	1974	17.661
	14	Fearnaught m/c	15.0	Italy	1974	
	15	Carding m/c	53.7	Italy	1974	
	16	Spinning Frame 1	47.5	Italy	1974	
	17	Spinning Frame 2	47.5	Italy	1974	
	18	Fancy yarn m/c	30.0	W. Germany	1975	
	19	Winding m/c	6.0	Italy	1974	
	20	Grinding m/c	0.5	Italy	1975	
	21	Humidity controller	1.0	W. Germany	1976	
	22	Dust remover	0.3	Denmark	1976	
	23	Air compressor	3.0	Italy	1976	

APPENDIX TABLE 91B: OR. SALIARIS S.A. BLANKET MANUFACTURE. DESCRIPTION OF MACHINERY AT COMPANY LEVEL

Department	Serial No.	Type of Machinery	Power (HP)	Country of Origin	Year of Installation	Purchase Cost Value (in million drachmas)
WEAVING	24	Weaving Loom 1 Somet	5.5	Italy	1971	28.955
	25	" " 2 Somet	5.5	Italy	1971	
	26	" " 3 Somet	5.5	Italy	1971	
	27	" " 4 Somet	5.5	Italy	1971	
	28	" " 5 Somet	5.5	Italy	1971	
	29	" " 6 Somet	5.5	Italy	1971	
	30	" " 7 Somet	6.6	Italy	1973	
	31	" " 8 Somet	6.6	Italy	1973	
	32	" " 9 Smit	5.5	Italy	1973	
	33	" " 10 Smit	5.5	Italy	1974	
	34	" " 11 Somet	5.5	Italy	1974	
	35	" " 12 Somet	5.5	Italy	1974	
	36	" " 13 Somet	6.4	Italy	1974	
	37	" " 14 Meteor	5.5	Italy	1977	
	38	" " 15 Meteor	5.5	Italy	1977	
	39	" " 16 Meteor	5.5	Italy	1977	
	40	" " 17 Meteor	5.5	Italy	1977	
	41	" " 18 Meteor	5.5	Italy	1977	
	42	" " 19 Meteor	5.5	Italy	1977	
	43	" " 20 Smit	7.1	Italy	1979	
	44	" " 21 Smit	7.1	Italy	1980	
	45	Warping m/c	13.0	Italy	1980	
	46	Fringe m/c	0.5	Italy	1980	
	47	Warp piecening m/c	1.5	Italy	1976	
	48	Air compressor	1.5	Greece	1980	
	49	Mending m/c 1	1.5	Greece	1977	
	50	Mending m/c 2	1.0	Italy	1975	
	51	Mending m/c 3	1.5	Greece	1977	

APPENDIX TABLE 91C: OR. SALIARIS S.A. BLANKET MANUFACTURE. DESCRIPTION OF MACHINERY AT COMPANY LEVEL

Department	Serial No.	Type of Machinery	Power (HP)	Country of Origin	Year of Installation	Purchase Cost Value (in million drachmas)
FINISHING (ACRYLICS)	52	Raising m/c 1	32.5	Italy	1977	30.559
	53	Raising m/c 2	26.5	Italy	1977	
	54	Tiger m/c 1	30.0	France	1977	
	55	Stenter m/c	35.0	Italy	1977	
	56	Humidity controller 1	1.0	W. Germany	1977	
	57	Grinding m/c	3.0	W. Germany	1977	
	58	Polishing and Shearing m/c 1	32.0	France	1977	
	59	Polishing and Shearing m/c 2	32.0	France	1977	
	60	Raising m/c 3	32.5	Italy	1979	
	61	Tiger m/c 2	35.0	W. Germany	1980	
	62	Air compressor	1.0	Italy	1977	
	63	Sewing m/c 1	0.4	Japan	1978	
	64	Sewing m/c 2	0.4	Japan	1978	
	65	Sewing m/c 3	0.75	Italy	1977	
	66	Humidity controller 2	1.0	W. Germany	1977	
	67	Raising m/c 4	33.0	Spain	1982	
	68	Raising m/c 5	33.0	Spain	1982	
	69	Air cleaner	7.5	Greece	1977	
FINISHING (WOOL)	70	Scouring and Milling m/c	25.0	Italy	1978	11.200
	71	Hydroextractor	20.0	Italy	1978	
	72	Raising m/c 1	26.5	Italy	1977	
	73	Sewing m/c 1	0.75	Italy	1977	
	74	Tenter m/c	45.0	W. Germany	1978	
	75	Raising m/c 2	32.5	Italy	1977	
	76	Raising m/c 3	28.0	Spain	1978	
	77	Sewing m/c 2	0.75	Italy	1977	
	78	Air compressor	1.0	Greece	1978	
	79	Boiler	2.5	Greece	1978	

APPENDIX TABLE 91D: OR. SALIARIS S.A. BLANKET MANUFACTURE. DESCRIPTION OF MACHINERY AT COMPANY LEVEL

Department	Serial No.	Type of Machinery	Power (HP)	Country of Origin	Year of Installation	Purchase Cost Value (in million drachmas)
END-FINISHING	80	Sewing m/c 1	0.75	Japan	1977	
	81	Sewing m/c 2	0.75	Japan	1977	
	82	Sewing m/c 3	0.75	W. Germany	1977	
	83	Sewing m/c 4	0.75	W. Germany	1978	
	84	Sewing m/c 5	0.75	W. Germany	1978	
	85	Sewing m/c 6	0.75	W. Germany	1979	
	86	Sewing m/c 7	0.75	Japan	1977	1.732
	87	Sewing m/c 8	0.75	Japan	1977	
	88	Sewing m/c 9	0.75	Japan	1977	
	89	Sewing m/c 10	0.75	Japan	1977	
	90	Sewing m/c 11	0.75	Japan	1977	
	91	Cutting m/c 1	0.75	Britain	1977	
	92	Cutting m/c 2	0.75	Greece	1979	
TOTAL:			1,080.3			99.300

Machinery at purchase cost:	99.300	million	drachmas
Add: Cost of installation	19.962	"	"
	119.262	"	"
Less: Accumulated depreciation[1]	96.278	"	"
	22.984	"	"

Note: 1 As at 31.12.1984. Since then there has been no further depreciation due to the company's overall financial position

APPENDIX TABLE 92: BLANKETS TECHNICAL SPECIFICATIONS. COMPARATIVE DATA THROUGH THE PRODUCTION FLOW

OR. SALIARIS S.A.
BLANKET MANUFACTURE

Departments of Production Scheduling and Quality Control

BLANKETS TECHNICAL SPECIFICATIONS

Product Type	Type of Loom [1]	Unfinished Blanket (After Weaving)						Semi-Finished Blanket (Prior End-Finishing)					Finished Blanket (After End-Finishing)				
		Dimensions (m) Width	Length	Surface (m^2)	Loom Gear (Picks/cm)	Weight (grms)	Weight/m^2 (grms)	Dimensions (m) Width	Length	Surface (m^2)	Weight (grms)	Weight/m^2 (grms)	Dimensions (m) Width	Length	Surface (m^2)	Weight (grms)	Weight/m^2 (grms)
Elacryl Double	D	2.38	2.18	5.19	11½	2,770	534	1.90	2.30	4.37	2,400	549	1.90	2.30	4.37	2,480	567
" "	E/D	3.05	1.75	5.34	11½	2,770	519	1.90	2.30	4.37	2,400	549	1.90	2.30	4.37	2,480	567
Elacryl Single	S	2.00	2.15	4.30	11½	2,350	546	1.55	2.25	3.49	2,000	573	1.55	2.25	3.49	2,075	594
Superfil	E/D	3.05	2.25	6.86	11	3,500	510	2.10	2.40	5.04	3,000	595	2.10	2.40	5.04	3,085	612
Elacryl Teenager [2]	D	2.35	2.18	5.12	11½	3,120	609	1.30	3.60	4.68	2,500	534	1.30	1.80	2.34	1,310	560
Elacryl Baby [3]	D	2.35	2.18	5.12	11½	2,800	547	1.80	2.30	4.14	2,600	628	0.90	1.15	1.03	690	670
Dralon Double	D	2.38	2.18	5.19	11½	2,780	536	1.90	2.30	4.37	2,400	549	1.90	2.30	4.37	2,480	567
" "	E/D	3.05	1.75	5.34	11½	2,780	521	1.90	2.30	4.37	2,400	549	1.90	2.30	4.37	2,480	567
Dralon Single	S	2.00	2.15	4.30	11½	2,320	539	1.55	2.25	3.49	2,000	573	1.55	2.25	3.49	2,075	594
Velour	E/D	3.05	2.25	6.86	11	3,400	496	2.00	2.40	4.80	2,800	583	2.00	2.40	4.80	2,885	601
Nobel (Acrylic)	D	2.40	2.18	5.23	10½	2,725	521	1.90	2.30	4.37	2,300	526	1.90	2.30	4.37	2,400	549
Nobel (Woollen)	D	2.40	2.30	5.52	10½	3,430	621	2.00	2.40	4.80	3,000	625	2.00	2.40	4.80	3,300	687
Woollen Venus Double	D	2.40	2.30	5.52	13	3,900	706	2.00	2.40	4.80	3,500	729	2.00	2.40	4.80	3,700	771
Woollen Venus Single	S	2.00	2.25	4.50	13	3,200	711	1.65	2.30	3.79	2,900	765	1.65	2.30	3.79	3,080	813
Woollen Teenager [2]	D	2.40	2.48	5.95	11½	3,800	639	1.30	3.60	4.68	3,600	769	1.30	1.80	2.34	1,940	829
Woollen Baby [3]	D	2.40	2.40	5.76	11½	3,700	642	2.00	2.50	5.00	3,400	680	1.00	1.25	1.25	950	760
Dorian Double	D	2.40	2.12	5.09	7½	2,140	420	1.80	2.20	3.96	1,720	434	1.80	2.20	3.96	1,800	454
Nobel Single	D	2.00	2.15	4.30	10½	2,260	525	1.55	2.25	3.49	2,060	590	1.55	2.25	3.49	2,150	616
Suncryl Double	D	2.40	2.12	5.09	8	2,250	442	1.80	2.20	3.96	1,800	545	1.80	2.20	3.96	1,880	475
Mantacryl Double	D	2.38	2.18	5.19	9	2,370	457	1.90	2.30	4.37	2,120	485	1.90	2.30	4.37	2,200	503
Mantacryl Single	S	2.00	2.15	4.30	9	2,250	523	1.55	2.25	3.49	1,920	550	1.55	2.25	3.49	1,995	572
Mantacryl Queen Size	E/D	3.05	1.75	5.34	9	2,370	444	1.90	2.30	4.37	2,120	485	1.90	2.30	4.37	2,200	503

Notes:

1. Double size loom = D
   Extra-double size loom = E/D
   Single size loom = S
2. Teenager blanket = ½ double size blanket
3. Baby " = ¼ " " "

APPENDIX TABLE 93: OR. SALIARIS S.A. BLANKET MANUFACTURE. DISTRIBUTION OF THE COMPANY'S PERSONNEL (as at 31st December)

Activity Breakdown		1978		1979		1980		1981		1982		1983		1984		1985		1986		1987	
		A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B
PRODUCTION	Dyeing	2	5	1	5	1	4	1	4	1	4	1	4	1	4	1	4	-	-	-	-
	Spinning	3	21	2	20	2	19	2	19	2	14	2	14	2	18	2	14	-	-	-	-
	Weaving	2	19	2	17	2	16	2	16	2	10	2	10	1	9	1	8	-	-	-	-
	Mending	-	5	-	5	-	5	-	5	-	4	-	5	-	4	-	4	-	-	-	-
	Finishing	2	21	2	20	2	17	2	16	2	15	2	10	2	9	2	10	-	-	-	-
	Cutting	-	3	-	3	-	3	-	3	-	3	-	3	-	3	-	3	-	1	-	-
	Sewing	1	14	1	15	1	14	1	13	1	12	1	11	1	5	1	5	-	1	-	1
	Packaging	-	6	-	6	-	6	-	6	-	5	-	4	-	4	-	4	-	1	-	1
Maintenance		1	1	1	1	1	2	1	2	1	2	1	2	1	2	1	1	-	-	-	-
Quality Control		-	-	-	-	-	-	-	-	1	-	1	-	1	-	1	-	-	-	-	-
Production Scheduling		-	-	-	-	-	-	-	-	-	-	1	-	1	-	1	-	-	-	-	-
GROUP A: TOTAL		106		101		95		93		79		74		68		63		3		2	
Sales		7	8	6	8	6	8	6	8	6	8	8	6	8	5	8	5	3	1	3	1
Accounting		11	-	10	-	10	-	11	-	10	-	9	-	9	-	9	-	5	-	3	-
GROUP B: TOTAL		26		24		24		25		24		23		22		22		9		7	
Senior Management		2	-	2	-	2	-	2	-	2	-	2	-	2	-	2	-	2	-	2	-
Company's Personnel		134		127		121		120		105		99		92		87		14		11	

Notes: A Salaried employees
B Workers

APPENDIX TABLE 94: SALES VALUE OF THE MAIN BLANKET PRODUCTS (1978-1987)
(Financial data in million drachmas)

OR. SALIARIS S.A.
BLANKET MANUFACTURE

SALES VALUE OF THE MAIN BLANKET PRODUCTS

	1978		1979		1980		1981		1982		1983		1984		1985		1986		1987	
Product Type	Sales Value	%	Sales Value	%	Sales Value	%	Sales Value	%	Sales Value	%	Sales Value	%	Sales Value	%	Sales Value	%	Sales Value	%	Sales Value	%
Dralon Double	64.200	38.4	97.949	44.5	102.755	42.0	83.986	31.1	78.969	28.3	42.320	19.1	46.293	16.5	43.675	16.5	20.655	14.1	3.207	5.4
Dralon Single	6.471	4.0	16.589	7.5	35.676	14.6	42.747	15.8	44.348	15.9	29.560	13.3	25.841	9.2	23.850	9.0	11.681	7.9	2.236	3.8
Velour	-	-	1.086	0.5	5.981	2.5	35.624	13.2	39.857	14.3	28.265	12.8	22.303	8.0	20.503	7.7	6.372	4.3	2.858	4.8
Superfil	30.569	18.3	35.216	16.0	35.569	14.5	27.443	10.2	17.583	6.3	15.121	6.8	18.673	6.7	11.668	4.4	5.954	4.1	4.263	7.1
Elacryl Double	39.137	23.4	35.847	16.3	25.376	10.4	34.038	12.6	38.909	14.0	24.770	11.2	27.610	9.8	18.319	6.9	9.008	6.1	3.115	5.2
Elacryl Single	10.093	6.0	10.579	4.8	12.123	4.9	14.267	5.3	20.074	7.2	14.130	6.4	13.458	4.8	13.490	5.1	3.976	2.7	3.497	5.9
Other Acrylics[1]	16.590	9.9	22.750	10.4	26.537	10.8	30.378	11.3	34.338	12.4	31.137	14.0	24.971	8.9	27.466	10.4	17.924	12.2	7.157	12.0
TOTAL ACRYLICS	167.330	100.0	220.016	100.0	244.017	99.7	268.483	99.5	274.078	98.4	185.303	83.6	179.149	63.9	158.971	60.0	75.570	51.4	26.333	44.2
Woollen Venus Double	-	-	-	-	0.617	0.3	1.325	0.5	4.577	1.6	26.688	12.0	46.547	16.6	47.580	17.9	31.402	21.4	13.825	23.2
Woollen Venus Single	-	-	-	-	-	-	-	-	-	-	-	-	6.011	2.1	10.768	4.1	6.956	4.7	3.575	6.0
Woollen Stamped Double	-	-	-	-	-	-	-	-	-	-	6.811	3.1	38.606	13.7	41.262	15.6	28.675	19.5	13.305	22.3
Other Woollen[2]	-	-	-	-	-	-	-	-	-	-	2.771	1.3	10.279	3.7	6.375	2.4	4.397	3.0	2.559	4.3
TOTAL WOOLLEN	-	-	-	-	0.617	0.3	1.325	0.5	4.577	1.6	36.270	16.4	101.443	36.1	105.985	40.0	71.430	48.6	33.264	55.8
TOTAL SALES[3]	167.330	100.0	220.016	100.0	244.634	100.0	269.808	100.0	278.655	100.0	221.573	100.0	280.592	100.0	264.956	100.0	147.000	100.0	59.597	100.0
Less:Returns/ Discounts/Tax	17.068	10.2	24.435	11.1	26.324	10.8	26.592	9.8	22.729	8.1	28.969	13.1	37.127	13.2	15.748	5.9	15.817	10.7	5.589	9.4
TOTAL NET SALES	150.262		195.581		218.310		243.216		255.926		192.604		243.465		249.208		131.183		54.008	

Notes:
1. Other Acrylics : Elacryl Teenager, Elacryl Bebè, Mantacryl Double, Mantacryl Single, Army blanket
2. Other Woollen : Woollen Teenager, Woollen Baby Strumf, Woollen Bebè
3. Total Sales (Home sales and exports)

APPENDIX TABLE 95: BREAKDOWN OF FINISHED GOODS TOTAL NET SALES (1978-1987)

(Finandial data in million drachmas)

OR. SALIARIS S.A.
BLANKET MANUFACTURE

BREAKDOWN OF FINISHED GOODS TOTAL NET SALES

	1978		1979		1980		1981		1982		1983 [1]		1984		1985		1986 [2]		1987	
	Value	%	Value	%	Value	%	Value	%	Value	%	Value	%	Value	%	Value	%	Value	%	Value	%
Thessaloniki and Northern Greece (Sector 1)	26.072	17.4	36.589	18.7	44.107	21.0	53.702	23.0	55.329	22.9	58.865	30.9	69.286	32.2	64.775	27.1	44.046	35.7	11.723	21.8
Greater Capital Area, Attica, Viotia and Evia (Sector 3)	61.264	40.8	76.937	39.4	88.735	42.1	91.141	39.1	85.402	35.4	59.594	31.2	71.587	33.2	76.764	32.2	39.639	32.1	26.992	50.3
Western Peloponnisos, Northwest Greece and Ionian Islands (Sector 4)	46.323	30.9	57.011	29.2	46.746	22.2	57.084	24.5	68.254	28.3	50.790	26.6	60.944	28.3	35.278	14.8	24.110	19.5	5.410	10.1
Remaining Areas (Sectors 2, 5, 6, 7, 8, 9 and 10)	16.429	10.9	24.790	12.7	30.922	14.7	31.384	13.4	32.453	13.4	21.531	11.3	13.651	6.3	61.917	25.9	15.699	12.7	9.528	17.8
Home Market	150.088	100.0	195.327	100.0	210.510	100.0	233.311	100.0	241.438	100.0	190.780	100.0	215.468	100.0	238.734	100.0	123.494	100.0	53.653	100.0
(A)	99.9		99.9		96.4		95.9		94.3		99.0		88.5		95.8		94.1		99.3	
Abroad	0.174		0.254		7.800		9.905		14.488		1.824		27.997		10.474		7.689		0.355	
(B)	0.1		0.1		3.6		4.1		5.7		1.0		11.5		4.2		5.9		0.7	
Total Net Sales Turnover (A) + (B)	150.262		195.581		218.310		243.216		255.926		192.604		243.465		249.208		131.183		54.008	
	100.0		100.0		100.0		100.0		100.0		100.0		100.0		100.0		100.0		100.0	

Notes: 1. Three month strike of the company's personnel

2. " " " " " " "

APPENDIX TABLE 96: SALES AND PRODUCTION FIGURES OF THE MAIN BLANKET PRODUCTS (1978-1987)

(in number of units)

OR. SALIARIS S.A.
BLANKET MANUFACTURE

SALES AND PRODUCTION BREAKDOWN

	1978		1979		1980		1981		1982		1983		1984		1985		1986		1987	
Product Type	P	S	P	S	P	S	P	S	P	S	P	S	P	S	P	S	P	S	P	S
Dralon Double	99,709	91,794	127,306	126,318	107,173	110,779	88,137	74,589	50,413	57,791	25,022	26,909	19,833	29,821	14,619	21,242	6,261	7,561	759	1,193
Dralon Single	10,807	10,261	26,904	22,908	42,492	42,372	44,141	41,840	43,048	36,014	15,834	20,596	7,893	14,641	10,349	12,792	4,197	4,791	738	911
Velour	-	-	1,841	974	5,531	4,320	26,132	22,708	25,216	22,383	12,919	13,614	7,349	8,561	3,781	7,794	1,675	1,672	493	745
Superfil	33,955	30,892	29,920	32,534	27,806	29,349	19,748	19,195	9,052	10,510	12,497	7,495	7,157	8,038	3,125	4,138	1,731	1,666	737	1,199
Elacryl Double	68,858	64,244	50,838	53,612	26,719	31,413	43,881	34,434	32,767	32,358	13,908	18,676	17,983	19,954	6,546	8,582	2,778	3,487	1,348	1,201
Elacryl Single	17,759	18,141	17,644	17,044	16,055	16,118	16,371	16,167	24,564	19,010	7,890	11,948	6,488	9,296	7,385	7,833	1,753	1,779	1,686	1,509
Other Acrylics	49,208	53,231	50,002	47,583	57,878	50,355	35,145	52,380	48,819	50,473	31,976	33,181	18,919	24,371	21,324	21,112	7,697	11,350	1,628	4,975
Total Acrylics	280,296	268,563	304,475	300,973	283,654	284,706	273,555	261,313	233,879	228,539	120,046	132,419	85,622	114,682	67,129	83,493	26,092	32,306	7,389	11,733
Woollen Venus Double	-	-	-	-	427	271	426	468	2,948	1,409	8,374	7,400	11,538	10,355	6,982	7,148	4,967	5,943	877	2,819
Woollen Venus Single	-	-	-	-	-	-	-	-	-	-	759	638	1,646	1,713	2,553	2,372	909	1,825	149	807
Woollen Stamped Double	-	-	-	-	-	-	-	-	-	-	1,759	1,598	9,055	7,953	5,833	5,760	3,456	3,873	2,076	2,015
Other Woollen	-	-	-	-	-	-	-	-	-	-	755	2,536	8,247	6,098	11,138	11,415	3,709	2,087	1,041	1,688
Total Woollen	-	-	-	-	427	271	426	468	2,948	1,409	11,647	12,172	30,486	26,119	26,506	26,695	13,041	13,728	4,143	7,329
TOTAL	280,296	268,563	304,475	300,973	284,081	284,977	273,981	261,781	236,827	229,948	131,693	142,591	116,108	140,801	93,635	110,188	39,133	46,034	11,532	19,062

Notes: (P) - number of units produced

(S) - number of units sold

APPENDIX TABLE 97: DEVELOPMENT OF MANUFACTURING COSTS (1978-1987)
(Financial data in million drachmas)

OR. SALIARIS S.A.
BLANKET MANUFACTURE

DEVELOPMENT OF MANUFACTURING COSTS

Cost Components	1978		1979		1980		1981		1982		1983 [1]		1984		1985		1986 [2]		1987	
	Value	%	Value	%	Value	%	Value	%	Value	%	Value	%	Value	%	Value	%	Value	%	Value	%
Raw Materials	57.360	50.0	75.761	51.3	73.253	46.0	91.677	47.4	88.899	43.0	55.277	36.2	77.994	39.6	96.533	46.0	62.824	54.0	19.849	50.1
Labour	25.017	21.8	33.078	22.5	35.817	22.5	44.839	23.1	55.991	27.1	44.812	29.3	57.849	29.4	69.193	33.0	32.597	28.0	6.681	16.9
Process Additives	24.267	21.2	27.912	18.9	34.242	21.5	38.348	19.8	37.147	18.0	37.015	24.2	42.007	21.3	24.950	11.9	10.396	8.9	9.491	24.0
Various	7.960	7.0	10.802	7.3	16.023	10.0	18.757	9.7	24.647	11.9	15.743	10.3	19.102	9.7	18.999	9.1	10.515	9.1	3.585	9.0
Total Manufacturing Costs	114.604	100.0	147.553	100.0	159.335	100.0	193.621	100.0	206.684	100.0	152.847	100.0	196.952	100.0	209.675	100.0	116.332	100.0	39.606	100.0
Production [3] (pcs)	260,219		281,695		254,164		257,267		213,184		116,237		108,847		90,346		36,057		10,256	
Cost/unit produced (drs)	440		523		627		753		969		1,315		1,809		2,321		3,226		3,862	

Notes:
1. Three month strike of the company's personnel
2. " " " " " " "
3. Total production in corresponding number of double blankets. Thus:
1 Teenager blanket corresponds to ½ double blanket
1 Baby " " " ¼ " "

APPENDIX TABLE 98: OR. SALIARIS S.A. BLANKET MANUFACTURE.
COST OF BORROWED CAPITAL DEVELOPMENT (1978-1987)
(Financial data in million drachmas)

	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987
S	158.292	198.536	221.831	252.446	261.663	212.684	263.864	297.358	153.856	82.094
$I_{L.T.L.}$	3.975	4.888	10.800	10.485	11.513	9.730	15.068	11.275	15.060	16.658
$I_{S.T.L.}$	7.570	11.643	14.177	12.402	24.381	33.727	28.664	29.132	15.882	3.693
$I_{L.T.L.} + I_{S.T.L.}$	11.545	16.531	24.977	22.887	35.894	43.457	43.732	40.407	30.942	20.351
$\frac{I_{L.T.L.} + I_{S.T.L.}}{S}$ %	7.3	8.3	11.2	9.1	13.7	20.4	16.6	13.6	20.1	24.8

Notes:
S : Total net sales turnover
$I_{L.T.L.}$: Interest on long-term loans
$I_{S.T.L.}$: Interest on short-term loans

APPENDIX TABLE 99: REVISED CUSTOMERS' SALES LEDGER

(Financial data in drachmas)

OR. SALIARIS S.A.
BLANKET MANUFACTURE

REVISED CUSTOMER'S SALES LEDGER

Sales Area : Western Peloponnisos, North-west Greece & Ionian Islands
Region : Patras
Agent : N. Carlos

Serial Number	Customer	Code Number	T	S	Customer's Address	Tel.	A.F.M. or A.T.	1981 Sales Turnover	1981 C	1981 P	1981 C'/P'	1982 Sales Turnover	1982 C	1982 P	1982 C'/P'	1983 Sales Turnover	1983 C	1983 P	1983 C'/P'	1984 Sales Turnover	1984 C	1984 P	1984 C'/P'	1985 Sales Turnover	1985 C	1985 P	1985 C'/P'
1	Skeparnias Bros.	2		*	Ermou 40	273046	94065700	294,251	100%			220,885	100%			80,220	100%			460,630	100%			283,760	100%		
2	Koulis Bros.	3	*	*	Kilkis 38A	-	A' 950894	233,150		100%		652,050		100%		-				196,800	100%			419,115	100%		
3	Koulis T.	4	*	*	Piliou 27	-	A' 973672	97,060		100%		-				-				228,375	100%			181,330	100%		
4	Koulis C.	6	*	*	Piliou 27	-	A' 914364	117,800		100%		312,758		100%		-				295,200	100%			192,595	100%		
5	Manthopoulos V.	7		*	Epmou 54	-	93254303	351,445		100%		-				-				348,810		100%		83,675	100%		
6	Bakalis N.	8	*		Const/Leos 11	326176	Γ' 926224	687,025		100%	P'	727,998		100%		537,760		100%		546,175		100%		486,800		100%	
7	Koulis N.	9	*		Partheniou 24	-	A' 900170	294,445	60%	40%		195,970		100%		134,515	100%			306,480	100%			-			
8	Siriopoulos G.	10	*		Demenica	-	H' 337158	182,910		100%		162,400		100%		-				197,100	50%	50%		-			
9	Vithoulcas D.	11		*	Athiros 179	324685	D' 044159	324,390		100%	P'	639,412		100%		405,920		100%		1,270,530	100%			-			
10	Asimakopoulos C.	12	*		Gouminas 159	-	94123759	271,850	100%			105,490	100%			128,705	100%			216,205	100%			-			
11	Christodoulou N.	13	*		Ionias 24	-	-	199,425	100%			-				67,255	100%			-				-			
12	Antonakopoulos S.	14	*		Acrotiriou 29	-	I' 848006	112,100	100%			157,900	100%			21,300	100%			-				158,140	100%		
13	Stefanidis G.	15	*		Soudas 40	-	A' 962027	22,500	100%			112,165	100%			72,320	100%			131,150	100%			-			
14	Coringelis P.	16	*		Mezonos 29	-	H' 171613	441,525	100%			963,575		100%		49,800	100%			285,400	100%			52,875	100%		
15	Bouboula Bros.	17	*		Frangi 115	-	-	25,724	100%			-				-				-				-			
16	Parmaki H.	18	*		-	-	-	66,670		100%		88,616	100%			-				-				-			
17	Tsakalos S.	20			Gero/Lou 20	-	-	94,100	100%			165,250	100%			-				-				-			
18	Antonopoulos Bros.	21			Karaiskaki 102	270515	91422713	213,180	100%			512,615	100%			575,745	60%	40%		21,665	100%			-			
19	Tsironis N.	23			Ermou 49	-	-	202,185	100%			20,400	100%			-				-				-			
20	Vithoulcas A.	25			Vilara 15	422218	Θ' 598622	245,075		100%		283,225	100%			246,285		100%		662,510	50%	50%		347,675		100%	
21	Koulis C.	29			Kilkis 36	-	H' 212780	90,350	80%	20%		159,996	100%			-				203,775	100%			258,500	100%		
22	Koulis S.	30			Thes/Kis 48	425294	H' 090387	269,950	100%			310,000	100%			250,000	100%			73,800	100%			-			
23	Vasilogiannis J.	32			Vrachneica	978304	C' 796069	181,720	100%			225,015	100%			-				-				-			
24	Avradinis N.	33			Karaiskaki 139	-	92455047	-				-				161,415	100%			-				-			
25	Barberis P.	34			Secci 10	-	-	402,990		100%		309,943		100%		348,095		100%		103,350		100%		168,260		100%	
26	Ioxana Bros.	35			Ermou 44	277218	91493804	16,290	100%			112,020	100%			50,095	100%			-				-			
27	Thanasoulis J.	36			Kitheronos 57	420492	A' 895506	412,125		100%		389,000		100%		455,225		100%		350,200		100%		214,975		100%	
28	Manousos & Sons	37			Ermou 17	-	95156030	835,355	65%	35%		568,565	100%			63,650	100%			-				-			
29	Vithoulcas D.	40			A. Ioannis	-	-	69,400		100%		-				-				-				251,850		100%	
30	Kalybas S.	41			Ionias 16	-	Γ' 086786	75,015	40%	60%		-				-				105,925		100%		-			
31	Chondros C.	42			Aratou 15	277376	93193237	596,775		100%	P'	568,475		100%		165,175	100%			300,510	100%			-			
32	Voutsinas C.	43			Pan/Miou 16	-	A' 897481	139,475	100%			32,778	100%			5,400	100%			-				-			
33	Corfofilotis J.	45			Germanou 183	272752	A' 966616	49,770		100%		107,498		100%		33,640		100%		22,135	100%			-			
34	Platipodis D.	46			Agia 24	-	D' 044760	143,350		100%	P'	246,948		100%		46,130		100%		-				-			
35	Patilis O.	47			Kitheronos 55	424848	Γ' 926724	105,550		100%		269,079		100%		120,050		100%		102,550		100%		-			
							Page Total:	7,864,925				8,620,026				4,018,700				6,429,275				3,099,550			

Notes:
T : Travelling salesman
S : Shop
A.F.M. : Taxation serial number
A.T. : Identification card number
C : Payment by cash or cheque
P : Payment by promissory note
C' : Non-payment of cheque
P' : Non-payment of promissory note

APPENDIX TABLE 100: SALES BREAKDOWN REPORT BY SALES AREA (in drachmas)

OR. SALIARIS S.A.
BLANKET MANUFACTURE

Year : 1985
Sales Area : Greater Capital Area, Attica, Viotia and Evia
Agents : N. Tsitsas
G. Kanellis

MONTHLY COMPANY SALES BREAKDOWN

	Sales		Cash In-Flows Breakdown										
	Value[1] (drs)	%	Cash	%	Promissory Notes	%	Total	%	Discounts[2]	%	Returns[3]	%	Remaining Balance At the End of the Month
January	2,495,955	3.2	2,172,897	52.3	1,977,905	47.7	4,150,802	100.0	205,279	4.9	25,485	1.0	3,984,169
February	5,582,775	7.0	2,701,534	96.4	100,000	3.6	2,801,534	100.0	267,863	9.6	11,903	0.2	6,485,644
March	4,348,055	5.5	3,688,481	59.7	2,485,740	40.3	6,174,221	100.0	184,714	3.0	-	-	4,474,764
April	2,485,915	3.1	2,424,629	93.2	177,850	6.8	2,602,479	100.0	287,903	11.1	-	-	4,070,297
May	1,100,845	1.4	2,646,132	91.6	242,350	8.4	2,888,482	100.0	172,217	6.0	-	-	2,110,443
June	190,830	0.2	443,497	100.0	-	-	443,497	100.0	122,918	27.7	-	-	1,734,858
FIRST HALF	16,204,375	20.4	14,077,170	73.8	4,983,845	26.2	19,061,015	100.0	1,240,894	6.5	37,388	0.2	"
July	1,561,170	2.0	807,725	95.4	39,140	4.6	846,865	100.0	48,374	5.7	-	-	2,400,789
August	4,108,095	5.1	1,407,121	61.0	900,000	39.0	2,307,121	100.0	239,698	10.4	-	-	3,962,065
September	10,157,460	12.8	2,014,588	56.4	1,557,850	43.6	3,572,438	100.0	148,022	4.1	46,620	0.4	10,352,445
October	16,856,629	21.2	7,877,955	88.7	1,003,115	11.3	8,881,070	100.0	189.516	2.1	-	-	18,138,488
November	20,373,685	25.6	12,442,657	80.9	2,933,335	19.1	15,375,992	100.0	1,261,694	8.2	18,700	0.1	21,855,787
December	10,266,620	12.9	11,892,284	80.5	2,883,035	19.5	14,775,319	100.0	2,451,214	16.6	234,756	2.3	14,661,118
SECOND HALF	63,323,659	79.6	36,442,330	79.6	9,316,475	20.4	45,758,805	100.0	4,338,518	9.5	300,076	0.5	"
1985 TOTAL[4]	79,528,034	100.0	50,519,500	100.0	14,300,320	100.0	64,819,820	100.0	5,579,412	8.6	337,464	0.4	

Notes:

1. Sales Value : total value of the sales invoices to the customers
2. Discounts : price discount offers to company customers for payment by cash or cheques
3. Returns : customer returns could result in any form of payment terms : cash/cheques or promissory notes
4. 1985 Total Sales : 79,528,034 drachmas
   Less : Indirect Taxation : 2,763,855 "
   1985 Total Net Sales : 76,764,179 "

OR. SALIARIS S.A.
BLANKET MANUFACTURE

Year: 1984

APPENDIX TABLE 101: STATISTICAL DATA OF PRODUCTION AND SALES ANNUAL REPORT

PRODUCT QUALITY	PRODUCTION	SALES	
	Volume (units)	Volume (units)	Value (in drachmas)
Dralon Double	19,833	29,821	46,292,754
Dralon Single	7,893	14,641	25,840,663
Superfil	7,157	8,038	18,672,930
Velour	7,349	8,561	22,302,996
Elacryl Double	17,983	19,954	27,610,005
Elacryl Single	6,488	9,296	13,457,970
Elacryl Teenager	2,336	2,860	2,920,411
Elacryl Baby	9,330	10,511	6,227,487
Nobel (Acrylic)	1,340	1,598	4,373,320
Crochet Double	-	43	75,290
Crochet Single	-	-	-
Crochet Baby	-	38	37,240
Fiorella	-	86	251,279
Army Blanket	-	993	758,885
Mantacryl Double	1,815	3,178	3,634,980
Mantacryl Single	1,646	2,272	2,674,035
Woollen Venus Double	11,538	10,355	46,547,333
Woollen Venus Single	1,646	1,713	6,011,310
Woollen Teenager	1,163	864	1,914,895
Woollen Baby	5,458	4,313	4,944,722
Woollen Stamped Double	9,055	7,953	38,606,333
Woollen Stamped Single	345	211	866,050
Woollen Star Double	641	636	2,305,732
Woollen Star Single	126	57	185,950
Nobel (Woollen)	81	12	45,925
Woollen Check Double	63	5	15,435
Mantawool Double	370	-	-
Other Acrylics[1]	2,452	2,792	4,017,885
TOTAL :	116,108	140,801	280,591,815
TOTAL[2]:	103,267	127,577	

Notes: 1 Make to order batches, export orders, tails of stocks, samples, etc.

2 Baby and teenager blankets

4 baby blankets = 1 double blanket
2 teenager " = 1 " "

APPENDIX TABLE 102: STATISTICAL MONTHLY REPORT ON PRODUCTION AND LABOUR COST CHANGE

(Financial data in drachmas)

OR. SALIARIS S.A.
BLANKET MANUFACTURE

Year: 1985
Month: May
Code: C5

STATISTICAL MONTHLY REPORT ON PRODUCTION AND LABOUR COST CHANGE

	Productive Activity	Real 8 hrs work (A)	Total wages (earnings + bonuses) (B)	Employer's Contri-butions (C)	Christmas Pay " Easter " Holiday " (D)	Labour Cost (E) = (B)+(C)+(D)	Working Hours (F) = 8 x (A)	Labour Cost/ Working Hours (G) = (E) ÷ (F)	Production (kgs/pcs) (H)	Production/ Working Hours (I) = (H) ÷ (F)
BLUE COLLARS	Dyeing	87	251,130	60,037	-	311,167	696	447	32,163 kgs	46.2 kgs/hr/person
	Spinning	290	786,241	193,007	-	979,248	2,320	422	25,602 "	11.0 " " "
	Weaving	145	382,418	93,040	-	475,458	1,160	410	5,238 pcs	4.5 pcs/hr/person
	Mending	107	265,010	61,860	-	326,870	856	382	6,780 "	7.9 " " "
	Finishing	129	340,418	80,067	-	420,485	1,032	407	3,739 "	3.6 " " "
	Cutting	56	131,093	30,610	-	161,703	448	361	3,458 "	7.7 " " "
	End-finishing	158	371,729	86,810	-	458,539	1,264	363	5,309 "	4.2 " " "
	Despatch	98	236,235	55,160	-	291,395	784	372	8,259 "	10.5 " " "
	Maintenance	78	197,688	47,378	-	245,066	624	393		
	GROUP I: TOTAL:	1,148	2,961,962	707,969	-	3,669,931	9,184	400		
WHITE COLLARS	Production	61	158,144	38,751	-	196,895	488	403		
	Administra-tion	169	577,566	119,220	-	696,786	1,352	515		
	GROUP II: TOTAL	230	735,710	157,971	-	893,681	1,840	486		
	GROUPS I & II TOTAL:	1,378	3,697,672	865,940	-	4,563,612	11,024	414		

Notes:
1. Blue Collars: Machine Operatives and Foremen
2. White Collars: Managers of the production operations and administrative personnel - accounting and sales

βιομηχανια κουβερτων ΟΡ. ΣΑΛΙΑΡΗΣ Α.Ε.

APPENDIX TABLE 103: PRODUCTION SCHEDULING PATTERNS AND A SALES FORECAST ANALYSIS FOR OR. SALIARIS S.A., BLANKET MANUFACTURE. (CASH FLOWS EXPECTATIONS ON A MONTHLY BASIS FOR THE SECOND HALF OF 1983)

ΕΔΡΑ : ΘΕΣΣΑΛΟΝΙΚΗ ΚΑΛΟΧΩΡΙΟΝ - ΤΑΧ. ΘΥΡΙΣ 263 - ΤΗΛ. 571.602)624 - 571.090 - ΤΗΛΕΓΡ. ΔΙΕΥΘΥΝΣΙΣ : P A S A L
ΓΡΑΦΕΙΑ - ΕΚΘΕΣΙΣ ΑΘΗΝΩΝ - ΑΘΑΛΑΩΝΟΣ 31 ΤΗΛ. 32.21.127 & 32.20.476 TELEX 412561 OS GR

1. PRODUCTION SCHEDULING FOR SECOND HALF OF 1983

1.1 LABOUR FORCE DISTRIBUTION

Departments \ Months		July	August	September	October	November	December
Dyeing	a	4	4	5	5	5	4
	b	1	1	2	2	2	1
Spinning	a	12	12	14	14	14	13
	b	2	2	3	3	3	2.5
Weaving	a	5	10	13	13	13	13
	b	1	2	3	3	3	3
Finishing	a	7	7	11	11	11	11
	b	2	2	2	2	2	2
End-Finishing	a	9	19	22	22	22	22
	b	1	1	1	1	1	1
Despatch	a	5	5	7	7	7	6
	b	1	1	1	1	1	1

Notes: 1. a: number of employees

b: number of shifts

2. There is a fluctuation in the company's personnel due to the annual holidays

1.2 MANUFACTURING OUTPUT

Months / Departments		July	August	September	October	November	December	Total
Dyeing	a+	36	36	54	54	54	45	279
	b+	20	20	18	18	18	11	105
Spinning	+	36	36	54	54	54	45	279
Weaving	+	20.3	40.7	61.6	61.6	61.6	61.6	307.4
	*	7,180	14,360	21,960	21,960	21,960	21,960	109,380
Finishing	c*	2,380	4,760	4,760	4,760	4,760	4,760	26,180
	d*	5,400	10,200	17,200	17,200	17,200	17,200	84,400
End-Finishing	*	7,780	14,960	21,960	21,960	21,960	21,960	110,580
Despatch	*	7,976	21,653	35,293	25,609	22,964	17,534	131,029

Notes: 1. + = tonnes * = units

2. a = dyed material for Or. Saliaris S.A. b = dyed material at subcontracted work

3. c = woollen blankets - processing at the Trikala plant
   d = acrylic blankets - processing at the company's premises at Thessaloniki

4. in the second half of 1983 it is expected that:

	spinning department's yarn production:	279	tonnes
Add:	purchase of Mantacryl yarns:	12	"
	increase in yarn inventory level:	291	"
Less:	weaving department's yarn consumption:	303	"
	decrease in yarn inventory level:	12	"

In weaving department's yarn consumption it was taken as a basis the weight of 2.5 kgs of the average unfinished woven acrylic blanket's overall weft weight, whereas for the case of the unfinished woven woollen blanket the corresponding weft weight was 3.5 kgs.

5. the overload in the finishing department during the months July and August was due to the high stocks of work in progress accommodated in the factory premises prior to the re-opening of the factory in the end of May 1983. It should be highlighted that there was a strike of the company's personnel from 10.3.1983 to 25.5.1983

1.3 SALES FORECASTING

1.3.1 EXPECTED SALES VOLUME (in pieces)

Products	SALES FOR SECOND HALF OF 1983								Average Sales during the same period in 1981 and 1982 Average Group Total
	July	August	September	October	November	December	Sub-Group Total	Group Total	
Dralon Double	824	2,419	5,044	4,260	3,179	2,031	17,757		
Dralon Single	369	1,130	2,793	2,887	2,571	1,477	11,227		
Superfil	250	711	989	796	1,067	984	4,797		
Velour	1,239	3,134	3,817	2,746	974	1,016	12,926	46,707	90,698
Elacryl Double	836	2,842	3,260	2,638	1,994	1,554	13,124		
Elacryl Single	310	1,292	2,398	1,357	2,104	829	8,290		
Elacryl Teenager	42	748	928	513	492	487	3,210		
Elacryl Baby	96	1,024	2,146	1,571	1,326	984	7,147	31,771	53,133
Woollen Venus Double	2,150	4,450	5,850	2,400	2,587	1,875	19,312		
Woollen Venus Single	30	290	670	480	517	375	2,362		
Woollen Stamped Double	293	419	687	528	569	412	2,908	24,582	483
Nobel	220	460	680	320	345	250	2,275		
Crochet	17	34	31	13	14	10	119	3,094	1,825
Mantacryl	1,100	2,300	2,900	1,100	1,225	1,250	9,875		
Exports	-	-	3,000	4,000	4,000	4,000	15,000	24,875	9,507
TOTAL:	7,976	21,653	35,293	25,609	22,964	17,534	131,029	131,029	155,646

1.3.2 EXPECTED SALES VALUE PATTERN (in drachmas)

Products	SALES FOR SECOND HALF OF 1983						
	July	August	September	October	November	December	Total
Dralon Double	1,437,880	4,221,155	8,801,780	7,433,700	5,547,355	3,544,095	30,985,965
Dralon Single	583,020	1,785,400	4,412,940	4,561,460	4,062,180	2,333,660	17,738,660
Superfil	542,500	1,542,870	2,146,130	1,727,320	2,315,390	2,135,280	10,409,490
Velour	2,886,870	7,302,220	8,893,610	6,398,180	2,269,420	2,367,280	30,117,580
Elacryl Double	1,266,540	4,305,630	4,938,900	3,996,570	3,020,910	2,354,310	19,882,860
Elacryl Single	415,400	1,731,280	3,213,320	1,818,380	2,819,360	1,110,860	11,108,600
Elacryl Teenager	37,170	661,980	821,280	454,005	435,420	430,995	2,840,850
Elacryl Baby	51,840	552,960	1,158,840	848,340	716,040	531,360	3,859,380
Woollen Venus Double	8,492,500	17,577,500	23,107,500	9,480,000	10,218,650	7,406,250	76,282,400
Woollen Venus Single	108,000	1,044,000	2,412,000	1,728,000	1,861,200	1,350,000	8,503,200
Woollen Stamped Double	1,215,950	1,738,850	2,851,050	2,191,200	2,361,350	1,709,800	12,068,200
Nobel	583,000	1,219,000	1,802,000	848,000	914,250	662,500	6,028,750
Crochet	36,550	73,100	66,650	27,950	30,100	21,500	255,850
Mantacryl	1,210,000	2,530,000	3,190,000	1,210,000	1,347,500	1,375,000	10,862,500
Exports	-	-	6,552,000	8,736,000	8,736,000	8,736,000	32,760,000
TOTAL:	18,867,220	46,285,945	74,368,000	51,459,105	46,655,125	36,068,890	273,704,285

1.4 COMPARATIVE DATA ON PRODUCTION AND SALES (in number of units)

		July	August	September	October	November	December	Total
A.	Production	7,180	14,360	21,960	21,960	21,960	21,960	109,380
B.	Sales	7,976	21,653	35,293	25,609	22,964	17,534	131,029
C.	(A) - (B)	- 796	- 7,293	- 13,333	- 3,649	- 1,004	+ 4,426	- 21,649

Note: Finished goods inventory level was estimated at 60,000 units on 30.6.1983. During the second half of 1983 it is expected to decline by 36.1% to a total of 38,351 units on 31.12.1983, considered as the safety stock level. The reduction of the physical stock will enable the company to lower its cost of capital.

1.5 METHODOLOGY. MODEL BUILDING

(i) retail sales is assumed to represent 0.8% of the total sales turnover

(ii) it is assumed that 45.2% of the total sales turnover will be met by cheques (incoming cash flows within a two month period, 10% price discount)

(iii) it is assumed that 54.0% of the total sales turnover will be on credit (promissory notes of an average time duration 7 months)

(iv) cost of borrowing from the banking sector, for short-term financing is expected to remain 24% per annum (2% on a monthly basis)

(v) the promissory notes will be cashed-in following a month's period from the date of issue

(vi) the agents' commission will remain 3.5% in the achieved sales turnover level

(vii) in the case of exports there will be an irreversable letter of credit for immediate cash payment

(viii) agents' commission payment will incur 2 months after the date of the issue of the invoice

EXAMPLE: CASH INFLOWS PATTERN

			Month 1	Month 2	Month 3
HOME MARKET SALES	A	Cash Payment	0.8% S_1	0.8% S_2	0.8% S_3
	B	Cheques	-	-	45.2% S_1 x 0.865
	C	Promissory Notes	-	54.0% S_1 x 0.88	-
EXPORTS		L.C. PAYMENT	-	100.0% S_1	-

Note: S: month's sales turnover

1.6 SELLING PRICES AS AT 1.3.1983

The company's selling prices are assumed to remain throughout the second half of 1983 at their level of the last price list on 1.3.1983. Namely:

Dralon Double	1,745 drachmas
Dralon Single	1,580 "
Superfil	2,170 "
Velour	2,330 "
Elacryl Double	1,515 "
Elacryl Single	1,340 "
Elacryl Teenager	885 "
Elacryl Baby	540 "
Woollen Venus Double	3,950 "
Woollen Venus Single	3,600 "
Woollen Stamped Double	4,150 "
Nobel	2,650 "
Crochet	2,150 "
Mantacryl Double	1,135 "
Mantacryl Single	1,065 "

1.7A: ANALYTICAL BREAKDOWN OF THE EXPECTED CASH IN-FLOWS BASED ON THE FORECASTED SALES

(in drachmas)

		1983						1984	
		July	August	September	October	November	December	January	February
Sales Turnover As Till		-	7,819,600	-	-	-	-	-	-
30.6.1983 Approx. 20,000,000		9,504,000	-	-	-	-	-	-	-
DRALON DOUBLE	A	11,503	33,769	70,414	59,470	44,379	28,353	-	
	B	-	-	562,182	1,650,387	3,441,320	2,906,429	2,168,905	1,385,670
	C	-	683,280	2,005,893	4,182,606	3,532,494	2,636,103	1,684,154	-
DRALON SINGLE	A	4,664	14,283	35,303	36,492	32,497	18,669	-	-
	B	-	-	227,949	698,055	1,725,371	1,783,440	1,588,231	912,414
	C	-	277,051	848,422	2,097,029	2,167,606	1,930,348	1,108,955	-
SUPERFIL	A	4,340	12,343	17,169	13,818	18,523	17,082	-	-
	B	-	-	212,107	603,231	839,094	675,347	905,271	834,852
	C	-	257,796	733,172	1,019,841	820,822	1,100,273	1,014,685	-
VELOUR	A	23,095	58,418	71,149	51,185	18,155	18,938	-	-
	B	-	-	1,128,708	2,855,022	3,477,224	2,501,560	887,298	925,599
	C	-	1,371,841	3,470,015	4,226,243	3,040,415	1,078,428	112,493	-
ELACRYL DOUBLE	A	10,132	34,445	39,511	31,972	24,167	18,834	-	-
	B	-	-	495,192	1,683,415	1,931,011	1,562,572	1,181,115	920,488
	C	-	601,860	2,046,035	2,346,965	1,899,170	1,435,536	1,118,768	-
ELACRYL SINGLE	A	3,323	13,850	25,706	14,547	22,555	8,887	-	-
	B	-	-	162,413	676,896	1,256,344	710,950	1,102,313	434,324
	C	-	197,398	822,704	1,526,970	864,094	1,339,760	527,881	-
ELACRYL TEENAGER	A	297	5,296	6,570	3,632	3,483	3,448	-	-
	B	-	-	14,533	258,821	321,104	177,507	170,240	168,510
	C	-	17,663	314,573	390,272	215,743	206,911	204,809	-
ELACRYL BABY	A	415	4,424	9,271	6,787	5,728	4,251	-	-
	B	-	-	20,268	216,196	453,083	331,684	279,957	207,751
	C	-	24,634	262,766	550,681	403,131	340,267	252,502	-
WOOLLEN VENUS DOUBLE	A	67,940	140,620	184,860	75,840	81,749	59,250	-	-
	B	-	-	3,320,398	6,872,451	9,034,570	3,706,490	3,995,288	2,895,696
	C	-	4,035,636	8,352,828	10,980,684	4,504,896	4,855,902	3,519,450	-
WOOLLEN VENUS SINGLE	A	864	8,352	19,296	13,824	14,890	10,800	-	-
	B	-	-	42,226	408,183	943,044	675,613	727,692	527,823
	C	-	51,322	496,109	1,146,182	821,146	884,442	641,520	-
WOOLLEN STAMPED DOUBLE	A	9,728	13,911	22,808	17,530	18,891	13,678	-	-
	B	-	-	475,412	679,855	1,114,703	856,715	923,241	668,498
	C	-	577,819	826,201	1,354,819	1,041,258	1,122,113	812,497	-
NOBEL	A	4,664	9,752	14,416	6,805	7,314	5,300	-	-
	B	-	-	227,941	476,605	704,546	332,587	357,453	259,024
	C	-	277,042	579,269	856,310	404,229	434,452	314,820	-
CROCHET	A	292	585	533	276	297	172	-	-
	B	-	-	14,290	28,581	26,059	13,469	14,505	8,406
	C	-	17,368	34,737	31,672	16,371	17,630	10,217	-
MANTACRYL	A	9,680	20,240	25,520	9,680	10,780	11,000	-	-
	B	-	-	473,086	989,179	1,247,226	473,086	522,631	537,597
	C	-	574,992	1,202,256	1,515,888	574,992	635,209	653,400	-
EXPORTS		-	-	-	6,552,000	8,736,000	8,736,000	8,736,000	8,736,000
LESS: AGENTS' COMMISSION		182,478	324,241	565,380	1,081,399	1,055,763	825,542	671,636	367,087
CASH IN-FLOWS TOTAL		9,472,459	16,831,349	29,348,831	56,135,498	54,804,711	42,853,944	34,864,655	19,055,565

1.7B CASH INFLOWS OF THE EXPECTED SALES TURNOVER

	1983						1984	
	July	August	September	October	November	December	January	February
Sales Turnover to 30.6.1983 approx. 20,000,000	9,504,000	7,819,600	-	-	-	-	-	-
Dralon Double Dralon Single Superfil Velour	43,602	2,708,781	9,382,483	17,493,379	19,157,900	14,694,969	9,469,992	4,058,535
Elacryl Double Elacryl Single Elacryl Teenager Elacryl Baby	14,167	899,570	4,219,542	7,707,154	7,399,613	6,140,609	4,837,585	1,731,073
Woollen Venus Double Woollen Venus Single Woollen Stamped Double	78,532	4,827,660	13,740,138	21,549,368	17,575,147	12,185,003	10,619,688	4,092,017
Nobel Crochet Mantacryl	14,636	899,979	2,572,048	3,914,996	2,991,814	1,922,905	1,873,026	805,027
Exports	-	-	-	6,552,000	8,736,000	8,736,000	8,736,000	8,736,000
Less: Agents' Commission for sales receipts by promissory Notes	182,478	324,241	565,380	1,081,399	1,055,763	825,542	671,636	367,087
Cash Inflows Sub-Total:	9,472,459	16,831,349	29,348,831	56,135,498	54,804,711	42,853,944	34,864,655	19,055,565

Cash Inflows Total: 263,367,012

Note: January and February 1984 expected cash inflows correspond to the forecasted sales in November and December 1983 alone

1.8 CASH OUT-FLOWS OF THE SYSTEM

	1983						1984	
	July	August	September	October	November	December	January	February
Customs Duties	1,600,000	2,350,000	2,900,000	2,900,000	2,900,000	2,900,000	2,900,000	2,900,000
Wages and Salaries	4,000,000	4,000,000	4,000,000	4,000,000	4,000,000	8,000,000	4,000,000	4,000,000
Employer's Contributions	1,000,000	1,000,000	1,000,000	1,000,000	1,000,000	1,000,000	1,250,000	1,250,000
Process Additives	2,075,335	2,174,965	2,174,965	2,169,785	2,174,965	2,168,490	2,174,965	2,169,785
Payment in Arrears	1,000,000	1,200,000	1,400,000	1,500,000	1,600,000	1,500,000	1,600,000	1,500,000
Foreign Promissory Notes Payable	590,000	3,200,000	4,000,000	1,000,000	100,000	3,600,000	1,000,000	2,000,000
Interior Notes Payable	3,410,000	300,000	3,500,000	-	-	-	-	12,000,000
Instalments of the Earth-quake Sufferers Loan	-	431,250	-	-	-	-	-	431,250
Instalments of the Fixed Assets Loans	-	10,000,000*	5,000,000	-	-	-	5,000,000	-
Instalments of the ETEBA Loans	1,780,000	3,360,000	-	-	440,000	-	1,780,000	3,360,000
Indirect Taxes	450,000	1,000,000	700,000	1,500,000	4,300,000	1,000,000	1,500,000	5,000,000
Interest Payable on Current Banks' Credit Accounts	6,200,000	-	-	5,500,000	-	-	6,200,000	-
Creditors	1,710,000	500,000	500,000	1,000,000	1,000,000	1,000,000	500,000	500,000
Instalments of the Current Banks' Credit Accounts	21,000,000*	19,000,000*	6,000,000*	7,000,000*	7,700,000*	4,000,000*	-	-
Cash Out-flows Sub-Total:	23,815,335	19,516,215	25,174,965	20,569,785	17,514,965	21,168,490	27,904,965	35,111,035

Cash Out-flows Total:	190,775,755
Re-cycled Loans' Instalments:	74,700,000
Total Liabilities for the Period:	265,475,755

Note: * A re-cycling of these loans is expected thus the indicated sums have not been considered as current monthly cash out-flows

1.9 COMPANY'S CASH POSITION

		July	August	September	October	November	December	Total
A	Cash Inflows	9,472,459	16,831,349	29,348,831	56,135,498	54,804,711	42,853,944	209,446,792
B	Cash Out-flows	23,815,335	19,516,215	25,174,965	20,569,785	17,514,965	21,168,490	127,759,755
C	(A) - (B)	-14,342,876	-2,684,866	4,173,866	35,565,713	37,289,746	21,685,454	81,687,037

APPENDIX TABLE 104: BALANCE SHEETS AS AT 31st DECEMBER (1978-1987)
(in million drachmas)

OR. SALIARIS S.A.
BLANKET MANUFACTURE

FINANCIAL STATEMENTS

	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987
SHARE CAPITAL [1]	52.454	52.454	52.454	52.454	83.958	83.958	83.958	83.958	83.958	83.958
RESERVES (Owners' Equity)	50.735	50.594	53.804	61.396	61.399	61.399	52.541	52.541	52.541	52.541
	103.189	103.048	106.258	113.850	145.357	145.357	136.499	136.499	136.499	136.499
LONG TERM LIABILITIES	35.515	32.734	73.184	59.601	47.579	57.582	40.796	28.281	14.450	14.450
CAPITAL EMPLOYED	138.704	135.782	179.442	173.451	192.936	202.939	177.295	164.780	150.949	150.949
FIXED ASSETS										
Factory and Machines at cost	125.519	156.944	186.259	204.091	283.359	285.989	211.899	212.064	211.065	219.619
Less: accumulated depreciation	34.110	57.321	80.564	105.471	137.695	152.423	138.393	138.393	137.513	137.513
	91.409	99.623	105.695	98.620	145.664	133.566	73.506	73.671	73.552	82.106
INVESTMENT	1.000	1.000	1.000	1.000	1.000	0.600	-	-	-	-
Add: accumulated loss	-	-	-	-	-	19.810	49.755	95.721	132.492	169.759
CURRENT ASSETS										
Stock	46.387	63.783	90.845	132.179	161.109	169.828	171.188	180.590	149.903	85.733
Debtors	49.504	61.491	65.782	78.119	47.671	44.804	62.128	60.067	31.108	20.138
Cash and short-term deposits	32.928	14.264	16.089	6.791	16.603	11.548	18,409	14.376	20.884	30.074
	128.819	139.538	172.716	217.089	225.383	226.180	251.725	255.033	201.895	135.945
Less: CURRENT LIABILITIES	82.524	104.379	99.969	143.258	179.111	177.217	197.691	259.645	256.990	236.861
NET CURRENT ASSETS	46.295	35.159	72.747	73.831	46.272	48.963	54.034	-4.612	-55.095	-100.916
NET ASSETS	138.704	135.782	179.442	173.451	192.936	202.939	177.295	164.780	150.949	150.949

Notes: 1. 52,454 ordinary shares 1,000 drachmas each (as from 1978 when OR. SALIARIS & SONS was transformed to OR. SALIARIS S.A.)
83,958 " " " " " (as from 1982 under the provision of Law N 1249/82)

APPENDIX TABLE 105: MAJOR GREEK BLANKET MANUFACTURING COMPANIES (ACRYLICS AND/OR WOOLLEN) THE 1980-1986 OUTLOOK

(Financial data in million drachmas)

A/A	Blanket Mfg. Companies	Estd.	Acrylic	Woollen	Activity	No. of Employees							Net Profit (Loss)						
						1980	1981	1982	1983	1984	1985	1986	1980	1981	1982	1983	1984	1985	1986
1	Anatolia Inc.▲	1951		•	Mfg. of machine-made carpets, moquette carpeting, woollen blankets	480	430	410	410	410	350	300	-	(39)	(1)	(1)	(155)	(266)	(237)
2	Ariston Wool Ind. S.A. *	1935	o	•	Mfg. of acrylic & woollen yarns and blankets	152	100	90	90	90	90	107	(58)	(150)	(150)	⚠	⚠	(691)	(502)
3	Vetlans-Naoussa S.A.	1922	o		Mfg. of acrylic yarns and blankets	795	724	724	724	700	700	700	51	76	46	21	8	9	⚠
4	Biocarpet Carpet Manufacture S.A.Δ	1969		•	Mfg. of wool carpets (machine made and hand-tufted), flokati rugs, moquette carpeting, woollen blankets	380	400	400	400	450	430	430	99	105	86	226	191	229	421
5	Ellaif S.A.	1958	o		Mfg. of acrylic yarns and blankets	123	110	78	78	**	**	**	(6)	(8)	(32	⚠	**	**	**
6	Ilios C.S. Constantinides S.A. *	1936	o		Mfg. of velvets (upholstery, tablecloths and clothing), acrylic blankets and curtains	630	600	600	600	400	360	360	9	-	(21)	(130)	(101)	(584)	(563)
7	Papadimitriou & Son, Carpet Manufacture 'Greco' S.A.	1890		•	Mfg. of machine-made carpets and woollen blankets	250	250	280	210	210	**	**	⚠	⚠	⚠	⚠	⚠	**	**
8	Pella-Olympos S.A.	1979	o		Mfg. of woollen and acrylic yarns, acrylic blankets	350	500	470	470	470	500	450	24	14	2	1	-	12	80
9	Persika S.A.▲	1969		•	Mfg. of woollen machine-made carpets, woollen blankets	190	170	190	190	190	160	160	20	7	7	11	11	32	125
10	Polylan S.A.	1975	o		Mfg. of acrylic yarns and blankets	50	45	15	15	**	**	**	(3)	(3)	(18)	⚠	**	**	**
11	OR. Saliaris S.A.	1935	o	•	Mfg. of acrylic & woollen yarns and blankets, bedspreads	126	115	105	92	89	85	10	8	13	-	(20)	(30)	(46)	(37)
12	Tsaktanis A.G.	1974		•	Mfg. of flokati rugs, woollen blankets, bedspreads, upholstery fabrics	160	150	100	100	100	**	**	2	(55)	8	29	⚠	**	**
13	Flocadam S.A.	1948	o		Mfg. of acrylic yarns and blankets	140	130	110	110	**	**	**	(13)	(6)	(55)	⚠	**	**	**

Notes: ⚠ Balance sheet not published

** Company under liquidation

* Company under government control by the provisions of law N 1386/83

▲ Abandoned blanket production in 1982

Δ Concentrates mainly in carpet manufacture

Sources: ICAP annual publications

APPENDIX TABLE 106: ACCOUNTING RATIOS' ANALYSIS (1978-1987)
(Financial appraisal as at 31st December)

OR. SALIARIS S.A.
BLANKET MANUFACTURE

ACCOUNTING RATIOS' ANALYSIS

	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987
1. INVESTMENT MEASURES										
(d) Return on equity	1.3%	20.3%	14.3%	18.2%	0.1%	-32.3%	-57.0%	-87.5%	-70.0%	-70.9%
(b) Earnings per share	-	60 drs	60 drs	60 drs.	0 drs	0 drs	0 drs	0 drs	0 drs	0 drs
2. MEASURES OF PERFORMANCE										
(d) Return on net assets	8.3%	19.7%	18.4%	20.8%	18.6%	11.6%	7.8%	-3.4%	-3.9%	-11.2%
(b) Profit margin	7.3%	13.5%	14.9%	14.3%	13.7%	11.1%	5.2%	-1.9%	-3.8%	-20.6%
(c) Asset turnover	1.1 times	1.5 times	1.2 times	1.4 times	1.3 times	1.0 times	1.2 times	1.8 times	1.0 times	0.5 times
(d) Stock turnover	3.8 times	3.4 times	2.5 times	2.1 times	1.7 times	1.4 times	1.8 times	2.4 times	1.7 times	1.6 times
(e) Debtor turnover	3.2 times	3.2 times	3.4 times	3.2 times	5.5 times	4.7 times	4.2 times	4.9 times	4.9 times	4.1 times
(f) Gross profit (%)	20.6%	29.5%	25.9%	26.7%	25.5%	21.9%	14.6%	8.0%	15.6%	2.5%
(g) Selling and administrative costs/sales (%)	12.9%	16.0%	11.0%	12.4%	11.7%	10.8%	9.4%	9.9%	19.4%	23.1%
3. MEASURES OF FINANCIAL STATUS										
A Solvency										
(d) Debt/capital employed (%)	25.6%	24.1%	40.8%	34.4%	24.7%	28.4%	23.0%	17.1%	9.6%	9.6%
B Liquidity										
(d) Current Ratio	1.6 times	1.3 times	1.7 times	1.5 times	1.2 times	1.3 times	1.3 times	1.0 times	0.8 times	0.6 times
(b) Acid test	1.0 times	0.7 times	0.8 times	0.6 times	0.3 times	0.3 times	0.4 times	0.3 times	0.2 times	0.2 times

APPENDIX TABLE 107: LONG & SHORT-TERM LIABILITIES AS AT 31st DECEMBER (1978-1987)

(in million drachmas)

OR. SALIARIS S.A.
BLANKET MANUFACTURE

LONG & SHORT TERM LIABILITIES

LONG-TERM LIABILITIES	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987
Loans by ETEBA	34.040	27.000	68.190	55.720	44.560	55.426	39.502	27.850	14.450	14.450
" by Bank ND 257/76	1.030	0.559	-	-	-	-	-	-	-	-
" by the Bank of Earthquake Sufferers	-	5.175	4.994	3.881	3.019	2.156	1.294	0.431	-	-
Promissory Notes Payable	0.445	-	-	-	-	-	-	-	-	-
TOTAL	35.515	32.734	73.184	59.601	47.579	57.582	40.796	28.281	14.450	14.450

SHORT-TERM LIABILITIES	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987
Loans by ETEBA	5.340	6.944	8.804	13.157	14.941	14.423	15.082	38.016	64.934	72.381
" by Bank ND 257/76	0.437	0.481	0.561	-	-	-	-	-	-	-
" by Other Banks	-	-	-	7.000	30.180	21.534	10.138	12.654	-	-
" by the Bank of Earthquake Sufferers	-	-	0.181	0.863	0.863	0.900	0.863	1.316	1.442	-
" for Exports	-	-	-	4.579	5.824	0.416	2.788	0.034	-	-
" under Bank Pledge (a)	-	-	-	-	-	8.186	14.551	15.451	-	-
(b)	-	-	-	-	-	-	11.119	2.598	1.117	1.120
Current Bank Credit A/Cs	25.179	32.000	16.930	27.881	62.000	68.659	70.705	73.817	56.759	52.378
Interior Notes Payable	20.189	19.725	20.039	22.038	23.898	15.619	19.060	15.459	8.329	3.162
Foreign Promissory Notes Payable (Raw Materials)	18.396	21.606	25.585	40.222	22.348	35.069	42.296	90.705	112.082	102.959
Foreign Promissory Notes Payable (M/Cs & Accessories)	1.214	1.033	1.699	0.700	-	-	-	-	-	-
Credit Accounts	0.696	8.796	7.326	5.028	3.260	-	1.756	1.485	-	-
Creditors	2.967	2.894	4.515	5.043	5.390	3.486	2.868	3.574	5.307	2.278
Ionian Insurance Co.	0.025	0.025	0.025	0.025	0.025	0.025	0.025	0.025	0.025	0.025
Taxes & Contributions Payable	3.032	3.938	4.140	6.843	4.484	5.775	2.059	2.773	4.082	1.004
Forecasted Expenses	0.611	2.921	6.410	4.357	5.845	2.334	4.355	1.712	2.887	0.537
Salaries Payable to the Board of Directors	-	-	-	0.300	-	-	-	-	-	-
Temporary Accounts	0.152	0.500	0.300	0.047	-	0.765	-	-	-	-
Taxes of 'D' Classification	1.138	0.369	0.307	2.028	0.027	-	-	-	-	-
Dividends Payable	3.147	3.147	3.147	3.147	-	-	-	-	-	-
V.A.T.	-	-	-	-	-	-	-	-	-	0.991
C/F from the Profit & Loss A/C	-	-	-	-	0.026	0.026	0.026	0.026	0.026	0.026
TOTAL	82.524	104.379	99.969	143.258	179.111	177.217	197.691	259.645	256.990	236.861
TOTAL LIABILITIES	118.039	137.113	173.153	202.859	226.690	234.799	238.487	287.926	271.440	251.311

Notes: (a) Loans under bank pledge (for interior notes payable)
(b) " " " " (for finished goods)

APPENDIX TABLE 108: SOURCE AND APPLICATION OF FUNDS ANALYSIS AS AT 31st DECEMBER (1978-1987)

(in million drachmas)

OR. SALIARIS S.A.
BLANKET MANUFACTURE

SOURCE AND APPLICATION OF FUNDS

	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987
SOURCE OF FUNDS										
Arising from Trading										
Funds from operations	86.879	74.819	79.652	92.144	130.347	61.693	15.673	23.830	23.173	2.077
Δ Liabilities										
Increase/(decrease) in long-term liabilities	-	-	40.450	-	-	10.003	-	-	-	-
Increase/(decrease) in short-term liabilities	21.075	21.855	-	43.289	35.853	-	20.474	61.954	-	-
Δ Assets										
(Increase)/decrease in fixed assets	-	-	-	-	-	-	74.090	-	0.999	-
(Increase)/decrease in stocks	-	-	-	-	-	-	-	-	30.687	64.170
(Increase)/decrease in debtors	-	-	-	-	30.448	2.867	-	2.061	28.959	10.970
(Increase)/decrease in cash and short-term deposits	-	18.664	-	9.298	-	5.055	-	4.033	-	-
	107.954	115.338	120.102	144.731	196.648	79.618	110.237	91.878	83.818	77.217
APPLICATION OF FUNDS										
Payment of dividends	-	3.147	3.147	3.147	-	-	-	-	-	-
Payment of taxation	-	-	0.307	2.028	-	-	-	-	-	-
Directors' remuneration	0.250	0.250	0.300	0.300	-	-	-	-	-	-
Selling and administrative payments	20.497	31.820	24.469	31.282	30.722	22.918	24.774	29.388	29.863	18.992
Interest payments (S.T.L. + L.T.L.)	11.545	16.532	24.976	22.888	35.894	43.457	43.732	40.408	30.941	20.352
Movement in Working Capital										
Δ Liabilities										
(Increase)/decrease in long-term liabilities	5.661	2.781	-	13.583	12.022	-	16.786	12.515	13.831	-
(Increase)/decrease in short-term liabilities	-	-	4.410	-	-	1.894	-	-	2.655	20.129
Δ Assets										
Increase/(decrease) in fixed assets	33.888	31.425	29.315	17.832	79.268	2.630	-	0.165	-	8.554
Increase/(decrease) in stocks	5.290	17.396	27.062	41.334	28.930	8.719	1.360	9.402	-	-
Increase/(decrease) in debtors	19.114	11.987	4.291	12.337	-	-	17.324	-	-	-
Increase/(decrease) in cash and short-term deposits	11.709	-	1.825	-	9.812	-	6.261	-	6.508	9.190
	107.954	115.338	120.102	144.731	196.648	79.618	110.237	91.878	83.818	77.217

Notes: $I_{S.T.L.}$ = Interest on short-term loans

$I_{L.T.L.}$ = Interest on long-term loans

APPENDIX TABLE 109: ANALYSIS OF BANK CREDIT TO THE MANUFACTURING SECTOR IN GREECE (1975-1986)

(Outstanding balance in billion drachmas at the end of the period)

Year	Credit to Manufacturing (A)	Annual Percentage Increase	(A) as a % to Total Bank Credit to the Private Sector
1975	136.8	30.9	45.2
1976	170.7	24.8	45.0
1977	214.4	25.6	45.0
1978	269.3	25.6	46.0
1979	325.9	21.0	47.1
1980	410.3	25.9	49.5
1981	541.4	25.4	52.0
1982	667.9	23.4	51.6
1983	774.7	16.0	50.9
1984	927.0	19.6	50.7
1985	1,108.5	19.6	50.6
1986*	1,227.4	10.7	49.5

Note: * Provisional data

Source: Bank of Greece, Monthly Statistical Bulletin

Reference: Epilogi (1988) "The Greek Economy in Figures" Electra Press Publications, Athens 294

APPENDIX TABLE 110: SHORT-RUN AND LONG-RUN NOMINAL LENDING RATES TO THE INDUSTRY IN GREECE (1970-1987)

(rates at the end of year)

Year	Short-Run	Long-Run
1970	8.0	7.5
1971	8.0	7.5
1972	8.0	7.5
1973	10.0	8.5
1974	12.0	10.5
1975	11.5	10.5
1976	11.5	10.5
1977	12.0	10.5
1978	14.5	11.5
1979	20.0	15.5
1980	22.5	18.0
1981	20.5	18.0
1982	20.5	18.0
1983	20.5	18.0
1984	20.5	18.0
1985	20.5	18.0
1986	20.5	18.0
1987	21.0	18.0

Source: Bank of Greece

References: Epilogi (1985e) "Interest Rates" 3 195
Nafteboriki (1988t) "Commercial Banks' Interest Rates" 7 (17789) 27

APPENDIX TABLE 111: NUMBER OF COMPANIES-INDUSTRY GROUP TOTAL (1980-1986)

Industry Groups	1980	1981	1982	1983	1984	1985	1986
20	397	432	360	387	416	407	436
21	68	74	64	69	71	80	81
22	7	7	7	7	8	8	8
23	424	429	365	384	394	390	425
24	273	285	248	275	290	283	341
25	55	62	51	53	54	55	61
26	66	80	64	65	72	74	76
27	67	72	58	66	74	76	74
28	173	185	128	155	170	172	189
29	24	24	20	23	21	19	22
30	179	186	151	170	168	171	183
31	277	283	232	238	247	248	252
32	14	16	15	16	15	16	14
33	251	270	222	245	264	279	292
34	18	17	18	21	22	22	19
35	267	272	227	254	263	256	265
36	127	125	91	102	110	118	123
37	175	181	144	145	146	165	170
38	125	123	96	90	85	80	88
39	95	87	63	69	69	78	91
	3,082	3,210	2,624	2,834	2,959	2,997	3,210

Source-Reference: ICAP annual publications

APPENDIX TABLE 112: NUMBER OF EMPLOYEES-INDUSTRY GROUP TOTAL (1980-1986)

Industry Groups	1980	1981	1982	1983	1984	1985	1986
20	41,157	46,170	41,975	42,416	46,659*	40,026	43,540
21	9,088	9,620*	9,472	8,969	9,080	9,277	9,018
22	4,267	4,122	4,179	4,367	4,310	4,206	3,962
23	62,023*	60,836	53,804	55,476	54,708	53,902	48,973
24	23,018	22,273	18,582	21,078	21,760	21,005	23,305*
25	5,466	5,601*	5,012	4,933	4,848	4,758	4,743
26	3,229	3,546	3,118	2,890	2,556	2,600	2,741
27	8,035	8,318	6,748	7,778	8,214	8,695*	8,451
28	7,435	7,628	6,769	7,499	8,002	8,017	8,665*
29	1,504*	1,338	1,322	1,355	1,320	1,189	894
30	12,473*	11,901	11,719	11,079	10,679	10,551	10,070
31	24,669	26,093*	23,962	25,555	25,036	24,998	24,044
32	3,520	3,563	3,934	3,962	3,482	3,920	4,126*
33	26,442*	26,052	23,213	24,016	24,001	24,142	19,406
34	10,217	10,039	9,901	10,748	11,256	11,351*	9,515
35	26,122*	25,492	23,824	26,110	23,809	21,469	21,333
36	5,738*	4,297	4,199	4,166	4,211	4,043	3,595
37	16,940*	16,677	14,487	14,006	13,880	13,572	12,824
38	24,026	24,715*	21,647	20,446	18,747	16,423	16,042
39	4,885	3,568	3,220	3,085	2,961	4,617*	4,353
	319,254	322,849*	291,087	299,934	299,519	288,761	279,600

Notes: * : Peak levels

Source-Reference: ICAP annual publications

APPENDIX TABLE 113: TOTAL ASSETS PER EMPLOYEE-INDUSTRY GROUP AVERAGE (1980-1986)

(Data in thousand drachmas)

Industry Groups	1980	1981	1982	1983	1984	1985	1986
20	2,184	2,595	3,475	3,628	4,310	6,149	6,316
21	2,457	3,150	4,623	5,138	5,640	6,419	7,051
22	3,018	3,091	3,771	3,973	4,706	5,280	7,095
23	1,895	2,364	2,940	3,386	3,729	4,295	5,781
24	846	968	1,433	1,529	1,747	2,022	2,389
25	2,314	2,893	3,536	3,988	4,464	4,818	5,392
26	1,154	1,278	1,940	2,343	2,287	2,611	3,119
27	2,762	3,261	3,965	4,473	5,028	5,001	5,632
28	1,026	1,381	2,025	2,275	2,820	3,165	3,738
29	1,963	2,447	3,592	3,979	4,968	5,338	7,344
30	1,782	2,262	2,695	3,495	4,144	4,782	5,421
31	2,201	2,685	3,640	4,263	5,017	6,031	6,812
32	19,285	22,365	21,761	34,085	94,377	97,884	122,598
33	2,158	2,889	4,373	4,976	5,864	6,384	7,539
34	5,223	7,360	9,897	12,166	13,852	15,393	17,726
35	1,937	2,472	3,176	3,535	3,853	5,237	7,325
36	1,534	1,997	2,678	3,224	3,315	4,087	4,853
37	1,999	2,357	3,251	3,850	4,314	5,147	7,034
38	3,053	3,531	4,967	6,162	7,919	10,275	11,074
39	2,252	2,626	3,842	2,847	3,672	3,187	4,065
	2,366	2,866	3,837	4,496	5,785	6,936	8,314

Source-Reference: Processed data from ICAP publications

APPENDIX TABLE 114: NET PROFITS BEFORE TAXATION-INDUSTRY GROUP AVERAGE (1980-1986)

(Data in million drachmas)

Industry Groups	1980	1981	1982	1983	1984	1985	1986
20	1,886	2,458	563	1,090	2,087	2,560	2,506
21	371	(1,093)	(2,506)	(2,014)	(2,869)	(479)	1,858
22	347	616	92	513	1,063	540	1,993
23	2,752	(1,183)	(2,607)	(2,517)	(4,917)	(4,516)	14,017
24	817	716	825	876	359	1,649	4,320
25	481	(9)	(504)	(671)	(1,480)	(978)	(918)
26	48	14	5	(55)	(2)	151	(337)
27	(1,422)	(1,053)	427	(800)	(4,422)	(12,810)	(8,851)
28	219	72	(295)	(225)	(896)	(640)	833
29	13	128	69	80	346	249	469
30	605	1,066	530	604	394	80	2,681
31	2,089	3,037	(53)	1,030	3,565	4,363	8,995
32	2,183	1,405	1,276	1,562	3,073	4,282	5,001
33	2,503	2,375	(827)	(6,685)	(8,628)	(14,101)	(5,592)
34	3,059	983	(1,349)	(571)	(3,332)	(3,233)	(4,258)
35	798	529	(2,263)	3,540	3,342	919	(4,984)
36	(110)	(200)	146	(62)	(539)	(14)	526
37	71	652	501	1,684	(197)	340	3,890
38	(902)	(1,185)	(3,727)	(5,597)	(6,490)	(8,814)	(10,984)
39	534	474	237	415	731	1,387	2,956
	16,343	9,804	(9,461)	(7,801)	(18,812)	(29,067)	14,122

Source-Reference: ICAP annual publications

APPENDIX TABLE 115: RETURN ON STOCKHOLDERS' EQUITY (1980-1986)

(Corporations and limited liability companies)

Industry Groups	1980	1981	1982	1983	1984	1985	1986
20	8.5	9.2	1.6	3.1	4.6	5.7	5.0
21	7.1	(22.5)	(21.8)	(15.8)	(222.1)	(11.5)	12.9
22	16.8	25.8	2.5	13.9	26.1	12.9	41.1
23	9.7	(3.9)	(7.0)	(6.6)	(18.2)	(22.4)	20.0
24	16.0	11.9	9.4	9.2	4.5	18.9	29.7
25	13.5	(0.2)	(8.7)	(13.2)	(33.7)	(27.3)	(28.1)
26	3.0	0.7	0.1	(1.8)	(0.1)	5.4	(13.8)
27	(338.8)	(336.4)	8.7	(35.3)	a_1	a_1	a_1
28	7.1	2.1	(5.7)	(3.8)	(14.7)	(10.0)	7.7
29	1.3	13.2	4.2	4.7	16.6	13.9	22.9
30	8.9	13.5	4.8	4.8	2.8	0.5	15.1
31	11.0	13.2	(0.2)	2.7	7.7	8.6	15.6
32	38.2	21.4	14.7	16.1	26.8	30.2	28.3
33	15.2	12.9	(3.1)	(30.4)	(61.8)	a_2	(15.9)
34	19.1	3.7	(3.9)	(1.5)	(7.9)	(6.5)	(9.7)
35	6.5	4.0	(13.1)	13.6	14.1	4.3	(28.8)
36	(5.1)	(7.5)	4.0	(1.7)	(17.8)	(0.5)	11.7
37	1.0	8.8	3.9	12.9	(1.7)	3.5	30.7
38	(5.8)	(7.2)	(14.2)	(22.2)	(23.7)	(37.3)	(40.6)
39	19.4	18.5	4.1	13.1	22.4	36.1	54.9
	9.3	4.7	(3.2)	(2.5)	(6.8)	(11.4)	3.7

Notes:

a) (Net profit/Net worth %)
Financial data presented below within parenthesis in million drachmas

a_1 Industry group 27 negative net worth (20,958/1984), (32,634/1985), (33,336/1986)

a_2 Industry group 33 negative net worth (31/1985)

Source-Reference: ICAP annual publications

APPENDIX TABLE 116: RATIO : DEBT TO ASSETS (x100)- INDUSTRY GROUP AVERAGE (1980-1986)

Industry Groups	1980	1981	1982	1983	1984	1985	1986
20	78	78	76	77	77	82	82
21	79	84	74	72	97	93	78
22	86	81	77	78	79	81	83
23	79	79	77	79	86	91	75
24	75	72	68	70	79	80	74
25	75	72	67	74	80	85	88
26	56	57	51	54	55	60	72
27	100	101	82	93	150	176	172
28	65	69	63	65	73	76	67
29	71	70	66	68	68	72	68
30	71	71	65	67	68	69	68
31	67	67	64	64	63	66	65
32	94	92	90	92	96	96	97
33	73	76	74	81	90	100	76
34	73	64	65	70	73	72	74
35	78	79	77	71	74	81	89
36	77	75	67	72	78	84	74
37	81	81	73	75	80	86	86
38	81	81	76	79	81	86	85
39	68	73	54	64	69	75	70
	77	78	74	77	84	87	84

Source-Reference: Processed data from ICAP publications

APPENDIX TABLE 117A: AGGREGATED DATA ON GREEK MANUFACTURING COMPANIES BY FIRM SIZE (NO. OF EMPLOYEES) 1983-1986

(Financial data in million drachmas)

	LARGE-SIZED COMPANIES			
	Firm Size - Employed Persons (500+)			
DATA	1983	1984	1985	1986
No. of Companies	103	99	90	89
No. of People Employed	121,834	119,462	110,334	98,122
Total Assets (Capital Employed)	734,635	1,010,222	1,154,769	1,334,586
Fixed Assets	539,752	622,172	703,627	749,789
Total Liabilities (Debt)	602,100	903,409	1,072,208	1,187,161
Net Worth	132,544	106,981	82,562	147,426
Net Profit (Net Loss)	(12,084)	(22,326)	(38,027)	(28,810)
Net Profit/ Net Worth %	(9.1)	(20.9)	(46.0)	(19.5)
Debt/Capital Employed %	81.9	89.4	92.8	88.9

Source-Reference: Processed data from ICAP annual publications

APPENDIX TABLE 117B: AGGREGATED DATA ON GREEK MANUFACTURING COMPANIES BY FIRM SIZE (NO. OF EMPLOYEES) 1983-1986

(Financial data in million drachmas)

	MEDIUM-SIZED COMPANIES			
	Firm Size - Employed Persons (100→499)			
DATA	1983	1984	1985	1986
No. of Companies	517	517	495	501
No. of People Employed	106,592	106,496	103,603	103,662
Total Assets (Capital Employed)	380,218	434,725	514,356	589,351
Fixed Assets	211,222	246,022	271,787	296,651
Total Liabilities (Debt)	286,748	355,644	446,755	484,712
Net Worth	92,838	79,311	67,577	104,655
Net Profit	1,435	638	403	20,860
Net Profit/ Net Worth %	1.5	0.8	0.6	19.9
Debt/Capital Employed %	75.4	81.8	87.0	82.2

Source-Reference: Processed data from ICAP annual publications

APPENDIX TABLE 117C: AGGREGATED DATA ON GREEK MANUFACTURING COMPANIES BY FIRM SIZE (NO. OF EMPLOYEES) 1983-1986

(Financial data in million drachmas)

	SMALL-SIZED COMPANIES			
	Firm Size - Employed Persons (10→99)			
DATA	1983	1984	1985	1986
No. of Companies	1,938	2,002	2,070	2,216
No. of People Employed	68,405	69,944	71,514	75,052
Total Assets (Capital Employed)	225,359	275,610	318,419	383,152
Fixed Assets	136,280	166,589	179,450	206,431
Total Liabilities (Debt)	145,480	190,387	219,245	264,320
Net Worth	79,801	85,194	99,415	118,839
Net Profit	2,890	2,938	8,404	21,477
Net Profit/ Net Worth %	3.6	3.4	8.4	18.1
Debt/Capital Employed %	64.5	69.1	68.8	69.0

Source-Reference: Processed data from ICAP annual publications

APPENDIX TABLE 118A: BASIC DATA ON THE 10 LARGEST GREEK MANUFACTURING COMPANIES RANKED BY TOTAL ASSETS (1980-1986)

(Financial data in million drachmas)

Years	1980		1981		1982		1983		1984		1985		1986	
Data	A	B	A	B	A	B	A	B	A	B	A	B	A	B
No. of companies	10	0.3	10	0.3	10	0.4	10	0.3	10	0.3	10	0.3	10	0.3
Total Assets	120,855	16.0	164,236	18.0	250,308	22.4	354,669	26.3	594,286	34.3	688,930	34.4	846,870	36.4
Debt	98,556	17.0	134,287	19.0	202,299	24.6	302,296	29.1	536,192	36.8	625,883	35.8	731,476	37.6
Net Profit	6,700	41.0	4,008	41.0										
Net Loss					3,060	32.3	6,257	62.5	9,368	49.8	14,870	51.2	7,162	(50.7)
Employees	15,963	5.0	19,986	6.0	27,475	9.4	25,820	8.6	25,459	8.5	24,725	8.6	18,649	6.7

Notes: A - Data of the 10 largest manufacturing companies per annum

B - Percentage of the 10 largest versus total ICAP directory manufacturing companies

Source-Reference: ICAP annual publications

APPENDIX TABLE 118B: BASIC DATA ON THE 100 LARGEST GREEK MANUFACTURING COMPANIES RANKED BY TOTAL ASSETS (1980-1986)

(Financial data in million drachmas)

Years	1980		1981		1982		1983		1984		1985		1986	
Data	A	B	A	B	A	B	A	B	A	B	A	B	A	B
No. of companies	100	3.2	100	3.1	100	3.8	100	3.5	100	3.4	100	3.3	100	3.1
Total Assets	392,779	52.0	477,322	52.0	641,337	57.4	791,906	58.7	1,089,813	62.9	1,268,525	63.3	1,465,179	63.0
Debt	307,263	53.0	384,450	53.0	501,523	61.0	647,227	62.2	966,020	66.3	1,169,483	66.9	1,291,038	66.3
Net Profit	10,623	65.0	7,378	75.0										
Net Loss					13,559	143.0	13,146	168.7	25,152	133.7	38,327	131.9	28,548	202.1
Employees	105,354	33.0	109,390	34.0	107,542	36.9	107,769	35.9	107,228	35.8	106,241	36.8	92,805	33.2

Notes: A - Data of the 100 largest manufacturing companies per annum

B - Percentage of the 100 largest versus total ICAP directory manufacturing companies

Source - Reference: ICAP annual publications

APPENDIX TABLE 119: AGGREGATED DATA ON GREEK TEXTILE COMPANIES BY FIRM SIZE (NO. OF EMPLOYEES) (1985-1986)

(Financial data in thousand drachmas)

Data	1986 FIRM SIZE (EMPLOYED PERSONS) (500+)	(100→499)	(10→99)	TEXTILE INDUSTRY AVERAGE	GREEK INDUSTRIES AVERAGE
Return on Stockholders' Equity (net profit/ net worth %)	2	40	26	20	3.7
Total Assets per employee	8,085	4,474	5,061	5,781	8,314
Fixed Assets per employee	2,703	2,435	2,541	2,556	4,516
Ratio: Debt to Assets (x 100)	75	79	70	75	83.9

Data	1985 FIRM SIZE (EMPLOYED PERSONS) (500+)	(100→499)	(10→99)	TEXTILE INDUSTRY AVERAGE	GREEK INDUSTRIES AVERAGE
Return on Stockholders' Equity (net profit/ net worth %)	*	13	16	(22.4)	(11.4)
Total Assets per employee	4,813	3,700	4,455	4,631	6,936
Fixed Assets per employee	2,527	2,108	2,372	2,331	4,025
Ratio: Debt to Assets (x 100)	111	80	67	91	87.4

Note: * Negative return

Source - Reference: Processed data from ICAP publications

APPENDIX TABLE 120: BASIC DATA ON THE 15 LARGEST GREEK TEXTILE COMPANIES RANKED BY TOTAL ASSETS (1982-1986)

(Financial data in thousand drachmas)

Data \ Years	1982	1983	1984	1985	1986
Total Assets	76,406,234	88,298,060	95,853,286	109,795,571	138,959,554
Fixed Assets	47,415,958	50,271,408	53,130,266	57,688,960	48,987,668
Debt	66,278,409	78,608,656	96,161,043	119,131,740	104,286,492
Net Worth	10,127,825	9,689,404	(307,732)	(9,335,879)	34,673,062(1)
Net Profits	(3,621,590)	(3,844,350)	(7,836,725)	(8,757,908)	1,503,008
Net Profit/Net Worth %	(35.8)	(39.7)	|2,546|	|93.8|	4.3
Debt/Capital Employed %	86.7	89.0	100.3	108.5	75.0
No. of People Employed	19,859	19,347	19,920	20,264	14,758(2)
Total Assets/Employee	3,847	4,564	4,812	5,418	9,416

Notes: (1) The substantial increase in the net worth of the 15 largest Greek textile manufacturing companies ranked by total assets in 1986 is due to the increases in share capital (representing principally the capitalisation of debt in some over-indebted companies). Example of this is the increase in net worth of Piraiki-Patraiki Cotton Manufacturing Inc. (Drs 41.4 billion in 1986). Notably the net assets of the above mentioned company in 1985 were (14,241,970) drs while in 1986 were 27,201,616 drs.

(2) The decrease in the number of employees in 1986 is due to the diversification of the activities of Piraiki-Patraiki S.A. being transferred to a number of newly established affiliated companies; these new companies have not been included in the 1986 statistical tables, because they did not publish a 1986 balance sheet. Notably in 1985 Piraiki-Patraiki S.A. employed 7,161 people while in 1986 employed only 1,770.

Source - Reference: Processed data from ICAP publications

APPENDIX TABLE 121: OVER-INDEBTED TEXTILE MANUFACTURING GREEK COMPANIES UNDER THE PROVISIONS OF LAW N 1386/83

(Financial data in million drachmas)

		Date of Entry	Debt	Employees	1986			
A/A	Textile Companies	To the status of N1386/83	At the date of entry	At the date of entry	Total Assets	Debt	Net Profit	Employees
1	Michailidis, S., S.A.	26/08/83	2,836	940	4,070	6,994	(550)	1,050
2	Textilia S.A.	26/08/83	189	104	192	243	(8,284)	90
3	Douridas, N.G., S.A.	17/10/83	1,491	597	2,215	4,248	(876)	562
4	Kleiderwerke Volos A.G. [1]	14/12/83	786	567	n.a.	n.a.	n.a.	450
5	Velca Spinning Co. S.A.	14/12/83	5,094	817	2,725	8,021	(1,048)	850
6	Perfil, S. Prousaloglou & Son Ltd. (S.A.)	31/05/84	2,508	340	n.a.	n.a.	n.a.	300
7	Piraiki-Patriki Cotton Mfg. Inc.	31/05/84	34,985	6,800	56,992	29,791	(4,130)	1,770
8	Ariston Wool Ind. S.A.	31/08/84	1,117	65	367	2,267	(502)	107
9	Mecca S.A.	31/08/84	1,300	30	836	894	(68)	150
10	Vionyl [1]	27/11/84	1,300	-	n.a.	n.a.	n.a.	-
11	Pournaras Hosiery Mills S.A.	09/01/85	520	145	443	1,077	(321)	170
12	Athina Spinning-Weaving S.A.	22/02/85	2,053 [2]	300	2,076	3,903	(573)	350
13	Ilios C.S. Constantinides S.A.	01/04/85	1,287 [2]	-	2,800	2,100	(563)	-

Notes:
1. Clothing companies
2. Data as at 31.12.1984

Sources: Published financial statements

APPENDIX TABLE 122: THE 15 LARGEST GREEK TEXTILE MANUFACTURING COMPANIES RANKED BY TOTAL ASSETS (1982-1986)

(Financial data in million drachmas)

A/A	Textile Companies	Estd.	Inc.	Activity	Total Assets Rank 1982	1983	1984	1985	1986	Net Profits/(Losses) 1982	1983	1984	1985	1986
1	Athina Spinning-Weaving S.A.*	1929	1980	Mfg. of men's and women's clothing fabrics, plastic coated fabrics, combed yarns.	11	12				(98)	(221)	(538)	(637)	(573)
2	Aegean Hill S.A.	1887	1927	Mfg. of yarns for weaving & knitting, fabrics (for clothing, upholstery, house linen) ready tailored house linen, jean wear.	2	2	2	2	2	(159)	35	-	(726)	1
3	Volos Cotton Mfg. Co. S.A.	1963	1963	Mfg. of ginned cotton, cotton yarns, cotton waste.	7	5	5	6	10	19	85	5	25	208
4	Velca Spinning Co. S.A.*	1922	1927	Mfg. of cotton & synthetic weaving and knitting yarns spinning mill by-products.	6	7	10	10	12	(755)	(958)	(1,277)	(1,266)	(1,048)
5	Vetlans-Naoussa S.A.	1952	1969	Mfg. of acrylic yarns & blankets, synthetic fabrics.	12	13	11	11		46	21	8	9	Δ
6	Biocrapet Carpet Manufacture S.A.	1969	1970	Mfg. of wool carpets (machine-made & hand-tufted), flokati rugs, moquette carpeting, woollen blankets.				15	11	86	226	191	229	421
7	Vomvicryl S.A.	1973	1973	Mfg., finishing and dyeing of acrylic fibres and yarns.	4	4	4	3	3	(173)	(199)	(248)	(10)	(11)
8	Vomvix S.A.	1863	1933	Mfg., dyeing, printing and finishing of yarns and fabrics.	3	3	3	4	4	35	11	13	(19)	(83)
9	Hellatex Synthetic Yarns S.A.	1969	1969	Mfg. of texturized synthetic yarns.	15				13	1	4	219	124	41
10	Hellenic Fabrics S.A.	1973	1973	Mfg. of jean fabrics		8	8	7	5	175	448	474	1,364	3,164
11	Selected Textile Industries Assoc. S.A.	1970	1970	Mfg. of ginned cotton, cotton yarns, fabrics, bath towels, white linen.		15		12	8	4	173	280	284	334
12	Etma Artificial Silk S.A.	1925	1925	Mfg. of man-made (rayon) and synthetic (nylon) fibres.	5	6	6	5	7	31	79	70	97	1,481
13	Ilios C.S. Constantinides S.A.*	1936	1958	Mfg. of velvets (upholstery, tablecloths and clothing), acrylic blankets & curtains.	13	14				(21)	(130)	(101)	(584)	(563)
14	Iliotex Spinning Mills S.A.	1973	1973	Mfg. of cottong yarns for weaving & knitting, cottong & blended knit fabrics, T-shirts.			15			(39)	40	70	152	372
15	Naoussa Spinning Mills S.A.	1963	1963	Mfg. of yarns for weaving (carded) & yarns for knitting (combed) and by-products.	10	10	7	8	6	70	179	259	539	1,186
16	Filiates Textiles S.A.	1973	1973	Mfg. of yarns for weaving & knitting (cotton and man-made fibres' yarns & fabrics).	8	9				(123)	(191)	(515)	98	5
17	Leventakis, Dem., S.A.	1950	1973	Mfg. of cottong & cotton/polyester sheets, cotton blankets and towels.		11	13			(116)	(177)	Δ	Δ	Δ
18	Lortex S.A.	1973	1973	Mfg. of cotton yarns, fabrics, sheets, T-shifts, women's underwear, shorts, pyjamas.				13	15	1	(4)	(46)	(45)	81
19	Macedonian Spinning Mills S.A.	1948	1948	Mfg. of cotton and synthetic yarns for weaving and knitting.		14		14		(48)	(52)	6	42	285
20	Michailidis, S., S.A.*	1945	1960	Mfg., bleaching, dyeing and finishing of yarns for knitting & weaving (worsted, man-made, synthetic yarns)	9		9	9	9	(417)	(1,034)	(1,042)	(778)	(550)
21	Piraiki-Patraiki Cotton Mfg. Inc.*	1933	1933	Mfg. of cotton textiles and ready-tailored house furnishings. (Sheets, towels, blankets, tablecloths).	1	1	1	1	1	(2,033)	(3,017)	(5,999)	(8,464)	(4,130)
22	Roka Industrial Enterprises S.A.	1969	1969	Mfg. of underwear, nightgowns, blouses, eiderdown cases, pillowcases.			12	14	14	29	33	69	-	(65)

Notes: Δ Balance sheet not published

* Company under government control (N 1386/83)

Sources-References: ICAP annual publications and Government gazettes

APPENDIX TABLE 123: FINANCIAL DATA ANALYSIS OF THE GREEK TEXTILES INDUSTRIAL INDUSTRIAL GROUP (CORPORATIONS & LIMITED LIABILITY COMPANIES) HAVING IN 1986 TOTAL ASSETS 50 MILLION DRACHMAS AND MORE. GEOGRAPHICAL BREAKDOWN INTO GREECE 10 REGIONS

(Financial data in million drachmas)

Geographic Regions of Greece	Defacto Population		Area *		No. of Companies		No. of Employees		Textile Companies Having in 1986 50+ Million Drs Total Assets						
	Results of the 1981 Census	%	(In sq kms)	%	A	B	A	B	Total Assets	Debt	Net Profit (Loss)	Debt / Total Assets %	Total Assets / Employee	Net Profit / Net Worth %	Net Worth
1 Greater Capital Area (Greater Athens & Rest of Attica)	3,369,424	34.6	466	0.3	337	180	25,757	22,554	107,464	91,698	4,124	85	4.8	26	15,720
2 Central Greece & Euboea (Except 1)	757,748	7.8	24,475	18.6	24	21	4,886	4,778	36,163	29,747	(355)	82	7.6	(6)	6,432
3 Peloponnesos	1,012,528	10.4	21,339	16.2	26	16	5,681	5,404	44,958	24,684	(1,393)	55	8.3	(7)	20,271
4 Thessalia	695,654	7.1	14,071	10.7	32	23	4,324	4,125	19,879	16,034	1,074	81	4.8	28	3,849
5 Macedonia	2,121,953	21.8	34,036	25.8	198	121	15,890	13,063	59,162	36,162	10,529	61	4.5	50	21,064
6 Thrace	345,220	3.5	8,578	6.5	19	16	1,934	1,861	5,380	4,539	51	84	2.9	4	1,162
7 Epirus	324,541	3.3	9,283	7.0	3	2	898	828	4,493	3,727	881	83	5.4	117	754
8 Ionian Islands	182,651	1.9	2,307	1.7	1	1	60	60	113	564	(83)	499	1.9	|18|	(452)
9 Aegean Islands	428,533	4.4	9,071	6.9	5	4	511	431	3,909	2,083	(256)	53	9.1	(14)	1,835
10 Crete	502,165	5.2	8,331	6.3	4	3	260	250	1,000	523	(11)	52	4.0	(2)	506
TOTAL:	9,740,417	100.0	131,957	100.0	649	387	60,201	53,355	282,521	209,761	14,561	74	5.3	20	71,232
C:					425		48,973		283,131	213,249	14,017	75	5.8	20	69,900

Notes:

A - Textile companies included in the 1988 ICAP directory (1986 financial data)

B - Textile companies having (50+ million drachmas) total assets in their 1986 balance sheet. (desk research)

C - Textile companies (Corporation & Limited Liability) whose financial results are presented in the 1988 ICAP directory. Among them 4 over-indebted textile enterprises - currently under government control - did not issue financial statements for 1986

Source-Reference: Processed data from ICAP 1988 publication

* DOMI (1973) "Illustrated Cyclopaedia" ASPRIOTI-ELCA S.A., Athens 5 300

APPENDIX TABLE 124: ACTIVITY CLASSIFICATION OF THE GREEK TEXTILE MANUFACTURING COMPANIES (PRODUCTS/PROCESSES)

A FIBRE PROCESSING Natural Fibres Man-Made Fibres	A1 Continuous Filament Dry spinning/texturing	A2 Staple Fibre Drawing/cutting	A3 Scoured Wool Shorting/washing Ginned Cotton Opening/cleaning	
B YARN PROCESSING a) Weaving Yarns (Small linear density -Nm-) b) Knitting Yarns (Large linear density -Nm-)	B1 Cotton Yarns a) Ring-spun yarns Carding/spinning b) Open-end yarns Carding/combing/drafting/spinning	B2 Wool Yarns a) Woollen yarns Carding/spinning b) Worsted yarns Carding/combing/drafting/spinning	B3 Acrylic Yarns a) Ring-spun yarns Carding/spinning b) Open-end yarns Carding/combing/drafting/spinning	B4 Others (Natural & man-made fibres blended/fancy yarns/special uses) Carding/spinning
C FABRIC PROCESSING a) Woven & Non-Woven Fabrics (Light & heavy fabrics) b) Knitted Fabrics	C1 Woven & Non-Woven Light Fabrics (Cotton/man-made/blended) a) Woven light fabrics (mainly cotton) (i) Household textiles (white fabrics: sheets/tablecloths etc.) (ii) Clothing articles (men's/women's/children fabrics) (iii) Narrow fabrics (labels/upholstery fringes/curtain loops/elastic tapes for underwear etc.) (iv) Fabrics for commercial and/or industrial use (military tents/rubberized cotton fabrics/waterproof, flame retardent, flame resistent fabrics/jute bags & fabrics/artificial leather etc.) b) Non-woven fabrics (mainly cotton/man-made) (Padding/shoe lining/dishcloths/tablecloths/napkins/mops/hospital & lab testing supplies etc.) a) Weaving/dyeing/printing/bleaching/finishing b) Web forming/chemical or stitch bonding		C2 Woven Heavy Fabrics (Wool/man-made/blended) (i) Furniture covering (upholstery fabrics) (ii) Wall covering (Curtains) (iii) Floor covering (Carpets/moquettes/mattings) (iv) Bed covering (Blankets/bed-spreads/Flokati rugs/Kelem rugs/popular art fabrics) Weaving/tufting/printing/bleaching/dyeing/finishing	C3 Knitting Fabrics (Cotton/wool/man-made/blended) (i) Household textiles (Curtains/sheets/blankets/upholstery fabrics/embroidered cloths-napkins, tablecloths, white & drapery fabrics-/ etc.) (ii) Clothing articles (men's/women's/children fabrics - underwear, outwear) Knitting/dyeing/printing/finishing

Sources: ICAP Publications (DESK RESEARCH)

APPENDIX TABLE 125: ANALYSIS OF THE GREEK TEXTILE MANUFACTURING COMPANIES (HAVING TOTAL ASSETS 50+ MILLION DRACHMAS IN 1986) RANKED BY ACTIVITY

Geographic Regions of Greece	Single Phase Horizontal Structure											Multi-Phase Horizontal Structure									
	A1	A2	A3	B1	B2	B3	B4	C1	C2	C3	%	B1 B3	B2 B3	B3 B4	C1 C2	C1 C3	C2 C3	B1 B3 B4	B2 B3 B4	B1 B2 B3 B4	%
1 Greater Capital Area (Greater Athens & Rest of Attica)	2	1	1	3	1	1	2	49	2	57	66	4	4	2	2	13	1	2	3	1	18
2 Central Greece & Euboea		1	6	3				3		3	76				1			1			10
3 Peloponnesos				1	2		1		1	4	56	2	1								19
4 Thessalia			4	2	1			1	3	4	65	1				1					9
5 Macedonia			3	6			2	15		67	77	4				4					7
6 Thrace			1	1				1		10	82					1					6
7 Epirus				1							50	1									50
8 Ionian Islands								1			100										-
9 Aegean Islands				1			1				50	1									25
10 Crete										1	34					2					66
Total No. of Companies					270												52				
%					70												13				

Source-Reference: Processed data from ICAP 1988 publication

continued

APPENDIX TABLE 125: ANALYSIS OF THE GREEK TEXTILE MANUFACTURING COMPANIES (HAVING TOTAL ASSETS 50+ MILLION DRACHMAS IN 1986) RANKED BY ACTIVITY

Geographic Regions of Greece	Multi-Phase Vertical Structure																								
	A3 B1 C1	A3 B1	B1 B2 C1 C3	B1 B2 C1 C2	B1 B3 C1 C3	B2 B3 C1 C2	B1 C1 C3	B2 C2 C3	B4 C1 C2	B1 B3 C1	B1 B4 C1	B2 B3 C1	B2 B3 C2	B3 B4 C1	B1 C1	B1 C3	B2 C2	B2 C3	B3 C2	B3 C3	B4 C1	B4 C3	%	%	No. of Companies
1 Greater Capital Area (Greater Athens & Rest of Attica)			1	1	1	1	1	1	1	1	1	3	1	1	6		4	1	1	1	1	1	16	100	180
2 Central Greece & Euboea	1	1													1								14	100	21
3 Peloponnesos							1								2		1						25	100	16
4 Thessalia		1			1		1						1	1			1						26	100	23
5 Macedonia		1	1		2								1	2		2	5		6				16	100	121
6 Thrace										1							1						12	100	16
7 Epirus																							-	100	2
8 Ionian Islands																							-	100	1
9 Aegean Islands															1								25	100	4
10 Crete																							-	100	3
Total No. of Companies									65																387
%									17																100

Source-Reference: Processed data from ICAP 1988 publication

APPENDIX TABLE 126: ANALYSIS OF THE FINANCIAL DATA OF THE GREEK TEXTILE COMPANIES HAVING IN 1986 TOTAL ASSETS 2 BILLION DRACHMAS AND MORE. COMPARISON WITH 1982

(Financial data in million drachmas)

A/A	Company	Estd.	Activity	No. of Factories	Total Assets		No. of Employees		Net Profit		Debt		Net Worth		Geographic Region
					1986	1982	1986	1982	1986	1982	1986	1982	1986	1982	
1	Piraiki-Patraiki Cotton Mfg. Inc.**	1933	B1,B4/C1	10	56,992	27,902	6,315	6,900	(4,130)	(2,033)	29,791	26,495	27,202	1,406	1,2,3,5
2	Aegean Mills S.A.	1887	B1/C1	5	21,808	12,064	3,450	2,890	1	(159)	19,151	9,436	2,737	2,627	1,3,9
3	Vomvicryl S.A.***	1973	A2	1	9,231	4,907	457	435	(11)	(173)	8,444	3,720	787	1,237	2
4	Vomvix S.A.***	1863	A1	2	8,250	5,193	916	1,260	(83)	35	7,188	4,061	1,062	1,131	1,2
5	Hellenic Fabrics S.A.	1973	C1	1	6,744	1,837	650	600	3,164	175	3,442	1,169	3,302	668	5
6	Naoussa Spinning Mills S.A.	1963	B1,B3	3	5,029	2,353	850	1,000	1,186	70	3,011	1,589	2,018	764	5
7	Etma Artificial Silk S.A.***	1925	A1	1	5,016	3,274	1,100	1,050	1,481	31	3,284	2,339	1,731	934	1
8	Selected Textile Industries Assoc. S.A.	1970	A3/B1/C1	1	4,882	1,658	700	600	334	4	3,778	1,412	1,104	246	2
9	Michailidis S., S.A.**	1945	B1,B3,B4	1	4,070	2,391	1,050	1,100	(550)	(417)	6,993	2,596	(550)	(205)	2
10	Volos Cotton Mfg. Co. S.A.	1963	A3/B1	1	3,660	2,906	1,150	1,300	208	19	2,788	2,302	871	604	4
11	Biokarpet Carpet Manufacture S.A.	1969	B2/C2	1	3,191	1,092	430	400	421	86	2,158	568	1,035	524	4
12	Vetlans-Naoussa S.A.*	1952	B3/C2	1	2,926	2,027	700	724	9	46	2,304	1,408	621	619	5
13	Ilios S.A.**	1936	B3/C2	1	2,800	1,936	360	600	(563)	(21)	2,100	1,291	(750)	647	5
14	Velca Spinning S.A.**	1929	B1,B3,B4	2	2,725	3,193	850	850	(1,048)	(755)	8,021	3,902	(5,296)	(709)	1,2
15	Filiates Textiles S.A.	1973	B1,B3	1	2,688	2,673	458	458	5	(123)	3,030	2,453	(354)	219	7
16	Hellatex Synthetic Yarns S.A.***	1969	B4	1	2,534	1,681	360	300	41	1	2,323	1,491	191	190	1
17	Roka Industrial Enterprises S.A.	1969	B1/C1,C3	1	2,478	1,203	575	645	(65)	29	2,011	742	467	460	4
18	Lortex S.A.	1973	B1,B3/C1,C3	1	2,268	1,409	450	432	81	1	1,882	1,091	386	319	5
19	Douridas Nikos G., S.A.**	1970	B1,B2/C1,C2	2	2,215	1,803	562	600	(876)	(579)	4,248	1,446	(2,033)	358	2
20	Macedonian Spinning Mills S.A.	1948	B3	2	2,134	1,759	480	350	285	(48)	1,917	1,621	216	138	1,3
21	Pella-Olympos S.A.	1979	B2,B3/C2	1	2,102	1,148	450	470	80	2	1,903	1,027	199	122	5
22	Athina Spinning Weaving S.A.**	1929	B1/C1	2	2,076	2,145	350	420	(573)	(98)	3,903	1,623	(1,828)	522	1,2
23	Iliotex Spinning Mills S.A.	1973	B1,B3/C1,C3	1	2,046	1,628	346	500	372	(39)	1,219	1,490	827	137	5
				TOTAL	157,865	88,182	23,009	23,884	(231)	(3,946)	124,889	75,272	33,945	12,958	

Notes:

* 1985 Financial data presented. The company suffers substantial losses ever since and has not issued a 1986 balance sheet in the government's gazette.

** Over-indebted companies under government control (law N 1386/83).

In the case of Piraiki-Patraiki Cotton Mfg Inc. as from 11.4.1986 the nominal value of the shares has been devaluated substantially and the overdue debt was to a great extent capitalised. Details are given below:

	Total Assets	Debt	Net Worth	Net Profit
1986	56,992	29,791	27,202	(4,130)
1985	38,999	53,241	(14,242)	(8,464)

In the case of Ilios S.A. the company is at the stage of liquidation.

*** Price leaders. State of monopolistic competition.

3. Vomvicryl S.A. — Sole producer of acrylic staple fibres in Greece. (A2).
4. Vomvix S.A. — Produces filament nylon and polyester and recently started the production of polypropylene. (A1).
7. Etma Artificial Silk S.A. — Produces filament polyester and nylon and is the major manufacturer of viscose rayon in Greece. (A1).
16. Hellatex Synthetic Yarns S.A. — Produces texturized synthetic filament yarns. (B4).

Source-Reference: Processed data from ICAP 1988 & 1984 publications

APPENDIX TABLE 127: ANALYSIS OF THE FINANCIAL DATA OF THE GREEK TEXTILE COMPANIES HAVING IN 1986 TOTAL ASSETS 1 TO 2 BILLION DRACHMAS. COMPARISON WITH 1982

(Financial data in million drachmas)

A/A	Company	Estd.	Activity	No. of Factories	Total Assets		No. of Employees		Net Profit		Debt		Net Worth		Geographic Region
					1986	1982	1986	1982	1986	1982	1986	1982	1986	1982	
1	Kadinopoulos, Pan S.A.	1949	A3	1	1,952	1,239	40	40	(15)	10	1,712	1,820	240	223	5
2	Leventakis, Dem S.A.*	1950	B1,C1	1	*	1,950	150	260	*	(116)	*	*	*	*	1
3	Perfil S.A.**	1934	B2,B3	1	*	1,934	300	400	*	*	*	*	*	*	1
4	Messinia Spinning Mills S.A.	1973	B1	1	1,930	1,119	300	320	356	(50)	1,352	987	579	132	3
5	Mouzakis, El, D., S.A.***	1968	B1	1	1,897	1,067	480	515	301	105	1,339	620	558	447	1
6	Preveza Mills S.A.	1973	B1	1	1,805	1,385	370	370	876	4	698	1,057	1,108	328	7
7	Cor-Fil S.A.	1966	B1,B3	1	1,785	728	210	180	218	(5)	1,501	610	284	118	3
8	Polyetma S.A.	1969	B4	1	1,776	782	185	280	193	(74)	1,168	886	608	403	1
9	Ilios-Tencate Textile Mills S.A.	1966	B1	1	1,731	1,090	328	328	799	28	777	747	954	343	5
10	Filteries De Grece, Les, S.A.	1956	B1	1	1,693	931	831	852	521	85	1,238	684	455	248	1
11	Anatolia S.A.	1951	B2/C2	1	1,690	1,384	300	410	(237)	(1)	1,895	1,001	(205)	329	1
12	Magrizos Bros. S.A.	1965	A3	1	1,622	883	370	330	119	-	953	493	669	390	4
13	Unicot Hellas S.A.	1971	A3/B1	1	1,572	1,008	425	325	158	22	1,115	684	457	324	2
14	Milaidis-Fotiadis Wool Industry S.A.	1925	B2/C2,C3	1	1,563	1,250	300	300	(18)	8	1,383	1,135	181	115	1
15	Gepa G. Papakyptzoglou S.A.	1953	B3,B4	1	1,497	1,167	140	140	(263)	67	1,968	946	(471)	222	1
16	Davlia Cotton Ginning Mills S.A.	1967	A3	1	1,472	583	50	40	6	5	1,101	348	381	235	2
17	Mavis S.A.	1946	B4/C3	1	1,460	836	128	150	30	15	1,140	540	320	296	1
18	Lekkas, A & Bros. S.A.	1960	B3/C3	2	1,413	919	230	230	134	-	972	542	441	376	1
19	Viopal M. Tsiplacos S.A.	1978	A3	1	1,367	470	30	30	4	(160)	1,513	549	(146)	(138)	4
20	Criticos Haralambos G., S.A.	1929	B1,B3	1	1,186	783	260	262	323	(3)	340	334	856	449	3
21	Akridas D. Bros. S.A.	1956	B1/C1	2	1,176	385	200	140	321	15	481	174	695	210	1,2
22	Texapret S.A.***	1880	C1,C3	1	1,146	*	230	300	226	*	328	*	819	*	5
23	Fintexport S.A.	1968	B2/C2	1	1,146	732	170	165	121	9	839	437	307	295	1
24	Sacalides J., S.A.	1953	B3/C2	2	1,097	780	350	395	241	32	757	563	339	217	1
25	Amgre American Greek Knitting Ind. S.A.	1902	C3	1	1,093	458	330	320	95	74	724	202	369	255	3
26	Attica Spinning Mills S.A.	1945	B1	1	1,086	848	310	310	376	34	578	449	508	399	1
27	Tricolan Franco-Hellenique S.A.	1973	C3	1	1,066	418	452	520	18	18	935	320	131	98	5
28	Dakar S.A.	1965	A3	2	1,059	447	150	90	117	13	810	321	249	126	2,4
29	Colora S.A.***	1926	C1,C3	1	1,046	373	75	82	573	103	571	69	475	304	5
30	Persika S.A.	1969	B2,C2	1	1,032	647	160	190	125	7	752	485	279	162	5
				TOTAL	40,358	26,596	7,854	8,274	5,718	245	28,940	17,003	11,440	6,906	

Notes: * Financial data not available (balance sheet not issued in the government's gazettes)

2. Leventakis, Dem S.A. The company suffers substantial losses. Financial data not published since 1984.

** Over-indebted companies under government control (law N 1386/83)

3. Perfil S.A. The company is currently at the stage of liquidation.

*** Price leaders. State of monopolistic competition.

5. Mouzakis, El., D. S.A. Produces cotton threads and yarns for sewing, embroidery and knitting (B1).

22. Texapret S.A. Dyeing of yarns. Dyeing, finishing of woven and knitted fabrics (C1,C3). Old established family company under the trade name Karasso Bros. Co. changed to S.A. in 1985. In the former status did not have by law the liability to publish its balance sheets. On the other hand its main competitor (29 Colora S.A.) changed its trade name from Apostolidis, Alex, & Son S.A. to Colora S.A. during 1984. Financial figures are available since the company was always trading in the format of S.A.

29. Colora S.A. Dyeing, bleaching, finishing of woven and knitted fabrics. Printing of knitted fabrics (C1,C3).

Source-Reference: Processed data from ICAP 1988 and 1984 publications

APPENDIX TABLE 128: PRESENTATION OF THE GREEK TEXTILE MANUFACTURING INDUSTRY RANKED BY TOTAL ASSETS SIZE IN 1986. COMPARISON WITH 1982

(Financial data in million drachmas)

	1986 TOTAL ASSETS RANK (in million drachmas)							
	⩽ 1		1→2		⩾ 2		TOTAL	
DATA	1986	1982	1986	1982	1986	1982	1986	1982
No. of Companies	372 % 88	312 85	30 7		23 5		425 100	365 100
No. of Employees	17,870 % 37	14,646 31	7,854 16	8,274 18	23,009 47	23,884 51	48,733 100	46,804 100
Total Assets (Capital Employed)	84,908 % 30	43,388 27	40,358 14	26,596 17	157,865 56	88,182 56	283,131 100	158,166 100
Total Liabilities (Debt)	59,420 % 28	28,764 24	28,940 14	17,003 14	124,889 58	75,272 62	213,249 100	121,039 100
Net Worth	24,515 % 35	16,874 46	11,440 16	6,906 19	33,945 49	12,958 35	69,900 100	36,738 100
Net Profit	10,507 % 65	1,150 (45)	5,718 36	245 (10)	(231) (1)	(3,946) |155|	15,994 100	(2,551) 100
Net Profit/ Net Worth %	43	7	50	3	(1)	(30)	23	(7)
Debt/ Capital Employed %	70	66	72	64	79	85	75	76

Source-Reference: Processed data from ICAP 1988 & 1984 publications

APPENDIX TABLE 129: DEVELOPMENTS IN THE 'PROBLEMATIC' ENTERPRISES-MANUFACTURING COMPANIES UNDER GOVERNMENT CONTROL FOLLOWING THE ESTABLISHMENT OF LAW N1386/83

(Financial data in billion drachmas)

		Viable Companies	Non-Viable Companies	Total
No. of Companies	1981	-	-	-
	1983	-	-	17
	1986	23	21	44
No. of People Employed	1981	27,000	6,000	33,000
	1986	26,100	1,900	28,000
Total Liabilities (Debt)	1981	85.3	30.0	115.3
	1986	250.7	98.9	349.6
Total Accumulated Losses	1981	(11.0)	(7.6)	(18.6)
	1986	(161.8)	(74.2)	(236.0)
Public Guarantees	1981			-
	31.10.1987			152.0

Sources: OECD, Ministry of National Economy

Reference: Stergiou, D. (1988) "Dead-End for the 'Problematic' Enterprises" Economicos 13 (1769) 3

APPENDIX TABLE 130: COMPARATIVE DATA[a] OF THE AGGREGATED FINANCIAL SITUATION OF THE INDUSTRIAL AND COMMERCIAL COMPANIES IN GREECE FOR THE YEARS 1986 AND 1987

(Financial data in million drachmas)

DATA	INDUSTRY		COMMERCE	
	1987	1986	1987	1986
Total Assets (Capital Employed)	2,012,771	1,767,399	398,278	345,094
Fixed Assets	860,688[b]	741,040	63,094	54,672
Assumulated Depreciation	687,447	488,570	27,688	21,670
Total Liabilities (Debt)	1,487,273	1,453,661	296,927	256,873
Net Worth	525,498	313,739	101,350	88,220
Gross Profit	348,128	320,632	123,691	125,721
Net Profit	25,258	10,435	26,296	36,032
Net Profit/ Net Worth %	4.8	3.3	25.9	40.8
Debt/Capital Employed %	73.9	82.2	74.5	74.4

Notes: (a) ICAP analysis for 1987 covers approximately 75% of the total industry and commerce. The study analysed the financial figures of 1614 industrial and 1161 commercial companies. The remaining group had not been published in the Government's Gazettes at the time. The complete picture will be presented in the ICAP (1989) Publication.

(b) Revaluation of fixed assets in 1987

Source: Recently released ICAP financial data

Reference: Nafteboriki (1988z) "Industry's Economic Profile Improved in 1987 while the Position of the Commercial Companies Deteriorated" 10 (17854) 12

POSTSCRIPT

THE SYSTEMS' ACTION. PERIPHERAL CASE-STUDIES

P. THE SYSTEMS' ACTION. PERIPHERAL CASE-STUDIES

P.1 INTRODUCTION

In this brief postscript to the thesis, the intention is to consider the broad methodological implications of the study which has been undertaken and in particular to attempt to bring out its generality. Accordingly, three other case-studies have been briefly summarized in order to carry out a comparative analysis.

Sections P.2, P.3, and P.4 are short descriptions of Blue Bell Inc. (North Carolina, USA), [REF: Edwards, J.R., Wagner, H.M., and Wood, W.P. (1985) "Blue Bell Trims Its Inventory" INTERFACES 15 (1) 34-52], Heavy Organic Chemicals Division of I.C.I. Ltd. (North-East England, UK), [REF: Jenkins, G.M. and Youle, P.V. (1971) "Systems Engineering. A Unifying Approach in Industry and Society" C. A. Watts and Co. Ltd., London 173-181], and Airedale Textile Company Ltd. (UK), [REF: Checkland, P.B. and Griffin, R. (1971) "Management Information Systems: A Systems View", Journal of Systems Engineering 1 (2) 29-42].

The systemic characteristics are extracted and presented in tabular form in Tables A and B, which also include OR. SALIARIS S.A. The structure of Table B is based on Churchman's set of systems characteristics, [REF: Schoderbeck, P.P., Schoderbeck, C.G. and Kefalas, A.G. (1985) "Management Systems. Conceptual Considerations" Business Publications, Inc., Texas 8-11].

Section P.4 discusses the systemic issues emerging from the four cases emphasizing the commonality of the approach and thus indicating the applicability of the methodology in providing the framework for a similar analysis on any company.

P.2 Blue Bell Inc. (North Carolina, USA)

P.2.1 The company: Blue Bell - one of the world's biggest apparel manufacturers - had three major businesses. The largest being the Wrangler Group (denim and corduroy jeans along with other product lines in sports and casual apparel), followed by Red Kap (durable garments used for production, service, and white-collar personnel), and finally Jantzen, the third major business (sports and casual apparel product lines, including popular lines of swimwear and sweaters). Domestic operations were supported by 80 plants and 32 distribution centers, whereas international operations were conducted by 15 plants and 17 distribution centers.

P.2.2 The problem: In the spring of 1982, Blue Bell management became concerned about its high investment in working capital. Inventory and accounts receivable accounted for 75% of the assets. The high cost of carrying inventory had become particularly acute. Inventory averaged over $371 million, or more than 50% of Blue Bell's asset base. Short-term interest rates were at 20%, and as a result, net interest

expenses grew from $1.1 million in 1979 to $21.9 million in 1982. The management realized that a significant reduction in inventory would require extensive improvement in production planning and inventory control.

P.2.3 The team: A working capital task force was organized which at the initiation of the project included three managers. One from the data processing (DP) systems group, a chief engineer from the manufacturing function, and a profit center controller who had a strong commitment to minimizing inventory investment.

P.2.4 The model: The task force's first assignment was to diagnose the inventory-reduction opportunity, to develop a comprehensive program for reducing inventory, and to implement the program. Furthermore, Blue Bell management wanted a production policy that maintained an even workforce throughout the year. Thus a scientific inventory-planning computer simulation model was developed which calculated a smooth production plan based on an annual sales forecast for each lot in Wrangler's product line. Two key analytic tasks for inventory reduction were considered. First, to determine a better approach for managing and allocating capacity, measured by labour hours per month per plant. Secondly, to find a better balance of the carrying inventory cost against the risk of shortages. The team constructed seven scientific models

that addressed the two tasks: sales forecasting, safety-stock planning, product-line planning, lot planning, size planning, net-requirements planning, and marker design and selection.

To maintain high cutting-capacity utilization, and economize on fabric waste, the task force formulated a linear programming (LP) model. The new markers that were designed using the LP process proved to be economical over a wide range of size percent distributions and performed consistently above historical standards for fabric waste.

The existing systems could not accomplish the task of significantly reducing inventory without harming customer service or increasing manufacturing costs. Thus a team of eight DP professionals, was selected and organized to work solely on this project. It was decided to design six major new DP systems, specifically sales forecasting, capacity planning, lot master planning, size forecasting, size planning, and marker planning and selection within three months and begin implementation immediately thereafter. It should be noted that the intense top-management involvement was critical to successful implementation of the new planning systems.

The planning models incorporated in the systems had to be exhaustively tested prior to full-scale implementation. The test was carried in a real-life, low-risk environment. The selected manufacturing plant was in Alabama where the test was limited to one lot. After several weeks, the team and the users jointly decided to expand the test to a larger

group of lots. Following the successful completion of the systems design and development phase at the product-line level, a standard format was adopted in each Wrangler manufacturing division.

The orgazisational task force worked for 10 weeks to analyse, resolve and recommend a program for the implementation of other supporting functions: training and development, organizational structure, staffing, and top-management's role.

P.2.5 The outcome: The most important and substantial direct benefit of the systems approach project was a $115 million reduction in inventory levels from $372 million in the second quarter of 1982 to $256 million in the first quarter of 1984. This reduction occurred without any reduction in sales volume or narrowing of the product line. Because of the decreased need for working capital, short-term debt at the end of the financial year 1983 was $47.4 million as compared to $111.6 million in 1982. Furthermore, there was no increase in long-term debt which resulted in a sharp decrease in interest expense during 1983. In addition, cash and marketable securities totalled over $90 million at the end of 1983, versus $8 million in 1982. Along with the inventory reduction came a decline in carrying cost, which positively affected the 1983 operating results. On the other hand there was no increase in fabric waste while trying to balance inventories; the outcome of which was reduced raw material costs.

The primary indirect benefit has been the improvement

of service levels. On-time shipments increased and order cancellations declined even with significantly less inventory. The key to this service performance was the ability to balance inventory stocks and, therefore, to have in stock only those items that would be shipped. A second indirect benefit of the project was the establishment of a model for systems design and development. These methods used to achieve such high user understanding and acceptance have been identified by Blue Bell for use in future systems projects. These included the formation of a dedicated project team, the close involvement of users as partners in the development process, and the intense involvement of top management.

P.3 Heavy Organic Chemicals Division of I.C.I. Ltd., North-East England, UK

P.3.1 The company: The Heavy Organic Chemicals Division of I.C.I. constituted about a tenth of the parent company and concentrated on the petrochemical side of the business. The Division occupied part of two extensive production sites. There were in 1964 three Olefines plants on the Wilton site. They produced ethylene as their main product; ethylene being a gas which was further processed by I.C.I. Plastics Division into the plastic 'polythene', and which entered real life as polythene dustbins, buckets and so on. The process by which oil or naphtha is converted into ethylene is known as 'cracking', and the plants were known as 'crackers'. Besides ethylene a number of other gaseous products were produced under the collective chemical term of 'olefines'.

P.3.2 The problem: The three Olefines plants were operating smoothly, the oldest for ten years and the others for shorter periods of time. These petrochemical plants run at minimum plant cost, but given attention to the Division's low return on capital, the management became profit-conscious and expressed its willingness to switch to a philosophy of maximum plant profit. Hence the overall company objective was conceived in the beginning of the systems study to be an adequate return on capital in the face of a situation where the problem was accepted as being the unjustified low return on capital employed.

P.3.3 The team: A joint team was created containing representatives of the works themselves: from the Division Technical Department (to supply design details), from the Marketing Department (to offer sales know-how), and from the Research Department (to advise on any required experimentation). Furthermore, a central systems team was involved from members of staff and students of the Systems Engineering Department of Lancaster University.

P.3.4 The model: The systems project aimed at improving the profitability of the three petrochemical plants. The combined team selected from the three departments was dedicated to pioneer a move from minimizing plant costs to maximizing plant profitability. A linear programming model was set up which

explored the behaviour of the individual parts of the plant and a major data collection exercise was initiated to provide the relationships needed for the model. Entirely new methods of chemical analysis were devised to cope with the particularly complicated set of gases produced in the fiery furnace conditions. The effects of temperature and pressure on product yields became accessible and were incorporated in the model. Trial runs with the model suggested that more profitable operating conditions to meet a given sales demand could be derived than those currently in use. The plant management agreed to a trial run which confirmed the validity of the results from the model. In a retrospective appraisal the potential of the model of the olefines plant was explored by a series of calculations on the way it suggested running the plant to achieve optimum profit when faced with a succession of patterns of sales demands.

P.3.5 The outcome: Following an extended period of time during which the derived calculations made a convincing case, the management of the plant decided to go ahead with real-plant trials following the recommendations from the computer model. The predictions from the model about extra profit were verified in successive months. The source of the additional profit laid in the way which the computer model followed the logic of the prevailing situation. These conditions pointed out by the linear programming model enabled the production of the

required quantities of ethylene and propylene to be produced to meet the Sales Department's requirements. The retrospective appraisal showed that the extra profit from the systems study was around £250,000 during the first year of the modified plant operations.

P.4 Airedale Company Ltd., UK

P.4.1 The company: The firm employed approximately 1,000 employees and had an annual turnover of about £3 million. Its business was the manufacture of a wide range of fibres, natural and man-made. Textile manufacturing was concentrated in one central production unit and finished goods were then despatched to eight depots scattered around the UK.

P.4.2 The problem: It was originally conceived by the Sales Director as one of poor production planning and control, but subsequently was widened to include the whole of the production-marketing function. There were approximately sixty products being sold in a variety of sizes and packaging styles, resulting in about 500 product variations. The difficulties were mainly due to poor information flow between the eight depots and the manufacturing plant. The relations between the area-based sales representatives and the headquarters were not satisfactory. Production planning and production scheduling were certainly poor. Furthermore quality control was virtually non-existent. Much basic financial information about production

and selling costs was not available. This lack of information caused serious difficulty for taking routine day-to-day decisions. Customer complaints were frequent since the service offered to the business clients was poor. Management information flows at all levels were sparse and random resulting in a lack of knowledge of the state of the business at any given time. Furthermore, the firm was also experiencing a sharp down turn in profits and morale throughout the company was low.

P.4.3 The team: The work begun as a five-month study, an exercise conducted by staff and students of the Systems Engineering Department of Lancaster University, but eventually led to further work with the same firm over the following two years. The project was carried out by R. Griffin (a postgraduate student) and supervised by P. B. Checkland.

P.4.4 The model: The examination of the historical data indicated operational problems; fast-selling products were always out of stock whereas stocks of slow-selling products were being built up, quite irrespective of the market demand. On the other hand procedural problems arose because employees' jobs were not properly defined. Furthermore, the organization structure was hopelessly inadequate to run the business efficiently. The existing production-marketing system was represented by a simple flow diagram and the objectives of the system had to be defined as a precursor to model building.

Thus it was agreed that the company needs were the generation of short and long-term profit for its shareholders and the provision of stable employment to its people.

A logical conceptual model of an order-generating-and-processing system was made. Thus, production planning and scheduling, company planning, and distribution systems were all looked at carefully. The company was viewed as a whole in a particular way which seemed relevant to the multivarious problems, and logical systemic consequences were followed. The decision sequence logic led to a system structure which enabled the purpose, source, content and recipient of the necessary information flows within the notional system to be defined. In the designed new organization structure the information requirements were studied and integrated management information systems were introduced. Key variables were identified by which management could control the operation, and reports were designed to monitor performance. The concept led to the creation of two units for order processing, one customer-oriented, and the other production-oriented. Following the design of the two major sub-systems, in the systems implementation stage an organization structure was set up based on the customer and production service systems. All systems operated through the sales, production and financial plans prepared for one year ahead. Plans were to be updated quarterly. Additional recommendations from the systems team to the company management covered new jobs, new personnel and new methods of working.

P.4.5 The outcome: The work overall made a contribution to solving the cataclysmic problems of a textile company which at the beginning of the systems study had failed to pay a dividend to its shareholders for the first time in its history and was in danger of going out of business. An analysis of the basic decisions needed to process an order through the system to the delivery of the product to the customer led to the creation of two new sub-systems; the Customer Services System and the Production Services System. A more detailed analysis of objectives and decision making within these two sub-systems led to a definition of the personnel required, methods of working, and information needs. As a result, an integrated management information system was set up to show how this information should flow throughout the organization. Finally, key variables were singled out to enable management to exercise effective control and reports were designed to monitor the state of business. Following the senior management's approval of the systems study recommendations, the necessary reorganization was initiated after a period of management education and training. It appeared that as a result of the clearer definition of objectives and decision making along with increased discipline at company level would enable the firm to be in much better position to face the future. By the end of the three-year period, recovery was well advanced, but by then the whole problem context had changed. There was a take-over of a group of smaller firms, the appointment of a new

managing director, among other changes, so that it was not possible to define clearly the specific contribution of the systems study.

P.5 DISCUSSION

At the start of the comparative systemic analysis it was regarded necessary to define the need, the goal-seeking nature of each individual system. Following the formulation of their real-world problems, by identifying, designing and implementing human activity systems it was aimed to select the best achievable means among alternative ways of getting from a given present state situation to the desired state. The generated set of input/output matchings which met the ultimate requirements of each individual system under study, appear in Table A. The systems teams in the examined manufacturing companies, having carefully specified what was desirable, then proceeded in the problem(s)-solving process by defining the set of potential systems which were feasible with available technology.

The first stage in the systems studies was a common-sense analysis of the problem(s). Both the blanket and the apparel manufacturing companies maintained substantial stock levels, aiming to provide high customer service. That policy was pursued at the expense of inventory carrying costs and affected the overall business performance. The petrochemical plants experienced low return on capital employed whereas in the yarn manufacturing textile firm there was insufficient

management information along with inefficient production scheduling, virtually non-existent quality control; issues which resulted in frequent customer complaints.

The systems approach sought to identify, as top priority, the hierarchy of systems existing within the companies and the corporate planning function which highlighted the objectives of the social organizations. As shown in Table B, the textile enterprises struggled for survival, each in a nationally diversified environment. The international apparel organization's performance criterion was profit maximization, and similarly the olefines plants aimed for an adequate return on their employed capital. Attention was focused on the setting up of a hierarchy of systems within each firm aiming to make best use of all available resources in form of men, machines, materials, money and information. It was thought that all the resources at a firm's disposal had to be geared towards achieving the targets in the established corporate planning and control systems in an efficient manner.

The role of the management planning system was to put forward the recommendations on the selected course of action, whereas the management control system had to ensure that performance was compared with the expected outcome. Furthermore, it was well accepted that, in each individual company, operational systems; human, organizational, commercial, and technical had a high degree of overlapping between them and exerted considerable influence.

Looking at human systems in the presented case-studies it became apparent that employees' activities such as job satisfaction, recruitment, job enrichment, promotion and reward schemes were the main issues of concern to people. Hence, organizational systems were introduced for men's job description, delegation of authority, education and training. On the other hand, production planning and control, establishment of manufacturing products' quality standards, materials handling systems and storage procedures were issues which involved machines and materials being regarded as the technical systems. Finally, the commercial systems were examined; these were mainly concerned with money flows which covered such activities as financial planning and control, accounting, marketing and selling functions. It was noticeable that apart from the petrochemical plants all other organizations experienced barriers in communication between their sales/ marketing and production departments, a matter which resulted in high investment in working capital-growing inventory levels.

The rise of the systems movement has depended upon the utilisation of information which is central to the basic systems concepts of emergence, hierarchy, communication and control. The introduction of closed-loop controls by the establishment of the appropriate information flows was regarded as a necessity in all examined cases. Furthermore, the quality of information was of vital importance aiming to improve the decision making process at company level.

The adoption of a systems approach in the four Companies required particular emphasis to be placed on the way in which the activities of functions and departments had to be integrated in order to contribute effectively to the overall performance of their business. Aiming to realise its objectives BLUE BELL INC. designed a scientific inventory-planning computer simulation model, and a master planning and selection model. The blanket manufacturing company OR. SALIARIS S.A. adopted a systems approach to operations management whereby three new sub-systems were introduced: the production scheduling, the quality control and the marketing departments. H.O.C. DIVISION, I.C.I. Ltd. applied a linear programming model for plant profit maximization, whereas the yarns spinning firm AIREDALE LTD. making use of a logical conceptual model of an order-generating-and-processing system, introduced two major sub-systems: the customer services and the production services departments.

The discussed case-studies represented examples of problem(s) solving in human activity systems. These real-world problem situations were studied by selected teams of experts who used general systems concepts in tackling ill-defined unstructured problems.

It was evident that such problems were only vaguely recognizable and could not be easily defined with the result that action research for their resolution was difficult. Clarification and progress in all cases was made by setting up selected teams of experts who used General Systems Concepts as the basis for their problem solving.

TABLE A: SYSTEMS METHODOLOGY IN SUMMARY

	THE COMPANY	THE PROBLEM	THE MODEL	THE OUTCOME
1	OR. SALIARIS S.A.	The value of inventory was high. Inadequate stock control procedures. Quality of information throughout the system relatively poor.	A systems approach to operations management.	Company viability was safeguarded. Creation of three new sub-systems: Production scheduling, quality control, and marketing departments. Internal MIS reporting system. Make to order policy. Sub-contracted work. Cotton dyeing investment.
2	BLUE BELL INC.	High investment in working capital. Inventory and accounts receivable accounted for 75% of the assets.	A scientific inventory-planning computer simulation model.	Drastic reduction in inventory levels, without any reduction in sales volume or narrowing of the product line. Decline in inventory carrying cost, affected positively operating results.
3	H.O.C. DIVISION, I.C.I. LTD.	Low return on capital employed. Willingness to switch to a philosophy of maximum plant profit.	A linear programming model for plant profit maximization.	Improved plant profitability. The systems study resulted in maximized Division's return on capital employed.
4	AIREDALE LTD.	Poor production planning and control. Quality control virtually non-existent. Insufficient management information. Frequent customer complaints.	A logical conceptual model of an order-generating-and-processing system.	Creation of two new sub-systems: customer services and production services. An integrated management information system was set up. The company was at the end of the systems project in a much better position to face the future.

TABLE B: SYSTEMS CHARACTERISTICS

	THE COMPANY	OBJECTIVES	ENVIRONMENT	RESOURCES	COMPONENTS	MANAGEMENT
1	OR. SALIARIS S.A.	P: Company viability S: By scrutinizing material flows and storage procedures to achieve a drastic reduction in the tied capital in stocks.	Economic and social changes at a nationally diversified environment exerted considerable influence on the activities of the existing production-sales system.	Men: Communication barriers due to undefined job description requirements. Machines: Concern for establishing a coherent production methodology by critical examination of the Company's manufacturing operations. Materials: The value of inventory was high and increasing. Inadequate stock control procedures. Money: Declining home market demand and rising cost of borrowing capital caused cash shortage to finance business operations. Information: Quality of information throughout the system was relatively poor.	New business structure creation of three new sub-systems a) Production scheduling department b) Quality control department c) Marketing department A make-to-order policy was pursued and sub-contracted work opportunities explored.	- Stocking and warehousing policies were modified and materials handling schemes employed. - New product development was introduced and market opportunities searched. - Job description systems were established. - Systems/users were trained while operational difficulties were resolved during actual running. - An internal management reporting system was designed to facilitate improved decision making.
2	BLUE BELL INC.	P: Profit maximization S_1: Reduction in cost of carrying inventory S_2: Fabric cutting-capacity utilization and fabric waste economization.	The Company being one of the world's largest apparel manufacturers operated in an international and diversified environment.	Men: The Management wanted a production policy that maintained an even workforce throughout the year. Machines: Domestic manufacturing operations were supported by 80 plants. Materials: Inventory levels were significantly high. Money: There was high investment in working capital. Reduction in short-term debt was a necessity. Information: Barriers in communication between the sales and production planning departments were noticeable.	New planning approaches and techniques of the inventory-planning model and the market planning and selection model were adopted. Organizational changes had to be introduced. Management Science provided an analytical aproach for maintaining customer service and economizing manufacturing costs while simultaneously lowering inventories substantially.	- Top management focused its attention on production-planning and inventory-control issues. - There was direct involvement of company key personnel in the designing, testing, implementing and operating stages. - System's users were trained. - Assessment of direct and indirect benefits of the systems study.
3	H.O.C. DIVISION, I.C.I. LTD.	P: Achievement of an adequate return on capital employed. S: Accomplishment of plants' profitability optimization.	The three petrochemical plants, being autonomous units of the parent company operated in a nationally diversified environment (UK).	Men: People connected with the plants had gained sufficient business know-how. Machines: High investment plants, contained a number of furnaces. Key control knobs, controlled the actual furnace conditions. Materials: 600,000 tons of naphtha were processed p.a. and 100,000 tons of ethylene produced p.a. Money: Profit before taxation and investment grants were regarded low. Information: Major data collection exercise was initiated to provide the relationships needed for the model	Central systems team. Set up of a useful working model. The exact mathematical relationships embedded in the model to the effect of calculations of optimum operating conditions on the human relationships in the joint team dealing with the project. a) Division technical department b) Marketing department c) Research department	- Introduction of a different method of operating the olefines plant. Company philosophy changed to maximum plant profit. - Co-ordinated effort based upon expertise of the various manufacturing limitations, such as - the effects of temperature and pressure on product yields.
4	AIREDALE LTD.	P: Generation of short and long term profit for its shareholders. S_1: Provision of stable employment for its employees S_2: Provision of a high level of customer service at minimum cost.	The existing production-marketing system operated in a nationally diversified environment (UK).	Men: People's jobs were not properly defined. Machines: Production scheduling and control were inefficient. Materials: Fast-selling products were always out of stock, whereas stocks of slow-selling products were being built up irrespective of the market demand. Money: Sharp down turn in profits. Information: Serious lack of information for taking routine day-to-day decisions.	New organisation structure. Creation of two new departments (major sub-systems) a) Customer services department b) Production services department.	- New job definitions were written and agreed with managers concerned. - Information requirements for each job and each department were defined, and an integrated management information system was set up to show how information should flow to and from departments. - Key variables were identified by which management could control the operation, and reports were designed to monitor performance. - The new organisation structure was based on management education and training.

Notes: P : Primary
S : Secondary