

CAUSES AND EFFECTS OF EXPORT INSTABILITY
IN A DEVELOPING COUNTRY:
THE CASE OF PAKISTAN

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Submitted to the Faculty of the Graduate College
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in partial fulfillment of the requirements
for the Degree of
DOCTOR OF PHILOSOPHY
July, 1974

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PREFACE

This study is concerned with the short-term fluctuations in export earnings of developing countries--one of the problems believed to arise because of the heavy dependence of their exports on primary products. The study examines the causes and effects of export instability within the context of export performance and economic development of a developing country, Pakistan, for the period 1948 - 1968. A case study approach was chosen so as to allow for a detailed examination of the specific factors relevant to an individual country and the related developments in the domestic economy.

The study was initiated in the economic development seminar given by Professor Mohammad W. Khouja at Oklahoma State University. I wish to express my gratitude to him for his invaluable assistance and inspiration in the early stage of the project. Sincere gratitude is expressed to Professors Michael R. Edgmand and Rudolph W. Trenton for their guidance and timely comments on numerous drafts throughout this study. Appreciation is also expressed to the other committee members, Professors Richard H. Leftwich, Frank G. Steindl, and John L. Folks, for their valuable suggestions in the preparation of the final manuscript.

I am deeply indebted to Professor Rudolph W. Trenton, chairman of the advisory committee, for his deep understanding of an often-troubled Oriental mind and his never-failing encouragement, counsel, and

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assistance throughout the entire phase of my graduate study program at Oklahoma State University.

A note of thanks is given to the staff members of the Commodity Division, Food and Agriculture Organization of the United Nations in Rome, the Embassy of Pakistan in Washington, D.C., Pakistan Institute of Development Economics in Karachi, and Ames Library of South Asia at the University of Minnesota, for their assistance in providing the badly needed research materials. Thanks are also due to the staff members of the North Dakota State University Computer Center for their assistance in the preparation of the Fortran programs.

Special thanks are extended to Mrs. Fran Dexter for her excellence in typing the final copy of the thesis and her valuable suggestions concerning form and wording.

Finally, I owe a never-repayable debt to my wife, Eun Sook, who, with understanding and patience, has brought up three infants to be healthy toddlers. This thesis--whatever merits and/or faults it may have--is dedicated to her. To our daughter, Young-Mee, and our twins, Young-Nan and Young-Joon, who all came into this world at inopportune times and missed their daddy's care, I now promise merry-go-round rides in the park every weekend.

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CHAPTER I

INTRODUCTION

For many of the developing countries, exports of primary products are the overwhelmingly important source of foreign exchange earnings. In view of the virtual absence or lack of capital goods industry, steadily rising imports must provide the investment goods and industrial raw materials necessary to increase productive capacity. The ability to import, of course, depends not only on the foreign exchange earnings from exports but also from official and private capital inflows from abroad. At present, however, it is generally believed that the flow of foreign capital is not likely to meet the foreign exchange requirements for the desired rate of economic growth of the developing countries. For these countries, therefore, the behavior (both the level and year-to-year time path) of export earnings is crucial to their developmental efforts.

The heavy dependence of many developing countries on the export of primary products gives rise to two separate types of problems widely discussed in the literature on trade and development. The first is the instability of primary product prices and, more generally, of export earnings. The other problem is the lagging growth rate of primary product exports. This study is concerned with the former--the problem of short-run fluctuations in export earnings.

The Problem

It is often claimed that the export earnings of developing countries undergo greater year-to-year fluctuations than do the earnings of developed countries. The argument runs as follows: Low price elasticities of demand and supply for most primary products, coupled with uncontrolled variability in demand and supply, lead to sharp fluctuations in both prices and proceeds of these commodities. Export instability tends to be greater for developing countries owing to the tendency for specialization in primary products, concentration on the export of a limited range of products, i.e., lack of diversification, and geographic concentration of their exports in one or few developed-country markets.

Such excessive instability, it is argued, is detrimental to the stability and growth of the economy. Among other things, year-to-year fluctuations in export earnings tend to produce combined multiplier and accelerator effects on domestic income, with inflationary and deflationary consequences, unless offset by appropriate domestic policies. Even if the degree of instability were the same in developed and developing countries, the latter may suffer more damage because of their alleged greater dependence on foreign trade and lack of techniques and facilities necessary for effective counter-cyclical monetary and fiscal policies.

Apart from its destabilizing effects on the domestic economy, export instability may also cause adverse effects on economic growth in various ways: Severe fluctuations in export earnings generate uncertainties that affect adversely both the level and composition of

investment--a key variable for economic growth. Also, economic growth is allegedly hindered by the disruptive effects of uncertainty and variability of foreign exchange earnings on the formulation and execution of the development plans. Consequently, it is argued that international schemes for stabilizing primary product prices and/or the export earnings of developing countries would facilitate their planned development by enhancing the predictability and reliability of export earnings.¹

This, then, is the crux of the conventional, widely held view of the causes and effects of export instability; and it appears that the problem is indeed serious for many of the developing countries.

Recent empirical studies, however, have produced evidence which is somewhat at odds with the conventional view just described. Empirical studies by such writers as Coppock, Michaely, Reynolds, and Massell²

¹The Final Act of the first session of UNCTAD (United Nations Conference on Trade and Development) recommended thus: ". . . All countries should cooperate through suitable international arrangements, on an orderly basis, in implementing measures designed to increase and stabilize primary commodity export earnings, particularly of developing countries, at equitable and remunerative prices and to maintain a mutually acceptable relationship between the prices of manufactured goods and those of primary products." Secretariat of UNCTAD, Proceedings of UNCTAD, Vol. I: Final Act and Report (New York: United Nations, 1964), pp. 19-20. Emphasis added.

²Joseph D. Coppock, International Economic Instability: The Experience after World War II (New York: McGraw-Hill Publishing Co., 1962); Michael Michaely, Concentration in International Trade (Amsterdam: North-Holland Publishing Co., 1962); Clark W. Reynolds, "Domestic Consequences of Export Instability," American Economic Review, LII (May 1963), pp. 93-102; Benton F. Massell, "Export Concentration and Fluctuation in Export Earnings: A Cross-Section Analysis," American Economic Review, LIV (March 1964), pp. 47-63 and "Export Instability and Economic Structure," American Economic Review, LX (September 1970), pp. 618-30; Michael R. Edgmand, "Concentration, Export Earnings, and the Terms of Trade," unpublished Ph.D. thesis, Michigan State University, 1968.

reveal some doubts concerning the conventional explanation of export instability with respect to its causes and consequences. More recently, MacBean³ has questioned the generally accepted assumption that export instability is harmful: He finds that developing countries are not subject to significantly greater instability in their export earnings than developed countries and that there is no evidence that export earnings instability has retarded economic growth of developing countries.

It is against this background of variance between the theoretical arguments and the diverging statistical evidence available that the present study is undertaken. One of the important contributions of the recent empirical studies has been to show that the conventional hypotheses regarding the causes and effects of export instability have to be qualified in many respects. However, empirical evidence that challenges the earlier presumptions has been derived mostly from cross-country analysis. Generalizations valid for all developing countries are difficult to make in the field of export instability. Furthermore, from the viewpoint of policy for an individual country, such generalizations may even be misleading, as the causes and effects of export instability vary greatly with the economic structure and government policies of individual countries.⁴

³Alasdair I. MacBean, Export Instability and Economic Development (Cambridge: Harvard University Press, 1966) and "Causes of Excessive Fluctuations in Export Proceeds of Underdeveloped Countries," Bulletin of the Oxford University Institute of Economics and Statistics, XXVII (November 1964), pp. 323-41.

⁴Alfred Maizels, "Export Instability and Economic Development: A Review," American Economic Review, LVIII (June 1968), pp. 575-80; Hans

As such, we feel that the causes of instability can better be analyzed at a more detailed level in terms of the specific factors relevant to the individual country and its particular export commodities. The same holds true for the effects: A priori, there is no reason to believe that the domestic consequences of instability would be necessarily commensurate with the magnitudes of export fluctuations; the effects can be either mitigated or accentuated by the over-all developments in the economy and the government policies as well. Hence, it is proposed that a single country be selected for a case study in the belief that the problem of export instability can be more appropriately (and perhaps more meaningfully) studied on a country rather than a cross-country basis.

Purpose of the Study

It is the purpose of this thesis to examine the causes and effects of export instability within the context of export performance and economic development of a developing country, Pakistan,⁵ during the post-war years 1948-1968. By analyzing the nature and extent of the problem of export fluctuations as experienced by Pakistan, it is hoped that the study will shed further light on the problem of export instability.

Singer and S. Schiavo-Campo, Perspectives of Economic Development (New York: Houghton Mifflin Co., 1970), pp. 163-71.

⁵The Indo-Pakistani War of 1971-72 has led to the independence of East Pakistan, which has now become Bangladesh. Throughout the study, the term Pakistan refers to the pre-war Pakistan that had included both wings of West and East, unless otherwise specified.

Pakistan was selected because it is a typical developing country and agricultural raw materials comprise the bulk of its exports. Export prices and proceeds of two major export commodities, jute and cotton, have been subject to severe fluctuations, as have been the total export earnings of the country. Pakistan is not an export-oriented economy; exports account for a meager 6 per cent of GNP. However, the country's resource endowments are such that severe technological limitations are placed on any meaningful import substitution. Accordingly, it is the export sector that must carry the burden of dispensing with foreign aid and meeting steadily rising import requirements of investment goods and other industrial raw materials necessary for continuous economic development. As such, the behavior of export earnings is of critical importance. In view of this, a study of the problem of export instability with special preference to Pakistan will be of particular interest.

Focus of the Study

In Chapter II, we first consider the theoretical issues and empirical evidence pertaining to the causes and effects of export instability for the developing countries in general, so as to provide a framework for subsequent analyses.

There are three main aspects of the study. First is the problem of the actual measurement of fluctuations in export earnings or any variable in question. For this purpose it is necessary that we discuss the statistical methods of measuring "instability." Chapter III is devoted to a discussion and selection of the measures to be used in our study. In Chapter IV, we then measure and discuss the degree and

pattern of export instability of Pakistan in the context of the experience of other primary product producing countries whose exports are heavily dependent on a few primary products.

Having established the presence of a considerable degree of export fluctuations in Pakistan, the second step is to discover what specific factors have been responsible for such instability observed. The extent of instability in the total export earnings of a country depends, among other things, on the types of commodities exported and their relative shares in the total exports, export markets, and export price and volume fluctuations. In Chapter V, the underlying causes of instability are sought from the study of jute and cotton because of their predominant position in Pakistan's exports. After all, it is the instability of individual export commodities that leads to the instability in the total exports. Chapter VI disaggregates the total export instability by major export commodities and export markets so as to determine their relative contributions to instability. Such analysis is seldom possible when one deals with a cross-country analysis. An attempt is also made to assess the impact of export diversification on the pattern of export instability in light of Pakistan's experience.

The third aspect of the study is to assess the impact of export instability on the domestic economy and economic growth in Pakistan. Chapter VII considers some microeconomic aspects of the domestic consequences by examining the instability in producers' incomes and trend in the production of export crops. Some macroeconomic effects are analyzed in Chapter VIII. The instability in some of the key macroeconomic variables is measured and related to export earnings

instability so as to determine to what extent and by what manner export instability has been transmitted into the domestic economy. Chapter IX examines the relationships between export instability, imports and income, and their implications on economic growth. Chapter X contains a summary of findings and conclusions.

CHAPTER II

CAUSES AND EFFECTS OF EXPORT INSTABILITY:

THEORETICAL BACKGROUND

Most of the debates on the problem of export instability largely center around the two main hypotheses: First, developing countries are subject to a greater degree of instability in their export earnings than are developed countries. Second, such instability of exports has detrimental effects on the economic stability and growth of these countries.

This chapter provides a discussion of both the theoretical and empirical issues surrounding these hypotheses. In the latter part of the chapter, we shall also consider several reasons for the need for case studies of the problem of export instability.

Causes of Excessive Export Instability

The tendency for the export earnings of developing countries to undergo greater fluctuations than those of developed countries is usually ascribed to the fact that their exports are heavily concentrated in primary commodities, whose prices are characteristically unstable, and the demand and supply of which are strongly influenced by a large number of uncontrollable factors that lead to instability in their markets. Given export concentration in primary commodities, instability in the markets for these commodities imparts a similar

instability in the export proceeds of exporting countries, most of which are developing countries.

The claim that developing countries are subject to greater instability in their export earnings was first substantiated by a United Nations study,¹ which demonstrated the high degree of instability in both prices and export earnings of a large number of primary commodities and exporting countries.

Even without such results, however, it is not difficult to sustain such a claim on an a priori basis. It is widely known that both the demand and supply functions of primary commodities tend to indicate very low price elasticities in the short-run.² The implication of the low price elasticities, as would be understood by many, if not all, students in the principles of economics, is that a small shift in either demand or supply results in a relatively large change in price and hence in total receipts. In other words, with rigidities in both demand and supply (which is the case for many primary products), a change in one plays havoc with price as the other remains relatively fixed.

Besides being price inelastic, there are also a large number of uncontrollable factors governing the supply and demand of primary commodities. These potential sources of both demand and supply shifts

¹United Nations, Instability in Export Markets of Underdeveloped Countries (New York: United Nations, 1952), p. 1.

²Price elasticities of demand for primary commodities have been found to be very low--considerably lower than unity in most cases. See, for example, Food and Agriculture Organization, Trade in Agricultural Commodities in the U. N. Development Decade (Rome: FAO, United Nations, 1967), Tables S.1 and S.2.

tend to set up fluctuations in price and export proceeds of developing countries.

On the demand side, one obvious source of instability lies with business cycles in advanced industrial countries. Cyclical variations in the income and industrial production impart similar (perhaps more pronounced) variations in the demand for primary products that are inputs to the industrial production. Second, and even more obvious than cyclical influences originating from the importing countries, is the impact of sporadic noneconomic events such as the Korean War, the Suez Crisis, and recently the Vietnam War, all of which have had profound effects on the price, quantity, and value of many primary products. Third, changes in government policies of the importing countries, especially those relating to strategic stockpiling, surplus disposal programs, trade and exchange restrictions, affect in no small degree the trade of primary commodities. The increasing protectionist policies for domestic agriculture by the industrial countries have allegedly had destabilizing effects on the world market for agricultural products.³ Fourth, technological progress and development of synthetics alter the proportion of the different raw materials used. Last, but not least in importance, speculative activities induced by expectations regarding the price and quantity are particularly pronounced in

³See, for instance, Raul Prebisch, "Commercial Policy in the Underdeveloped Countries," American Economic Review, XLVIII (May 1959), pp. 251-269 and Towards a New Trade Policy for Development (New York: United Nations, 1964); Werner Baer, "The Economics of Prebisch and ECLA," Economic Development and Cultural Change, X (January 1962), pp. 169-182.

the trade of primary commodities.⁴ Primary product prices are "more influenced by speculative buying and selling, and changes in inventories often tend to aggravate instead of dampening fluctuations in demands."⁵

On the supply side, an important source of instability for primary commodities, especially agricultural, is that output is subject to the vagaries of unpredictable nature, such as weather, floods, droughts, and diseases.

For certain commodities, such as coffee, rubber, and hard fiber, cyclical variations in their output are also attributable to the longer gestation period required. If adjustment in production requires time lags of a year or more, adjustments in the quantity supplied in the short-run must be made from inventory, which implies the relatively low price elasticity of supply in the short-run. Moreover, supply may react in a perverse way to price changes. One such example is the so-called cobweb mechanism that tends to perpetuate fluctuations in price and quantity supplied. For instance, a high price in a given year will induce increased supply that can only come forth one or two years later, at which time price will be driven down; the lower price will then induce a lagged reduction in supply which in turn will drive price back up, and so forth. This cobweb mechanism, which is allegedly prevalent in certain agricultural commodities, may be a continuing

⁴Gunnar Myrdal, An International Economy: Problems and Prospects (New York: Harper & Row, 1969); Henry C. Wallich, "Stabilization of Proceeds from Raw Material Exports," in H. S. Ellis, ed., Economic Development for Latin America (New York: Macmillan Book Co., 1961), pp. 342-361.

⁵Myrdal, p. 238.

source of instability in price, quantity, and hence export proceeds even if demand remains constant.

With these various sources of instability in the demand as well as supply of primary commodities, which are in fact beyond control by the producing countries, the fact that for many primary commodities the demand and supply are price inelastic only tends to reinforce the market instability.⁶ To the extent that exports of a country consist mainly of primary products, therefore, there is a strong presumption that its export receipts will in all probability be relatively unstable.

In addition to the heavy dependence of their exports on primary products, export instability is also believed to be greater in

⁶Mathematically, it can be shown that uncontrollable, autonomous factors lying behind both the demand and supply of a primary commodity will cause a greater change in price of the commodity if the price elasticities are smaller. Assume the constant price elasticity demand and supply functions for a certain commodity X in the form:

$$X_d = AP^{-\alpha} \quad (1)$$

$$X_s = BP^\beta \quad (2)$$

Solving for the price in equilibrium, we get:

$$P = (A/B)^{\frac{1}{\alpha+\beta}} \quad (3)$$

From Equation (3) we obtain:

$$\frac{dP/P}{dA/A} = \frac{1}{\alpha+\beta} \quad (4)$$

$$\frac{dP/P}{dB/B} = \frac{-1}{\alpha+\beta} \quad (5)$$

Thus, it is obvious that the percentage change in price (dP/P) with respect to the percentage change in the autonomous factors (dA/A or dB/B) tends to be greater the smaller the values of the price elasticities of demand and supply of commodity X, α and β .

developing countries because of the commodity and geographic concentration of their exports. That the exports of many developing countries are highly concentrated in one or two commodities and that they usually are destined to one or two importing (developed) countries have been amply demonstrated by the evidence.⁷

If a country's exports consist of a large number of commodities, one would expect that changes in export proceeds of individual export commodities will tend to offset each other, thereby stabilizing the country's aggregate export earnings. If, however, a country's exports are highly concentrated on a few commodities, it is not likely that changes in price and/or volume in one commodity will be offset by changes in the opposite direction in the price and volume of other commodities, with the result that the country's aggregate export earnings tend to fluctuate more. In a similar manner, a heavy concentration of a country's exports towards a few importing countries may also have the same effect.

From the above (a priori) arguments it seems likely that developing countries may be subject to an exceptionally high degree of instability in their export earnings and this phenomenon is linked to certain characteristics of the economies (and the export sectors in particular) of these countries.

⁷See, for instance, Michael Michaely, Concentration in International Trade (Amsterdam: North-Holland Publishing Co., 1962), pp. 11-12, 16; Joseph D. Coppock, International Economic Instability (New York: McGraw-Hill Book Co., 1962), pp. 99-101.

Effects of Export Instability

The other aspect of the problem of export instability concerns the damaging impact that severe fluctuations in exports may have on the economic stability and development of the developing countries. It has been widely believed that:

. . . export instability affects domestic investment, consumer incomes and government revenue and expenditure, and that its consequences on less developed economies are instability of key domestic variables and retardation of growth of internal sectors. Furthermore, a planned dependence of development projects on certain projected levels of foreign exchange earnings may add an element of rigidity to internal adjustments to export variations, hampering implementation and follow-up of planned projects. At the very least, there are repercussions on the external payments sector, with implications for exchange policy, liquidity needs and programs of export diversification.⁸

As such, economic stability and growth is hampered by export instability.

Behind this broad generalization, however, lie a large number of alternative hypotheses regarding which domestic variables are affected by export instability and the manner by which the alleged adverse effects operate. Different writers have stressed different aspects of it.⁹

First of all, it is contended that the national incomes of developing countries are more sensitive to the year-to-year fluctuations in

⁸G. F. Erb and S. Schiavo-Campo, "Export Instability, Level of Development and Economic Size of Less Developed Countries," Bulletin of the Oxford University Institute of Economics and Statistics, XXXI, No. 4 (November 1969), p. 263.

⁹For an excellent summary discussion of the consequences of export instability, see A. I. MacBean, Export Instability and Economic Development (Cambridge, Mass.: Harvard University Press, 1966), Ch. 1, esp. pp. 26-31.

export earnings because these countries are lacking effective monetary and fiscal policy instruments to counterbalance such instability. As a result, there is a danger that export instability will generate domestic price instability, especially inflation:

A degree of fluctuation (in export receipts) such as that indicated by this study, threatens underdeveloped countries with inflation in both prosperity and depression. During recessions, reduction in export proceeds and balance of payments deficit encourage the devaluation of currencies or restriction of imports; both measures may increase inflationary pressures on prices. Conversely, the money income of exporters may expand so rapidly in times of increased demand that domestic controls become inadequate to prevent inflation,
...¹⁰

Here, the emphasis is placed on the effect of export instability on the rate of change in domestic prices and ultimately on development. The implication of the argument is that fluctuations in export earnings are expected to cause parallel fluctuations in domestic prices. This is so because, given the low (short-run) supply elasticities associated with agricultural products in developing countries, it is likely that changes in demand will result in significant changes in domestic prices. Moreover, it is further argued that governments of developing countries, owing to political and institutional reasons as well as greater effectiveness in coping with deflationary than in combating inflationary pressures, may be inclined to react only to the deflationary pressures and by so doing transform the impact of export instability into a long-run inflationary process.

Apart from its destabilizing effects on the domestic economy, export instability may cause adverse effects on economic development in

¹⁰United Nations, Instability in Export Markets . . . , p. 1.

various ways: One line of reasoning is centered upon the dependence of economic growth of developing countries on the imports of investment goods and other necessary raw materials which must be paid by export earnings, unless a country has other sources of foreign exchange:

Fluctuations in export receipts of developing countries tend to cause similar fluctuations in the ability to import because the international reserves of the underdeveloped countries are limited and because aid and investment from advanced countries are not necessarily compensating. If, as a result, imports essential for development are forced to fluctuate, development will be sporadic, if not retarded, and a steady progression to sustained economic growth will be made extremely difficult.¹¹

Here, economic growth is believed to be hampered through the adverse effects of export instability on capital goods imports, given the non-compensatory nature of foreign aid and investment and a lack of foreign exchange reserves that can serve as an effective cushion against fluctuations in export earnings. It is often argued that for each developing country there may be a certain minimum of capital goods imports required for its economy to operate at full capacity.¹² If this minimum is not maintained due to frequent fluctuations in export earnings, the economy would not be able to operate and grow at the optimum rate. During periods of sharp declines in export earnings, a country may try to maintain the minimum requirement of capital goods imports by further cutting back the imports of consumer goods. However, to the extent that imports of consumer goods cannot be reduced below a certain

¹¹R. Hawkins, et al., Stabilization of Export Receipts and Economic Development: International Commodity Agreements and Compensatory Financing Plans, The New York University Bulletin, No. 40 (New York: New York University, 1966), p. 8.

¹²S. B. Linder, Trade and Trade Policy for Development (New York: F. A. Praeger, 1967), p. 9.

minimum because of no domestic substitutes, capital goods imports are likely to suffer from any deterioration in the capacity to import.

A close association between fluctuations in imports and those of domestic fixed capital formation can be expected because of the high import content of investment in many developing countries. Imported capital goods account for almost 40 per cent of domestic fixed capital formation in the average developing country.¹³ With the producer goods sector virtually missing or at the initial stage of development, one of the major sources of increasing investment in fixed capital formation is to increase imports of capital goods. Furthermore, as these countries continue to pursue their developmental efforts, one would expect that import demand for capital goods will increase steadily. Under these circumstances, therefore, any shortage and/or interrupted flow of imported capital goods are likely to slow down the growth rate of capital formation, a key variable for economic growth.

Excessive fluctuations in export earnings may also have adverse effects on long-run private investment on other grounds. In this argument, the insecurity and uncertainty created by export instability are emphasized, which ultimately tend to deter investment in primary production itself and other industries in the economy as well:

The instability of export markets for primary commodities . . . discourages investment in primary production itself; generally limits the 'economic horizon,' and destroys the sense of continuity so necessary in private as well as public planning The violent fluctuations of the export trade may well be a major cause of the speculative

¹³United Nations, "Investment Trends and Policies in Underdeveloped Countries," World Economic Survey, 1959 (New York: United Nations, 1960), Ch. 2, Tables 2-9.

attitude and the 'get-rich-quick' mentality so widespread among businessmen in underdeveloped countries.¹⁴

The uncertainty generated by a high degree of export instability increases the difficulty of estimating the expected rate of returns on investment in the export industries. Similarly, the insecurity and uncertainty regarding the future imports of spare parts and raw materials may also discourage investment in those industries that are heavily dependent on imports from abroad. Moreover, "the existence of these risks may make the suppliers of capital and credit charge higher interest rates and impose more stringent conditions,"¹⁵ thereby raising the borrowing costs. Under these circumstances, instability in the export sector is likely to deter investment.

The uncertainty and variability of foreign exchange earnings also render effective development planning extremely difficult by destroying "the sense of continuity so necessary in private as well as public planning."¹⁶ Intuitively, with stable export earnings, "it is easier to take a long view and plan domestic investment without the constant interruption that destroys half its value."¹⁷ In the absence of ample foreign exchange reserves and continuous flow of foreign aid, the planning authorities of developing countries are greatly hampered by sudden export short-falls since:

¹⁴Ragnar Nurkse, "Trade Fluctuations and Buffer Policies of Low-Income Countries," Kyklos, XI, Fasc. 2 (1958), p. 143.

¹⁵MacBean, Export Instability . . . , p. 29.

¹⁶Nurkse, p. 143.

¹⁷A. K. Cairncross, Factors in Economic Development (New York: Praeger Publishers, 1962), p. 214.

. . . a project halted because of an unexpected lack of the foreign exchange with which to finance the imports necessary for it cannot in actual practice be replaced on the spot by another project with lower import requirements.¹⁸

Worse yet, if "development projects are expected to result in the production of exportable goods, calculations of cost and income may be completely upset by wide fluctuations in price and demand."¹⁹ Perhaps Wallich has put this argument in its proper perspective by stating that "Instability turns programming, at least a guessing game, into a rank speculation."²⁰

Finally, sharp fluctuations in export earnings may also aggravate the balance of payments difficulties, which in turn may lower confidence in the maintenance of the exchange rate; and any fear for devaluation will further stimulate the flight of capital overseas, which is already endemic in many developing countries.

The arguments for the detrimental effects of export instability discussed so far are all related to the fluctuations in the aggregate export receipts and purport to theorize the mechanism by which the export-induced instability transmits its impact on the rest of the economy. There are other arguments that are couched in terms of the micro, rather than macro, effects; they are primarily related to the instability in prices of primary products per se, rather than the instability in the aggregate export earnings of a country.

¹⁸S. Schiavo-Campo and Hans Singer, Perspectives of Economic Development (Boston: Houghton Mifflin Co., 1970), p. 167.

¹⁹United Nations, Instability in Export Markets . . . , p. 1.

²⁰Henry C. Wallich, "Stabilization of Proceeds from Raw Material Exports," in H. S. Ellis, (ed.), Economic Development for Latin America (New York: Macmillan Book Co., 1961), p. 344.

Because of the unstable prices of primary commodities, the economic risks of devoting resources to the production for exports are high; and consequently, production for exports becomes less profitable and less attractive. This will discourage investment in primary production for exports, which in turn will retard the growth of the export sector. Excessive price fluctuations very often cause hedging behavior on the part of the farmers, inducing them to devote their resources to subsistence crop production which normally yields lower average returns rather than to production of cash crops for export with higher returns. With the subsistence crop, a farmer can at least be assured of feeding his family for the year:

The hazards of being faced with high food prices in years of low income are sufficiently disastrous in many parts of the world to induce farmers and nonfarmers alike to retain land for home use. This risk-averting behavior helps perpetuate extremely low productivity in agriculture.²¹

Over all, then, export price fluctuations, in essence, cause a retardation in the growth of exports and a perpetuating low productivity in agriculture, which will ultimately prevent optimum allocation of resources.

Price instability may also encourage the development of synthetic products, replacing natural raw materials. Moreover, high prices of raw materials may force the importers to modify their production processes and techniques:

In the post-war period when prices of Egyptian cotton were both high and unstable, spinners in Lancashire and Western Europe bought other varieties and adapted their machines

²¹William C. Brainard and Richard N. Cooper, "Uncertainty and Diversification in International Trade," Studies in Agricultural Economics, Trade, and Development, VIII, No. 3 (1968), p. 274.

and the quality of their products accordingly. Once such a change has been made it requires a considerable fall in prices to persuade spinners to reset their machines and they are not, in any case, likely to do so until existing stocks have been exhausted and until they can be assured of a reasonable degree of stability in prices in the future.²²

Over the long-run, therefore, price instability of exports tends to cause a decline in the demand for the traditional primary product exports of developing countries.²³

While there are many economists who take as axiomatic the evils of fluctuations in primary product prices and export proceeds, as we have seen above, there are also some economists who argue otherwise. Therefore, it behooves us to look at their dissenting views on the effects of export instability.

According to Sidney Caine,²⁴ for instance, instability of export incomes may result in greater rather than lesser savings and real investment. He theorizes that individuals whose incomes are subject to large fluctuations tend to save more against contingencies than do those whose incomes are relatively stable, because the proportion of

²²R. S. Porter, "Comment," Kyklos, XI, Fasc. 2 (1958), p. 236.

²³This is, of course, one of the long-run trade problems--e.g., the lagging growth of exports and the declining terms of trade, which are basically associated with the heavy dependence of developing countries' exports on primary products. To be sure, the long-term trade problems and the problem of (short-term) export fluctuations with which the present study is concerned are conceptually different. In practice, however, they are not totally separable from each other.

²⁴Sidney Caine, "Instability of Primary Product Prices: A Protest and Proposal," Economic Journal, LXV (September 1954), pp. 610-14; "Comment," Kyklos, XI, Fasc. 2 (1958), pp. 187-93; "Stabilizing Commodity Prices," Foreign Affairs, XXXVII (October 1958), pp. 131-43; Prices for Primary Producers, Hobart Paper No. 24 (London: Institute of Economic Affairs, 1966), pp. 16-18.

income saved is greater after a marked rise in income.²⁵ This is, in fact, in accordance with Friedman's "permanent" income hypothesis.²⁶ Nearly the same is true of societies in general: when the initial fluctuations are upwards, it is certain that the proportion of income saved will be particularly high; and in a subsequent period of lower prices and incomes, a portion of the savings will be released for consumption, but it is probable that a fair amount of it will also be spent on genuine investment.

In essence, Caine's argument implies the so-called "ratchet mechanism" thesis of investment--that investment is magnified by windfall profits during the upward phase of business cycle but somehow muddles through on the downward phase, thus ensuring a higher long-run rate of investment. As such, investment may not necessarily be deterred by export fluctuations.

Clark Reynolds,²⁷ pointing out that a high rate of reinvestment has actually occurred during periods of wide fluctuations in export

²⁵Caine, "Instability of . . . ," pp. 611-12.

²⁶Milton Friedman, A Theory of Consumption Function (Princeton, N. J.: Princeton University Press, 1957). For the recipients of income there is some level of "permanent" income that they normally expect and out of which they save a certain proportion. If, however, income rises temporarily above the "permanent" level, consumption, being a function of "permanent" income, would not be affected by this unexpected increase in income above the "permanent" level, particularly in the case of windfall gains as would be the case of a sudden increase in export prices and earnings. The marginal propensity to save for the windfall income, as a matter of fact, would be equal to one according to the strict "permanent" income hypothesis. A very high proportion of the income increase would be saved, therefore, when fluctuations in incomes are upwards.

²⁷Clark W. Reynolds, "Domestic Consequences of Export Instability," American Economic Review, LIII (May 1963), pp. 93-102.

sales and profits in the Chilean copper industry, argues that the behavior of investors in the export industry is such that export fluctuations may not have caused a lower rate of investment over the long-run:

Investors in the export industry regard upswings as beginnings of trends rather than as temporary phenomena, and behave accordingly; downswings, on the other hand, are apparently considered short-run phenomena, since no major disinvestment occurred for any of the companies even during the severe depression of the 1930's.²⁸

It may be that export booms generate optimism, thereby increasing investment, and this increase in investment may not be matched by disinvestment in the same magnitudes in years of export slumps.²⁹ It is, however, equally difficult to see why people would regard downswings in exports only as short-run, temporary phenomena since, as Nurkse once described:

'People have learned out of the past that wealth comes quickly in Brazil through a boom, and that a sudden turn of events may bring disaster.' The violent fluctuations of the export trade may well be a major cause of the speculative attitude and the 'get-rich-quick' mentality so widespread among businessmen in underdeveloped countries.³⁰

Whether more will be saved from stable income than from unstable income is an unsettled question. Even if more would be saved from unstable income, it is doubtful whether these savings will be channeled into the productive investment. In many developing countries it is mostly the well-to-do groups who are able to save; and, among others,

²⁸Ibid., p. 100.

²⁹MacBean, Export Instability . . . , p. 113.

³⁰Nurkse, "Trade Fluctuations . . . ," p. 143.

the demonstration effect succeeds, in no small degree, in diverting these savings into a variety of nonproductive activities.³¹

Whether increased or reduced investment is likely to result from stable export prices and incomes cannot be established on an a priori basis. For instance, one can justifiably argue that investors invest in the production of agricultural raw materials or minerals simply because they are the best alternatives open to them for export, owing to the country's comparative advantage in their production, but not because of unstable export prices and incomes. Similarly, it can also be argued that investors might be reluctant to invest in primary products simply because their price prospects are poor, even if prices are in fact very stable. In either case, therefore, short-run fluctuations in export prices and receipts may not be too relevant for the investment decisions. Besides the paucity of empirical studies, this may be one reason why the two opposing arguments on the effects of export instability (especially on the relationship between export fluctuations and investment) remain yet unresolved.

Summing up, the arguments--that the developing countries tend to undergo exceptional instability in their export earnings and that such instability has detrimental effects on the economic stability and growth of these countries--have strong theoretical underpinnings based on usual price and income theories and appear to have received a wider acceptance among economists and policymakers of the developing

³¹For a discussion of the demonstration effect on the international plane that "tends to limit the supply of investible funds by inhibiting the willingness to save" in developing countries, see Ragnar Nurkse, Problems of Capital Formation in Underdeveloped Countries (New York: Oxford University Press, 1953), pp. 58-67.

countries as well. In fact, the arguments have become "an orthodoxy of development economics,"³² and have provided the basis of a host of proposals for stabilizing commodity-trade instability both nationally and internationally.

Empirical Aspects of the Problem

Recent empirical studies,³³ however, have produced results which are somewhat at odds with the conventional views in many respects. According to the a priori arguments, one may expect that the instability in the prices of primary commodities would be greater than that for manufactured goods. However, Michaely and Coppock find that there is surprisingly no such evidence for items in international trade.³⁴

Also, there is no conclusive evidence that fluctuations in the export earnings of developing countries are primarily the result of export price rather than volume fluctuations. A United Nations study finds that, for 39 primary commodities which are important in

³²Harry G. Johnson, Economic Policies Toward Less Developed Countries (Washington, D. C.: The Brookings Institution, 1967), p. 143.

³³Joseph D. Coppock, International Economic Instability: The Experience after World War II (New York: McGraw-Hill Publishing Co., 1962); Michael Michaely, Concentration in International Trade (Amsterdam: North-Holland Publishing Co., 1962); Benton F. Massell, "Export Concentration and Fluctuation in Export Earnings: A Cross-Section Analysis," American Economic Review, LIV (March 1964), pp. 47-63; Alasdair I. MacBean, "Causes of Excessive Fluctuations in Export Proceeds of Underdeveloped Countries," Bulletin of the Oxford University Institute of Economics and Statistics, XXVII (November 1964), pp. 323-341 and Export Instability and Economic Development (Cambridge: Harvard University Press, 1966); Michael R. Edgmand, "Concentration, Export Earnings, and the Terms of Trade," unpublished Ph.D. thesis, Michigan State University, 1968.

³⁴Michaely, pp. 75-78; Coppock, p. 33.

international trade, price and volume fluctuations were approximately the same in their magnitudes.³⁵ However, the study concludes that downward movements in price were, on the average, greater than declines in export volume, thus indicating that price movements are the more important factor in causing fluctuations in export earnings. Coppock, however, concludes that export volume fluctuated more than export price; therefore, instability of export quantity was more important as a source of instability in export earnings than export price instability.³⁶ The same conclusion is reached by MacBean and Edgmand.³⁷ One important implication of the finding, of course, is that price stabilization might aggravate rather than mitigate export earnings instability.³⁸

Furthermore, the developing countries are not significantly more subject to instability of export earnings than the developed countries; the differences in export instability between the two "are much less than commonly supposed."³⁹ Nor is there conclusive evidence that the

³⁵UNCTAD, Commodity Trade, Proceedings of UNCTAD, Vol. III (New York: United Nations, 1964), p. 85.

³⁶Coppock, p. 125.

³⁷MacBean, Export Instability . . . , p. 46; Edgmand, pp. 135-36.

³⁸One cannot, however, conclude definitely that stabilizing export volume will be more successful in stabilizing export earnings than stabilizing export prices. To the extent that variations in export quantity are essentially the result of changes in export prices in previous years--i.e., through the operation of the so-called cobweb mechanism, which is believed to be prevalent among agricultural export commodities, fluctuations in export quantity and export proceeds may very well be ameliorated by stabilizing export prices.

³⁹MacBean, Export Instability . . . , p. 34. MacBean found that during the period 1948-58 export instability of LDC's as measured by

commodity concentration of exports is a major explanatory factor in determining the extent of instability in export prices and/or export earnings,⁴⁰ as would be expected on a priori considerations. The same goes for the other two propositions for expecting greater instability--specialization in primary products and geographic concentration of exports.⁴¹

Most important of all, there is little relationship between export fluctuations and variations in domestic economic variables, which MacBean attributes, among other things, to the operation of built-in stabilizers and especially high marginal propensities to import in the developing countries.⁴² And, in particular, there is no statistical evidence that there is "any relation between growth in per capita real income and export instability,"⁴³ and that export instability has retarded economic growth of the developing countries:

All in all, our search for evidence demonstrating the adverse influence of short-term instability of export earnings on the prospects of growth in underdeveloped countries gives us no grounds for believing that export instability is in fact so harmful. Almost every chain of reasoning leading to the conclusion that serious damage is inflicted by instability has

the Coppock index (the log-variance method) was greater than that of DC's, but only by 31 per cent, hardly the difference which was thought to exist (Ibid., p. 36).

⁴⁰Michaely, pp. 73-74; Massell, "Export Concentration . . . ," pp. 47-63; MacBean, Export Instability . . . , Ch. 2.

⁴¹MacBean, Export Instability . . . , Ch. 2 and "Causes of Excessive Fluctuations . . . ," pp. 323-341; Edgmand, Ch. 5.

⁴²MacBean, Export Instability . . . , Ch. 3, esp. pp. 85-96.

⁴³Coppock, p. 107.

been found wanting when confronted with analyses of U. N. and I. M. F. data.⁴⁴

While the results of empirical studies cited above⁴⁵ are against the widely-held, conventional views in many respects, there are some recent studies the results of which generally tend to substantiate the conventional hypotheses.⁴⁶ Indeed, not only was the degree of export instability of developing countries over twice as high as that of developed countries during the later post-war years, 1954-66,⁴⁷ such instability is related, for one thing, to the concentration of exports⁴⁸ and other structural characteristics of developing economies--e.g., the small size of the domestic market, the higher ratio of food exports to total exports, and the higher ratio of domestic consumption

⁴⁴MacBean, p. 127.

⁴⁵Notably, Coppock and MacBean's.

⁴⁶G. F. Erb and S. Schiavo-Campo, "Export Instability, Level of Development and Economic Size of Less Developed Countries," Bulletin of the Oxford University Institute of Economics and Statistics, XXXI (November 1969), pp. 263-283 and "Instability of Exports, of 'Developmental' Imports and of Domestic Income in Less Developed Countries," unpublished manuscript, November 1969; M. R. Edgmand, "Concentration, Export Earnings, and the Terms of Trade," unpublished Ph.D. thesis, Michigan State University, 1968; B. F. Massell, "Export Instability and Economic Structure," American Economic Review, LX (September 1970), pp. 618-630.

⁴⁷Erb and Schiavo-Campo, "Export Instability, Level of . . . ," p. 268. Also, Edgmand, pp. 122-131.

⁴⁸Massell, "Export Instability . . . ," pp. 626-628 and Edgmand, pp. 157-161.

to exports.⁴⁹ Furthermore, there is a positive association between export instability and domestic economic variables.⁵⁰

It is now well acknowledged that one unequivocal contribution of the recent empirical research has been to show that the conventional hypotheses regarding the causes and effects of export instability have to be qualified in many respects. While most of the studies dealt with cross-country analysis, practically no detailed country studies on the subject have been made.

One of the serious drawbacks of a cross-country analysis is, of course, its implicit assumption that there is a single, unique relationship between a given degree of export instability and the resulting changes in the domestic economic variables. Without taking into account the possibility of deliberate offsetting policies by the government and the over-all developments in the economy, and without taking into account the differences in economic structures and in the degree of foreign trade dependency of different economies, what one hopes for is that the relationship between export instability and domestic economic variables, such as the growth rate of GNP or GDP, is strong enough to be picked up by the data.

Moreover, the conflicting statistical evidence presented by the analyses of essentially the same type may be due to the choice of a particular instability index, a particular sample of countries, and/or

⁴⁹Erb and Schiavo-Campo, *ibid.* and Massell, *ibid.*

⁵⁰Erb and Schiavo-Campo, "Instability of Exports, of 'Developmental' Imports . . .," unpublished manuscript, 1969, quoted in S. Schiavo-Campo and H. W. Singer, Perspectives of Economic Development (Boston: Houghton Mifflin Co., 1970), p. 169.

time period covered. This is well demonstrated, for instance, by Massell who, in his later study, obtains a significant association between export instability and the commodity concentration of exports, reversing the conclusion reached in his earlier study,⁵¹ and by Maizels who shows a significant relationship between export fluctuations and the growth rate of GDP by employing the same data used by MacBean but simply excluding from the regression analysis a few countries which appear to be special cases,⁵² suggesting that generalizations both across countries and for different time periods are particularly difficult in the field of export instability.

Such being the case, a study that explores the causes and effects of export instability of a single country should be of particular interest and should provide us with further insights into the problem.

Summary

This chapter has provided a discussion of both the theoretical and empirical issues pertaining to the causes and effects of export instability for the developing countries in general. It has been shown that the conventional hypotheses regarding export instability appear to have strong theoretical underpinnings. Because of the predominant share of primary products in total exports, developing countries are expected to face severe fluctuations in their export earnings; and the

⁵¹Massell, "Export Concentration . . . ," and "Export Instability and Economic Structure."

⁵²Alfred Maizels, "Export Instability and Economic Development: A Review," American Economic Review, LVIII (June 1968), pp. 575-580.

export-induced instability is transmitted into the domestic economy to the detriment of economic stability and growth of these countries.

We have also noted that recent empirical studies have produced diverging statistical evidence--some in favor of, and some against, the conventional views of the problem. While these studies have mainly dealt with cross-country analysis, practically no case studies have been made. Generalizations as to the causes and effects of export instability appear to be particularly difficult both across countries and for different time periods. The diverging statistical evidence available in the literature, among other things, is one indication of such difficulty. In view of this, a case study should prove to be a meaningful and fruitful approach to the problem.

In order to analyze the causes and effects of export instability as experienced by Pakistan, a country of our special concern in the present study, we need first to determine whether Pakistan has actually been subject to any instability in its export earnings, and if it has, to what extent. This requires a discussion of the statistical methods of measuring "instability" and the actual measurement of export instability that has occurred in Pakistan during the post-war years. The following two chapters are devoted to this task.

CHAPTER III

MEASUREMENT OF INSTABILITY

A wide variety of different measures of instability are used in the study of export instability. The purpose of this chapter is to review and evaluate the various measures of instability available in the literature and select the measures that appear to be most appropriate for the purpose of our study.

Statistical Methods of Measuring Instability

The simplest conventional method of measuring instability in a time series is to calculate the average year-to-year percentage changes. Symbolically, the index of instability can be expressed as:

$$I_1 = \frac{100}{n-1} \sum_{t=2}^n \frac{|E_t - E_{t-1}|}{E_{t-1}} \quad (3.1)$$

where: I_1 = the index of export instability

E = the value of export earnings

t = the year

n = the total number of years covered in the series.¹

¹This method has been used in numerous studies done by Food and Agriculture Organization, United Nations, and other writers such as Michaely who used the method in measuring fluctuations in export and import prices and the commodity terms of trade [Michael Michaely,

Although easy to compute, this method is deficient in that it does not allow for trend factors. The actual observable changes over time in the value of exports (or any variable in question) are essentially the sum of the two different sets of forces--namely, long-run forces which can be said to determine the trend, and short-run forces which can be considered as determining fluctuations around the trend. Thus, if an index of instability is used without correcting for trend, a country with a rapid secular increase in export earnings will exhibit greater instability than a country whose export earnings secularly remain unchanged. Take, for example, a country whose export earnings have risen continuously over time, say from 100 to 200, 300, 400, and 500 in successive years. Using this method the index would show an average annual fluctuation of 52 per cent while graphically there is only an upward linear trend with no fluctuations at all. In the presence of the strong upward trend, use of such an index would seriously overstate the degree of instability. Particularly in the case of a cross-country study, use of such a method is least desirable because countries with strong upward trends in their export earnings would show greater instability than other countries.² However, use of

Concentration in International Trade (Amsterdam: North-Holland Publishing Co., 1962), pp. 68-70].

²In Coppock's study only 4 out of 83 countries showed no trend influences [J. D. Coppock, International Economic Instability (New York: McGraw-Hill, 1962), p. 92]. All but one of 35 countries showed trend influences in Massell's study [B. F. Massell, "Export Concentration and Fluctuations in Export Earnings: A Cross-Section Analysis," American Economic Review, LIV, No. 2 (March 1964), p. 50] and strong trend influences were also shown in Michaely's study [M. Michaely, Concentration in International Trade (Amsterdam: North-Holland Publishing Co., 1962), p. 99].

this method may be justified if there is little or no trend in the series under study.³

Another widely used index is the United Nations index,⁴ which is quite similar to the previously discussed conventional method, except that the denominator of the ratio is the higher of the two values in two successive years rather than the value of the preceding year. The U. N. index of instability as measured in terms of percentage average annual fluctuation can be expressed as:

$$I_2 = \frac{100}{n-1} \sum_{t=2}^n \frac{|E_t - E_{t-1}|}{\max.(E_t, E_{t-1})} \quad (3.2)$$

where $\max.(E_t, E_{t-1})$ denotes the value of exports in years t and $t-1$, whichever is larger.

This method, widely used in numerous U. N. studies, is easy to compute and also has some advantages over the conventional method (I_1). In this method, "a rise is measured as a percentage of the terminal high point, rather than of the lower starting point of an increase. Thus, a rise from 100 to 150 was not considered an increase of 50 per

³Michaely justified the use of this method on the grounds that there is little or no trend in export and import prices and the commodity terms of trade. Michaely, p. 69. On the grounds of the absence of any discernible trend and easiness of computation, FAO also used this method.

⁴E.g., United Nations, Instability of Export Markets in Underdeveloped Countries (New York: United Nations, 1952); "Commodity Trade and Policies in the Post War Period," World Economic Survey, 1958 (New York: United Nations, 1959), pp. 12-56; "Trends and Fluctuations in World Trade of Primary Commodities," World Economic Survey, 1959 (New York: United Nations, 1960), pp. 17-65.

cent . . . but an increase of 33 1/3 per cent"5 But in measuring a fall the conventional method was retained. Hence, this method produces symmetrical results for successive rises and falls of the same magnitude. For example, a fall from 200 to 100 is expressed as a 50 per cent decrease and a rise from 100 to 200 as a 50 per cent increase rather than a 100 per cent increase, which would be the case when using the conventional method.

This U. N. method also takes some account of trend factors. This is so because in case of a rise in export earnings (or any variable in question) it is the attained higher value that is used as a base. Thus, calculating the absolute change as a percentage of this "base" is equivalent to viewing the value of exports (or any variable) in the given year as a short-fall from the attained higher value. Using this procedure, the average year-to-year fluctuation of export earnings in our previous example would be 32 per cent, which is the same result as in the case of secularly falling export earnings. Overstating the degree of instability because of the presence of strong upward trends is therefore reduced.

There are a number of measures of instability which make formal adjustments for trend factors. Different ways of correcting for the trend give rise to different indices of instability. One way of correcting for the trend is to fit a regression line to export earnings (or any variable in question) as a function of time, and measure exports as deviations from this estimated trend. Then, we can write:

⁵United Nations, Instability of . . . , p. 77.

$$E_t = \beta_0 + \beta_1 t \quad (3.3)$$

where E = export earnings, t = time, and β_0 and β_1 can be estimated by least squares. The residuals, u_t , are then obtained by subtracting the estimated trend values of export earnings in each year from the actual values, i.e., $u_t = E_t - (\beta_0 + \beta_1 t)$. In each case, the absolute value of the difference between u_t and u_{t-1} is obtained, divided by u_{t-1} , and multiplied by 100 to produce the trend-corrected year-to-year fluctuation of export earnings in percentage. The annual percentage rates of change in export earnings are then summed and divided by $n-1$ observations to obtain the trend-corrected average annual fluctuation of export earnings in per cent form. Algebraically, the instability index, I_3 , can be written as:

$$I_3 = \frac{100}{n-1} \sum_{t=2}^n \frac{|u_t - u_{t-1}|}{u_{t-1}} \quad (3.4)$$

In this method it is assumed that the trend can most appropriately be approximated by a linear function of time. In the absence of any discernible linear trends, either an exponential or polynomial trend should be used.

Quite similar to the method discussed above, some variants of the method are also suggested by the writers on the subject. One variant used by Massell⁶ is as follows:

⁶Benton F. Massell, "Export Concentration and Fluctuation in Export Earnings: A Cross-Section Analysis," American Economic Review, LIV, No. 2 (March 1964), pp. 48-52.

$$I_4 = \frac{100}{n-1} \sum_{t=2}^n w_t \quad (3.5)$$

where:

$$w_t = \frac{|u_t - u_{t-1}|}{\max.(E_t, E_{t-1})}$$

$$u_t = E_t - (b_0 + b_1 t)$$

$\max.(E_t, E_{t-1})$ = the larger of the actual exports in two successive years, t and t-1

t = time or year.

This method differs from the previous one, I_3 , only in that in computing the trend-corrected year-to-year annual fluctuation, w_t , the absolute value of the difference between the residuals u_t and u_{t-1} , is divided by the actual export earnings in two successive years, whichever is larger, rather than the residual in the preceding year, u_{t-1} . This difference is akin to that between I_1 and I_2 discussed above.

Another measure of instability is a modified version of the coefficient of variation or the "normalized standard error of the estimate" as used by Massell,⁷ Neuberger,⁸ and Staller.⁹ In it, the standard error of the estimate (square root of the unexplained variance) is divided by the mean of the observations to produce the instability index, I_5 :

⁷Ibid.

⁸Egon Neuberger, "Is the USSR Superior to the West as a Market for Primary Products?" Review of Economics and Statistics, XVII (August 1964), p. 287.

⁹George J. Staller, "Fluctuations in Economic Activity: Planned and Free-Market Economies, 1950-60," American Economic Review, LIV (June 1964), p. 386.

$$I_5 = (100) \frac{s_r}{\bar{E}} = (100) \frac{\sqrt{\sum_{t=1}^n u_t^2 / n-1}}{\bar{E}} \quad (3.6)$$

where $\bar{E} = \sum_{t=1}^n E_t / n$, the arithmetic mean of the observations,

$u_t = E_t - (b_0 + b_1 t)$, the deviation from the trend value. The index of instability, so computed, is a pure number and is independent of the level and rate of growth of export earnings.

While both measures, I_4 and I_5 , are obtained by fitting a linear regression line to export earnings as a function of time, they are conceptually quite distinct. The instability index I_4 is rather a measure of year-to-year changes of a country's export earnings whereas the index I_5 is a measure of the variation of the series as a whole around the trend line. Both measures are affected by the appropriateness of fitting a linear trend line to a country's export earnings, but I_5 would be more affected by a poor fit than I_4 .¹⁰

Coppock has suggested a measure of instability, known as the Coppock index, where the adjustment for the trend is made by the so-called "log-variance" method.¹¹ The instability index I_6 is equal to the anti-log of the square root of logarithmic variance of the series E_t / E_{t-1} , with unity subtracted from the anti-log. The algebraic formula of the index is as follows:

¹⁰Massell, "Export Concentration . . . ," p. 52.

¹¹J. D. Coppock, International Economic Instability (New York: McGraw-Hill Book Co., 1962), pp. 23-24.

$$I_6 = (100) \text{ anti-log } \sqrt{V_{\log}} - 1 \quad (3.7)$$

where:

$$V_{\log} = \frac{1}{n-1} \sum_{t=1}^{n-1} [\log (E_{t+1} / E_t) - m]^2$$

E = export earnings

t = time of year

n = the number of observations

$$m = \frac{1}{n-1} \sum_{t=1}^{n-1} \log (E_{t+1} / E_t), \text{ the arithmetic mean of}$$

the difference between the logarithms of E_t and

E_{t+1} , E_{t+1} and E_{t+2} , E_{t+2} and E_{t+3} , . . . , etc.

The index of instability so derived is "a close approximation of the average year-to-year percentage variation, adjusted for trend."¹² As claimed by Coppock, this method avoids the complication of estimating the trend line by the least squares method and therefore is less laborious and lends itself to machine methods.¹³ However, it still involves complicated logarithmic scales in transforming the data. In addition, the index has a serious defect in that it is heavily influenced by the two extreme values, i.e., the first and last observations in a time series. This is so because:

$$m = \frac{1}{n-1} \sum_{t=1}^{n-1} \log (E_{t+1} / E_t) = \frac{1}{n-1} \log (E_n / E_1). \quad (3.8)$$

¹²Ibid., p. 24.

¹³Ibid., p. 23.

Thus, the value of "m" is solely determined by the two extreme observations, E_1 and E_n .

Another index--which Coppock calls the "average-percentage-deviation-from-trend" method¹⁴--involves simply the deviations from a straight line trend fitted by the least-squares method. The index I_7 can be written in algebraic terms as follows:

$$I_7 = \frac{100}{n} \sum_{t=1}^n \frac{|u_t|}{\hat{E}_t} \quad (3.9)$$

where: $u_t = E_t - (b_0 + b_1 t)$
 $\hat{E}_t = b_0 + b_1 t$, the trend value in year t .

This index is deficient in that it is not a measure of average year-to-year fluctuations but a measure of instability about the trend, and a poor fit of the linear time trend will affect this index far more than other indices such as I_3 , I_4 , and I_5 ; hence no real advantages over them exist except the relative ease of computation.

The Pearson's coefficient of variation of the series can also be used as an index of instability. It is simply the standard deviation of the annual observations divided by the arithmetic mean of the observations. Algebraically, the index, I_8 , is as follows:

$$I_8 = \frac{100}{\bar{E}} \sum_{t=1}^n (E_t - \bar{E})^2 / (n-1) \quad (3.10)$$

¹⁴Ibid., p. 25.

where $\bar{E} = \sum_{t=1}^n E_t / n$, the arithmetic mean of the n observations. This

index is a pure number but is solely dependent on the size and the rate of growth of the variable in question, i.e., it only measures the variation around the mean and takes no account of separating the short-run and long-run (trend) forces. Thus the index is the least desirable one for the purpose of a study involving year-to-year changes in economic variables.

There still exists another type of method of measuring instability--the so-called "moving average" method, I_9 . This method involves the deviations from either 5-year or 3-year moving averages centered on the mid-year. It is expected that the instability indexes so obtained are considerably lower because of the weight given to the current year--i.e., the numerator is included in the denominator.¹⁵ This method has been favored by the International Monetary Fund.¹⁶ The main

¹⁵Algebraically, the index using 5-year moving averages, $I_9(5\text{-yr})$, may be expressed as:

$$I_9(5\text{-yr}) = \frac{100}{n-4} \sum_{i=1}^m \frac{|E_{ti}^* - M_i|}{M_i}$$

for $i = 1, 2, 3, \dots, m=n-4$ and where $m =$ the number of moving averages, equaling $n-4$, $n =$ the number observations, $E_{ti}^* =$ export earnings of the mid-year t of the i th group of 5 years when $t = 3$, and $M_i =$ moving average, i.e., the mean export earnings of the i th group of 5 years such as $M_1 = (E_{t-2} + E_{t-1} + E_t^* + E_{t+1} + E_{t+2})/5$, $M_2 = (E_{t-1} + E_t + E_{t+1}^* + E_{t+2} + E_{t+3})/5$, . . . , etc.

¹⁶J. M. Fleming and F. Lovasy, "Fund Policies and Procedures in Relation to the Compensatory Financing of Commodity Fluctuations," IMF Staff Papers, VII (November 1960), pp. 1-76.

reason for the choice of the measure by the Fund is that it measures the variations of the variable in question from a mid-term trend rather than a long-term one; and, consequently, it is considered a better basis by which the developing countries should be compensated for fluctuations in their export earnings by borrowing from the Fund.

These different indices of instability may be grouped into two categories--(1) those that measure annual changes in the variable in question against a selected norm; and (2) those that measure the variation of the series as a whole around a selected norm. In constructing an index of average instability throughout the selected period, the numerators of the ratios to be averaged in (1) would be the changes in export earnings or residuals over two successive years (first differences), whereas the numerators to be averaged in (2) would be the value of exports or residuals in each year. Included in (1) are: I_1 (the conventional method--average year-to-year percentage change), I_2 (the United Nations method--average year-to-year per cent change), I_3 (average annual per cent change adjusted for trend by least-squares), I_4 (Massell version of average annual percentage rate of change adjusted for trend by least-squares), I_6 (Coppock index--the log-variance method), and I_9 (IMF index--5-year or 3-year moving average method). The indices, I_5 (modified version of the coefficient of variation), I_7 (average-percentage-deviation-from-trend fitted by least-squares) and I_8 (Pearson's coefficient of variation) are included in (2); they are essentially a measure of changes of a series as a whole around a selected norm.

To be sure, the indices in (1), which are measures of year-to-year changes, are preferred to those in (2) because they represent

the type of instability we consider appropriate for the purpose of the present study.

Finally, these different indices may also be grouped into two categories, this time according to whether they take account of the trend factors: I_1 , I_2 , and I_8 make little or no adjustments for trend while the rest correct for trends in one way or another. Generally, it seems appropriate, but not always, as will be discussed shortly, to use a trend-corrected instability index when there is trend influence, even though there is always a problem of defining a correct trend.

Choice of Instability Index

As mentioned earlier, the actual observable changes over time in a country's export earnings (or any variable in question) are essentially the sum of the two different sets of forces--i.e., the long-run forces considered to be determining the trend, and the short-run forces which can be said to determine fluctuations around the trend. The problem of export instability is concerned with the short-run phenomena--i.e., year-to-year fluctuations in export earnings. Therefore, any measure that does not distinguish between fluctuations due to the trend of export earnings and fluctuations around the trend is deemed unacceptable for the purpose of our study. This is so, particularly in the case of a cross-country analysis, since countries with a strong upward or downward trend in export earnings over the same period will exhibit a greater instability than countries with a milder one, even if

fluctuations around it are the same.¹⁷ It may be argued that differences in the trend are more important for economic development than differences in the fluctuations around it. In dealing with the problem of export instability, however, we are primarily interested in isolating the importance of the latter. Hence, an acceptable measure of export instability would have to be the one which corrects for the trend in one way or another.

As was seen earlier, different ways of correcting for the trend give rise to a number of different indices of instability. All indices have their own statistical limitations. A tendency for some of these different indices to be intercorrelated has been demonstrated by several studies.¹⁸ The implication of observing such a tendency is that,

¹⁷However, for a case study, particularly when there exists no discernible trend, use of an index without trend adjustment may as well be acceptable. This will be discussed in some detail in the following pages.

¹⁸In his study, Coppock computed instability indices of export earnings of 83 countries for the period, 1947-1958, by using three different methods--namely, the U. N. method (I_2), the log-variance method (I_6), and the average-percentage-deviation-from-trend method (I_7). He found that the simple correlation coefficient (r) between I_2 and I_6 was .91, whereas r was found to be .89 between I_6 and I_7 . Coppock, International Economic Instability, pp. 25-26.

Massell also demonstrated a rather close correspondence between the two indexes of export earnings instability (for a sample of 36 countries during the 1948-59 period) computed by the average year-to-year percentage rate of change method by Massell (I_4) and the "normalized standard error of the estimate" method (I_5). To test the significance of the country rankings according to the two indexes, a Spearman's rank correlation coefficient was computed and found to be .718, with standard error of .17, which is significant at the .01 level. Massell, "Export Concentration . . . ," pp. 52-57.

Staller notes in his study ["Fluctuations in Economic Activity: Planned and Free-Market Economies, 1950-1960," American Economic Review, LIV, No. 4 (June 1964), pp. 385-395] that all of the five measures of instability tested "led to essentially the same results." Those five measures of instability tested by Staller include (1) the

at least in the absence of trends, the different measures should give rise to more or less the same results. However, the fact that there is no unique way of measuring "instability" itself indicates that the result of a study may as well hinge upon the choice of the index.

One way of choosing among them is according to the goodness of fit of the relationship from which these indexes are derived. A more important criterion than this, however, would be the specific purpose of the study on hand in which the particular index will be used. If one is interested in a cross-country analysis of the relationship between export instability and other variables, any measure when consistently used for all countries will be acceptable if the differences in trends are corrected and there is no reason to expect that the measure introduces systematic biases across countries. In such a case, relative ease of computation may be an important factor determining the selection of an index.

In the absence of any marked trend in the series of the variable in question, average year-to-year percentage changes in observed values

standard error of the least-squares fit of the series of V_t/V_{t-1} to time, where V is the variable in question and t is time period, (2) the anti-log of the square root of logarithmic variance of the series V_t/V_{t-1} , with unity subtracted from the anti-log, (3) Pearson's coefficient of variation, (4) the standard error of the least-squares fit to the index of growth with 1950 as the base year, and (5) the standard error of the least-squares fit to the logarithms of index of growth with 1950 as the base year.

Edgmand also found a close correspondence between three indexes of export instability as measured by the U. N. method (I_2), the Massell version of the average annual percentage rate of change (I_4), and the "normalized standard error of the estimate" method (I_5) for a sample of 78 countries for the 1948-64 period. M. R. Edgmand, "Concentration, Export Earnings, and the Terms of Trade," unpublished Ph.D. thesis, Michigan State University, 1968, pp. 123-127.

may serve as a satisfactory index, regardless of whether one conducts a study on a cross-country or one-country basis. Even if trends exist there are some cases where adjustments for trend may not be desirable:

The measure of year-to-year change in trade and prices may be of interest insofar as wide annual swings in export earnings could have, for example, serious balance of payments repercussions or have other important policy implications (e.g., in connection with determination of annual support levels), quite irrespective of whether such swings contain large elements of a long-term trend.¹⁹

Second, one may not have enough information on hand to identify the correct trend. Third, if one is interested in the effect of export instability on the domestic macro-economic variables, one might be led to believe that the different economic units may react to year-to-year changes in export earnings rather than to deviations from any abstract norm such as trend. If so, for such purpose, it might also be appropriate to emphasize the year-to-year percentage changes in export earnings rather than the deviations around the trend; and a trend-uncorrected measure may be a satisfactory device. Fourth, even if a marked trend exists in a particular series, the influence of a few years of relatively large (or small) change tends to affect the value of the trend-corrected index more than the trend-uncorrected one. In such a case, a trend-corrected index tends to exaggerate the true extent of the short-term instability.²⁰

¹⁹Food and Agriculture Organization, The Stability of World Trade in Coarse Grain, FAO Commodity Policy Studies, No. 14 (Rome: United Nations, 1963), p. 35.

²⁰This was the case for the series of export earnings from jute and cotton manufactures in Pakistan for the period 1951/52 - 1966/67. Export earnings from jute manufactures were none up to 1950/51, and were not significantly different from 1 million rupees in two years

For the reasons discussed above, this study will not be restricted to the use of a single measure of instability because it is believed that each method has its own merits and consequently is appropriate under different circumstances. Two measures, however, will be given special preferences over the others in our study--namely, the United Nations index (I_2), which makes little formal adjustment for trend, and the Massell version of annual percentage rate of change (I_4), which corrects for trend by the least-squares method. However, other measures will also be used under the different circumstances and according to the different purposes at hand.

1951/52 and 1952/53, but increased sharply thereafter. Pakistan also did not export any cotton manufactures up to 1950/51, and for four years from 1951/52 to 1954/55 their exports remained around one million rupees, then increased sharply thereafter. Export earnings of jute manufactures and cotton manufactures fluctuated annually on the average by 33.7 and 40.2 per cent, respectively, according to the United Nations method (I_2) which makes little formal adjustment for trend, whereas they fluctuated by 287.2 and 404.9 per cent, respectively, for the same period according to the trend-corrected method by Massell (I_4). See Chapter VI of this study.

CHAPTER IV

INSTABILITY IN EXPORT EARNINGS OF PAKISTAN

AND OTHER PRIMARY PRODUCING COUNTRIES:

THE POST-WAR EXPERIENCE

Using the measures of "instability" discussed and selected in the preceding chapter, we now measure and compare the degree and pattern of export instability in Pakistan within the context of the experience of other selected primary product producing countries during the post-war period 1948-68. Such comparative analysis is necessary in order for us to determine, in better perspective, the relative severity of export fluctuations experienced by Pakistan.

Following a brief discussion of the characteristics of our country sample and export data selected, the first section presents the results of computation of the instability indexes, and the extent of export instability experienced by Pakistan is compared with others. In the second section, attention is directed toward the seemingly changing pattern of export instability over time for many primary producing countries and Pakistan in particular.

Fluctuations in Export Earnings

In order to assess, comparatively, the severity of export fluctuations of Pakistan, a sample of 34 countries was taken from the

earlier study by the United Nations¹ (see Table I). With a few exceptions--namely, Australia and New Zealand--these countries are all developing countries. Export concentration in a few primary products characterizes all of these countries as can be seen in Table I. The degree of concentration as measured by the percentage of total exports accounted for by three major export (primary) commodities varies greatly among countries, ranging from 29 per cent for India to 98 per cent for Venezuela in 1953-55 and 26 per cent for India to 98 per cent for Venezuela, again, in 1959-61. For these countries as a group, however, three principal commodities accounted for 75.7 per cent and 70.8 per cent of their total export earnings in 1953-55 and 1959-61, respectively.

In order to compare the extent of instability in export earnings among countries, it is necessary that each country's export earnings be expressed in a common currency. Otherwise, the calculated instability indices will be influenced by changes in exchange rates. For such purpose, common practice is the use of the U. S. dollar; it is a commonly accepted international currency, and data in U. S. dollars are available for a large number of countries.² Data for export receipts, in U. S. dollars, for 34 primary product exporting countries, are taken

¹UNCTAD, Commodity Trade, Vol. III (New York: United Nations, 1964), p. 111, Table 2-9.

²Use of a common currency is not altogether free from any errors and biases, however. The official exchange rates used to convert exports to dollar terms may diverge frequently and widely from free market rates. Such divergence along with exchange controls may blur the meaning of an exchange rate.

TABLE I

CONCENTRATION OF EXPORTS: PRIMARY PRODUCT EXPORTING COUNTRIES,
1953-55, 1959-61, 1960, 1966 AND 1965-67

Country	Concentration ^a					Three Major Export Commodities in 1959-61 (6)
	1953-55 (1)	1959-61 (2)	1965-67 (3)	1960 (4)	1966 (5)	
Argentina	71	86	60.0	.300	.322	Meat, cereals, wool
Australia	63	60	39.8			Wool, wheat, meat
Bolivia	82	74	69.6			Tin ore, lead ore, tungsten ore
Brazil	81	65	38.4	.580	.463	Coffee, cocoa, cotton
Burma	82	79	81.3	.674	.647	Rice, teakwood, metals and ores
Ceylon	90	90	90.8	.660	.651	Tea, rubber, coconut products
Chile	80	76	86.3			Copper, nitrates, wood
Colombia	97	92	69.6	.743	.664	Coffee, petroleum, vegetable seeds and oils
Costa Rica	93	82	65.2	.609	.462	Coffee, bananas, cocoa
Ghana	85	84	78.3	.674	.686	Cocoa, diamonds, manganese ore
Guatemala	91	69	63.6	.694	.496	Coffee, bananas, cotton
Haiti	91	75	68.6			Coffee, sisal, sugar
Honduras	76	66	68.4	.511	.531	Bananas, coffee
India	29	26	32.7	.279	.256	Tea, fibres, cashew nuts
Iraq	96	98	92.8			Crude petroleum, dates, barley
Jamaica	88	63	75.8	.560	.536	Metaliferous ores, sugar, bananas
Kenya	52	68	46.2	.368	.388	Coffee, sisal, tea
Malaysia	62	64	58.4	.644	.524	Rubber, tin
Mexico	65	42	29.4	.272	.243	Cotton, nonferrous metals, coffee
Morocco	45	49	49.8	.312	.354	Minerals, citrus fruits, wheat
New Zealand	86	84	57.8			Wool, meat, dairy products
Nigeria	74	69	73.0	.422	.422	Oil-seeds and oil, cocoa, tin concentrates
*Pakistan	86	58	40.1	.500	.326	Jute, cotton, wool
Peru	64	63	62.8			Non-ferrous metals and ores, cotton, sugar
Philippines	79	70	72.5	.415	.370	Coconut products, sugar, timber

TABLE I (Continued)

Country	Concentration ^a					Three Major Export Commodities in 1959-61 (6)
	1953-55 (1)	1959-61 (2)	1965-67 (3)	1960 (4)	1966 (5)	
S. Africa	56	52	20.9			Gold, wool, diamonds
Sudan	73	81	71.0	.635	.560	Cotton, gum arabic, ground-nuts
Thailand	78	68	55.3	.451	.410	Rice, rubber, tin ore
Tunisia	43	43	47.5	.280	.297	Phosphates, olive oil, wheat
Turkey	58	52	58.5			Tobacco, cotton, hazel nuts
Uganda	86	79	84.6	.564	.587	Cotton, coffee
United Arab Rep.	87	78	62.4	.713	.574	Cotton, rice
Uruguay	80	81	83.5			Wool, meat, hides and skins
Venezuela	98	98	97.6	.725	.702	Petroleum, iron ore, coffee
Mean	75.5	70.1	63.3	.524	.480	

^aColumns (1), (2), and (3) show the percentage of total exports accounted for by three principal export commodities listed in column (6) in 1953-55 and 1959-61, respectively; columns (4) and (5) contain the Hirschman concentration index C, defined as:

$$C = \sqrt{\sum_{i=1}^m (x_i/x)^2}$$

where x_i = value of export of commodity i , n = number of commodities, $x = \sum_{i=1}^n x_i$, m = number of commodities chosen for the index computation, and $m < n$.

The two measures of concentration above are conceptually distinct; thus columns (4) and (5) are not directly comparable with columns (1), (2), and (3), although they are closely correlated.

Sources: Columns (1), (2), and (6) from UNCTAD, Commodity Trade, Vol. III (New York: United Nations, 1964), p. 111, Table 2-9; Column (3) computed from IMF, International Financial Statistics, various issues and UN, Yearbook of International Trade Statistics, various issues; Columns (4) and (5) from UNCTAD, Handbook of International Trade and Development Statistics (Geneva, Italy: United Nations, 1969), pp. 143-146, Table 4-10.

from the various issues of International Financial Statistics published by the International Monetary Fund.

In computing fluctuations in export earnings three different measures were used--the United Nations index (I_2), average annual percentage rate of change adjusted for trend by least-squares method as used by Massell (I_4), and the modified version of the coefficient of variation or the normalized standard error of the estimate (I_5). The properties and reasons for selection of these indices were discussed previously.³

The results of the calculations are summarized in Table II; they indicate that export earnings of these countries fluctuated considerably during the period under consideration. The extent of instability, however, varied greatly among the countries. Also, the degree of export instability experienced by these countries as a group varies somewhat according to the method used in computing the indices.

If the United Nations method I_2 is used, export earnings of these countries as a group fluctuated by 10.4 per cent during the post-war period 1948-68, whereas the means of export instability indices by two trend-corrected measures, I_4 and I_5 , were 9.8 and 14.9 per cent, respectively. Even though these three measures give rise to different degrees of instability experienced by these countries, they are closely associated. The simple correlation coefficients between I_2 and I_4 , I_2 and I_5 , and I_4 and I_5 were found to be .935, .692, and .749, respectively, which are all significant at the .01 level. As can be seen in Table II, the two measures, I_2 and I_4 , tended to show almost identical

³See Chapter III above, especially pp. 44-48.

TABLE II
 THREE INDICES OF EXPORT EARNINGS INSTABILITY
 FOR 34 PRIMARY PRODUCT EXPORTING COUNTRIES,
 1948-1968
 (In Per Cent)

Country ^a	Instability Index ^b		
	I ₂	I ₄	I ₅
Sudan	15.5	16.0	17.6
Uruguay	15.5	15.8	21.8
Bolivia	14.8	14.6	33.4
Iraq ^c	14.6	14.6	11.3
Malaysia	14.1	14.4	20.2
Haiti	14.2	14.2	17.9
Burma	12.3	12.2	19.7
*Pakistan	12.4	12.1	26.7
Argentina	11.7	11.4	19.6
Honduras	10.5	10.7	26.2
Uganda ^d	9.5	10.5	14.4
Chile	10.6	10.5	17.1
Turkey	11.4	10.4	14.0
Nigeria	10.7	9.9	14.9
Tunisia	10.4	9.8	13.8
Jamaica	9.2	9.7	9.4
UAR	9.4	9.5	14.3
Peru	10.6	9.5	16.7
Ghana	9.5	9.3	10.1
Australia	10.3	9.2	13.2
Brazil	9.4	9.2	12.9
Philippines	10.1	9.1	10.6
Thailand	10.4	8.9	13.9
Colombia	8.5	8.4	17.3
Guatemala	8.9	8.2	16.0
Costa Rica	9.9	8.2	15.7
India	8.1	7.8	10.3
Kenya ^d	9.8	7.5	9.3
New Zealand	7.5	7.3	7.4
Ceylon	7.2	7.1	8.3
Mexico	8.0	6.9	8.6
S. Africa	7.6	6.4	9.4
Morocco	5.8	5.3	6.8
Venezuela	5.8	4.7	7.6
Mean	10.4	9.8	14.9

TABLE II (Continued)

^aCountries are arranged in descending order of the degree of export earnings instability in terms of I_4 .

^b I_2 = average year-to-year fluctuation in export receipts with no formal adjustment for trend; I_4 = average annual percentage rate of change in exports corrected for trend by least-squares; I_5 = the ratio of the standard error of estimate to the mean of exports, trend corrected. For detailed explanation of these indices, see Chapter III.

^c1950-1968.

^d1949-1968.

Source: Calculated from IMF, International Financial Statistics, various issues.

results for all countries in the sample while when I_5 is used, the extent of export fluctuations tended to be much larger for most countries. Why this divergence? It will be recalled that these measures are conceptually different--the former (I_2 and I_4) being a measure of year-to-year fluctuation and the latter (I_5) a measure of fluctuations of the series as a whole around the trend line. Unusually large increases or decreases in export earnings in a few years should affect I_5 far more than either I_2 or I_4 .⁴

Using I_4 series, Pakistan was in the top one-fourth (8th in rank) on the list in terms of the extent of export instability; her export earnings fluctuated by 12.0 per cent annually throughout the entire post-war period 1948-68, relative to the group mean, 9.8 per cent, and the median, 9.5 per cent. In terms of I_5 series, Pakistan's export instability was far more severe than others with 26.7 per cent per year, one of the highest among the countries in our sample. The mean and median of the group were 14.9 and 14.2 per cent, respectively.

It is interesting (and important) to observe a wide diversity of experience with export instability even among the countries whose exports are highly concentrated on a few primary products. As Table II reveals, the degree of export instability varies greatly among countries, ranging from a low of 4.7 per cent for Venezuela to a high of 16.0 per cent of Sudan in terms of I_4 series; and from a low of 7.6 per cent for Venezuela to a high of 33.4 per cent for Bolivia when using

⁴See Chapter III above, pp. 37-39. In order to see whether the country rankings are affected by the two measures I_4 and I_5 , a Spearman's rank correlation coefficient was computed. The coefficient was found to be .787 and significant at the .01 level.

I_5 series. A coefficient of variation (standard deviation divided by the mean of a series) is a frequently used statistical measure of relative dispersion in a given series. These coefficients are .250, .286, and .403, respectively, for I_2 , I_4 , and I_5 series.

This divergence in export instability even among the primary product exporting countries may be at least in part traced to the wide diversity in price fluctuations of different primary commodities that these countries are exporting. It is now believed, contrary to the widely held views, that export proceeds of manufactured goods are also subject to a more or less similar degree of instability as are those of primary products.⁵ The average degree of instability of unit values, however, is greater for primary products than for manufactured goods, which is consistent with the conventional view.⁶ What is perhaps more important is that the extent of instability in unit values of primary commodities varies greatly among them.

Table III reflects this wide variability in unit value fluctuations of 39 primary commodities which are important in international trade for the period 1950-61. The unweighed average instability (as measured by the U. N. method-- I_2 in our notation) for 39 items was 11 per cent. The extent of instability ranged from a low of 3 per cent for crude petroleum, tobacco, and bananas to a high of 21 per cent for

⁵Coppock, International Economic Instability, pp. 33-37. In fact, Coppock concluded that "export proceeds were decidedly more stable for primary goods than for manufactured goods" for the period 1948-58; average instability indices as measured by the log-variance method (equivalent to I_6 in our notation) were 3.8 and 6.8 per cent, respectively, for primary and manufactured goods.

⁶Ibid., p. 35.

TABLE III
 FLUCTUATIONS IN EXPORT UNIT VALUE, VOLUME, AND PROCEEDS
 OF MAJOR PRIMARY COMMODITIES, 1950-1961

Commodity ^a	Per cent of imports by DC's from LDC's ^b	Year-to-year fluctuations ^c		
		Export Unit Value	Export Volume	Export Proceeds
Natural Rubber	100	21	5	21
Cocoa	85	20	10	15
Linseed	42	17	23	18
Tallow	--	17	13	16
Lard	--	17	14	20
Sisal	93	16	7	16
Zinc metal	13	16	6	16
Wool	15	16	11	15
Jute	98	15	10	15
Copra	94	15	10	12
Abaca	98	14	11	20
Lead metal	27	14	7	10
Cotton-seed	56	14	26	25
Copper-metal	53	13	8	16
Olive oil	35	12	21	18
Palm kernels	91	11	6	12
Soya beans	2	11	24	24
Palm oil	84	11	5	9
Cotton	61	11	10	14
Barley	17	10	15	20
Tin metal	75	10	8	10
Butter	2	10	7	12
Coffee	99	9	7	8
Beef, veal, pork mutton, and lamb	19	9	13	15
Maize	20	9	10	10
Rice	52	9	10	10
Ground-nuts	93	8	10	10
Oranges	40	7	9	8
Synthetic rubber	--	5	20	18
Wheat	14	5	13	13
Bauxite	87	4	10	13
Bananas	96	3	5	5
Tobacco	30	3	7	8
Crude petroleum	93	3	10	9
Mean (39 items)		11	11	14

TABLE III (Continued)

^aArrayed in descending order of average 1950-1961 year-to-year change in export unit value.

^bPercentage of imports of industrial countries coming from developing countries, 1962. Industrial countries consist of N. America, W. Europe, and Japan; developing countries, of Latin America, Africa (other than the Republic of S. Africa), and Asia (other than mainland China, Japan, and Turkey).

^cIn computing year-to-year changes, the higher figure has always been used as denominator irrespective of whether it was the earlier or later year.

Source: UNCTAD, Commodity Trade, Vol. III (New York: United Nations, 1964), p. 85, Table 2-1.

natural rubber. The relative dispersion of this unit value series was .333, which is high.

It is this wide range of unit value fluctuations of different commodities that is responsible (at least partly) for the wide variation in the degree of instability in export earnings among the countries in our sample. Take, for example, the cases of those countries with greater export instability, such as Sudan (16.0), Uruguay (15.8), Malaysia (14.4), Haiti (14.2), and Pakistan (12.0); they are the main exporters of such commodities as natural rubber (Malaysia), jute (Pakistan), wool (Uruguay), cotton (Sudan), and sisal (Haiti), all of which have shown greater fluctuations in their unit values. Instability in export proceeds of these commodities is correspondingly higher than those of other commodities (See Table III). On the other hand, the bulk of export earnings of Venezuela and Ceylon are derived from such commodities as crude petroleum (Venezuela) and tea (Ceylon), which registered rather stable prices; and export earnings instability of these countries is among the lowest in the sample--7.1 per cent for Ceylon and 4.7 per cent for Venezuela.

As such, there is an indication that the nature or type of commodities that a country is exporting may be, among other things, an important factor contributing to the differential degrees of export earnings instability among the primary product exporting countries themselves. This implies that specialization in a few commodities (or commodity concentration) itself may not necessarily lead to a higher instability in export earnings. This, however, is not to say that increased diversification of exports may not lead to a reduction in the instability of export earnings. More will be said on this later in Chapter VI.

Changing Pattern of Export Instability

It is evident that the degree of export instability has declined markedly over time for the 34 primary product exporting countries in our sample.⁷

Irrespective of the measures used in computing the indices of instability, the extent of export fluctuation has declined by approximately 30 per cent in the recent period 1957-68 compared to the earlier period 1948-59. Using I_4 series, export receipts of these countries fluctuated annually by 12.0 per cent in 1948-59, but only by 7.7 per cent during the recent period 1957-68. This amounts to a 36 per cent decline. Similarly, the means of I_2 and I_5 also declined from 12.5 to 8.5 per cent, equivalent to a 32 per cent decrease and from 13.5 to 9.7 per cent, a decline of 30 per cent, respectively. This seemingly changing pattern of export instability for different historical periods is summed up in Table IV.

When countries are examined individually in terms of the I_4 series, all but two countries (Guatemala and the United Arab Republic) experienced a decline in the extent of instability in their export earnings. The size of decline varied widely among countries, however,

⁷See Appendix A, "A Comparison of the Degree of Export Instability for Selected DC's and LDC's, 1948-68," and G. F. Erb and S. Schiavo-Campo, "Export Instability, Level of Development and Economic Size of Less Developed Countries," Bulletin of Oxford University Institute of Economics and Statistics, XXXI, No. 4 (November 1969), pp. 268-283. Also, J. Clark Leith, "The Decline in World Export Instability: A Comment," Bulletin of Oxford University Institute of Economics and Statistics, XXXII, No. 3 (August 1970), pp. 267-272.

TABLE IV
 TWO INDICES OF EXPORT EARNINGS INSTABILITY FOR
 SELECTED PRIMARY PRODUCT EXPORTING COUNTRIES,
 1948-59 AND 1957-68
 (In Per Cent)

Country ^a	Instability Index ^b			
	1948 - 1959		1957 - 1968	
	I ₄	I ₅	I ₄	I ₅
Sudan	23.1	26.2	10.5	11.5
Haiti	19.9	22.5	10.1	11.8
Malaysia	19.0	19.8	10.0	10.0
Uruguay	17.7	23.4	12.6	12.4
Bolivia	15.7	18.2	12.1	22.1
*Pakistan	15.5	22.6	5.9	8.1
Argentina	14.9	18.7	6.8	9.1
Iraq ^c	14.5	20.7	7.2	8.4
Chile	14.4	13.8	8.7	11.7
Turkey	13.8	17.7	10.2	9.0
Burma	13.3	13.9	10.6	20.6
Jamaica	13.2	15.0	6.1	6.9
Australia	12.8	10.2	8.6	8.0
Uganda ^d	12.4	14.4	8.5	11.9
Philippines	12.0	9.3	5.5	7.1
Thailand	11.7	11.8	8.5	8.8
Ghana	11.6	11.5	6.8	7.9
Tunisia	11.1	12.2	7.5	12.6
Nigeria	11.1	10.0	8.6	14.1
India	10.7	10.4	5.4	6.5
Kenya ^d	10.2	11.8	4.7	4.4
Brazil	10.2	13.8	7.7	8.3
Honduras	10.1	10.2	8.5	16.8
Peru	9.9	9.5	8.9	6.4
Colombia	9.3	19.8	6.3	7.2
Costa Rica	9.2	11.9	8.0	12.9
Mexico	9.0	9.8	3.8	4.8
Ceylon	8.3	9.1	4.7	5.6
S. Africa	8.0	8.0	5.8	9.4
New Zealand	7.9	7.4	7.7	7.5
United Arab Rep.	7.7	12.6	9.8	9.1
Guatemala	6.5	9.3	10.5	12.5

TABLE IV (Continued)

Country ^a	Instability Index ^b			
	1948 - 1959		1957 - 1968	
	I ₄	I ₅	I ₄	I ₅
Morocco	6.2	7.7	4.4	4.7
Venezuela	5.9	6.1	2.5	2.3
Mean	12.0	13.8	7.7	9.7

^aCountries are arrayed in descending order of the degree of export instability in terms of I₄ during the earlier post-war period 1948-59.

^bFor explanation of instability indices, I₄ and I₅, see Chapter III, esp. pp. 37-39.

^c1950-1959 for the earlier period.

^d1949-1959 for the earlier period.

Source: Computed from IMF, International Financial Statistics, various issues.

ranging from a small decline of 2.5 per cent for New Zealand to a substantial decline of 61.9 per cent for Pakistan.

To what factors, then, can we attribute this over-all decline in the degree of export instability experienced by these countries, including Pakistan, in the more recent period? Adequate answers to such a question will certainly require a full-scale study. As tentative and partial explanations, however, one can think of a number of reasons that might have produced the wide diversity in experience with export instability in the two historical periods. Compared to the more recent period 1957-1968, the earlier period 1948-1959 was characterized by the occurrence of some major events that might have brought about significant destabilizing effects on international trade.

One, the Korean War with the ensuing commodity boom was no doubt a clear-cut case of a major destabilizing event. Mainly through the rising prices of raw materials during 1951 and 1952, many primary producing LDC's registered record high export earnings. The Korean War export booms were short-lived, however; export slumps followed immediately when the War ended in 1953. Worse yet, the effects of export slumps were prolonged, manifesting themselves through general recession; and such effects were felt continuously up to the mid-fifties in many primary product exporting countries.⁸

⁸The mean values of I_2 , I_4 , and I_5 for 34 primary product exporting countries were 10.4, 9.8, and 14.9 per cent, respectively, for the entire post-war period 1948-1968. If the Korean War years were excluded, the corresponding figures were found to be 9.0, 8.2, and 12.8 per cent, respectively. Similarly, the degree of export instability for all countries in the sample was found to be lower than when the Korean War years were included.

Two, political instability characterizes many LDC's since World War II up to the present. However, it may be argued that many LDC's, especially those countries that had gained independence immediately after the Second World War, were politically more unstable during the immediate post-war years than in the more recent years. Also, a number of LDC's actually emerged as independent nations in the early 1950's. Greater political instability in these countries must have affected more domestic production and exports in the earlier period.⁹

Three, there are also a number of other factors in operation in the earlier period which could have affected significantly the trade of both DC's and LDC's. Some of them are the trade consequences of the post-war European recovery, the capital inflow under the Marshall Plan that might have exerted some stabilizing and/or destabilizing effects on export earnings instability, and the wider amplitude of the business cycle relative to the more recent years.¹⁰ No generalization regarding the direction, let alone the magnitude, of the influence of these factors is possible, of course. However, it is quite plausible that those factors together should have produced a net negative influence on the stability in international commodity trade.

The more recent period 1957-1968, on the other hand, had a number of events or factors which seemingly exerted some stabilizing effects on the commodity trade of LDC's. First of all, it was only in the more recent post-war years when considerable attention was given the problem of export instability in many LDC's, particularly the damage that the

⁹Pakistan is a case in point as will be seen in Chapter VI.

¹⁰Erb and Schiavo-Campo, "Export Instability . . . ," p. 269.

severe fluctuations in export prices and proceeds might inflict on the domestic economy, the process of economic development, and the growth potential of these countries.¹¹ Several commodity agreements were negotiated or extended in these years for tin, coffee, and olive oil.¹² Besides such formal commodity agreements, less formal international

¹¹The growing concern with the problem among the professional economists and the planners and government officials as well led to the 1958 and 1959 Kyklos Symposiums, "The Quest for a Stabilization Policy in Primary Producing Countries--A Symposium," Kyklos, XI, Fasc. 2 (1958), pp. 139ff. and "Stabilization and Development of Primary Producing Countries--Symposium II," Kyklos, XII, Fasc. 3 (1959), pp. 269ff., and to the first meeting of UNCTAD (United Nations Conference on Trade and Development) in Geneva in 1964 and the second in New Delhi in 1968.

¹²For a historical review of the experience with international commodity agreements, see United Nations, Commodity Trade, Proceedings of the UNCTAD, Vol. III (New York: United Nations, 1964), Ch. 2, esp. pp. 86-93; R. G. Hawkins et al., Stabilization of Export Receipts and Economic Development--International Commodity Agreements and Compensatory Financing Plans, The New York University Bulletin, No. 40 (New York: New York University, 1966); L. Baranyai and J. C. Mills, International Commodity Agreements (Mexico City: CEMLA, 1963).

Six commodities have been covered so far by formal commodity agreements at various times in the post-war period; they are wheat, coffee, sugar, tin, olive oil, and tea. The first agreement ever to be negotiated was that for wheat in 1949, then sugar (1954), tin (1956), olive oil (1959), and coffee (1962). An agreement has been in force ever since the first Wheat Agreement became operative in 1949. The first five-year Sugar Agreement covered the period 1954-59 and another five-year agreement was ratified which was to cover the period 1959-64. However, the agreement was suspended in 1962 as a result of the political upheaval in Cuba and the elimination of the U.S. sugar quota for Cuba in 1960. As for tin, three post-war agreements have been negotiated, the first covering the period 1956-61, the second for 1961-66, and the last, which went into effect in July 1966, will run until 1971. After many abortive attempts, the first five-year Coffee Agreement became effective in 1962. A formal agreement for olive oil was also negotiated in 1959; it was renewed and extended in 1963. Unlike other commodity agreements, however, the agreement has no price or export control provisions. Hawkins et al., pp. 28-50.

arrangements¹³ also came into being for a large number of other commodities under the auspices of the United Nations' ICCICA (Interim Coordinating Committee on International Commodity Agreements) and FAO (Food and Agriculture Organization). Such arrangements exist for cocoa, cotton, rice, tea, grains, wool, lead and zinc, and rubber.¹⁴ Apart from the international scene, a large number of primary producing LDC's also adopted various production schemes at the national level and established a marketing board charged with the operation of the national buffer stocks in an effort to stabilize their export earnings.

There are several other factors that might have exercised some stabilizing effects on the commodity trade; they include, among other things, the increased use of bilateral trading arrangements with the Socialistic countries by a number of LDC's in recent years and the movements toward regional economic integration among some countries in Latin America, Asia, and Africa.

Last, but not least, it may be argued that an increased degree of export diversification on the part of many LDC's in the more recent years has tended to reduce the extent of export earnings instability of these countries. Most countries in our sample of 34 primary producing countries have shown a decline in their export (commodity) concentration over time. This is shown in Table I. Export concentration as measured by the percentage of total exports accounted for by the three leading export commodities has been reduced for most countries. For

¹³These arrangements provide an international forum for discussion of the market problems of the producing and consuming countries and propose solutions to the commodity problems.

¹⁴Hawkins et al., p. 31.

the group as a whole the average percentage figures were 75.5, 70.1, and 63.3 per cent, respectively, in 1953-55, 1959-61, and 1965-67. Of 24 countries for which the concentration indices in the Hirschman sense are available for the years 1960 and 1966, the value of concentration index declined over time in most countries; and the group mean value declined from .524 in 1960 to .480 in 1966. Hence, it appears that many primary producing LDC's have actually succeeded in diversifying their exports.

Dealing with the earlier post-war period, several empirical studies by Coppock, Massell, and MacBean found a positive but rather insignificant relationship between export (commodity) concentration and export instability, a relationship which is not strong enough to warrant export concentration to be an important variable in explaining the variation in the degree of export instability.¹⁵ However, studies by Edgmand and Massell, covering the period extending into the more recent years, found a positive and significant relationship between the two.¹⁶

To the extent that the intensity of export earnings instability is significantly and positively related to export concentration, the

¹⁵Coppock, International Economic Instability, pp. 102-104; B. F. Massell, "Export Concentration and Fluctuation in Export Earnings: A Cross-Section Analysis," American Economic Review, LIV (March 1964), pp. 47-63; A. I. MacBean, Export Instability and Economic Development (Cambridge, Mass.: Harvard University Press, 1966), Ch. 2 and "Causes of Excessive Fluctuations in Export Proceeds of Underdeveloped Countries," Bulletin of Oxford University Institute of Economics and Statistics, XXVII (November 1964), pp. 323-341.

¹⁶M. R. Edgmand, "Concentration, Export Earnings, and the Terms of Trade," unpublished Ph.D. thesis, Michigan State University, 1968, pp. 157-161; Massell, "Export Instability and Economic Structure," American Economic Review, LX (September 1970), pp. 618-630.

observed over-all decline in the degree of export earnings instability in the more recent period can partly be attributed to the increased (decreased) export diversification (export concentration) experienced by many of these countries. A close examination of this relationship will be made in light of Pakistan's experience later in Chapter VI.

Summary

The purpose of this chapter has been to measure the degree and pattern of export instability in Pakistan within the context of the experience of other selected primary product producing countries whose exports are heavily concentrated in a few primary commodities during the post-war period.

Regardless of the different measures of instability used, Pakistan's export instability was one of the highest among the countries in our sample. In terms of the trend-corrected measure of instability, I_4 , her export earnings fluctuated by 12.0 per cent annually, relative to the group mean, 9.8 per cent and the median, 9.5 per cent.

Also observed was a wide diversity of experience with export instability even among the countries with their exports being highly concentrated on a few primary products. The variation in the degree of instability ranged from a low of 4.7 per cent for Venezuela to a high of 16.0 per cent for Sudan in terms of the instability index, I_4 . This wide variation can partly be traced to the wide range of export price fluctuations of the different commodities exported by these countries. As such, the nature or type of commodities that a country is exporting may be, among other things, an important factor that is

responsible for the wide variability in the degree of export instability among the primary product producing countries themselves.

Finally, we found that the pattern of export instability has been changing over time for Pakistan and other primary product exporting countries as well, thus pointing to some substantial structural changes in international commodity trade and the export sectors of these countries over time. Pakistan's export instability has declined over time substantially more than any other primary product exporting country in the sample. This is intriguing, particularly in view of the fact that the structural change in Pakistan's exports over the same period of time has been also substantial.¹⁷ We shall concern ourselves with an assessment of the impact of this structural change on export instability in Chapter VI.

¹⁷In fact, the change in the export structure (the commodity composition of exports in particular), induced by the various government policy measures aimed at industrialization and import substitution, has been found most pronounced in Pakistan relative to other countries between the 1950's and the 1960's. See Bela Balassa and Associates, The Structure of Protection in Developing Countries (Baltimore: The Johns Hopkins University Press, 1971), Ch. 2, esp. pp. 44-48. Other countries in Balassa's study include Brazil, Chile, Mexico, Malaya, Philippines, and Norway.

CHAPTER V

SOURCES OF PAKISTAN'S EXPORT INSTABILITY

Fluctuations in export earnings are the combined result of fluctuations in both price and quantity of exports. The ultimate causes of instability, however, lie in the interaction of both the demand and supply factors governing individual export commodities. And the extent of instability in a country's total export earnings depends, among other things, on the types of export commodities and their relative shares in total exports, and export markets and the stability therein. From a policy viewpoint, i.e., in implementing measures to ameliorate the total export earnings instability, investigation of the underlying causes as well as the make-up of such instability is essential, which is the task of Chapters V and VI.

The purpose of this chapter is to examine the underlying sources of export instability in Pakistan. The first section presents, as a background, a brief discussion of the structure of exports in Pakistan. This is followed by an assessment of the relative effects of export price and quantity fluctuations on the earnings instability in total as well as individual commodity exports. The basic causes of instability are then sought from a study of jute and cotton in the rest of the chapter.

Export Structure¹

Pakistan is not an export-oriented economy; exports² have accounted for at best 6 per cent of gross domestic product on the average throughout the period under study.³ Nor is Pakistan a dual economy characterized by high productivity plantations isolated from the subsistence sector. The bulk of Pakistan's exports consists of agricultural raw materials produced on diversified farms by peasants. This land use is in direct competition with the production of foodstuffs for domestic use and other marketed crops. The export sector is therefore closely tied to the agricultural sector of the economy.⁴

Heavy export concentration in primary commodities characterized Pakistan's exports during the first decade since Partition in 1947.

¹For a review of the general features of the Pakistan economy, including its foreign trade sector, one may refer to: J. R. Andrus and A. F. Mohammed, Trade, Finance and Development in Pakistan (Stanford: Stanford University Press, 1966); M. R. Sharif, Modern Economic Development of Pakistan (Dacca, Pakistan: Mullick Brothers, 1966); S. R. Lewis, Jr., Economic Policy and Industrial Growth in Pakistan (Cambridge, Mass.: The M. I. T. Press, 1969) and Pakistan: Industrialization and Trade Policies (London: Oxford University Press, 1970); G. F. Papanek, Pakistan's Development: Social Goals and Private Incentives (Cambridge, Mass.: Harvard University Press, 1967); S. R. Lewis, Jr., and S. E. Guisinger, "The Structure of Protection in Pakistan," in Bela Balassa and Associates, The Structure of Protection in Developing Countries (Baltimore: The Johns Hopkins University Press, 1971), Ch. 10, esp. pp. 223-229.

²Throughout the study, the term "exports" refers to "merchandise exports" only, unless specified otherwise.

³Government of Pakistan, Pakistan Economic Survey 1968-69 (Islamabad, Pakistan: Ministry of Finance, 1969), Statistical Appendix, pp. 4-5, 90.

⁴Thus one would expect that, among other factors, the prices of export crops relative to those of domestically marketed crops play an important role in affecting the allocation of resources and, accordingly, the export performance of the country as well.

Virtually all exports consisted of a few primary commodities like raw jute, raw cotton, raw wool, tea, hides, and skins. Two agricultural raw materials, jute and cotton, provided over 80 per cent of total exports, with other primary commodities accounting for the rest. Exports of manufactured goods were virtually nonexistent in the early 1950's. Basic manufactures such as jute and cotton textiles entered the export market only after the development of the cotton textile and jute mill industries in the late 1950's. Table V shows Pakistan's major export commodities and their relative shares in total exports for different time periods.

During the 1960's rapid growth of manufacturing, coupled with export promotion policies, resulted in a drastic change in the composition of exports as well as imports. The transformation of the export structure was characterized by a marked shift from raw materials to processed manufactured goods. As shown in Table VI, the export share of agricultural raw materials in total exports declined from 94 per cent in 1951/52 to only 47 per cent in 1967. Exports of basic manufactures, namely jute and cotton textiles, increased their share from virtually nil to 39 per cent. Minor exports, mostly manufactured goods such as leather, sport goods, footwear, and carpets, were also introduced (Table V).

This marked shift in the export structure that has occurred in Pakistan over time is of special interest in the context of the present study, for a country's export instability is presumed to be closely related to its export structure, the commodity concentration of exports

TABLE V

MAJOR EXPORTS OF PAKISTAN: AVERAGE ANNUAL EXPORT EARNINGS
AND EXPORT SHARES, 1950/51 - 1964/65

Export Commodity	1950/51 - 1954/55		1955/56 - 1959/60		1960/61 - 1964/65	
	Value (million U.S. \$)	Share (%)	Value (million U.S. \$)	Share (%)	Value (million U.S. \$)	Share (%)
Raw jute	230.7	45.3	158.4	47.3	171.7	38.6
Raw cotton	196.9	38.7	59.2	17.7	53.5	12.0
Raw wool	16.1	3.2	15.7	4.7	15.0	3.4
Hides and skins	12.1	2.4	10.4	3.1	11.0	2.5
Tea	11.5	2.3	7.0	2.1	1.6	0.4
Rice	6.1 ^b	1.7 ^a	6.3	1.9	22.5	5.1
Fish, fresh	5.0 ^c	1.1 ^b	6.5	1.9	17.7	4.0
Jute textiles	2.6 ^c	0.6 ^b	28.2	8.4	65.0	14.6
Cotton goods	0.3 ^c	0.1 ^b	18.8	5.6	29.8	6.7
Leather	0.0 ^c	0.0 ^b	1.1	0.3	6.1	1.4
Carpets	0.0 ^b	0.0 ^a	0.4	0.1	4.1	0.9
Footwear	0.0 ^b	0.0 ^a	0.4	0.1	1.7	0.4
Sport goods	1.8 ^b	0.5 ^a	2.4	0.7	3.1	0.7
Others	19.2	5.4	20.1	6.0	42.3	9.5
Total	509.2	100.0 ^c	334.9	100.0 ^c	445.1	100.0 ^c

^aAverage of 1951/52 - 1954/55 only.

^b1954/55 only.

^cTotals may not equal 100 due to rounding.

Sources: Adopted from S. R. Lewis, Jr., and S. E. Guisinger, "The Structure of Protection in Pakistan," in Bela Balassa and Associates, The Structure of Protection in Developing Countries (Baltimore: The Johns Hopkins University Press, 1971), Ch. 10, p. 227, Table 10.4.

TABLE VI
 COMMODITY COMPOSITION OF EXPORTS AND IMPORTS,
 PAKISTAN, 1951 AND 1967
 (In Per Cent)

Commodity Group (SITC)	Exports		Imports	
	1951/52 ^a	1967	1951/52 ^a	1967
Food, beverages, tobacco (0+1)	5	9.7	10	17.7
Industrial materials (2+4+ unwrought metals)	94	46.4	5	8.2
Fuels (3)	0	0.6	7	5.7
Total primary commodities	99	56.7	22	31.6
Chemicals (5)	0	1.0	5	11.0
Basic manufactures (6-unwrought metals)	1	39.0	54	19.5
Machinery and transport equipment (7)	0	0.5	15	35.7
Capital goods (7-732-733)	n.a.	n.a.	12	31.2
Durable consumer goods (732+733)	n.a.	n.a.	3	4.5
Miscellaneous manufactured goods (8)	0	2.7	4	2.2
Total manufactured goods	1	43.2	78	68.4
Other (9)	0	0.1	0	0.0
All commodities (0 through 9)	100	100.0	100	100.0

^aFigures for 1951/52 are based on incomplete commodity breakdowns.

Source: Adopted from Bela Balassa and Associates, The Structure of Protection in Developing Countries (Baltimore: The Johns Hopkins University Press, 1971), pp. 45, 47, Tables 2.7 and 2.8.

in particular.⁵ The impact of export diversification on export instability will be examined in some detail later in Chapter VI.

The growth of cotton textile and jute mill industries, which spearheaded industrialization in Pakistan, not only changed the export structure but also replaced basic manufactures previously imported with domestic production and necessitated increasing imports of capital goods. The import share of basic manufactures in total imports fell from 54 per cent in 1951/52 to 20 per cent in 1967, and that of capital goods rose from 12 to 31 per cent (Table VI).

Immediately after Partition, diversification in export markets became a necessity for Pakistan, which was a major supplier of food and agricultural raw materials to India in exchange for manufactured goods. In 1948/49 about 60 per cent of Pakistan's exports still went to India. A trade deadlock with India in 1949, however, forced Pakistan to search for alternative export markets.⁶ The bulk of her exports went to the Western industrial countries, namely, U.S.A., U. K., West Germany, France, and Japan, compensating for the loss of the Indian market. These countries thereafter remained Pakistan's major export markets.

In the 1960's, however, exports to developing countries and communist bloc countries assumed an increasing importance, whereas the export share to developed countries, i.e., Pakistan's traditional export markets, continued to fall. This changing direction of Pakistan's

⁵See Chapter II, pp. 9-14 and Chapter IV, pp. 68-69 of this study.

⁶Pakistan's decision of non-devaluation of its rupee in conformity with India and the rest of the sterling area in 1949 led to India's refusal to recongize the new value of the Pakistan rupee, and ultimately to trade suspension between the two countries until 1950.

export trade is also in part related to both the marked shift in the composition of exports from raw materials to processed goods and the export promotion policies undertaken by the government in recent years.

Instability in Export Price and Quantity

Whether fluctuations in export earnings are caused predominantly by price fluctuations or by volume fluctuations is an important issue in setting up appropriate stabilization programs. If the primary source of instability in export earnings were fluctuations in export quantity rather than in price, one might expect that stabilizing prices of export commodities would not help much in reducing the earnings instability.

On a priori grounds, sharp price fluctuations are expected to form a major source of instability in the export earnings of many primary products, especially agricultural raw materials, because of the price inelastic and characteristically unstable supply of and demand for them.⁷ Accordingly, one may expect price fluctuations to be a prime source of instability in Pakistan's exports, the bulk of which has been accounted for by such agricultural raw materials as jute and cotton. Our analysis of Pakistan's experience, however, suggests otherwise, generally conforming to the findings of other studies.⁸ Nevertheless, in the case of raw jute, Pakistan's leading foreign exchange earner,

⁷See Chapter II, pp. 9-14.

⁸Notably, J. D. Coppock, International Economic Instability (New York: McGraw-Hill Book Co., 1962); A. I. MacBean, Export Instability and Economic Development (Cambridge, Mass.: Harvard University Press, 1966); M. R. Edgmand, "Concentration, Export Earnings, and the Terms of Trade," unpublished Ph.D. thesis, Michigan State University, 1968.

price fluctuations were found to be a major source of earnings instability.

Data for the export volume of jute and cotton manufactures are incomplete. Our analysis will be limited to the five major primary products--namely, raw jute, raw cotton, raw wool, tea, and fish (excluding canned fish). These export commodities accounted for more than 70 per cent of total exports per year on the average during the period under study, 1951/52 - 1966/67.

One way of determining whether earnings instability was caused more by fluctuations in price or quantity is to compute the degrees of instability in the two for the entire period and compare them.

If export unit value⁹ fluctuated more than export quantity, this would be taken as an indication that price fluctuations were a more important contributory factor to export earnings instability, and vice versa. Also, fluctuations in unit value and quantity must have been reinforcing if the intensity of earnings instability were to be greater than that of either unit value fluctuation or volume fluctuation. Similarly, if the opposite case would occur, that is, when the instability of export receipts were smaller than that of either export unit value or quantity, the latter two must have been offsetting.

⁹In considering the relationship between price fluctuations and export earnings, the movement in export unit values is more relevant than that in export prices themselves. This is so as export unit values are related to the total volume of trade of the commodity concerned, whereas a price series at a certain market (or port of exit or entry) may not be representative of all markets. Also, export unit values embody the effects of changes in the volume of transactions, which is likely to be smaller at higher prices than at lower prices. UNCTAD, Commodity Survey, 1967 (Geneva: United Nations, 1968), p. 24.

Table VII contains the computed instability indices of unit value, volume, and total value of the five major export commodities and the total exports of Pakistan for the period 1951/52 - 1966/67. For raw cotton, raw wool, and tea, volume fluctuations contributed more towards the earnings instability of these commodities. In the remaining two commodities, raw jute and fish, it was unit value fluctuations that contributed more to earnings instability.

The analysis above, however, does not tell us exactly (i.e., quantitatively) to what extent fluctuations in either export unit value or volume accounted for the instability in export earnings. A method suggested by Sackrin¹⁰ can be used in measuring the relative effects of changes in export unit value and volume on the total value of exports. What follows is a brief description of the method.¹¹

The total value of exports of a commodity concerned is essentially the product of export price (unit value) and quantity; thus we write:

$$V = P \times Q \quad (5.1)$$

where V = total value of export, P = export price or unit value, and Q = export quantity. The multiplicative relationship in Equation (1) expressed in natural numbers becomes an additive relationship when expressed in logarithms:

$$\log V = \log P + \log Q \quad (5.2)$$

When expressed as first differences of logarithms in order to get changes from the preceding year, Equation (2) becomes:

¹⁰S. M. Sackrin, "Measuring the Relative Influence of Acreage and Yield Changes on Crop Production," Agricultural Economic Research, IX, No. 4 (October 1957), pp. 136-139.

¹¹Ibid., p. 137.

TABLE VII

INSTABILITY INDICES OF EXPORT UNIT VALUE, QUANTITY AND
TOTAL VALUE OF MAJOR EXPORT COMMODITIES, AND TOTAL
EXPORTS OF PAKISTAN, 1951/52 - 1966/67^a

Commodity		I ₂	I ₄
Raw Jute:	P	16.5	16.8
	Q	13.8	14.1
	V	12.3	12.3
Raw Cotton:	P	11.4	11.1
	Q	22.5	22.2
	V	21.5	19.3
Raw Wool:	P	9.2	9.1
	Q	16.3	16.4
	V	19.3	19.3
Tea:	P	11.5	11.5
	Q	44.0	49.8
	V	44.4	49.4
Fish:	P	37.0	36.8
	Q	26.3	26.4
	V	23.6	20.3
Total Exports ^b :	P	10.8	10.7
	Q	14.8	12.8
	V	11.7	11.9

^aCalculated from Government of Pakistan, Central Statistical Office, Statistical Yearbook 1967; _____, 20 Years of Pakistan in Statistics 1947-1967; Ministry of Finance, Pakistan Economic Survey 1968/69.

^bFor the period 1954/55 - 1966/67 only.

$$\Delta \log V = \Delta \log P + \Delta \log Q \quad (5.3)$$

But in Equation (3), the equality of both sides of Equation (2) is preserved in the sums.

Now, a least-squares regression can be used to estimate the relationship in Equation (3), with $\Delta \log V$ as the dependent variable X_1 , and $\Delta \log P$ and $\Delta \log Q$ as the independent variables X_2 and X_3 , respectively. However, the estimated regression coefficients associated with two independent variables X_2 and X_3 will not show us the proportions of a given unit change in X_1 ($\Delta \log V$) that are attributable to changes in X_2 ($\Delta \log P$) and X_3 ($\Delta \log Q$).¹² Instead of the net regression coefficients, we are interested only in the simple regression coefficients, b_{21} and b_{31} . We therefore express both $\Delta \log P$ and $\Delta \log Q$ as separate functions of $\Delta \log V$,¹³ and the simple regression coefficients b_{21} and b_{31} can be estimated by the least-squares method.

The coefficients so obtained can be interpreted as follows: On the average, of each one-unit change in X_1 (changes in export earnings) from the preceding year, b_{21} per cent is due to X_2 (changes in export unit value) and b_{31} per cent is ascribable to X_3 (changes in export volume). This is so because the coefficient b_{21} measures the change in X_2 associated with a one-unit change in X_1 and b_{31} the change in X_3 associated with a one-unit change in X_1 . Since the data are expressed in the first differences of logarithms, the unit change involved here

¹²These net regression coefficients $b_{12.3}$ and $b_{13.2}$ will each be one, because the unit change in export earnings will exactly be equal to the unit change in either independent variable, unit value or volume, with one of them being held constant.

¹³Note that $\Delta \log V$ (X_1) now becomes the independent variable, and $\Delta \log P$ (X_2) and $\Delta \log Q$ (X_3) the dependent variables.

is a one-per cent change from the previous year. Also, it should be noted that, because of the additive relationship in Equation (3)--i.e., the unit change in export earnings is the exact sum of the changes in the two determining variables, export unit value and quantity, the estimated coefficients b_{21} and b_{31} not only represent the proportion that each comprises of the total but also add up to unity.

Using the method described above, the relative effects of changes in export unit value and quantity on the annual variation in export earnings were estimated for each of the five major export commodities and the total exports of Pakistan for the period 1951/52 - 1966/67. Table VIII summarizes the results.

In two cases, raw jute and fish, changes in export unit value were the overwhelmingly important source of annual variation in export receipts. About 98 per cent of the variation in the export receipts of jute can be attributable to changes in export unit value and only 2 per cent to changes in export volume. The corresponding figures for fish were 74 and 26 per cent, respectively, for unit value and quantity changes.

Changes in export quantity were the primary source of export earnings fluctuations for raw cotton, tea, and raw wool. In the case of tea, changes in export earnings appeared to have depended almost entirely on volume fluctuations, the latter contributing about 99 per cent. The predominant influence of changes in export volume is also found in raw cotton; about 94 per cent of changes in export receipts of cotton is ascribable to changes in volume and only 6 per cent to unit value changes. As for raw wool, quantity variation accounted for approximately 73 per cent and unit value changes for 27 per cent.

TABLE VIII
 RELATIVE EFFECTS OF CHANGES IN EXPORT UNIT VALUE AND
 VOLUME ON EXPORT EARNINGS OF MAJOR COMMODITIES AND
 TOTAL EXPORTS, PAKISTAN, 1951/52 - 1966/67^a

Commodity	Changes in Export Receipts Attributable to Changes in Export Unit Value b ₂₁	Changes in Export Receipts Attributable to Changes in Export Quantity b ₃₁
Raw Jute	.979	.021
Raw Cotton	.062	.938
Raw Wool	.274	.726
Tea	.014	.986
Fish	.736	.264
Total Exports ^b	.224	.776

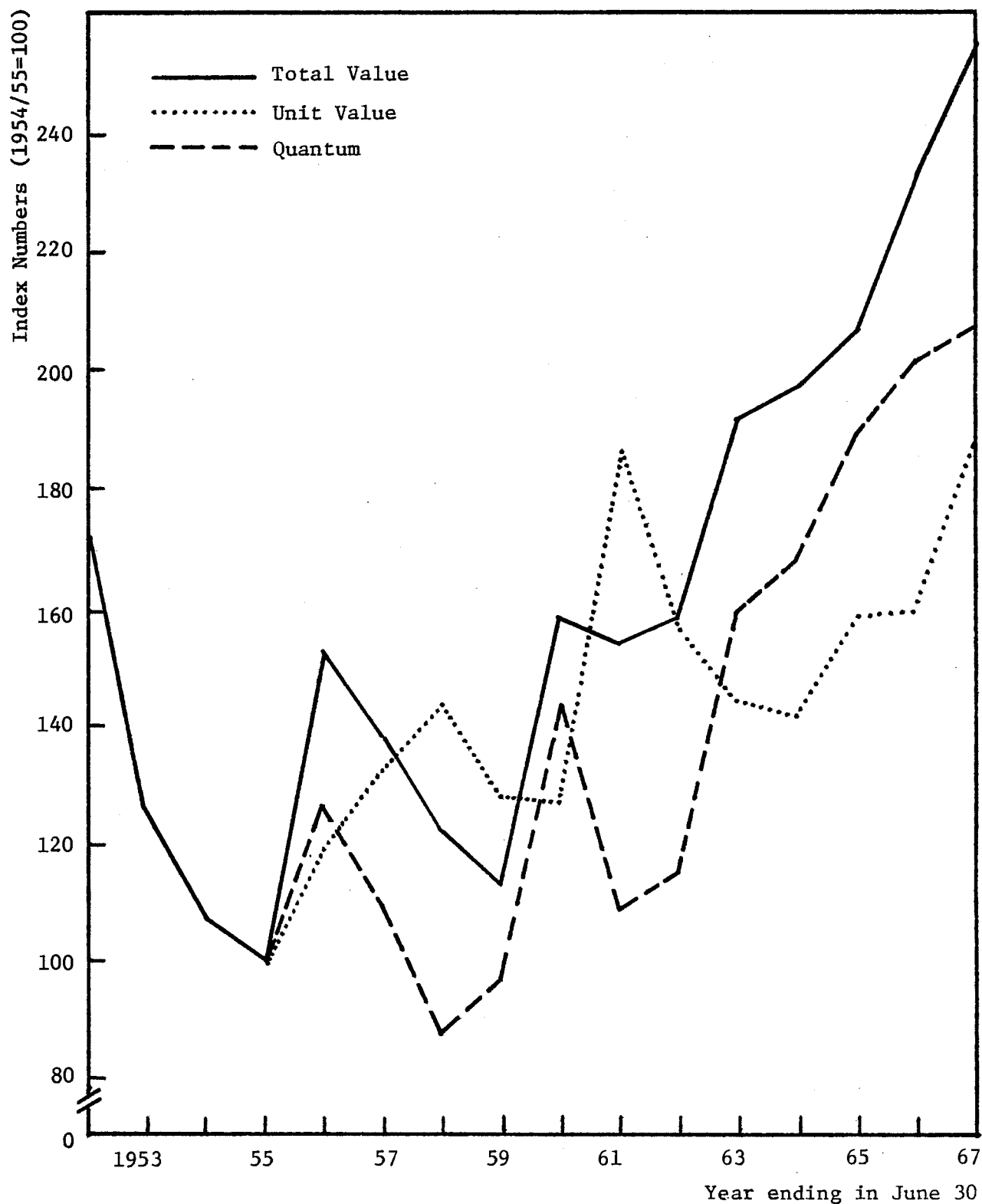
^aFor data sources, see Table VII; the data were first converted into logarithms, the first differences of logarithms were then obtained, and the least-squares regression was used to estimate the coefficients b₂₁ and b₃₁. For a discussion and interpretation of these coefficients, see pp. 80-83 above.

^bFor the period 1954/55 - 1966/67 only.

In aggregate, fluctuations in export volume contributed more to the annual variation in the total export earnings of Pakistan, about 78 per cent. This compares with 22 per cent being attributable to fluctuations in export unit value. The greater impact of volume fluctuations on the aggregate export receipts can also be found by observing Chart 1, in which the indices of quantum, unit value, and total value of exports for the period 1954/55 - 1966/67¹⁴ are plotted. From the chart, it is clear that the total value and volume of exports moved in unison for 11 out of 12 cases. The only exception occurred between years 1957/58 and 1958/59, when export receipts fell by 8.3 per cent despite an increase in export volume by 9.7 per cent. In that same period the unit value index declined by 10.5 per cent. However, in years of rising export prices such as 1955/56 - 1957/58 and 1959/60 - 1960/61, export earnings actually declined mainly because of a substantial decline in export volume. Total value of exports was also correlated more closely with export volume than with unit value. The simple correlation coefficient (r) between the total value and quantum was found to be .958, and that between the total value and unit value was .665.

Moreover, regardless of the different measures used, the degree of instability was larger for export volume than for unit value. Using a trend-corrected measure of instability, I_4 , export volume and unit value fluctuated per annum by 12.8 and 10.7 per cent, respectively (Table VII). Since the total value of exports fluctuated by 11.9 per

¹⁴During which the comparable series of the index numbers of unit value and volume of exports were available.



Source: Government of Pakistan, CSO, 20 Years of Pakistan in Statistics 1947-1967, pp. 107, 130, Tables 6.1 and 6.7.

Chart 1. Indices of Quantum, Unit Value, and Total Value of Exports, Pakistan, 1951/52 - 1966/67

cent per annum, which is less than volume fluctuation (12.8) but larger than price fluctuation (10.7), fluctuations in volume and price must have been offsetting to some extent, thereby dampening the degree of instability in the total value of exports.¹⁵

In brief, the question of whether export receipts instability is caused more by fluctuations in price or quantity varies according to the different individual export commodities. As for the aggregate export earnings, however, export volume fluctuations seem to have been a more important contributory factor.

Potential Causes of Export Instability:

Demand and Supply

The analysis in the preceding section appears to indicate the presence of stronger supply factors in causing the instability in Pakistan's export earnings. The potential causes, and the factors influencing the degree of export instability in a commodity are many and their interrelationships complex. A glance at the main determinants of the value of exports of an exportable good for an individual exporting country¹⁶ in

¹⁵A complete offsetting between price and quantity fluctuations would yield a zero instability in the value of exports.

¹⁶As opposed to the aggregate commodity approach in international markets. The commodity approach in dealing with the problems of export instability is best reflected in the numerous studies by Food and Agriculture Organization of the United Nations (e.g., Commodity Bulletin Series, Commodity Review, Monthly Bulletin of Agricultural Economics and Statistics, etc.) and by UNCTAD (e.g., Commodity Survey, etc.).

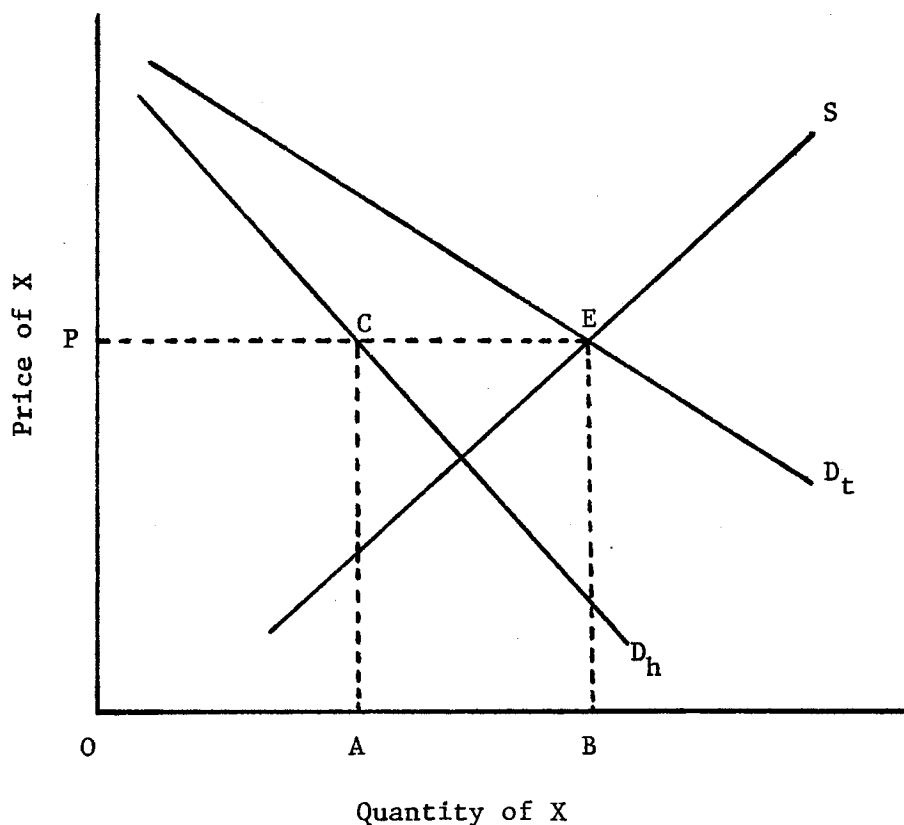
general amply demonstrates this complexity. A brief theoretical discussion is given below.¹⁷

Assuming no imports, the value of exports of a commodity is determined by domestic production, domestic demand, and foreign demand. Given the hypothetical domestic supply (S), domestic demand (D_h), and total demand (D_t)¹⁸ schedules for the exportable good X in the diagram below, OP is the equilibrium price, at which OB is produced, OA sold domestically, and AB exported. The area of rectangle ACEB measures the total value of exports. It can easily be seen that the value of exports can change if any of the three curves shifts. The effect of a shift in any of these curves on the value of exports depends not only on the magnitude of the shift but also on the elasticities associated with these curves. Therefore, the extent of year-to-year fluctuations in export earnings depends upon the relative instability in domestic production, domestic consumption, and foreign demand for the exportable good X as well as the elasticities thereof.

It is generally believed that agricultural raw materials are subject to sharp supply fluctuations; unpredictable weather conditions, pests, and plant diseases, which are all beyond the control of producers, are often the cause. In addition, for annual crops, supply

¹⁷Discussion in this and the following few pages heavily draws on B. F. Massell, "Export Instability and Economic Structure," American Economic Review, LX, No. 4 (September 1970), pp. 618-630.

¹⁸Total demand (D_t) is equal to the sum of domestic demand (D_h) and foreign demand (D_f). Thus $D_f = D_t - D_h$ at each price. If domestic consumption of an export item were negligible, the foreign demand and total demand schedules would converge into one, and at the same time the domestic supply schedule would become the export supply schedule for the commodity.



instability may arise from a cobweb effect to the extent that production decisions are made on the basis of the prices in the previous seasons. The impact of a given shift in supply¹⁹ on the value of exports depends on the price elasticity of foreign demand. The less elastic the demand for the commodity, the greater the fluctuations in price and revenue for any given shift in supply.

A distinction should be made, however, between the elasticity of total demand and that of foreign demand facing an individual country.

¹⁹ Assuming that domestic consumption of the exportable good is none, and therefore, the domestic supply schedule is equivalent to the export supply schedule. This assumption will be relaxed later.

It is the latter that is relevant in determining the extent of the country's export fluctuations. The price elasticity of export demand facing an individual country is influenced by three factors: (1) the elasticity of total demand, (2) the country's export share in the world market, and (3) the elasticity of supply of the commodity concerned by the rest of the world. The relationships between them can be shown in the following equation:²⁰

$$e_{df} = e_{dw} (1/m) - e_{so} (1-m/m) ; 0 \leq m \leq 1 \quad (5.4)$$

where: e_{df} = price elasticity of foreign demand facing the country concerned,

e_{dw} = price elasticity of world demand,

e_{so} = price elasticity of supply of other exporting countries,

m = export market share of the country concerned,

$1-m$ = export market share of other supplier countries.

Thus, e_{df} is the sum of e_{dw} and e_{so} , each appropriately weighted by the market shares. The importance of a country's market share in influencing the elasticity of foreign demand is clear from the equation. Given a constant e_{dw} and e_{so} , e_{df} is a decreasing function of m . If a country dominates the world export market, e_{df} will become closer to e_{dw} ; whereas if a country is only a marginal supplier of a commodity in world exports, e_{df} will tend to become a large number, i.e., the relevant foreign demand curve will become closer to a horizontal line.²¹

²⁰F. C. Shorter, "Jute Production Policies of India and Pakistan," Indian Economic Journal, III, No. 1 (July 1955), pp. 30-34 and Richard Mallon, "Export Policy in Pakistan," Pakistan Development Review, VI, No. 1 (Spring 1966), pp. 62-64.

²¹In the two extreme cases where $m \rightarrow 1$ and $m \rightarrow 0$, e_{so} becomes rather an insignificant variable in affecting the value of e_{df} ; if $m \rightarrow 1$,

For many industrial raw materials like jute, cotton, wool, and rubber, fluctuations in world demand form a major source of instability in their export earnings. Shifts in either the world demand or supply will cause a shift in the foreign demand curve faced by an individual country. Demand fluctuations, which are generally believed to be much more severe for industrial raw materials than for others, may arise from business fluctuations with resultant fluctuations in incomes and import demands in the major importing countries, changes in the prices of competing materials (e.g., synthetic fibers for cotton and wool, synthetic rubber for natural rubber, paper and cotton sheets for jute), strategic stockpiling in times of war and other political crises, and speculative activities by the dealers at all stages of marketing and distribution.

Given the elasticity of foreign demand, a shift in foreign demand tends to cause greater price fluctuations when the export supply of a commodity is less elastic. More important, however, shifts in foreign demand, cet. par., always tend to bring about the price and quantity effects that reinforce each other, thereby accentuating fluctuations in export earnings, regardless of the values of elasticities of demand and supply.²²

Instability in export earnings is also affected by the stability in, and the level of, domestic consumption of the exportable good. The

$e_{df} \rightarrow e_{dw}$, and if $m \rightarrow 0$, $e_{df} \rightarrow \infty$, regardless of the value of e_{s0} . However, in the intermediate cases where several countries share substantially large portions of the world export trade, e_{s0} would significantly influence the value of e_{df} , given m and e_{dw} .

²²Assuming a constant supply schedule in particular.

greater the proportion of its output consumed domestically, the greater will be the relative effect on the value of exports of a given shift in either demand or supply. Also, domestic consumption may not be stable; shifts in the domestic demand curve may arise from fluctuations in incomes, changes in the relative prices, and the general fiscal and monetary policies affecting the aggregate demand. To the extent that changes in stocks and imports for re-export of an exportable good are negligible, its net export supply is largely determined by domestic demand, given the supply of domestic output. Therefore, instability in domestic consumption tends to produce much the same effects on export proceeds as those of supply instability we discussed earlier.

In view of the theoretical discussion presented above, the underlying causes of Pakistan's export instability can be traced to the numerous factors on both the demand and supply sides of her export commodities, her market position in world exports, economic conditions and over-all developments in the domestic economy, and the specific policy measures undertaken by the government as well. In the subsequent analysis, our attention will be focused on jute and cotton because of their predominant role in affecting Pakistan's export instability.²³

²³As will be seen later, about three-fourths of Pakistan's aggregate export earnings instability was attributable to the instability in jute and cotton exports during the period under study. See Chapter VI, esp. pp. 116-117.

Causes of Instability in Pakistan's

Jute and Cotton Exports

Export Demand and Supply of Pakistan's Jute and Cotton

Pakistan and India are the two largest producers of jute; they produce over 90 per cent of total world jute output. The remainder is accounted for by mainland China, Brazil, Taiwan, and Burma. Pakistan's share of total world jute output declined from 70 per cent in 1946-49 to 46 per cent in 1963/64. This was due mainly to the expansion of output in India, where domestic output more than tripled since Partition, replacing imports from Pakistan. Output in other countries also rose sharply in recent years.²⁴ Pakistan, however, has maintained a near monopoly position in jute (raw) exports, accounting for over 90 per cent of world exports on the average during the period under study.²⁵ Pakistan's market shares in world jute and cotton exports are shown in Table IX.

²⁴FAO, "Jute, Kenaf, and Allied Fibres: Trends and Prospects," Monthly Bulletin of Agricultural Economics and Statistics, XIII, No. 9 (September 1964), pp. 17-18 and Table 1. Hereafter cited as FAO, Monthly Bulletin.

²⁵India has prohibited exports of raw jute since late 1949 when the trade deadlock with Pakistan cut off imports of raw jute from Pakistan and domestic output fell far short of the jute-mill industry requirements. Mainland China, third largest producer of jute behind Pakistan and India, does not enter the world market. Accordingly, during the 1950's Pakistan was virtually the sole exporter of raw jute. In the 1960's, the most serious challenger to Pakistan in world jute exports has been Thailand, where output of kenaf (mesta), a fiber very similar to jute, increased more than five times over the period 1958-1964. This and the growth of domestic jute-mill industry in Pakistan are largely responsible for a declining share of Pakistan's jute exports in recent years.

TABLE IX
 PAKISTAN'S MAJOR EXPORTS AND THEIR MARKET SHARES IN
 FREE WORLD EXPORTS, 1950-53 AND 1960-63

Export Commodity	Pakistan		Free World		Percent Share of World Exports (5) =(2)÷(4)
	Total Value (million U.S. \$) (1)	Export Quantity (2)	Total Value (million U.S. \$) (3)	Export Quantity (4)	
Jute (000 long tons):					
1950-53	241	983	250	988	99.5
1960-63	168	694	206	844	82.2
Jute Manufactures (000 long tons):					
1950-53	--	--	381	852	--
1960-63	25	213	424	1,155	18.4
Cotton (000 bales):					
1950-53	225	1,031	2,276	11,101	9.3
1960-63	44	481	2,009	14,836	3.2
Cotton Textiles (000 metric tons):					
1950-53	--	--	1,125	561	--
1960-63	15 ^a	n.a.	1,200	607	1.3 ^b

^aFour-year average for 1959/60 - 1962/63.

^bPercent share of world exports in total value.

Source: Compiled from: B. A. deVries, The Export Experience of Developing Countries (Baltimore: The John Hopkins Press, 1967), pp. 72, 74, 77, Annex Table III. All figures in columns (1) through (4) are four-year averages for period specified.

It is generally believed that the demand for jute is price inelastic. Jute is a long fiber, comparable in length to flax, hemp, and the hard fibers. Over 75 per cent of all mill-manufactured jute (that is, jute fabrics such as jute yarn and hessian) is used in the production of containers for the movement of many agricultural and some industrial products.²⁶ Other end-uses of jute are in the production of floor-coverings, roofing felts, string, rope, upholstery furnishings, electric cables, and automotive felts. The prices of jute account for such a small weight in the total cost of the final goods that competition with other fibers depends primarily on technical rather than price considerations.²⁷

Given the structure of final demand for jute and Pakistan's near monopoly position in world jute exports, one would expect the short-run price elasticity of foreign demand facing Pakistan to be less than unity.²⁸ A few empirical studies in fact estimated the price elasticity of export demand for Pakistan's jute to be around -0.4.²⁹

²⁶FAO, Jute, Commodity Bulletin Series, No. 28 (Rome: FAO, United Nations, 1957), pp. 2-3.

²⁷FAO, "Trends in World Demand for Jute Manufactures, Part I & II," Monthly Bulletin, IX, No. 12 (December 1960), pp. 1-11 and X, No. 1 (January 1961), pp. 1-10; N. K. Choudhry, "An Econometric Analysis of the Import Demand Function for Burlap (Hessian) in the U.S.A.," Econometrica, XXVI, No. 3 (July 1958), pp. 416-428.

²⁸From the equation, $e_{df} = e_{dw} (1/m) - e_{so} (1-m/m)$, if $m > 1$, regardless of the value of e_{so} , $e_{df} > e_{dw}$ since $e_{so} (1-m/m) < 0$. Assuming that $m = 0.9$ and $e_{dw} = 1$, for the value of e_{df} to be equal to or greater than one would require the value of e_{so} at least equal to or greater than 19.18, which is unrealistic and implausible.

²⁹T. P. Chatterjee and A. R. Sinha, "A Statistical Study of the Foreign Demand for Raw Jute," Sankhya, V (December 1941), quoted in Ralph Clark, "The Economic Determinants of Jute Production," FAO

Furthermore, the presence of a specific export duty on jute tends to make the demand curve facing the exporters less elastic.³⁰ One of the implications of the price-inelastic export demand, of course, is that year-to-year changes in the quantity of exports are likely to bring about the opposite changes in price and total value of exports, unless offset by the shifts in foreign demand.

In cotton, Pakistan is a marginal supplier of world exports. Her export market share declined from 9 per cent in 1950-53 to a mere 3 per cent in 1960-63 (Table IX). The fast growing cotton textile industry since the mid-1950's has led the process of industrialization and import substitution in Pakistan. Rapidly rising domestic consumption of raw cotton had already absorbed by 1958 about two-thirds of total cotton production, drastically reducing exports of raw cotton. At the same time, other countries such as Mexico, Syria, Turkey, and Sudan increased their market shares at the expense of Pakistan. In view of this, the price elasticity of export demand for Pakistan's cotton is likely to be very high, the demand curve probably being close to a horizontal line.³¹ It is not likely, therefore, that autonomous changes in the quantity of exports from Pakistan will affect the world prices of cotton, although cotton production may be affected by the world prices of cotton.

Monthly Bulletin, VI, No. 9 (September 1957), p. 7; A. I. MacBean, "Problems of Stabilization Policy in Underdeveloped Countries," Oxford Economic Papers, XIV (October 1962), p. 255, Table III.

³⁰Richard Mallon, p. 62.

³¹Even if we assume that $e_{dw} = 0$ and $e_{so} = 1$, $e_{df} = -32.3$ when $m = 0.3$.

Causes of Jute Instability

Table X shows the annual percent changes in the unit value, quantity, and total value of jute and cotton exports during 1951/52 - 1966/67. The index numbers of the unit value, quantity, and total value of exports are also plotted in Charts 2 and 3. Although the export price of jute fluctuated (19.8 per cent) more than export quantity (14.1 per cent), this may not necessarily suggest that fluctuations in foreign demand have been the major cause of instability in Pakistan's jute exports.³²

In view of the structure of world jute markets and Pakistan's position therein, Pakistan apparently is confronted with a downsloping (to the right) export demand curve and an upsloping (to the right) export supply curve. It follows, then, that autonomous changes in the export supply are likely to produce the opposite changes in the price and quantity of jute exports, given stable demand. Moreover, the price elasticity of foreign demand being less than unity, fluctuations in the quantity of exports tend to accentuate price fluctuations. This appears to have been the case: of 15 cases, price and quantity moved more often in the opposite direction (10 times) than in the same direction (5 times). If demand fluctuations were the main cause behind the

³²Analytically, comparison of the instability indexes for the export price and quantity in assigning responsibility (to either the demand or supply side) for export receipts fluctuations may not be entirely correct. For these instability indexes, being a measure of average annual fluctuation, hide considerable short-term movements of price and quantity. Perhaps, a crude but practical way of accounting for this is to compare the annual directional changes in export price, quantity, and total value during the period under study, which is being used in this section.

TABLE X

ANNUAL PERCENT CHANGES IN UNIT VALUE (P), VOLUME (Q), AND
TOTAL VALUE (V) OF JUTE AND COTTON EXPORTS,
PAKISTAN, 1951/52 - 1966/67^a

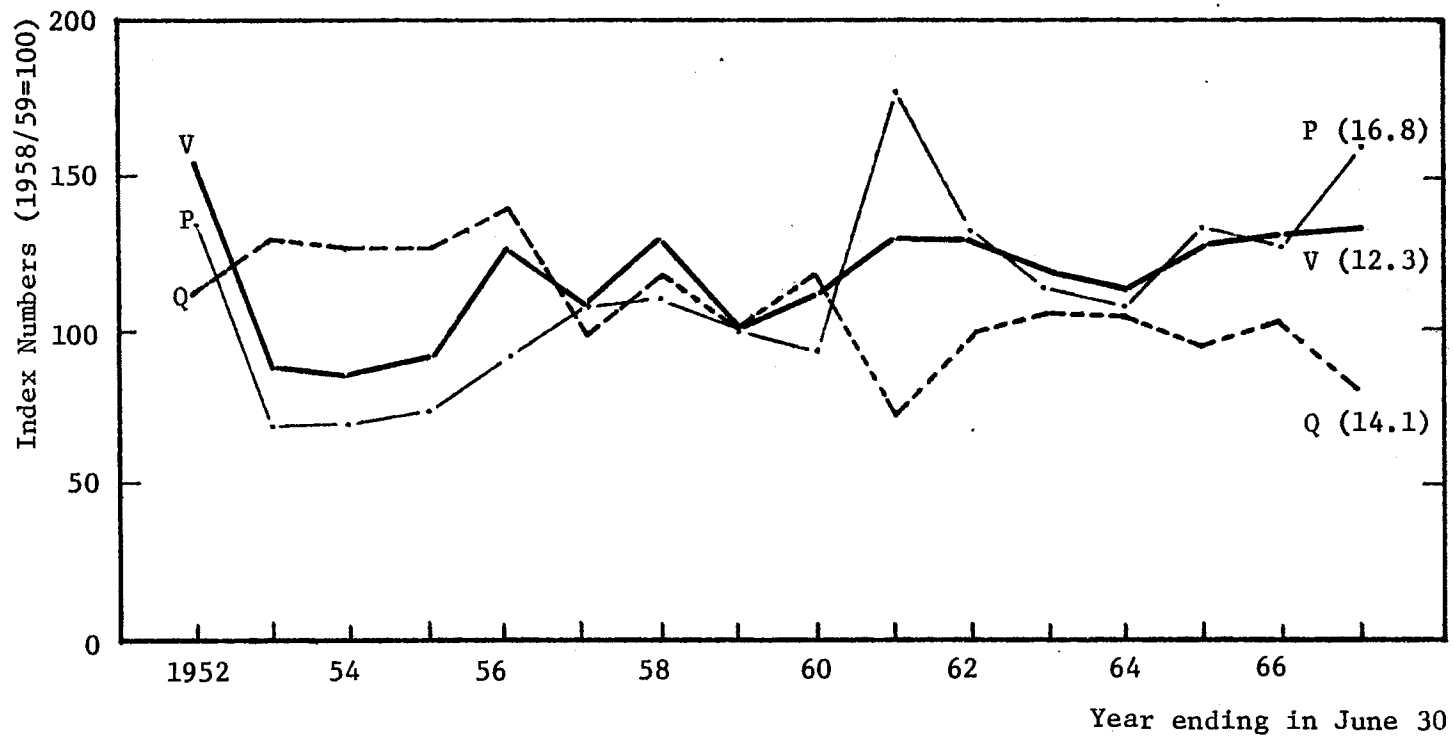
Year	Jute			Cotton		
	V	Q	P	V	Q	P
1951/52	--	--	--	--	--	--
1952/53	-43.1	13.8	-50.0	-10.7	37.5	-35.1
1953/54	- 1.7	- 2.7	10.0	-28.3	-22.3	- 7.8
1954/55	7.6	0.1	7.4	-40.4	-39.1	- 2.1
1955/56	38.5	10.6	25.3	55.9	33.1	17.1
1956/57	-14.9	-28.4	18.9	-45.4	-30.0	-21.9
1957/58	20.9	17.6	2.8	-14.5	-34.3	30.2
1958/59	-23.3	-14.6	-10.1	-11.8	5.8	-16.6
1959/60	11.3	17.9	- 5.6	- 0.8	- 2.7	1.9
1960/61	16.3	-38.8	90.0	-27.1	-34.7	-11.6
1961/62	0.2	36.6	-26.7	-10.2	- 6.9	- 3.6
1962/63	- 6.7	7.7	-13.3	199.6	220.1	- 6.4
1963/64	- 5.0	- 0.8	- 4.3	- 8.1	1.9	- 9.8
1964/65	12.3	- 8.5	22.7	-15.6	-18.5	3.6
1965/66	2.1	6.8	- 4.4	- 3.1	- 9.4	7.0
1966/67	0.8	-20.4	26.7	4.5	12.9	- 7.5

Average ^b	±13.7	±15.0	±20.6	±31.7	±33.9	±12.1
I ₄ index ^c	±12.3	±14.1	±16.8	±19.3	±22.2	±11.1

^aComputed from data sources in Table VII.

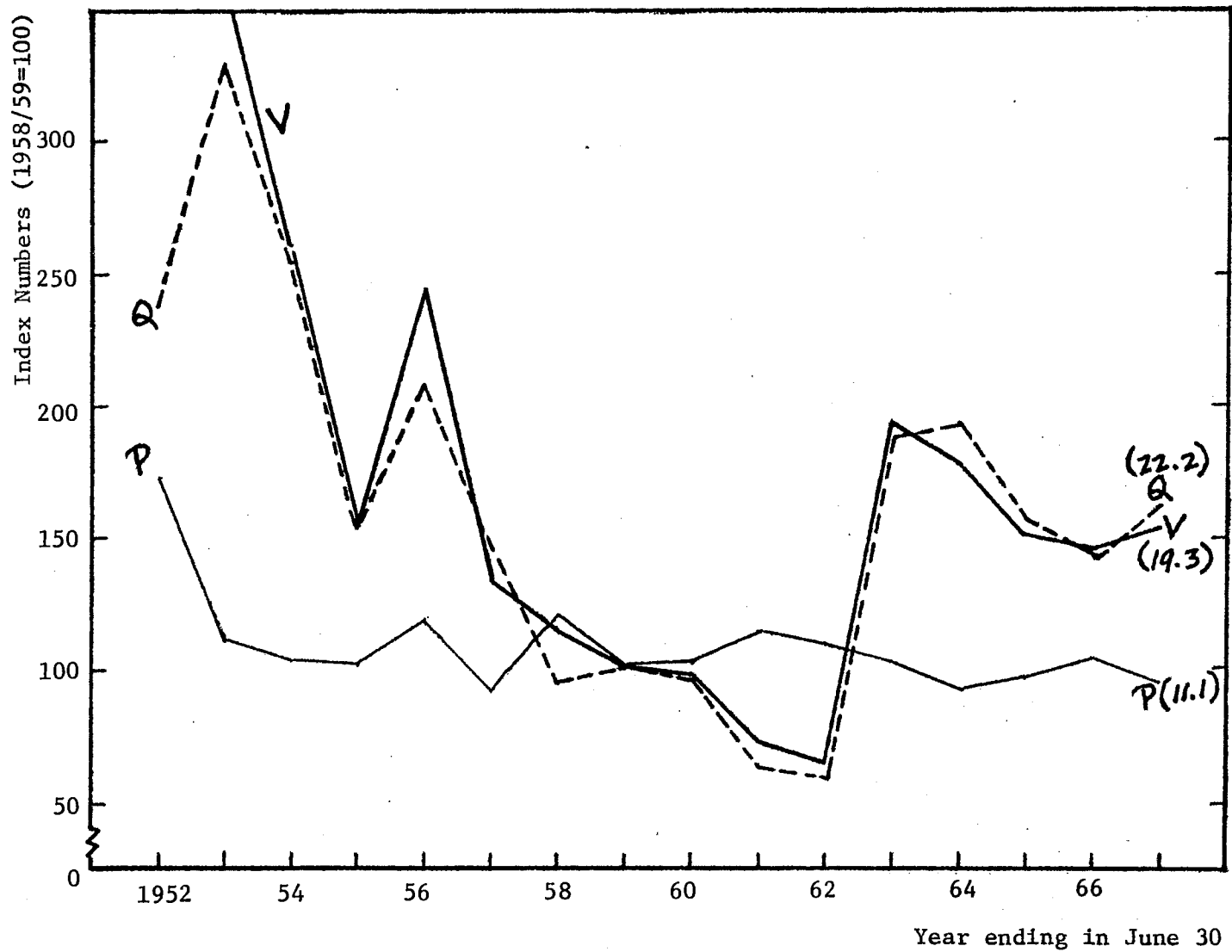
^bArithmetic mean of annual percent changes disregarding signs. This is a conventional measure of year-to-year fluctuation without correcting for trends, and equivalent to the I₁ index of instability discussed in Chapter II of this study.

^cFrom Table VII. This is a trend-corrected measure of instability which measures average deviation from a linear trend.



Sources: Computed from data sources in Table VII. Figures in parentheses indicate the trend-adjusted average annual fluctuation as measured by the instability index I_4 . See Tables VII and X.

Chart 2. Index Numbers of Unit Value (P), Volume (Q), and Total Value (V) of Jute Exports, Pakistan, 1951/52 - 1966/67



Sources: See Chart 2.

Chart 3. Index Numbers of Unit Value (P), Volume (Q), and Total Value (V) of Cotton Exports, Pakistan, 1951/52 - 1966/67

jute earnings instability, price and quantity would have moved in the same direction most of the time. Since this did not occur, it appears that supply fluctuations were an equally important cause of jute instability.

On the other hand, if supply fluctuations were the main cause, changes in the quantity of exports, cet. par., would have caused the opposite changes in export proceeds because of the price-inelastic export demand. For the period under study, however, export quantity and total value of jute exports moved more often in the same (10 times) than in the opposite (5 times) directions, suggesting the presence of autonomous shifts in foreign demand. Notice that most of the same directional movements, not only between quantity and price but also between quantity and total value, occurred in the earlier post-war years 1951/52 - 1959/60 during which the domestic jute-mill industry in Pakistan had absorbed but a small part of the jute output. This is consistent with our findings later in Chapter VI that raw jute earnings were greatly stabilized in the later years 1958/59 - 1966/67 when a large portion of the crop was being diverted to domestic mill consumption for processing, thus making the supply of raw jute exports a residual.³³ Given the degree of instability in jute production, the impact of fluctuations in foreign demand on jute export earnings must have been reduced, whereas in the earlier years foreign demand fluctuations tended to reinforce the jute earnings instability.

Given Pakistan's near monopoly position in the world jute market, fluctuations in jute production and the resultant fluctuations in

³³See Chapter VI, pp. 134-135.

export supply immediately affect world prices of jute. Moreover, the price elasticity of demand for raw jute at mills being inelastic in the short-run, supply fluctuations tend to accentuate price fluctuations.

The annual variations in jute output are subject to such random factors as planting, growing, and harvesting conditions, which are beyond the control of jute farmers. But it has been well established that jute farmers are fairly responsive to price changes in making their jute planting decisions.³⁴ Jute is produced in direct competition with rice on the same land in the same season. Farmers, therefore, must make a choice between the cultivation of jute, a major cash crop in East Pakistan, and that of rice, the main staple food crop. Since rice production must be foregone to grow jute, rice prices largely determine the opportunity cost of using land for jute production. Consequently, the relative prices of the two crops influence the farmer's choice whether to grow more rice or jute, a decision of allocating his land between the two crops in any particular season.

The price response of jute farmers is manifested primarily in the variations in jute acreage, which in turn account for over 90 per cent of the annual variations in jute output in Pakistan.³⁵ A close

³⁴Ralph Clark, "The Economic Determinants of Jute Production," FAO, Monthly Bulletin, III (September 1957), pp. 1-10; S. M. Hussain, "A Note on Farmer Response to Price in East Pakistan," Pakistan Development Review, IV, No. 1 (Spring 1964), pp. 93-106; R. N. Stern, "Price Responsiveness of Primary Producers," Review of Economics and Statistics, XLIV (May 1962), pp. 201-212; A. K. M. G. Rabbani, "Economic Determinants of Jute Production in India and Pakistan," Pakistan Development Review, V, No. 2 (Summer 1965), pp. 191-228.

³⁵Rabbani, p. 198.

correspondence between annual fluctuations in jute acreage and output can be seen in Table XI and Chart 4. In addition, average annual fluctuations of acreage and output, as measured by the instability index I_2 , were roughly in the same magnitude during 1948/49 - 1966/67; jute acreage fluctuated annually by 15 per cent and jute output by 16 per cent (see Table XI).

Fluctuations in the acreage sown to jute are caused by changes in the price of jute relative to the price of rice in the previous harvest season. This lagged response of jute acreage to the jute/rice price ratio is clearly indicated in Chart 5 as well as in columns (1) and (4) in Table XI. According to the estimates made by several studies, the price elasticity of raw jute supply (as measured in terms of the acreage sown to jute) in Pakistan range from 0.4 to 0.76.³⁶

When combined with the short-run price inelasticity of demand for raw jute, this supply response to price changes, aggravated by the one-year time lag, tends to generate a sort of self-perpetuating cobweb effect; a season of short crops at high prices tends to bring about a season of bumper crops with low prices, which tend to, again, result in another season of short crops, driving up the prices, and so on. Since the price elasticity of supply tends to be a little larger than that of demand, fluctuations in price and output seem to be mildly explosive.

³⁶The difference in the estimates of the price elasticity of jute acreage is largely due to the different methods of estimation used and the different periods covered in the studies. Some of the estimates are as follows: 0.4 for the period 1949/50-1962/63, Rabbani, p. 222; 0.68 during 1893/94-1938/39 for all India and 0.76 during 1911/12-1938/39 for Bengal, Stern, p. 206; 0.4 for 1948-1963, Hussain, pp. 101-103; 0.6 for 1931/32-1954/55, Clark, p. 7. For a summary table of the price elasticities of acreage in Pakistan, see Hussain, p. 102, Table IV.

TABLE XI

FLUCTUATIONS IN JUTE AREA CULTIVATED, YIELD, OUTPUT, AND JUTE/RICE
PRICE RATIO IN PAKISTAN, 1948/49 - 1966/67

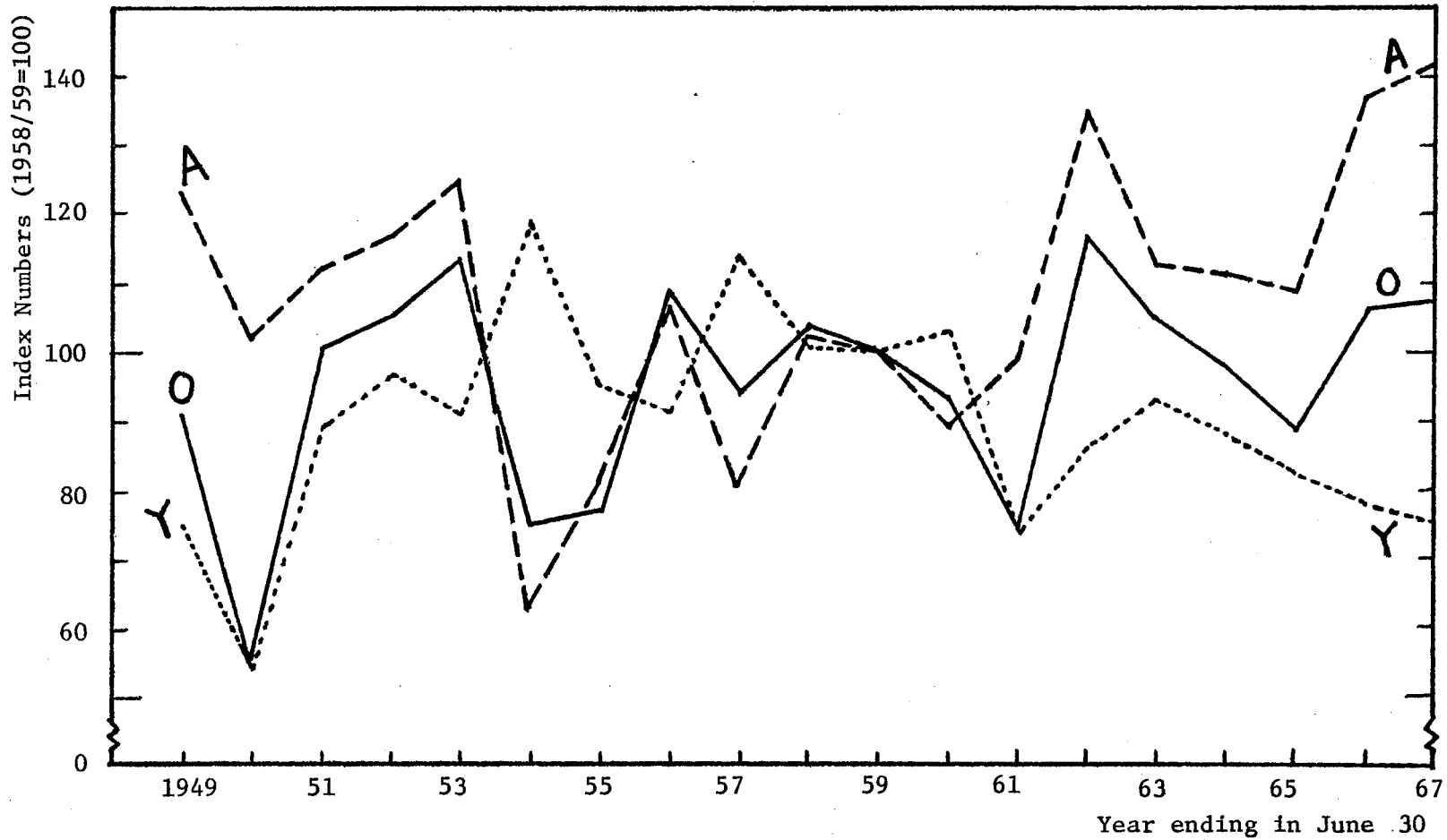
Year	Area (000 acres) (1)	Yield ^a (maund/acre) (2)	Output (000 tons) (3)	Jute/Rice Price Ratio ^b (4)
1948/49	1877	14.2	978	111
1949/50	1561	10.4	595	71
1950/51	1711	17.1	1073	148
1951/52	1779	17.3	1131	125
1952/53	1907	17.4	1218	45
1953/54	965	22.7	804	71
1954/55	1243	18.2	832	111
1955/56	1634	19.3	1161	105
1956/57	1230	21.8	985	78
1957/58	1563	19.3	1107	89
1958/59	1528	19.1	1071	76
1959/60	1375	19.6	992	79
1960/61	1518	14.3	796	178
1961/62	2061	16.4	1244	164
1962/63	1723	17.8	1125	n.a.
1963/64	1700	16.8	1049	n.a.
1964/65	1660	15.6	951	n.a.
1965/66	2090	14.8	1136	n.a.
1966/67	2165	14.4	1143	n.a.
Average Annual Fluctuation, I ₂ , in Per Cent	15.0	11.1	16.3	28.1 ^c

^aYield per acre in maunds. One maund equals 82.28 lbs.

^bRatio of average harvest price of jute to average harvest price of rice multiplied by 100.

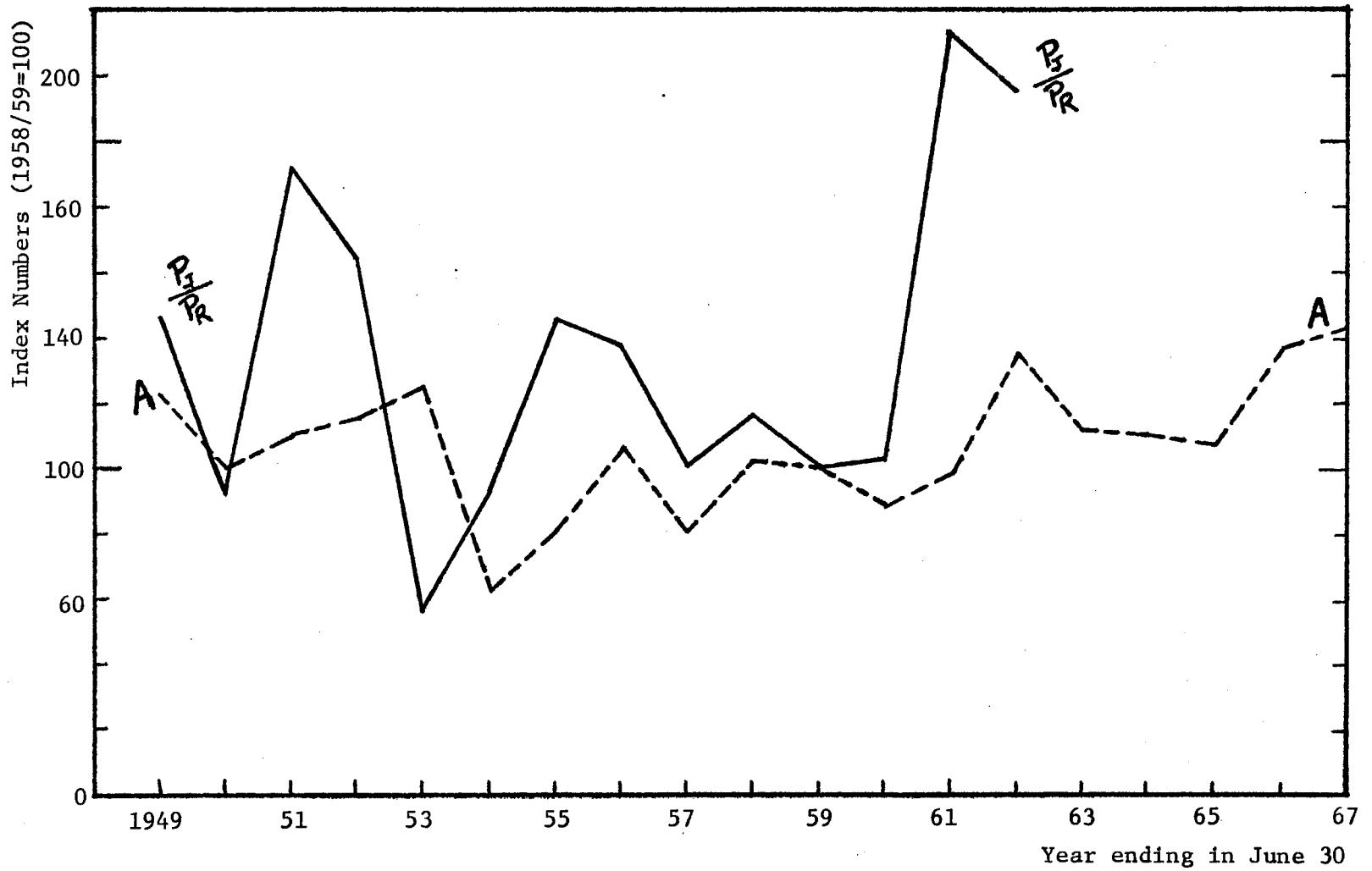
^cAverage annual fluctuation in per cent for 1948/49 - 1961/62 only.

Sources: Columns (1) - (3) from Government of Pakistan, Central Statistical Office, 20 Years of Pakistan in Statistics, 1947-1967, p. 52, Table 3.17; column (4) from S. M. Hussain, "A Note on Farmer Response to Price in East Pakistan," Pakistan Development Review, IV, No. 1 (Spring 1964), p. 105, Table A-II.



Source: Computed from Table XI.

Chart 4. Fluctuations in Jute Acreage (A), Yield (Y), and Output (O), Pakistan, 1948/59 - 1966/67



Source: See Chart 4.

Chart 5. Relationship between Jute/Rice Price Ratio (P_J/P_R) and Jute Acreage (A), Pakistan, 1948/49 - 1961/62

In addition to the instability of jute on the supply side described above, the behavior of jute stocks held by Pakistan dealers significantly affects world jute prices. While jute output fluctuates widely in response to price changes, there seem to be no corresponding variations in raw jute demanded by mills. Thus, most of the year-to-year variations in jute output are reflected in the level of stocks that varies widely in consequence, affecting world jute prices immediately. According to the FAO estimate, "for every change in stocks of 700,000 bales, there is an opposite change in prices of some 50 per cent" during 1957-1962.³⁷

Autonomous changes in foreign demand may have contributed to the instability of jute export earnings in Pakistan. The main cause of the instability, however, appears to lie in the fact that demand is inelastic in the short-run while supply responds to changes in the relative prices of jute and rice after a time-lag of one year. Stabilizing the price of jute alone will not ensure increased stability in export earnings from jute. Since jute output responds to changes in the relative prices of jute and rice rather than the price of jute alone, a well coordinated jute-rice policy is deemed necessary in order to stabilize the price ratio of the two crops.

Causes of Cotton Instability

With respect to cotton, autonomous changes in the quantity of exports from Pakistan are not likely to affect the world prices of cotton

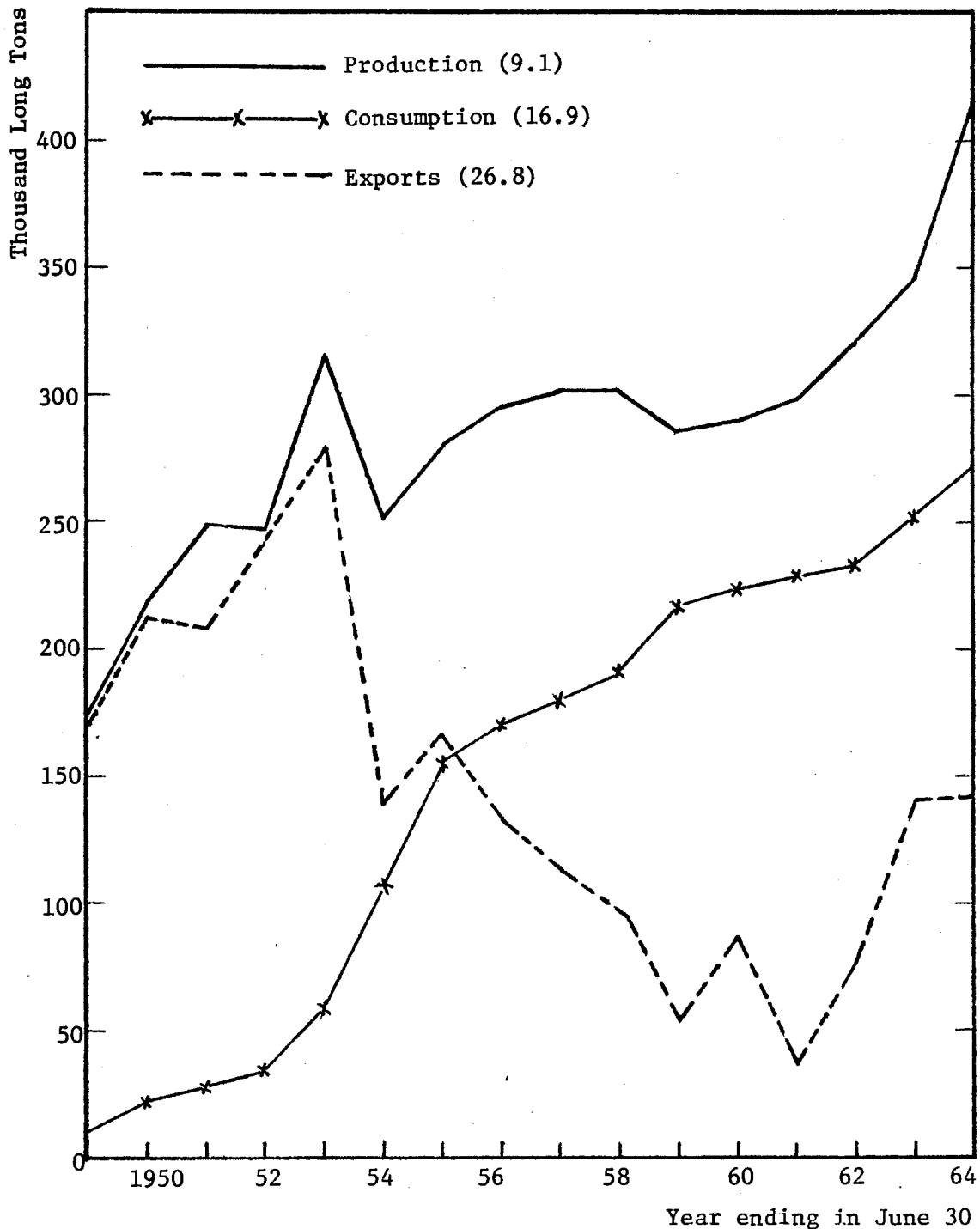
³⁷FAO, "Instability and Stabilization of the World Market for Raw Jute--I," Monthly Bulletin, XIII (December 1964), p. 21.

in view of the fact that she is a marginal supplier in world exports and presumably faces an export demand close to a horizontal line. As can be seen in Table X and Chart 3, not only were fluctuations in quantity and proceeds similar in their magnitudes, but the quantity and total value of exports moved in the same direction in 12 out of 15 cases. Exceptions occurred in 1952/53, 1958/59, and 1963/64 when price declines more than offset increases in the quantity of exports. Price and quantity, however, appeared to be unrelated; the simple correlation (r) between the two worked out to be -0.12 . Fluctuations in world demand and supply and the resulting fluctuations in cotton prices may have influenced cotton production in Pakistan. But the factors underlying the supply of exports, namely domestic production and consumption of cotton, seem to have been the main causes of cotton instability in Pakistan during the period under study.

Since Pakistan does not import cotton for re-export and changes in stocks have been very small,³⁸ fluctuations in the quantity of cotton exports are largely determined by fluctuations in cotton output and domestic mill consumption. Chart 6 shows the relationships between domestic production and net export supply of cotton in Pakistan for the period 1948/49 - 1963/64.

If domestic consumption were negligible, fluctuations in the quantity of exports would correspond to those in production as was the case for Pakistan's cotton exports up to the mid-1950's (see Chart 6). A sharp increase in the domestic mill consumption of raw cotton,

³⁸Ghulam Mohammad, "Some Physical and Economic Determinants of Cotton Production in West Pakistan," Pakistan Development Review, III, No. 4 (Winter 1963), p. 521, Table A-2.



^aFigures in parentheses show average annual fluctuation in per cent as measured by the United Nations instability index, I_2 .

Source: Richard Mallon, "Export Policy in Pakistan," Pakistan Development Review, VI, No. 1 (Spring 1966), p. 68, Table IV.

Chart 6. Fluctuations in Production, Consumption, and Exports of Cotton, Pakistan, 1949-1964^a

accelerated by the rapid expansion of the textile industry, however, has not only caused a precipitous decline in the exportable surplus but also accentuated the annual variation in the volume of cotton exports. Given a degree of instability in the production of an exportable good, the rising home consumption of the commodity tends to reinforce fluctuations in the net export supply.³⁹ In other words, a given percentage change in production produces a greater percentage change in exports when the level of domestic consumption is high than when it is low.⁴⁰ As measured by the United Nations instability index I_2 , cotton output in Pakistan fluctuated annually by 9.1 per cent during the period 1948/49 - 1963/64. The quantity of cotton exports, however, fluctuated severely by almost 27 per cent per annum largely due to the rapidly rising domestic mill consumption since the mid-1950's, coupled with fluctuations in cotton output heavily influenced by natural hazards such as weather conditions.

Summary

Because of the price inelastic and characteristically unstable supply of and demand for many primary products, sharp price fluctuations are expected to form a major source of instability in their export earnings. Accordingly, one may expect, on a priori grounds, price fluctuations to be a prime source of instability in Pakistan's exports,

³⁹See pp. 91-92 above.

⁴⁰To illustrate the point, suppose domestic production is 100, home consumption 50, and exports 50. A fall in output by 10 per cent will cause a 20 per cent fall in exports if consumption remains the same. If, however, domestic consumption were 75, a 10 per cent fall in production would cause a 40 per cent decline in exports.

the bulk of which has been accounted for by such agricultural raw materials as jute and cotton.

The analysis of Pakistan's five major primary export commodities, however, shows that export quantity fluctuations were a more important source of instability in their export receipts during 1951/52 - 1966/67, except for raw jute, Pakistan's leading foreign exchange earner. As for the total export earnings, export volume fluctuations also seem to have been a more important source of instability: about 78 per cent of the annual variation in total export receipts was found to be attributable to export quantity fluctuations and 22 per cent to export price fluctuations.

Fluctuations in foreign demand and the resulting fluctuations in world prices of jute and cotton may have influenced their production and export supplies from Pakistan. However, during the period under study, the supply factors appear to have been largely responsible for the instability in Pakistan's jute and cotton export earnings. Although fluctuations in the export price of jute were the primary source of jute earnings instability, this may not necessarily suggest that fluctuations in foreign demand have been the major cause of instability. Given the structure of demand and supply of jute in world markets and Pakistan's near monopoly position therein, changes in Pakistan's jute output and export supply are largely manifested in sharp fluctuations in jute prices. The main cause of jute instability appears to lie in the fact that demand for jute is inelastic in the short-run while its supply responds to changes in the relative prices of jute and rice with a one-year time lag, thus generating a self-perpetuating price and output cycle, commonly known as a cobweb effect. The

instability in cotton exports, on the other hand, were due mainly to export quantity fluctuations, which are in turn caused by fluctuations in cotton output heavily influenced by natural hazards and the rapidly rising domestic mill consumption of raw cotton since the mid-1950's due to the rapid expansion of import-substituting cotton textile industry in Pakistan.

CHAPTER VI

EXPORT STRUCTURE AND INSTABILITY IN PAKISTAN

The extent of instability in a country's total export earnings depends, among other things, on the composition and concentration of exports, i.e., the types of export commodities and their relative shares in total exports, and export markets and the stability therein.

This chapter disaggregates the total export instability by major export commodities and export markets, so as to analyze its make-up. A marked shift in the structure of exports and its impact on the pattern of export instability will also be examined in the final section.

Export Instability by Major Commodities

We first turn to an analysis of the components of export instability in Pakistan by major export commodities. Our main objective is to determine to what extent each of the major export commodities contributed to the total export earnings instability of Pakistan during the post-war period.

The breakdown of the total export receipts instability of Pakistan for the period 1951/52 - 1966/67¹ is presented in column (2), Table XII.

¹The analysis is limited to the period 1951/52 - 1966/67 because data for export receipts by export commodities for the immediate post-war years are not available. Standard statistics were first published for the year 1951/52 in Pakistan.

TABLE XII
 INSTABILITY BY MAJOR EXPORT COMMODITIES AND THEIR
 CONTRIBUTIONS TO TOTAL EXPORT INSTABILITY,
 PAKISTAN, 1951/52 - 1966/67^a
 (In Per Cent)

Commodity	Average Annual Share in Total Exports	Average Annual Fluctuation, I_2^b	Proportions of Total Instability Contributed by Export Commodity ^c
	(1)	(2)	(3)
Jute:			40.8
Raw	42.5	12.3	25.0
Manufactures	10.0	33.1	15.8
Cotton:			30.7
Raw	19.4	21.5	20.0
Manufactures	4.9	45.6	10.7
Wool, raw	3.6	19.3	3.3
Tea	1.6	44.4	3.4
Fish	2.4	23.6	2.7
Others	15.7	25.4	19.1
Total Exports	100.0 ^d	12.6	100.0 ^d

^aComputed from data sources in Table VII.

^bFor a discussion of the instability index I_2 , see Chapter III, pp. 35-36.

^cProcedure for computing the proportions of total instability that can be attributable to each export commodity is explained in the following pages, pp. 116-117.

^dTotals may not add up due to rounding.

As before, the instability measures used were the United Nations method (I_2) and the Massell version of average annual rate of change from trend fitted by the least-squares method (I_4). In Table XII, however, only the I_2 indexes are reported in order to ensure comparability between the calculated instability indexes for the major export commodities.²

Column (2) in Table XII shows that all of the major commodity exports of Pakistan fluctuated rather severely during the period concerned. The value of the I_2 index was the highest at 45.6 per cent for the export receipts of cotton manufactures, followed by tea (44.4), jute manufactures (33.1), the "all other commodities" category (25.4), and fish (23.6).

It is of interest to note that the values of the instability index, I_2 , were among the lowest for raw jute, raw cotton, and raw wool--Pakistan's three leading exports; international markets for these commodities, especially jute and cotton, have been quite unstable during the post-war years. Raw jute, which has thus far produced

²Use of the index I_4 grossly exaggerates the true extent of instability in export earnings of jute and cotton manufactures. For the period concerned, the values of the I_4 index for jute and cotton manufactures turned out to be 217.4 and 438.5 per cent, respectively; and 12.3 for raw jute, 19.3 for raw cotton, 19.3 for raw wool, 49.4 for tea, 20.3 for fish, 26.1 for "other commodities," and finally 13.6 per cent for total exports. Exaggeration of the degree of instability for jute and cotton manufactures as measured by the I_4 index can be attributable to the fact that trends are not approximated by a linear function of time. Exports of jute goods were none up to 1950/51 and were not significantly different from one million rupees in two years 1951/52 and 1952/53, but increased sharply thereafter; exports of cotton manufactures were also none up to 1950/51, remained at around one million rupees for four years from 1951/52 to 1954/55, then increased sharply thereafter. In computing the relative contributions of major export commodities to the total export earnings instability, therefore, the I_2 series were used in order to ensure comparability.

approximately half of total export earnings for Pakistan, registered the lowest degree of instability at 12.3 per cent per annum. Exports of raw cotton, the second most important commodity, and raw wool fluctuated annually by 21.5 and 19.3 per cent, respectively.

Compared to the severe fluctuations in individual commodity exports, the total export earnings instability turned out to have been milder at 12.6 per cent. Fluctuations in individual commodity exports must therefore have been offsetting to a large extent. In other words, severe fluctuations in minor export items such as tea, raw wool, and fish, had little effect on the extent of instability in total export earnings. These commodities accounted for only a small fraction of the total export receipts for the period concerned. This can be seen in column (1) in Table XII.

A clearer way of determining the relative contributions of each of the major export commodities to the total export earnings instability is to weigh instability indices by the percentages of total exports accounted for by each of these commodities. This method involves three steps in computation: First, we multiply the instability index by the export share in total exports for each commodity; second, their products are summed; and third, each product is divided by the product sum and multiplied by 100 to produce the proportion of total instability ascribable to each export commodity. Column (3) in Table XII contains the results of such computation.

As was expected, the bulk of Pakistan's export instability can be ascribable to the exports of two mainstays--jute and cotton. Raw jute alone accounted for 25 per cent of the total export earnings instability, followed by raw cotton, contributing 20 per cent. About 16 and 11

per cent of total instability can be attributable to jute and cotton manufactures, respectively. Thus, exports of jute and cotton together, both in raw and manufactured forms, were responsible for about three-fourths of the aggregate instability in Pakistan's exports. Despite the severe fluctuations in their exports, contributions to total instability by tea, fish, and raw wool were very small. Hence both jute and cotton exert a predominant influence on Pakistan's export instability. The "all other commodities" category, which includes such items as hides and skins, rice, and the minor manufactures other than jute and cotton, contributed about 19 per cent to the total export earnings instability.

Export Instability by Major Export Markets

A country's export earnings instability is influenced not only by the type of product exported but also by the stability of export markets or countries to which the bulk of the export commodity is shipped. The breakdown of Pakistan's export instability by major export markets for the period 1948/49 - 1966/67 is shown in Table XIII. As before, two measures of instability, I_2 and I_4 , were used in calculating average annual fluctuations in exports destined to each of the leading export markets for Pakistan.

The values of the instability index, I_4 (average annual rate of change or fluctuation from trend), ranged from a high 48.7 per cent for Communist China to a low 10.3 per cent for the United Kingdom. India was second at 43.1 per cent. Thus, it appears that during the post-war years China and India proved to have been the most unstable markets for Pakistan's exports. The United Kingdom, on the other hand, has been

TABLE XIII

EXPORT EARNINGS INSTABILITY BY MAJOR EXPORT MARKETS AND THEIR RELATIVE CONTRIBUTIONS
TO TOTAL EXPORT INSTABILITY, PAKISTAN, 1948/49 - 1966/67^a
(In Per Cent)

Major Export Market	Average Share of Total Exports	Export Instability Measured by:		Relative Contributions of Export Market to Total Export Instability Based on I ₄	
		I ₂	I ₄	(4)	
	(1)	(2)	(3)		
U.S.A.	8.6	21.2	20.3	7.5	
European Common Market ^b	20.3	16.9	17.0	14.8	29.4
United Kingdom	15.2	10.3	10.9	7.1	
Communist Bloc	9.0	32.7	32.7		
Eastern Europe ^c	4.4	25.4	23.5	4.4	14.0
China	4.6	49.4	48.7	9.6	
Hong Kong	4.1	36.8	36.3	6.4	
India	11.9	44.4	43.1	22.0	56.5
Japan	8.9	22.7	22.5	8.6	
Others ^d	22.0	21.5	20.7	19.5	
All Countries	100.0 ^e	16.5	17.0	100.0 ^e	

^aComputed from Government of Pakistan, CSO, 20 Years of Pakistan in Statistics, 1947-1967, pp. 108-113, Table 6.2.

^bBenelux, France, West Germany, and Italy.

^cU.S.S.R., Bulgaria, Czechoslovakia, Hungary, Poland, Rumania, and Yugoslavia.

^dIncludes countries in Africa, Middle East, Asia excluding Hong Kong, India and Japan, and Latin America.

^eTotals may not equal 100 due to rounding.

the most stable customer of Pakistan, purchasing on the average more than 15 per cent per annum of Pakistan's total exports.

Pakistan's exports to the member countries of the European Common Market as a group have been comparatively stable, the value of the instability index I_4 being 16.9 per cent, the second lowest. Purchases of Pakistan's exports by Hong Kong, however, have been relatively unstable (36.3 per cent). As for other major export markets--U.S.A., Japan, and Eastern Europe--the values of the I_4 index were found to be 20.3, 22.5, and 23.5 per cent, respectively. Finally, exports to the rest of the world fluctuated annually by 20.7 per cent.

Except those to the United Kingdom and the European Common Market countries, exports to other major markets all exhibited greater instability than the total export earnings instability for the period concerned. The total exports of Pakistan fluctuated annually by 17.0 per cent.³ Fluctuations in exports destined to the different export markets, therefore, must have been to a large extent offsetting one another.

It is of particular interest to observe that the Communist bloc countries appeared to have provided Pakistan with a less stable market

³The degree of instability turned out to be much higher for the period 1948/49 - 1966/67 than for the period 1951/52 - 1966/67 (13.6 and 12.6 per cent in terms of I_4 and I_2 , respectively). This is because of the inclusion of the immediate post-war years 1948/49, 1949/50, and 1950/51. Trade with India was disrupted in 1948, with a resultant decline in jute exports by a substantial magnitude--from Rs. 1,044 million in 1948/49 to only Rs. 318 million in 1949/50; and the total exports dropped from Rs. 1,862 million to Rs. 1,211 million, accordingly. The outbreak of the Korean War in 1950 and the ensuing commodity boom, however, more than doubled the total exports of Pakistan; her export earnings went up to a record high Rs. 2,549 million in 1950/51 from a low Rs. 1,211 million in the previous year 1949/50.

relative to the developed countries in the free world. The intensity of instability was lowest among the latter--10.9 per cent for U.K., 17.0 and 20.3 per cent, respectively, for the European Common Market and U.S.A., whereas it was relatively high for the Communist bloc countries--China and Eastern Europe⁴ together, the value of the I_4 index being 32.7 per cent (Column 3 in Table XIII).

It has been sometimes claimed (especially by the economists from the socialist and/or communist countries) that, because of the peculiar characteristics of planned economies--e.g., the absence of business fluctuations in particular⁵--planned economies provide the LDC's with more stable markets for primary products. Such contention, however, does not appear to be upheld in the light of Pakistan's experience with export instability during the post-war years. This is also consistent with the conclusion reached by Neuberger,⁶ who found that during the period 1955-1961, the imports of primary products by the Soviet Union were less stable than those by the Western industrial countries, although the rate of growth in primary-product imports was higher in the former.

Several reasons can be offered for a greater instability in the imports of primary products by these countries. First of all, the

⁴Eastern Europe includes the following countries: U.S.S.R., Bulgaria, Czechoslovakia, Hungary, Poland, Rumania, and Yugoslavia.

⁵For example, "Socialism is characterized, above all, by the absence of cyclical disturbances in production." Cited by G. J. Staller, "Fluctuations in Economic Activity: Planned and Free-Market Economies, 1950-1960," American Economic Review, LIV (June 1964), p. 385.

⁶Egon Neuberger, "Is the U.S.S.R. Superior to the West as a Market for Primary Products?" Review of Economics and Statistics, XLVI (August 1964), pp. 287-293.

claim to superiority of planned economies over free-market economies-- i.e., that they are not subject to fluctuations in outputs--is perhaps wrong. A study by Staller⁷ comparing the year-to-year fluctuations in outputs for the two groups of planned and free-market economies during 1950-1960 rejects such a claim by concluding that "the planned economies of the Communistic bloc were subject to fluctuations in economic activity equal to or greater than those experienced by the free-market economies of the OECD."⁸ Hence, one would expect that the imports of planned economies might have been subject to fluctuations in outputs and therefore incomes and demands.

Perhaps more important may be the fact that foreign trade of these countries is largely controlled by the state, with the export and import decisions being governed predominantly by political factors rather than economic. For instance, the Soviet Union did not import from Pakistan in the two years 1954/55 and 1955/56, and the imports by Communist China have been quite erratic throughout the post-war years.

Finally, Pakistan's trade with the Communist bloc countries has been conducted largely through bilateral trade agreements. Bilateralism, however, does not necessarily lead to stability in trade. According to Kidron, bilateral trade has not only "tended to restrict the growth of trade beyond narrow limits" but also proved as erratic in

⁷G. J. Staller, "Fluctuations in Economic Activity: Planned and Free-Market Economies, 1950-1960," American Economic Review, LIV (June 1964), pp. 385-395.

⁸Ibid., p. 389.

practice as the traditionally unstable trade with the West.⁹ Unevenness in purchases and payments characterizes the trade with the Communist bloc countries. Such unevenness in trade is inherent in the economies of these countries:

They are relatively small traders and are undercapitalized; they keep stocks to a minimum and shift stockholding outside the system wherever and whenever possible. As a consequence changes in production in one or two factories are as likely to result in purchasing agents receiving new instructions . . . as to changes in the level of stocks held at home. There is little room left in which to exercise commercial discretion on the spot.¹⁰

Also, instability in trade results from the behavior of the Communist bloc countries' foreign trade organizations themselves, e.g., attempting to "offset the fluctuations in rupee receipts by inducing a compensatory and wholly artificial unevenness in purchases and payments for exports, with little reference to seasonal and other factors that might affect local prices."¹¹

Speaking of the relative contributions made by each of the major export markets to the total export earnings instability, each market's relative share in total exports should also be taken into account along with the stability of each market. A method of determining the proportion of total export instability attributable to each market (or commodity) was discussed earlier.¹² Column (4) in Table XIII shows the results of such computation.

⁹Michael Kidron, Pakistan's Trade with Eastern Bloc Countries (New York: Praeger Publishers, 1972), pp. 4-9.

¹⁰Ibid., pp. 49-50.

¹¹Ibid., p. 49.

¹²Supra, pp. 116-117.

India contributed most to the total export earnings instability during the period concerned; approximately 22 per cent of total instability can be attributable to fluctuations in the Indian purchases of raw jute from Pakistan. All other minor markets as a group ranked second with about 20 per cent, followed by the European Common Market countries together, contributing 15 per cent. The United Kingdom, the second largest market for Pakistan's exports,¹³ contributed only 7 per cent. This is not surprising because the United Kingdom was found to be the most stable market for Pakistan (with the value of the instability index I_4 being the lowest at 10.9 per cent).

The Communist bloc countries, though their relative share in total exports averaged only 9 per cent per year, did exert a comparatively greater impact on the total export earnings instability of Pakistan. The proportion of total instability ascribable to these countries was 14 per cent, which is far greater than their average share in total exports.

Column (4) in Table XIII also reveals the fact that the bulk of total export instability can be attributed to the export markets in LDC's rather than to those in DC's. The "others" category in the table includes LDC's in Africa, the Middle East, and Asia excluding Japan, Hong Kong and India. These countries, along with Hong Kong, India, and Japan, accounted for 57 per cent of total instability, more than their

¹³The largest export market for Pakistan is the European Common Market countries as a group, which imported 20.3 per cent of the total exports per year on the average during the period concerned. The United Kingdom has been the single largest importer, however, when export markets are viewed on individual country basis; her annual average share of Pakistan's total exports was 15.2 per cent.

average share in total exports (47 per cent). The Western industrial countries (U.S.A., E.C.M., U.K.), however, contributed only 29 per cent, far less than their average share of 44 per cent.¹⁴ Hence, this appears to indicate that exports to the LDC's markets were not only more unstable but also exhibited greater impact on the aggregate instability in export earnings than exports to the DC's.

This finding is contrary to the widely-held view that fluctuations in demand in industrial countries are one of the main causes of export earnings instability of many primary producing LDC's. At least in the case of Pakistan, the blame for instability may not be placed too heavily on business fluctuations (and the ensuing fluctuations in demand for imports of raw materials and other primary products) in industrial countries. For, as can be seen in Table XIII, Pakistan's exports to these countries--namely, U.S.A., U.K., and E.C.M. countries--were most stable, contributing to total instability by the magnitudes of far less than their relative shares in total exports.

Although the nature of the inquiry was somewhat different from ours, a study made by Stekler¹⁵ reached a similar conclusion; she found that U.S. business fluctuations had a surprisingly small impact on the total value of U.S. imports of most primary commodities, including raw jute from Pakistan. Thus, factors other than U.S. business

¹⁴If the Eastern European countries and Communist China were included in the category of LDC's and Japan and U.S.S.R. in the category of DC's, the relative contributions made by these two groups worked out to be 62 and 38 per cent, respectively.

¹⁵Lois E. Stekler, "Effect of U.S. Business Fluctuations on Imports of Primary Commodities," Yale Economic Essays, IX, No. 2 (Fall 1969), pp. 209-249.

fluctuations may have played an important role in causing instability in many primary commodity markets.¹⁶

The loss of the Indian market for exports, raw jute in particular, can be singled out as one of the main causes of the total export earnings instability of Pakistan for the period under question, particularly in the earlier post-war years. Instability in the Indian imports from Pakistan was the highest (average annual fluctuation of 43 per cent) and India was by far the most important jute consumer, purchasing 5.3 million bales¹⁷ as against 0.8 million by the rest of the world in 1947/48. The trade deadlock between India and Pakistan in 1949, however, resulted in sharp declines in jute exports to India, and Pakistan was forced to explore other markets for jute. By 1950/51 two-thirds of Pakistan's jute exports were absorbed by countries other than India such as U.S.A., U.K., France, West Germany, and Belgium. The Indian imports of raw jute declined progressively as India's domestic production of jute rose sharply. And India, striving for its goal of virtual self-sufficiency in raw jute, resorted to Pakistan's jute only as a residual source of supply. Added to this were continuing hostilities between the two countries, frequently leading to trade disruptions.¹⁸ Hence, a greater instability in exports to India resulted.

¹⁶Ibid., p. 225.

¹⁷One bale equals 400 lb. for jute and 392 lb. for cotton.

¹⁸The territorial disputes and the ensuing hostilities between India and Pakistan in 1965 had virtually eliminated their trade. Exports to India dropped from Rs. 220 million in 1964/65 to Rs. 18 million in 1965/66 and further dropped to only Rs. 1 million in 1966/67.

Export Diversification and Instability

Earlier, in Chapter IV, we have argued that, among other factors, increased export diversification (decreased export concentration) on the part of many primary producing countries might have contributed to the observed over-all decline in their export instability in the period 1957-68 compared to the immediate post-war years 1948-59. It will be recalled that Pakistan's exports fluctuated severely in the earlier years but the extent of export instability (as measured by the instability index I_4) had declined substantially in the later years, from 15.5 per cent in 1948-59 to 5.9 per cent in 1957-68.¹⁹ At the same time, the structure of exports in Pakistan, as we noted in the beginning of Chapter V, had undergone a drastic change.

This section explores the relationship between the changes in export structure and export instability in light of Pakistan's experience. One of the conclusions is that successful diversification in jute exports has been, among other things, an important factor responsible for the substantial decline in the year-to-year fluctuations in the country's export earnings.

It is apparent that Pakistan's exports have been diversified to a larger extent than those of the average primary producing country. As shown in Table XIV, export concentration by commodity has declined continuously over time. In 1953-55, three primary commodities--raw jute, raw cotton, and raw wool, accounted for 86 per cent of the total

¹⁹The corresponding figures for the average primary product exporting country (the mean value of the instability index I_4 for 34 countries) were 12.0 and 7.7 per cent, respectively, in the two periods. See Chapter IV, pp. 63-64, Table IV.

TABLE XIV
CHANGING PATTERN OF EXPORT CONCENTRATION IN PAKISTAN
AND OTHER PRIMARY PRODUCING COUNTRIES^a

Period	Pakistan	Other Countries
(A) Percentage Share of Total Exports by Three Major Export Items:^a		
1953-55	86.0	75.5 ^b
1959-61	58.0	70.1 ^b
1965-67	40.1	63.3 ^b
 (B) Hirschman Concentration Index:		
1952	.610	.559 ^c
1960	.500	.524 ^d
1966	.326	.480 ^d

^aThree-year average.

^bArithmetic means for 34 countries.

^cArithmetic mean for 17 countries.

^dArithmetic mean for 24 countries.

Sources: Compiled from Table I, Chapter IV of this study, pp. , and I. B. Kravis, "External Demand and Internal Supply Factors in LDC Export Performance," Banca Nazionale del Lavoro Quarterly, XLIII (June 1970), p. 179, Table 3.

exports. Their export shares, however, declined to 58 per cent in 1959-61 and to only 40 per cent in 1965-67. For the average primary producing country, the export shares accounted for by three major export items also declined over time but at a much slower pace than in Pakistan; the percentage shares were 76, 70, and 63 per cent, respectively, in 1953-55, 1959-61, and 1965-67. In terms of Hirschman's concentration index, the same pattern of export diversification is observed. In 1952 the value of the concentration index for Pakistan was measured at 0.61 compared to 0.56 for other countries as a group. In 1960 and 1966, the corresponding figures were 0.50 and 0.33 for Pakistan and 0.52 and 0.48 for the average primary producing country.

Export diversification in Pakistan has been characterized by a continuously increasing share of manufactured goods in total exports. The most phenomenal change in the composition of exports, however, has occurred in jute and cotton exports. As can be seen in Table XV, exports of jute and cotton manufactures were virtually nonexistent in the early 1950's. From the mid-1950's processed jute and cotton goods started to enter the export markets, thereafter gradually reducing the shares of raw jute and cotton. As of 1966/67 manufactured jute and cotton goods accounted for approximately 40 and 50 per cent of the total jute and cotton exports, respectively. Although the composition of exports has changed substantially over time, jute and cotton continued to play the dominant role in Pakistan's exports, accounting for three-fourths of the total export earnings throughout the post-war years under study. Columns (5) and (10) in Table XV show the relative shares of jute and cotton exports in total exports.

TABLE XV

DIVERSIFICATION IN JUTE AND COTTON EXPORTS IN PAKISTAN, 1951/52 - 1966/67^a
(In Million Rupees)

Year	Exports of Jute					Exports of Cotton				
	Raw (1)	Manufac- tured (2)	Total Jute Exports (3)	Percent Manufac- tured (4)	Jute Exports as Percent of Total Exports (5)	Raw (6)	Manufac- tured (7)	Total Cotton Exports (8)	Percent Manufac- tured (9)	Cotton Exports as Percent of Total Exports (10)
1951/52	996.0	0.1	996.1	0.0	49.6	777.5	0.5	778.0	0.1	38.7
52/53	566.3	1.4	567.7	0.2	38.8	694.0	0.7	694.7	0.1	47.5
53/54	556.4	9.6	566.0	1.7	45.1	497.4	0.9	498.3	0.2	39.7
54/55	598.5	22.8	621.3	3.7	53.2	296.5	1.3	297.8	0.4	25.5
55/56	829.2	105.9	935.1	11.3	52.6	462.1	35.7	497.8	7.2	28.0
56/57	705.8	91.1	796.9	11.4	49.6	252.4	92.7	345.1	26.9	21.5
57/58	853.6	91.3	944.9	9.7	66.4	215.8	32.0	247.8	12.9	17.5
58/59	654.8	155.2	810.0	19.2	61.1	190.4	52.1	242.5	21.5	18.3
59/60	729.1	227.1	956.2	23.8	51.9	188.8	231.4	420.2	55.1	22.8
60/61	848.1	314.1	1,162.2	27.0	64.6	137.6	118.2	255.8	46.2	14.2
61/62	849.5	302.7	1,152.2	26.3	62.5	123.5	43.0	166.5	25.8	9.0
62/63	792.9	306.8	1,099.7	27.9	49.0	370.0	88.0	458.0	19.2	20.4
63/64	752.9	323.2	1,076.1	30.0	46.8	340.1	189.3	529.4	35.8	23.0
64/65	845.4	300.7	1,146.2	26.2	47.6	287.0	272.2	559.2	48.7	23.2
65/66	863.2	575.5	1,438.7	40.0	53.0	278.4	254.2	532.6	47.7	19.6
66/67	870.2	587.7	1,457.9	40.3	48.5	290.6	276.9	567.5	48.8	18.9

^aCompiled and computed from CSO data in Pakistan Statistical Yearbook, various issues, and 20 Years of Pakistan in Statistics, 1947-1967.

Directly responsible for this phenomenal change in the structure of jute and cotton exports are the Export Bonus Scheme introduced in 1959 and the various policy measures such as a combination of export duties and subsidies, which are all designed to discriminate in favor of processed goods and against raw materials. And the main beneficiaries of such discrimination in Pakistan have been manufactures of jute and cotton.

In terms of the commodity composition of exports, the two periods 1951/52 - 1959/60 and 1958/59 - 1966/67 indicate different patterns, as can be seen in columns (1) and (4) in Table XVI. In the earlier period the bulk of exports consisted of primary products--largely raw jute and raw cotton. Raw jute alone accounted for 47 per cent of the total exports per annum on the average, and raw cotton for 26 per cent. The average annual shares of jute and cotton manufactures amounted to only 5 and 3 per cent. In the later period, however, the average annual share of jute manufactures more than tripled (15.4 per cent) and that of cotton goods more than doubled (7.5 per cent), thereby reducing the export shares of raw jute and raw cotton to 38 and 11 per cent. Notice, however, that the export share of the combined jute exports actually increased from 52 to 54 per cent and that of the combined cotton exports declined from 29 to 19 per cent. Absolute declines in the export shares of cotton and tea can be explained by the rising domestic consumption as a result of rising incomes in the later post-war years.

Besides jute and cotton exports, a noticeable structural change also occurred in the "others" category, which includes minor primary products such as hides and skins, and rice, but mostly manufactured items other than jute and cotton. The average annual share of this

TABLE XVI

INSTABILITY BY MAJOR EXPORT COMMODITIES AND THEIR RELATIVE CONTRIBUTIONS
TO TOTAL EXPORT EARNINGS INSTABILITY, PAKISTAN,
1951/52 - 1959/60 AND 1958/59 - 1966/67^a
(In Per Cent)

Commodity	1951/52 - 1959/60			1958/59 - 1966/67		
	Average Annual Share of Total Exports (1)	Average Annual Export Fluctuation, I ₂ (2)	Proportion of Total Export Instability Attributable to Each Commodity (3)	Average Annual Share of Total Exports (4)	Average Annual Export Fluctuation, I ₂ (5)	Proportion of Total Export Instability Attributable to Each Commodity (6)
Raw Jute	47.0	18.2	35.2	38.4	6.2	14.7
Jute Manufactures	5.0	50.2	10.3	15.4	15.8	15.1
Jute Total	52.0	18.2	45.5	53.8	9.2	29.8
Raw Cotton	25.9	23.5	25.1	11.3	17.0	11.9
Cotton Manufactures	3.0	52.6	6.5	7.5	42.5	19.7
Cotton Total	28.9	27.8	31.6	18.8	23.5	31.6
Raw Wool	4.1	22.1	3.7	3.3	15.8	3.2
Tea	2.4	32.9	3.3	0.8	53.1	2.6
Fish	1.6	24.2	1.6	3.2	24.0	4.8
Others	10.9	31.7	14.2	20.1	22.5	28.0
Total Exports	100.0 ^b	17.3	100.0 ^b	100.0 ^b	9.8	100.0 ^b

^aComputed from data sources in Tables VII and XV.

^bTotals may not equal 100 due to rounding.

"others" category was 11 per cent in the earlier period but almost doubled in the later years mainly because of the introduction of new industrial goods for export.

In order to examine the impact of export diversification on the instability of export earnings, we have measured average annual export fluctuations for each of the major export items separately for the two periods. This is shown in columns (2) and (4) in Table XVI. By taking into account the changes in the composition of exports (i.e., the average annual export shares) we then have computed the proportions of total instability that can be attributable to each export commodity. Columns (3) and (6) in Table XVI contain the results of our computation.²⁰

Instability in a country's aggregate export earnings arises basically from the instability in individual commodity exports, and to what extent the total export earnings instability is affected by a particular export commodity depends on the extent of export fluctuations of the commodity as well as its relative share in the total exports. Therefore, the proportions of total instability attributable to each export commodity in the two periods should convey valuable information as to the factors that might have been responsible for a substantial decline in export instability experienced by Pakistan in the later post-war years.

²⁰The procedure for computing the proportion of total export instability accounted for by each export commodity is as follows: (1) Multiply the export instability index by the relative export share for each export commodity; (2) sum their products; and (3) divide each product by the product sum and multiply by 100 to produce the contribution to the total instability in per cent.

As shown in columns (2) and (5) in Table XVI, Pakistan's total export earnings were stabilized to a large extent in the later period; average annual fluctuation (I_2) declined from 17.3 to 9.8 per cent. Except tea and fish, all of the major export commodities showed declines in their earnings fluctuations, though in varying degrees. Decreased export concentration (increased export diversification) in the later period 1958/59 - 1966/67 may have increased the chances for the fluctuations in individual commodity exports to offset one another, thus greatly stabilizing the total export earnings.

However, a closer examination of Table XVI suggests that the substantial decline in the total export earnings instability of Pakistan can be traced primarily to substantially increased stability in jute exports, raw jute in particular. In the earlier period, raw jute earnings fluctuated annually by 18.2 per cent, but, because of its predominant export share in total exports (47 per cent), instability in raw jute was responsible for more than 35 per cent of the total export instability. Highly unstable earnings from jute manufactures contributed 10.3 per cent to total instability despite their meager export share of 5 per cent. Instability in the total jute earnings therefore accounted for about half the aggregate export instability of Pakistan.

Diversification of jute exports in the later period resulted in a substantial decline in the instability in earnings from both raw jute and jute manufactures, thereby substantially reducing their impact on the total export earnings instability. The average annual export share of raw jute declined to 38 from 47 per cent, but greatly increased stability in raw jute earnings (6.2 per cent) reduced the proportion of total instability attributable to raw jute to only 15 per cent (relative

to 35 per cent in the earlier period). The export share of jute manufactures more than tripled but accounted for only 15 per cent of total instability largely because of a decline in earnings instability (from 50 to 16 per cent). Accordingly, despite the unchanged export share of the combined jute exports (52 and 53.8 per cent, respectively, in the earlier and later periods), jute earnings together contributed to the total export instability by only 30 per cent (relative to 46 per cent in the earlier period).

In fact, the size of the decline in the total export instability (from 17.3 to 9.8, a 43.4 per cent decline) roughly corresponds to the magnitude of the decline in the jute earnings instability (from 18.2 to 9.2, a decline of 49.5 per cent).

Although a similar structural change has occurred in cotton exports, export diversification in cotton appears to have had little, if any, impact on the total export instability. Earnings from raw cotton were stabilized somewhat but earnings from cotton manufactures continued to be highly unstable (42.5 per cent), accounting for about 20 per cent of total instability. In spite of a decline in the export share from 29 to 19 per cent, the combined cotton exports remained unstable in both periods. As a result, the proportion of total instability attributable to cotton exports remained unchanged at 32 per cent.

One reason why diversification in cotton had little impact in stabilizing, if not destabilizing, the earnings from cotton exports and the total exports of the country is the fact that cotton exports, unlike jute, have been subject to fluctuations in domestic demand, which in turn are greatly affected by fluctuations in national income.

Domestic demand for cotton yarn and fabrics is believed to be income

elastic. Moreover, if the proportion of domestic consumption of an export commodity is higher, a given percentage change in output will cause a greater percentage change in exports of the commodity than when it was lower. Hence, fluctuations in domestic demand cause instability in the net export supply.

Similarly, the "others" category, of which average annual share in total exports in the later period almost doubled, reflecting mostly the new manufactured goods that entered the export market, appears also to have had a minimal, if any, impact on the aggregate export instability. In fact, its contribution to total instability has actually increased proportionately with the increase in its export share.²¹

Briefly, then, the structural changes in jute exports and the resulting stability in their earnings can be singled out as a main factor that has been responsible for increased stability in Pakistan's export earnings in the later years.

The case of Pakistan suggests that a primary product exporting country may be able to reduce fluctuations in its export earnings by processing raw materials produced domestically rather than exporting them in the raw form.²² By so doing, price fluctuations arising from unexpected fluctuations in foreign demand as well as variations in

²¹If adding the new products to the list of exports had produced strong stabilizing effects on earnings, one would expect that the proportion of total export instability attributable to this category of exports would not have increased as much as an increase in their export share.

²²For an interesting and penetrating analysis of the relationships between export diversification and instability, see W. C. Brainard and R. N. Cooper, "Uncertainty and Diversification in International Trade," Studies in Agricultural Economics, Trade and Development, VIII, No. 3 (1968), pp. 257-285.

domestic production can be minimized. After meeting domestic demand for fabrication, any excess supply of raw materials can be exported in the raw state. Moreover, ". . . even where the processing is relatively high in cost, the gains from reduced risk may compensate for the low yield."²³

Pakistan's experience also indicates that mere export diversification in word, i.e., increasing the number of export items, may not necessarily lead to reduced fluctuations in export earnings in all circumstances. We have seen that increased stability in Pakistan's export earnings was due primarily to the structural change in jute exports and that the similar structural change in cotton exports had little impact on the country's export instability. The increased export share of the "all others" category (new export items) also had little impact on the aggregate export instability. As such, a decrease in export concentration per se may not always reduce a country's export instability.²⁴ This, however, is not to say that export diversification is not related to export instability. Rather, the question is

²³Ibid., p. 268.

²⁴It seems that, over time, export diversification is more closely related to the level (growth) of export earnings of a country. By adding new products to the list of exports a country will have a better chance to increase its export earnings over time. A study by Kravis, in fact, shows a significant, positive relationship between export diversification and export growth, that is, countries with greater export diversification were more successful in achieving a higher rate of export growth than those with less successful export diversification. See I. B. Kravis, "External Demand and Internal Supply Factors in LDC Export Performance," Banca Nazionale del Lavoro Quarterly, XLIII (June 1970), pp. 157-179.

not so much "to what extent a country's exports diversify" as "how well diversify":²⁵

. . . countries tend to produce a range of products which have similar characteristics, e.g., their exports all depend primarily on industrial production in the major countries or they are all subject to the same vicissitudes of rainfall and sunshine. These countries, though ostensibly 'diversified,' have not diversified properly; simply adding commodities to the list of exports is not sufficient.²⁶

If earnings for many of the export commodities are subject to similar sources of fluctuations in either demand or supply, export earnings from these commodities will tend to fluctuate together and hence export diversification would not stabilize by much the

²⁵A regression analysis, based on cross-sectional data for a sample of 17 primary producing countries for which comparable data on export concentration were available for the two different time periods, produced no systematic relationship between export diversification and fluctuations in export earnings. The relationship tested was in the form:

$$I_p = a_0 + a_1 D_p + u \quad (1)$$

where $I_p = I_4^2 \div I_4^1$ (100), the index of instability pattern

(the smaller the value of I_p , the larger the decline in export instability), and

$$D_p = C_h^1 \div C_h^2$$
 (100), the index of export diversification

(the larger the value of D_p , the greater the degree of export diversification); I_4 and C_h are the indexes of export instability and export concentration and superscripts 1 and 2 refer to the earlier and later post-war periods, 1948-59 and 1957-1968.

It was hypothesized that a_1 , the regression coefficient associated with D_p , be negative and significantly different from zero. The estimated equation was:

$$I_p = 92.46 - 0.152D_p; R^2 = 0.019 \quad (2)$$

(0.823)_p F = 0.287

Although the regression coefficient carried the expected sign it was not statistically significant.

²⁶Brainard and Cooper, p. 271.

instability of export earnings. For instance, "diversifying from wheat to wool or from coffee to cocoa . . . represented largely diversification in name only, since price movements for these pairs of commodities broadly paralleled one another."²⁷

In addition to the question of "how well diversify," the nature of the major export commodities and their export shares seem to be more important than export concentration per se in affecting fluctuations in a country's export earnings over time.²⁸

Summary

In this chapter, we have disaggregated the total export instability of Pakistan in order to examine its structural components. Fluctuations in all of the major commodity exports were notoriously severe during the post-war years, 1951/52 - 1966/67. Pakistan's three traditional exports--raw jute, raw cotton, and raw wool--were surprisingly stable relative to jute and cotton manufactures.

Although individual commodity exports exhibited severe fluctuations, the degree of instability of total export earnings was milder at 12.6 per cent per annum. This points to the fact that fluctuations in individual commodity exports must have been offsetting each other to a large extent.

The bulk of Pakistan's export instability can be attributable to fluctuations in the exports of two mainstays, jute and cotton. Despite

²⁷Ibid., p. 273.

²⁸See Chapter IV, pp. 58-61 above for the same line of argument presented earlier.

the relatively low degree of instability, raw jute alone accounted for one-fourth of the aggregate instability because of its predominant share in total exports (42.5 per cent on the average per year). Exports of jute and cotton, both in raw and manufactured forms, were responsible for about three-fourths of the aggregate instability of Pakistan's exports.

India and China proved to have been the most unstable markets for Pakistan's exports while exports to the United Kingdom, the single largest importer, were most stable. Pakistan's exports to the Communist bloc countries were found to be less stable than those to the Western industrial countries. This suggests that planned economies may not necessarily provide the LDC's with more stable markets for primary products than free-market economies.

Exports to the markets of LDC's themselves were not only more unstable but also exhibited greater impact on the total instability than exports to the DC's. Among other things, the trade deadlock and ensuing hostilities with India following Partition in 1947 had a significant impact on the instability of Pakistan's exports, particularly in the 1950's.

Rapid growth of domestic manufacturing, spearheaded by the development of the cotton textile and jute mill industries, brought about a substantial change in the structure of exports in Pakistan in the 1960's. This transformation of the export structure characterized by a marked shift from raw materials to manufactured goods was found to be closely linked to the country's export earnings instability. Among

other factors, successful diversification in jute exports was responsible for the substantial decline in export instability in the later years.

CHAPTER VII

DOMESTIC CONSEQUENCES OF EXPORT INSTABILITY: SOME MICROECONOMIC ASPECTS

Introduction

The purpose of this chapter is to examine some of the microeconomic aspects of the domestic consequences of export instability, namely, the effects of severe price fluctuations of primary exports on the producers' income and the trend in production of cash crops for export.

It has been argued that severe fluctuations in the prices of primary exports lead to similar fluctuations in export earnings as well as incomes of the producers, affecting adversely their current welfare. More importantly, price instability is alleged to affect adversely the long-term growth of exports by operating both on the supply and demand sides:¹ Price uncertainty increases the economic risks of devoting scarce resources (land, in particular) to the production of cash crops for export, thereby making it less profitable and attractive than production of other subsistence crops. This will discourage investment in production for export which in turn will retard the export growth. Since the production of subsistence crops yields average returns

¹For a summary discussion of both pro and con arguments for the effects of export instability, see Chapter II, especially pp. 20-22.

normally lower than those of cash crops, this risk-averting behavior on the part of farmers will also cause a perpetuating low productivity in agriculture, which will ultimately prevent optimum allocation of resources. On the demand side, price instability may encourage the production of other substitutes such as synthetic products, replacing natural raw materials, and may also induce the importers to modify their production techniques which are seldom reversible. Thus, price instability tends to cause a decline in the long-term demand for primary products.

In view of the discussion above, the effects of sharp fluctuations in export prices in Pakistan may have been serious, since two agricultural raw materials, jute and cotton, have been the mainstays of Pakistan's exports, especially in the earlier years. The predominant role played by jute and cotton exports in affecting the extent of instability in Pakistan's aggregate export earnings was discussed in the preceding two chapters.² With jute as an example, the effect of price instability on jute farmers' income and welfare will be examined first, and the effect of price instability on the long-term production of jute and cotton in the final section.

Effect of Price Instability on Jute Farmers' Income³

Table XVII provides data on jute prices, output, and the estimated cash incomes of jute farmers in Pakistan during 1948/49 - 1960/61. Two

²Especially Chapter VI, pp. 113-117.

³Statistical analysis in this section is based on the data supplied by Commodity Division, FAO, Statistical Appendix to "Fluctuations in World Jute Markets, 1947/48 to 1960/61," a paper prepared for an

TABLE XVII

FLUCTUATIONS IN JUTE PRICE, OUTPUT, AND PRODUCER INCOME
EAST PAKISTAN, 1948/49 - 1960/61^a

Year	Jute Output (000 bales)	Harvest Price (rs./bale)	Estimated Jute Farmer Income (million rs.)	Trend-corrected Annual Fluctuation in Per Cent, I ₄		
	O _J	P _{JH}	Y _J	P _{JH}		
1948/49	5479	152	832	--	--	--
49/50	3333	97	324	-40.1	-37.9	-63.4
50/51	6007	139	838	43.7	28.4	59.1
51/52	6331	127	802	4.3	-10.5	-6.6
52/53	6823	52	354	6.5	-61.1	-58.2
53/54	3610	75	271	-47.9	27.3	-28.8
54/55	4662	71	333	21.5	-8.7	12.9
55/56	5592	94	523	15.7	21.8	32.7
56/57	5514	123	677	-2.3	21.5	19.9
57/58	5701	104	594	2.4	-17.5	-15.1
58/59	6001	79	476	4.1	-26.5	-23.1
59/60	5554	109	604	-8.3	25.2	18.0
60/61	5625	244	1374	0.3	54.5	54.7
Instability Index, I ₄				16.4	28.4	32.7
Instability Index, I ₁				20.6	38.4	49.9

^aCompiled and computed from FAO, Commodity Division, Statistical Appendix to "Fluctuations in World Jute Markets, 1947/48 to 1960/61," a paper prepared for an ad hoc meeting on jute held under the auspices of FAO Committee on Commodity Problems and United Nations ECAFE, CCP/Jute Ad Hoc/62/8, October 1962 (Mimeographed).

different indices of instability in the related variables were computed and are summarized in Table XVIII.

The trend-adjusted measure of year-to-year fluctuations (I_4) was smaller for jute output at 16 per cent per year than for jute price at 28 per cent. Greater fluctuation in jute prices, which are largely determined by the size of jute crop harvested, is expected because of the price inelasticity of demand for and supply of jute in the short-run.⁴ Since jute output within a crop year is completely price inelastic, the cash incomes received by farmers depend entirely on the harvest price of jute that they can fetch and are expected to move in sympathy with price fluctuations. Instability in jute farmers' income was in fact far more severe than either jute output or price, fluctuating annually by almost 33 per cent (or 50 per cent in terms of the conventional average annual percentage change, I_1). Instability in jute producers' income during the period under study was accentuated by the parallel movements of jute prices and production that occurred in four years, 1949/50, 1950/51, 1954/55, and 1960/61 (see Table XVII). In these years, jute prices rose or declined independently of the size of the jute crop in Pakistan, reflecting perhaps the autonomous shifts in demand for Pakistan's jute in the world market.⁵

ad hoc meeting on jute held under the auspices of FAO Committee on Commodity Problems and United Nations ECAFE, CCP/Jute Ad Hoc/62/8, October 1962 (mimeographed), the summary of which was subsequently published later in FAO, Monthly Bulletin of Agricultural Economics and Statistics, XII (January 1963), pp. 14-18.

⁴Chapter V of this study, pp. 93-107.

⁵In 1949/50 season jute price fell drastically despite a fall in jute output as a result of non-devaluation of the Pakistan rupee vis-à-vis other currencies in the Sterling Area countries. The ensuing

TABLE XVIII

INSTABILITY INDICES FOR JUTE PRICES, OUTPUT, PRODUCER INCOME,
AND EXPORT EARNINGS, PAKISTAN, 1948/49 - 1960/61^a
(In Per Cent)

Variable	Instability Index	
	I ₁	I ₄
O _J , Jute production	20.6	16.4
P _{JH} , Harvest jute prices to growers	38.4	28.4
Y _J , Estimated jute producers' income	49.9	32.7
P _{JB} , Jute prices at baling centers	25.4	20.1
P _{JE} , Jute prices at port of export	19.4	15.8
E _{JR} , Export earnings from raw jute	29.3	23.3
E, Total commodity exports	30.4	23.4

^aComputed from data in Table XVII except for E_{JR} and E, for which data are from Government of Pakistan, CSO, 20 Years of Statistics in Pakistan 1947-1967.

The severe instability in jute price was undoubtedly the prime source of instability in jute producers' incomes. This is borne out by the same directional movements in jute prices and cash incomes for 10 out of 12 cases (Table XVII). The predominant influence of price fluctuations on the instability of cash incomes is also evident from the following regression results:

$$\Delta Y_J = -2.548 + 6.224 \Delta P_{JH} ; R^2 = 0.882 \quad (7.1)$$

(0.721) D.W. = 2.411

$$\Delta Y_J = 43.854 + 0.108 \Delta O_J ; R^2 = 0.206 \quad (7.2)$$

(0.071) D.W. = 1.580

where ΔY_J , ΔP_{JH} , and ΔO_J are the annual changes in cash incomes, harvest price of jute, and jute production. Figures in parentheses denote the standard errors of regression coefficients. In fact, using the method suggested by Sackrin,⁶ it is estimated that about 73 per cent of the instability in cash incomes can be attributed to jute price fluctuations and only 27 per cent to fluctuations in jute output.⁷

exchange rate dispute with India culminated into a trade deadlock, and Pakistan faced a serious problem of disposing of a surplus jute crop, which fortunately was solved with the outbreak of the Korean War in 1950. In spite of the increase in jute output, jute price rose in 1955/56 due to the devaluation of the Pakistan rupee, in 1950/51 due to the rising raw materials prices in the wake of the Korean War commodity boom, and in 1960/61 owing to the world-wide shortage of jute.

⁶S. M. Sackrin, "Measuring the Relative Influence of Acreage and Yield Changes on Crop Production," Agricultural Economic Research, IX, No. 4 (October 1957), pp. 136-139.

⁷We have used this method in Chapter V in order to determine the relative influence of export price and quantity changes on export earnings instability. See Chapter V, especially pp. 80-87 and also Sackrin, p. 137. The estimated cash incomes for farmers (Y_J) are the product of average harvest price of jute received by jute farmers (P_{JH}) and jute output (O_J), that is:

Furthermore, fluctuations in jute farmers' incomes (33 per cent) were far more severe than fluctuations in export earnings from raw jute (23 per cent) during 1949/50 - 1960/61 (Table XVIII). This is explained by the fact that jute price fluctuations were most severe at the grower's level (28 per cent). Price fluctuations at the baling centers were smaller at 20 per cent per year and smallest at the export level at 16 per cent per year (Table XVIII).⁸

$$Y_J = P_{JH} \times O_J \quad (1)$$

Expressing (1) in logarithms, we get:

$$\log Y_J = \log P_{JH} + \log O_J \quad (2)$$

To obtain changes from the preceding year, (2) becomes:

$$\Delta \log Y_J = \Delta \log P_{JH} + \Delta \log O_J \quad (3)$$

In (3) the equality of both sides of (2) is preserved in the sums. Direct estimation of the regression coefficients associated with $\Delta \log P_{JH}$ and $\Delta \log O_J$ will not give us the proportions of a given unit change in Y_J that can be attributed to changes in P_{JH} and O_J . Thus, we express both $\Delta \log P_{JH}$ and $\Delta \log O_J$ as separate functions of $\Delta \log Y_J$, and the single regression coefficients can be estimated by OLS. The estimated equations were:

$$\Delta \log P_{JH} = -0.012 + 0.726 \Delta \log Y_J; R^2 = 0.676 \quad (4)$$

(0.168)

$$\Delta \log O_J = 0.011 + 0.274 \Delta \log Y_J; R^2 = 0.229 \quad (5)$$

(0.167)

The sum of the two regression coefficients estimated should, of course, be equal to unity because of the additive relationship in (3); in our estimation, $0.726 + 0.274 = 1$.

⁸Also see FAO, "Fluctuations in World Jute Markets, 1947/48 to 1960/61," Monthly Bulletin, XII (January 1963), p. 17. Our measures of instability are slightly different from those of FAO because of the different instability indices used.

Jute moves through many stages of marketing before reaching the final port of export.⁹ In the process, a large number of additional charges are added to jute price at the grower level such as the transport and handling charges, the cost of sorting and baling, brokerage fees, port charges, ocean freight, insurance, and export duty.¹⁰ Of these additional costs, only brokerage and insurance charges appear to vary proportionally to the price of jute at each stage of marketing, while other charges vary little from year to year and are not directly related to changes in jute price. Thus, fluctuations in jute prices tend to be reduced when jute moves further away from the grower's level to the export level.¹¹ It is therefore the jute farmers who, in the process of export trade of jute in Pakistan, seem to bear much of the burden of price fluctuations as reflected in the severe instability in their cash incomes.

Whether such a high degree of instability in their cash incomes may make jute farmers worse off in the long-run is impossible to tell. The effect of such instability on the current welfare of the farmers, however, seems quite serious. As discussed elsewhere, jute is grown on the same land in direct competition with rice, the major subsistence crop in Pakistan, by small-scale peasant farmers. Land is obviously the scarcest factor of production for either rice or jute. The average

⁹For a brief description of production and marketing of export crops in Pakistan, see J. R. Andrus and A. F. Mohammed, Trade, Finance and Development in Pakistan (Stanford: Stanford University Press, 1966), Ch. 1.

¹⁰FAO, *ibid.*, p. 17.

¹¹*Ibid.*

landholdings of jute farmers rarely exceed ten acres, three to six acres being the most common size.¹² Nearly 90-95 per cent of their land has been devoted to rice and jute--80 per cent for rice and 13 per cent for jute on the average for all jute growers in 1958/59.¹³ By opting to grow jute in anticipation of higher returns from the land, the farmers run grave risks of reducing their food supply. Worse yet, they may run a double hazard if the harvest price of jute suddenly falls and the retail price of rice they have to pay to buy rice rises before the rice (aman) harvest time is reached.¹⁴

The jute farmer would be able to protect his family against the sudden fall in jute prices and therefore his cash proceeds if he could withhold his jute crop for a while before selling because jute prices tend to be lowest at harvest time. But such opportunities for hedging against severe price fluctuations are extremely limited by inadequate credit facilities and storage capacity, and moreover by "difficulties of transport once the floods begin to recede in October, leaving most rural areas without boat routes to the larger market centers." So, the average jute farmer ends up selling his crop on the spot to peripatetic

¹²A. K. M. Ghulam Rabbani, "Economic Determinants of Jute Production in India and Pakistan," Pakistan Development Review, V, No. 2 (Summer 1965), p. 195.

¹³Ibid., pp. 196-197.

¹⁴The season of aus, autumn-harvested rice, coincides with the jute season. But the season of aman, the winter-harvested rice which accounts for 80 per cent of the annual production of rice in the jute belt, lags behind the jute season by about three or four months. However, opportunities for double cropping are extremely limited. See Rabbani, pp. 194-195.

farias at whatever price he can fetch.¹⁵ A strong case can be made, therefore, for stabilizing jute prices,¹⁶ if it can be done successfully, and if price stabilization leads to a reduction in the instability in cash incomes of the jute farmers.¹⁷ Several attempts at stabilization in Pakistan in the past, either by acting directly on price (by imposing minimum prices periodically at the grower level and/or the export level) or by acting indirectly on supply (by imposing acreage licensing to control production), have met so far with little success.¹⁸ One of the difficulties for stabilization has been the fact that "jute price" is not and cannot be the only variable to be acted upon; what is to be acted upon is a sort of "composite price," i.e., the relative price of jute vis-a-vis rice and imported foodgrains! What seems to be required is a well coordinated policy for jute, rice, and imports of foodgrains,¹⁹ which itself suggests the dimension of the difficulty of stabilization in practice apart from theory.

¹⁵Andrus and Mohammed, p. 5.

¹⁶For a case for price stabilization and the resulting welfare gains to producers as measured in terms of "producer surplus," see B. F. Massell, "Price Stabilization and Welfare," Quarterly Journal of Economics, LXXXIII (May 1969), pp. 284-298.

¹⁷For a discussion of the possible effects of alternative stabilization policies on the cash incomes of producers, export earnings, and other related variables, see A. I. MacBean, "Problems of Stabilization Policy in Underdeveloped Countries," Oxford Economic Papers, XIV (October 1962), pp. 251-266.

¹⁸Andrus and Mohammed, pp. 1-11; FAO, "Jute: Fluctuations . . . ," pp. 17-18, and "Instability and Stabilization of the World Market for Raw Jute--II," Monthly Bulletin, XIV (January 1965), pp. 16-20.

¹⁹Chapter V of this study, pp. 102-107.

Effect of Price Instability on Production
for Export

Another argument for the detrimental effects of price instability, apart from its effect on producers' current welfare, is that price uncertainty may actually deter farmers' incentives to grow more cash crops for export. If this is the case, the long-run consequences of price instability may indeed be harmful to the economy in many aspects. For the growth of exports will be hampered, thereby aggravating the already serious foreign exchange problems; the over-all productivity in the agricultural sector may also deteriorate since the cultivation of jute in East Pakistan and that of cotton in West Pakistan means better utilization of the scarce factor, land, both in terms of the value of agricultural production and foreign exchange earnings.²⁰ As such, the argument appears quite appealing particularly to a country like Pakistan where the export performance has been influenced to a large extent by the over-all developments in the agricultural sector in general.

Trend in Jute Production

Appealing though it may be, there seems little evidence to support the above argument when viewed against the experience of Pakistan with respect to the two main cash crops, jute and cotton. Table XIX presents data showing the long-term trends in jute acreage, production,

²⁰Rabbani, p. 225; Ghulam Mohammad, "Some Physical and Economic Determinants of Cotton Production in West Pakistan," Pakistan Development Review, III, No. 4 (Winter 1963), pp. 510-513.

TABLE XIX

TREND IN JUTE ACREAGE, PRODUCTION, AND JUTE/RICE PRICE RATIO
IN BRITISH INDIA AND EAST PAKISTAN, 1921/22 - 1966/67^a

Period	Acreage (000 acres)	Yield (lbs./acre)	Output (000 metric tons)	Jute/Rice Price Ratio ^b
Undivided British India:				
1921/22-25/26	2398	1154	1730	136
1926/27-30/31	3454	1245	2479	152
1931/32-35/36	2275	1275	1671	105
1936/37-39/40	3025	1156	1984	140
East Pakistan (Pre-Partition):				
1936/37-40/41	2952	1198	1349	147
1941/42-45/46	1803	1234	1008	102
East Pakistan (Post-Partition):				
1946/47-50/51	1750	1188	1057	109
1951/52-54/55	1505	1464	994	87
1955/56-59/60	1443	1544	1095	71
1960/61-62/63	1716	1344	1065	89

	(000 acres)	(mounds/acre)	(000 tons)	
1959/60-62/63	1669	17.0	1039	140 ^c
1963/64-66/67	1904	15.4	1070	--
1959/60	1375	19.6	992	79
1960/61	1518	14.3	796	178
1961/62	2061	16.4	1244	164
1962/63	1723	17.8	1125	--
1963/64	1700	16.8	1049	--
1964/65	1660	15.6	951	--
1965/66	2090	14.8	1136	--
1966/67	2165	14.4	1143	--

^aAnnual averages for period indicated.

^bThe ratio of average harvest price of jute to average harvest price of rice multiplied by 100.

^cThree-year average for 1959/60-1961/62 only.

TABLE XIX (Continued)

Sources: For undivided British India and East Pakistan up to 1962/63, A. K. M. Ghulam Rabbani, "Economic Determinants of Jute Production in India and Pakistan," Pakistan Development Review, V, No. 2 (Summer 1965), pp. 224-225, Tables XI and XII; for the 1960's, jute acreage, yield, and output data are from Government of Pakistan, Central Statistical Office, 20 Years of Pakistan in Statistics 1947-1967, p. 52, Table 13.7; and relative price data are from S. M. Hussain, "A Note on Farmer Response to Price in East Pakistan," Pakistan Development Review, IV, No. 1 (Spring 1964), p. 105, Table A-II.

and the price of jute relative to rice in undivided British India as well as in East Pakistan for a period covering approximately half a century. From the examination of the table, it is clear that the trend in jute acreage followed the trend in jute/rice price ratio in undivided British India. Because of no discernible trend, upward or downward, in yield, jute production also followed closely the long-term behavior of the relative price of jute. The same relationship is also observed in East Pakistan.

There has been a long-term decline in jute acreage in Pakistan at least up to 1959/60. The decline is found to be due mainly to the long-term fall in the price of jute relative to the price of rice. Both acreage and relative price reached a lowest level during 1955/56 - 1959/60 (Table XIX). The decline in the jute/rice price ratio in East Pakistan has been due to a sharp increase in the price of rice, which rose rapidly during World War II and again more than doubled between 1954/55 and 1957/58,²¹ when rice production lagged far behind the rapid population growth, thus causing a severe food shortage in the country. Table XX provides some relevant data on foodgrains position and population growth in Pakistan. In the face of a slow growth in the production of rice and other foodgrains, population expanded by almost 30 per cent between 1948 and 1961, with an average annual growth rate of 2.3 per cent (column 3 in Table XX). Under the circumstances, increased reliance was placed on food imports; annual net foodgrain imports amounted to more than 4 per cent of domestic production between 1952/53 and 1957/58 and increased steadily thereafter. Prices of foodgrains in

²¹Rabbani, p. 224.

TABLE XX

INDICES OF FOODGRAIN PRODUCTION AND POPULATION GROWTH
PAKISTAN, 1948/49 - 1964/65

Year	Indices (1948/49=100)			Net Imports(+) of Foodgrains	
	All Food-grains ^a (1)	Rice ^b (2)	Popu-lation ^c (3)	Quantity in 000 tons (4)	Percent of Total Foodgrain Production (5)
1948/49	100.0	100.0	100.0	162	1.2
49/50	97.4	96.1	102.3	11	0.1
50/51	97.7	95.7	104.7	(-) 325	(-) 2.4
51/52	86.0	91.7	107.0	(-) 73	(-) 6.2
52/53	84.5	95.6	109.5	809	7.0
53/54	103.5	107.5	112.1	621	4.4
54/55	93.5	98.9	114.7	(-) 205	(-) 1.6
55/56	86.3	83.2	117.3	32	0.3
56/57	101.6	106.7	120.0	1248	9.0
57/58	95.9	99.0	122.7	1359	10.4
58/59	95.2	90.2	125.6	705	5.4
59/60	106.7	110.5	128.4	1242	8.6
60/61	113.2	124.1	131.8	1623	10.5
61/62	116.2	123.4	135.2	952	6.0
62/63	112.0	113.8	138.7	1670	11.0
63/64	124.8	136.3	142.3	1551	9.1
64/65	129.3	134.7	146.0	1590	9.0

^aFoodgrains include rice, wheat, barley, maize, bajra, and jowar, for which rice accounts for over 63 per cent on average.

^bRice production in East Pakistan only, which accounts for more than 90 per cent of total production of rice in Pakistan.

^cThe size of population stood at 77 million in 1948/49 and 112.4 million in 1964/65.

Sources: Compiled and computed from Government of Pakistan, Ministry of Finance, Pakistan Economic Survey 1968/69, Statistical Section, p. 10, Table No. 4 for columns (1), (3), (4), and (5); CSO, 20 Years of Pakistan in Statistics 1947-1967, p. 42, Table 3.7 for column (2).

general rose sharply during the period; the sharpest rise was recorded in the price of rice while wheat prices remained stable, owing to the relatively large scale of wheat imports under the U.S. PL 480 assistance program.²²

Since 1959/60, however, the price of rice has been kept from rising further because of increased imports of foodgrains and the exceptionally good harvests of rice in the subsequent years (Table XX). At the same time, the price of jute rose to an unprecedented record level in 1960/61 (Table XVII) when Pakistan's jute output fell in the face of the acute world-wide shortage of jute and the jute/rice price ratio rose with it, but declined the next year due to the subsequent decline in jute price (Table XVIII). From 1959/60 on, however, the long-term decline in the relative price of jute seems to have stopped.

The long-term decline in jute acreage observed in Pakistan up to 1959/60 was due to the long-term decline in the jute/rice price ratio, which was in turn influenced by the production of rice, population growth, and the behavior of rice price. The decline in jute production, although it moved closely with the long-term behavior of the jute/rice price ratio, was less pronounced than in the jute acreage because of the offsetting effects of yield rate on jute output to some extent.

²²In 1957/58 - 1959/60, for instance, wholesale rice prices rose by 53.8 per cent in West Pakistan and 34.3 per cent in East Pakistan over the period 1951-52 - 1953/54; during the same period wheat prices increased by 13.7 per cent and 4.7 per cent, respectively, in East and West Pakistan. See United Nations, ECAFE, "Economic Development and the Role of the Agricultural Sector," Economic Survey of Asia and the Far East 1964 (Bangkok: United Nations, 1965), pp. 131-133.

In conclusion, the severe fluctuations in jute prices cannot be said to have affected adversely the long-term trend in jute acreage and output. Rather, the production and price of rice has been, and is likely to continue to be, the main limiting factor in the long-run production and thus export potential of jute unless there is substantial improvement in yield rate of jute.

Trend in Production of Cotton

In the case of cotton, too, price uncertainty arising from the year-to-year fluctuations was not the main factor responsible for the long-term decline in the acreage of cotton relative to that of competing crops observed in West Pakistan during 1950-1963. After the Korean War commodity boom, the period of stagnation in cotton production in Pakistan coincided with a decline in the relative price of cotton. Between 1952/53 and 1959/60, cotton acreage failed to increase while total area under crops in West Pakistan expanded by almost 20 per cent. At the same time, the acreage of the competing kharif crops²³ such as sugarcane, rice, and maize, recorded sizable expansion at the expense of cotton. Table XXI presents data related to this change in the cropping pattern in West Pakistan, which is reflected in the long-term decline in the ratio of cotton acreage to the competing kharif crops (column 5 in Table XXI).

It is believed and argued that such change in the cropping patterns, i.e., shifting away from cotton to other crops, has been and is

²³Summer crops cultivated on irrigated land, which include sugarcane, rice, maize, jowar, and corn.

TABLE XXI

AREA AND PRICE OF COTTON AND COMPETING KHARIF CROPS,
WEST PAKISTAN, 1949/50 - 1962/63

Period	Price Indices			Price Ratio (4)=(2)÷(3)	Area Ratio (5)
	Cotton Exports ^a (1)	Cotton ^b (2)	Competing Kharif Crops ^b (3)		
1950/51-54/55	119.5	115.6	104.3	113.7	94.2
1955/56-58/59	101.3	106.0	118.2	90.4	95.5
1959/60-62/63	97.0	115.8	146.0	80.5	82.6
1949/50	94.2	97.6	78.2	124.8	--
1950/51	179.3	151.1	88.8	170.1	90.7
1951/52	139.1	153.6	117.9	130.6	111.9
1952/53	87.8	82.0	121.1	67.7	105.9
1953/54	96.1	92.2	106.1	86.9	73.0
1954/55	95.2	99.3	87.6	113.4	89.4
1955/56	108.9	108.5	106.3	102.1	101.5
1956/57	113.4	119.1	138.1	86.2	98.3
1957/58	96.1	108.0	130.8	82.6	97.7
1958/59	86.9	88.4	97.6	90.6	84.5
1959/60	93.3	112.7	149.0	75.6	86.1
1960/61	106.1	121.1	161.7	74.9	83.3
1961/62	97.0	119.6	159.1	75.2	82.7
1962/63	91.5	109.9	114.3	96.2	78.4
Instability Index, I ₂ ^c	14.6	14.2	16.3	17.1	9.5

^aUnit value of raw cotton exports with 1962/63 original base switched to 1953/54-1955/56=100.

^bIndices of average prices received by the growers of cotton and competing kharif crops, 1953/54-1955/56=100.

^cAverage annual fluctuation in per cent for the period as measured by the United Nations instability index, I₂.

Sources: Column (1) from IMF, International Financial Statistics, 1971 Supplement, pp. 198-199; columns (2), (3), and (4) from Ghulam Mohammad, "Some Physical and Economic Determinants of Cotton Production in West Pakistan," Pakistan Development Review, III, No. 4 (Winter 1963), p. 508, Table VI.

undesirable, for it involves a net loss in terms of the value of agricultural production per acre of land as well as in terms of foreign exchange earnings.²⁴ Furthermore, shift of land to rice is particularly undesirable because it raises the water table in cotton-growing areas, making it more difficult to grow cotton--the second important cash crop for export after jute, on which depends a continuous growth of the import-substituting cotton textile industry. The stagnant cotton production, coupled with a rapid domestic mill consumption of raw cotton, was in fact largely responsible for the poor performance of Pakistan's exports between 1954 and 1958 despite the devaluation of the Pakistan rupee in 1955.

To what extent, then, can we say that price instability contributed to this undesirable change in the cropping pattern in West Pakistan? Probably none. Export price of cotton fluctuated annually by 15 per cent, and the harvest price of cotton also fluctuated by more or less the same magnitude during 1950-1963. Here again, as in the case of jute and rice in East Pakistan, it is the relative price of cotton that is important in making a choice between cotton and other kharif crops. Compared to the case of jute and rice, the competition between them for productive resources, land in particular, is more limited as there is a certain amount of geographical specialization because of the ground water table requirements for growing these crops. Nevertheless, the responsiveness of the cotton farmers to the relative price changes has been well established statistically. The cotton acreage response to

²⁴For a discussion of the effects of changes in the cropping pattern on the value of agricultural production and foreign exchange earnings, see Mohammad, pp. 510-513.

the price ratio of cotton and competing kharif crops was found to be 0.41 by Falcon²⁵ and around 0.5 by Mohammad,²⁶ which are believed to be "quite remarkable in light of similar studies for other countries."²⁷ The area response to fluctuations in the price ratio of cotton vis-a-vis competing kharif crops in the previous season can also be seen in Chart 7.

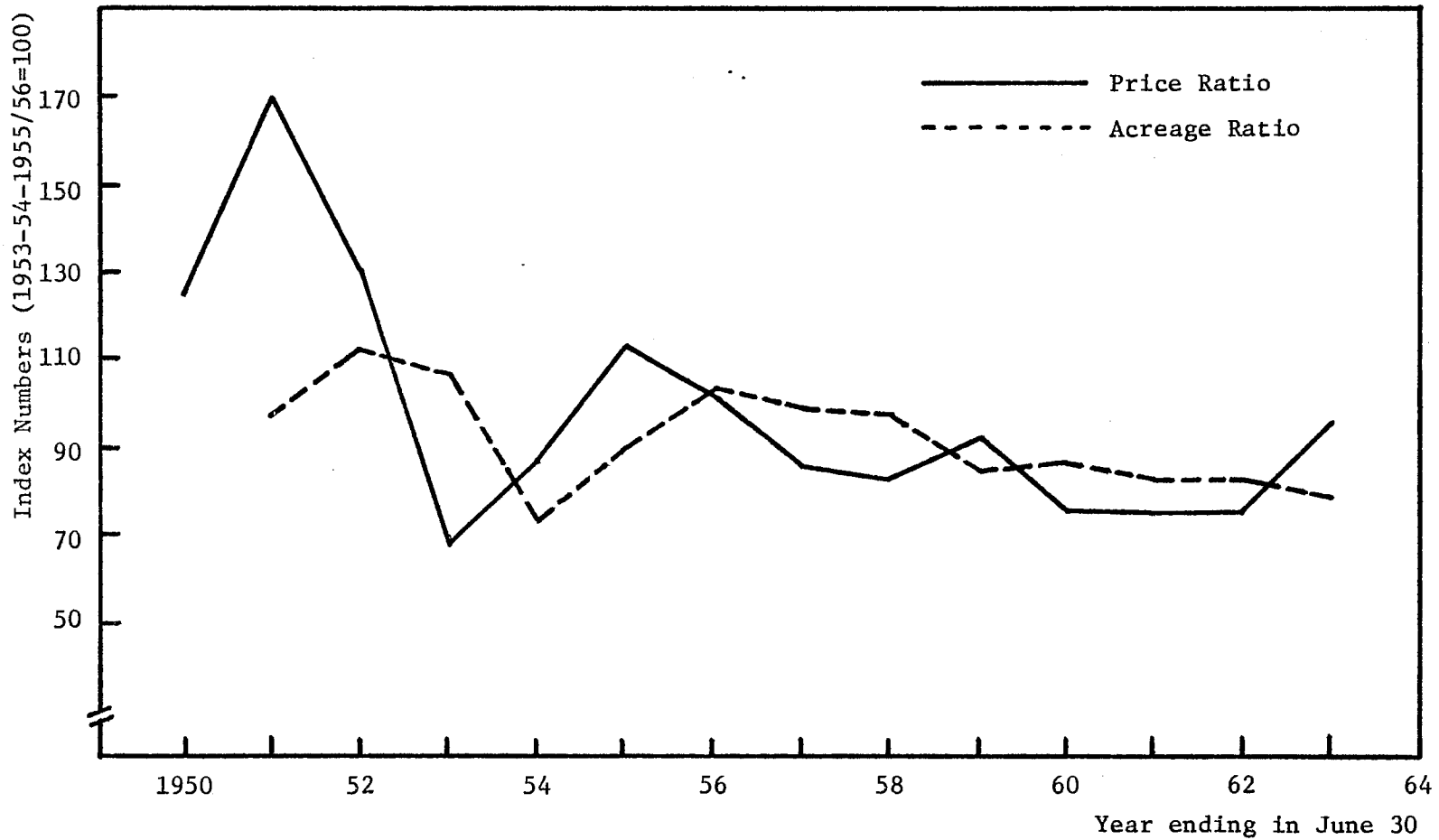
As can be observed in Table XXI and Chart 7, the long-term decline in the cotton acreage relative to competing kharif crops was due to the similar decline in the price of cotton relative to other crops, approximately 40 per cent from 1949/50 to 1961/62. This decline in the relative price of cotton was due in part to the fall in the world market price of cotton in the wake of recession in world commodity markets in the latter part of the 1950's, and partly to the increase in the prices of competing crops, particularly sugarcane and rice in Pakistan. Domestic prices of sugar and rice rose largely because of government policy as well as foodgrain availability. The impact of foodgrain availability on the price of rice was discussed earlier in dealing with jute.

Prices of sugar and rice were boosted by the restrictions on sugar imports and by placing fine quality rice under the Export Bonus Scheme in an effort to promote minor exports as part of the export promotion policy undertaken by the new Government in 1959. Last, but not least,

²⁵Walter P. Falcon, "Farmer Response to Price in a Subsistence Economy: The Case of West Pakistan," American Economic Review, LIV (May 1964), p. 585.

²⁶Mohammad, p. 509.

²⁷Falcon, p. 585.



Source: Table XXI.

Chart 7. Relationship between Price Ratio and Acreage Ratio of Cotton to Competing Kharif Crops, Pakistan, 1948/49 - 1962/63

the export duty on raw cotton also contributed to the deterioration in the relative domestic price of cotton. The export duty imposed on raw cotton during the period under review amounted to 20-30 per cent of the unit value of cotton exports.²⁸ Since Pakistan is a marginal supplier of cotton in world market, the foreign demand for her exports is highly elastic. Thus, little opportunity exists for shifting the burden of export tax to the foreign buyers; the burden shifts back to the domestic producers and traders.²⁹

All these factors have combined to depress the relative price of cotton, making the production of cotton less profitable, and thus encouraging the allocation of land to competing kharif crops. Added to this were some physical factors such as waterlogging, which has also influenced directly the relative decline in cotton acreage.³⁰

Summary

The long-term behavior of jute and cotton production in Pakistan was governed primarily by the trend in the price of export crops

²⁸Richard Mallon, "Export Policy in Pakistan," Pakistan Development Review, VI, No. 1 (Spring 1966), p. 69.

²⁹If, on the other hand, the taxing country accounts for a large portion of total world production, as in the case of raw jute in Pakistan, a greater opportunity exists for the tax to be shifted forward to foreign buyers through the rise in the world market price. However, such forward shifting is likely to be limited by the possibility that a price rise will stimulate production elsewhere or induce the introduction of substitutes for the taxed commodity. With rare exceptions, export taxes should be regarded as "taxes on their own producers and traders rather than as a means of taxing foreigners." See R. Goode, G. E. Lent, and P. D. Ojha, "Role of Export Taxes in Developing Countries," IMF Staff Papers, XIII, No. 3 (November 1966), pp. 169-184.

³⁰Mohammad, pp. 491-506.

relative to the price of other subsistence and cash crops that compete for the same productive resources. The trend in the relative price was in turn determined by factors other than price instability of an export crop per se, such as structural factors and government policy.

One may still argue that more jute or cotton would be grown in the long-run were there little or no price instability. In light of Pakistan's experience, however, the price instability in cash crops for export cannot be said to have been a major deterrent to the long-term behavior of their production.³¹ The effect of the severe price fluctuations on the current welfare of the producers of export commodities may have been serious, however.

³¹For a similar conclusion, see A. I. MacBean, Export Instability and Economic Development (Cambridge, Mass.: Harvard University Press, 1966), pp. 194-195.

CHAPTER VIII

DOMESTIC CONSEQUENCES OF EXPORT INSTABILITY:

SOME MACROECONOMIC ASPECTS

Introduction

In the literature, many of the hypotheses concerning the potentially harmful effects of export instability are discussed in terms of a macroeconomic transmission mechanism by which the external disturbances originating from the export sector are supposedly transmitted to the domestic economy. It is the purpose of this chapter to determine to what extent and in what manner the instability arising from the export sector has transmitted its impact to the domestic economy of Pakistan.

In the absence of effective counteracting domestic policies, sharp fluctuations in a country's export earnings are expected to give rise to other kinds of instability in the domestic economic variables:

(1) instability in incomes of those who produce for export; (2) instability in general money incomes and prices; (3) instability in the government revenue and expenditure, particularly when the taxes on foreign trade account for a relatively large proportion of total revenue; (4) instability in external purchasing power and ensuing instability in imports; and (5) as a consequence of these, instability in real expenditures, domestic fixed capital formation in particular, when the

import content of investment is high. Thus export instability, it has been argued, is detrimental to the stability and growth of the domestic economy.¹

Behind this broad generalization about the response mechanism of the domestic economy to export fluctuations lie a large number of alternative hypotheses regarding which domestic variables are affected and by what manner the alleged adverse effects might operate. For our purpose of analysis, however, the broad response channels described above may be divided into two categories: the relationships represented by (1), (2), and (3) concentrate more on the stability aspects and ultimately on development; and those in (4) and (5) on the growth aspects of the export-induced instability of a country's capacity to import, which will be the subject of the following chapter.

In the section that follows, fluctuations in national income in Pakistan will be examined in relation to export fluctuations. This is followed by an assessment of the impact on the government budget of export instability through export taxes. The final section examines the relationship between export fluctuations and the internal price movements.

The basic methodology to be used in the present chapter is to relate the trend-adjusted year-to-year fluctuations in merchandise export earnings to those of the domestic economic variables by using correlation and regression techniques. Emphasis should be placed on the importance of isolating the short-term fluctuations from the long-term

¹See Chapter II of the present study for a summary discussion of the pros and cons about the effects of export instability on the stability and growth of the domestic economy.

growth factors reflected in the time trend in the variables concerned before they are related. A priori, there is no reason to believe that the impact of export instability would necessarily be commensurate with its magnitudes: the effects can either be mitigated or accentuated by over-all developments in the rest of the economy and the government policies as well in a specific year or period.² Accordingly, efforts will be made to account for those specific factors that might have mitigated or accentuated the potential impact of external disturbances. A case study approach enables one to achieve such an objective, which is precisely the goal that the present study hopes to achieve.

Export Instability and Fluctuations in National Income

The expectation that the year-to-year fluctuations in export earnings tend to impart similar fluctuations in national income, particularly when export income accounts for a relatively large portion of national income, is of course based on the Keynesian-type multiplier theory for an open economy. Through the combined multiplier and accelerator effects on the domestic income, it is argued, export instability tends to destabilize the domestic economy with inflationary and deflationary consequences, unless offset by appropriate monetary and fiscal policies. From this, one moves one step forward to make further inference to the possible (indirect) effects that export instability

²A point which, to some extent, has already been illustrated in Chapter VII in connection with a discussion of the impact of export price instability on the long-term trend in the production of export crops.

might ultimately have on the other key domestic variables such as savings and investment. Whether more will be saved from the stable income than from the unstable income is an unsettled question. However, to the extent that the marginal propensity to save is larger than the average propensity, the domestic savings available for investment will fluctuate proportionally more than fluctuations in national income. If so, the export-induced instability in domestic income would tend to make savings and investment much more unstable; and such instability could be expected to have harmful effects on the time path of capital formation and to lower the efficiency of investment.³

It should be noted that the argument is based on the following implicit assumptions: (1) a country's exports account for a relatively large proportion of its national income--the so-called "foreign-trade orientedness" usually measured in terms of either the ratio of foreign trade (exports plus imports) to GNP or the ratio of exports to GNP; (2) either no offsetting government policies are undertaken (due to political or institutional reasons) or such policies, if undertaken, seldom bring about the desired effects (due to a lack of efficient monetary and/or fiscal policy techniques or the general rigidity inherent in the economy of developing countries, or the combination of both); and (3) the marginal propensity to save is greater than the average propensity to save. Generally, the stability of domestic income may become more sensitive to export fluctuations if the first two conditions prevail. The export-induced instability in national

³For a more detailed discussion of this argument, see A. I. MacBean, Export Instability and Economic Development (Cambridge, Mass.: Harvard University Press, 1966), p. 29.

income, however, is expected to cause a similar instability in domestic savings when the consumption function (and therefore savings function) is such that condition (3) is also met.

Some comments on each of these conditions are now in order:

First, the susceptibility of the domestic income to export fluctuations may tend to be greater, cet. par., if a country's export/GNP ratio is larger.⁴ But this is not the same thing as saying that the country's export multiplier tends to be larger as the export/GNP ratio is larger.⁵ The foreign trade multiplier may be small if there exist a number of leakages, e.g., high marginal propensities to save and import, marginal rate of taxation, and marginal rate of factor incomes

⁴Theoretically, it can be demonstrated that the elasticity of domestic income with respect to exports tends to be greater as the ratio of exports to income is greater. Assuming that there are only two leakages represented by the marginal propensities to save (s) and import (m) and that the marginal propensities and the average propensities are equal, the simple foreign trade multiplier, k_f , is:

$$k_f = \frac{dy}{dE} = \frac{1}{s + m} \quad (1)$$

where Y is national income and E is export earnings. Then, the elasticity of domestic income with respect to exports, e_{yx} , is given by:

$$e_{yx} = \frac{dy}{dE} \cdot \frac{E}{Y} = \frac{1}{s + m} \cdot \frac{E}{Y} = \frac{E}{sY + mY} \quad (2)$$

If, initially, trade balance is assumed so that $E = M$, then:

$$e_{yx} = \frac{E}{sY + mY} = \frac{E}{S + E} = \frac{1}{(S/E) + 1} \quad (3)$$

Thus, the lower the savings/exports ratio, S/E , the higher the response of income to exports or e_{yx} . However, $S/E = (S/Y)/(E/Y)$. Therefore, the larger the exports/income ratio, the lower the savings/exports ratio, which makes the value of e_{yx} larger. See United Nations, ECAFE, Economic Survey of Asia and Far East 1968, pp. 21-22.

⁵The response of domestic income to changes in export earnings, $e_{yx} = (dY/dE) \cdot (E/Y)$, is the product of the export-trade multiplier and the exports/income ratio. Thus, even if E/Y is large, e_{yx} becomes small when dY/dE is small.

paid abroad, which are all determined by the institutional factors of a particular country. In the face of high marginal leakages associated with a given change in export earnings, the impact of the latter on income will be greatly reduced.

Second, many developing countries in general may be lacking monetary and fiscal policy techniques for stabilization. However, the possible effects of government intervention through the operation of marketing boards, buffer stock policies, and the manipulation of export duty rates should not be ignored. Their effects may be neutral or may accentuate or mitigate the impact of export instability.

Third, once the export-induced income changes are found to be strong, then the domestic savings can be affected by export instability if the marginal propensity to save is greater than the average propensity to save, which is essentially an empirical question. The expectation that the MPS tends to be larger than the APS in many developing countries seems to have gained some empirical support; many exceptions, however, appear to exist.⁶ As argued by Maizels,⁷ domestic savings may

⁶The question of whether the marginal propensity to save is greater (smaller) than the average propensity to save is equivalent to the question of whether the rate of saving rises (falls) as income increases, i.e., whether the savings function intersects the horizontal axis measuring income or the vertical axis that measures savings. Empirically, therefore, the question is equivalent to that of whether a statistically fitted savings function carries a negative or positive constant term. A negative constant term in the estimated savings function was obtained for 31 out of 44 countries studied by D. W. Johnson and J. S. Y. Chiu, "The Saving-Income Relations in Underdeveloped and Developed Countries," Economic Journal, LXXVIII (June 1968), pp. 321-333, for 21 to 24 out of 28 countries studied by J. K. Lee, "Exports and the Propensity to Save in L.D.C.'s," Economic Journal, LXXXI (June 1971), pp. 341-351.

⁷Alfred Maizels, Exports and Economic Growth of Developing Countries (Cambridge: Cambridge University Press, 1968), pp. 57-58, 93-96.

be affected by the variations in export earnings directly rather than indirectly through the export-induced income changes, i.e., the foreign-trade multiplier effect as suggested by the modern income theory for an open economy. For the export-induced instability in income to affect savings, however, conditions (1) and (2) must hold at the same time.

Pakistan hardly meets the first condition to begin with. A priori, therefore, the impact of export fluctuations on national income is likely to be small, largely because of the small exports/income ratio. During the period 1948-67, export incomes in Pakistan averaged annually at best 6 per cent of her GNP. The exports/income or foreign-trade/income ratio is widely used as a measure of the degree of foreign trade involvement of a country although it is a poor measure of the relative importance of the export or foreign trade sector in the economy. In terms of the foreign-trade/income ratio, Pakistan's is one of the smallest in the world; as of 1957, among 80 countries studied by Coppock, Pakistan stood at 74th in rank with her foreign trade ratio being 12 per cent.⁸ The ratio of exports to GNP even appears to have been declining over the years; from a record high of 12.3 per cent in the Korean War export boom it has progressively declined to only 5.2 per cent in 1966/67 (Table XXII).

Table XXII shows the time series data for merchandise export earnings and GNP at factor cost in Pakistan as well as their fluctuations measured by different instability indices. While export earnings

⁸J. D. Coppock, International Economic Instability: The Experience after World War II (New York: McGraw-Hill Book Co., 1962), pp. 85-88 and p. 161, Table A-2.

TABLE XXII
 FLUCTUATIONS IN EXPORT EARNINGS AND NATIONAL INCOME,
 PAKISTAN, 1949/50 - 1966/67

Year	Export Earnings		GNP ^a		Relative Share of Exports in GNP
	Million Rupees	Annual Percent Change	Million Rupees	Annual Percent Change	
	(1)	(2)	(3)	(4)	(5)=(3)÷(1)
1949/50	1218	--	19893	--	6.1
50/51	2554	109.7	20740	4.3	12.3
51/52	2009	- 21.3	22500	8.5	8.9
52/53	1510	- 24.8	21802	- 3.1	6.9
53/54	1286	- 14.8	21836	0.2	5.9
54/55	1223	- 4.9	21147	- 3.2	5.8
55/56	1784	45.9	22658	7.2	7.9
56/57	1608	- 9.9	26593	17.4	6.1
57/58	1422	- 11.6	28400	6.8	5.0
58/59	1325	- 6.8	28023	- 1.3	4.7
59/60	1843	39.1	31439	12.2	5.9
60/61	1799	- 2.4	34786	10.7	5.2
61/62	1843	2.5	36485	4.9	5.1
62/63	2247	21.9	38642	5.9	5.8
63/64	2299	2.3	41284	6.8	5.6
64/65	2408	4.7	45535	10.3	5.3
65/66	2718	12.9	49690	9.1	5.5
66/67	3006	10.6	58203	17.1	5.2

Instability Index^b:

I ₁	20.4	7.6
I ₂	15.1	6.9
I ₄	15.5	5.3

^aGross national product at factor cost in current prices.

^bI₁ = average annual percentage change disregarding signs; I₂ = United Nations measure of instability in per cent; I₄ = Massell version of average annual fluctuation after adjusting for trend.

Sources: Government of Pakistan, Central Statistical Office, 20 Years of Statistics in Pakistan 1947-1967, pp. 8-9, Table 1.3; p. 107, Table 6.1; Ministry of Finance, Pakistan Economic Survey 1968/69, Statistical Section, pp. 4-5, 90.

fluctuated severely during 1949/50 to 1966/67, GNP was markedly stable over the same period. The trend-adjusted measure of average instability (I_4) was 15.5 per cent for export earnings and only 5.3 per cent for GNP. The simple average annual percentage change (I_1) was measured at 20.4 per cent and 7.6 per cent, respectively, for exports and GNP.

A comparison of the timing, magnitudes, and direction of fluctuations in GNP and export earnings gives little association between the two. The index numbers of export earnings and GNP, both in current prices, are sketched in Chart 8 and the trend-adjusted year-to-year fluctuations in the two variables in Chart 9. The lack of association is clearly evident from the following results of the regression of annual fluctuations in money GNP on export earnings fluctuations:

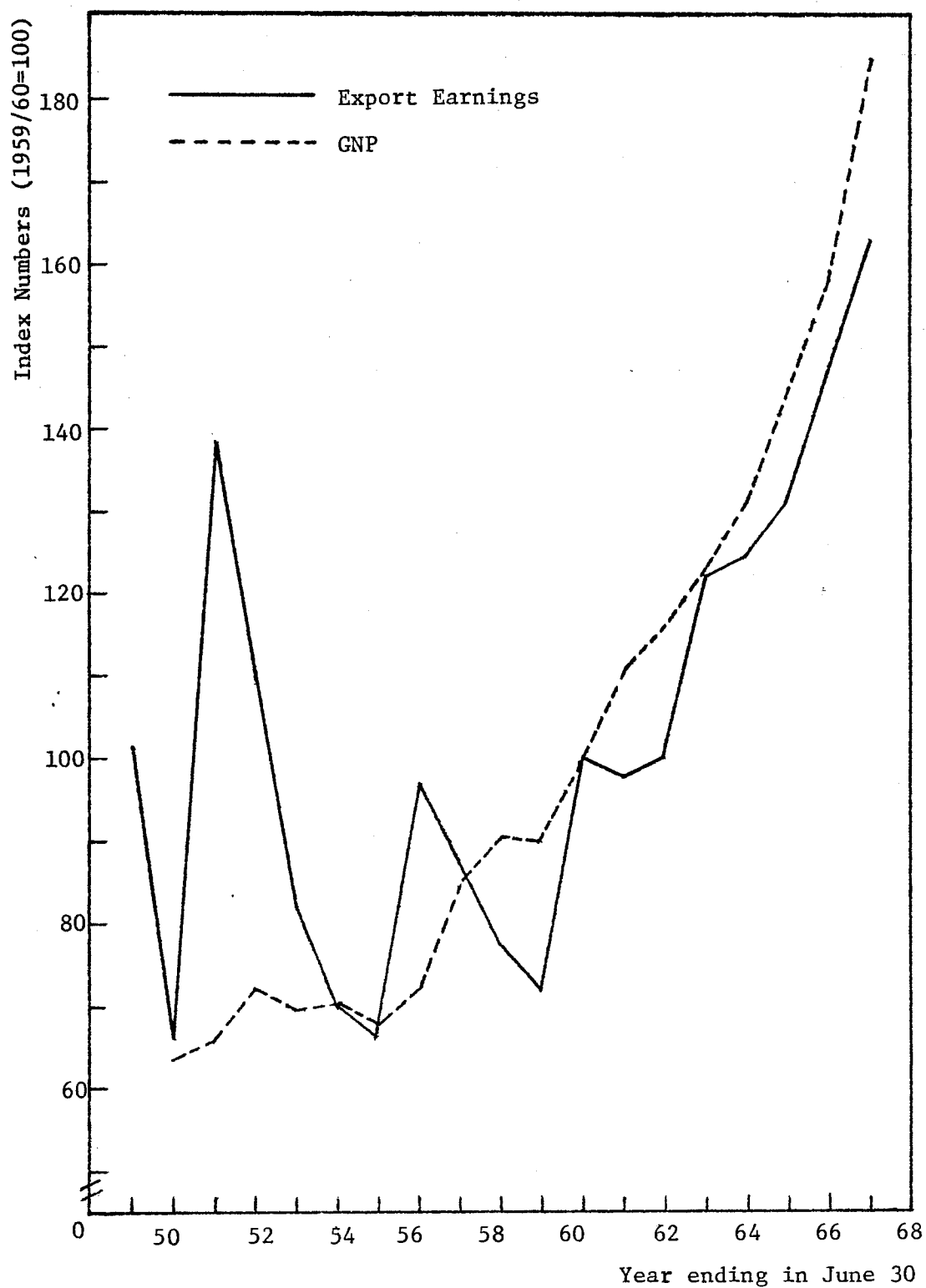
$$\begin{aligned} \dot{Y}_1 = -0.840 + 0.084 \dot{E}_1 ; & \quad R^2 = 0.064 & (8.1) \\ & \quad (0.083) \quad F = 1.022 \\ & \quad \quad \quad D.W. = 1.141 \end{aligned}$$

$$\begin{aligned} \dot{Y}_2 = 6.472 + 0.024 \dot{E}_2 ; & \quad R^2 = 0.016 & (8.2) \\ & \quad (0.049) \quad F = 0.239 \\ & \quad \quad \quad D.W. = 1.476 \end{aligned}$$

$$\begin{aligned} \Delta Y = 2145.869 + 1.024 \Delta E ; & \quad R^2 = 0.039 & (8.3) \\ & \quad (1.299) \quad F = 0.621 \\ & \quad \quad \quad D.W. = 0.899^9 \end{aligned}$$

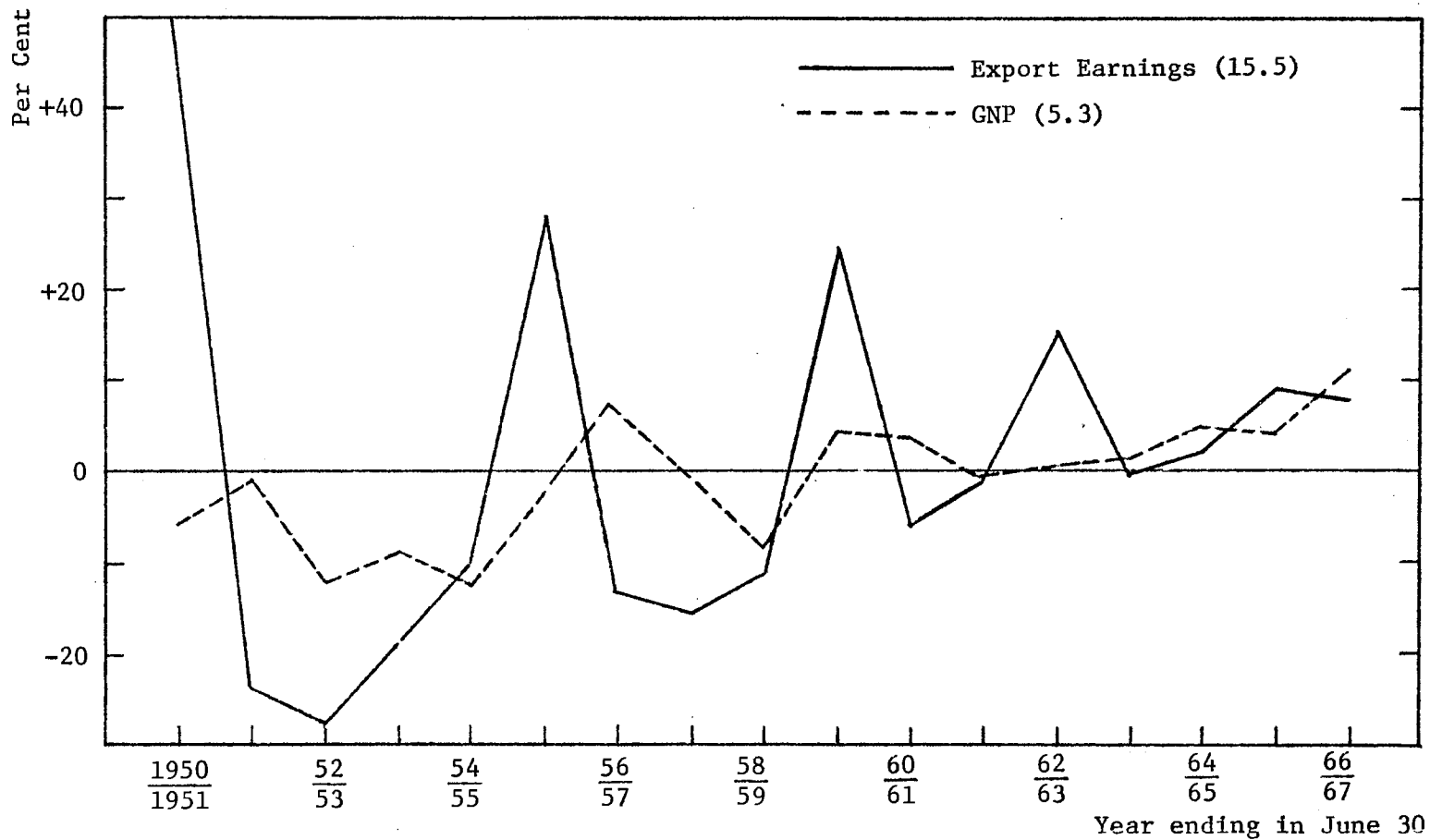
where \dot{Y} is GNP at factor cost in current prices, \dot{E} is merchandise export earnings in current prices, and subscripts 1 and 2 refer to the trend-adjusted annual fluctuations in per cent (I_4) and annual per cent changes without removing the time trend (I_1); and ΔY and ΔE are the

⁹The serial correlation between GNP and E apparently has not been reduced much by first-differencing. The null-hypothesis of no serial correlation can be rejected at the 5 per cent level since $D.W. = 0.899 < d_L = 1.01$ when $N = 17$, $K = 1$.



Source: Computed from Table XXII.

Chart 8. Index Numbers of Export Earnings and Gross National Product at Factor Cost, Pakistan, 1949/50-1966/67



^aTrend-adjusted annual fluctuations. Figures in parentheses show average annual fluctuation in per cent as measured by the instability index I_4 .

Source: Computed from Table XXII.

Chart 9. Annual Fluctuations in Export Earnings and Gross National Produce in Pakistan, 1949/50 - 1966/67^a

first differences in exports and GNP, respectively. Since we are primarily interested in isolating the short-term fluctuations from the time trend, the estimated relationship in the regression equation (8.1) should be the appropriate one to consider; only 6 per cent of the annual fluctuations in GNP is explained by export fluctuations, and the regression coefficient is not statistically significant although it carries the expected sign.

During the period under review, the economy of Pakistan has undergone substantial structural changes, the most noticeable one being a fast growth of the manufacturing sector that has helped reduce the share of national product from the agricultural sector. Table XXIII shows the components of GNP originating from the various sectors and their growth rates. The relative share of manufacturing rose from 6 to 11 per cent of GNP at factor cost (in 1959/60 constant prices) from 1949/50 to 1964/65, while that of agriculture declined from 60 to under 50 per cent of GNP over the same period. However, it may be safe to say that the economy is still predominantly agricultural. Therefore, it is not surprising that fluctuations in GNP have moved closely together with fluctuations in agricultural output. This is clearly shown in Chart 10 where the annual fluctuations in GNP and agricultural output after removing the time-trend are plotted. Furthermore, the instability indices for GNP and agricultural output during 1949/50 - 1966/67 turned out to be the same. The I_1 index (average annual percentage change ignoring the signs) was the same at 7.6 per cent for both GNP and agricultural output; the I_2 index (United Nations index of instability) was measured at 6.9 per cent, again resulting in the same magnitude for both; only in terms of the I_4 index (trend-corrected

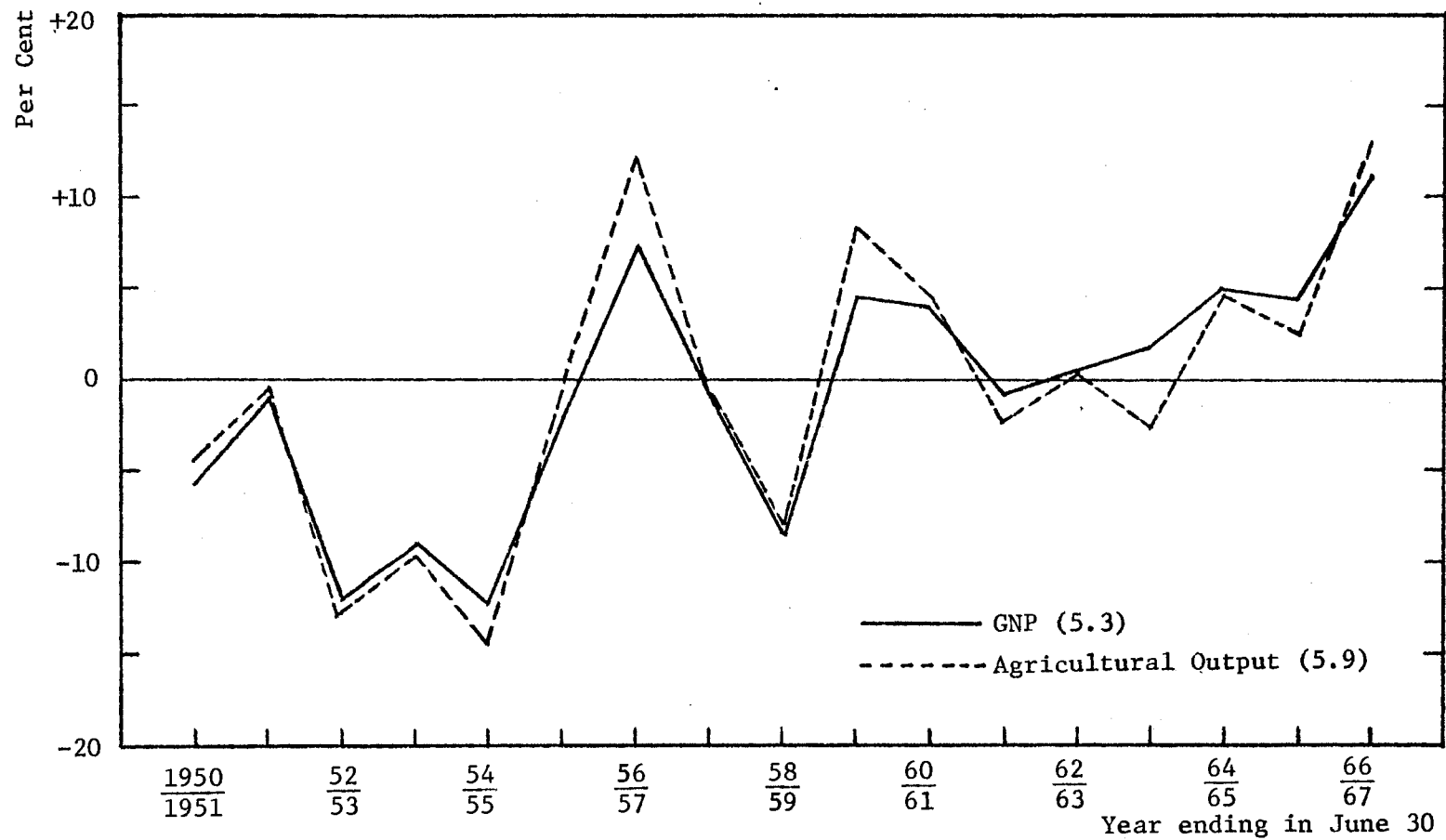
TABLE XXIII

SECTORAL ORIGIN OF GNP AND GROWTH RATES IN PAKISTAN,
1949/50 - 1964/65, AT 1959/60 FACTOR COST
(In Per Cent)

Period	Agri- culture	Manufac- turing	Other Activities	GNP	GNP Per Capita
Sectoral Origin of GNP:					
1949/50	60.0	5.9	34.2	100.0	311 ^a
1954/55	56.1	8.0	36.0	100.0	316 ^a
1959/60	53.3	9.3	37.4	100.0	318 ^a
1964/65	49.1	11.0	40.0	100.0	365 ^a
Growth Rates:					
1949/50-1954/55	1.3	9.7	2.5	2.6	0.2
1954/55-1959/60	1.4	6.4	2.7	2.4	0.0
1959/60-1964/65	3.5	11.9	5.5	5.3	2.7

^aPer capita real income in rupees.

Sources: S. R. Lewis, Jr., Pakistan: Industrialization and Trade Policies (London: Oxford University Press, 1970), pp. 8-9, Tables 1.1 and 1.2; Government of Pakistan, Ministry of Finance, Pakistan Economic Survey 1968/69, Statistical Section, pp. 2-3, Table No. 1.



^aSee note (a) in Chart 9.

Source: Computed from data sources indicated in Table XXII.

Chart 10. Annual Fluctuations in the Value of Agricultural Output and GNP in Pakistan, 1949/50 - 1966/67^a

average annual fluctuation) did agricultural output (5.9 per cent) fluctuate slightly more than GNP (5.3 per cent).

In short, the severe year-to-year fluctuations in Pakistan's export earnings have not caused similar fluctuations in her domestic income, one obvious reason being that export income has accounted for a very small share in GNP. With the economy being predominantly agricultural, GNP fluctuations (apart from its growth) have closely followed the fluctuations in agricultural output, which in turn are heavily conditioned by natural hazards such as variable weather conditions, flood, and drought. Moreover, it is estimated that nearly 30 per cent of national product originates from the subsistence sector and is consumed directly on farms without reaching the market place.¹⁰ The presence of a sizable subsistence sector tends to minimize the impact on total GNP of the instability arising from the export sector, which has been the center of the monetized sector in the economy of Pakistan. As will be discussed later, the impact of export instability on the monetized sector appears to have been fairly strong in influencing the behavior of internal prices especially in the 1950's when the domestic industries were still in the early stage of growth.

Export Instability, Export Taxes, Government

Revenue and Expenditure

Like many primary-product exporting countries, the foreign trade sector has provided the most important source of government revenue in

¹⁰Parvez Hasan, Deficit Financing and Capital Formation: The Pakistan Experience 1951-59 (Karachi: Institute of Development Economics, 1962), p. 47.

Pakistan. Because of the strategic role played by the export sector in providing foreign exchange needed for importing capital goods and other raw materials for developmental efforts and because of the heavy reliance on foreign trade taxes as a major source of government revenue, the economy of Pakistan has sometimes been called a foreign-trade oriented economy despite its low foreign-trade/GNP ratio.¹¹

Tax Structure

Table XXIV presents the per cent distribution of major tax-heads in the central government's total tax revenue in Pakistan during 1948/49 - 1966/67. Customs duties, central excise, income and corporate taxes, and sales tax are the four major sources of tax revenue in Pakistan; these taxes are collected by the central government and shared with the provincial governments of East and West Pakistan. Customs duties are the largest source and accounted for far more than the three other tax-heads combined up to 1954/55. Their share has declined progressively from 57 per cent in 1950-55 to 40 per cent in 1961-65. This decline is due to the shrinkage in export taxes and the growth of other taxes as a result of industrial development. The highest rate of growth has been recorded in central excises followed by sales tax. The share of income and corporate taxes went up during 1955-60 but declined in the subsequent years (Table XXIV) largely because of the liberal tax incentives given to industry.¹²

¹¹See, for instance, Hasan, pp. 6-7.

¹²J. R. Andrus and A. F. Mohammed, Trade, Finance, and Development in Pakistan (Stanford: Stanford University Press, 1966), pp. 213-214.

TABLE XXIV

TAX STRUCTURE IN PAKISTAN: RELATIVE SHARE OF MAJOR TAX HEADS
1948/49 - 1966/67
(In Per Cent)

Revenue Heads	Period						
	1948/49	1949/50	1950/51 to 1954/55 ^a	1955/56 to 1959/60 ^a	1960/61 to 1964/65 ^a	1965/66	1966/67
Total Tax Revenue	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Customs	61.0	58.9	57.2	42.4	40.1	41.3	38.2
Export Duties		27.7	25.1	12.8	5.5 ^b		
Import Duties		31.2	32.0	29.6	34.6 ^b		
Central Excise	9.8	7.2	9.4	16.8	25.8	32.3	38.5
Income and Corporate Tax	12.2	16.1	17.0	22.8	17.7	11.0	8.2
Sales Tax	7.8	12.4	10.4	12.6	14.0	13.6	13.5
Other	9.1	5.5	6.0	5.3	2.1	1.8	1.7
<hr/>							
Total Tax Revenue ^c	80.7	81.1	81.4	72.9	74.1	69.7	73.2
Non-Tax Revenue ^c	19.3	18.9	18.6	27.1	25.9	30.3	26.8
Total Revenue	100.0	100.0	100.0	100.0	100.0	100.0	100.0

^aFive-year average for period indicated.

^bThree-year average for 1960/61 - 1962/63.

^cPercent share in total government revenue.

Sources: Compiled and computed from S. R. Lewis, Jr., and S. K. Qureshi, "The Structure of Revenue from Indirect Taxes in Pakistan," Pakistan Development Review, IV, No. 3 (Autumn 1964), p. 526, Table A-8; Nurul Islam, A Short-Term Model for Pakistan Economy: An Econometric Analysis (London: Oxford University Press, 1965), p. 118, Table 12; Government of Pakistan, CSO, 20 Years of Pakistan in Statistics 1947-1967 (Karachi, 1968), pp. 278-281, Tables 14.1 and 14.2; and Pakistan Economic Survey 1967-68, pp. 42-45, Tables 22 and 23.

Effect of Export Instability on Export Taxes and Total Tax Revenue

If a substantial portion of government tax revenue is derived from export taxes, the fluctuations in export earnings may be expected to lead to domestic instability by destabilizing tax revenue and, ultimately, government expenditures. If export taxes are steeply graduated, export tax revenue will tend to fluctuate more than export earnings, resulting in a greater instability in total tax revenue. At this point, however, it should be kept in mind that the export-induced instability in tax revenue can affect the domestic economy only if the government allows it to do so without manipulating its budget. As a matter of fact, in a country where the dependence of tax revenue on the export sector is high, export duties can provide an effective countercyclical fiscal measure for stabilization if judiciously used.¹³

During the period 1950/51 - 1962/63,¹⁴ revenue from export taxes amounted to 16 per cent of total tax revenue per year on the average; in the export boom years of 1950/51 and 1951/52, the export sector alone provided a record high 34 per cent. The impact of export instability on the government revenue via export taxes, therefore, may have been substantial. Our analysis, however, gives no support for such an expectation; export instability has not been transmitted to the government revenue, let alone government expenditures.

¹³S. Kanesathasan, "Export Instability and Countercyclical Fiscal Policy in Underdeveloped Export Economies: A Case Study of Ceylon Since 1948," IMF Staff Papers, VII, No. 1 (April 1959), pp. 47-74.

¹⁴For which period data on export taxes were available to this investigator.

As was expected, export tax revenue fluctuated severely during 1950/51 - 1962/63; the value of the trend-adjusted average annual fluctuation (I_4) amounted to 22 per cent compared to 15 per cent for export earnings over the same period. Table XXV contains a summary of the computed instability indices for export taxes and other related variables, and Table XXVI analyzes the relative contributions¹⁵ to instability in total tax revenue by major tax-heads. The trend-adjusted index was the highest at 22 per cent for export taxes, followed by import duties (19 per cent), minor taxes (18 per cent), central excise taxes (17 per cent), and sales taxes (16 per cent). Revenue from income and corporate taxes was most stable at 12 per cent.

The export-induced instability in the revenue from export duties appears to have had a minimal, if any, impact on the stability of total tax revenue during the period under review. Total tax revenue fluctuated annually by 11 per cent. The relative stability in total tax revenue indicates that the severe fluctuations in export tax revenue must have been smoothed out by the offsetting fluctuations in other tax revenues, particularly import duty revenue.

Although export taxes and import duties that make up the revenue from the foreign trade sector were the major source of instability in total tax revenue, each contributing 20 and 35 per cent (column 3, Table XXVI)--more than their per cent shares, 16 and 32 per cent (column 1, Table XXVI)--the net impact of their instability was neutralized because of the offsetting movements of the two. This is

¹⁵Instability indices weighted by the relative shares of major tax-heads in total tax revenue.

TABLE XXV

INSTABILITY IN EXPORT EARNINGS, EXPORT TAXES, TAX REVENUES,
AND GOVERNMENT EXPENDITURES, 1950/51 - 1962/63^a
(In Per Cent)

Variable	Average	Trend-
	Annual	adjusted
	Fluc-	Average
	tuation	Annual
		Fluc-
		tuation
	I_1	I_4
Export earnings (E)	17.2	14.7
Export earnings from raw jute and cotton (E_{jc})	17.9	16.7
Export taxes (T_e)	24.8	21.9
Import duties (T_m)	21.4	19.3
Customs ($T_c=T_e+T_m$)	17.2	15.9
Central excise (T_{ce})	20.8	16.9
Income and corporate taxes (T_y)	15.6	11.9
Sales tax (T_s)	23.5	15.9
Other taxes (T_o)	19.8	18.2
Total tax revenue ($T_x=T_c+T_{ce}+T_y+T_s+T_o$)	12.9	10.9
Other non-tax revenue (R_o)	16.2	13.8
Total government revenue ($R=T_x+R_o$)	12.2	10.2
Government expenditure on revenue account (G_r)	11.6	9.9
Development expenditures (G_d)	22.9	15.5
Government expenditures ($G=G_r+G_d$)	12.5	9.5

^aComputed from data sources in Tables XXII and XXIV.

TABLE XXVI
 RELATIVE CONTRIBUTIONS TO INSTABILITY IN TOTAL TAX REVENUE
 BY EXPORT TAXES AND OTHER TAXES,
 1950/51 - 1962/63^a
 (In Per Cent)

Major Heads of Taxes	Average Annual Share in Total Tax Revenue	Trend- Corrected Average Annual Fluctua- tion, I ₄	Relative Contri- bution to Instability in Total Tax Revenue
	(1)	(2)	(3)
Customs	47.5	15.9	
Export taxes	15.9	21.9	20.0
Import duties	31.6	19.3	35.1
Central excise	15.4	16.9	15.0
Income and corporate tax	19.8	11.9	13.6
Sales tax	12.3	15.9	11.2
Other tax heads	4.9	18.2	5.1
Total tax revenue	100.0 ^b	10.9	100.0 ^b

^aComputed from Tables XXIV and XXV.

^bTotals may not equal 100 due to rounding.

indicated by the fact that revenue from the combined customs duties was far less unstable, fluctuating annually by 16 per cent compared to 22 per cent and 19 per cent for export taxes and import duties separately (column 2, Table XXVI).

The tendency for import duty revenue to fluctuate in the opposite direction from export tax revenue seems to have served to minimize the impact of export tax instability. The collections from import duties vary largely according to the level and composition of imports given the duty rates and import restrictions. However, it is not unreasonable to expect imports to respond to the fluctuations in export earnings with some time-lag, which is found to be the case in Pakistan (to be discussed in some detail in Chapter IX). The likelihood is, then, that the import duty revenue may tend to fluctuate in the opposite direction from the export duty revenue.¹⁶

Perhaps more important, the relative importance of export taxes as a revenue source diminished markedly after 1957/58, which was no doubt an important factor responsible for little or no impact of export instability on government tax revenue. The per cent share of export taxes in total tax revenue declined from 39 per cent in 1950/51 to 13 per cent in 1955/56 - 1959/60 and to a meager 6 per cent in 1960/61 - 1962/63 (Table XXIV).

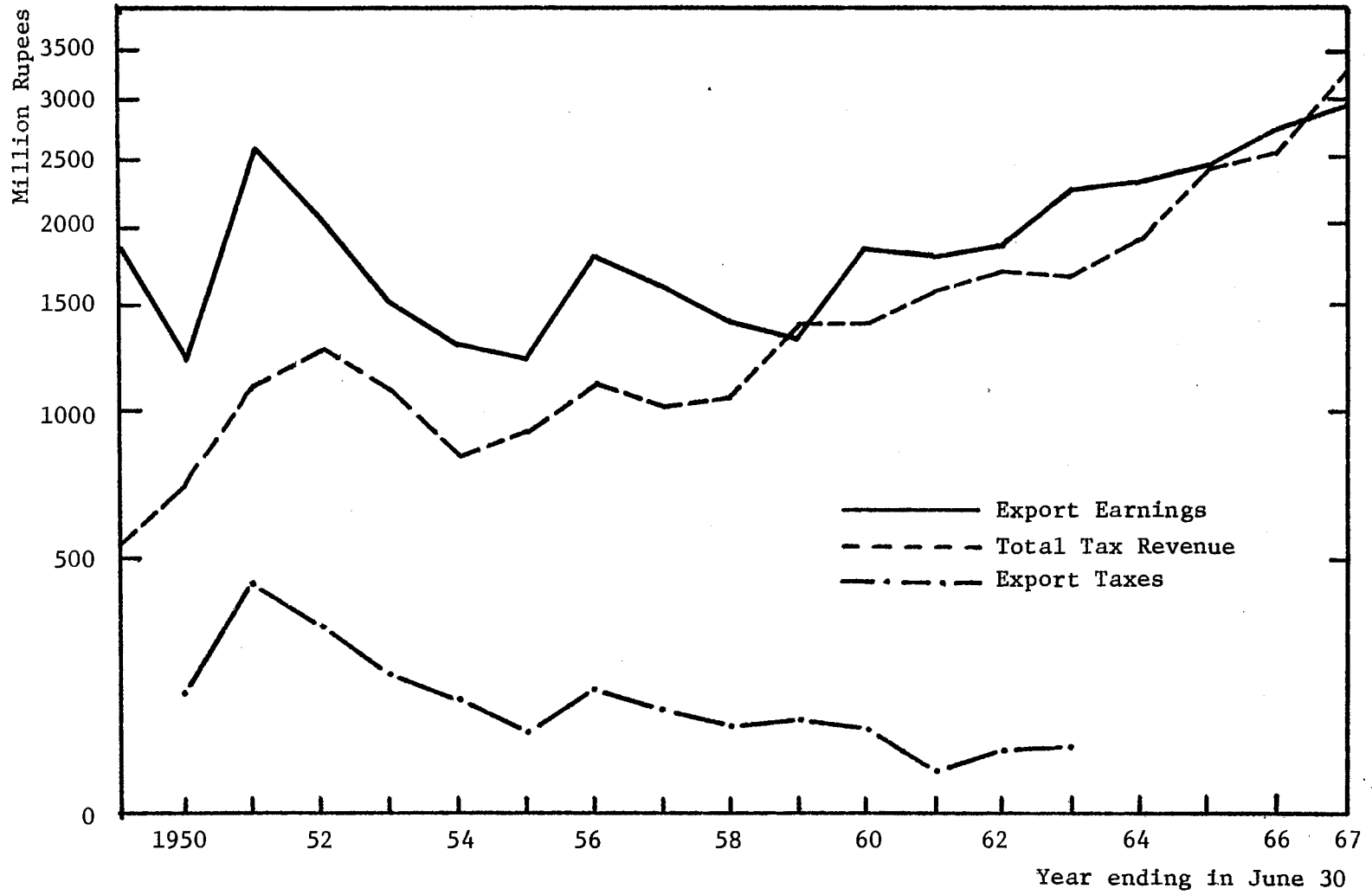
The decline in export tax revenue was due partly to the government policy and partly to the structural changes in the economy. Export duty rates were reduced continuously in order to maintain farmers' incentives to grow cash crops for export, along with the elimination of

¹⁶MacBean, Export Instability . . . , pp. 88-89.

the duty on wool (1952), hides and skins (1955), Comilla cotton (1962), and tea (1963). Export tax collections from tea and Desi cotton declined drastically as exportable surpluses were reduced by rising domestic consumption in the face of stagnant output. While cotton production (and exports of raw cotton) improved greatly since 1962/63, duty rates were reduced progressively to increase foreign exchange earnings as well as to meet the domestic demand by the import-substituting cotton textile industry until 1967 when the duty on both cotton and jute was finally exempted.¹⁷ Although belated (in the opinion of the present investigator), the elimination of export taxes as a source of government revenue partly reflects the fast industrial growth achieved by Pakistan in recent years, which in turn provided a broader tax base for both direct taxes on non-agricultural income and indirect taxes such as central excise and sales taxes on domestically produced manufactured goods.

For a comparison of the timing and direction of their movements, export earnings, export taxes, and total tax revenue are sketched in Chart 11 on a semi-log scale. Only in the 1950's during which export duty collections were sizable relative to total tax revenue, did they show some association; since 1957, however, any link between them has apparently broken owing to changes in the tax structure and other factors briefly described earlier.

¹⁷Government of Pakistan, Ministry of Finance, Pakistan Economic Survey 1968/69, Statistical Section, p. 64, Table No. 33.



Source: Table XXIV.

Chart 11. Export Earnings, Export Taxes, and Total Tax Revenue in Pakistan, 1949/50 - 1966/67

Export Instability and Government Expenditure

As we move one step further away from export fluctuations to the short-term fluctuations in total tax revenue, total government revenue (including both tax and non-tax revenue), government expenditure on current account, and finally government expenditure including development expenditure, the degree of instability as measured by the I_4 index tends to be smaller as can be seen in Table XXV, and their association becomes weaker as evidenced by the regression results. Table XXVII summarizes the simple relationships between the trend-adjusted annual fluctuations in export earnings and the related variables through which export instability is alleged to transmit its impact to the domestic instability. Except for the relationship between export earnings and export tax revenue, none of the regression coefficients estimated withstands the test of significance at the 0.05 level. In the case of the relationship between export earnings instability and the year-to-year fluctuations in government spending including development expenditures (Regression equations (4-A) and (4-B) in Table XXVII), the regression coefficient associated with government spending is not significant and even carries a wrong sign. Throughout the period under review, the rising development expenditures have been met by deficit financing operations and, increasingly more in the 1960's, by the heavy inflow of foreign aid and loans, the fluctuations of which have been quite unstable and autonomous by themselves.

TABLE XXVII

SUMMARY OF REGRESSION RESULTS OF RELATIONSHIPS BETWEEN
FLUCTUATIONS IN EXPORT EARNINGS, EXPORT TAXES,
GOVERNMENT TAX REVENUE AND EXPENDITURE
IN PAKISTAN, 1949/50 - 1966/67

Independent Variable = Export Earnings, E; Sample Size = 17

Dependent Variable and Equation Number ^a	Constant	Regression Coefficient ^c (Standard Error)	R	F ^c	D.W.
1. T _e (1-A) ^b	5.505	1.048** (0.323)	0.716	10.539**	2.312
(1-B) ^b	- 23.909	0.118** (0.028)	0.706	17.270**	2.542
2. T _x (2-A)	1.053	0.287 (0.159)	0.411	3.254	1.714
(2-B)	136.568	0.172 (0.114)	0.352	2.268	1.735
3. R (3-A)	0.217	0.214 (0.153)	0.330	1.962	1.847
(3-B)	196.018	0.146 (0.150)	0.236	0.942	1.811
4. G _r (4-A)	- 0.023	0.206 (0.180)	0.275	1.307	1.933
(4-B)	160.848	0.151 (0.238)	0.157	0.402	2.284
5. G (5-A)	- 1.283	-0.181 (0.165)	0.265	1.207	1.641
(5-B)	372.526	-0.126 (0.273)	0.115	0.215	1.861

^aT_e = export tax revenue, T_x = total tax revenue, R = total government revenue including non-tax revenue, G_r = government expenditure on revenue account, and G = government expenditure including development expenditure on capital account. Regression variables in (A) are the trend-corrected year-to-year fluctuations measured by the instability index, I₄, and in (B) they are expressed in first differences. For example, regression equation (1-A) is in the form

TABLE XXVII (Continued)

of $\dot{T}_e = \alpha_0 + \alpha_1 \dot{E} + u$ where \dot{T}_e and \dot{E} are the annual fluctuations in export tax revenue and export earnings in percent after adjusting for trend; regression equation (1-B) is in the form of $\Delta T_e = \beta_0 + \beta_1 \Delta E + u$ where ΔT_e and ΔE are the annual changes from the previous year in export tax revenue and export earnings.

^bFor the period 1950/51 - 1962/63 only. Accordingly, the sample size equals 12.

^c* significant at the 5 per cent level; ** significant at the 1 per cent level.

Role of Export Taxes as a Stabilization Device

In brief, export instability in Pakistan has not been transmitted to the domestic economy through export taxes and tax revenue. The changing tax structure resulting from the transformation in the industrial structure of the economy has progressively reduced the relative importance of export taxes in the government revenue. In addition, the role of export taxes as a stabilization device should not be overlooked. The fiscal action taken by the Pakistan government during the Korean War boom years is a good example. It will be worth examining the events briefly to illustrate the point.

Export earnings in 1949/50 fell to a record low level in the aftermath of the deadlock in jute trade with India, but more than doubled in 1950/51 with the outbreak of the Korean War, rising from Rs. 1218 million to Rs. 2554 million. The impact of the rise in export income on the domestic income and imports, however, was limited chiefly by the government policy. The export duty on staple cotton was raised by 5 times from Rs. 60 per bale in 1949 to Rs. 300 by November 1950. The duty rates on raw jute and other primary export commodities were also raised.¹⁸ The raising of duty rates, particularly on cotton exports, increased collections of export duties many times to Rs. 428 million in 1950/51, which amounted to 17 per cent of total export earnings and accounted for 39 per cent of total tax revenue. As a result, the

¹⁸The specific duty rate for raw jute increased from Rs. 15 per bale in the previous years to Rs. 20 in 1951 and to Rs. 35 in 1952. The ad valorem duty rates on wool, hides, and skins were raised from nil to 25 per cent, 10 per cent, and 13 per cent, respectively. Pakistan Economic Survey 1968/69, Statistical Section, pp. 64-65, Table No. 33.

surpluses in the government budget soared and were funded. The net monetary impact of the government's fiscal operations during 1950/51, according to Hasan,¹⁹ was estimated to be contractionary to the extent of Rs. 160 million. Due largely to this surplus in the government budget, the money supply rose only slightly despite the powerful expansionary forces exerted by the foreign trade sector.²⁰ Export taxes, therefore, served to stabilize the domestic income by siphoning off a substantial portion of the swollen export income into a heavy government budget surplus.

Apart from the adverse effects on production incentives for export and export growth associated with export taxes,²¹ they nevertheless provide an effective stabilizer against the destabilizing forces emanating from the export sector.

Export Instability and the Internal Price Level

Another line of argument centers on the effect of export instability on the rate of change in domestic prices and ultimately on development. It is argued that the severe fluctuations in export earnings will

¹⁹Parvez Hasan, "Balance of Payments Problems of Pakistan," Pakistan Development Review, I, No. 2 (Summer 1962), pp. 15-48.

²⁰Ibid., pp. 24-25.

²¹For a discussion of the role of export taxes and their advantages and disadvantages, see R. Goode, G. E. Lent, and P. D. Ojha, "Role of Export Taxes in Developing Countries," IMF Staff Papers, XIII, No. 3 (November 1966), pp. 453-501; E. P. Reubens, "Commodity Trade, Export Taxes and Economic Development," Political Science Journal, LXXI (March 1956), pp. 42-59; K. J. Rothwell, "Taxes on Exports in Underdeveloped Countries," Public Finance, XVII, No. 3/4 (1963), pp. 310-325; E. G. Ayal, "The Impact of Export Taxes on the Domestic Economy of Underdeveloped Countries," Journal of Development Studies, I (July 1965), pp. 330-362.

tend to generate domestic price instability, especially inflation:

During recessions, reduction in export proceeds and balance of payments deficits encourage the devaluation of currencies or restriction of imports; both measures may increase inflationary pressure on prices. Conversely, the money income of exporters may expand so rapidly in times of increased demand that domestic controls become inadequate to prevent inflation, and increased export proceeds are dissipated for imports which absorb purchasing power and reduce inflation rather than used to import goods required for economic development.²²

The sensitivity of domestic prices to export instability is likely to be greater in developing countries because: first, these countries are lacking effective monetary and fiscal measures to counterbalance such instability; and second, the production structure in their economies is rigid as reflected by the low short-run supply elasticities associated with agricultural products.

A priori, one can expect that the internal price level in Pakistan would be influenced by fluctuations in export prices and earnings. Domestic prices in Pakistan are heavily weighted by the prices of food-grains and other agricultural products: In East Pakistan, a two-crop economy, prices of jute and rice play the dominant role in governing the internal price movements, and in West Pakistan, the prices of cotton and other competing kharif crops. With the price inelastic supply of agricultural products, subsistence crops in particular,²³ and the income

²²United Nations, Department of Economic Affairs, Instability in Export Markets of Underdeveloped Countries (New York: United Nations, 1952), p. 1.

²³Production elasticities estimated for subsistence crops such as rice, wheat (irrigated), and bajra are much lower than those for cash crops--namely, jute and cotton. For other subsistence crops such as unirrigated wheat, gram, and jowar, there is no significant response to price changes. For a summary table of the price elasticities of acreage in Pakistan, see S. M. Hussain, "A Note on Farmer Response to Price

inelastic demand for staple food, the severe fluctuations in the prices of agricultural exports as well as in the incomes of jute and cotton producers, middlemen, and exporters, may cause sympathetic fluctuations in the domestic prices.

Instability in Domestic and External Prices

Table XXVIII provides data on the movements of prices in Pakistan, both internal and external, during 1949/50 - 1965/66. The instability indices were also computed and are summarized in the same table. While external prices--the unit values of exports and imports, all measured in domestic currency--fluctuated severely, domestic prices were markedly stable. In terms of the instability index, I_4 , the aggregate domestic price index (GNP deflator) fluctuated annually by 4.7 per cent during 1949/50 - 1962/63;²⁴ the consumer price index fluctuated by only 1.7 per cent for government clerical workers and by 3.2 per cent for industrial workers over the same period. On the other hand, external prices exhibited severe instability--14 per cent for export price and 11 per cent for import price. Fluctuations in export earnings were most severe at 18 per cent per year.

in East Pakistan," Pakistan Development Review, IV, No. 1 (Spring 1964), p. 102, Table IV.

²⁴Publication of export and import price indices with the 1948/49 base was discontinued in 1963 and replaced by the new series with the 1954/55 base. Accordingly, the two series are not entirely comparable. Use of the first series necessitated the computation of instability indices for other variables for the same period 1949/50 - 1962/63 for comparability. For the entire period 1949/50 - 1965/66, the instability indices were 4.4 per cent for GNP deflator, 2.0 per cent and 3.0 per cent, respectively, for government clerical workers' and industrial workers' cost of living indexes.

TABLE XXVIII

PRICE MOVEMENTS IN PAKISTAN, 1949/50 - 1965/66
(1959/60 = 100)

Year	Price Indices						Index of Export Earnings
	GNP De- flator	Wholesale Price, General ^a		Consumer Price ^b	Export Price ^c	Import Price ^c	
		A	B				
(1)	(2)	(3)	(4)	(5)	(6)	(7)	
1949/50	81.3			77.4	107.7	50.8	66.1
50/51	81.7			77.2	130.4	45.1	138.6
51/52	88.6	82.1		79.8	136.8	60.5	109.0
52/53	83.4	86.5		85.6	80.7	49.7	81.9
53/54	78.6	71.8		88.9	78.5	54.6	69.8
54/55	75.8	57.6		85.9	82.3	52.0	66.4
55/56	81.4	72.5		85.2	99.9	77.3	96.8
56/57	90.2	94.5	95.4	90.7	111.7	91.9	87.2
57/58	95.6	91.5	95.6	98.4	110.7	98.0	77.2
58/59	93.0	94.8	93.9	94.6	101.2	99.1	71.9
59/60	100.0	100.0	100.0	100.0	100.0	100.0	100.0
60/61	105.1		103.0	101.8	165.0	104.3	97.6
61/62	104.1		105.9	104.0	131.0	101.4	100.0
62/63	106.5		104.8	102.4	116.4	102.0	121.9
63/64	105.1		104.6	105.5			124.7
64/65	110.9		112.4	111.2			130.7
65/66	115.6		117.5	117.6			147.5

Instability Indices^d:

I ₁ :	4.9	13.8 ^e	3.1 ^f	3.9	16.6 ^g	12.4 ^g	21.0
I ₄ :	4.4	#12.2 ^e	#2.9 ^f	3.0	14.0 ^g	10.7 ^g	15.8

^aA is the Institute of Development Economics index with original base 1951/52 = 100. B is the Central Statistical Office index with original base 1959/60 = 100.

^bConsumer price index for industrial workers, Karachi, with original base 1948/49 = 100.

^cUnit values of exports and imports with original base 1948/49 = 100.

^dI₁ is average annual percentage change and I₄ is average annual fluctuation in per cent after trend adjustment.

TABLE XXVIII (Continued)

^eFor 1951/52 - 1959/60.

^fFor 1956/57 - 1965/66.

^gFor 1949/50 - 1962/63.

#Average annual fluctuation as measured by the U. N. index, I₂.

Sources: Columns (1) and (4) are from S. R. Lewis, Jr., Pakistan: Industrialization and Trade Policies (London: Oxford University Press, 1970), p. 193, Table A. 18; column (2) from A Measure of Inflation in Pakistan 1951-60, Monographs in the Economics of Development, No. 4 (Karachi: Institute of Development Economics, 1961), p. 21, Table 9; column (3) from 20 Years of Pakistan in Statistics 1947-1967, p. 198, Table 11.1; columns (5), (6), and (7) are computed from Pakistan Economic Survey 1968/69 and 20 Years of Pakistan in Statistics, 1947-1967, p. 107, Table 6.1.

Effect of Instability in Export Price and Earnings on
the Internal Price Level

The timing, magnitudes, and direction of annual fluctuations in the internal price level, and export price and earnings are shown in Table XXIX; they are also sketched in Chart 12. In this and the subsequent analyses, the GNP deflator is assumed to be representing the behavior of domestic prices since it is believed to be "the most accurate over-all reflection of the movements of the level of prices in Pakistan,"²⁵ while the consumer price indices such as the one reported in Table XXVIII reflect only the price movements in a particular area.

That the general price level has been quite responsive to the fluctuations in export price and export earnings can be seen in Table XXIX and Chart 12. For a large number of years during the period under review, fluctuations in the internal price level moved in the same direction as export price (8 out of 13 cases) and export earnings in the previous year (10 out of 15 cases). Furthermore, when the internal price changes are regressed against the fluctuations in export price or export earnings, the relationships are statistically significant. Table XXX summarizes the regression results. All regression variables are the annual fluctuations in per cent after removing the time trend by using the instability measure, I_4 .

Introducing the annual changes in the money supply as an additional determinant of the internal price changes, the following equation was used to estimate the impact of export earnings fluctuations on

²⁵S. R. Lewis, Jr., Pakistan: Industrialization and Trade Policies (London: Oxford University Press, 1970), p. 188.

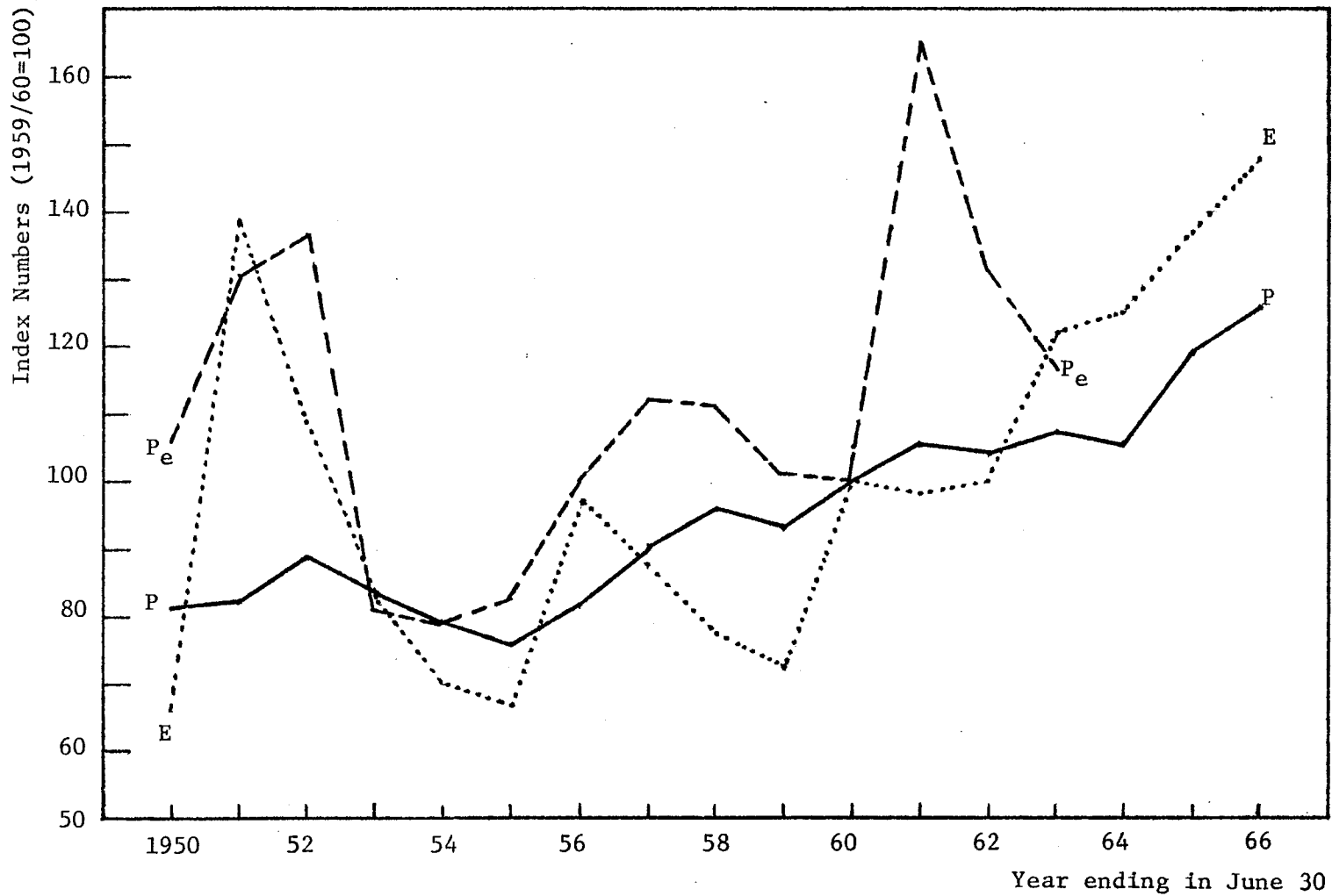
TABLE XXIX

FLUCTUATIONS IN EXPORT PRICE (P_e), EXPORT EARNINGS (E), AND
THE INTERNAL PRICE LEVEL (P) IN PAKISTAN, 1949/50 - 1965/66^a
(In Per Cent)

Year	Annual Percentage Change, Trend-uncorrected, I_1			Annual Fluctuation, Trend-corrected, I_4		
	P	P_e	E	P	P_e	E
1949/50	--	--	--	--	--	--
50/51	0.5	21.1	109.7	-2.3	16.2	50.4
51/52	8.5	4.9	- 21.3	5.2	3.5	-23.3
52/53	- 5.9	-41.0	- 24.8	-8.4	-42.2	-27.3
53/54	- 5.8	- 2.7	- 14.8	-8.5	- 4.7	-18.1
54/55	- 3.6	4.8	- 4.9	-6.4	2.7	- 8.8
55/56	7.4	21.4	45.9	4.1	16.0	28.7
56/57	10.8	11.8	- 9.9	7.3	9.2	-12.6
57/58	6.0	- 0.9	- 11.6	3.3	- 2.3	-14.7
58/59	- 2.7	- 8.6	- 6.8	-5.1	-10.0	-10.3
59/60	7.5	- 1.2	39.1	4.7	- 2.8	25.4
60/61	5.1	65.0	- 2.4	2.7	38.4	- 5.1
61/62	- 1.0	-20.6	2.5	-3.1	-21.6	- 0.3
62/63	2.3	-11.2	21.9	0.1	-12.4	15.8
63/64	- 1.3		2.3	-3.4		0.1
64/65	5.5		4.7	3.2		2.5
65/66	4.2		12.9	2.1		9.6

Averages:						
1949/50 to 62/63	5.1	16.6	24.3	4.7	14.0	17.9
1949/50 to 65/66	4.9	--	21.0	4.4	--	15.8

^aComputed from Table XXVIII.



Source: Table XXVIII.

Chart 12. Index Numbers of Export Price (P_e), Export Earnings (E), and the Internal Price Level (P) in Pakistan, 1949/50 - 1966/67

TABLE XXX

SUMMARY OF REGRESSION RESULTS OF RELATIONSHIPS BETWEEN SHORT-TERM FLUCTUATIONS
IN EXPORTS, MONEY SUPPLY, AND THE INTERNAL PRICE IN PAKISTAN,
1949/50 - 1962/63^a

Dependent Variable = Internal Price Level, \dot{P}

Equation Number	Constant	Regression Coefficient ^b (Standard Error)				N	R	F	D.W.
		\dot{P}_e	\dot{E}	\dot{E}_{-1}	\dot{M}_s				
(1)	-0.257	0.148* (0.071)				13	0.533	4.365	1.836
(2)	-0.470		0.052 (0.698)			13	0.221	0.562	1.790
(3)	-0.332			0.171** (0.054)		12	0.711	10.211	1.806
(4)	-0.292				0.407 (0.339)	13	0.340	1.435	1.770
(5) ^c	-0.111			0.182** (0.044)	0.533* (0.224)	12	0.835	10.335	1.872
(6) ^c	-0.230	0.044 (0.067)		0.162* (0.055)	0.486* (0.242)	12	0.844	6.602	2.112

^aAll variables that entered regression are the trend-adjusted annual fluctuations in per cent as measured by the instability measure, I_4 . All regression equations are in the linear form with the annual fluctuations in the internal price level (P) as the dependent variable and the annual fluctuations in export price (P_e), export earnings in current year (E), export earnings in the previous year (E_{-1}), and money supply (M_s) as independent variables.

b* significant at the 0.05 level; ** significant at the 0.01 level.

^cEquation (6) is less reliable than equation (5). This is because there is multicollinearity between export price (P_e) and export earnings (E_{-1}), the coefficient of correlation (r) being 0.711. Inclusion of P_e thus becomes redundant and reduces the size of the regression coefficients for E_{-1} and M_s . In equation (5) E_{-1} reflects the effects of export price on the internal price level, P .

the general price level:

$$\dot{P}_i = \alpha_{0i} + \alpha_{1i}\dot{E}_{-1i} + \alpha_{2i}\dot{M}_{Si} + u_i; \quad i = 1, 2 \quad (8.4)$$

where \dot{P} , \dot{E}_{-1} , and \dot{M}_S are the annual fluctuations in the internal price level, export earnings with a one-year time-lag, and money supply, and u stands for random error. The subscript, i , denotes two different measures of the annual fluctuations in the variables--1 refers to the trend-adjusted annual fluctuations, and 2 the simple annual percentage changes. In addition, the annual changes in the absolute values of the variables (first differences) were also used; the relationship to be estimated was in the form:

$$\Delta P = \beta_0 + \beta_1 \Delta E_{-1} + \beta_2 \Delta M_S + u \quad (8.5)$$

The estimated regression equations are given below:

$$\dot{P}_1 = -0.111 + 0.182 \dot{E}_{-11} + 0.533 \dot{M}_{S1} \quad (8.6)$$

(0.044) (0.224)

$$\begin{aligned} R^2 &= 0.697 \\ F &= 10.335 \\ D.W. &= 1.872 \\ r_{12.3} &= 0.806 \\ r_{13.2} &= 0.622 \end{aligned}$$

$$\dot{P}_2 = -1.924 + 0.106 \dot{E}_{-12} + 0.494 \dot{M}_{S2} \quad (8.7)$$

(0.035) (0.280)

$$\begin{aligned} R^2 &= 0.555 \\ F &= 5.611 \\ D.W. &= 1.226 \end{aligned}$$

$$\Delta P = -0.695 + 0.007 \Delta E_{-1} + 0.008 \Delta M_S \quad (8.8)$$

(0.002) (0.005)

$$\begin{aligned} R^2 &= 0.599 \\ F &= 6.728 \\ D.W. &= 1.565 \end{aligned}$$

In all three estimated equations above, export earnings fluctuations are statistically significant whereas fluctuations in the money supply are significant only in Equation (8.6) where the variables are expressed in terms of the trend-adjusted annual fluctuations. As can be seen in Equation (8.6), about 70 per cent of the short-term fluctuations in the general price level in Pakistan during 1949/50 - 1962/63 are explained by the behavior of both export earnings and money supply. Both regression coefficients are statistically significant: at the 0.01 level for export earnings fluctuations and at the 0.05 level for money supply fluctuations. The regression equation as a whole is also significant at the 0.01 level.

Judging from the partial correlation coefficients (0.806 for export fluctuations and 0.622 for money supply fluctuations), it appears that export earnings exerted greater influence on the general price level movements than money supply during 1949/50 - 1962/63. This can also be seen in the estimated regression equation (4) in Table XXX where the simple relationship between the general price level and money supply alone fails to meet the test of significance at the 0.05 level. This is not to say, however, that the money supply is not an important determinant of the general price level; the impact of monetary expansion, as will be discussed shortly, appears to have been offset by the autonomous changes arising from the external sector and other factors.

Export Instability and Inflation

Undoubtedly, the short-term movements in the general price level in Pakistan were influenced strongly by the fluctuations in export prices and incomes. There seems no apparent evidence, however, that

the severe instability in export prices and earnings transformed its impact into a long-term inflationary pressure in Pakistan. The general price level fell continuously during 1951-55 despite the expansion in money supply. The decline in export prices in the wake of recessionary forces set in the world commodity markets with the end of the Korean War boom and the cumulative shortfalls in export earnings (further accentuated by the stagnant cotton output and rising domestic consumption) were clearly the main factor behind the downward trend in the general price level during the period. The impact of monetary expansion which increased by more than 18 per cent between 1951/52 and 1954/55 was apparently conditioned by the balance of payments deficits that caused a heavy drain in foreign exchange reserves, thus offsetting the expansion in primary reserves caused by government deficit financing.²⁶

The devaluation of the Pakistan rupee in 1955 (by 30.5 per cent) drove up export prices and earnings in terms of domestic currency, helping reverse the downward trend in the general price level. Poor crops and a curtailment of imports due to devaluation as well as restrictive import policy were also responsible for the reversal. In the subsequent two years following the devaluation of 1955, the wholesale price index rose by some 64 per cent and the general price level by 19 per cent (Table XXVIII); inflation seemed to have gathered a momentum. The impact of devaluation was short-lived, however. Between 1956/57 and 1958/59 export prices and earnings again fell but the general price level went up by 18 per cent. Unlike in the early years, internal

²⁶Hasan, Deficit Financing . . . , pp. 19-20.

monetary expansion appeared to have exerted a much stronger effect on the general price level since 1956/57. The general price level moved upward rather slowly without sizable swings and appeared to have been stabilized from 1956/57 on (Table XXVIII and Chart 12). This stability has existed despite a rather rapid expansion in the money supply. Currency in circulation and demand deposits increased from Rs. 3,676 million in 1950/51 to Rs. 5,185 million in 1956/57 and Rs. 10,887 million by 1965/66 with an average annual increase of 6.4 per cent and 8.7 per cent, respectively. Table XXXI shows data relevant to the monetary developments in Pakistan during 1949/50 - 1966/67.

It is well known that one of the outstanding features of the development process in Pakistan has been the absence of noticeable inflationary pressures,²⁷ compared to many developing countries, especially those in Latin America, where the runaway-type of inflation has been rampant, posing a serious obstacle to development. A comparison of rates of inflation in Pakistan and other developing countries illustrates the case, which is shown in Table XXXII. This price stability, undoubtedly a fortunate blessing for Pakistan, has prevailed in spite of the rapid industrialization and the government's mounting development expenditures.

One of the main reasons for price stability after 1956/57 was, no doubt, the rapid industrialization itself. The growth of the domestic manufacturing sector brought the rapid increase in the domestically

²⁷For example, see G. F. Papanek, D. M. Schydrowsky, and J. J. Stern, Decision Making for Economic Development: Text and Cases (Boston: Houghton Mifflin Co., 1971), p. 21; G. F. Papanek, Pakistan's Development: Social Goals and Private Incentives (Cambridge, Mass.: Harvard University Press, 1967), pp. 208-209.

TABLE XXXI

MONEY SUPPLY AND MONETARY RATIO IN PAKISTAN,
1949/50 - 1966/67

Year	Money Supply ^a		Monetary Ratio ^b	
	Million Rupees	Annual Percent Change	Ratio	Annual Percent Change
1949/50	2889	--	0.145	--
50/51	3676	27.2	0.177	22.1
51/52	3141	-14.6	0.140	-20.9
52/53	3482	10.9	0.160	14.3
53/54	3754	7.8	0.172	7.5
54/55	4345	15.7	0.205	19.2
55/56	4864	11.9	0.215	4.9
56/57	5185	6.6	0.195	- 9.3
57/58	5453	5.2	0.192	- 1.5
58/59	5718	4.9	0.204	6.3
59/60	6129	7.2	0.195	- 4.4
60/61	6175	0.8	0.178	- 8.7
61/62	6486	5.0	0.178	0.0
62/63	7411	14.3	0.192	7.9
63/64	8702	17.4	0.211	9.9
64/65	9496	9.1	0.209	- 1.0
65/66	10887	14.1	0.219	4.8
66/67	10597	- 2.7	0.182	-16.9

Instability Index:	I ₁	±10.3		
	I ₄	± 6.0		

^aCurrency in circulation, demand deposits, and other deposits with State Bank of Pakistan as of the last Friday of December.

^bRatio of money supply to GNP at factor cost in current prices.

Source: Compiled and computed from Government of Pakistan, Ministry of Finance, Pakistan Economic Survey 1968/69, Statistical Section, pp. 26-27, Table No. 13, for money supply and Table XXII of this study for GNP.

TABLE XXXII

INSTABILITY IN THE COST OF LIVING AND RATES OF INFLATION
IN PAKISTAN AND OTHER DEVELOPING COUNTRIES, 1951-67

Country	Cost of Living		Export Earnings
	Average Annual Fluctuation in Percent, I_1	Rate of Inflation in Percent ^a	Average Annual Fluctuation in Percent, I_4^b
	(1)	(2)	(3)
Brazil	36.4	35	9.2
Chile	32.6	31	10.5
Uruguay	31.4	29	15.8
Argentina	28.9	27	11.4
Colombia	9.8	9	8.4
Peru	9.2	9	9.5
Mexico	6.5	5	6.9
Taiwan	8.9	8	14.7
India	5.9	5	7.8
Philippines	3.7	3	9.1
*Pakistan	5.4	3	12.1

^aAnnual compound percentage increase.

^bTrend-corrected measure of instability for the period 1948-68.

Source: Columns (1) and (2) are compiled and computed from I. Little, T. Scitovsky, and M. Scott, Industry and Trade in Some Developing Countries: A Comparative Study (London: Oxford University Press, 1970), p. 468, Table A. 9.1; column (3) is from Chapter IV, Table II, and Appendix, Table XLII of this study.

produced goods for the monetized sector of the economy, and at the same time greatly reduced the need for consumer goods imports (which had the effect of minimizing the influence of import prices on the domestic prices). A rough indication of the extent of industrialization and import substitution in Pakistan can be seen in Table XXXIII. The most phenomenal increase in the availability of domestically produced goods was recorded in cotton textiles, a second most important item next to food in the consumer budget. In the face of the increase in the goods and services available for the market, the money supply can increase without causing a rise in prices.

The industrial growth also enabled the private sector to achieve a high rate of savings out of industrial profits (further stimulated by the tax incentives to industry provided by the government), and thereby helped to absorb part of the money supply increase in the form of cash reserves for industrialists for future investment.²⁸

Increased wheat imports from the U.S. under the P.L. 480 program were another factor that directly helped stabilize the prices of foodgrains, an important determinant of the general price level in Pakistan.²⁹ Proceeds from the sale of surplus agricultural commodities were accumulated in the counterpart funds, thereby absorbing part of the increase in the money supply.

²⁸Papanek, pp. 209-210.

²⁹The impact of foodgrain imports on checking the downward trend in the price ratios of jute/rice and cotton/competing kharif crops by stabilizing food prices was discussed earlier in Chapter VII of this study.

TABLE XXXIII
 DOMESTIC PRODUCTION OF CONSUMER AND INTERMEDIATE GOODS
 AS PER CENT OF TOTAL SUPPLY^a IN PAKISTAN,
 1949/50 - 1964/65

Manufacture Item	Period				
	1949/50	1951/52	1954/55	1959/60	1964/65 ^b
Consumer goods:					
Sugar mfg.	18.3	22.8	49.7	99.9	90.2
Edible oils	60.3	63.6	95.4	96.6	79.0
Tea mfg.	94.0	92.3	97.7	99.4	98.5
Food mfg. n.e.c.	n.a.	n.a.	72.5	73.0	61.1 ^c
Beverages	n.a.	n.a.	71.2	62.2	70.7
Tobacco	n.a.	88.6	98.5	99.6	99.7
Cotton and other textiles	19.8	14.5	80.1	97.3	96.5
Silk and art silk textiles	n.a.	n.a.	43.0	51.0	67.8
Footwear	n.a.	n.a.	99.8	99.8	98.4
Wood and furniture	n.a.	n.a.	34.5	82.7	52.3
Printing and publishing	n.a.	n.a.	91.0	88.9	92.7
Soap, cosmetics, etc.	n.a.	n.a.	84.2	94.2	88.9
Matches	n.a.	10.9	97.0	100.0	100.0
Miscellaneous mfg.	n.a.	n.a.	34.2	37.4	54.3
Intermediate goods:					
Jute textiles	0.0	5.3	99.4	99.9	100.0
Paper mfg.	n.a.	n.a.	49.4	66.6	72.2
Leather mfg.	n.a.	n.a.	98.9	98.9	96.3
Rubber products	3.8	25.4	40.9	33.9	37.5
Fertilizer	n.a.	n.a.	20.0	41.9	60.9
Chemicals	n.a.	n.a.	29.3	39.3	40.7
Petroleum products	36.0	31.5	34.9	32.8	66.7

^aTotal supply equals domestic production and imports.

^bAverage of 1963/64, 1964/65, and 1965/66.

^c1963/64 figure.

Source: S. R. Lewis, Jr., Pakistan: Industrialization and Trade Policies (London: Oxford University Press, 1970), p. 107, Table 5.2.

Summing up, the industrial growth in Pakistan was accompanied by the increased availability of goods and services for the market and a high rate of savings in the industrial sector. This, combined with the inflow of surplus agricultural commodities, was the main factor behind the absence of a long-term inflationary pressure despite a continuous monetary expansion generated by the government's deficit financing operations for development efforts.

Summary

The main objective of this chapter has been to evaluate some of the macroeconomic consequences of export instability against Pakistan's experience. Despite the severe instability in export prices and earnings to which Pakistan has been subject, no causal relationship was found between the instability emanating from the export sector and the short-term movements of money GNP. The year-to-year fluctuations in GNP were markedly stable throughout the period under review, although GNP (in constant prices) grew slowly at less than 3 per cent during the 1950's with little increase in per capita real income but rapidly at more than 5 per cent in the 1960's. Because of the small size of the export sector relative to total GNP and the predominance of the agricultural sector, the short-term fluctuations in GNP closely followed those in agricultural output.

Although export tax revenue assumed an important position in the central government's fiscal system in the 1950's, its relative importance diminished progressively vis-a-vis direct taxes and other indirect taxes largely owing to the industrial growth. Export instability has not transmitted its impact to the domestic economy by destabilizing

the government revenue. Rather, the manipulation of export duty rates during the export boom years proved to be an effective fiscal device for stabilization.

The unstable export sector, however, played an important role in influencing the short-term (and medium-term) behavior of the general price level in the 1950's. This was so because the internal price level in Pakistan was heavily weighted by prices of agricultural products. Accordingly, the external prices of agricultural exports that made up the bulk of Pakistan's exports in the early years affected significantly the domestic price movements. No evidence was found, however, that the instability in export prices and incomes transformed its impact into a long-term inflationary pressure in the economy. The degree of instability in the general price level was rather small at 4.7 per cent as against 14 per cent for export price and 18 per cent for export earnings (as measured by the I_4 index) during the period 1949-1966, and the inflation rate of 3 per cent was one of the lowest among the selected developing countries. The absence of noticeable inflationary pressures especially after 1956/57 can be attributed to the rapid industrial growth, accompanied by the increased goods and services available for the market and a high rate of industrial savings, and the sizable inflow of surplus agricultural commodities under the foreign assistance program. These factors were instrumental in cushioning the impact of monetary expansion frequently caused by the government sector.

CHAPTER IX

EXPORT INSTABILITY, IMPORTS, AND ECONOMIC GROWTH

Introduction

Apart from its destabilizing effects on the domestic economy, it is maintained that short-term fluctuations in the export earnings of developing countries cause serious damage to the growth of their economies. The negative effect of export instability on economic growth is attributed largely to the ensuing instability in a country's capacity to import. The reasoning is centered upon the dependence of economic growth of developing countries on the imports of capital goods and other industrial raw materials that must be paid for by export earnings, a major source of foreign exchange in these countries. This chapter examines some "growth" aspects of the domestic consequences of export instability in light of Pakistan's experience.

The process of economic growth is a complex one, and export performance of a country is but one of many factors affecting the growth process. Furthermore, the mechanism by which export fluctuations are supposedly transmitted to the process of economic growth is an indirect one--indirect because export instability is linked to income growth through at least three sub-relationships: (1) the relationship between exports and total imports; (2) the relationship between total imports and capital goods imports; and (3) the relationship between capital

goods imports and domestic investment, a key variable in any growth model of the capital accumulation type. A study of the growth aspects of export instability thus requires a detailed examination of these triumvirate relationships. In the case of Pakistan, a detailed examination of relationship (3) is not possible because of the absence of time series data on investment. Accordingly, the present study will concentrate on the first two relationships. As a substitute for relationship (3), however, an attempt will be made to relate export earnings fluctuations directly to the sectoral incomes--such as income derived from the manufacturing sector--under the assumption that the import content of investment hinges more upon non-agricultural incomes.

Following an elaboration of the a priori argument in the section that follows, each of these three relationships will be examined, so as to determine to what extent and in what manner export instability in Pakistan has affected its growth potential.

The Argument

At this point it may be useful to elaborate further on the a priori argument¹ in order to establish a framework for our subsequent inquiry into the case of Pakistan.

¹This line of argument has been introduced and expounded in various writings of the United Nations and of academic economists. See, for instance, United Nations, Instability in Export Markets of Underdeveloped Countries (New York: United Nations, 1951), pp. 1-11; International Compensations for Fluctuations in Commodity Trade (New York: United Nations, 1961), pp. 9-13; "Commodity Trade and Policies in the Post War Period," World Economic Survey 1958 (New York: United Nations, 1959), pp. 53-65; "Trends and Fluctuations in World Trade of Primary Commodities," World Economic Survey 1959 (New York: United Nations, 1960); "Export Instability of Primary Producing Countries,"

Fluctuations in export earnings tend to give rise to similar fluctuations in imports unless offset by other sources of foreign exchange (e.g., earnings from invisible trade and foreign investment, loans, and aid) and/or ample foreign exchange reserves that can serve as an effective cushion against such fluctuations in export earnings. But the external receipts other than export earnings are quite unstable by themselves; many of them are autonomous and are seldom of a compensatory nature. Thus experience of the average primary producing country, according to an IMF study, shows that "the magnitude of year-to-year variations in imports . . . has been practically the same as that of variations in the importing power of exports."² Also, it is generally believed that the gold and foreign exchange reserves of many developing countries are rather low compared to their import requirements.

Under these circumstances, export earnings fluctuations are likely to be associated with variations in imports. During periods of sharp declines in export earnings, a country may try to maintain the minimum requirements of capital goods imports by further cutting into the imports of consumer goods. However, to the extent that imports of consumer goods cannot be reduced below a certain minimum because of no domestic substitutes, capital goods imports are likely to suffer from any deterioration in the capacity to import.

ECAFE, Economic Survey of Asia and the Far East 1957 (Bangkok: United Nations, 1958), pp. 125-132; M. Fleming and G. Lovasy, "Fund Policies and Procedures in Relation to the Compensatory Financing of Commodity Fluctuations," IMF Staff Papers, VIII, No. 1 (November 1960), pp. 12-15.

²Fleming and Lovasy, p. 14.

Because of high import content of investment, also expected is a close association between fluctuations in capital goods imports and those of domestic fixed capital formation. Imported capital goods are estimated to account for around 40 per cent of domestic fixed capital formation in the average developing country.³ Furthermore, one would expect that import demand for capital goods and other industrial raw materials will increase steadily as these countries continue to pursue their developmental efforts while their investment goods industry is either missing or is still in the early stage of development. Any shortage and/or interrupted flow of imported capital goods, therefore, are likely to constrain the growth rate of capital formation and of income. The insecurity and uncertainty (generated by export instability) regarding future imports of spare parts and other raw materials may also discourage investment in those industries heavily dependent on imports and vital to economic growth.

The argument appears quite convincing in principle, although it can easily be pushed too far.⁴ The export-induced instability in a country's capacity to import is likely to affect the rate of growth not directly, but indirectly, under a number of specified circumstances: (1) fluctuations in the export-based capacity to import arising from export earnings instability are not offset to a large extent by

³United Nations, "Investment Trends and Policies in Underdeveloped Countries," World Economic Survey 1959 (New York: United Nations, 1960), ch. 2, Table 2-9.

⁴For a similar view see, for instance, Michael Michaely, Concentration in International Trade (Amsterdam: North-Holland Publishing Co., 1962), pp. 118-120; A. I. MacBean, Export Instability and Economic Development (Cambridge, Mass.: Harvard University Press, 1966), pp. 69-75, 78-85.

fluctuations in other external receipts; (2) foreign exchange reserves are not adequate to cushion the impact of export fluctuations; (3) perhaps most important of all, the import content of investment is high; and the components of imports other than capital goods are rather rigid. If the first two conditions prevail, then it is most likely that export fluctuations will lead to similar fluctuations in total imports. A close association between fluctuations in total imports and export earnings, however, may not itself imply a close association between the latter and the imports of investment goods. Even if the import content of investment is high, for the export-induced stability in total imports to affect capital goods imports, other components of imports in total imports must be either inflexible or already at a minimum level below which it may not be feasible to cut back further. Otherwise, capital goods imports can be maintained at the expense of other imports even in the face of a falling capacity to import. In other words, the proportions of major categories of imports in total imports do and can fluctuate; they are, in fact, a policy variable which is and can be manipulable by the government through its import control system. As such, a detailed investigation is necessary of the relationship between export instability and fluctuations in the major components of imports on one hand and the relationship between capital goods imports and income changes on the other.

Export Instability and Fluctuations in Total Imports

During 1949/50 - 1966/67 merchandise export earnings in Pakistan fluctuated by 16 per cent per year after adjusting for trend

factors. The total value of merchandise imports were more unstable than export earnings, fluctuating by 21 per cent per year. Although commodity imports in Pakistan have been subject to import licensing and other quantitative restrictions throughout the period under review, it appears clear that fluctuations in export earnings were closely followed by similar fluctuations in imports, but with an apparent time-lag of one year. Table XXXIV provides data on annual fluctuations in exports and imports. The lagged response of imports to export fluctuations is clearly shown in Chart 13 where the total values of exports and imports are sketched on a semi-log scale, and in Chart 14 where the trend-adjusted annual fluctuations in the two variables are plotted.

A close association between the year-to-year fluctuations of export earnings and those of imports is also reaffirmed by the regression results. The simple relationship between export and import fluctuations to be estimated was in the form:

$$\dot{M}_i = \alpha_{0i} + \alpha_{1i}\dot{E}_i + u_i ; i = 1,2,3 \quad (9.1)$$

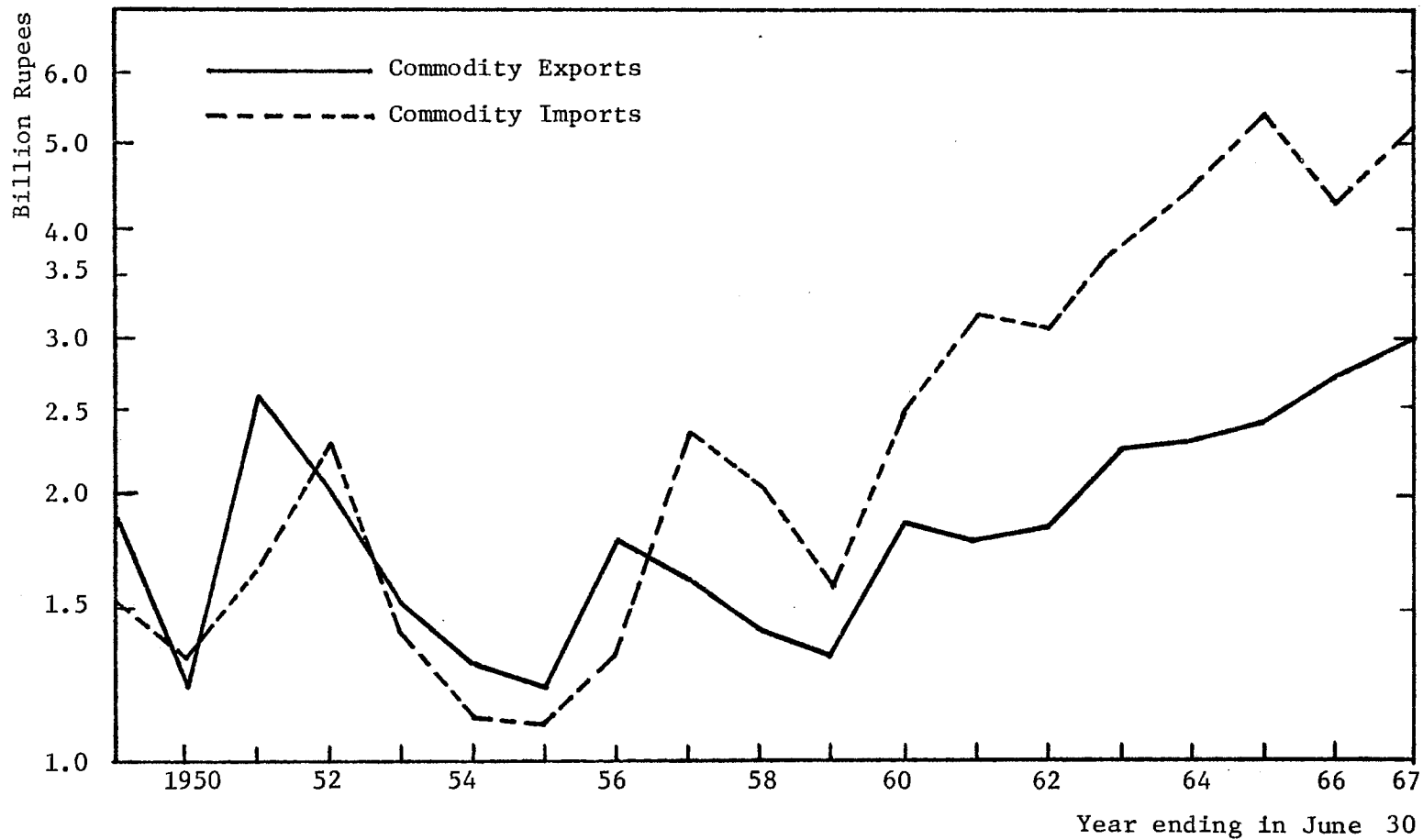
$$\dot{M}_i = \beta_{0i} + \beta_{1i}\dot{E}_{-1i} + u'_i ; i = 1,2,3 \quad (9.2)$$

where \dot{M} and \dot{E} are the annual fluctuations in imports and exports, all in current prices; u is the error term; and the subscript i refers to two different measures of fluctuations in the variables--1 the trend-adjusted annual fluctuations as measured by I_4 method, 2 the simple annual percentage changes, and 3 the first differences in the absolute values of the variables. It is not unreasonable to expect that the impact of export fluctuations may spread over the current and following years, thus:

TABLE XXXIV
 FLUCTUATIONS IN EXPORTS AND IMPORTS IN PAKISTAN,
 1949/50 - 1966/67

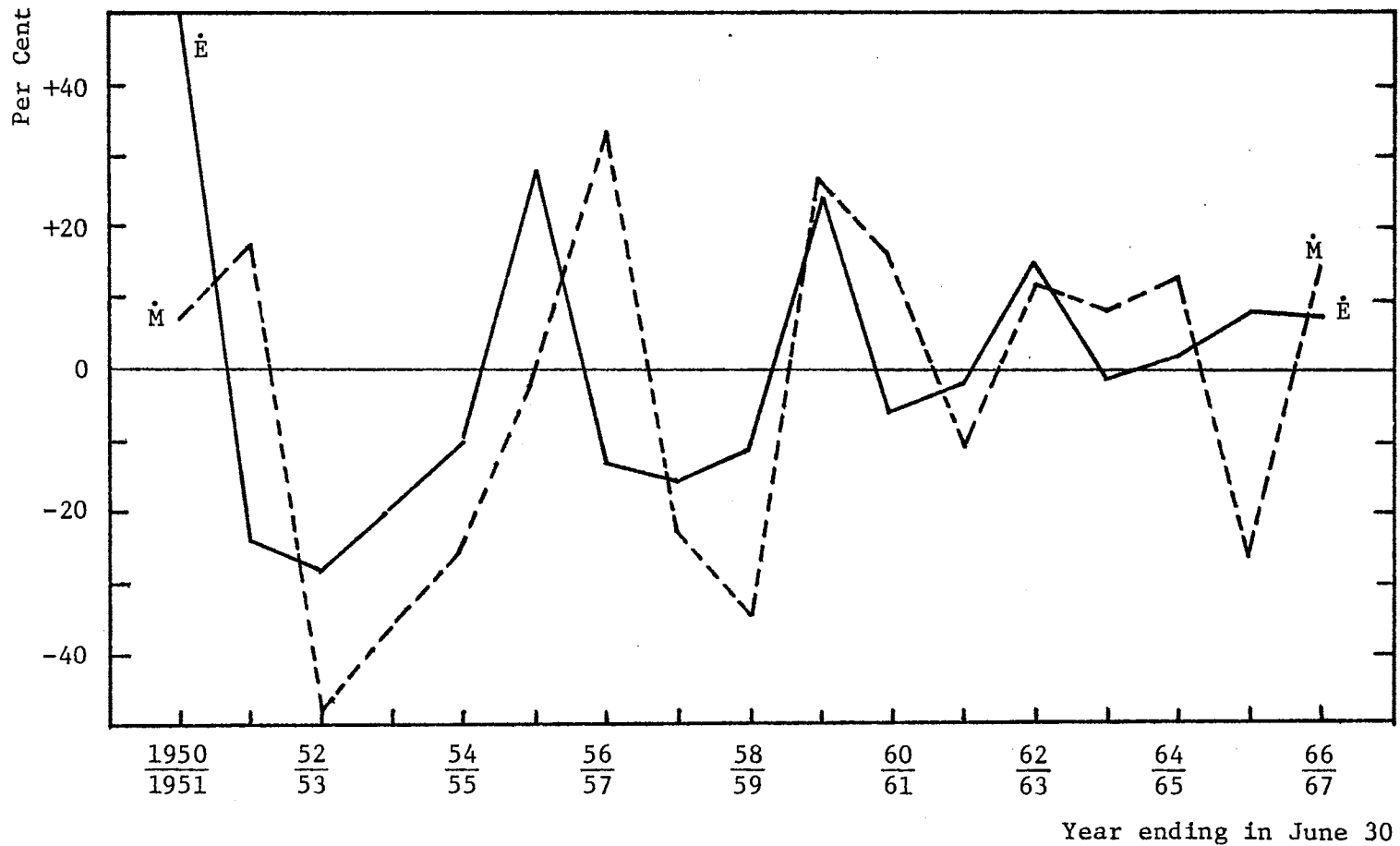
Year	E (Exports in Million Rupees)	M (Imports in Million Rupees)	Trend-adjusted Annual Per Cent Fluctuation		Annual Per Cent Fluctuation	
			E	M	E	M
	(1)	(2)	(3)	(4)	(5)	(6)
1949/50	1218	1284	--	--	--	--
50/51	2554	1620	49.9	6.3	109.7	26.2
51/52	2009	2237	-23.8	17.1	- 21.3	38.1
52/53	1510	1384	-27.9	-48.6	- 24.8	-38.1
53/54	1286	1118	-19.0	-36.2	- 14.8	-19.2
54/55	1223	1103	- 9.8	-22.3	- 4.9	- 1.3
55/56	1784	1325	28.0	- 0.9	45.9	20.1
56/57	1608	2335	-13.4	33.2	- 9.9	76.2
57/58	1422	2050	-15.4	-22.2	- 11.6	-12.2
58/59	1325	1578	-11.2	-34.5	- 6.8	-23.0
59/60	1843	2461	24.7	26.4	39.1	56.0
60/61	1799	3188	- 5.8	15.5	- 2.4	29.5
61/62	1843	3109	- 1.0	- 9.8	2.5	- 2.5
62/63	2247	3819	15.2	12.5	21.9	22.8
63/64	2299	4430	- 0.5	8.5	2.3	16.0
64/65	2408	5374	1.9	13.2	4.7	21.3
65/66	2718	4208	9.1	-26.1	12.9	-21.7
66/67	3006	5192	7.5	14.4	10.6	23.4
	Average Instability:		±15.5	±20.5	± 20.4	±26.3

Source: Government of Pakistan, CSO, 20 Years of Pakistan in Statistics 1947-1967, p. 107, Table 6.1; Ministry of Finance, Pakistan Economic Survey 1968/69, Statistical Section, p. 90, Table 42.



Source: Table XXIV.

Chart 13. Commodity Exports and Imports in Pakistan, 1949/50 - 1966/67



Source: Table XXXIV.

Chart 14. Trend-Adjusted Annual Fluctuations in Export Earnings (E) and Imports (M), Pakistan, 1949/50 - 1966/67

$$\dot{M}_i = \gamma_{0i} + \gamma_{1i}\dot{E}_i + \gamma_{2i}\dot{E}_{-1i} + v_i ; i = 1,2,3 \quad (9.3)$$

The regression results are summarized in Table XXXV. Irrespective of different measures of the annual changes in exports and imports, the regression coefficients for the current year exports all fail to withstand the test of significance at the 0.05 level (see regression equations 9.1.1, 9.1.2, and 9.1.3 in Table XXXV). When fluctuations in imports are related to fluctuations in export earnings in the previous year, however, the relationship is statistically significant (regression equations 9.2.1, 9.2.2, and 9.2.3 in Table XXXV). As the estimated regression equation (9.2.1) shows, the lagged export fluctuations after adjusting for trend are significant at the 0.01 level and explain 50 per cent of the short-term variations in imports. When fluctuations in imports are regressed on fluctuations in both current and lagged export earnings, in all three cases the size of regression coefficient increases and so does the size of the coefficient of determination (R^2). However, except in regression equation (9.3.2) where the variables are expressed in simple annual percentage changes, the test of serial correlation turns out to be inconclusive. Hence, the current year export earnings will not be used in the subsequent analyses.

Briefly, export instability in Pakistan was transmitted to imports, causing similar fluctuations in the latter. The response of merchandise imports to export fluctuations was found to be significant with a time-lag of about one year.

TABLE XXXV

REGRESSION RESULTS OF ANNUAL FLUCTUATIONS IN IMPORTS
ON EXPORT FLUCTUATIONS, PAKISTAN,
1949/50 - 1966/67

Equation Number ^a	Regression Coefficient ^b (Standard error)		N	R	F	D.W.
	E	E ₋₁				
9.1.1	0.647 (0.368)		17	0.426	3.097	2.232
9.1.2	0.527 (0.391)		17	0.339	1.815	2.365
9.1.3	0.535 (0.546)		17	0.253	0.961	2.599
9.2.1		0.844** (0.225)	16	0.708	14.067	2.117
9.2.2		0.543* (0.200)	16	0.587	7.355	1.967
9.2.3		0.811* (0.338)	16	0.541	5.779	2.516
9.3.1	0.740** (0.217)	0.891** (0.170)	16	0.858	18.170	2.803
9.3.2	0.779* (0.287)	0.650** (0.171)	16	0.763	9.052	2.518
9.3.3	0.738 (0.455)	0.896* (0.324)	16	0.641	4.538	2.871

^aThe third digit in equation number refers to different measures of fluctuations in the regression variables: 1 refers to the trend-adjusted annual fluctuations in per cent, 2 the annual percentage changes, and 3 the first differences in the absolute values of variables.

^b* significant at the 0.05 level; ** significant at the 0.01 level.

Import Structure, Growth, and Instability

From the significant and positive relationship between exports and imports found in the preceding section, no meaningful inference can be drawn regarding whether export instability has been associated with economic growth. As discussed earlier, it is the time path of capital goods imports that links export instability with domestic fixed capital formation and income growth. It is, therefore, necessary to examine the relationship between total imports and the major components therein, their fluctuations, and trends as well, on the one hand and the relationship between export instability and capital goods imports on the other.

Import Content of Investment in Pakistan

The availability of imported capital goods greatly influences the time path of domestic fixed capital formation in many developing countries. Accordingly, in these countries the availability of foreign exchange is an important constraint to economic growth. Pakistan is no exception. Table XXXVI shows the importance of the imports of capital goods and raw materials for capital goods in relation to total imports and domestic capital formation in Pakistan as well as in some of the other Sterling Area countries.

In Pakistan during the 1960's (compared to the 1950's), the share of domestically produced industrial raw materials (for consumer goods and other intermediate goods) in their total supply (meaning domestic production plus imports) had been rising, but that of investment and related goods had been nil. Virtually all capital goods were imported

TABLE XXXVI

CAPITAL GOODS AND RAW MATERIALS IMPORTS RELATIVE TO TOTAL
IMPORTS AND DOMESTIC CAPITAL FORMATION IN PAKISTAN AND
OTHER DEVELOPING COUNTRIES,^a 1960 - 1962

Country	As % of Total Imports			As % of GDFCF ^b		
	M _K	M _{RK}	M _K + M _{RK}	M _K	M _{RK}	M _K + M _{RK}
Burma	31	10	41	36	11	47
Ceylon	20	9	29	38	17	55
Malaya	18	13	31	47	30	77
India	43	9	52	17	4	21
Pakistan	46 ^c	15 ^c	61 ^c	27 ^c	10 ^c	37 ^c
Ghana	24	8	32	32	11	43
Kenya	25	8	33	65	17	82

Pakistan:						
1959/60	38	14	52	29	10	39
1960/61	38	18	56	26	13	39
1961/62	48	15	63	25	8	33
1962/63	51	11	62	31	7	38
1963/64	49	15	64	30	9	39
1964/65	48	11	59	31	7	38

^aDeveloping countries in the Sterling area.

^bGross domestic fixed capital formation.

^cThree-year averages for 1960/61 - 1962/63.

Sources: Compiled and computed from Alfred Maizels, Exports and Economic Growth of Developing Countries (Cambridge: Cambridge University Press, 1968), p. 85, Table 3.5; Nurul Islam, Imports of Pakistan: Growth and Structure--A Statistical Study, Statistical Papers No. 3 (Karachi: Pakistan Institute of Development Economics, 1967), pp. 15, 29, Tables XIV, B-5, and B-6.

from abroad.⁵ As noted earlier, the national income accounts in Pakistan suffer from the absence of data on the expenditure side; some existing data on investment, consumption, and savings are extremely fragmentary. However, it was estimated that the foreign exchange component of gross investment in Pakistan amounted to 35 per cent in the 1950's.⁶ The import content of investment in the 1960's is shown in the lower half of Table XXXVI. During 1959/60 - 1964/65 the imports of capital goods (M_K) alone accounted for 29 per cent of the aggregate investment expenditure, and the imports of capital goods and the raw materials for capital goods ($M_K + M_{RK}$) together for 38 per cent on the average for the same period. Although the import content of investment fluctuated from year to year, it showed no discernible trend, either downward or upward. In view of this high import content of investment, any interrupted flow and/or shortage of developmental imports may have entailed serious repercussions on the implementation of investment programs and income growth.

Major Imports by Function: Growth and Structure

In Chapter V, a brief mention was made of the changing commodity composition of imports in Pakistan over time largely owing to industrial growth. Discussion of the commodity composition of imports in terms of SITC, however, may not be useful for our purpose as SITC is

⁵S. R. Lewis, Jr., Pakistan: Industrialization and Trade Policy (London: Oxford University Press, 1970), pp. 106-107, Tables 5.1 and 5.2.

⁶M. Haq, The Strategy of Economic Planning: A Case Study of Pakistan (Karachi: Oxford University Press, 1963), pp. 228-230, Table A-10.

not the most appropriate commodity classification for an analysis of the relationship between imports and income growth. A more relevant one would be the classification by functional groups--namely, consumer goods, capital goods, and industrial raw materials. Fortunately, detailed data on Pakistan's imports by functional classification have been made available recently by Islam's study.⁷

Table XXXVII presents the composition of imports in Pakistan classified into four functional categories for the period 1951/52 - 1964/65. The highest growth was recorded in the imports of capital goods (M_K) with an annual growth rate of 7.1 per cent, followed by the raw materials for capital goods (M_{RK}), 5.4 per cent, and the raw materials for consumer goods (M_{RC}), 3.9 per cent. The lowest growth rate was in the category of finished consumer goods (M_C) at 2.3 per cent.⁸

During the period under review the composition of imports changed considerably; the most phenomenal structural change occurred in the imports of finished consumer goods and capital goods. The import share of consumer goods fell from 41 per cent in 1951-55 to 24 per cent in 1960-65, while that of capital goods rose steadily from 29 to 47 per cent over the same period. No discernible trends were found for the import shares of the raw materials for either consumer or capital goods. This changing import structure can also be seen in Chart 15 where the relative shares in total imports of four major categories of imports are sketched. A considerable decline in the import share of

⁷Nurul Islam, Imports of Pakistan: Growth and Structure, Statistical Papers No. 3 (Karachi: Pakistan Institute of Development Economics, 1967).

⁸Ibid., p. 4.

TABLE XXXVII

COMMODITY COMPOSITION OF IMPORTS BY FUNCTIONAL CLASSIFICATION,
PAKISTAN, 1951/52 - 1964/65

Year	Value in Million Rupees					Per Cent Share				
	Consumer Goods	Raw Materials for Consumer Goods	Capital Goods	Raw Materials for Capital Goods	Total ^a	M _C	M _{RC}	M _K	M _{RK}	M ^b
	M _C	M _{RC}	M _K	M _{RK}	M					
1951/52	926	515	474	183	2098	44	25	23	9	100
52/53	662	184	297	150	1293	51	14	23	12	100
53/54	425	196	309	153	1083	39	18	29	14	100
54/55	310	163	419	151	1043	30	16	40	15	100
55/56	398	212	447	163	1220	33	17	37	14	100
56/57	876	348	704	242	2170	41	16	33	11	100
57/58	831	243	659	257	1990	42	12	33	13	100
58/59	521	198	540	264	1523	34	13	36	17	100
59/60	737	408	904	344	2393	31	17	38	15	100
60/61	936	453	1206	556	3151	30	15	38	18	100
61/62	682	476	1459	444	3061	22	16	48	15	100
62/63	805	645	1941	420	3811	21	17	51	11	100
63/64	981	621	2150	676	4428	22	14	49	15	100
64/65	1368	796	2600	603	5367	26	15	49	11	100

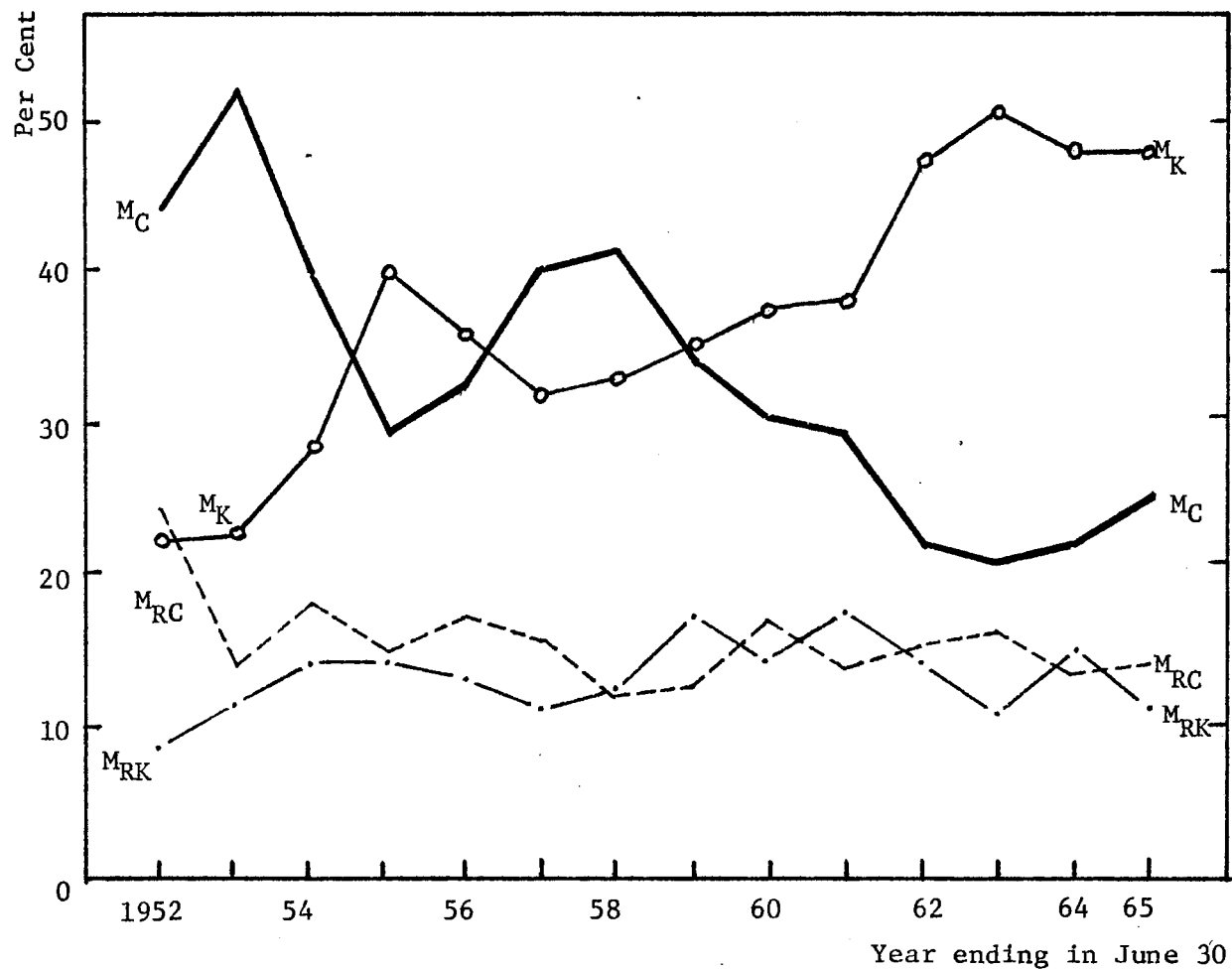
TABLE XXXVII (Continued)

Year	Value in Million Rupees					Per Cent Share				
	Consumer Goods	Raw Materials for Consumer Goods	Capital Goods	Raw Materials for Capital Goods	Total ^a	M _C	M _{RC}	M _K	M _{RK}	M ^b
	M _C	M _{RC}	M _K	M _{RK}	M					
Annual Averages:										
1951/52 - 54/55	581	265	375	159	1379	41	18	29	13	100
1955/56 - 59/60	673	282	651	254	1859	36	15	35	14	100
1960/61 - 64/65	594	599	1872	540	3964	24	15	47	14	100

^aClassified imports only; 99 per cent of total imports are classified for the 1960's and 93-97 per cent for the 1950's. The figures in this column are therefore slightly different from those reported in column (1) in Table XXXIV.

^bTotals may not add up due to rounding.

Source: Compiled and computed from Nurul Islam, Imports of Pakistan: Growth and Structure--A Statistical Study, Statistical Papers No. 3 (Karachi: Pakistan Institute of Development Economics, 1967), p. 29, Tables B-5 and B-6.



Source: Table XXXVII. M_C = consumer goods, M_K = capital goods, M_{RK} = raw materials for capital goods, M_{RC} = raw materials for consumer goods.

Chart 15. Commodity Composition of Imports in Pakistan: Functional Classification, 1951/52 - 1964/65

finished consumer goods was matched by the corresponding increase in the share of capital goods, which is a good indication of the extent of import substitution and industrial growth that has occurred in Pakistan over the years. And these trends in import shares are consistent with the expected pattern in the process of economic development.⁹

Instability in Major Imports and Total Imports

Apart from growth and structural change in imports, the year-to-year fluctuations in major imports and their composition (as measured by the per cent shares in total imports) have been considerable over the years. Table XXXVIII contains the indices of average instability computed by three different measures for the various categories of imports and the total as well. The imports of consumer goods fluctuated more than any other categories of imports, irrespective of the instability measures used: the average annual per cent fluctuation (I_1) was 35 per cent for consumer goods and 32, 27, and 21 per cent, respectively, for the raw materials for consumer goods, capital goods, and the raw materials for capital goods. The same pattern is observed when fluctuations were measured by two other indices, I_2 and I_4 , although their magnitudes were smaller (see Table XXXVIII).

The differential variability in the major categories of imports deserves special attention because it may have been the result, to a large extent, of the government import policy. It is not unreasonable

⁹See, for instance, H. B. Chenery, "Patterns of Industrial Growth," American Economic Review, L (September 1960), pp. 624-654; Alfred Maizels, Industrial Growth and World Trade (Cambridge: Cambridge University Press, 1963), ch. 2.

TABLE XXXVIII
 INSTABILITY INDICES FOR MAJOR IMPORTS AND TOTAL IMPORTS
 IN PAKISTAN, 1951/52 - 1964/65^a
 (In Per Cent)

Variable	Average Annual Fluctuation		
	I ₁	I ₂	I ₄
(M _C) Consumer goods	35.2	26.9	26.7
(M _{RC}) Raw materials for consumer goods	32.3	24.3	24.7
(M _K) Capital goods	27.1	20.7	24.5
(M _{RK}) Raw materials for capital goods	21.2	15.8	21.4
(M _R) Raw materials (= M _{RC} + M _{RK})	24.4	19.5	21.0
(M) Total imports	26.0	20.2	23.1

^aComputed from data in Table XXXVII.

to expect that the growth-minded government would try to maintain the flow of the imports of capital goods and industrial raw materials at the expense of other imports, particularly in times of falling foreign exchange earnings. As was found earlier, the variation in total imports, no doubt, reflects the variation in foreign exchange availability; however, the variability in the different categories of imports may reflect in large part the reaction pattern of the government in response to the availability of foreign exchange, derived from export earnings and other sources.

At least two important inferences can be drawn from Table XXXVIII: One, both categories of the raw materials (for consumer and capital goods) were more stable than their corresponding finished goods imports; the raw materials for consumer goods fluctuated annually by 32 per cent compared to 35 per cent for finished consumer goods, while the raw materials for capital goods fluctuated by 21 per cent compared to 27 per cent for finished capital goods. Two, the variations in the imports of capital goods (27 per cent) and their raw materials (21 per cent) were smaller than those in the imports of consumer goods (35 per cent) and their raw materials (32 per cent).

One of the implications of the observed differences in the variations of major imports is that the system of import control used by the Pakistan government as an instrument for industrial development has been successful in maintaining the components of imports flexible in accordance with the priorities assigned to each category of imports. The smaller variability in the imports of raw materials for consumer goods than for finished consumer goods can be explained at least partly by the desire on the part of the government to avoid any interrupted

flow of raw materials for the consumer goods industries, which may cause underutilization of installed capacity and thereby adversely affect incomes and employment in these industries. On the other hand, the lesser variation for the raw materials for capital goods than for finished capital goods may reflect partly the limited extent of the capital goods sector in Pakistan and partly the greater priority given to the need to maintain the availability of capital goods.¹⁰ The differential variability in the imports of finished goods vs. raw materials, however, may not be as important as the differences in the annual variation in the imports for the consumer vs. producer sectors in the economy, since it is the producer sector that has a direct bearing on economic growth.

The observed smaller annual variation in the imports for the producer sector vis-a-vis the imports for the consumer sector was not unexpected because of the greater priorities given to the acceleration of fixed investment in allocating scarce foreign exchange:

In view of the need to maintain, and if possible, to accelerate the pace of investment, in times of stringency, a cut is more easily made in the category of consumer goods and the raw materials for consumer goods and in times of affluence proportionately larger increase takes place in the imports of the capital goods and the raw materials for capital goods.¹¹

This expectation is, in fact, upheld by the analysis that follows.

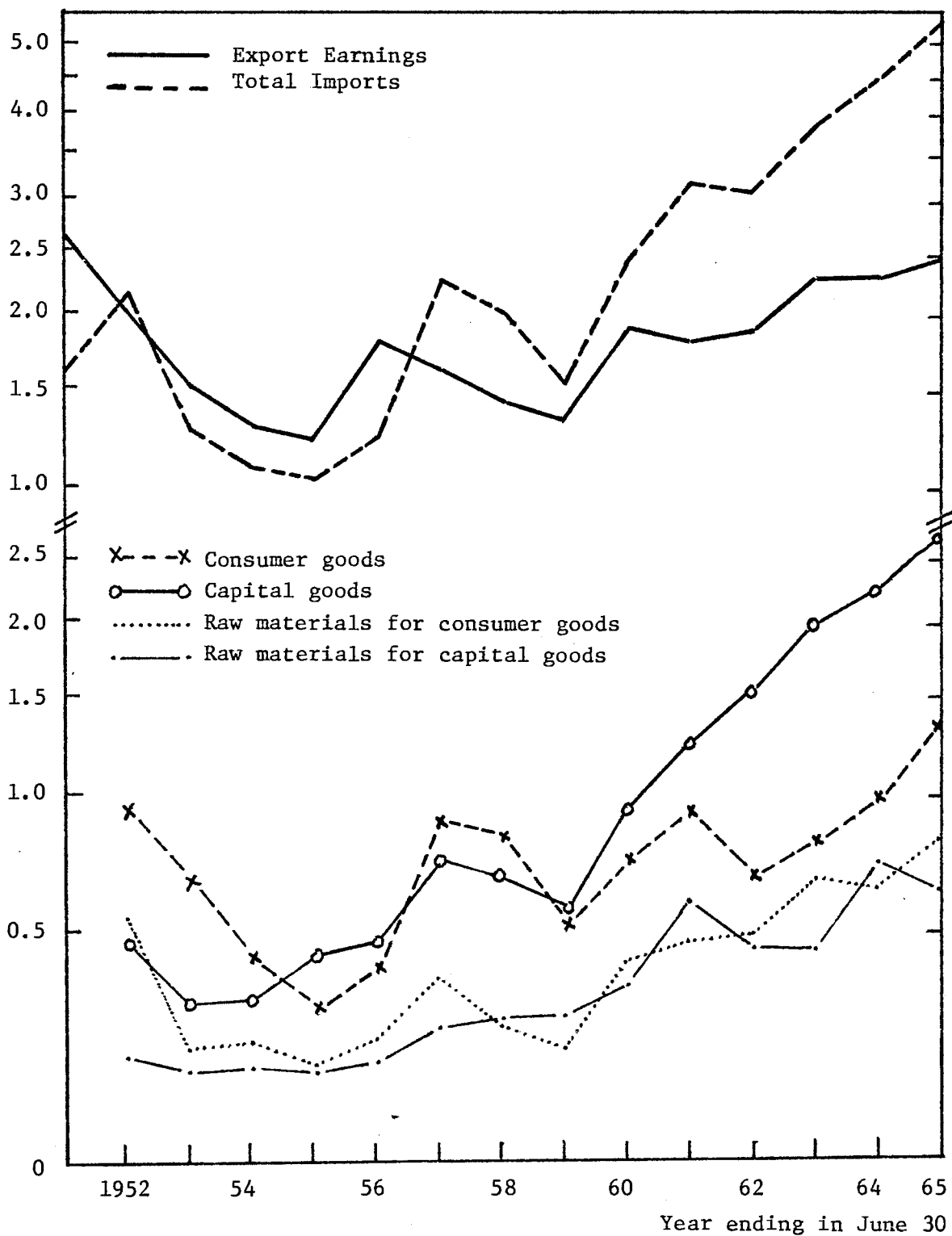
¹⁰Islam, p. 5.

¹¹Ibid.

Export-Induced Instability in Total Imports and Fluctuations in the Imports of Capital Goods and Consumer Goods

From a comparison of variations in the major categories of imports, it appears that the impact of export-induced fluctuations in total imports was borne most by the finished consumer goods and least by the capital goods. This is also indicated by Chart 16 where the fluctuations in major imports are plotted on a semi-log scale along with export earnings and total imports during 1951/52 - 1964/65. With no exception, the finished consumer goods imports and total imports moved together while capital goods imports rose in several cases when total imports fell, implying that a cut in the imports of other categories was made.

Perhaps a more vigorous analysis in this respect is to compute the per cent distribution of the annual fluctuations in total imports among the major import categories. Table XXXIX presents the results of such a computation; it shows how a given per cent change in total imports was shared by each of the four major imports. As can be seen in columns (2), (3), and (5) in the table, consumer goods imports invariably followed, every year, the movement of total imports whereas capital goods imports actually rose in three years--1953/54, 1954/55, and 1961/62--when total imports fell. In these years, the increase in capital goods imports was made at the expense of a cut in consumer goods imports, of which the weighted per cent share declined far more than the per cent decline in total imports. In 1953/54, for instance, total imports fell by 16.2 per cent. This decline was more than offset by the 18.3 per cent decline in consumer goods imports, thus increasing



Sources: Tables XXXIV and XXXVII.

Chart 16. Relationships Between Export Earnings, Total Imports, and Major Imports in Pakistan, 1951/52 - 1964/65

TABLE XXXIX

DISTRIBUTION OF ANNUAL CHANGES IN TOTAL IMPORTS
BETWEEN MAJOR IMPORTS, 1951/52 - 1964/65^a
(In Per Cent)

Year	Export Earnings ^b	Total Imports ^b	Functional Groups ^d			
	E	M	M _C	M _{RC}	M _K	M _{RK}
	(1)	(2)=(3+4+5+6) ^c	(3)	(4)	(5)	(6)
1951/52	--	--	--	--	--	--
52/53	-24.8	-38.4	-12.6	-15.8	- 8.4	-1.6
53/54	-14.8	-16.2	-18.3	0.9	0.9	0.2
54/55	- 4.9	- 3.7	-10.6	- 3.1	10.2	-0.2
55/56	45.9	17.0	8.5	4.7	2.7	1.2
56/57	- 9.9	77.9	39.2	11.2	21.1	6.5
57/58	-11.6	- 8.3	- 2.1	- 4.8	- 2.1	0.7
58/59	- 6.8	-23.5	-15.6	- 2.3	- 6.0	0.4
59/60	39.1	57.1	14.2	13.8	23.9	5.4
60/61	- 2.4	31.7	8.3	1.9	12.6	8.9
61/62	2.5	- 2.9	- 8.2	0.7	8.2	-3.6
62/63	21.9	24.5	4.0	5.5	15.7	-0.8
63/64	2.3	16.2	4.6	-0.6	5.5	6.7
64/65	4.7	21.2	8.7	4.0	10.2	-1.6

^aComputed from Table XXXVII.

^bAnnual changes in per cent.

^cTotals may not add up due to rounding.

^dWeighted distribution of a given per cent change in total imports borne by major functional imports in per cent.

capital goods and other imports. Likewise, in 1954/55 and 1961/62 total imports fell by 3.7 and 2.9 per cent, respectively; again these declines were more than offset by the reduction in consumer goods by 10.6 and 8.2 per cent while the weighted share of capital goods rose by 10.2 and 8.2 per cent, respectively. In other years, capital goods increased (decreased) proportionately more (less) than consumer goods when total imports rose (fell).

To sum up, the impact of export fluctuations on the imports of capital goods appeared to have been reduced somewhat by the restrictive import policy that accorded the greater priority to the availability of capital goods and industrial raw materials. The impact of export-induced instability in total imports appeared to have affected consumer goods imports more than any other category of imports. This indicates the ability on the part of the government to adjust imports to the variations in the availability of foreign exchange through the elaborate system of import licensing and exchange control,¹² initiated in November 1952 following the foreign exchange crisis after the Korean War boom and maintained throughout the period under review. In addition, a heavy inflow of food imports under the P.L. 480 program and the fast growth of domestic manufacturing, the cotton textile industry in

¹²For a discussion of the mechanics and impact of the import control system in Pakistan, see S. N. H. Naqvi, "Import Licensing in Pakistan," Pakistan Development Review, IV, No. 1 (Spring 1964), pp. 51-68; P. S. Thomas, "Import Licensing and Import Liberalization in Pakistan," Pakistan Development Review, VI, No. 4 (Winter 1966), pp. 500-539; M. L. Pal, "The Determinants of the Domestic Prices of Imports," Pakistan Development Review, IV, No. 4 (Winter 1964), pp. 597-622; S. R. Lewis, Jr., Economic Policy and Industrial Growth in Pakistan (Cambridge, Mass.: The M. I. T. Press, 1969), ch. IV, esp. pp. 75-87.

particular--both discussed in the preceding chapter--all helped reduce the imports of consumer goods in times of foreign exchange shortfalls. At the same time, the imports of capital goods were further facilitated by a heavy inflow of foreign aid and loans since the late 1950's. Table XL shows the extent of foreign capital inflow in Pakistan for the period 1949/50 - 1966/67.

Nevertheless, as will be seen in the following section, these favorable developments were not sufficient to isolate the impact of short-term fluctuations in export earnings on the imports of capital goods and other industrial raw materials, which in turn are significantly related to income changes.

Export Instability, Developmental Imports, and Income Growth

This section provides a statistical analysis of the interrelationships between export earnings, developmental imports, and income growth in Pakistan during 1951/52 - 1964/65.

A Trade-Constrained Growth Model

At this point, it is necessary to recapitulate the a priori argument discussed at the beginning of this chapter in the context of a formal growth model from which we can derive a set of empirically testable functional relationships.

TABLE XL
 INFLOW OF FOREIGN CAPITAL AND THE BALANCE
 OF PAYMENTS IN PAKISTAN, 1949/50 - 1966/67
 (In Million Rupees)

Year	Current Account Balance ^a	Net Long- Term Private Capital	Net Long-Term Public Capital		Total Net Inflow of Foreign Capital ^b
			Official Donations	Official Loans and Other Obligations	
	(1)	(2)	(3)	(4)	(5)=(2+3+4)
1949/50	- 322	4	--	--	4
50/51	600	5	--	--	6
51/52	- 423	11	2	2	16
52/53	- 515	19	76	69	165
53/54	- 161	23	138	42	203
54/55	- 67	24	101	65	190
55/56	11	9	372	101	481
56/57	- 962	21	706	57	784
57/58	-1517	28	1194	62	1285
58/59	- 622	11	657	154	821
59/60	- 865	14	989	79	1082
60/61	-1354	25	1304	113	1442
61/62	- 933	2	831	146	978
62/63	-1586	9	1495	521	2024
63/64	-1872	10	876	127	1013
64/65	-3012	176	1334	1339	2849
65/66	-2305	175	876	1187	2238
66/67	-3049	246	833	1382	2462

^aExports and imports of goods and services.

^bTotals may not add up due to rounding.

Sources: State Bank of Pakistan data. Compiled and computed from CSO, 20 Years of Pakistan in Statistics 1947-1967, pp. 310-319, Table 15.1 and Ministry of Finance, Pakistan Economic Survey 1968/69, Statistical Section, pp. 101-103, Table 49.

Recently, in the field of trade and development the "two-gap analysis" has been popularized by McKinnon,¹³ and Chenery and Strout¹⁴ who constructed growth models where a shortage of foreign exchange plays a major constraint on economic growth. By using a (computable ex post) model adapted from the Chenery-Strout growth model, Maizels¹⁵ analyzed the role of exports in the process of economic growth for the Sterling Area countries. Although the Maizels model is basically of a long-term nature as are all other growth models, it specifies the essential sub-relationships that link exports with income growth. The interconnections between export instability, developmental imports, and income, therefore, can be readily explored in terms of a trade-constrained model of economic growth such as Maizels'.

Income growth in many developing countries is constrained by the availability of foreign exchange on which depends the level of developmental imports, a major determinant of investment--a situation, as we noted earlier, not unrealistic to a country like Pakistan. The

¹³Ronald I. McKinnon, "Foreign Exchange Constraints in Economic Development and Efficient Aid Allocation," Economic Journal, LXXIV (June 1964), pp. 388-409.

¹⁴Hollis B. Chenery and Alan M. Strout, "Foreign Assistance and Economic Development," American Economic Review, LVI (September 1966), pp. 679-732; Chenery and M. Bruno, "Development Alternatives in an Open Economy: The Case of Israel," Economic Journal, LXXII (March 1962), pp. 79-103; Chenery and A. MacEwan, "Optimal Patterns of Growth and Aid: The Case of Pakistan," Pakistan Development Review, VI, No. 2 (Summer 1966), pp. 209-242, also reprinted in I. Adelman and E. Thorbecke, eds., The Theory and Design of Economic Development (Baltimore: The Johns Hopkins University Press, 1966), pp. 149-178.

¹⁵Alfred Maizels, Exports and Economic Growth of Developing Countries (Cambridge: Cambridge University Press, 1966).

following is a brief description of the Maizels model¹⁶ with some modifications of the variables to suit our purpose:

Income, Y , and investment, I , are related through an incremental-capital-output ratio, σ , as follows:

$$Y_t = I_t / \sigma r \quad (9.4)$$

where r is the growth rate of income and t is the time. The level of commodity imports, M_T , is determined by the total capacity to import defined as merchandise export earnings, E , plus the net inflow of foreign capital, both private and public, F :¹⁷

$$M_{T_t} = E_t + F_t \quad (9.5)$$

assuming that merchandise export earnings and the net capital inflow are autonomously determined.

Developmental imports, M_D , are defined as the sum of the imports of capital goods, M_K , and the raw materials for capital goods, M_{RK} , to which the greater priorities are accorded by the government, as in the case of Pakistan, because they are a major determinant of domestic fixed capital formation. Developmental imports so defined are chiefly determined by the capacity to import:

$$M_{D_t} = \alpha_0 + \alpha_1(E_t + F_t) \quad (9.6)$$

¹⁶Ibid., pp. 59-72.

¹⁷The net balance on service trade account is included in the definition of total capacity to import. In the case of Pakistan, earnings from service exports were insignificant relative to merchandise export earnings in the current account during the period under review.

The imports of consumer goods, M_C , and their raw materials, M_{RC} , are then determined as a residual, thus:

$$\begin{aligned} M_{C_t} + M_{RC_t} &= M_{T_t} - M_{D_t} \\ &= (E_t + F_t) - \alpha_1(E_t + F_t) - \alpha_0 \end{aligned} \quad (9.7)$$

Domestic investment is assumed to vary with the level of developmental imports:

$$I_t = \beta_0 + \beta_1 M_{D_t} \quad (9.8)$$

Substituting (9.6) into (9.8), the relationship between import capacity and investment can readily be derived:

$$I_t = (\beta_0 + \alpha_1\beta_1) + \alpha_1\beta_1(E_t + F_t) \quad (9.9)$$

Finally, substituting (9.9) into (9.4), it can be seen that income growth is constrained by export earnings and other sources of foreign exchange as follows:

$$Y_t = \frac{1}{\sigma r} [(\beta_0 + \alpha_1\beta_1) + \alpha_1\beta_1(E_t + F_t)] \quad (9.10)$$

given the values of the structural parameters such as σ , α_1 , and β_1 . From (9.10) the relationship between the growth rate of exports, e , and the growth rate of GNP, r , can be derived, and the required net inflow of foreign capital consistent with the target growth rate of income, r^* , can also be estimated given the values of Y and E in the base year of the plan period.¹⁸

¹⁸For a mathematical derivation, see Maizels, pp. 71-72.

Despite its long-term nature, the model can be useful for the problem of export instability since it contains the key relationships through which export instability is believed to transmit its impact to income growth--i.e., those between exports and developmental imports (Equation 9.6) and between developmental imports and investment (Equation 9.9).¹⁹

Effect of Export Instability on Developmental Imports

In the model presented above, the imports of raw materials for consumer goods, M_{RC} , are excluded from developmental imports, which is logical because it is the imports of capital goods and their raw materials that directly influence the level of fixed capital formation. In our analysis, however, developmental imports are defined broadly as the sum of capital goods, M_K , and industrial raw materials, M_R , that comprise the raw materials for both capital goods, M_{RK} , and consumer goods, M_{RC} . As mentioned earlier, imported raw materials for consumer goods play an important role in influencing the degree of utilization of installed capacity in the import-substituting manufacturing

¹⁹In this sense, the model is far superior to the UNCTAD's aggregate growth model which in essence assumes a proportional relationship between the growth rate of income and the growth rate of total capacity to import. See UNCTAD, Studies in Long-Term Economic Projections for the World Economy (New York: United Nations, 1964). For a criticism of the model as well as the UNCTAD's argument for the need to increase the rate of growth of import capacity for LDC's in order to accelerate economic growth in these countries, see David Wall, "Import Capacity, Imports and Economic Growth," Economica, XXXV (May 1968), pp. 157-168, and the counter-argument by D. J. Smith and J. M. Holms, "The Statistical Relationship Between Imports of Investment Goods and Gross Domestic Product in Developing Countries," Economic Analysis and Policy, I (March 1970), pp. 14-17.

industries and thereby affect incomes and employment in these industries.

In order to examine the impact of year-to-year fluctuations in export earnings on the two categories of developmental imports, the following equations were used:

$$\Delta M_K = \alpha_0 + \alpha_1 \Delta E_{-1} + \alpha_2 \Delta L + u \quad (9.11)$$

$$\Delta M_R = \alpha_0' + \alpha_1' \Delta E_{-1} + \alpha_2' \Delta L + u' \quad (9.12)$$

where ΔM_K , ΔM_R , ΔE_{-1} , and ΔL are the first-differences in capital goods imports, industrial raw materials imports, lagged export earnings, and the net foreign capital inflow, both private and public. All variables are measured in current prices.²⁰ The regression results are reported below:

$$\Delta M_K = 140.416 + 0.363 \Delta E_{-1} + 0.139 \Delta L \quad (9.11)'$$

(0.130)* (0.064)*

$$R^2 = 0.557$$

$$F = 6.296*$$

$$D.W. = 1.556$$

$$\Delta M_R = 56.052 + 0.398 \Delta E_{-1} + 0.026 \Delta L \quad (9.12)'$$

(0.109)* (0.053)

$$R^2 = 0.575$$

$$F = 6.775*$$

$$D.W. = 2.165$$

²⁰The variables could not be deflated by appropriate import price indices for aggregate imports as well as functional imports since the time series for import price indices are either broken or too short, reducing the degree of freedom.

Export earnings are found to be significantly related to the two categories of developmental imports. As shown in (9.11)', fluctuations in export earnings and the net foreign capital inflow explain about 56 per cent of the annual variations in capital goods imports. Export earnings are also significant in determining the variation in the imports of industrial raw materials but foreign capital is not. This may be due to the fact that in Pakistan the greater priority was given to capital goods imports, the bulk of which were imported on the government account to implement the public investment projects for building infrastructure. Part of the foreign exchange derived from foreign aid and loans were earmarked for such projects.

On the other hand, it is not unreasonable to expect that Pakistan's own foreign exchange earnings from exports play a more important role in determining the imports of industrial raw materials which were imported mostly on the private account. Particularly under the Export Bonus Scheme introduced in 1959 as a measure of export promotion, export earnings are closely tied with the demand for imports. Under the Scheme, exporters are entitled to receive a bonus voucher equal to a government determined proportion of the value of exports, and this voucher can be sold in the free market. The bearer of the voucher is then entitled to purchase foreign exchange equal to the voucher's face value at the official exchange rate. The foreign exchange so obtained can be used to import most raw materials and intermediate goods for the private sector. At the present time, almost all manufacturing industries and some non-traditional primary products are awarded the bonus vouchers.

In sum, in spite of the government's attempts to adjust the essential imports to the variations in foreign exchange availability at the expense of nonessentials and the presence of a large inflow of foreign aid and loans, developmental imports were significantly responsive to export earnings fluctuations during the period under review.²¹

Developmental Imports and Sectoral Incomes

By affecting the variability of developmental imports, the impact of export earnings fluctuations in Pakistan was transmitted to income growth. As noted before, the relationship between developmental imports and domestic investment (Equation 9.9) cannot be examined meaningfully because of the absence of reliable time series on the latter. However, as a substitute for relationship (9.9), the dependence of income growth on developmental imports may be examined directly.

²¹The simple relationships between annual fluctuations in export earnings and developmental imports were estimated as follows:

$$\dot{M}_K = -7.254 + 1.170\dot{E}_{-1} ; R^2 = 0.473 \\ (0.372) \quad F = 9.886$$

$$\Delta M_K = 170.693 + 0.365\Delta E_{-1} ; R^2 = 0.347 \\ (0.151) \quad F = 5.853$$

$$\dot{M}_R = -2.824 + 1.070\dot{E}_{-1} ; R^2 = 0.528 \\ (0.305) \quad F = 12.309$$

$$\Delta M_R = 61.732 + 0.398\Delta E_{-1} ; R^2 = 0.565 \\ (0.105) \quad F = 14.303$$

where \dot{M}_K , \dot{M}_R , and \dot{E}_{-1} are the trend-adjusted annual fluctuations in the imports of capital goods and industrial raw materials, and export earnings lagged by one year. Other variables are defined as before. In all cases, export earnings fluctuations are statistically significant and explain a considerable amount of the variations in developmental imports.

Substituting (9.8) into (9.4) we obtain:

$$\begin{aligned} Y_t &= \frac{1}{\sigma r} (\beta_0 + \beta_1 M_{D_t}) \\ &= \gamma_0 + \gamma_1 M_{D_t} \end{aligned} \quad (9.13)$$

where $\gamma_0 = \beta_0/\sigma r$ and $\gamma_1 = \beta_1/\sigma r$. It is assumed that income growth varies directly with developmental imports; the immediate relationships between developmental imports and investment and between investment and income (each represented by the structural parameters, β_1 and σ , respectively) are now compressed into coefficient γ_1 .

The following regression equation was used to estimate the impact of annual changes in developmental imports on income for the period 1951/52 - 1964/65:

$$\Delta Y_i = \gamma_{0i} + \gamma_{1i} M_{K-1} + \gamma_{2i} \Delta M_R + v_i \quad (9.14)$$

where: ΔY and ΔM_R are the first-differences in income and imported industrial raw materials, M_{K-1} is the absolute value of capital goods imports lagged by one year.²² The subscript ($i = 1, 2, 3$) refers to the three concepts of income used in the analysis: Y_1 is the income from the manufacturing sector alone; Y_2 is the non-agricultural income derived from (a) manufacturing, (b) construction, (c) electricity, gas, water, and sanitary services, and (d) transportation and communication; and Y_3 is total GNP. In defining non-agricultural income, Y_2 , other non-agricultural incomes originating from other sectors such as

²²Although we are primarily interested in the short-term relationships between the variables, the absolute level of capital goods imports was chosen on the grounds that machinery and equipment are an addition to the existing capital stock accumulated from the past that will last over time, affecting the stream of income.

wholesale and retail trade, banking, and government are excluded because developmental imports are likely to have little direct impact on these incomes. Agricultural income is not considered since its variations are influenced more by variable weather conditions. All income data are those of the Central Statistical Office of Pakistan and are measured in the 1959/60 constant factor cost.²³

The estimated equations are reported below:

$$\Delta Y_1 = 101.686 + 0.152M_{K-1} + 0.441\Delta M_R \quad (9.14.1)$$

(0.061)*⁻¹ (0.206)*

$$R^2 = 0.603$$

$$F = 7.606*$$

$$D.W. = 1.937$$

$$\Delta Y_2 = 72.656 + 0.484M_{K-1} + 0.770\Delta M_R \quad (9.14.2)$$

(0.088)**⁻¹ (0.298)*

$$R^2 = 0.832$$

$$F = 24.793**$$

$$D.W. = 2.116$$

$$\Delta Y_3 = 600.975 + 0.939M_{K-1} + 6.299\Delta M_R \quad (9.14.3)$$

(0.538) (1.829)*

$$R^2 = 0.668$$

$$F = 10.073*$$

$$D.W. = 1.906$$

The heavy dependence of income on the variations in imported capital goods and industrial raw materials is evident. The availability of

²³Government of Pakistan, Central Statistical Office, 20 Years of Pakistan in Statistics 1947-1967, pp. 4-5, Table 1.1

developmental imports appears to have affected non-agricultural income (Y_2) more than either the income from manufacturing alone (Y_1) or the total GNP (Y_3). As shown in Equation (9.14.2), over 83 per cent of the annual variations in non-agricultural income is explained by developmental imports, and the regression coefficients are statistically significant as is the whole regression equation. Over all, 60-83 per cent of income variations are explained by the availability of developmental imports.

Export Instability and Sectoral Incomes

So far, the two important sub-relationships that are hypothesized to link export fluctuations with income growth (as described by a trade-constrained growth model) are upheld by statistical evidence. And, one is naturally tempted to estimate the short-term response of income changes to the variations in the capacity to import as implied in the relationship:

$$Y_t = \frac{1}{\sigma_Y} [(\beta_0 + \alpha_1\beta_1) + \alpha_1\beta_1(E_t + F_t)] \quad (9.10)$$

The regression equation to be estimated for our purpose was in the form:

$$\Delta Y_i = \theta_{0i} + \theta_{1i}\Delta E_{-1} + \theta_{2i}\Delta L + w_i ; i = 1, 2, 3 \quad (9.15)$$

The regression variables are as defined before and the subscript ($i = 1, 2, 3$) denotes the three income concepts defined before.

The estimated relationships are found to be positive and statistically significant. The results are given below:

(1) Manufacturing Income:

$$\Delta Y_1 = 248.266 + 0.337\Delta E_{-1} + 0.082\Delta L \quad (9.15.1)$$

(0.115)* (0.056)

$$R^2 = 0.519$$

$$F = 5.399*$$

$$D.W. = 1.976$$

(2) Non-Agricultural Income:

$$\Delta Y_2 = 541.812 + 0.801\Delta E_{-1} + 0.074\Delta L \quad (9.15.2)$$

(0.263)** (0.129)

$$R^2 = 0.491$$

$$F = 4.823*$$

$$D.W. = 1.213$$

(3) Total Income:

$$\Delta Y_3 = 1620.527 + 3.880\Delta E_{-1} + 1.044\Delta L \quad (9.15.3)$$

(0.782)** (0.382)*

$$R^2 = 0.764$$

$$F = 16.159**$$

$$D.W. = 2.989$$

As the estimated relationships (9.15.1) and (9.15.2) show, the impact of annual changes in export earnings on incomes derived from the manufacturing and non-agricultural sectors is substantial and statistically significant. About 50 per cent of income variations are explained by export earnings and the net foreign capital inflow. The estimated regression coefficients for export earnings are significant but they are not for foreign capital.

In the case of total GNP (Equation 9.15.3), both export earnings and foreign capital carry positive and significant coefficients, and R^2 is much higher; however, the estimated relationship may not be reliable because of the presence of serial correlation as indicated by the D.W. statistic.²⁴

The apparent insignificance of foreign capital in affecting domestic income may be due to the fact that the inflow of foreign resources in Pakistan was virtually absent in the early 1950's (see Table XL). Only after 1955 when the First Five-Year Plan (1955/56 - 1959/60) was launched, did massive foreign aid from the U. S. begin to flow into Pakistan. Another plausible explanation may be that, unlike export earnings and private foreign investment (which accounted for a trivial fraction of total foreign resources in Pakistan during the period under review as can be seen in Table XL), the bulk of foreign aid and loans received by the Pakistan government was used for financing the mounting development expenditures. And these expenditures were usually devoted to infrastructure and public investment projects that have a long gestation period.²⁵ The extent of foreign aid and its importance in relation to GNP, imports, and development expenditure can be seen in Table XLI.

²⁴Serial correlation may be present since $2.60 = 4 - d_U < D.W. = 2.989 < 4 - d_L = 3.17$ when $N = 13$, $K = 2$.

²⁵Also, it may be that the inflow of foreign aid and loans increased so rapidly from a small base that first-differencing greatly accentuates the year-to-year fluctuations in the variable. The absolute level (growth) of foreign resources may have been more important in affecting the growth of income over time.

TABLE XLI
FOREIGN AID, DEVELOPMENT EXPENDITURE, IMPORTS,
AND GNP IN PAKISTAN

Year	Foreign Aid ^a (Million Rupees)	Foreign Aid ^a As % of:		
		Development Expenditure	Imports	GNP
1952	5	0.5	0.1	0.02
1956	472	34.8	18.6	2.1
1960	1068	38.1	31.1	3.4
1964	3105	42.2	55.8	7.5
1967	3334	37.7	47.0	5.7
1968	3570	34.0	49.8	5.8

^aIncludes Indus Basin aid and U.S. surplus agricultural commodities under P.L. 480.

Source: Pakistan Planning Commission estimates, quoted in Irving Brecher and S. A. Abbas, Foreign Aid and Industrial Development in Pakistan (Cambridge: Cambridge University Press, 1972), p. 24, Table 1.

All in all, the interrelationships between export earnings fluctuations, developmental imports, and sectoral incomes as well as total GNP--derived from a trade-constrained model of economic growth--are found to be positive and statistically significant when analyzed against Pakistan's experience. This finding contrasts with the results of MacBean's study on Pakistan and four other countries--the study undertaken in conjunction with his cross-country analysis from which negative conclusions were obtained.²⁶ At least in the case of Pakistan, the results of our analysis reported here tend to indicate that some of the growth aspects of the "capacity-to-import" argument with respect to the effect of export instability are substantiated.²⁷

²⁶A. I. MacBean, Export Instability and Economic Development (Cambridge, Mass.: Harvard University Press, 1966), Part II. For the Pakistan case, see ch. 9, pp. 187-203. MacBean, by using graphical comparison and correlation analysis, finds no significant relationships between export fluctuations and the key domestic economic variables, except total imports which clearly showed a lagged response to export earnings. Without going into a detailed investigation of the major components of imports--developmental imports in particular--he argues that "the intervention of other factors such as foreign economic aid and the use of reserves of foreign exchange to support imports . . . and the ability of both government and firms to stockpile capital goods" (MacBean, pp. 191, 193) would break the link between export earnings fluctuations and the key domestic economic variables, especially the domestic fixed capital formation. Our analysis, however, indicates that the intervention of these factors were not sufficient to isolate the impact of export fluctuations and prevent it from being transmitted to developmental imports and incomes. In this and other aspects, therefore, his analysis is incomplete.

²⁷Cf. B. F. Massell, S. R. Pearson, and J. B. Fitch, "Foreign Exchange and Economic Development: An Empirical Study of Selected Latin American Countries," Review of Economics and Statistics, LIV (May 1972), pp. 208-212. They examine the impacts of the major components of foreign exchange availability (exports of goods and services, private foreign capital, and public foreign capital) on three indicators of economic development. By pooling the time series data drawn from 11 Latin American countries for the period 1955-1966,

Summary

The main purpose of this chapter has been to examine the growth aspects of export earnings fluctuations in the process of economic development within the context of Pakistan's experience. It was found that fluctuations in Pakistan's export earnings were transmitted to her imports, causing similar fluctuations in the latter with a time lag.

Since it is the imports of capital goods and their raw materials (rather than total imports) that have direct bearing on the domestic fixed capital formation and income growth, a detailed examination was made of the relationships between total imports and their components classified by function. The impact of export instability was found to have been borne most by consumer goods and least by capital goods imports. In times of falling imports induced by export shortfalls, capital goods imports were maintained or reduced less than other categories of imports through the restrictive import policy and exchange control. At the same time, a heavy inflow of foreign aid and loans enabled Pakistan to continuously maintain huge import surpluses over the years. In spite of these, however, the export-induced instability in total imports was found to have channeled its impact into developmental imports.

they find that the impact of annual changes in exports on imports, investment, and GNP is substantial and significant.

Also see David Wall ["Import Capacity, Imports and Economic Growth," Economica, XXXV (May 1968), pp. 157-168] who contends that the time series analysis for 12 LDC's shows no association between imports of investment goods and economic growth. However, for a contention that Wall's statistical evidence, in fact, indicates that there is a strong, positive association between them, see D. J. Smith and J. M. Holms, "The Statistical Relationship Between Imports of Investment Goods and Gross Domestic Product in Developing Countries," Economic Analysis and Policy, I (March 1970), pp. 14-17.

The basic assumptions underlying a trade-constrained growth model are not unrealistic to a country like Pakistan where the import content of investment is high and industrial growth has, to a large extent, depended upon imported inputs. The functional relationships between export earnings, developmental imports, and income growth were derived from the model and tested against the available data for the period 1951/52 - 1964/65. The estimated relationships were found to be positive and significant: The dependence of income--especially the non-agricultural income--on developmental imports was substantial; and the impact of annual variations in export earnings on developmental imports and income was also significant. In view of these findings, it is pertinent to note that at least in the case of Pakistan, the major growth aspect of the "effect of instability" hypothesis--namely, the capacity-to-import argument--is not rejected.

CHAPTER X

SUMMARY AND CONCLUSIONS

The main purpose of this study has been to examine the causes and effects of export instability in developing countries with a special reference to Pakistan for the period 1948-1968.

Many of the conventional hypotheses regarding the causes and effects of export instability, widely discussed and debated in the literature on trade and development, appear to have strong theoretical underpinnings based on usual price and income theories. Recent empirical studies, however, have produced diverging statistical evidence--some in favor of, and some against, the conventional views. While these studies have dealt mainly with a cross-country analysis, few case studies have been made.

It is pertinent to note that the causes and effects of export instability vary greatly with the economic structure and government policies of individual countries. The causes of instability can better be analyzed at a more detailed level in terms of the specific factors relevant to the individual country and its particular export commodities. The same holds true for the effects of export instability: A priori, there is no reason to believe that the domestic consequences of instability arising from the export sector would be necessarily commensurate with the average degree of export fluctuations measured for a certain time period; the effects can be either mitigated or

accentuated by the over-all developments in the rest of the economy and the government policies as well. In view of these, a case study approach was taken with the hope that the study would shed further light on the problem of export instability.

The study focused on the following three aspects: (1) actual measurement of the extent and pattern of export fluctuations experienced by Pakistan along with other selected primary producing countries whose exports were highly concentrated in a few primary commodities (Chapters III and IV); (2) examination of the underlying causes of export instability in Pakistan (Chapters V and VI); and (3) investigation of the microeconomic, macroeconomic, and growth aspects of the domestic consequences of instability arising from the export sector (Chapters VII, VIII, and IX).

Export Instability in Pakistan:

Extent and Pattern

The problem of export instability is basically of a short-term nature. Consequently, one invariably needs to isolate "instability" from the long-term (or trend) factors. A chief measure of instability used in the study was the Massell version of annual rate of change measured from a linear trend by the least-squares method. Other measures of instability were also used since each measure is believed to have its own merit and is appropriate under different circumstances and for different purposes at hand.

When viewed against the experience of selected developing countries whose exports were highly concentrated in a few primary commodities during 1948-1968, the extent of instability in Pakistan's export

earnings was one of the highest. There was a wide diversity of experience with export fluctuations even among the countries characterized by a heavy concentration of exports in a few primary products. Such a diversity could be partly traced to the wide range of export price fluctuations of the different commodities exported by these countries. This suggests that the nature or type of commodities that a country is exporting may be an important factor for the wide variability in the degree of export instability among the primary producing countries themselves.

The pattern of Pakistan's export instability in particular (and other primary producing countries in general) differed markedly over the two different historical periods, 1948-1959 and 1957-1968. The trend-adjusted measure of export instability for Pakistan declined substantially more than any other country over time: from one of the highest (16 per cent per annum) in 1948-1959 to one of the lowest (6 per cent per annum) in 1957-1968, a decline of almost 62 per cent. This is intriguing, particularly in view of the fact that such a decline in instability appeared to have coincided with substantial structural changes in Pakistan's exports over the same period of time.

Causes of Export Instability

On a priori grounds, sharp price fluctuations are expected to form a major source of instability in the export earnings of many primary products because of the price inelastic and unstable supply of and demand for these commodities. Accordingly, one may expect price instability to be a prime source of Pakistan's export earnings, the bulk of which were accounted for by such agricultural raw materials as jute and

cotton. The analysis of Pakistan's five major (primary) export commodities, however, showed that export quantity fluctuations were a more important source of earnings instability, except for raw jute--Pakistan's leading foreign exchange earner.

Even in the case of jute, where its export price fluctuations were the primary source of earnings instability, fluctuations in jute output and export supply appeared to have been the major cause of instability. Given the structure of final demand for and supply of jute in world export markets and Pakistan's near monopoly position therein, changes in Pakistan's jute production and prices immediately affect the world jute prices. The supply of jute responds to changes in the relative prices of jute and rice with a one-year time lag. This, combined with the inelastic demand for jute, tends to generate a self-perpetuating price and output cycle. For cotton, fluctuations in output and the rapidly rising domestic mill consumption of raw cotton (owing to population growth and expansion of the import-substituting cotton textile industry) accentuated fluctuations in export quantity and earnings. Fluctuations in foreign demand and the resulting fluctuations in world prices of jute and cotton may have influenced their production and export supplies from Pakistan. However, during the period under review, the supply factors appeared to have been largely responsible for the instability in Pakistan's export earnings.

In terms of the trade flows to different export markets, India and China proved to have been the most unstable markets for Pakistan's exports; and exports to the United Kingdom, the single largest export market for Pakistan, were most stable. Pakistan's exports to the Western industrial countries as a group were far more stable than

exports to either the Communist-bloc countries or the markets of developing countries themselves. The demand fluctuations arising from the major importing (industrial) countries appeared to have had little, if any, impact on Pakistan's export instability. The trade deadlock and ensuing hostilities with India following Partition in 1947 had profound and lasting repercussions on the instability as well as trend in Pakistan's jute trade in the 1950's.

Rapid growth of domestic manufacturing, spearheaded by the development of cotton textile and jute mill industries, was accompanied by the diversification of exports away from the traditional raw materials to manufactured goods. Exports of non-traditional primary products such as fine rice and manufactures other than jute and cotton goods were also encouraged by the export promotion policies undertaken by the new government in 1959, among which the most innovative measure was the Export Bonus Scheme. This marked shift in the composition of exports was found to be closely linked with the diverging pattern of export instability observed in the 1960's. Among other things, successful diversification in jute exports (from the export of raw jute to that of manufactured jute goods) appeared to have contributed most to the substantial decline in export instability in the later years. Diversification in cotton exports, however, contributed little, if any, to the reduction in export instability largely because of the domestic demand fluctuations for both raw cotton and cotton goods.

Effects of Export Instability

Microeconomic Aspects

It has been argued that severe fluctuations in the prices of primary exports lead to similar fluctuations in export earnings as well as incomes of producers, affecting adversely their current welfare. Price instability is also alleged to affect adversely the long-term growth of exports by discouraging investment in production for export. Particularly in the case of agricultural raw materials, price uncertainty deters farmers from producing cash crops with higher returns in favor of subsistence crops with lower returns, thereby causing a perpetuating low productivity in agriculture; this process will ultimately lead to misallocation of resources.

In Pakistan's case, the effect of the severe price fluctuations on the current welfare of peasant farmers may have been serious. Jute price instability was greater at the grower level than at either the baling centers or the port of export. The severe fluctuations in the harvest prices of jute received by farmers were primarily responsible for the severe instability in their cash incomes. For small-scale peasant farmers who are living on a bare subsistence level, little opportunity exists for hedging against severe price fluctuations because of inadequate credit facilities and storage capacity. It is the jute farmers who, in the process of export trade of jute in Pakistan, bear much of the burden of price instability as reflected in the severe fluctuations in their incomes.

The price instability of cash crops for export, however, cannot be said to have been a major determinant of the long-term behavior of

their production. The long-term trends in jute and cotton production in Pakistan were primarily influenced by the trends in the prices of export crops relative to the prices of other subsistence crops that compete for the same productive resources. The trends in the relative prices were in turn determined by factors other than price instability of export crops--e.g., foodgrains availability (conditioned by domestic production of rice and other grains, population growth, and food imports), government policies (export taxes, and import and export policies), and other structural factors.

Macroeconomic Aspects

Despite the severe instability in export prices and earnings to which Pakistan has been subject, no clear evidence was found that the instability emanating from the export sector seriously damaged the stability of the domestic economy of Pakistan during the period under review. Mainly because of the small size of the export sector relative to total GNP and the predominance of the agricultural sector in the economy, the short-term fluctuations in money GNP closely followed those in agricultural output.

In addition to providing the needed foreign exchange for importing capital goods and other industrial raw materials, the export sector in Pakistan assumed a key role in providing a large portion of the central government's tax revenue in the 1950's. The relative importance of export tax revenue, however, diminished progressively vis-a-vis direct taxes and other indirect taxes as a result of the industrial growth. Export instability did not transmit its impact to the domestic economy by destabilizing the government revenue and expenditure. Rather, the

manipulation of export duty rates in times of export boom proved to be an effective fiscal device for stabilization by siphoning off a large portion of the swollen export income into a budget surplus.

While the impact of export instability through the multiplier effect appeared to have been insignificant, the unstable export sector influenced greatly the short-term (and the medium-term) behavior of the internal price level especially in the 1950's. The internal price level in Pakistan was heavily weighed by agricultural prices and, consequently, the external prices of agricultural exports that made up the bulk of Pakistan's exports in the early years affected significantly the domestic price movements. No evidence was found, however, that the instability in export prices and earnings propelled serious long-term inflationary or deflationary consequences. The short-term fluctuations in the general price level were mild, and the rate of inflation was one of the lowest among the selected countries. This price stability that prevailed in Pakistan in the face of the continuous monetary expansion caused by the government's deficit financing operations, was due primarily to the increased availability of domestically produced goods and services for the market and a high rate of industrial savings as a result of the rapid industrial growth. A heavy inflow of U. S. agricultural surplus commodities under the P.L. 480 program was also instrumental in dampening the rising prices of foodgrains.

Growth Aspects

In Pakistan, fluctuations in imports were significantly responsive to export earnings fluctuations. A detailed examination of the relationships between export earnings and the major categories of

functional imports showed that the impact of export earnings fluctuations on capital goods imports was somewhat reduced by the import control system wherein the greater priorities were accorded to developmental imports. At the same time, a large inflow of foreign aid and loans enabled Pakistan to sustain huge import surpluses over the years. In spite of these (favorable) factors, however, the export-induced short-term fluctuations in total imports was found to be closely related to the imports of capital goods and industrial raw materials.

The interrelationships between export earnings, developmental imports, and the sectoral incomes were derived from a trade-constrained model of economic growth, and these hypothesized relationships were tested against Pakistan's data for the period 1951/52 - 1964/65. The estimated relationships were statistically significant: Developmental imports contributed significantly to the annual changes in incomes, especially the non-agricultural income. The impact of annual variations in export earnings on the manufacturing and non-agricultural incomes was also substantial and significant. In the process of economic development in Pakistan, therefore, the foreign exchange availability derived from export earnings assumed a crucial role in determining the time path of developmental imports and output. One of the leading conventional hypotheses regarding the growth aspect of export instability--namely, the "capacity-to-import" argument--appears to be in line with Pakistan's experience.

Some Concluding Remarks

The major findings of the study summarized above tend to reinforce the need for a case study approach to the problem of export instability.

Some of the conventional hypotheses regarding the causes and effects of export instability are in conformity with the experience of Pakistan and some are not.

In treating the problem of export instability, emphasis has been placed on the price instability; and measures have been proposed and debated to stabilize export earnings by acting on price. In the case of Pakistan, the main sources of earnings instability, by and large, lie in the supply side. Furthermore, for both jute and cotton, it is not the price of jute or cotton to be acted upon; what is to be acted upon is the ratio of two prices, i.e., the prices of export crops relative to other crops competing for the same productive resources. Even if the price of an export crop were to be stabilized through international commodity agreements or unified buffer-stock policies, there would be little guarantee that export earnings would be stabilized because the other part of the price ratio (such as the prices of rice or competing kharif crops in the case of Pakistan) is itself a variable, of which fluctuations are largely dependent on the domestic factors. To the extent that farmers respond to changes in the relative prices, stabilizing one part of the price ratio alone is inappropriate and may accentuate output fluctuations, thereby destabilizing export incomes. In addition, price stabilization may have little effect on an individual country if the country's export share of a commodity in world exports is small (e.g., cotton and tea in the case of Pakistan).

Frequently, export instability has been treated as a function of some structural factors such as the commodity concentration of exports. The corollary of this is that export diversification, not necessarily

industrialization, may be a solution toward stabilizing earnings instability. In the case of Pakistan, export diversification was accompanied by industrialization which replaced part of the traditional raw jute and raw cotton exports with manufactured jute and cotton goods. The process of diversification of exports away from primary products to manufactures not only helped reduce the rigidity in the production structure in the economy but also had the effect of increasing the price elasticities of export demand and supply of jute and cotton, which all tended to reduce the impact of export price and quantity fluctuations on earnings, especially in the case of jute. Export diversification in name only may not necessarily have the effect of reducing export earnings instability when diversification occurs in the same line of agricultural products. The nature and relative shares of the major export commodities in total exports seem to be more important in affecting the instability pattern in export earnings of a country over time.

Generalizations regarding the effects of instability are all the more difficult to make. In addition to the differences in the economic structures, the relative importance of the export sector in the economy, and the government policies, one difficulty for generalization for all countries arises basically from the very nature of the problem of instability itself. "Instability," to be sure, is a condition of quality--a state of deviation from a fixed state called (or agreed as) a "norm." Disagreement frequently arises over the norm to be used in measuring instability. Also, over the long-run, the effects of export instability are likely to disappear or be offset by other factors or developments in the rest of the economy. And many of the effects

arising from export instability are qualitative in nature and are therefore hardly measurable quantitatively. To witness, we quote

Nurkse:

The instability of export markets for primary commodities makes any steady development policy difficult; discourages investment in primary production itself; generally limits the 'economic horizon,' and destroys the sense of continuity so necessary in private as well as public planning. 'People have learned out of the past that wealth comes quickly in Brazil through a boom, and that a sudden turn of events may bring disaster.' The violent fluctuations of the export trade may well be a major cause of the speculative attitude and the 'get-rich-quick' mentality so widespread among businessmen in underdeveloped countries.¹

A search for clear-cut empirical evidence regarding whether or not "export instability is harmful," in general, may not be too rewarding. The best that can be done may be to trace through the reaction patterns of the different economic units in the economy to a given disturbance arising from the export sector, which, in many respects, may require qualitative judgments within the context of the over-all developments in the economy. This, of course, calls for extensive case studies.

¹Ragnar Nurkse, "Trade Fluctuations and Buffer Policies of Low-Income Countries," Kyklos, XI, Fasc. 2 (1958), p. 143.

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APPENDIX

A COMPARISON OF THE DEGREE OF EXPORT INSTABILITY
OF DEVELOPED AND LESS DEVELOPED COUNTRIES
DURING THE POST-WAR YEARS 1948-1968

It has long been believed that the degree of export instability is much greater for LDC's (less developed countries) than for DC's (developed countries). This conventional belief is commonly referred to as the "degree of instability" hypothesis widely discussed in the literature on the problem of export instability.

The purpose of this Appendix is to present a comparison of the degree of export instability for a sample of 62 LDC's and a sample of 20 DC's during the post-war years 1948-1968, and to note the changing pattern of export instability in international trade over time. The conclusion is that large and significant differences existed and therefore the "degree of instability" hypothesis is not rejected,¹ and the world export instability declined considerably over time.

¹Other studies that cover the period extending into the 1960's and generally substantiate the "degree of instability" hypothesis are: M. R. Edgmand, "Concentration, Export Earnings, and the Terms of Trade," unpublished Ph.D. thesis, Michigan State University, 1968, ch. 4; G. F. Erb and S. Schiavo-Campo, "Export Instability, Level of Development and Economic Size of Less Developed Countries," Bulletin of Oxford University Institute of Economics and Statistics, XXXI, No. 4 (November 1969), pp. 263-283; B. F. Massell, "Export Instability and Economic Structure," American Economic Review, LX, No. 4 (September 1970), pp. 618-630.

Based largely on the availability of export data for the post-war period 1948-1968, a total of 82 countries² were selected for the computation of instability indices of their export earnings. Following the conventional classification scheme commonly used in the development literature, i.e., the use of per capita gross domestic product in U.S. dollars, these countries were divided into two groups, 62 less developed and 20 developed countries, and then the group means were compared for the different historical periods. The lists of these countries can be found in Tables XLII and XLIII.

Export data, in United States dollars, of these countries are taken from the various issues of International Financial Statistics published by the International Monetary Fund. The data refer to the F.O.B. dollar value of merchandise exports only, and therefore exclude service exports. For some countries, data are not available for the entire period under consideration; the exceptions are noted in the tables.

In computing year-to-year fluctuations in merchandise export earnings of each country, three different measures of instability were used: (1) I_2 , the United Nations method which measures the average annual percentage change without formally correcting for the trend factors; (2) I_4 , the trend-corrected average annual rate of change as

²The Sino-Soviet area excluding Yugoslavia and some countries are excluded from the sample mainly because of lack of data and territorial changes that rendered the existing data inconsistent. Also excluded are a few countries, such as Korea and Vietnam, which are believed to be the obvious, exceptional cases because of wars and the resultant disruptions to their economy during the period under consideration.

used by Massel;³ and (3) I_5 , the modified version of the coefficient of variation, or the standard error of estimate (square root of the unexplained variance) divided by the mean of the observations. Although the instability index I_4 is considered most appropriate and desirable for a comparative analysis of the relative degree of export instability for LDC's and DC's, the two additional measures were used in order to see whether the results are to be affected significantly by the choice of an instability index.

For each of 82 countries the three instability indices were calculated for the three different historical periods: (1) the first period covers the entire post-war years 1948-1968; (2) the second, the earlier post-war years 1948-1959, during which considerable attention was given the problem of export instability confronting many primary producing LDC's; (3) the third, the more recent years 1957-1968.⁴ The country details of the results of calculation are presented in Tables XLII and XLIII. Table XLIV contains a summary of the comparison of the relative degree of export instability for LDC's and DC's.

³B. F. Massell, "Export Concentration and Fluctuation in Export Earnings: A Cross-Section Analysis," American Economic Review, LIV, No. 2 (March 1964), pp. 48-52.

⁴Dividing the entire post-war period into two separate periods, 1948-59, and 1957-68, is, of course, somewhat arbitrary. But several reasons for this division are as follows: (1) Many earlier empirical studies of the problem of export instability dealt with the periods--1946-58, 1948-58, or 1948-59. (2) Several international commodity agreements and national policies (e.g., application of production stabilization schemes, creation of the marketing boards, etc.) went into effect in the late 1950's. Thus it was decided to include 1957-59 in the later period. (3) In addition, it was decided to give equal length to the two periods.

TABLE XLII

THREE INDICES^a OF EXPORT EARNINGS INSTABILITY OF LESS DEVELOPED
COUNTRIES IN 1948-1968, 1948-1959, AND 1957-1968
(In Per Cent)

Country	1948 - 1968			1948 - 1959			1957 - 1968		
	I ₂	I ₄	I ₅	I ₂	I ₄	I ₅	I ₂	I ₄	I ₅
Angola	10.9	9.1	16.0	12.5	11.1	12.4	8.2	6.0	9.5
Argentina	11.7	11.4	19.6	14.0	14.9	18.7	7.4	6.8	9.1
Barbados	12.5	12.0	13.4	13.5	13.1	12.9	12.5	11.9	13.0
Bolivia	14.8	14.6	33.4	16.7	15.7	18.2	14.7	12.1	22.1
Brazil	9.4	9.2	12.9	10.2	10.2	13.8	8.1	7.7	8.3
Burma	12.3	12.2	19.7	13.4	13.3	13.9	11.5	10.6	20.6
Ceylon	7.2	7.1	8.3	8.7	8.3	9.1	4.7	4.7	5.6
Chile	10.6	10.5	17.1	13.7	14.4	13.8	9.0	8.7	11.7
China (Taiwan) ^c	15.1	14.7	40.3	14.2	13.3	13.1	13.7	17.2	21.6
Colombia	8.5	8.4	17.3	10.7	9.3	19.8	5.9	6.3	7.2
Costa Rica	9.9	8.2	15.7	10.7	9.2	11.9	9.7	8.0	12.9
Cyprus	11.2	10.2	13.6	13.8	12.3	14.9	8.0	7.6	9.8
Dominican Rep.	11.9	11.4	13.9	10.8	10.9	10.2	12.1	11.7	13.3
Ecuador	11.2	10.6	9.6	14.7	16.2	11.0	6.1	4.1	7.3
El Salvador	9.1	6.8	11.1	11.0	8.5	11.7	7.2	6.9	10.2
Ethiopia	11.3	11.6	12.2	14.1	16.6	17.8	8.8	6.8	10.1
Ghana	9.5	9.3	10.1	12.4	11.6	11.5	6.9	6.8	7.9
Greece	11.5	7.7	18.5	12.8	8.1	11.5	9.6	8.3	14.8
Guadeloupe	12.2	11.9	11.5	16.5	15.7	12.7	5.9	5.9	5.2
Guatemala	8.9	8.2	16.0	7.4	6.5	9.3	9.5	10.5	12.5
Guyana	9.9	8.3	10.0	11.0	8.9	9.0	8.3	8.0	9.0
Haiti	14.2	14.2	17.9	19.7	19.9	22.5	9.9	10.1	11.8

TABLE XLII (Continued)

Country	1948 - 1968			1948 - 1959			1957 - 1968		
	I ₂	I ₄	I ₅	I ₂	I ₄	I ₅	I ₂	I ₄	I ₅
Honduras	10.5	10.7	26.2	9.5	10.1	10.2	10.4	8.5	16.8
India	8.1	7.8	10.3	10.7	10.7	10.4	5.7	5.4	6.5
Iran	20.7	19.7	35.3	29.1	25.6	53.8	9.9	10.3	14.9
Iraq ^c	14.6	10.0	11.3	20.8	14.5	20.7	10.7	7.2	8.4
Jamaica	9.2	9.7	9.4	11.1	13.2	15.0	6.4	6.1	6.9
Jordan	18.4	18.6	34.9	22.1	23.5	44.0	14.8	13.9	18.9
Kenya ^b	9.8	7.5	9.3	12.3	10.2	11.8	7.4	4.7	4.4
Liberia	19.3	19.6	26.7	22.9	25.3	24.5	14.1	10.2	15.9
Malaysia	14.1	14.4	20.2	18.9	19.0	19.8	10.1	10.0	10.0
Martinique	11.4	11.3	11.7	13.1	13.2	14.1	9.8	9.5	10.6
Mauritius	13.9	14.0	16.4	11.2	11.7	11.2	15.2	15.3	17.9
Mexico	8.0	6.9	8.6	9.3	9.0	9.8	5.4	3.8	4.8
Morocco	5.8	5.3	6.8	6.9	6.2	7.7	4.5	4.4	4.7
Mozambique	8.2	8.1	12.9	7.7	8.9	8.1	8.6	5.9	8.6
Neth. Antilles	6.5	6.5	18.3	8.5	6.7	13.3	5.0	3.8	6.1
Nicaragua	14.5	12.2	20.9	15.9	13.3	15.8	10.7	10.9	14.0
Nigeria	10.7	9.9	14.9	11.7	11.1	10.0	9.8	8.6	14.1
*Pakistan	12.4	12.0	26.7	15.7	15.5	22.6	8.9	5.9	8.1
Panama	11.8	11.2	28.8	9.0	8.8	8.8	13.5	13.0	16.3
Paraguay	9.3	9.0	16.4	7.9	7.8	8.5	10.1	10.2	15.3
Peru	10.6	9.5	16.7	10.9	9.9	9.5	10.4	8.9	6.4
Philippines	10.1	9.1	10.6	12.4	12.0	9.3	7.8	5.5	7.1
Portugal	9.7	8.8	19.6	9.6	9.9	10.0	8.1	6.1	10.4
Reunion	11.2	10.9	11.9	12.2	11.2	14.8	10.2	10.8	9.4
Sierra Leone	15.1	14.6	18.9	12.4	10.7	15.3	15.7	16.1	16.3
Saudi Arabia	8.8	7.0	18.7	8.0	6.4	8.0	8.2	6.3	12.5

TABLE XLIII (Continued)

Country	1948 - 1968			1948 - 1959			1957 - 1968		
	I ₂	I ₄	I ₅	I ₂	I ₄	I ₅	I ₂	I ₄	I ₅
South Africa	7.6	6.4	9.4	9.1	8.0	8.0	6.9	5.8	9.4
Spain	8.4	10.4	25.6	5.5	5.4	6.2	10.1	12.4	13.5
Sudan	15.5	16.0	17.6	22.8	23.1	26.2	10.0	10.5	11.5
Surinam	11.8	8.5	32.9	12.0	8.5	6.8	11.7	11.8	25.1
Tanzania	12.0	11.5	13.4	12.5	11.8	15.4	10.6	9.2	8.5
Thailand	10.4	8.9	13.9	12.4	11.7	11.8	9.7	8.5	8.8
Trinidad & Tobago	7.6	6.0	8.2	8.5	6.4	9.8	6.5	3.6	3.8
Tunisia	10.4	9.8	13.8	12.2	11.1	12.2	7.6	7.5	12.6
Turkey	11.4	10.4	14.0	14.5	13.8	17.7	11.5	10.2	9.0
Uganda ^b	9.5	10.5	14.4	12.0	12.4	14.4	6.1	8.5	11.9
United Arab Rep.	9.4	9.5	14.3	8.2	7.7	12.6	9.5	9.8	9.1
Uruguay	15.5	15.8	21.8	17.9	17.7	23.4	13.6	12.6	12.4
Venezuela	5.8	4.7	7.6	8.1	5.9	6.1	2.8	2.5	2.3
Yugoslavia	14.7	13.3	25.4	18.5	16.0	24.6	9.8	6.2	8.6

^aThe instability index I₂ measures average annual fluctuation in per cent without formal adjustments for trend; this measure is commonly known as the U.N. index. The I₄ index measures average annual rate of change from the linear trend fitted by least-squares à la Massell. The I₅ index is a modified version of the coefficient of variation; it is the ratio of standard error of the estimate to the mean export receipts, and measures the variation of the series as a whole around the trend line. For a detailed discussion of these instability indices, see Chapter III.

^b1949-1968, 1949-1959, and 1957-1968.

^c1950-1968, 1950-1959, and 1957-1968.

Source: Computed from International Monetary Fund, International Financial Statistics, various issues.

TABLE XLIII

THREE INDICES^a OF EXPORT EARNINGS INSTABILITY OF DEVELOPED
COUNTRIES IN 1948 - 1968, 1948 - 1959, AND 1957 - 1968
(In Per Cent)

Country	1948 - 1968			1948 - 1959			1957 - 1968		
	I ₂	I ₄	I ₅	I ₂	I ₄	I ₅	I ₂	I ₄	I ₅
Australia	10.3	9.2	13.2	13.1	12.8	10.2	9.3	8.6	8.0
Austria	11.2	4.9	6.6	14.0	6.6	7.8	7.3	4.0	5.1
Belgium-Luxembourg	9.7	9.5	16.9	9.9	10.8	10.1	8.9	5.5	7.8
Canada	7.9	7.4	18.0	7.2	7.4	7.2	7.6	7.0	13.1
Denmark	7.4	4.2	10.1	7.8	4.5	3.7	7.1	2.8	4.1
Finland	11.6	10.8	12.6	15.3	16.2	16.7	7.2	4.4	4.4
France	9.9	6.8	12.6	11.0	8.8	8.2	7.8	4.7	5.0
Germany ^b	12.7	5.4	11.3	15.5	6.1	5.2	9.2	3.8	6.6
Iceland	13.8	13.3	23.0	14.3	14.7	17.8	11.6	9.8	21.7
Ireland	8.4	8.0	12.3	7.8	7.7	7.8	7.5	7.2	6.1
Israel	16.0	20.3	30.2	18.3	19.0	25.6	12.7	7.4	9.1
Italy	12.0	11.3	27.3	11.2	8.5	10.4	11.7	6.8	9.8
Japan	17.2	14.1	32.1	20.3	10.5	11.0	12.6	9.8	15.6
Netherlands	9.8	5.2	12.9	10.5	4.9	4.1	8.6	3.8	6.1
New Zealand	7.5	7.3	7.4	8.2	8.0	7.4	7.6	7.7	7.5
Norway	10.3	9.1	17.4	11.2	11.5	10.7	9.1	6.0	10.4
Sweden	9.1	7.6	13.4	9.6	9.2	9.5	7.7	3.8	5.1
Switzerland	7.7	5.0	14.5	6.7	4.5	3.5	8.3	3.6	6.6
United Kingdom	5.6	4.0	5.4	6.0	5.4	4.9	4.9	2.8	3.2
United States	8.5	8.3	10.6	9.6	10.5	10.8	7.3	6.1	7.9

^aSee table note (a) in Table XLII.

^b1950-1968, 1950-1959, and 1957-1968.

Source: Computed from export data in International Monetary Fund, International Financial Statistics, various issues.

TABLE XLIV

A COMPARISON OF THREE INDICES OF EXPORT INSTABILITY FOR LDC'S AND DC'S
DURING 1948 - 1968, 1948 - 1959, AND 1957 - 1968^a

Period under Consideration	Instability Index ^b	Group Mean of Average Annual Export Fluctuation in Per Cent and Standard Deviation (in Parentheses)		Difference in Means in Percentage Points ^c	Calculated Normal Deviate z ^d	Percentage Difference in Means
		20 Developed Countries	62 Less Developed Countries			
		(1)	(2)	(3)=(2)-(1)	(4)	(5)= $\frac{(3)}{(1)} \cdot 100$
1948-1968	I ₂	10.33 (2.93)	11.23 (3.05)	0.90	0.95	8.71
	I ₄	8.59 (3.97)	10.54 (3.25)	1.95*	1.47	22.70
	I ₅	15.39 (7.47)	16.98 (7.57)	1.59	0.67	10.33
1948-1959	I ₂	11.38 (3.92)	12.85 (4.46)	1.47	1.12	12.92
	I ₄	9.38 (3.97)	12.13 (4.63)	2.75**	2.02	29.32
	I ₅	9.63 (5.34)	14.55 (8.02)	4.92**	2.28	51.09
1957-1968	I ₂	8.70 (2.03)	9.28 (2.84)	0.58	0.74	6.67
	I ₄	5.78 (2.20)	8.50 (3.17)	2.72***	3.16	47.06
	I ₅	8.16 (4.41)	11.05 (4.73)	2.89**	1.99	35.42

^aCompiled from Tables XLII and XLIII.

^bSee table note (a) in Table A-1 for a brief explanation of these instability indices and Chapter II for a detailed discussion.

^cThe differences in two means are statistically significant at the 10 per cent level (*), at the 5 per cent level (**), and at the 1 per cent level (***) .

^dThe one-tail significance test was carried on by calculating:

$$z = |\bar{x}_2 - \bar{x}_1| / \sqrt{\frac{\sigma_1^2}{n_1} + \frac{\sigma_2^2}{n_2}}$$

where \bar{x} is the group mean value of instability index, σ the standard deviation, n the number of countries in each group, and subscripts 1 and 2 refer to DC's and LDC's, respectively. The null hypothesis that the means are equal is rejected at the 10 per cent level when $z > 1.28$, at the 5 per cent level when $z > 1.64$, and at the 1 per cent level when $z > 2.33$.

As can be seen in Table XLIV, the (unweighed) mean values of the three instability indices are greater for LDC's than for DC's during the three different time periods considered. For all periods, however, the magnitudes of the mean difference vary rather significantly according to the measure of instability used. The differences tend to be smaller when the instability index I_2 is used and larger when the instability index I_4 or I_5 is used (Column (3) in Table XLIV). This is not too surprising because I_2 , the United Nations index, does not correct for the trend influences in measuring the instability of a country's export earnings, whereas the latter two, I_4 and I_5 , formally correct for trends by least-squares method. And there exists enough evidence showing the presence of strong trends in the export earnings of many countries, developed countries in particular, during the post-war years. A trend-corrected index of instability should therefore be the one to be used in our analysis.

For the earlier post-war years 1948-1959, the mean values of the trend-corrected instability index I_4 turned out to be 9.38 and 12.13 per cent for DC's and LDC's, respectively. The mean difference of 2.75 percentage points is statistically significant at the .05 level. Thus merchandise export earnings fluctuated approximately 30 per cent more in LDC's than in DC's during 1948-1959. The mean difference of 4.92 percentage points, in terms of another trend-corrected index, I_5 , is also statistically significant at the .05 level. However, when the instability index I_2 which makes little formal adjustment for trend is used, the mean difference amounts to only 1.47 percentage points and is not significant statistically.

A seemingly changing pattern of export instability can be observed when the later post-war years 1957-1968 are considered. The mean values of all three instability indices for both DC's and LDC's declined rather substantially in this period compared to the earlier one. This apparent decline in world export instability will be examined in some detail later. Despite the apparent over-all decline in the degree of export instability in international trade over time, LDC's again exhibited greater annual export fluctuation than DC's-- about 50 per cent more to be more precise. The means of the I_4 index are 5.78 and 8.50 per cent for DC's and LDC's, respectively, with a difference of 2.72 percentage points being statistically significant at the .01 level. Here again, if the I_5 index is used, the mean difference of 2.89 percentage points is also significant (at the .05 level); but when I_2 series is considered, the difference amounts to only 0.58, which is not significant.

The relative degree of export instability between DC's and LDC's is not much different, however, when the entire post-war years 1948-1968 are considered. Only when the trend-corrected index I_4 is used, is the mean difference of 1.95 percentage points barely significant at the .05 level.

The over-all decline in the degree of export instability in international trade over time is apparent as can be seen in Table XLIV. Irrespective of the index used in measuring instability, the group mean values of instability indexes declined substantially for both DC's and LDC's in the later years 1957-1968 compared to the earlier period 1948-1959. Using the I_4 series, Table XLV analyzes the historical divergence

TABLE XLV

A COMPARISON OF WORLD EXPORT INSTABILITY BETWEEN
1948 - 1959 AND 1957 - 1968^a

Instability Index I ₄ ^b Characteristics	Period		Absolute Difference	Percentage Difference
	1948-1959	1957-1968		
	(1)	(2)	(3)=(1)-(2)	(4)= $\frac{(3)}{(1)} \cdot 100$
A. World^c (82 countries)				
Mean	11.46	7.84	3.62 ^d	31.6
Median	10.75	7.45	3.30	30.7
Standard deviation	4.61	3.18	1.43	31.0
Coeff. of variation	0.402	0.406	(0.004)	(1.0)
B. Developed Countries (20 countries)				
Mean	9.38	5.77	3.61 ^d	38.5
Median	8.65	5.75	2.90	33.5
Standard deviation	3.97	2.20	1.77	44.6
Coeff. of variation	0.423	0.381	0.042	9.9
C. Less Developed Countries (62 countries)				
Mean	12.13	8.50	3.63 ^d	29.9
Median	11.15	8.40	2.75	24.7
Standard deviation	4.63	3.17	1.46	31.5
Coeff. of variation	0.382	0.373	0.009	2.4

^aCompiled from Tables XLII and XLIII.

^bAverage annual rate of change in export earnings corrected for trend by least-squares method as used by Massell. A detailed discussion of this index and others can be found in Chapter II above, pp.

^cIncludes a total of 82 countries of which 20 are classified as "developed" and 60 as "less developed."

^dThe mean difference in two periods is statistically significant at the 1 per cent level. The one-tail significance test was performed by computing:

$$z = |\bar{x}_1 - \bar{x}_2| / \sqrt{\frac{\sigma_1^2 + \sigma_2^2}{n}}$$

where \bar{x} is the mean value of instability index, σ is the standard deviation, n is the number of countries, and subscripts 1 and 2 refer to the two periods, 1948-1959 and 1957-1968, respectively. The null hypothesis that the means are equal is rejected at the 10 per cent level when $z > 1.28$, at the 5 per cent level when $z > 1.64$, and at the 1 per cent level when $z > 2.33$. The calculated z values are 5.84, 3.54, and 5.11 for "World," "DC's," and "LDC's," respectively.

in the experience with export instability for DC's, LDC's, and the world as a whole.

The degree of export instability for an average developed country declined from 9.4 per cent in 1948-59 to 5.8 per cent in 1957-68. The mean difference of 3.6 percentage points is statistically significant at the .01 level and amounts to a decline of about 39 per cent. The variation between countries within the same group also declined from .423 to .381, a decline of about 10 per cent. For LDC's export fluctuation also declined from 12.1 to 8.5 per cent per annum in the later period, a difference of 3.6 percentage points being statistically significant at the .01 level. This is a 30 per cent decline. The variability in the degree of export instability from country to country appeared to have remained the same.⁵

In spite of a substantial over-all decline in instability for both DC's and LDC's, the differential degree of export instability between the two groups actually increased in the later period. In the earlier period export fluctuation was greater for LDC's than for DC's by 29 per cent, but the percentage difference in the later period increased to 47 per cent. (See Column (5) in Table XLIV.) This is due to a larger relative decline in instability for DC's (39 per cent) than for LDC's (30 per cent), as can be seen in Column (4) in Table XLV.

When both groups are considered together, export instability in world trade declined from 11.5 to 7.8 per cent in the later years. A difference of 3.6 percentage points amounts to a 32 per cent decline

⁵In fact, the coefficient of variation declined slightly from .382 to .373. But this represents a reduction of only about little more than 2 per cent.

and is statistically significant at the .01 level. The coefficient of variation, however, remained more or less the same.

Several main conclusions of this Appendix are now in order:⁶

(1) Export earnings of LDC's did fluctuate more than those of DC's, regardless of the different time periods under consideration: 23 per cent more for the entire post-war period 1948-68, 29 per cent more for the earlier period 1948-59, and 47 per cent more during the later period 1957-68, when the trend-corrected instability index I_4 is used. (2) Both groups of DC's and LDC's experienced a marked decline in their export instability in the later period compared to the earlier period: 39 per cent for DC's and 30 per cent for LDC's. For the world as a whole, there was a decline of 32 per cent, thus indicating the changing pattern of export instability in international trade over time. (3) The differential degree of instability between DC's and LDC's actually increased in the later period compared to the earlier one from 29 to 47 per cent.

In brief, the "degree of instability" hypothesis is not rejected. Hence, export earnings fluctuate more in LDC's than in DC's.

⁶Cf., G. F. Erb and S. Schiavo-Campo, "Export Instability, Level of Development and Economic Size of Less Developed Countries," Bulletin of Oxford University Institute of Economics and Statistics, XXXI, No. 4 (November 1969), pp. 263-283, esp. pp. 265-270. The statistical results of their study are not directly comparable with ours because of the different sets of data and instability indices used, the different periods covered, and the different sizes of samples used. Our conclusions above, however, generally confirm most of their findings. For the different opinion on the conclusion concerning the decline in world export instability, see J. Clark Leith, "The Decline in World Export Instability: A Comment," Bulletin of Oxford University Institute of Economics and Statistics, XXXII, No. 3 (August 1970), pp. 267-272.

Unlike the degree of instability hypothesis, the second aspect of the problem of export instability surrounding the "effect of instability" hypothesis is still subject to debate. One of the implications of the historical divergence in experience with export instability, particularly for LDC's, observed in this Appendix is that it may make generalization more difficult with respect to the effect of instability, especially when one conducts a cross-country analysis. A glance at Table A-2 tends to indicate that country rankings in the severity of instability in the two periods are diverse enough to warrant intertemporal comparisons.

VITA

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