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**UNIVERSITY OF NOTTINGHAM**  
**SCHOOL OF ECONOMICS**



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**THE ECONOMIC EFFECTS AND  
DISTRIBUTIONAL IMPLICATIONS OF ECONOMIC  
REFORM POLICIES ON THE INDONESIAN  
ECONOMY: A CGE APPROACH**

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**By**

**GUNTUR SUGIYARTO, MSc**

**THESIS SUBMITTED TO**

**THE SCHOOL OF ECONOMICS**

**UNIVERSITY OF NOTTINGHAM**

**FOR THE DEGREE OF DOCTOR OF PHILOSOPHY, JULY 2000**



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## ABSTRACT

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Having discussed issues of economic reform and its applications on the Indonesian economy followed by Indonesian SAMs and CGE applications, three CGE models representative to the economy were developed by using SAMs of 1985, 1990 and 1993 for analysing the effects of economic reform. Production is specified as a two-level nesting of CES functions and total production is allocated to domestic demand and exports. Producers are assumed to be indifferent between selling domestically and exporting, while for imports the 'small country' assumption is adopted. Total demands are derived from composite commodities of domestically produced and imported commodities. Fixed and planned consumption patterns are assumed for households and government, which makes government saving a residual. Aggregate investment is accordingly fixed, reflecting the 'investment driven' nature of the economy.

Three policy changes (i.e. stabilisation, trade liberalisation and tax reform) are then simulated as well as sequencing simulations, in which the three policy changes are simulated in different orders. Stabilisation simulation results suggest that government spending cut will make contractions, leading to worsening welfare status. This policy, however, has favourable impacts on income distribution, since government consumption has increasingly been favouring higher income households. Trade liberalisation increases trades and availability of products. This in turn improves macroeconomic performance and welfare condition. Trade balance and government deficit, however, worsen. This policy also has favourable impacts on income distribution of rural households since urban households seem to be the ones benefiting from the existing tariff protection. Indirect tax reductions improve macroeconomic performances, welfare condition and income distribution, especially among agriculture households. Government bears the adverse effects due to its consumption behaviour and initial budget deficits.

The sequencing simulations show that initial condition is crucial which affects choices of favourable policies. A sensible choice for sequencing of economic reform in Indonesia is to start with tax reform, which can then be followed by trade liberalisation and stabilisation. By having less distorted domestic market, the benefits from trade and other reform policies can be more realised. If a deficit reduction is a matter of urgency, stabilisation should include other policies that reduce existing distortions. The same is also applied for trade liberalisation. There seems an urgent need to further dismantling the existing distortions in the domestic market, indicating that the actual government policies adopted during the period concerned were 'not the best ones'.



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# CHAPTER I

## INTRODUCTION

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### 1.1. Research Background

Indonesia started its economic development from a very low base (i.e. per capita income in 1967 was only US \$50, about half that of India, Bangladesh, and Nigeria, see Glassburner, 1988 and Hill 1996), but successfully maintained its economic growth at an average of almost 7% per year during 1969-95. The growth has raised the population's living standards as per capita income increased by about 4.5% per year. During the early 1980s, however, Indonesia experienced a sharp deterioration in its terms of trade and balance of payments due to the decline in world prices of oil and primary commodities, rising international interest rates and decreasing foreign capital inflows.<sup>1</sup> These external shocks seriously disrupted Indonesian development plans and induced extensive structural adjustment aimed at improving competitiveness, increasing economic efficiency and diversifying the pattern of industrial production. The adjustment was firstly for restoring external creditworthiness, but it then led to a change in the development strategy from a public sector led, import-substitution system with a repressed financial sector to a private sector led, export-oriented economy with a market based financial sector. During the 1980s, Indonesia's government was forced to adopt a number of adjustment measures such as massive devaluations, trade liberalisation, and domestic tax reform to reduce the distortionary threat of the expansionary policies inherited

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<sup>1</sup> These external shocks severely hit most of the highly indebted countries and led to the so called International Debt Crisis in 1982

from the previous oil boom decade.<sup>2</sup> These efforts were intensified in 1986 and afterwards to improve saving mobilisation, to maintain the competitiveness of the real exchange rate and to stimulate non-oil exports. These voluntary structural adjustments (to be distinguished from structural adjustments as part of conditional loans provided by the IMF/World Bank) proved successful in restoring external conditions and providing more favourable conditions for the domestic economy.

Despite impressive progress, export earnings and government revenue remain highly vulnerable to changes in the prices of oil and non-oil products in the world markets. There has also been a reluctant attitude towards economic reform on the government side, so that major changes in the direction of trade and industrial policies in Indonesia have been linked to major political and economic crises. In this sense, policy reforms in Indonesia might be thought as an overall restructuring strategy in response to falling petroleum prices, rather than being motivated by the benefits of economic reform.

By 1990 the economy began to overheat. Sustained economic activity had begun to put increasing pressure on resources, leading to accelerating inflation and to strong import growth. The strong macroeconomic performance during those years also hid a number of underlying weaknesses that made the economy vulnerable to adverse external shocks. Structural rigidities arising from regulation of domestic industries and import monopolies have impeded economic efficiency and competitiveness. The open capital account, the rapid expansion of the financial sector (as a result of financial liberalisation in 1988), the stability of the rupiah during most

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<sup>2</sup>The world market price of oil increased in 1973-74 and 1978-79, and brought a substantial increase in government revenue. These oil booms, however, led to the mis-allocation of domestic resources only to the booming sector. This 'Dutch Disease' phenomenon was then accompanied by overoptimistic predictions of future oil prices from the government side (see Gelb et al., 1988 for an assessment of oil booms and the 'Dutch Disease' phenomenon in the oil exporting countries). This seriously affected the government planned expenditure since more than two thirds of government revenues at that time were from oil.

of the 1990s, and the high rate of return on domestic investment all encouraged and facilitated a high level of foreign borrowing, a significant part of which was short-term debt that was not hedged.<sup>3</sup> The corporate sector had borrowed very heavily abroad and at the same time the banking system had been poorly supervised, as shown by widespread violations of legal lending limits, a significant amount of non-performing loans and bank scandals<sup>4</sup>. All were made worse by poor governance, characterized by what in Indonesia is famously term as “corruption, cronyism and nepotism”.

The devaluation of the Thai Baht in July 1997 then triggered currency turmoil as shown by the alarming level of exchange rate depreciation for the currencies in the region. The Indonesian case is the worst one, since the plummeting of the rupiah has led to very large increases in the (rupiah) debt service costs of banks and corporations that had borrowed—largely without hedging—from abroad. This amplified investor uncertainty and encouraged capital flight, thereby intensifying pressures on the exchange rate and domestic interest rates. The financial crisis had become an economic and political crisis, leading to the changes in the government.

In November 1997, the Indonesian government signed an agreement with the IMF for a comprehensive package of economic policy reform. The package includes macroeconomic policies (i.e. fiscal, monetary and exchange rate policies), financial sector restructuring (i.e. restructuring and strengthening the legal and supervisory framework of the banking sector), structural reform (i.e. foreign trade and investment, deregulation and privatisation) and social safety net.

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<sup>3</sup> By the end of December 1997, Indonesia’s external debt stood at \$140 billion (about two thirds of GDP), of which \$20 billion was short term.

<sup>4</sup> In September 1990, Bank Duta, a large, nominally private, bank that possessed impeccable political connections had to be bailed out since it had incurred foreign exchange losses of US \$420 million. In December 1992 another crisis emerged with the collapse of Bank Summa, an offshoot of the country’s second largest conglomerate: the Astra Group, due to its non-performing loans of US \$720 million. In early 1994 there were also arrests in connection with a fraud loan of US \$ 650 million from the state development bank, Bapindo.



Some studies using Computable General Equilibrium (CGE) applications, however, have pointed out that more efficient policies could have been implemented to yield a better economic performance, especially with regard to the structure of domestic industry, poverty, and the inequality of income distribution (see for instances Roland-Holst, 1992, Thorbecke, 1992, Devarajan et al. 1996, and Azis, 1996). The models used by most of these studies, however, seem to neglect important features of the underlying economy, especially in relation to government behaviour, the international trade regime, and the characteristics of the labour market. The existence of transfer payments among domestic institutions was also neglected, and these could be crucial, especially for models concerning income distribution issues. Moreover, the counterfactual scenarios chosen failed to reflect the actual policies adopted by the government<sup>5</sup>.

To remedy the lack of a representative CGE model for Indonesia, three CGE models are developed in this thesis. The models were developed<sup>6</sup> by making use of the Indonesian Social Accounting Matrices (SAMs) for 1985, 1990 and 1993 as the frameworks for capturing the important characteristics of the Indonesian economy. Accordingly, the behavioural specifications of actors in the models are defined to reflect the actual situation. The models are then used to evaluate the impacts of stabilisation (reductions in government expenditure), trade liberalisation (reductions in import tariffs) and tax reform (reductions in indirect taxations) on macroeconomic performance, welfare and income distribution. Given the three benchmark data sets used in the models (reflecting different stages of economic development) and the

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<sup>5</sup> Some studies only chose one policy and then compared the simulation results with the presumed actual condition. The others preferred a combination of presumably better policies and then were compared to a set of policies assumed to be adopted by the government. Too much attention has been devoted to the theoretical background underlying the modeling development, neglecting the main features of the Indonesian economy.

<sup>6</sup> in the GAMS HFRUCLES context.

nature of Indonesian economic reform (liberalisation of capital account at the early stage) simulations in which the policy changes are introduced in different orders are conducted. This has never been attempted before, and does raise methodological issues about its appropriateness, especially given the comparative static nature of the models. Nevertheless, the results suggest that something can be learnt for designing better economic policies in the Indonesian case.

It appears to be the first attempt to develop such models since previous models use different approaches and an earlier SAM.<sup>7</sup> Various ‘project-driven’ CGE models have been developed, with support from external donor agencies and a degree of duplication, to undertake a variety of analyses but too often the results have not been interpreted and related to the on-going policy concerns or issues. Their implementation is often cumbersome and, in some cases, poorly documented and understood, especially from the Indonesian government side (Hewing, 1996).

CGE modelling was chosen for its incorporation of economy-wide general equilibrium effects, which are lacking in other modelling approaches. The central idea of this type of model is to convert the Walrasian general equilibrium structure - formalised by Kenneth Arrow, Gerard Debreu and others in 1950s- from an abstract economy to realistic models of an actual economy by specifying production and demand functions and incorporating data reflective of real economies. These types of model provide an ideal framework for appraising various effects of policy changes that are not well covered by empirical macro models. The models have been widely applied in a range of various policy considerations (Shoven and Whalley, 1992).

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<sup>7</sup>See for instance Holst (1992), Thorbecke (1992), and CBS and ISS (1986). Khan and Thorbecke (1989) also provide the example of SAM-based fixed price model.

## 1.2. Main Purposes and Objectives of the Study

The main purpose of the study is to develop CGE models representative of the Indonesian economy that can be used for a variety of analyses relevant to the on-going concerns and issues in the Indonesian economy. The long run intention is that the models will be maintained and continuously updated to make them available and useful for policy analysis and evaluations of the Indonesian economy.<sup>8</sup> Meanwhile, the models' development and their use in counterfactual analyses are directed towards:

- Firstly, understanding the characteristics and main features of the Indonesian economy reflected in the SAMs, so that the CGE models developed subsequently are representative.
- Secondly, analysing the effects of economic reform policies such as stabilisation (cutting government consumption), trade liberalisation (reducing import tariff) and tax reform (reducing indirect taxation on domestic commodities), and
- Thirdly, analysing issues related to the introduction of individual policy reform or sequenced/simultaneous economic reforms

All are in a hope to distil some lessons for designing better economic policies in the future.

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<sup>8</sup> Hopefully, this can strengthen the role of the Indonesia Central Bureau of Statistics, which its name is now changed to Statistics Indonesia (my affiliated institution) in the policy formulation and evaluation.

### 1.3. Methodology of the Analysis

Having set up the models, the methodology for analysis in this study is conducted by:

- Firstly, setting up the types of appropriate simulations given the issues concerned.
- Secondly, determining the variables concerned and then developing or calculating their relevant economic indicators.
- Thirdly, conducting simulations to produce counterfactual results.
- Fourthly, comparing the counterfactual results with benchmark data, and
- Fifthly, analysing the results based on the variables concerned

In addition, standardised change and sensitivity analysis are also carried out to assess the robustness of the results, including the functional specification and non-calibrated parameters used in the model.

### 1.4. Organisation of Thesis

**Chapter I** sets out the background of the thesis, the objective of the study, and the methodology of the analysis. The background section puts this study in its relevant context, highlighting the new features of the study in the existing situation and modelling applications on the Indonesian economy. It is followed by the main purposes and objectives of this study. The last section of this chapter then describes the methodology used in the study.

**Chapter II** reviews important issues surrounding economic reform, covering aspects such as reasons for reform, types of economic reform (i.e. trade

liberalisation, liberalisation of capital market, tax reform, financial sector reform and other reforms), speed of adjustments, credibility and compatibility of macroeconomic policies, the role of initial condition, the order of economic reform, adjustment costs and role of foreign funds. As with other issues, there is no common agreement among economists, in most cases, on those issues. The review highlights both the similarities and differences of the arguments to help understand the issues in their context.

**Chapter III** overviews and summaries the economic reform measures that have been adopted by the Indonesian government. To understand the problem in detail, the development period of Indonesian economy since its independence is broken down into six different stages based on the similarities (or significant changes) in the economic policies adopted during those years. This covers the period of The Chaotic Years (1945-1965), Stabilisation and Rehabilitation (1966-1973), The Oil Windfalls Years (1974-1981), Adjustment to External Shocks (1982-1984), The Voluntary Economic Reforms (1985- mid-1997), The Crisis and Afterwards (1997-to date). This classification differs from the development plan of the Indonesian government, which is set for every 25 years (long-term development plan) and then divided into five consecutive five-year development plans.<sup>9</sup>

**Chapter IV** discusses the main features of the Indonesian SAMs used as the framework of the CGE models developed in this study, including some descriptive analysis of the Indonesian economy that is derived from the SAMs.

**Chapter V** highlights previous CGE applications and modelling development on the Indonesian economy, including their common features and ‘unfortunate’ (i.e. very marginal) roles in the policy analysis and evaluation. It is really impressive that various CGE models have been developed to undertake a variety of issues relevant to

the Indonesian economy. This, for certain degree, reflects the complete availability of data from the Indonesian statistical system that is rarely found among developing countries.

**Chapter VI** describes the main features of the CGE models developed in this study, covering all aspects of the CGE modelling development, their conceptual basis, formal representation, choice of closure rules, and model calibration. The models are then used for analysing three types of policy changes commonly adopted as part of economic reform (i.e. Stabilisation, Trade Liberalisation, and Tax Reform). The representative policy changes are, respectively, reductions in government consumption, in import tariffs, and in indirect taxation. The economy-wide effects on important variables such as macroeconomic aggregates, external performance, welfare, income and income distributions, are then analysed and presented in **Chapter VII**. That chapter also includes simulations of standardised change (in which the policy changes were standardised in term of GDP) and sensitivity analysis (changes non-calibrated parameters used in the models). Given the three benchmark data sets used in the models and the nature of Indonesian economic reform, simulations in which the policy changes are introduced in different order are conducted. The results are presented in **Chapter VIII**. **Chapter IX** summarises the findings and conclusions of the study, as well as suggestions further research topics.

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<sup>9</sup> It was started in the fiscal year (i.e. April to March) of 1969/1970.

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## CHAPTER II

### THE MAIN ISSUES OF ECONOMIC REFORM

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#### 2.1. Definitions, Coverage and Main Issues

Following Krueger, economic reform here refers to a 'policy reform programme', that is a set of policy changes that are announced and intended to be implemented to correct long run difficulties in the overall functioning of the economy. In a typical programme, among other things, the quantitative restrictions on trade are eliminated, tariff levels and dispersions are reduced, domestic capital markets are developed, and restrictions on international capital movements are lifted. The main objective of such reforms is to increase the efficiency of the domestic economy and to transform the domestic economy into an outward-oriented economy. It is important to note that there is emphasis here on the **set of policies** subject to the reform. Thus a 'tax reform' might **not** be a part of policy reform programme if it is a stand-alone measure to improve administration of tax. The same is also applied for adjustments in the exchange rate taken by themselves as a part of a 'crawling-peg' policy (Krueger, 1992).

In addition, the economic reform would normally include monetary policy, alterations in the government expenditures and tax policies, and changes in the exchange rate. In many instances, labour market liberalisation might be involved, as well as changes in policies regarding public sector activities and subsidies to private sector activities. The monetary and fiscal policies are, however, quite often adopted as a part of stabilisation efforts, which should be distinguished from economic reform. In a stabilisation programme, there is no intention to change the underlying economic structure and orientation whereas there is such an intention with economic

reform. However, there are difficulties in making a clear-cut distinction between the two policies and moreover many articles in the literature on economic reform neglect this issue with only a few making a clear distinction<sup>1</sup>. While understanding that stabilisation is not economic reform it is 'meaningful' to regard the stabilisation as part of an economic reform programme.

Some of the most important and at the same time least understood aspects of economic reform concern their appropriate speed and sequencing: how fast, and in what order, should the markets be opened and liberalised? In the absence of distortions, all markets should be liberalised immediately and simultaneously to reach the long run equilibrium. In the real world, however, the problems are more complex since important issues such as speed, efficiency gains, income distributions, resource allocation, credibility and feasibility of the reform should be taken into account. If all markets can not be liberalised simultaneously, there might be negative welfare implications for piecemeal reform where distortions in one sector are reduced or eliminated while those in others remain (see Edwards 1986, 1990). Government in fact can not, *and indeed should not*, undertake all liberalising measures simultaneously.<sup>2</sup> There is an 'optimal' order of economic liberalisation, which may vary for different liberalising economies depending on their initial conditions (McKinnon, 1993). There is also no single approach common across countries through which policy reforms should proceed (Levy, 1993). However there are common agreements such as:

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<sup>1</sup> The difficulties are best captured by comparing the policy content of Stabilisation Programme undertaken with IMF and of Structural Adjustments Loans of the World Bank.

<sup>2</sup> A clear example to support this argument can be found in the fiscal dependence on trade and capital account reforms, especially in the fiscal deficit situation.



(i). Opening the capital account in the situation of a repressed domestic capital market and artificially low fixed interest rates will result in large destabilising capital flows in the short run<sup>3</sup>.

(ii). Liberalising the domestic capital market should take place only after controlling fiscal deficit to prevent inflationary pressures.<sup>4</sup>

Other important issues which arise in the design and implementation of a policy reform programme are the initial conditions and the nature and extent of the policy reform efforts that must be undertaken. While useful in identifying the gains from reforms, economic policy analysis is not sufficiently sensitive to be able to identify the range of the reforms and to quantify the changes required (Krueger 1992, Greenaway & Morrissey 1992). In addition, there are some crucial factors necessary for successful economic reform, such as the involvement/availability of funds from outside agencies and creditors and the credibility of the reform.

All the important issues related to economic reform noted above will be discussed in turn but only stabilisation, trade liberalisation and tax reform will eventually be simulated (in **Chapter VII**) for addressing the effects of economic reform on the Indonesian economy. This is due to the nature of the CGE models developed subsequently. In addition, given that there are three benchmark data sets (i.e. 1985, 1990 and 1993) that reflect different stages of economic development, sequencing simulations will also be conducted, in which the three policy reforms above are simulated in different orders.

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<sup>3</sup> This was a major reason for the economic reform failures in some Latin American countries in 1970s (a good example is Argentina's reform in the late 1970s and early 1980s).

<sup>4</sup> The sequencing of economic reform in Indonesia was the reverse of what is usually 'advocated', as the capital account was substantially liberalised at the early stage of the economic development, well before the liberalisation of domestic financial market and trade regime. See Cole and Slade (1991), among others, for the discussion on the causes and consequences of the Indonesian approach.

## 2.2. Reasons for Reform

The virtual agreement regarding the advantages of economic policies which favour openness and export-led growth has generated important and pressing questions regarding their actual implementation (Greenaway & Morrissey 1992). This in turn has led to a major shift in the emphasis of economic policies by many developing countries, away from inward-oriented, import-substituting policies to outward-oriented, export-led growth policies. This change reflects the dissatisfaction with the results of the previous import substitution policies and the desire to emulate the strong growth performance of the 'outwardly-oriented' new industrialised countries. The international donors and lenders, such as the World Bank and IMF, have also attempted to push developing countries in the direction of greater outward orientation by making their assistance conditional on economic reform.

The empirical evidence, however, suggests that many liberalisation programmes have been triggered, directly or indirectly, by balance of payment crises, which seem unavoidable given the policies adopted by many developing countries. In these countries, international transactions are usually subject to wide-ranging restrictions to protect domestic import-competing industries. This import substitution policy at the same time creates price distortions in the domestic markets (Musa, 1987). The Indonesian experience also suggests that major changes in economic policies have been linked to major political and economic crises. While the need for reforms may have been recognised among groups both within and outside the government for some time, the necessary 'political will' to undertake them usually comes after such crises (Pangestu, 1996). Moreover, the policy reform programmes are commonly undertaken in response to:

- (i) Perceived emergency conditions where the intention is largely to mitigate the crisis conditions. Examples are the economic reforms in Egypt (1963), Turkey (1958 and 1970), and India (1966).
- (ii) Perceived emergency conditions where the intention is to make a fundamental alteration in the underlying structure of economic policy. Examples are the reforms in Mexico after debt crisis in 1982, Korea in the early 1960s, Turkey in the early 1980s, Indonesia following the 1966 revolution, Chile in the mid and late 1970s.
- (iii) Non-crisis situations where the intention is to improve the economic policies. Examples are the economic reforms in Sri Lanka in 1970s (due to changes in the government) and Indonesia in 1980s and 1990s (in response to the unfavourable external conditions).
- (iv) Failures of economic policies such as: those affecting macroeconomic stability (i.e. inflation and unemployment); inadequate provision of infrastructure services; inefficiencies in the public sector; government controls and incentives affecting resource allocation (Krueger, 1992).

## **2.3. Types of Reform**

### **2.3.1. Stabilisation**

Stabilisation refers to policies for controlling inflation and unemployment by means of reducing government budget deficits and improving monetary and fiscal policy. In many cases the stabilisation will involve alterations in the government expenditures (i.e. spending cut or postponed), improvement in the administration of tax collection, and changes in the exchange rate. Changing regulations in the labour market might be involved, as well as changes in policies regarding public and private sector activities. The control of inflation is crucial in the stabilisation efforts, since

inflation will generate serious distortions. Therefore, any liberalisation attempts during an inflation era will take place under inappropriate signals (Fischer, 1986 and 1987). If the economy is characterised by high inflation, stabilisation should involve a two-pronged attack: controlling the government budget and establishing income policy. The incomes policy can take the form of making programmes for wages, prices and the exchange rate in line with the price stabilisation effort, since the inflation process has inertia (Dornbusch, 1990). Historical evidence from the successful Asian exporting countries suggests the important role of stabilisation in the context of successful economic reform (Sachs, 1987 and 1988 and Edwards, 1993).

### **2.3.2. Tax Reform**

Tax reform is the formulation of a set of tax policies designed to alter the fiscal balance (increasing government revenue), to change incentives to private sectors (removing biases against investment) and to improve the efficiency of resource allocation. Traditionally, tax systems are designed to promote vertical equity, levelling down income of the rich and raising that of the poor. However, the distortionary effects of high marginal tax rates and the high degree of tax evasion arising from a complicated traditional tax system have shifted the focus from vertical equity to horizontal equity. In the latter, concerns are with applying a broadly uniform tax for the rich and the poor while at the same time helping the poor through the welfare system or some other government policy. The emphasis in recent years has therefore been on collecting larger revenues through applying broadly uniform taxes and addressing equity issues such as poverty alleviation through the welfare system and other government fiscal policies. This can be seen from the substantial tax revenue increases as a result of tax reforms in developing countries and the

adoption of various government policies for helping the poor. There have been more than 100 identifiable attempts at major tax reform since the mid 1940s in developing countries, and the tax ratio increased on average from less than 10% of GDP in the mid 1960s to almost 20% of GDP by the late 1980s. All are due to the increasing realisation of the need to make the tax system simpler (corresponding to the administrative capacity of developing countries), more transparent, less distorting and more broadly based (Rao, 1993 and World Bank, 1991). The reforms have also served to 'level the playing field', but there have also been tax reforms merely in response to growing fiscal deficits. In fact, tax levels have in general been rising in all countries in recent years, almost irrespective of income levels, economic structure, or growth rates (World Bank, 1988).

A 'best practice' approach to tax reforms includes replacing quantitative restrictions with tariffs, simplifying the tax structure, broadening the tax base, levying lower and more uniform tax rates, and exempting (for specific sector) or reducing intermediate inputs from taxes. A removal of quantitative restrictions avoids rent seeking activities, a simpler tax structure is easier to administer, a broader tax base yields larger revenues, a lower and uniform tax rate reduces unintended distortions (besides also being easier to administer) and an exemption on intermediate input taxes may encourage domestic production. Application of optimal taxation theory to the design and reform of tax systems in developing countries has mostly been impossible due to the lack of data to estimate the demand and supply elasticities necessary for setting the optimal tax rates. In addition the optimal tax theory approach also ignores the administration and compliance costs associated with any tax system. Therefore, the best approach to successful tax reform seems to be a pragmatic combination of theory and past reform experience, taking into account the

administrative, political and information constraints. A 'good' tax reform does not merely change the existing tax system but also takes into account tax administration and acceptability. These can be key to the success of the tax reform (Bird, 1990).

### **2.3.3. Trade Reform (Liberalisation of Current Account)**

The foreign trade sector has a crucial role in economic development, so that trade has variously been described as the 'engine' of growth. Therefore economic policies related to foreign trade will be crucial for the trade orientation and export performance, which in turn will affect economic growth.<sup>5</sup> The trade reforms commonly include reductions in quantitative restrictions (and their replacement by price-based measures), lowering tariffs, the simplification of import and export procedures, and the unification of multiple exchange rates. All these policies aim at opening the domestic market to international markets.

In highly protected markets, the scale of operations is small, competition from international markets is absent, and rent seeking is pervasive. Resources thus are inefficiently used and the incentives for innovation are minimal. By contrast, in open economies manifold channels for beneficial foreign influences on a country's economy are at work, ranging from technology transfer and foreign investment to competition and stability of rules regulations (since the domestic economy is now a part of the international market). Therefore the attitude to foreign investment should also be changed in order to attract more foreign direct investment and to increase the prospects for the domestic economy in the world market (Dornbusch, 1993).

The first element of trade reform, a realistic exchange rate, is a first step to increasing the relative return for exporters. The reduction in protection and removal of any price distortions will encourage exports and at the same time discourage

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<sup>5</sup> Booth (1999) points out that this export-friendly policy is essential for economic growth and the policy is one of the common lessons from Taiwan, South Korea and the fast-growing economies of South East Asia.

resources from going into import substitution industries. The trade liberalisation will therefore facilitate the growth of real exports. In this sense, it is not surprising that almost 80 per cent of Structural Adjustment Loans (SALs) have trade policy reform conditions attached<sup>6</sup> (Greenaway & Morrissey, 1992). Based on their theoretical model, Bleaney and Fielding (1995) also predict that trade liberalisation policies tend to promote investment, provided that protection against imported capital goods is also reduced. There is also a strong correlation between trade liberalisation and rapid export growth, and no sluggishness in the response of exports following liberalisation (Michaely et al. 1991).

Regarding the approach to trade liberalisation, countries with weak administrative capabilities should push import liberalisation to the limits, while politically constrained countries with strong administrative capabilities might consider ‘roundabout’<sup>7</sup> reforms that secure outward orientation without prior full scale import liberalisation (Levy, 1993). The relationship of the two can be summarised as follows:

**Table II.1: Impact of Political and Organisational Capabilities on the Design of Reform Programme**

		Political Flexibility	
		Low	High
Organisation Capabilities	Low	Limited Prospect of Reform	Promote Liberalisation and Dismantling
	High	Promote Roundabout Reform	Abundant menu of viable policies

<sup>6</sup> However, the trade liberalisation of Structural Adjustment Loans (SALs) conditions does not often take a form which should produce a positive investment response even though there is a strong evidence of current account improvement under SALs (see Bleaney and Fielding 1995).

<sup>7</sup> Levy defines this term as policies and programmes that provide opportunities for efficient economic actors and strengthen the constituency for further reform without challenging head-on the interests that benefit most from inefficient policies.

It is also necessary to continue the movement of resources from non-exportable sectors to exportable sectors since this is the main key to successful trade liberalisation. In addition, it is important to assess the ability of exportable sectors to expand in the short run. In line with this view, it might be advisable to begin a programme of export promotion prior to initiating the trade reform programme so that exportable sectors are expanding just at the time that the import substitution sectors are contracting (Michaely, 1986). Moreover, it is important to establish some gainers quickly in order to increase the credibility of the reform. It might be tempting to provide temporary assistance to exporters during the adjustment periods. The trade reform should also give priority to macroeconomic and fiscal considerations over allocative efficiency and its range should preferably be narrow but its magnitude ambitious (Rodrik, 1989). Preference should be given to the building up exports rather than import liberalisation in the early stage of the trade reform (Rodrik, 1995).

#### **2.3.4. Liberalisation of Capital Account**

The role of the international capital market as a source of finance for filling the saving-investment gap commonly prevalent in developing countries is very important. Foreign capital inflows have helped in providing much needed financing to increase the use of existing capacity and to stimulate domestic investment. Lower international interest rates, an excess of capital in the capital exporting countries, and better economic returns in the developing countries, have caused capital inflows to developing countries increase sharply in recent years. This is partly due to liberalisation of the capital account in the developing countries, which is actually a removal of restrictions on international capital movements or an 'opening of the capital account'. In the normal situation, one can expect that the real interest rate in developing countries to be substantially higher than in developed countries.



Therefore, once the capital account in developing countries is liberalised, the perceived profitability of investment in these countries will increase dramatically<sup>8</sup>.

The international capital inflows include official loans/grants from foreign government (G) or international institutions such as the World Bank and IMF (I) or from the foreign private sectors (P). The domestic recipient could be the government (i.e. G to G, I to G, and P to G) or the private sector (i.e. G to P, I to P, and P to P). Furthermore, the official loans/grants to support policy adjustments may in fact attract private capital inflows once the countries begin to make progress in their adjustment efforts.<sup>9</sup> The private capital inflows may take the form of Foreign Direct Investment (FDI), commercial bank lending, and portfolio capital (investment in stocks and bonds). Given its nature, FDI does not cause many problems<sup>10</sup> -especially related to the real exchange rate appreciation- but this is not so for the other two. Foreign capital inflows from foreign governments or international institutions may also create problems for developing countries as the historical evidence suggests (i.e. the misuse of foreign debt). Certain macroeconomic and monetary policies<sup>11</sup> may also attract foreign private capital inflows so that in many cases the inflows are an endogenous response to changes in domestic policies and economic prospects.

However some inflows may cause problems, especially those volatile inflows commonly attracted by market imperfections or policy mistakes that create a large gap between domestic and international interest rates. The impacts of such volatility on the domestic economy could be devastating, as can be seen in the 1982 Debt

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<sup>8</sup> However, if the developing countries have problems with their foreign debt, the foreign capital inflows following the capital account liberalisation will be affected accordingly. In fact it will depend on how the government tackle the debt problem.

<sup>9</sup> Pack and Pack (Economic Journal, 1990), for instance, conclude that there is no proof of misallocation of Indonesian foreign loans, which in fact attract private investments. Fane (The World Economy, 1996) also conclude that the accumulation of Indonesian foreign loans reflects more to the growth of investment than to the growth of consumption.

<sup>10</sup> Developing countries encourage FDI by dismantling restrictions for capital inflows and improving domestic macroeconomic conditions. This is the heart of capital account liberalisation.

<sup>11</sup> For instance adopting fiscal deficit or implementing strict monetary policy.

Crises (for Mexico and other highly indebted countries). in 1994 (especially for Mexico) and in 1997 (crises in some Asian countries).

The problems commonly associated with foreign capital inflows are the appreciation of the real exchange rate, the expansion of non-tradable sector at the cost of the tradable sectors, larger fiscal and external deficits, and higher inflation rate, especially in fixed exchange rate regimes. This is a consequence of capital inflows tending to reduce domestic interest rate and boost domestic expenditure. Part of the increase in spending will go into tradables and part into non-tradables. The worst result of increases in spending on tradables is a higher trade deficit, but the increase in non-tradable spending may create excess demand for the non-tradables that results in a real exchange rate appreciation<sup>12</sup>. Another reason that opening the capital account may result in a real exchange rate appreciation is when the financial market adjusts faster than the goods market (overshooting) so that in the short run an immediate inflow of capital will be the result. Therefore, an unsustainable foreign capital inflow will create larger deficits (both fiscal and external), a real exchange rate appreciation, and a larger non-tradable sector. These problems are very relevant for developing countries given that their domestic capital markets are still repressed and the domestic interest rates are kept at artificially low levels. Opening the capital account in this situation will usually result in large destabilising capital inflows especially in the short run.

The way to avoid the negative effects of foreign capital inflows may take the form of: (i).developing a well-functioning banking system, (ii). changing the policy mix towards a more restrictive fiscal policy and a less restrictive monetary policy.

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<sup>12</sup> Dynamic effect of capital account liberalisation resembles that of the so called 'Dutch Disease': in order to adjust to a large increase in the domestic absorption, a real appreciation of real exchange rate will have to take place.

and (iii). using some direct and indirect controls such as ceilings on foreign borrowing and managing exchange rates (Corbo and Hernandez, 1996).

### **2.3.5. Financial Sector Reform**

There is a wide empirical evidence that relates a repressive financial system with a worse economic performance and a competitive financial system with a better economic performance (see McKinnon, 1993). The main functions of a financial system are to mobilise the maximum amount of resources and then to allocate them as efficiently as possible among competing users. The more efficient the system, the better the channelling of these resources, meaning that saving will be directed to the most profitable investments. This in turn will stimulate higher economic growth and positively contribute to economic development. Policy changes as part of financial sector reform aim at increasing the efficiency of the financial system. The reform commonly includes changing the behaviour of the central bank (i.e. giving it more independence), setting a more effective financial regulatory system and liberalising interest rates. Moreover Long (in Faruqi, 1993) suggests six basic aspects of financial reform:

- (i) Achieving a sound macroeconomic situation.
- (ii) Resolution of the financial problems of state-owned enterprises.
- (iii) Setting realistic and moderately stable structures of relative prices.
- (iv) Setting realistic levels of interest rates to stimulate adequate savings while at the same time avoiding excessive disincentives to investment (including elimination of subsidised interest rates).
- (v).Setting a strong financial infrastructure, including a sound system of regulation of financial institutions and timely and efficient enforcement of the rules.

(vi). Deepening of institutional structures of banks and non-banks as well as a diversified structure of financial investments, maturities, and so forth.

Financial liberalisation must be properly planned and be accompanied by not only adequate macroeconomic policies consistent with the liberalisation attempts but also adequate regulation and supervision to prevent market failures. In this context, it is better to have a gradual and orderly liberalisation process in order to gain the necessary experience that will allow adjustment of legislation to the needs that arise during the process. 'Gradual' liberalisation does not refer to a long period of time, but to the time needed to establish the institutions required in order to have a financial system operating efficiently and soundly under market conditions.

The main element of controversy in defining the scope of financial reform relates to the extent of the residual interventions that government should provide. The World Bank has tended to advise governments against any selective intervention in the allocation of credit in the belief that governments always articulate good reasons for intervening in financial markets even when these interventions are fundamentally deficient. However some countries have regarded judicious government involvement in credit allocation as desirable.

### **2.3.6 Other Reforms**

Other reforms may include those of domestic financial markets, labour markets and domestic goods markets. Domestic financial market reforms are usually conducted in line with financial account liberalisation, while labour market reforms could be undertaken in conjunction with any other economic reforms. Reforms in the labour market may involve setting a minimum wage for casual workers, reforming trade unions to make them more 'business friendly', and creating a social safety net. Successful labour market reform could be the crucial factor in reducing the

adjustment costs associated with other economic reforms. The intention of reform in the domestic goods markets is to reduce distortions as a result of government interventions in the domestic market, such as price controls and quotas, and of the use of monopoly power.

#### 2.4. Speed of Adjustments

The experience of economic reform in developing countries indicates that the timing, speed, and sequencing are very important for the reform to be successful. In a normal situation the speed of adjustment in financial markets may be very fast, whereas the response of exports and import substitutes to changes in the real exchange rate (if the trade account is opened-up) may be sluggish. Therefore, a rapid dismantling of distortions is dictated by welfare as well as credibility considerations (Krueger in Edwards, 1993). Credibility and sustainability require a **big push** rather than gradualism (Rodrik, 1989). The big push will send a correct (i.e. seriousness or commitment on the government side) signal to the private sector and may help defeat a sense of **deja vu**<sup>13</sup> on the part of workers and entrepreneurs. The big push is also required to counter the natural sluggishness in private sector responses, arising from sunk costs and capital irreversibility, and is helpful in building up a constituency for the reform as quickly as possible. In line with this, efficiency gains from reform might be obtained as quickly as possible (Falvey & Kim, 1992). In addition it may be more difficult to build up the necessary political momentum for reform once the crisis atmosphere has passed.

On the other hand, since the reform can generate adjustment costs and opposition it may be better to conduct structural reforms gradually (Little, et al. 1970). Faster reform will result in larger short-term costs -including unemployment

and bankruptcies- and thus stiffer political opposition. In line with this argument, trade liberalisation should be carried out slowly and that assistance to the import competing industries should also be provided to finance a smoother adjustment (Michaely, 1986). A very rapid trade liberalisation may be preferable to a gradual process for reasons of credibility and long term efficiency, **but** the unemployment cost might be sizeable in the transition process (Bruno, 1993). The more rapid the liberalisation process, the less flexibility there is through factor mobility between sectors. In contrast, the more protracted and prolonged the reform process, the more danger there is that the reform will not be credible, that the 'right' investment and employment decisions will not be made, and that the reform will gradually peter out. The choice of liberalisation speed will depend on the aversion that countries have to high unemployment. Gradualism helps to minimise the unemployment consequences by indicating where displaced labour can profitably be employed. The longer the time allowed for adjustment, the easier it is to smooth the process of transition to a new structure of industrial activity.

It is possible to argue that gradualism has characteristics that work in both directions, simultaneously enhancing and compromising credibility (Edwards, 1990). On the one hand, by reducing the unemployment effect and by allowing for a firmer fiscal equilibrium, a gradual trade reform will tend to be more credible. On the other hand, a slow reform will allow those groups negatively affected by reform to organise and lobby against the policies. In the end, the efficacy of gradualism will depend on factors specific to each country. What is clear is that policy makers should always pay particular attention to the establishment of credibility when implementing economic reform.

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<sup>13</sup> Something felt has already happened before.

A number of other arguments also favour gradualism (Greenaway and Morrissey, 1992). First, adjustment costs, notably unemployment, are likely to be higher if the reform is rapid. Second, gradualism can be defended on the grounds of the effect on the income distribution, since it will give more time for domestic economic actors to adjust accordingly. Third, there is actually a credibility argument for gradualism, especially for governments that have not previously established their credibility, since the adoption of gradualism can be used to demonstrate their commitment to reform. In general, however, the answers must be determined on a case-by-case basis (Falvey and Kim, 1992).

## **2.5. Sequencing Issues**

### **2.5.1. Necessary Stabilisation and the Role of Initial Conditions**

The question of whether macroeconomic stabilisation is a necessary **pre-condition** to a successful liberalisation is often addressed in the context of economic reform. If macro stabilisation is required, it would be pointless to embark on trade reform in advance since the trade reform signals would be swamped by the macro uncertainties (Wolf, 1986 and Mussa, 1987). The arguments for conducting any required macro stabilisation in advance can be found in the 'conjuncture' problem (Wolf 1986, Falvey and Kim, 1992), since the contractionary effects of stabilisation tend to be contemporaneous with the trade reform, so that public may associate the trade reform with unemployment and deflation. It is also advisable not to unite political opposition by conducting stabilisation and trade reform at the same time. Both programmes are more likely to be sustainable if they are taken sequentially rather than simultaneously. In addition, adjustment costs imposed on the economy by any policy changes are likely to be positively related to the speed and extent of the

changes. Therefore, the adjustment costs of a combined programmes are therefore likely to be higher than the sum of those generated by sequential implementation<sup>14</sup>. Some aspects of the stabilisation programme will also promote trade reform. The stabilisation programme will increase the transparency of the existing pattern of protection, thereby providing a clearer basis for trade policy reform. Any economic policy reform must take account of initial conditions, both political and economic (Greenaway and Morrissey, 1992). Politically, it is necessary to create a political commitment and to organise support for reform i.e. by facilitating political stability, identifying and mobilising the gainers, and reinforcing the social and physical infrastructure. Political commitment is a prerequisite for successful reform. Economically, it is necessary to establish appropriate economic foundations, such as setting a realistic exchange rate, reducing fiscal deficits (by broadening the tax base or improving tax collection procedures), controlling domestic inflation, and reforming the labour market (in order to mitigate unemployment problems caused by the reform). Failure to stabilise the macroeconomy may reverse the reform process, and a failed reform imposes very high costs and may make the economy worse-off than before the reform. The failure will also undermine future credibility, so that it is important to create auspicious initial conditions before attempting any reform. Liberalisation will have a better chance of success if it is undertaken with a fiscal surplus since this will maintain a depreciation of the real exchange rate (McKinnon and Mathieson, 1981). A fiscal surplus is the best way to avoid the need for foreign funds, which would stimulate an appreciation of the real exchange rate (McKinnon 1993).

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<sup>14</sup> This argument is not necessarily true since the combined programmes may in fact create mutually favourable effects, reinforcing their positive effects or eliminating their negative effects.



Arguments against the above view are motivated by the evidence that the adjustment costs associated with the trade reform are much smaller in magnitude than often believed and may well pass unnoticed amongst those generated by the stabilisation<sup>15</sup> (Michaely et al. 1991). An empirical study of 36 liberalisation episodes in 19 countries showed that there is no particular necessity to stabilise prior to liberalisation as long as the policies accompanying liberalisation are appropriate to the macroeconomic situation. The most important determinant of a successful liberalisation is a depreciation of the real exchange rate. This requires resolving fiscal deficit pressures simultaneously. Moreover, theoretically there is very little connection between the determinants of inflation and trade orientation (Krueger, 1981 and 1984). It is possible to attack both problems simultaneously. Postponement of trade liberalisation will prolong inefficiency costs and if there are foreign funds available, a reduction in tariffs can help the stabilisation effort by providing an anchor for many domestic prices. In line with this, it is possible to carry on both stabilisation and liberalisation at the same time as long as overvaluation of the real exchange rate is avoided (Corden as quoted in Edwards, 1993).

### **2.5.2. Sequencing of Other Reforms**

The main questions regarding the order of economic reform are which market(s) should be liberalised first, and then what order should be followed for liberalising the other markets. This is crucial since macroeconomic instability is not completely exogenous but is in some sense related to the liberalisation strategies chosen. The order of economic reform can have an important effect on the credibility and perceived sustainability of economic liberalisation attempts. An inappropriate

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<sup>15</sup> Greenaway (1992) points out that one has to proceed with caution in the interpretation of results based on the evaluation study of 36 liberalisation episodes presented in the 7 volumes. The claims made for generality of the results are extravagant, although much of the analysis in the individual country studies is analytically sound. Greenaway & Morrissey (1992) also point out that a closer examination of the country studies in Papageorgiou

sequencing - i.e. one that results in exceedingly high domestic real interest rates or in a rapid real exchange rate appreciation- will send wrong signals to the private sector. As the sustainability of the reform comes into doubt, the private sector will begin to speculate, generating forces that will put the continuation of the reform in danger.

Labour markets have traditionally been neglected in the studies of sequencing (Edwards, 1989). The consequences of postponing reform of labour markets can be costly in terms of increased unemployment and reduced efficiency. Moreover, higher unemployment will usually increase the political resistance and thus reduce the credibility of the reform. Therefore, labour markets should be reformed at an early stage of the structural reform programme in order to mitigate the adjustment costs (Greenaway and Morrissey, 1992).

The arguments on whether to open the capital account first or at the same time as trade is reformed is consistent with the exchange rate management adopting a floating exchange rate system with full currency convertibility before the trade reform (Lal, 1984, Little et al., 1993, and Michaely, 1986). The arguments underlying this choice are: (i). Government face less opposition in the financial field from powerful vested interests whose rents will be cut following exposure to foreign competition (as in the case of trade liberalisation). (ii).The availability of additional foreign funds eases the investment-financial problem and enables government to keep domestic interest rates high while some domestic sectors avail themselves of seemingly cheap foreign finance. (iii).Government can use the foreign funds to increase its own expenditure without having to resort to higher taxes or to printing money.

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et al. (1991) allows one to question regarding the costs of adjustments. It is quite clear that unemployment increased, often dramatically, in some countries during and after liberalisation

However, more authors seem to agree that trade liberalisation should precede capital liberalisation. Opening up the capital account in the presence of trade distortions may result in a serious mis-allocation of investment (Krueger, 1984 and 1986). An economy that liberalises its foreign trade should avoid unnecessary and destabilising movements of short-term capital. Recall that while asset markets clear almost instantaneously, the attainment of equilibrium in the goods markets usually takes some time and therefore the synchronisation of the structural reform outcomes will call for the goods market to be liberalised before financial markets and the lifting of capital controls (Frenkel, 1993). Moreover, second best considerations suggest that it is more advisable to open the current account before liberalising restrictions on capital mobility. In line with this, capital controls should be relaxed only after domestic financial reform is accomplished, and after trade and industrial sector distortions have been dismantled (McKinnon, 1993). This is crucial for countries where the government lacks credibility (Calvo in Edwards, 1993).

The real exchange rate appreciation that accompanies capital inflows would counter the real depreciation resulting from the trade liberalisation (Corbo and Hernandez, 1996). This will delay the supply response of export-oriented sectors and increase the competitiveness of import-competing sectors. Through the risk of higher domestic inflation, the large capital inflows may also put the stabilisation programme in danger. This view implies that stabilisation followed by trade reform and then by financial sector reform seems the most 'suggested' order of economic reform. [Not very clear what you are trying to say here]

Timing and sequencing are also important in designing tax reform. Most successful tax reforms (Japan in 1949/50, Korea in 1962-65 and Indonesia in 1983-86) were carried out quite late in the context of economic reform (Rao 1993). For reforming

domestic financial market and capital account, most authors argue that liberalisation of capital account should be introduced only after the domestic financial sector has been liberalised (see Edwards, 1990). An ill-implemented financial reform programme may lead to the collapse of the financial sector and severe damage to the macroeconomy, as in the Chilean case in the mid and late 1970s (Gomez, 1990). To liberalise the domestic financial sector in an inflationary situation, however, poses an additional sequencing problem. The liberalisation of the domestic financial market can only be fully undertaken if the fiscal deficit is under tight control (McKinnon and Mathieson, 1981 and Edwards, 1989). The existence of a large fiscal deficit, which is financed by an inflation tax, requires that reserve requirements on banks be kept high and interest payments on deposits be kept low. This is to ensure that the base on which the inflation tax is collected -the stock of high-powered money- is not eroded. If domestic interest rates are liberalised and the fiscal deficit is uncontrolled, the inflation tax base will be reduced, and the rate of this tax - the inflation rate- will have to be increased in order for the government to collect the same amount of money. This process may lead to very high inflation rates, which would become increasingly difficult to control and would jeopardise the sustainability of reform. Therefore, controls on the capital account should only be lifted after the domestic financial market has been reformed and domestic interest rates have been raised. In turn, interest rates should be liberalised only after the fiscal deficit is under control.

The sequencing of economic reform that would attract wide support seems to be started by stabilisation (including proper exchange rate management, tax reform, labour market reform and control on fiscal deficit), followed by trade liberalisation, domestic financial market liberalisation and relaxation of capital controls (Greenaway and Morrissey 1992). The tax reform may be conducted at the late stage

of the economic reform if the tax reform will significantly change the underlying tax system. This is due to the fact that the tax reform will involve designing a new tax system, tax administration and acceptability that could take years to establish.

## **2.6. Credibility and the Compatibility of Macroeconomic Policies**

An important determinant of the survivability of economic reform is the extent to which the reform programme is perceived to be credible. In the absence of credibility, the reforms are likely to fail in their objectives and prove unsustainable (Rodrik, 1989). This is, however, a messy area where economics, political science and psychology intersect and in which neat and easy solutions are not likely to exist. The credibility of reform is actually a function of the consistency of macroeconomic policies adopted during the reform period. If the macroeconomic policies are compatible with the reform efforts, they will create, enhance and at the same time maintain the reform's credibility. If a specific reform is not credible to economic agents, economic liberalisation may be welfare reducing (Calvo, 1987). An example is the liberalisation of capital controls at the time when the public believes that some of the trade liberalisation measures will be reversed, or when the credibility of trade reform is very low.

There is also a problem in measuring credibility. A best measure for credibility is the substance of the adjustment programme: given the size of a real depreciation or of a budget cut, how likely is it that this is enough to avoid a critical speculative attack (Dornbusch, 1990). Viewed in this way, credibility is just a summary term for the adjustment effort and it plays no independent role. Adjustment is all-important and credibility means nothing by itself. It is important to note, however, that the degree of credibility is not an exogenous variable but will depend

on a number of factors, of which one of the most important is the perceived consistency of the proposed policies (Edwards, 1984). If the public perceives the reform to be consistent, it will expect that the reform attempts will be supported, whichever order is chosen. In this sense, credibility is even more important than determining the correct order of liberalisation<sup>16</sup>. One way of overcoming the credibility problem is to announce the whole programme of economic reform (Bruno, 1993). In addition liberalisation needs to be accompanied by appropriate macro economic policies that take into account both internal and external imbalances in the economy during the transition. To enhance the credibility (Rodrik, 1989), it is necessary to:

- (i) Communicate with the private sector regarding the government commitment to the reform.
- (ii) Reduce any possible future incentives to reverse policies.
- (iii) .Make it more difficult to change course if the temptation arises nonetheless.

## **2.7. Adjustment Costs and the Role of Foreign Funds**

The most serious problem with any liberalisation programme is the political resistance that it generates (Krueger, 1992). Economic agents can generally recognise the short run adjustment costs associated with the reforms, but usually have difficulties in perceiving their long run benefits. In order to minimise the political opposition, it is necessary to minimise short run adjustment costs by relying on foreign capital during the transition, especially in providing assistance to the domestic import-competing industries (Michaely, 1986). Therefore, it is necessary to increase capital inflows during the transition of trade related reform to reduce the

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<sup>16</sup> This statement should be interpreted cautiously since the credibility might be thought as a function of correct order of liberalisation, speed of adjustment, consistent macroeconomic policies etc.

friction that emerges during major structural reforms<sup>17</sup>. This argument relies on the fact that the adjustment costs associated with micro reforms can be reduced by an increased availability of foreign funds, so that restrictions on the importation of capital should be reduced before the trade reform takes place<sup>18</sup> (see also Edwards 1993). In this context the less the assistance from abroad, the more (or even prohibitively) costly the reform can be (Bruno, 1993). International confidence (consistently perceived efforts that gain support internationally) plays a key role in any stabilisation or liberalisation effort (Dornbusch, 1990). With confidence on the world markets, fostered by the existence or strong prospect of adjustment efforts, capital inflows will support the currency and help stop inflation from day one. By contrast, with strained confidence abroad, a high interest rate is necessary to maintain the exchange rate and to avoid a decline in output and worsening public finances as a result of stabilisation. International investors may also play a crucial role, since they can afford to wait while the economy can not. If they do take a wait-and-see attitude, that very fact makes a stabilisation less likely to succeed. This is true since the costs associated with the reform are immediately apparent while the benefits could take some times.

Objections to the view that structural (including trade) reforms should be accompanied by capital inflows arises from the fact that relaxation of capital controls is very likely to result in substantial inflows of capital. This in turn will result in a real exchange rate appreciation and in disprotection of the tradable sector. Therefore a structural reform of the trade account should “deliberately avoid an unusual or extraordinary injection of foreign capital” since these flows are unsustainable in the

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<sup>17</sup> She refers to the case of the successful reform in Egypt in 1970s that according to Clark (Clark, 1986) was due to the ample availability of foreign funds.

<sup>18</sup> This view seems to call for a ‘capital account first’ sequence of structural reform. However it only stresses the important of foreign funds during adjustment period (e.g. Egyptian Reform in 1963). In fact she argues that

long run. (see Edwards 1986, 1990, 1993 and McKinnon 1993 )<sup>19</sup>. An aid-financed liberalisation may not be sustainable because of the 'Dutch Disease' spending effects and credibility problems, so that liberalisation and devaluation without foreign aid is the appropriate policy combination (Collier and Gunning in Greenaway and Morrissey, 1992)

The foreign capital inflows can actually play both negative and positive roles in a successful economic reform (Rodrik, 1989). If government commitment is in doubt, the foreign loan conditional on reform can render reform support (i.e. attempts appear less credible than they would otherwise), since the private sectors may reason that government is interested in simply satisfying the foreign creditors and will revert to its previous policies as soon as it is safe to do so. The involvement of international institutions such as the World Bank and IMF in formulating the reform programme may create the feeling that the reform is being 'bought' by foreign creditors without having the full support of the domestic policy makers. This is strengthened by the fact that the 'domestic reformers' are basically the very same politicians and bureaucrats who were the most ardent champions of the previous import substitution policies<sup>20</sup>. But when government does appear committed to reform, the foreign capital inflows can enhance the credibility and sustainability of the reform.

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opening up the capital account in the presence of trade distortions will result in a serious misallocation of investment.

<sup>19</sup> It seems that there is slightly mis-interpretation regarding the role of foreign fund during transition process. Krueger stresses that it is necessary to have foreign funds for reducing the transition costs, but it does not mean that capital control should be relaxed since the foreign inflows can still be under government control (through government only). However McKinnon and Edwards interpret that it is always the case of capital account liberalisation.

<sup>20</sup> This view implicitly assumes that the foreign funds represent a large share of foreign reserves and the government has the problems of credibility (could be from the previous reform attempts).



Table II.2: Summary on the Main Issues of the Economic Reform

AUTHOR(S)	ISSUE & ARGUMENT
<b>A. APPROACH/SPEED OF ADJUSTMENTS</b>	
<b>1. Big Push/Big Bang</b>	
<b>Krueger (1986)</b>	Welfare as well as credibility considerations dictate for a rapid dismantling of distortions.
<b>Rodrik (1989)</b>	Credibility and sustainability require a <b>big push</b> rather than gradualism.
<b>Falvey and Kim (1992)</b>	Efficiency gains from reform might be obtained as quickly as possible and it may be more difficult to build up the necessary political momentum for reform once the crisis atmosphere has passed.
<b>2. Gradual</b>	
<b>Little, Scitovsky and Scott (1970)</b>	Structural reforms should be carried out gradually since they can generate adjustment costs and opposition.
<b>Michaely (1986)</b>	Trade liberalisation should be carried out slowly by providing assistance to import competing industries to finance a smoother adjustment.
<b>Edwards (1990)</b>	Gradualism may work in both directions, simultaneously enhancing and compromising credibility.
<b>Greenaway &amp; Morrissey (1992)</b>	Adjustment costs, income distribution, and possibility to demonstrate credibility call for gradual approach.
<b>B. SEQUENCING</b>	
<b>1. Stabilisation First (Necessary Initial Condition)</b>	
<b>McKinnon and Mathieson (1981),</b>	With fiscal surplus, liberalisation will have a better chance of succeeding and will ensure depreciation of real exchange rate.
<b>McKinnon (1984)</b>	It is necessary to have fiscal surplus before liberalisation to avoid massive capital inflows following liberalisation.
<b>Fischer (1986, 1987)</b>	Inflation will generate serious distortions to the reform.
<b>Sachs (1987,1988)</b>	Historical evidence from successful Asian exporters suggests that stabilisation should be consolidated before attempting trade reforms.
<b>Wolf (1986) and Mussa (1987)</b>	If macro stabilisation is required, it would be pointless to embark on trade reform in advance since the trade reform signals would be swamped by the macro uncertainties.
<b>Greenaway and Morrissey (1992)</b>	Any economic policy reform must account for initial conditions, both political and economic Failure to stabilise the macroeconomy may reverse the reform process, and a failed reform imposes very high costs and may make the economy worse-off than before the reform.

<b>2. Simultaneously (Stabilisation and Trade Reform)</b>	
<b>Krueger (1981, 1984)</b>	Theoretically, there is little connection between inflation determinant and trade orientation. Postponement of liberalisation will prolong inefficiency costs.
<b>Michaely (1986)</b>	Liberalisation will only succeed with a depreciation of real exchange rate. This requires solving fiscal deficits simultaneously.
<b>Corden (1987)</b>	It is possible to carry on both policies at the same time as long as overvaluation is avoided.
<b>3. Trade Reform First</b>	
<b>Krueger (1984,1986)</b>	Opening up the capital account in the presence of trade distortions may result in a serious mis-allocation of investment
<b>Calvo (1987)</b>	In countries where government lacks of credibility, capital controls should not be removed until the liberalisation programme in the goods markets is fully consolidated.
<b>Edwards (1990).</b>	Liberalisation of capital account should be done only after domestic financial sector has been liberalised to avoid real exchange rate appreciation.
<b>Greenaway and Morrissey (1992)</b>	The reform should be started by stabilisation (including proper exchange rate management, tax reform and control on fiscal deficit) and then followed by trade liberalisation, domestic financial market liberalisation and relaxation of capital controls.
<b>Frenkel (1993)</b>	While asset markets clear almost instantaneously, attainment of equilibrium in good markets usually takes some time. Thus a synchronisation of the structural reform process will call for the goods market to be liberalised first. Second best considerations also suggest that it is more advisable to open the current account before liberalising capital account.
<b>Corbo and Hernandez (1996)</b>	The real exchange rate appreciation that accompanies capital inflows would counter the real depreciation (as a result of trade reform), delaying the supply response of export-oriented sectors and increasing the competitiveness of import-competing sectors. Through the risk of higher domestic inflation, the large capital inflows may also put the stabilisation programme in danger.
<b>4. Capital Account First</b>	
<b>Little, Scitovsky and Scott (1970) and Michaely (1986)</b>	Consistent with the role of exchange rate management during the reform.
<b>Lal (1984)</b>	A floating exchange rate system with full currency convertibility to be implemented before the trade reform.

<b>C. Role of Foreign Funds</b>	
<b>1. Important</b>	
<b>Krueger (1981,1993)</b>	With foreign funds, tariff can be reduced without an accompanying real depreciation, helping the stabilisation effort by providing an anchor for many domestic prices. The capital inflows during the transition are necessary for reducing the friction that emerges during the major structural reform.
<b>Clark (1986)</b>	The success of Egyptian Reform in 1963 was due to the ample availability of foreign funds.
<b>Rodrik (1989)</b>	Foreign capital inflows can play positive roles, as long as the reform is credible.
<b>Dornbusch (1990)</b>	International confidence plays a key role in any stabilisation efforts. Capital inflows will support domestic currency and help stop inflation from day one
<b>Bruno (1993)</b>	The less assistance from abroad, the more costly (or even prohibitive) the reform can be.
<b>2. Not Important</b>	
<b>McKinnon (1973)</b>	Any structural (including trade) reforms should not be accompanied by capital inflows to avoid real exchange rate appreciation.
<b>Collier and Gunning (1992)</b>	Aid financed liberalisation may not be sustainable because of 'Dutch Disease' spending effects and credibility problems. Liberalisation and devaluation without foreign aid is the appropriate policy combination.
<b>D. Adjustment Costs</b>	
<b>1. Significant</b>	
<b>Greenaway and Morrissey (1992)</b>	Unemployment increased, often dramatically, in some countries during and after liberalisation.
<b>Bruno (1993)</b>	The cost of unemployment might be sizeable in the transition, especially in the rapid liberalisation process
<b>2. Not Significant</b>	
<b>Michaely et al. (1991)</b>	The adjustment costs associated with trade reform are much smaller than often believed.

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## CHAPTER III

# AN OVERVIEW OF ECONOMIC REFORM MEASURES ON THE INDONESIAN ECONOMY

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### 3.1. The Chaotic Years, 1945-1965<sup>1</sup>

Even though Indonesia proclaimed its political independence from the Dutch<sup>2</sup> in 1945, after the end of the Japanese occupation, its economic development basically started from 1967. Revolutionary struggles and unstable political conditions in the newly independent nation had caused economic depression and greatly disrupted trade, damaged the infrastructure and undermined the economic system. Efforts to emulate a European parliamentary democracy system led to a proliferation of political parties. Seven cabinets fell in the first ten years of independence, and the first general election in 1955 (contested by more than a hundred political parties) failed even to reach a national consensus on constitutional reform. This then led to the Presidential Decree (July 1959) that returned to the initial constitutional arrangement set up in 1945.<sup>3</sup>

There were frequent changes in economic policies following the changes in the government. However, taxes on trade were the main source of government revenue from the beginning, involving the imposition of various devices such as multiple exchange rates<sup>4</sup> and export surcharges. The government adopted a 'guided economy' program,

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<sup>1</sup> This section might be viewed too brief for describing the development of the Indonesian economy during this period. Booth (1998) provides a very good descriptions of the Indonesian economy in the 19<sup>th</sup> and 20<sup>th</sup> centuries, covering issues such as the economic growth and structural change, living standard and income distribution, government role, the impact of international trade, investment and technological change, and market and entrepreneurs. The bibliography cited in the book is also an excellent guideline for anyone interested on the Indonesian economy.

<sup>2</sup> The Dutch colonized Indonesia for more than 350 years and the Japanese occupation lasted for less than 4 years.

<sup>3</sup> The system is often claimed to give a central power to the executive (President) in the constitutional system. This constitutional setting is however adopted until now and in fact is protected from any changes.

<sup>4</sup> A multiple exchange rate system can be used as a means of increasing the government incomes in term of domestic currency. It works basically through imposing a lower exchange rate to the foreign exchange transactions involving unfavorable (from the government point of view) sectors economic agents, and vice versa. The difference between

expanding controls over the means of productions by nationalizing foreign companies, and introducing quantitative restrictions on both imports and domestic industries. The government also commonly printed money to finance its budget deficits.

During the first two decades, Indonesia's economic prospects were basically bleak. In short, the economy was characterized by accelerating inflation, capital flight, shortages of basic commodities and prevalent open corruption. These 'chaotic years' culminated in 1966, when the inflation rate reached more than 600%,<sup>5</sup> the unemployment rate was more than 25% and the foreign exchange reserves and domestic savings were negative. The political crisis then made the problems worse, leading to changes in the government. General Suharto took power in 1966 and replaced the first president, Sukarno, as president in 1967.<sup>6</sup> Politics was no longer the main issue, being replaced by economic concerns.

### **3.2. Stabilization and Rehabilitation Period, 1966-1973**

Facing economic imbalances, the new government took action mainly to stabilize the economy. A team<sup>7</sup> of presidential economic advisors was formed to set stabilization and rehabilitation policies, covering budgetary, fiscal, monetary, price, and balance of payment issues. Foreign debts were rescheduled to reduce the fiscal burden (including attainment of debt relief and new loans). Money supply growth was reduced each year to bring down the inflationary pressure. The government also started to adopt

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the market rate of foreign exchange and the lower rate imposed by the government works as an implicit tax. Therefore it is a means of collecting taxes from international transactions.

<sup>5</sup> In fact, inflation topped to 1000% in the second quarter of 1966, when 1000 of the old rupiah was changed to 1 new rupiah.

<sup>6</sup> The period under Suharto has been referred as the 'New Order' period. President Suharto was still in power in 1997 and is expected to be in power for the next five years.

<sup>7</sup> The team was formed from scholars of the Faculty of Economics, University of Indonesia (FEUI). Some of them were fresh Ph.D. graduates from the University of California, Berkeley, who then continuously held important positions in the Suharto cabinet. Other graduates from the same University joined in as cabinet members later on. They are often referred as the 'Berkeley Mafia'.

a ‘balanced budget’<sup>8</sup> policy, replacing the money-printing measure commonly adopted by previous governments. This balanced budget principle has been maintained, preventing the government from printing money or issuing debt securities in the domestic capital market for financing budget deficits; they must instead rely on foreign sources.<sup>9</sup> . The result was impressive, as noted by Hill (1996): “*Economists cite Indonesia from 1966 to 1968 as one of the most effective instances of inflation control in the twentieth century*”. More specifically, Booth (1998) indicates that the stabilisation has come to be regarded as the most successful such programmes undertaken anywhere in the world since 1950.

In 1967, a new foreign investment law was introduced to encourage private investments (i.e. by introducing tax holidays etc.), followed by improvements in domestic investment law a year later. In 1969, the first ‘five-year development plan’ was set, embodying the three aspects of the *Indonesian development trilogy* namely: **stability, growth, and equity**. In 1970, the existing multiple exchange rate system was unified and pegged to the US dollar. The restrictions on international transactions involving foreign exchange were also abolished, implying the adoption of an open capital account. In 1971, the rupiah (Indonesian currency) was devalued by 9 per cent to increase exports and therefore alleviate balance of payments problems.

The most significant result of stabilization in 1966 was that the drop in inflation was accompanied by economic expansion rather than by economic contraction. Inflation plunged from 635% in 1965 to 6% in 1970 and net foreign reserves had turned positive by 1972. The economy also began to recover, as shown by GDP growth in 1967 (2%), in 1968 (11%) and in 1969 (7%). Moreover, Booth (1998) also shows that there was a

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<sup>8</sup> This ‘balanced budget’ has a political meaning since foreign aid and loans for development were counted as the government revenue rather than a source of financing. The government budget has been, in fact, always in deficit.

considerable fall in the proportion of 'very poor' people in the latter part of 1960s. Woo et al. (1994) argue that this unusual phenomenon (of growth under the stabilization program) was as a result of increased productivity (achieved through better allocation of resources), an increase in exports (induced by devaluation), and foreign aid that reduced inflation (by making imported intermediate, capital and consumer goods available for domestic industry and consumers).

The adoption of the balanced budget principle, a fixed exchange rate and an open capital account,<sup>10</sup> however, had serious consequences for the nature of the government fiscal and monetary policies as well as for the development of the domestic capital market. The government was increasingly dependent on external sources for financing its deficit, and domestic prices became very sensitive to external shocks. As a result of these policies, exogenous shocks, such as oil price fluctuations in the world market, have been transmitted quickly to the domestic economy, posing particular challenges to the short-run management of the money supply. The policies also created devaluation risks and forced the government to adopt some more direct intervention measures to stabilize domestic prices, especially until the early 1980s.<sup>11</sup> Devaluation became very common, as did changes in economic policies related to the financial sectors (see summary **Table III.4** for detail). Other consequence of those policies was that the Indonesian government has in practice never been able to match its neighboring countries, such as Singapore, Malaysia and Thailand, in providing a consistently low-

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<sup>9</sup> There has been a consortium of Indonesia's foreign creditors, known by the Inter-Governmental Group on Indonesia (IGGI), which is now changed to the Consultative Group on Indonesia (CGI).

<sup>10</sup> There are also positive impacts of having open capital account at the early stage. Woo et al. (1996) pointed out that the liberalization of capital account transactions lowered the risks of investing on the rupiah-denominated assets. Moreover, given the existing geographical condition and reason for holding money, the open capital account will reduce the possibility of smuggling activities and excess demand for foreign currencies.

<sup>11</sup> As noted by Hill (1996), monetary developments after 1982 significantly differed from those in the 1970s. Details are discussed the section on adjustments to external shocks.

inflation environment, especially during the periods of economic booms such as in the mid and late 1970s.

### **3.3. The Oil Windfalls and Boom Years, 1974-1981**

Indonesia's oil industry is one of the oldest, having begun in 1871, only twelve years after the earliest drillings in Pennsylvania. The first commercial production was in 1885. In the early 1950s, Caltex (an American oil company) began developing its giant field in Central Sumatra (the third biggest island of Indonesia). However significant oil production only started in 1967, after an agreement on production sharing and the attainment of economic and political stability (Glassburner, 1988). With weak administration of the non-oil tax system, oil provided a significant amount of the government revenues. Until the early 1980s, Indonesia economic development was fueled mostly by oil revenue.

When the world price of oil increased in 1974 and again in 1979, the oil industry (the government<sup>12</sup>) received a substantial amount of oil windfalls, approximately at 16% and then 23%, respectively, of Indonesia's non-mining GDP.<sup>13</sup> The government reaction to the first oil windfall was to increase development expenditure, since 49% of the windfall was allocated to investment, 33% to reducing the current account deficit, and the remainder (18%) to public and private consumption. Most of the investment and public spending went on economic infrastructure, in both urban and rural areas. The rise in the oil price also created over-confidence in the state oil company (Pertamina), as reflected in its significant expansion and diversification, ranging from agriculture to tourism. The conglomerate was financed by short-term foreign loans, which eventually

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<sup>12</sup> Since the government owns oil company, namely **Pertamina**.

<sup>13</sup> Gelb et al. (1988) provide comprehensive measures and their usage of oil windfalls in some oil-exporting countries including Indonesia.



led to the 'Pertamina Crisis' in 1974 (when Pertamina failed to meet its foreign debt obligations). This forced the government to allocate a significant amount of its windfall gains to repaying the debts. The 'Pertamina crisis' also led the government to adopt expenditure-reducing measures such as postponing imported-capital-intensive projects and reallocating expenditures only to economically feasible objectives.

In 1978, when oil exports started to decrease, the government took the view that the oil-boom was almost over. In addition, increased domestic spending by the government and by Pertamina contributed to the appreciation of the real exchange rate due to the increased inflation. The average inflation rate during 1973-1977 was 24% a year. Under the fixed exchange rate regime, this inflation rate significantly eroded the competitiveness of the non-oil tradable sectors. Woo et al. (1994) estimated that the disincentive for the tradable sectors increased by 26% over the period 1973-1978. Therefore, to help the non-oil tradable sectors, the government devalued the rupiah by 50%, from 415 to 625 per US \$. This devaluation seems poorly timed since it was then followed by another increase in oil prices. However, it succeeded in maintaining a competitive real exchange rate and therefore in increasing non-oil exports. Manufacturing exports rose by more than two and a half times with many firms entering export markets for the first time (Glassburner, 1988). The increase in investments financed by windfalls went to the agriculture sector (developing infrastructure, subsidizing fertilizers, and financing rural credit for raising production), public services, and import-competing industries, including what are called Resource Base Industries (RBI).<sup>14</sup> To protect these industries the government had to adopt more protective international trade policies. Import restrictions on steel products to protect the domestic

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<sup>14</sup> Auty (1996) considers that Indonesia's RBI was less risky and more successful than that of most other oil producing countries i.e. relatively diversified, better phased over time, more cautiously financed, and less central to the country's overall development strategy.

steel industry, for instance, have caused the domestic price of steel products to be 30-40% higher than the world price.

Having experienced the first oil windfall, the government adopted a more cautious fiscal policy in the second oil boom period.<sup>15</sup> A policy of restraint was pursued, in that it kept absorption well below the level permitted by the availability of government revenue. About 42% of the windfall were used to finance the current account deficit, 36% for domestic investments and 22% for consumption. The result was that the current account swung from a deficit of 1.6% of GDP to a surplus of 2.3%. The economy also grew at nearly 10% in 1980 (Glassburner, 1988).

### **3.4. Adjustment to the External Shocks, 1982-1984**

External shocks in 1982 (decreasing world prices of oil and other primary products, increasing real interest rates in the world market, and significant reductions in the foreign capital inflows to developing countries<sup>16</sup>) widened the Indonesian current account deficit enormously (it reached 6% of GDP in 1982). GDP growth in 1982 was only 2.3%. These factors forced the government to take action to avert a possible balance of payment crisis. The rupiah was devalued by 38% (March 1983)<sup>17</sup> to increase non-oil exports, which alleviated the balance of payment problems. The government also started to adopt more conservative macroeconomic policies by cutting expenditure and tightening foreign exchange outflows to maintain low inflation. To achieve this, subsidies on domestic fuels, agriculture and state enterprises were reduced and several capital- and import-intensive projects were postponed. As a result, the inflation rates in

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<sup>15</sup> This attitude was completely different to that of other oil-exporting countries. Gelb et al. (1988) provide details on how the second oil boom period boosted over confidence feeling among the leaders of other oil-exporting countries.

<sup>16</sup> These factors contributed to the International debt crisis in 1982.

1983 and 1984 were only slightly above 10% and exports expanded, so that the current account deficit in 1984 shrunk to 2.2% of GDP.

On the financial market, in June 1983, the government made the first financial reform by permitting state banks to set some deposit and lending rates, removing some credit ceilings, reducing the availability of subsidized credit from the central bank and reducing the reserve requirement from 15 to 2 per cent.<sup>18</sup> The reform caused liquidity problems in the banking sector and disturbances in the monetary balances. In February 1984, the government introduced a new monetary instrument called the *Central Bank Certificate* (SBI, Sertifikat Bank Indonesia), to fill the lack of government debt securities (due to the government's 'balanced budget' principle) and to reduce excess liquidity. However the government still lacked market instruments to deal with the consequences of adopting an open capital account. In September 1984, fears of devaluation prompted massive capital flight and drained domestic liquidity to such an extent that overnight rates on inter-banks loans reached 90 per cent.<sup>19</sup> In February 1985, the Central Bank introduced a short-term debt facility<sup>20</sup> as a means of injecting short-term liquidity if necessary.

Hill notes that monetary development after 1982 differed from those in the 1970s due to three factors. Firstly, world oil prices fell and remained low so that there was no inflation trigger from term of trade shocks due to changes in oil prices. Secondly, the government started to develop a more sophisticated approach to monetary

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<sup>17</sup> This devaluation was criticized for being taken only for budgetary reason, showing an increase in the government revenue in the rupiah term despite the fall in the oil price in US dollar. The aim to increase non-oil export was fail since it was accompanied by increased protective policies (See Woo et al. 1994 and Pangestu 1996 for detail).

<sup>18</sup> As part of controlling monetary aggregates, banks are required to deposit certain amount (measured in percentage) of their capital in the Central Bank. This is called a reserve requirement. The lower the reserve requirement, the higher would be the money demand that possibly created by the banking sector.

<sup>19</sup> Similar problem arose again in the first half of 1987 that forced the government to withdraw substantial amount of its money from state banks to purchase SBI from the central bank.

<sup>20</sup> In Indonesian it was named by SPBU, Surat Berharga Pasar Uang or debt certificate.

policy management, emphasizing more indirect intervention measures. Thirdly, these indirect interventions seemed successful in maintaining low inflation (less than 10 per cent) despite two large devaluations in 1983 and 1986 and a continuous 'crawling peg' in other years (Hill, 1996).

The government also reformed the complicated existing tax systems, inherited from the Dutch, to raise more revenue. The main features of the tax system in Indonesia before the tax reforms were a narrow tax base (dependent merely on oil tax), and very low tax enforcement (due to oil booms, a very complicated tax law and a shortage of competent personnel).<sup>21</sup> Moreover, the amount of tax collected was a form of negotiated outcome, due to the nature of the tax system. The tax revenue target published in the annual budget determined the amount which administrators felt obliged to collect.

In December 1983, a drastic revision of income tax, to take effect in January 1984, was introduced. The income tax structure was simplified from a progressive and complicated system to a simpler but still progressive system. The new system had only three rates: 15, 25, and 35%, which were applied to both personal and corporate incomes. The level of non-taxable income was also doubled and the individually negotiable system was replaced by a self-assessment system subject to audit. The times allowed for tax payments, tax refunds and tax appeals were also limited, further increasing the efficiency of tax collection.

In April 1985, the government replaced the sales tax system, which previously had 7 categories, with a single rate value-added tax. The result was impressive since

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<sup>21</sup> Share of oil tax to the total the government revenue from tax in 1969-70 was 26 %, rose to 55 % in 1974-75 and peaked at 71 % in 1981-82.

non-oil tax revenue rose from 6% of GDP before the reforms to 8.2% of GDP after the reforms. The biggest revenue increase came from the value-added tax, which contributed to 82% of the increase in total tax revenue. However, there were still problems since the rate of compliance remained low. The World Bank estimated that the actual amount of tax revenue collected in the 1985 fiscal year was only 50% of the total tax revenue due the government (Woo et al. 1984).

The implementation of Trade Related Investment Measures (TRIMs), however, made the trade and industrial policies more protective. An export promoting measure, namely the 'counter trade policy', was adopted in January 1982 to increase non-oil exports. Foreign and joint venture firms bidding for government projects worth more than US \$ 720.000 and using imported materials were required to purchase non-oil products from Indonesia equivalent to the value of the imported materials needed by the projects. But the policy failed to reduce the trade deficit and in fact caused Indonesia to export at lower prices and to purchase imports at higher prices than the international prices.<sup>22</sup> Moreover, quantitative restrictions<sup>23</sup> on imports (in the forms of bans, quotas, and licenses) were increased under the 'approved importer' system introduced in 1982. Under this system, goods could only be imported by 'approved importers', classified into 'general importers' (holding general licenses) and 'specific importers' (holding specific licenses). The government could limit the number of importers without clear criteria, which led to a monopolistic structure. By 1985, for example, of 5229 imported products, 1484 items required licenses and another 296 items were subjected to quotas. The bans were applied to products such as completely built motor vehicles and motor

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<sup>22</sup> By this arrangement, Indonesia bartered rubber for fertilizer from Singapore and for rail cars from Romania. Since Singapore had no fertilizer plant, it must have bought the fertilizer from other countries and then re-sold to Indonesia at a higher price. In the Romania case, it sold its excess rubber to other countries at the world price, implying that it had obtained the rubber at a discount price (Nasution, as quoted by Woo, 1994, p 113).

cycles in order to protect the domestic assembly industry. The creation of the **Ministry for Promoting the Use of Domestic Products** in 1983 further increased protective nature of the government policies.<sup>24</sup> Pangestu (1996) pointed out that this period (1982-1985) was characterized by an *ambivalent attitude* on the government side towards liberalisation as taxation and the financial sector were reformed significantly while trade and industrial policies remained (or even became increasingly) protective.

### **3.5. Further Economic Reforms Toward a More Diversified and Outward Oriented Economy, 1985- mid 1997 (prior to the economic crisis)**

Economic reform in the real sectors (affecting both trade and industry) really began in 1985. In this year, the Indonesian government signed the GATT-Code on subsidies and countervailing duties, implying its willingness to liberalize its international trade. In March 1995, the tariff system was rationalized substantially by across-the board reductions in the range and level of nominal tariffs. The tariff range was reduced from between 0 - 225% to 0 - 60% and the number of tariff levels was also reduced, from 25 to 11. This significantly reduced the overall tariff dispersion. Only one month later, this tariff rationalization was followed by the bolder action of removing all the discretionary powers of Indonesian customs officials<sup>25</sup> (*Presidential Instruction* No 4, 1985). A private Swiss surveying company (*Societe Generale de Surveillance/SGS*) was appointed to replace the Indonesian customs officials, who had long been recognized as the cause of what was termed Indonesia's 'high cost economy'. The new regulations also removed restrictions on international shipping arrangements in

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<sup>23</sup> The quantitative restrictions also covered intermediate inputs, having negative effects on the tradable sectors and undermined the goal of reducing trade deficit. This negative discrimination against the tradable sector was reversed by the May 1986 trade reform that allows exporters to purchase intermediate inputs at world prices.

<sup>24</sup> This was proved to be inefficient, so that the ministry was eventually abolished in the 1989 new cabinet.

international trade, reducing administrative barriers, rationalizing port fees and allowing foreign carriers to operate in inter-island transportation.

The momentum of economic reform was intensified in 1986 when the oil price on the world market plunged from US \$28 per barrel in January to less than US \$10 per barrel in August. The government reacted by cutting public investments (from 10.2% of GDP in 1984 to 8.5% in 1986 and 7.9% in 1987) and introducing new tax measures to raise revenue. In January 1986, a new land and building tax with a single rate (0.5% of taxable value) was introduced, completing the tax reforms conducted during the two previous years.

In May 1986, the government introduced a duty exempt and duty drawback system, where exporters could reclaim import duty paid out for intermediate inputs used in producing exported products. These measures also allowed importation of these intermediate inputs to be carried out directly, outside the existing license arrangements (by-pass monopoly). In September 1986, the rupiah was devalued by 45% to maintain the competitiveness of domestic products in the world market.<sup>26</sup>

The devaluation was followed by further liberalization of imports one month later, the ceiling on the central bank swaps facility was removed and the number of goods under the approved importer system was reduced and the licenses were converted to tariffs. Tariffs on intermediate inputs were also reduced to lower the production costs of goods sold domestically. The reduction was continued in January 1987.

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<sup>25</sup> The customs officials whose services were not required were either shifted to other jobs or given early retirement. This policy showed the government's willingness to really embark on economic reform to increase the efficiency of the domestic economy.

<sup>26</sup> This devaluation was considered as successful in term of increasing non-oil exports (Pangestu 1996). However, Woo et al. (1994) argue that this devaluation in fact widened the government deficits since the increased revenue from devaluation was less than the increase in the foreign debt services due to devaluation and depreciation of US dollar against other currencies, especially yen (Yendaka), given the share of Indonesia's foreign debt denominated to US dollar was only 30 per cent.

In June 1987, the government also deregulated Foreign Direct Investment (FDI) by removing the necessity for re-application for renewal and expansion by foreign firms. 'Closed' sectors were now opened to export oriented foreign firms (at least 85% of production for export).<sup>27</sup> In July 1987, the system of quota allocation of textile exports was improved, reducing administrative procedures and costs. At the end of 1987, a package of deregulation measures was announced. Export licenses were removed and the licensing procedure for hotel/tourism facilities was simplified. The domestic capital market was further deregulated, allowing foreigners to buy stocks/shares. Joint venture firms were to be treated as domestic firms if the Indonesian equity (percentage of shares owned by Indonesians) was at least 51% or if 20% of their shares were sold in the domestic capital market. An export-oriented firm was redefined as one exporting at least 65 per cent (previously 85%) of its products.

In October 1988 a major financial sector reform was introduced. The main characteristic of the financial system in Indonesia before the reform was the overwhelming dominance of the state-owned banks.<sup>28</sup> During the 1970s, their assets accounted for 80% of total bank assets. They were also the instruments through which the Central Bank disbursed credit to targeted groups. The state banks received liquidity credits<sup>29</sup> from the central bank at very low interest rates and re-lent them at a higher interest rate set by the central bank. The state banks were also designated as the only financial institutions that could hold the deposits of state enterprises. The government regulations also created entry barriers that protected even more the dominant position of

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<sup>27</sup> The FDI restrictions in Indonesian economy take the forms of equity restrictions (some of the equity must be owned by Indonesian citizen), ownership phase down requirements (the share of equity owned by Indonesian citizen must be increased over the years of company's life) and sectoral restrictions (not all sectors are open to foreign investments but only those termed as 'priority sectors'). In addition there is also a regulation for renewal, diversification and expansion of foreign firms.

<sup>28</sup> There were five state-owned commercial banks and one development bank.



the state banks. All of these made the state banks act only as disbursement agents of the central bank, neglecting the traditional banking activities. This resulted in an inefficient financial system, with higher uncollectible loans (about 30%) and a low return to capital.<sup>30</sup> As an example, in 1977 the government had to 'bail out' one of the state banks due to its big losses. Other important features of the Indonesian economy that make it somewhat difficult for the government to control the monetary aggregates are:

- 1) An open capital account, which makes the domestic interest rate very sensitive to international interest rates (adjusted to exchange rate expectations).
- 2) The government principle of adopting a 'domestic balanced budget', which allows its deficit to be financed only by external resources.
- 3) The underdeveloped nature of the domestic financial market, due to the lack of government debt instruments as a benchmark in the financial market to which the return of other shares can be compared (i.e. as a consequence of point 2).

The three conditions above forced the central bank to adopt more direct control measures whenever the money stock had to be reduced quickly in order to defend the exchange rate. These direct control measures took the form of altering credit ceilings and reserve requirements. The reform was intended to give more power to the central bank to control monetary aggregates in a less direct way.

From October 1988, new private banks were permitted and all domestic banks were free to open new offices. Foreign banks were also allowed for the first time to operate outside the capital city (Jakarta). Non-bank state enterprises were permitted to

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<sup>29</sup> Low-interest-rate credits from government to targeted groups such as poor people, farmers, and small-scale industries.

<sup>30</sup> World Bank estimated that in 1976, the state banks had a zero rate of return to capital.

deposit up to 50% of their funds with private national banks. To stimulate the development of the stock market, income from bank deposits was also subject to (the lower) income tax rate of 15% to encourage the purchase of shares. The liberalization of the non-bank financial sector took place in December 1988, when entry barriers to the insurance sectors were removed and regulations on other non-bank financial institutions, such as leasing and venture capital, were clarified. This financial liberalisation brought significant changes in the characteristics of the financial sector in Indonesia as marked by the significant development of private banks and non-bank financial institutions

The liberalization of trade was continued by deregulation packages announced in November 1988 and January 1989. More import licenses were converted to tariffs and tariff dispersion was reduced by tariff revision. The shift away from import licensing towards tariffs has been the centerpiece of these trade reforms. As a result, the proportion of imports protected by Non-Tariff Barriers (in the form of import licenses) declined from 41% in 1985 to 12% in 1991. **Table III.1** and **Table III.2** show the extent of the change over the period of 1985 to 1991.<sup>31</sup>

**Table III.1: Indicators of Reform**

Measure	1985	1991
(1)	(2)	(3)
Average tariff: Unweighted (%)	27	22
Production weighted	19	17
Import Licensing: Import weighted	43	13
Production weighted	41	12

Source: World Bank (1992), Indonesia Growth, Infrastructure and Human Resources, Report No. 10470-IND.

<sup>31</sup> Booth (1998) argues that over the period of 1983-1990 the Indonesian government made much progress towards making the non-oil traded goods sectors more internationally competitive and less reliant on exports of oil and gas.

**Table III.2: Changes in the Tariff Schedule**

Average Tariff Rates (%)	1985	1991
(1)	(2)	(3)
Unweighted	27	22
Weighted: By import value	13	11
By domestic production	19	17
Index of Dispersion <sup>1)</sup>	108	89

<sup>1)</sup> Measured by the coefficient of variation. Source: World Bank (1992), Indonesia Growth, Infrastructure and Human Resources, Report No. 10470-IND.

The structural adjustments during the 1980s enabled the Indonesian economy to make rapid strides, both in increasing efficiency and in developing outward-looking trade and industrial policies. However by 1990 the economy began to overheat. Economic growth, spurred by the strong expansion of non-oil exports, had been high, and the balance of payments position and debt servicing capacity had been improving. At the same time, sustained economic activity had begun to put increasing pressure on resources, leading to accelerating inflation and to strong import growth. Concurrently, deregulation in the financial sector led to rapid monetary expansion and high interest rates. The windfall gains from oil exports at the time of the Gulf War were not sufficient to relieve the pressures that had built up. In January 1990 the government started to adopt tighter monetary and fiscal policies. Credit programs and mandatory subsidized credit insurance were eliminated, and in February 1991 a strong measure to squeeze liquidity and dampen currency speculation was taken. The government asked state enterprises to convert their bank deposits (of about Rp 8 trillion) to central bank deposits of one year maturity. In October-November 1991, the government also curbed the growing offshore loans, which had been fueling both domestic monetary expansion and import demand, and imposed a ceiling for annual offshore borrowing by rescheduling the projects to be financed.<sup>32</sup>

<sup>32</sup> The source of financing for joint venture projects quite often came from the off shore loans through the international bank syndicate. This can worsen Balance of Payment condition through increasing private foreign-loans.

The signing of the ASEAN Singapore Declaration in January 1992 was an important development. The declaration indicates that ASEAN seeks to safeguard its collective interests in response to the formation of large and powerful economic groupings in developed countries, by increasing economic cooperation within the region. This will have important implications for the trade and investment regimes of the member countries. In particular, inter-regional trade should be further stimulated by the establishment of the ASEAN Free Trade Agreement (AFTA), which is to be based upon a Common Effective Preferential Tariff (CEPT) scheme. Under this scheme, tariffs within ASEAN have to be reduced to a range of 0-5% in phases over 15 years. Accelerated reductions are to commence within 15 product groups (including chemicals, textiles, electronics, and wooden and rattan furniture). Economic cooperation is to extend to the fields of investments and industrial linkages, transport and communication networks and strengthening of joint trade and tourism. These economic reforms continued with the introduction of a new foreign investment law in June 1994.

The economic reforms have successfully changed the economy from an oil-dependent, inward-oriented economy to a more diversified, outward-oriented economy. The economy has continued to grow steadily at impressive rates, with non-oil exports leading the way. In May 1995 tariffs on a significant number of commodities (6030 items or 64% of the total commodities on which tariffs are collected) were reduced and a schedule for further tariff reductions over the next few years compatible with the AFTA and APEC (Asia-Pacific Economic Cooperation) agreements was also introduced. This was then followed by a further trade liberalization in January 1996. In November 1995, the state telecommunication company was partially privatized, following the same course taken earlier for other state companies. In 1995 the Indonesian economy grew by 7.4%, exceeding the previous year's growth of 6.9%. The

current account deficit, however, jumped from US\$ 3.4 billion in 1994 to US\$ 6.5 billion in 1995. This was partly the result of soaring imports of capital goods, while non-oil exports were not quite so successful.

To sum up, prior to the Asian crisis (started July 1997), Indonesia had experienced 25 years of sustained economic progress, during which income per capita had trebled and the number of people in poverty had fallen sharply.<sup>33</sup> Even though Indonesia started its economic development from a very low base (Indonesia's per capita income in 1967 was only US \$50, about half that of India, Bangladesh, and Nigeria), the country has sustained GDP growth at almost 7% per year (a rate far above the average for developing countries and on a par with those in East Asia). The growth raised the population's living standards as per capita income increased by about 4.5% per year. Since 1982, the government has pursued adjustment programs aimed at improving competitiveness, increasing economic efficiency and diversifying the pattern of industrial production. These efforts were intensified in 1986 and afterwards to improve saving mobilization, to maintain competitiveness of real exchange rate and to stimulate non-oil exports. These reforms, in conjunction with conservative fiscal and monetary policies, were instrumental in promoting economic growth, keeping inflation within manageable limits, increasing saving and investment, and generating a rapid increase in non-oil exports.

Therefore, the reasons for the success were: (i) maintaining economic stability in the face of fluctuating oil prices, (ii) adopting broad based development strategies that put emphasize on raising rural welfare and reducing poverty, (iii) adopting prudent management for its external borrowing (Indonesia has only once rescheduled its external

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<sup>33</sup> Over the past two decades, Indonesia has had the highest annual average reduction in the incidence of poverty among all countries studied (World Development Report 1990, World Bank, Oxford University Press, July 1991, p 45). The incidence of poverty was reduced from 43 % in 1976 to 13 % in 1993.

debt in 1967), (iv) developing physical infrastructure supportive for rapid economic growth and increasing services that results in an improvement of living standards (over the past 15 years, the government has allocated over 40% of all development spending to infrastructure, which has led to an impressive growth in services.<sup>34</sup> This infrastructure supported rapid growth and recovery from the external shocks of the 1980s. The development of infrastructure all over the country has helped to achieve more equitable development across regions and income groups.<sup>35</sup>).

Despite the impressive progress, some problems remain. Export earnings and government revenue are still highly vulnerable to changes in prices of oil and non-oil products in the world markets. There is still a reluctant attitude to economic reform on the government side: Pangestu (1996) shows that major changes in the direction of trade and industrial policies in Indonesia are still linked to major political and economic crises. While the need for reform may have been recognized among groups both within and outside the government for some time, usually the necessary political will to undertake them is triggered by major political and economic crises. Furthermore, the most important economic change providing the impetus for reform (until the financial crisis) is an externally generated one, namely the fall in the price of petroleum. In this sense, policy reforms in Indonesia might be thought as an overall restructuring strategy in response to falling petroleum prices rather than being motivated by the benefits of economic reform. Progress on the removal of existing non-tariff barriers has not been quite so successful and straightforward, especially for products such as soybean meals, wheat, sugar, rice and automotive products. There has been an increasing number of complaints about lengthy customs clearance procedures and other inefficiencies, which

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<sup>34</sup> For examples, the installed capacity of the state electricity company (PLN) increased eighteen-fold; the number of telephone lines rose seven-fold; and the length of paved roads increased nearly six-fold over the past 15 years.

<sup>35</sup> For example, improvement in transport and irrigation were major factors in reducing poverty in Java.

impede imports and increase business costs. The new arrangements to give the power for customs clearance (both exports and imports) back to the Indonesian customs have made the matter worse (Financial Times, April 1997).

Problems in the domestic financial market arose especially as a result of the liberalisation of capital market (i.e. open capital account) and deregulation banking/financial sector, while the distortions in the real sector remained (in addition to the pressures coming from the adoption of the government budget deficits financed by foreign borrowings). Up to mid July 1997, for example, price controls were prevalent, such as:

(i). Price regulations benefiting monopolies for transport services, public utilities and fuel products.

(ii) Price control through market interventions for commodities like rice and cement (the government sets a price band for rice and intervenes in the market if the price falls outside the band. For doing this, the government logistic agency /BULOG maintains a buffer stock of approximately 10% of national production. BULOG also imports rice during years of substantial shortages as in 1991 and before 1985<sup>1</sup>. The policy is intended to ensure food security and dampen fluctuations in retail prices.<sup>36</sup> For cement, government intervention is done through imports, which are actually cheaper, export bans or redirection of supplies among different marketing regions. There are also regulations controlling exports and domestic marketing and a substantial state ownership in the cement industry).

(iii). Controls on ex-factory and retail prices for products such as fertilizer and sugar. (Fertilizer prices are subsidised by the government largely as a means of controlling the

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<sup>36</sup> According to the World Bank, by and large the policy has achieved its objective, and rice prices have on trend fallen between import and export parity, i.e. the domestic price of rice has stayed between the export (FOB) and import (CIF) prices.

rice price. Price controls for sugar are part of the regulatory framework designed to encourage domestic sugar production and lower reliance on imports).

The strong macroeconomic performance during those years also hid a number of underlying weaknesses that made the economy vulnerable to adverse external shocks. Structural rigidities arising from regulation of domestic trade (as in the examples above) and industries, and from import monopolies, have impeded economic efficiency and competitiveness. The open capital account, the rapid expansion of the financial sector (as a result of financial liberalisation in 1988), the stability of the rupiah during most of the 1990s, and the high rate of return on domestic investment all encouraged and facilitated a high level of foreign borrowing, a significant part of which was short-term debt that was not hedged. By the end of December 1997, Indonesia's external debt stood at \$140 billion (about two thirds of GDP), of which \$20 billion was short term. The corporate sector had borrowed very heavily abroad and at the same time the banking system had been poorly supervised, as shown by the widespread violations of legal lending limits and the significant amount of non-performing loans. All were made worse by poor governance, characterized by what in Indonesia is famously termed "corruption, cronyism and nepotism". In the financial sector, given Indonesia's open capital account, monetary policy should have been used to support the balance of payments (by protecting the reserves) and to maintain price stability. Reserve money management should have been geared to achieve a rate of money growth, consistent with the demand for money, GDP growth, and the government's target of inflation. In addition, the capability to supervise banks needed to be strengthened to prevent future bank crises.<sup>37</sup>

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<sup>37</sup> In September 1990, Bank Duta, a large, nominally private, bank that possessed impeccable political connections had to be bailed out since it had incurred foreign exchange losses of US \$420 million. In December 1992 another crisis emerged with the collapse of Bank Summa, an offshoot of the country's second largest conglomerate: the Astra



There is a potential for improvement in increasing tax revenue by expanding the tax base and reducing leakages in the tax collections. The ratio of tax revenue to GDP for Indonesia was still low. In 1994, it was only 14.7%, compared with Malaysia at 33% and Singapore and Thailand at over 17% each.

### **3.6. The Economic Crisis and Afterwards, 1997-to date**

The devaluation of Thai baht in July 1997 triggered currency turmoil in the region as shown by alarming level of exchange rate depreciation of the regional currencies. The Indonesian case was the worst, as the cumulative depreciation of the rupiah during July 1997 to January 1998 reached more than 70 percent - with over half of the decline occurring since the end of November 1997 -, while the decline in the Jakarta stock exchange index reached 50 percent. Many argue that the enormous depreciation of the rupiah did not seem to stem from macroeconomic imbalances, which remained quite modest. Instead, it reflected a severe loss of confidence in the currency, the financial sector, and the overall economy.

The plummeting of the rupiah has led to very large increases in the rupiah debt service costs of banks and corporations that had borrowed—largely without hedging—from abroad. Moreover, since the currency depreciation has engendered a substantial rise in domestic interest rates, the burden of paying for and collecting domestic currency loans has also increased, further straining the position of corporations and financial institutions. The process has become self-reinforcing: growing strains on firms have amplified investor uncertainty and encouraged capital flight, thereby intensifying pressures on the exchange rate and domestic interest rates. To discourage speculative

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Group, due to its non-performing loans of US \$720 million. In early 1994 there were also arrests in connection with a fraud loan of US \$ 650 million from the state development bank, Bapindo.

attacks, the exchange rate band was widened in July 1997, but in the face of continued pressure on the currency, the rupiah was allowed to float, and in August 1997 this was backed by a tightening of monetary policy and by postponing major infrastructure projects, cutting low priority development programs, and extending the coverage of the luxury sales tax. At the same time, import tariffs on over 150 items (mainly raw materials and other intermediate goods) were reduced with effect from mid-September 1997, while the 49 percent limit on foreign holdings of listed shares was abolished. Further trade liberalization measures, including removing monopoly restrictions on agricultural imports, were announced in November 1997. These actions, however, were not sufficient to restore confidence in the rupiah and the economy. In November, the Indonesian government signed an agreement with the IMF for a comprehensive policy package intended to restore confidence and arrest the decline of the rupiah. The package includes macroeconomic policies (i.e. fiscal, monetary and exchange rate policies), financial sector restructuring (i.e. restructuring and strengthening the legal and supervisory framework of the banking sector), structural reform (i.e. foreign trade and investment, deregulation and privatisation) and introduction of social safety net. These policies were to provide the supportive macroeconomic framework for the continuing efforts to restructure the financial sector and accelerate structural reforms.

In the context of this IMF-supported program, in November 1997 the government took drastic action by closing 16 insolvent banks and putting a number of other banks (including regional development banks) under intensive supervision by the central bank. This policy however destroyed the credibility of private banks. People shifted their money to state and foreign banks or even withdrew their money entirely as they had no confidence in the banking system. By mid-November, a large number of banks faced growing liquidity shortages, and were unable to obtain sufficient funds.

Recourse to the interbank market to cover the gap was not sufficient, even after paying interest rates ranging up to 75 percent. The Central Bank took action by providing banks in distress with liquidity support, while withdrawing funds from banks with excess liquidity. Nevertheless, the problems of the rupiah have only intensified. From early December to early January, the exchange rate lost a further 53 percent of its external value, falling from around Rp 3,700 per U.S. dollar to around Rp 8,000 per U.S. dollar. Part of the reason was the financial turmoil in other neighboring countries. Another factor was that markets became increasingly concerned about the deterioration in Indonesia's economic situation, which has weakened the financial health of the banking system and the corporate sector.

On the fiscal side, the government canceled 12 major infrastructure projects, discontinued immediately any special tax, customs, or credit privileges granted to the National Car Project and any budgetary and extra budgetary support and credit privileges granted to Indonesian Aircraft Industry (IPTN). BULOG's import monopoly over wheat and wheat flour, soybeans, and garlic was eliminated. Tariffs were simultaneously introduced on all of these products, but these rates were limited to 20% or less, and are scheduled to be reduced to 5 percent by 2003. The administrative retail price for cement was also eliminated.

In 1998, the continued depreciation of the rupiah, and high interest rates led to a marked deterioration in financial conditions, which was exacerbated by deposit runs and capital flight. Tariffs on chemical products were reduced by 5 percentage points on January 1998, while those on steel metals were lowered from January 1, 1999. In line with the overall program, further reductions in these tariffs are scheduled for subsequent years, so that by 2003, the maximum tariff on these products will be 10 percent.

Tariffs on all food items were cut to a maximum of 5 percent, while local content regulations on dairy products have been abolished, both effective from February 1998. At the same time, tariff rates on non-food agricultural products were reduced by 5 percentage points, and will gradually be reduced to a maximum of 10 percent by 2003. On February 1998, import restrictions on all new and used ships were also abolished. The government removed restrictions on foreign investment in palm oil plantations in February 1998, while those on wholesale and retail trade were lifted in March 1998. The existing formal and informal restrictive marketing arrangements were dissolved by February 1998 and provincial governments were prohibited from restricting inter-provincial or intra-provincial trade. Export taxes on a wide range of products—including leather, cork, ores and waste aluminum products—were abolished and in March 1998, export taxes on logs, sawn timber, rattan, and minerals were reduced to a maximum of 10 percent ad valorem, and appropriate resource rent taxes were imposed. Similar steps will be taken for the remaining items currently subject to export taxes, and the levies on exporting will be abolished and replaced by resource rent taxes, where appropriate.

At the beginning of the 1998/99 fiscal year (April), the government accelerated provisions under the Non-tax Revenue Law of May 1997 to incorporate all off-budget funds in the government's budget within five years. Two large off-budget accounts, the Investment and Reforestation Funds, were incorporated in the central government budget. To strengthen the fiscal position, the government gradually eliminated subsidies on fuel and electricity and increased excise duties on alcohol and tobacco. In addition, the government removed all VAT exemptions (apart from those on capital goods or those explicitly mandated by law) on electricity for private companies, taxis, soybean food for cattle, sugar, personal goods, medical equipment, and other machinery and

capital equipment. The government also removed the ban on palm oil exports and replaced by an export tax of 40%; reduced export taxes on logs, sawn timber, rattan, and minerals to a maximum of 30% in addition to the resource rent taxes. A 5 % local sales tax on gasoline was introduced and the number of goods subject to the luxury sales tax was increased. To improve the tax administration, the government introduced a single taxpayer registration number. Further planned improvements -in line with recommendations of the Fiscal Affairs Department of the IMF to increase non-oil tax revenue- include: (i) raising the annual audit coverage; (ii) developing improved VAT audit programs to target large potential taxpayers; and (iii) increasing the recovery of tax arrears. Other policy actions included freezing the operations of 10 private banks, taking over of other 7 private banks by the Indonesian Bank Restructuring Agency (IBRA) and lifting the restrictions on foreign investment in the wholesale trade.

Despite all of the reactions, the economic crisis was getting worse and became a political crisis. In May 1998, Suharto was forced to resign (after more than 32 years in power) and the Vice President was sworn as the new president. The new government tried to maintain the momentum by continuing the reform process. Luxury sale taxes on some commodities were increased and to support export expansion the government prohibited local taxes at all levels on export goods. In June 1998, the government revised and shortened the negative list of activities closed to foreign investors, and eliminated the Clove Marketing Board. In July excises on alcohol and tobacco were increased and revised bankruptcy law was ratified. In August the government established the Indonesian Debt Restructuring Agency (INDRA) and Asset Management Unit/AMU (as part of the IBRA) in the context of corporate debt and bankruptcy reform and also announced a major bank-restructuring package. In September the government established the Jakarta Initiative, a framework designed to promote the voluntary

restructuring of corporate debt. The quota system limiting the sale of livestock was also abolished. In October the import subsidies on sugar, wheat, wheat flour, corn, soybeans, and fishmeal and subsidies on aviation fuel were eliminated. Approval procedures for FDI were streamlined. In December export taxes on logs, sawn timber, rattan, and minerals were further reduced to 20% and replaced by resource rent taxes. Export taxes on palm oil were also reduced to a maximum of 10%.

The policy measures adopted in the 1999 were mostly in the context of banking and corporate sector restructuring. Other policies include the introduction of tax holiday facilities in January, and in July, reductions of import tariffs on motor vehicles and export taxes on crude palm oil (to 10%), and elimination of taxes on crude palm kernel and crude coconut oil. Export taxes on logs, sawn timber, rattan, and minerals were further reduced to 15% and replaced by resource rent taxes. There were also crucial developments during this year such as the parliamentary (general) election in June and the forming of the new democratically elected government in October.

In its latest report on the Indonesian economy, the World Bank notes that while stabilisation has shown progress, economic recovery is far from assured. The large burden of private sector debts remains to be resolved, and corporate distress is still widespread. Unemployment and consequently poverty have increased sharply. The report suggests three short-term policies, in the form of pressing ahead with bank and corporate restructuring, protecting the poor from the adverse effects, and managing fiscal balances carefully. These policies should also be in line with appropriate medium term policies such as developing and deepening institutions, strengthening markets and market institutions, and ensuring environmental sustainability (The World Bank, 1999).

**Table III.3** highlights that the recovery still has a long way to go.

Table III.3: Selected Economic Indicators, 1996/97-1998/99

Indicators	1996/97	1997/98	1998/99
(1)	(2)	(3)	(4)
<b>Real GDP growth (%)</b>	8.2	2.0	-16
<b>Inflation(%)</b>	5.2	12.9	66.0
<b>Current Account (US \$ billion)</b>	-8.1	-1.7	5.5
<b>Capital Account(US \$ billion)</b>	14.1	-11.6	-3.0
<b>Direct Investment(US \$ billion)</b>	6.5	1.8	0.9
<b>Exchange rate (Rp/US \$)</b>	2 403	10 200	8 700

Source: IMF 1999

**Table III.4: Summary of the Economic Reform Measures on the Indonesian Economy**

YEAR	REGIMES/SECTORS				CONTENTS
	FISCAL/ STABILIZATION	FINANCIAL	TRADE	CAPITAL/ INVESTMENT	
(1)	(2)	(3)	(4)	(5)	(6)
1945-1966					The chaotic years: Unstable economic and politic conditions
1967					<ul style="list-style-type: none"> <li>• Introduction of Foreign Investment Law to encourage private investment</li> <li>• Rescheduling of foreign debt payments</li> <li>• Adopting 'balanced budget' principle</li> </ul>
1970					<ul style="list-style-type: none"> <li>• Unification of multiple exchange rates</li> <li>• Removal of restrictions on foreign exchange transactions (adopting open capital account)</li> </ul>
1971, August					<ul style="list-style-type: none"> <li>• Devaluation of Rupiah by 9 %</li> <li>• Import ban on completely built-up auto mobiles</li> </ul>
1974, April					<ul style="list-style-type: none"> <li>• Anti-inflationary package. Interest rates increased, banks' reserve requirements raised to 30% and credit ceilings placed on commercial loans</li> </ul>
1975, Nov.					<ul style="list-style-type: none"> <li>• Devaluation of Rupiah by 34 %</li> </ul>
1978, Nov.					<ul style="list-style-type: none"> <li>• Devaluation of Rupiah by 50 %</li> <li>• Reductions in deposit rate and banks' reserve requirements (from 30 to 15 %)</li> </ul>
1983, March					<ul style="list-style-type: none"> <li>• Devaluation of Rupiah by 38 %</li> </ul>
1983, June					<ul style="list-style-type: none"> <li>• Banking Deregulation (Removal of interest rate controls and credit ceiling over state banks, Reduction in reserve requirements from 15 % to 2 %).</li> </ul>
1983, Dec.					<ul style="list-style-type: none"> <li>• Introduction of wide ranging quantitative restrictions on imports</li> </ul>
1984, Jan					<ul style="list-style-type: none"> <li>• Introduction of a progressive income tax system with three rates and self-assessment</li> </ul>
April					<ul style="list-style-type: none"> <li>• Introduction of Value Added Tax (Replacing the existing complicated sales tax system)</li> </ul>
1985, Jan					<ul style="list-style-type: none"> <li>• Further import restrictions</li> </ul>
March					<ul style="list-style-type: none"> <li>• Tariffs reduced from 0-225% to 0-60%</li> <li>• Number of tariff levels reduced from 25 to 11.</li> </ul>
April					<ul style="list-style-type: none"> <li>• Replacement of Indonesian Custom Service by a Swiss private surveyor company, Societe Generale de Surveillance (SGS).</li> <li>• Removal of restrictions on choice of carrier for international shipment</li> <li>• Removal of custom department in good clearance</li> </ul>
1986, Jan					<ul style="list-style-type: none"> <li>• Introduction of a new land and property tax system with a single tax rate.</li> </ul>



YEAR	REGIMES/SECTORS				CONTENTS
	FISCAL/ STABILIZATION	FINAN CIAL	TRADE	CAPIT AL/IN VEST MENT	
(1)	(2)	(3)	(4)	(5)	(6)
1986, May					<ul style="list-style-type: none"> <li>• Introduction of a duty exempt/duty drawback scheme for intermediate inputs imported by exporters.</li> <li>• Computerization of export/import transactions</li> <li>• Removal of equity requirements (up to 95%) on foreign ownership for export oriented joint ventures.</li> <li>• Foreign export-oriented firms allowed to distribute their own products domestically.</li> <li>• Joint venture firms allowed to utilize export credit</li> </ul>
Sept.					<ul style="list-style-type: none"> <li>• Devaluation of Rupiah by 45 % to increase non-oil export and restore BOP deficit</li> </ul>
Oct.					<ul style="list-style-type: none"> <li>• Removal of some import licenses (shift of some 321 items from NTB to tariff protection).</li> <li>• Reductions in tariffs on intermediate goods</li> <li>• Removal of ceilings on Central Bank swaps facility</li> </ul>
1987, Jan					<ul style="list-style-type: none"> <li>• Further removal of some import licenses (textiles, iron and steel)</li> </ul>
June					<ul style="list-style-type: none"> <li>• Opening closed sectors/widening priority sectors to export-oriented foreign firms</li> <li>• Deregulation of FDI</li> </ul>
July					<ul style="list-style-type: none"> <li>• Simplification of quota allocation on textile exports</li> </ul>
Dec.					<ul style="list-style-type: none"> <li>• Deregulation of capital market</li> <li>• Reduce government role in stock exchange market</li> <li>• Foreigners allowed to buy stocks in capital market</li> <li>• Promotion of export and tourism</li> </ul>
1988, Oct.					<ul style="list-style-type: none"> <li>• Removal of entry barriers for new banks and foreign joint ventures</li> <li>• Relaxation on lending limit of commercial banks</li> </ul>
Nov.					<ul style="list-style-type: none"> <li>• Conversion of import licenses to tariffs</li> <li>• Deregulation on shipping to promote exports</li> <li>• Foreign investors allowed to distribute their own products domestically.</li> </ul>
Dec.					<ul style="list-style-type: none"> <li>• Further capital market deregulation (allowing the opening of private stock exchanges outside the capital city).</li> <li>• Removal of entry barriers in insurance industry and in other financial institutions such as leasing, venture capital etc.</li> </ul>
1989, Jan					<ul style="list-style-type: none"> <li>• Revision of tariffs (reduced tariff dispersions while leaving tariff average rate unchanged)</li> </ul>
March					<ul style="list-style-type: none"> <li>• Elimination of requirement for prior approval from Central Bank for offshore loans.</li> <li>• Further deregulation of foreign banks and private banks</li> </ul>
1990, Jan					<ul style="list-style-type: none"> <li>• Elimination of directed credit programs and mandatory subsidized credit insurance</li> </ul>
1991, March					<ul style="list-style-type: none"> <li>• Introducing New professional standards for bank directors. Obligation for banks to adopt the risk-based capital adequacy ratio (CAR). By the end of 1993, banks required to have capital equal to 8 % of risk-weighted assets.</li> </ul>

YEAR	REGIMES/SECTORS				CONTENTS
	FISCAL/ STABILIZATION	FINAN CIAL	TRADE	CAPIT AL/IN VEST MENT	
(1)	(2)	(3)	(4)	(5)	(6)
1991, May					<ul style="list-style-type: none"> <li>Removal of import licensing restrictions (on about 335 products) and a cross the board tariff reductions towards tariff ceiling of 40%.</li> </ul>
June					<ul style="list-style-type: none"> <li>Removal of Non-Tariff Barriers (in the form of bans and import licenses) on some agricultural products</li> </ul>
1992, April					<ul style="list-style-type: none"> <li>100 % of foreign ownership of firm permitted</li> </ul>
May					<ul style="list-style-type: none"> <li>Ban on log exports replaced by a very high tariff</li> </ul>
1994, June					<ul style="list-style-type: none"> <li>Further liberalization of foreign investment</li> </ul>
1995, May					<ul style="list-style-type: none"> <li>Tariff cuts on 6030 imported items and setting a schedule for further tariff reductions compatible with AFTA and APEC agreements.</li> </ul>
July 1997					<ul style="list-style-type: none"> <li>A number of underlying weaknesses has made the Indonesian economy very vulnerable to adverse external shocks. Rupiah depreciated sharply after the devaluation of Thailand's baht. To discourage speculative attacks, the central bank widened the exchange rate band.</li> </ul>
Aug					<ul style="list-style-type: none"> <li>In the face of continued pressure on the currency the rupiah was allowed to float, backed by the adoption of a tight monetary policy.</li> </ul>
Sept					<ul style="list-style-type: none"> <li>Reduce import tariff on over 150 items</li> <li>Abolish the 49% limit of foreign holding of listed shares</li> </ul>
Oct					<ul style="list-style-type: none"> <li>The crisis worsened and became an economic and then political crisis. The Indonesian government seeks help from the IMF</li> </ul>
Nov					<ul style="list-style-type: none"> <li>Introduction of a comprehensive policy package that includes: <ul style="list-style-type: none"> <li>The closure of 16 insolvent private banks and put a number of other banks under the central bank intensive supervision</li> <li>Cancel major infrastructure projects</li> <li>Discontinue any special tax, costumes and credit privileges granted to the National Car and aircraft industries</li> <li>Planning for privatization of public companies</li> </ul> </li> </ul>
1998, Feb					<ul style="list-style-type: none"> <li>Lift restriction on branching of foreign banks</li> </ul>
March					<ul style="list-style-type: none"> <li>Closure of other 17 private banks</li> <li>Establish implementation rules for the new environmental law</li> </ul>

YEAR	REGIMES/SECTORS				CONTENTS
	FISCAL/ STABILIZATION	FINANCIAL	TRADE	CAPITAL/ INVESTMENT	
(1)	(2)	(3)	(4)	(5)	(6)
April					<ul style="list-style-type: none"> <li>Freeze the operation of 10 private banks and take over of other 7 private banks by IBRA</li> <li>Gradually eliminate subsidies on fuel and electricity</li> <li>Remove all VAT exemptions</li> <li>Remove ban on palm oil exports and replace by export tax of 40%</li> <li>Reduce export taxes on logs, sawn timber, rattan, and minerals to a maximum of 30% and replaced by resource rent taxes.</li> <li>Lift restriction on foreign investment in the wholesale trade.</li> </ul>
May					<ul style="list-style-type: none"> <li>Suharto resigns (after more than 32 years in power) and the Vice President was sworn as the new president</li> <li>Increase luxury sale taxes</li> </ul>
June					<ul style="list-style-type: none"> <li>Eliminate restrictions on foreign investment in the banking sector</li> <li>Eliminate the Clove Marketing Board</li> </ul>
July					<ul style="list-style-type: none"> <li>Increase excises on alcohol and tobacco</li> <li>Ratify the revised bankruptcy law</li> </ul>
Aug					<ul style="list-style-type: none"> <li>Establish the Indonesian debt restructuring agency (INDRA) and Asset Management Unit (AMU, as part of IBRA) in the context of corporate debt and bankruptcy reform</li> <li>Announce a major bank restructuring package</li> </ul>
Sept					<ul style="list-style-type: none"> <li>Establish the Jakarta Initiative, a framework designed to promote the voluntary restructuring of corporate debt.</li> </ul>
Oct					<ul style="list-style-type: none"> <li>Eliminate import subsidies of sugar, wheat, wheatflour, corn, soybeans, and fishmeal</li> <li>Eliminate subsidies on aviation fuel</li> <li>Streamline approval procedures for FDI</li> </ul>
Dec					<ul style="list-style-type: none"> <li>Reduce export taxes on logs, sawn timber, rattan, and minerals to 20% and replaced by resource rent taxes.</li> <li>Reduce export taxes on palm oil to maximum 10%</li> </ul>
1999, Jan					<ul style="list-style-type: none"> <li>Introduce tax holiday facilities</li> </ul>
June					<ul style="list-style-type: none"> <li>Complete audits of some public company (Pertamina, Bulog and PLN)</li> <li>Recapitalisation of 'eligible' private banks</li> <li>Parliamentary (general) election</li> </ul>
July					<ul style="list-style-type: none"> <li>Reduce import tariff on motor vehicles</li> <li>Reduce export taxes on crude palm oil, to 10% and eliminate taxes on crude palm kernel &amp; crude coconut oil</li> </ul>
Oct					<ul style="list-style-type: none"> <li>Form a new democratically elected government.</li> </ul>
Dec					<ul style="list-style-type: none"> <li>Reduce export taxes on logs, sawn timber, rattan, and minerals to 15% and replaced by resource rent taxes.</li> </ul>

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## CHAPTER IV

### SAMs FOR INDONESIA

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#### 4.1. General Features

A Social Accounting Matrix (SAM) is basically a system of presenting the economic and social structure of a country (region) at a particular time, by defining the representative actors or economic agents in the underlying economy and recording their transactions. The transaction values are presented in a square matrix, as opposed to the double entry format of T-typed account (i.e. the one used in the accounting report), with its rows representing detailed receipts by each particular account and its columns recording the corresponding expenditures. It then follows that every income has its corresponding expenditure, and the incoming and outgoing of any account must always balance.

Entries in a SAM can be categorised into two groups, one that reflects flows across markets (representing product and factor markets) and the other that reflects nominal flows or transfer payments. However, there is no 'standard SAM', so that the disaggregation level and choice of representative actors depend entirely on the motivation underlying its development and the availability of data.

In a statistical system, a SAM provides complementary economic indicators, which concern not only the macroeconomic aggregates of the System of National Accounts (the SNA) but also the socio-economic structure and distributional aspects of the economy. Accordingly, it can be thought of as a further development of input-output accounts, which concentrate only on the production side of the economy. It is must be noted, however, that every SAM is only a static image or 'snapshot' of an

economy. Nevertheless it can provide the statistical basis for the development of plausible models when more than a static image is needed (King, 1985).

The development of SAMs in Indonesia has been conducted continuously as an integral part of the national statistical system. The first Indonesian SAM was developed in 1975 as a result of collaborative work between the Central Bureau of Statistics (CBS), Indonesia, and the Institute of Social Studies (ISS), Netherlands.<sup>1</sup> It was aimed at the measurement of social welfare (i.e. poverty and income distribution) in Indonesia. The 1985 SAM was the first SAM developed fully by the CBS as a framework for analysing growth and income distribution as well as other social economic aspects.<sup>2</sup> This work was followed by the development of successive versions, namely SAM 1990 and SAM 1993. These SAMs form the basis for the development of the CGE models in this paper.

#### 4.2. The Indonesian SAMs for 1985, 1990 and 1993

The three SAMs have unique characteristics rarely found in the developing countries. They share the same structure, as reflected in their maintained classifications for the economic agents and production activities. **Table IV.1** shows the schematic representation of these SAMs. Their structure reflects the underlying motivation for their development and the completeness of data availability. Pyatt and Round (1977) argue that the main concern motivating SAM development can be seen from the way of ordering of the accounts. Putting factors in the upper left block, as in case of Indonesian

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<sup>1</sup> Downer's work on the construction of the Indonesian SAM for his PhD thesis at The Cornell University (Downer, 1984) might influence the subsequent development of the later versions of the SAMs.

<sup>2</sup> Although, as stated earlier, a SAM is only a static image of an economy, nevertheless it can provide a framework for analysing better investment policy to achieve higher economic growth. Fixed price multiplier models developed based on SAMs, for instance, can measure direct and indirect effects as well as forward and backward linkages of any injection in the economy. It then follows that better investments should be allocated to the sectors that have strong backward and forward linkages to avoid growth bottle necks.

SAMs, shows that the main concern is the distributional aspects of income and not the structure of production. This kind of design is intended to capture the circular flows of income: from income generated by activities to factors, and from factors to institutions, which then create demand for goods and services.

The factor accounts in this SAM receive factor payments from both domestic production activities and from the rest of the world (ROW). The current transfers are recorded in the intersection of rows and columns of domestic institutions -namely households, firm and government- and ROW. These transfers constitute the non-factor incomes, which augment the factor income to yield the gross income of institutions. By representing transactions in this way, the classification and disaggregation of factors might be set independently of those of institutions (as in the Indonesian SAM case) and therefore the underlying characteristic and policy concerns about factor markets and domestic institutions can be simultaneously accommodated. This provides fruitful information and strengthens the usefulness of the models developed subsequently.

The separation of commodity accounts from production activity accounts makes it especially useful for constructing models that focus on international trade (Robinson, 1989). It is also parallel to the System of National Account (SNA) suggestion that a SAM should be approached through commodity balances. Moreover, the disaggregation of commodities into domestically produced and imported commodities also provides a very good background for modelling imperfect substitutability characteristics between the two goods as suggested by Armington (Armington, 1969).

Another distinct feature is the representation of trade and transport margins (TTM) as an independent account. This account 'collects' incomes from domestic and imported commodities, which are then paid to the corresponding domestic commodity

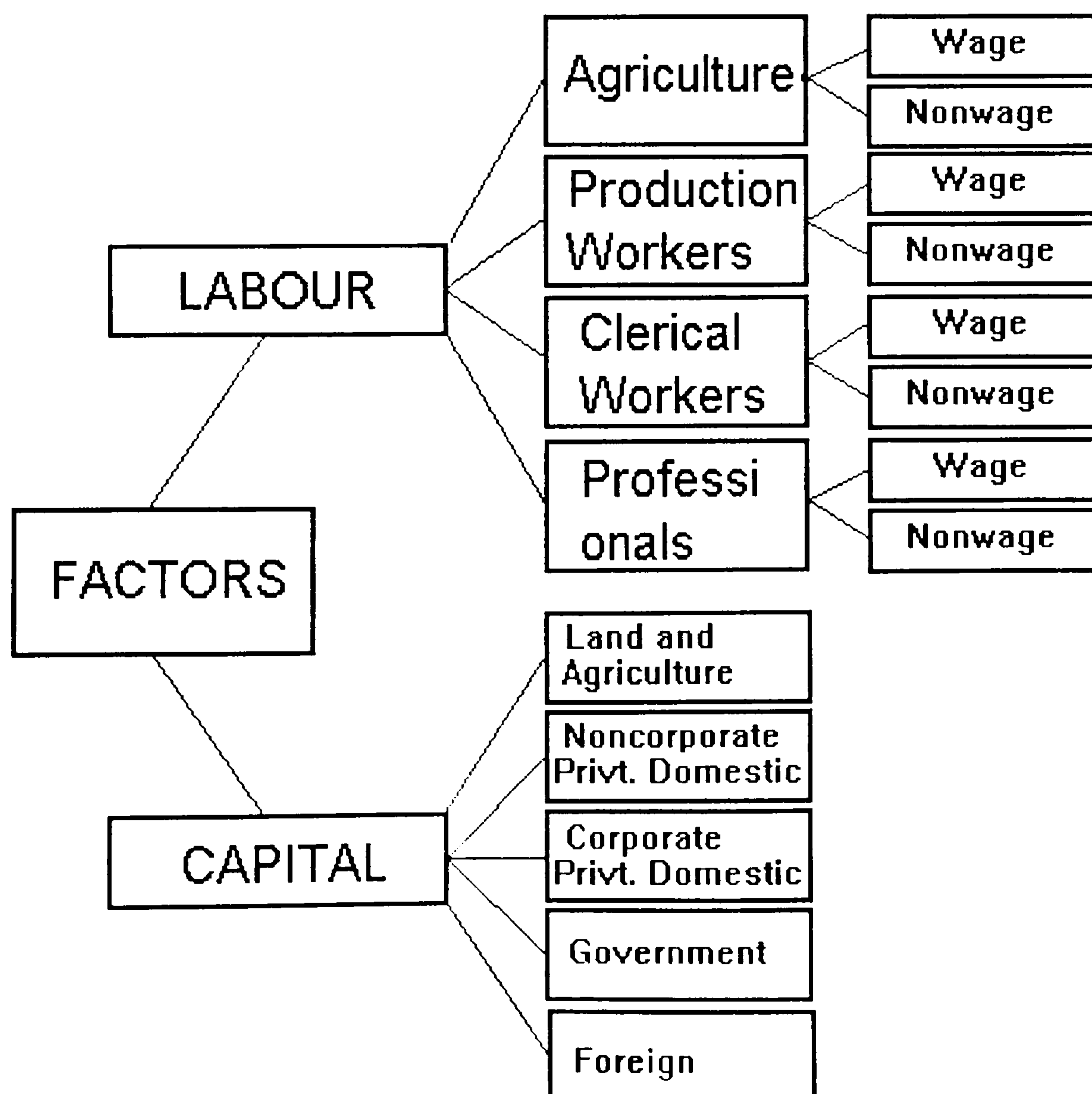
account, namely 'trade, communication and services'. The separation of TTM from production activities shows that the value added of economic activities was measured at producer prices, reflecting a clear effort of recording only the actual or direct value added generated by each activity. In a modelling context, this also provides an additional tool for policy experiments since the TTM can be thought as 'indirect taxes' (mark-up) charged by private sectors that can also be affected by the government policy.

It can be seen that there is a complete set of transactions among accounts in the economy especially in relation to the Rest of the World (ROW). However, it still does not include assets or flow of funds so it cannot portray the working of financial markets.<sup>3</sup> From the detailed SAMs (see the detailed disaggregation in **Table IV.2.1** in the appendix and publication from the CBS), it can be concluded that various issues commonly suggested (see for instance Thorbecke in Pyatt and Round, 1985) have already been accommodated. Asset distributional features such as human capital (skill), land tenure system, and ownership or access to capital have been explicitly included in the specification of actors. The treatment of the agriculture sector has also had special attention as can be seen from the very detailed disaggregation of its labour and households. The regional dimension (urban/rural) has also been explicitly expressed, as well as the attempt to accommodate some 'real' variables such as measuring the number of workers in terms of equivalent worker, consumption on calorie (calorie intake), and others.

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<sup>3</sup>The exclusion reflects the weak assumption underlying the saving generation in the economy and in many cases its overall accuracy is also reduced (see Roe, A in Pyatt, G and Round, J.J (Eds.), 1985). This in turn will affect the main feature of the model developed subsequently. There were attempts to accommodate flow of funds in the Indonesian SAM 1980. See for instances Roland Holst, 1992 and Thorbecke, E 1992.

In this aggregated version of the model, the labour was categorised into eight groups based on the combination of sector, type of workers, and job status (wage and non-wage). The wage term refers to the employee while the non-wage category includes employers, the self employed and family workers. In the Indonesian economy context, the former tends to be associated with the higher wage income group as most of the latter consists of self employed and unpaid family workers.<sup>4</sup> In the original SAMs, the workers were then further disaggregated into those who live in urban and rural areas. However for modelling purposes it seems that there is no justifiable reason (i.e. distinctive differences) for splitting the two since the behaviour of workers in the production function is not affected by the area of residence. In any case, the urban and rural feature will be captured in the household categorisation.



<sup>4</sup> This can be concluded from the detail SAMs available from the CBS.

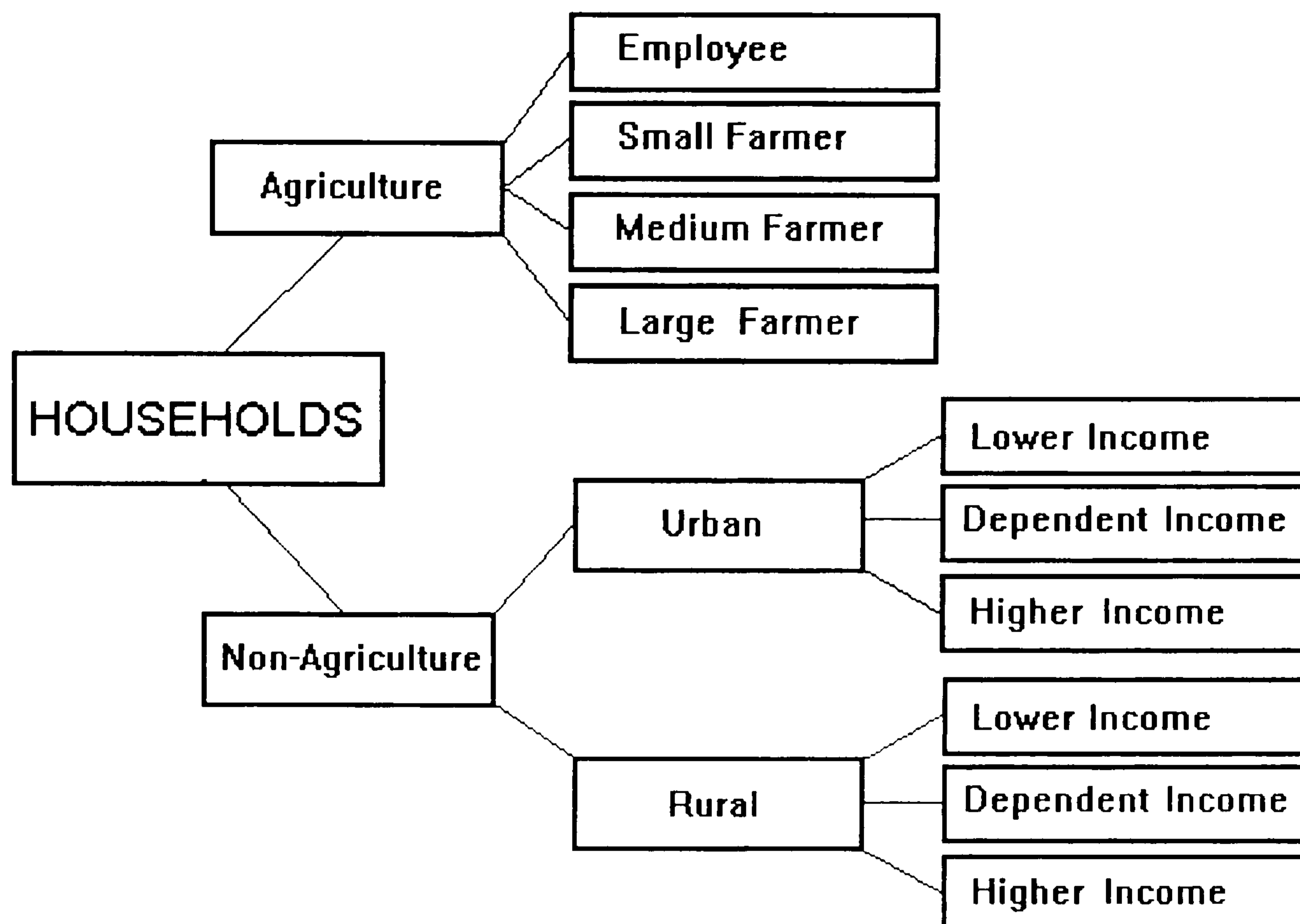


On the other hand, capital was disaggregated into 5 categories based on the ownership and the nature of the capital. Land and other agriculture capital, for instance, were combined into one category while the private domestic capital was divided into two, owned by corporate and non-corporate institutions. The other two categories of capital are Government and Foreign capital (see schematically diagram above).

On the other hand, households were categorised into 10 groups based on their sources of income, area of residence and economic status. The categorisation of households was based on occupation of the household head or highest income earner. At the first level, households are divided into two categories: agriculture and non-agriculture households. The agriculture households (the head or the highest income earner in the household works in agriculture) are then split into four categories: employee (landless labourers), small farmers, medium farmers and large farmers. The classification of farmers was based on their farm land size: small less than 0.5 hectare, medium between 0.5-1.0 hectare, and large more than 1.0 hectare.

For the non-farmers (non-agriculture households) the disaggregation was based on area of residence (urban and rural), a combination of occupation and job status, and level of income. Based on these variables the non-agriculture households in each area were then classified into three different groups: low, dependent and high-income groups. The dependent household refers to the households whose head or whose highest income earner in the household does not work anywhere, relying on transfer incomes (from relative, government etc). It can be seen that the categorisation of households has been developed based on the 'real' variables that can easily be identified for policy targeting as commonly suggested in the development of a SAM. This categorisation, in turn, can be very useful for developing income distribution indicators, since the ratio of incomes between groups in each sector or across sector can

be used as a proxy of income inequality index.<sup>5</sup> Schematically the disaggregation of households can be represented as the following:



On the production side, the assumption of one production sector produces only one good was adopted so that the classifications for production activities and commodities (for both domestic and imported commodities) are exactly the same. In the detailed SAMs (106x106) the production activities and commodities were classified into 22 sectors, while in the model used in this thesis it was aggregated further into 14 categories. The aggregation was based on the characteristics of sectors and the manageable size, bearing in mind the trade off between having a very detailed classification and the underlying concern in the model development. The detailed classification of the original SAM and the corresponding classification used in the present model can be seen in the **Table IV.2.1** in the appendices.

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<sup>5</sup>Compared to the Gini Ratio, for instance, this method seems to be arbitrary, especially in the context of measuring degree or magnitude of the inequality. However for measuring the direction of changes, the method seems justifiable.

Table IV.1: Schematic Representation of Indonesian SAM 1985, 1990 and 1993

RECEIPTS	EXPENDITURE								
	1.Factors	2.Institution	3.Activities	4.TTM	5.DomCom	6.ImpCom	7.Capital	8.Ind. Tax	9. ROW
1.Factors			Value Added						
a).Labour			Wages						
b).Capital			Profits/Rents						Remittance
2.Institution									
a).Households	Factor Income	Transfers							Transfers
b).Firm	Factor Income	Transfers							Transfers
c).Government	Factor Income	Direct Taxes						Ind.tax income transf	Transfers
3.Activities					Production Allocation				
4.TTM					Mark-up for TTM	Mark-up for TTM			
5.Domestic Comm.		Final Consumption	Intermediate Consumption	Transfers/Consumption			Investment		Export
6.Imported Comm.		Final Consumption					Investment		
7.Capital		Savings							
8.Net Indirect Tax					Ind.Tax Payment	Ind.Tax Payment			
9.ROW	Remittance	Transfers			Import	Capital Outflows			

### 4.3. Characteristic of the Indonesian economy as reflected by the SAMs

Rapid economic growth in Indonesia during the last three decades has been accompanied by significant structural changes as reflected by the composition of sectoral value added. As is typical for developing countries, the role of the agriculture sector relatively declined and was substituted for by manufacturing sector. At the same time services continued to grow as the economy moved from traditional to modern.

**Table IV.3.1a** shows that during the period concerned, Indonesian GDP increased by more than 6 % per year. The Agriculture sector itself has still grown at about 3% per year but its share continued to decline from 40.9 % (in 1985) to 31.4% (in 1993). This was due to the higher expansion (more than 10 % per year) of the Manufacturing and Service sectors (more than 7 % annually).

**Table IV.3.1a: Share and Growth of GDP by main sectors: 1985,1990 and 1993(%)**

Main Sectors	Years			Growth		
	1985	1990	1993	1985-90	1990-93	1985-93
(1)	(2)	(3)	(4)	(5)	(6)	(7)
A	40.88	34.62	31.45	2.78	3.28	2.97
M	21.51	25.81	28.44	10.20	10.14	10.18
S	37.61	39.57	40.11	7.34	7.12	7.25
<b>TOTAL (%)</b>	100.00	100.00	100.00	6.25	6.63	6.40
<b>(BillionRp)</b>	85081.9	115217.7	139707.1			

Note: Source: CBS, 1996. (Calculated based on constant 1983 price).

Sector A= Agriculture and Mining, M = Industry manufacturing, Public utility and construction, S= Trade and services

In the System of National Accounts (the SNA) an open economy can be represented by integrated national accounts that consists of four different accounts, namely production, domestic institution, saving-investment, and rest of the world accounts (**Table IV.3.1b to Table IV.3.1e**). Each account summaries the incomes and

expenditures of that particular economic agent, and as typical in T-typed account every income (expenditure) has its corresponding expenditure (income).

Incomes of production activity can be categorised into sales of intermediate inputs, final products, capital goods, and net exports, while its expenditure can be divided into payments for intermediate input, wages and salaries, profit (capital payments) and net indirect taxes. It then follows that total expenditure is equal to total output.

**Table IV.3.1b: Production Activity Account: 1985, 1990 and 1993**  
(billion rupiah)

Expenditures	1985	1990	1993	Incomes	1985	1990	1993
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
1. Intermediate Inputs	68777.3	160518.4	264194.4	1. Sales of Interm. Inputs	68777.3	160518.4	264194.4
2. Wages and Salaries	42441.0	94027.1	150962.6	2. Sales of Final Product	68601.4	142833.7	213287.3
3. Profits	53175.6	104570.0	156457.5	3. Sales of Capital Goods	22755.9	64789.9	109575.4
4. Net Indirect Taxes	2029.2	9204.5	15963.7	4. Export minus Imports	22522.4- 16233.6	53288.7 -53110.7	85296.2 -84775.1
TOTAL	166423.1	368320.0	587578.2	TOTAL	166423.4	368320.0	587578.2

**Table IV.3.1c: Domestic Institutions Account: 1985, 1990 and 1993**  
(billion rupiah)

Expenditures	1985	1990	1993	Incomes	1985	1990	1993
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
1. Household Consumption	58723.3	127330.9	188559.4	1. Wages and Salaries	42440.9	94027.1	150.962.6
2. Government Consumption	9878.1	15502.7	24727.9	2. Capital Incomes	53175.6	104570.0	156457.5
3. Savings	25987.2	55763.5	95421.3	3. Net Indirect Taxes on Domestic Comm.	2029.2	9204.5	15963.6
				4. Net Indirect Taxes on Imported Commodities	760.6	3064.9	6392.1
				5. Net Factor incomes from ROW	-3940.9	-9615.5	-11234.6
				6. Net Transfers from ROW	-219.9 +343.0	-2653.9	-9832.6
TOTAL	94588.6	198597.1	308708.6	TOTAL	94588.5	198597.1	308708.6

**Table IV.3.1d: Saving and Investment Account: 1985, 1990 and 1993**  
(billion rupiah)

Expenditures	1985	1990	1993	Incomes	1985	1990	1993
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
1. Investment	25987.2	64789.9	109575.4	1. Domestic Savings	25987.2	55763.5	95421.2
				2. Net Foreign Loans		9026.4	14154.2
TOTAL	25987.2	64789.9	109575.4	TOTAL	25987.2	64789.9	109575.4

**Table IV.3.1e: Rest of World (ROW) Account: 1985, 1990 and 1993**  
(billion rupiah)

Expenditures	1985	1990	1993	Incomes	1985	1990	1993
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
1. Exports	22522.5	53288.8	85296.2	1. Imports	16233.6	53110.7	84775.1
2. Transfers	401.0	9420.8	14309.8	2. Transfers	3852.2	12074.8	24142.4
3. Factor Income	851.1	1158.5	3153.0	3. Factor Incomes	4792.0	10773.9	14387.6
4. Lending	343.0	9026.4	14154.2				
5. Net Indirect Taxes on Imports	760.6	3064.9	6392.1				
TOTAL	24878.2	75959.4	123305.3	TOTAL	24877.8	75959.4	123305.3

As can be seen that the input to output ratio (share of intermediate input in total output) was in fact increasing during the period concerned, suggesting a decrease in the 'efficiency' of the production sector. The ratio in 1985 was 41.3% and in 1993 became 45.0%. The account for domestic institutions shows an aggregation of incomes and expenditures of households, firms and government. From **Table IV.3.1c** it can be concluded that the growth of the domestic saving rate was higher than the growth rates of both government and household consumption. During 1985-93, saving rate increased 17.7% annually, while household and government consumptions increased by 15.7% and 12.2% respectively. Notice also that the share of government consumption decreased during this period

The growth rate of savings above was however still lower than the growth rate of investment (**Table IV.3.1d**), creating a saving -investment gap in the economy. During the period concerned, investment grew at 19.7% per year, making a saving-investment gap of 2% that must be financed externally. Moreover, the ROW account (**Table IV.3.1e**) shows that export growth was also less than that of imports (18.1 % compare to 23.0 %), showing that the domestic economy became increasingly dependent on the foreign sector.

**Table IV.3.2** shows the sectoral composition of output derived from the existing SAMs. It adopts the sectoral aggregation used in the model and is, of course, calculated based on current prices. It can be seen that the decrease in the share of the primary sector (sector A) happened especially in the food crops and mining sectors, while the expansions in the secondary sector (sector M) of food processing and textile industries were particularly large. The share of value added generated in agriculture-food crops decreased from 13.1 % in 1985 to 9.7 % in 1993 while in the mining sector the fall was from 14.8 % to 9.6 %. On the other hand, the share of value added in the food processing and textile industry increased from 3.7 % and 1.2 % to 7.4 % and 8.4 % respectively. Expansions in the transport and communication and financial sectors were also relatively more significant than other sectors such as utility and paper and metal industries. The share of value added in chemical industry, trades, and hotel and restaurant more or less remained the same despite their increases in absolute terms.

From the composition of value added in each sector, as presented in **Table IV.3.3a** to **Table IV.3.3c**, one can conclude that the Indonesian economy was still relatively labour intensive and there was no fundamental change in the underlying production function during the period concerned. The share of wages in GDP was approximately constant at about 44 % while the share of profit declined from 54 % to

47 %. This was due to the increase in the share of indirect taxation especially on domestic commodities. A comparison of the source of value added between sectors shows that the most capital-intensive sectors were mining and chemical industries. The latter has also had a distinctive feature since it was the only net subsidised sector (as shown by its negative sign). Other sectors that had special characteristics were food processing and paper and metal product industries for their relatively higher level of indirect taxations.

**Table IV.3.4.** shows that despite the decrease in the share of agriculture's value added in total GDP, the role of the agriculture sector as the main source of income remained important as can be seen from the share of agriculture workers that remained at about 43 %. If we consider the types of worker into three different groups: Agriculture, Production and Clerical/manager, it seems that there was no significant change in the composition of workers especially between 1990 to 1993.<sup>6</sup> The share of production workers was about 30 % and the rest (24 %) was made up by "white collar" workers.

For the income distribution issue, **Table IV.3.5a** presents the number of households by type and their annual per capita income in the period concerned. To measure the magnitude of changes in household income distribution, the coefficient of variation (CV) and incomes ratio of the high-income group to low income groups were calculated and are presented in **Table IV.3.5b**. The CV measures the level of dispersion of household income while the ratio provides information on the direction of

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<sup>6</sup> The significant changes in the shares of worker type 3 (Production Worker-Wages) and 7 (Manager Professional-Wages) between 1985 to 1990 turned out to be as a result of mis-classification in the 1985 data (and before). The concept and definition for classifying workers have actually been consistent through out the period concern (in fact during 1975-93), but since 1990 treatment on technician workers was corrected. Until 1985, the technician workers (production workers) were miss-classified as professionals. It is impossible to correct the problem so that a more cautious approach is needed in addressing issues related to the composition of workers using 1985 data.



changes, whether relatively favouring poor households (lower income group). This is important since the same level of dispersion in the income distribution can have different meanings in terms of the welfare status of the lower income households.

From the **Table IV.3.5b**, it seems that household income distribution worsened during the period concerned especially among rural and urban household. The income distribution among farmers improved between 1985 and 1990 but deteriorated afterwards. Moreover, the table also shows that the urban households were in a relatively better condition as shown by the increase in their income share. The worst off were the non-farmer rural households, as shown by the increases in both the CV and ratio.

Table IV.3.2: GDP by sector of production 1985, 1990 and 1993

Production Sector	1985		1990		1993	
	Absolute	(%)	Absolute	(%)	Absolute	(%)
(1)	(2)	(3)	(4)	(5)	(6)	(7)
1. Agriculture-Food Crops	12922.51	13.13	25763.25	12.22	32148.86	9.75
2. Agriculture-Others	9492.36	9.65	16785.77	7.96	29929.2	9.08
3. Mining & Quarrying	14581.48	14.82	25637.6	12.16	31535.79	9.56
4. Food Processing	3637.71	3.70	11522.91	5.46	24392.46	7.40
5. Textile	1189.51	1.21	15891.59	7.54	27733.75	8.41
6. Construction	7232.38	7.35	4865.57	2.31	7008.01	2.13
7. Papers and Metal	2759.12	2.80	9846.65	4.67	15445.99	4.68
8. Chemical Industry	7368.24	7.49	14667.93	6.96	24688.17	7.49
9. Utilities	395.91	0.40	1488.52	0.71	3290.17	1.00
10. Trades	12919.53	13.13	27670.8	13.12	41627.62	12.62
11. Hotel & Restaurant	2454.68	2.49	6912.95	3.28	10692.84	3.24
12. Transport & Comm.	4791.46	4.87	11536.97	5.47	19834	6.01
13. Bank and Insurance	2376.78	2.42	8407.58	3.99	14005.29	4.25
14. Services	16281.58	16.55	29868.48	14.16	47443.73	14.39
Total	98403.25	100.00	210866.5	100.00	329775.8	100.00

Table IV.3.3a: GDP by sources of income and sector of production 1985

Production Sector	Wages and Salaries	Capital Payments	Indirect Taxes on Commodities		Total	
			Domestic	Imported	(%)	Absolute
(1)	(2)	(3)	(4)	(5)	(6)	(7)
1. Agriculture-Food Crops	68.78	30.41	0.76	0.05	100.00	12922.51
2. Agriculture-Others	33.11	66.03	0.79	0.07	100.00	9492.36
3. Mining & Quarrying	6.09	93.70	0.14	0.07	100.00	14581.48
4. Food Processing	29.66	51.23	18.62	0.49	100.00	3637.71
5. Textile	53.78	42.25	2.70	1.26	100.00	1189.51
6. Construction	50.14	46.08	3.78	0.01	100.00	7232.38
7. Papers and Metal	25.86	51.08	4.74	18.31	100.00	2759.12
8. Chemical Industry	14.85	91.76	-9.27	2.66	100.00	7368.24
9. Utilities	39.03	60.79	0.18	0.00	100.00	395.91
10. Trades	55.79	37.42	6.79	0.00	100.00	12919.53
11. Hotel & Restaurant	29.30	63.75	6.96	0.00	100.00	2454.68
12. Transport & Comm.	45.36	52.99	1.64	0.00	100.00	4791.46
13. Bank and Insurance	38.04	61.23	0.74	0.00	100.00	2376.78
14. Services	68.86	29.55	1.60	0.00	100.00	16281.58
Total	43.13	54.04	2.06	0.77	100.00	98403.25

Table IV.3.3b: GDP by sources of income and sector of production 1990

Production Sector	Wages and Salaries	Capital Payments	Indirect Taxes on Commodities		Total	
			Domestic	Imported	(%)	Absolute
(1)	(2)	(3)	(4)	(5)	(6)	(7)
1. Agriculture-Food Crops	71.90	27.26	0.78	0.06	100.00	25763.25
2. Agriculture-Others	47.47	51.33	1.19	0.01	100.00	16785.77
3. Mining & Quarrying	8.58	90.45	0.95	0.01	100.00	25637.6
4. Food Processing	24.39	49.67	25.72	0.21	100.00	11522.91
5. Textile	50.35	44.72	4.92	0.01	100.00	15891.59
6. Construction	38.48	52.92	3.93	4.67	100.00	4865.57
7. Papers and Metal	28.69	41.46	7.48	22.37	100.00	9846.65
8. Chemical Industry	21.73	77.64	-3.30	3.93	100.00	14667.93
9. Utilities	28.15	70.54	1.30	0.00	100.00	1488.52
10. Trades	66.14	24.81	9.06	0.00	100.00	27670.8
11. Hotel & Restaurant	28.12	63.01	8.87	0.00	100.00	6912.95
12. Transport & Comm.	33.96	63.83	2.21	0.00	100.00	11536.97
13. Bank and Insurance	39.89	58.96	1.15	0.00	100.00	8407.58
14. Services	62.61	34.40	2.95	0.04	100.00	29868.48
Total	44.59	49.59	4.37	1.45	100.00	210866.5

Table IV.3.3c: GDP by sources of income and sector of production 1993

Production Sector	Wages and Salaries	Capital Payment	Indirect Taxes on Commodities		Total	
			Domestic	Imported	(%)	Absolute
(1)	(2)	(3)	(4)	(5)	(6)	(7)
1. Agriculture-Food Crops	87.10	11.94	0.78	0.17	100.00	32148.86
2. Agriculture-Others	44.39	54.25	1.20	0.16	100.00	29929.2
3. Mining & Quarrying	10.11	88.75	1.01	0.12	100.00	31535.79
4. Food Processing	23.96	49.31	25.45	1.27	100.00	24392.46
5. Textile	50.13	44.88	4.92	0.07	100.00	27733.75
6. Construction	44.33	47.73	3.96	3.97	100.00	7008.01
7. Papers and Metal	28.63	42.08	7.54	21.75	100.00	15445.99
8. Chemical Industry	20.54	73.50	-3.12	9.08	100.00	24688.17
9. Utilities	28.09	70.61	1.30	0.00	100.00	3290.17
10. Trades	67.71	23.24	9.06	0.00	100.00	41627.62
11. Hotel & Restaurant	29.97	61.17	8.85	0.00	100.00	10692.84
12. Transport & Comm.	33.97	63.82	2.21	0.00	100.00	19834
13. Bank and Insurance	39.94	58.91	1.15	0.00	100.00	14005.29
14. Services	62.17	34.73	3.02	0.08	100.00	47443.73
Total	45.78	47.44	4.84	1.94	100.00	329775.8

Table IV.3.4: Number of Workers<sup>1)</sup> by Types, and Their Average Annual Wages: 1985, 1990 and 1993

Type of Workers (1)	1985			1990			1993		
	Total (000 we) (2)	Percent age (%) (3)	Wages (000 Rp) (4)	Total (000 we) (5)	Percent age (%) (6)	Wages (000 Rp) (7)	Total (000 we) (8)	Percent age (%) (9)	Wages (000 Rp) (10)
1. Agriculture-wages	4624.99	7.01	554.69	6800.99	9.38	1090.23	7704.42	9.57	1425.31
2. Agric.nonwages	23945.26	36.31	390.41	24679.42	34.05	749.46	28118.71	34.94	1043.99
3. Production-wages	9020.91	13.68	740.03	14440.99	19.92	1482.03	14301.58	17.77	2485.50
4. Produc.nonwages	6913.64	10.48	436.65	8151.46	11.25	530.02	8960.07	11.13	826.62
5. Clerical-wages	7165.18	10.86	1174.44	5980.24	8.25	3603.25	7167.45	8.91	4707.76
6. Clerical-nonwages	11102.18	16.83	610.65	11148.28	15.38	1248.55	12628.51	15.69	1749.35
7. Man/Prof.-wages	2776.31	4.21	1890.01	1146.46	1.58	5768.12	1411.11	1.75	7943.31
8 Man/Prof.nonwages	403.18	0.62	968.80	135.00	0.19	2321.56	195.36	0.24	3221.69
Average	65951.65	100.00	643.52	72482.84	100.00	1297.23	80487.20	100.00	1875.61

1) Measured by worker equivalent (we). Defined: 1 we = 1 worker working for 40 hours per week.

Table IV.3.5a: Number of Households by Type, and Annual Per capita Income, 1985-1993

Type of Households	1985			1990			1993		
	Number (million) (2)	Percentage (%) (3)	Income (000 Rp) (4)	Number (million) (5)	Percentage (%) (6)	Income (000 Rp) (7)	Number (million) (8)	Percentage (%) (9)	Income (000 Rp) (10)
1.Agr. Employee	11.5	7.01	255.06	15.7	8.73	441.53	18.7	9.97	507.96
2.Small farmer	39.1	23.83	242.10	49.7	27.64	575.11	51.3	27.35	798.06
3.Medium farmer	13.1	7.98	358.93	11.2	6.23	692.45	11.6	6.18	960.14
4.Big farmer	15.9	9.69	548.63	11.6	6.45	1065.15	12.0	6.40	1506.95
5.Rural Lower	21.9	13.35	323.64	16.2	9.01	650.49	16.6	8.85	862.32
6.Rural Dependent	8.4	5.12	322.28	2.8	1.56	946.27	2.90	1.55	1349.96
7.Rural Higher	13.4	8.17	537.97	23.7	13.18	1061.67	24.3	12.95	1878.30
8.Urban Lower	20.7	12.61	572.12	22.7	12.63	844.85	23.3	12.42	1081.62
9.Urban Dependent	6.3	3.84	600.12	4.7	2.61	967.25	4.8	2.56	1344.73
10.Urban Higher	13.8	8.41	935.33	21.5	11.96	1899.78	22.1	11.78	3138.45
Total	164.1	100.00	438.34	179.8	100.00	881.78	187.6	100.00	1303.56

**Table IV.3.5b: Coefficient of Variance (CV) and Inequality Index of Household  
Income by Category of Households 1985, 1990 and 1993 (%)**

Category of Households	1985		1990		1993	
	CV	Ratio	CV	Ratio	CV	Ratio
(1)	(2)	(3)	(4)	(5)	(6)	(7)
<b>A.FARMERS</b>	36.8	228.8 <sup>a)</sup>	29.0	145.1 <sup>a)</sup>	33.6	153.8 <sup>a)</sup>
<b>B.RURAL</b>	25.4	101.7 <sup>b)</sup>	21.8	238.7 <sup>b)</sup>	33.1	318.7 <sup>b)</sup>
<b>C.URBAN</b>	24.2	109.0 <sup>c)</sup>	39.0	212.9 <sup>c)</sup>	49.8	275.2 <sup>c)</sup>
<b>TOTAL</b>	45.9	66.6 <sup>d)</sup>	48.2	68.7 <sup>d)</sup>	59.7	70.4 <sup>d)</sup>
		167.7 <sup>e)</sup>		168.4 <sup>e)</sup>		158.2 <sup>e)</sup>

Source: Calculated from **Table IV.3.5a**

Notes:

- a). Ratio of incomes of Medium and Large farmers to Small farmer and Landless labourers
- b). Ratio of incomes of Rural-High Income group to Rural-Low Income group
- c). Ratio of incomes of Urban-High Income group to Urban-Low Income group
- d). Ratio of incomes of Urban Households to Farmer and Rural Households
- e). Ratio of incomes of Urban Households to Rural Households



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## CHAPTER V

# CGE MODELING ON THE INDONESIAN ECONOMY

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### 5.1. Introduction

General equilibrium analysis is at the very centre of economic theory. All aspects of economics have been enriched and aided by past work on general equilibrium theory. The value of general equilibrium theory is not as a universal mathematical structure but rather as a diagnostic tool. It has been quite fruitful in the intuitive end of science, hypothesis-creation, and rather less successful in normal science or in work of falsification of hypothesis (Weintraub, 1982).

The main characteristics of general equilibrium modeling/analysis are its endogenous price specification, sectoral consistency, and behavioural specifications for each economic actor included in the model. The model specifications are derived from microeconomics, reflecting its theoretically solid basis. It views the economy as a system of mutually interdependent markets and seeks to analyze the economy from the microeconomics viewpoint of individual markets considered simultaneously. Therefore it is a complete microeconomic model, and simultaneously a detailed approach to macroeconomics.

Macroeconomics and general equilibrium analysis are likewise intertwined. The interrelationship is even more specific since macroeconomics can be thought of as a general equilibrium theory with some of the many markets grouped together for expositional clarity and convenience. Macroeconomics can be categorized into 5 markets: consumer goods, investment goods, labour services, financial assets and money. Therefore a general equilibrium system is actually a totally disaggregated

macroeconomic model (However, there are difficulties in incorporating financial assets and money).

The fast development of computer technology has enabled modellers to find solutions even for relatively very complex and large general equilibrium models. From this fact the term 'Computable' General Equilibrium (CGE) was emerged, replacing the commonly used (applied/multisectoral) general equilibrium model.

One of the most innovative and flexible developments in applied economics in recent decades has been CGE modeling. It is an approach that attempts to simulate numerically the general structure of an economy (Greenaway et al. 1993). The central idea of CGE modelling is to convert the Walrasian general equilibrium structure - formalized by Kenneth Arrow, Gerard Debreu and others in the 1950s - from an abstract economy into realistic models of actual economies by specifying production and demand functions (including behavioural specifications of economic actors as well as the 'accounting' equations for balancing the models) and incorporating data reflective of real economies. These types of model provide an ideal framework for appraising various effects of policy changes that are not well covered by empirical macro models. The models have been widely applied to a range of policy considerations (Shoven and Whalley, 1992). A carefully designed CGE model will have a transparent and theoretically consistent structure, and will offer a vehicle for policy appraisal. The great strength of general equilibrium analysis is that it models the whole economy explicitly, albeit under restrictive assumptions. It is a flexible technique for modeling complicated problems. However it has also shortcomings, since this type of model relies heavily on secondary data and offers no formal facility for testing the model structure. The underlying assumption that the benchmark data should be in equilibrium since it is a solution to the model implies the crucial

relationship between the quality of data and results from model simulations.<sup>1</sup> There are two approaches for the process of translating the theoretical framework into a numerical model, namely Johanson approach, which uses linear approximation in deriving the counterfactual solution from the initial equilibrium, and the derivation of solution from the full model. The first approach has been used for developing ORANI Model of Australian economy while the second approach can be seen in most of the current CGE applications (Greenaway, et al. 1993).

In the context of other modeling systems, CGE models could combine the advantages of econometric, Input-Output (I/O) and/or Social Accounting Matrix (SAM) type frameworks. Compared with fixed price I/O or SAM type-multiplier models, for instance, CGE's flexible price structure and behavioural equations can approximate long-term equilibrium adjustment in addition to short-term analyses. The CGE model also imposes consistency characteristics among sectors, which is lacking from macro econometric models (Azis, 1996).<sup>2</sup> The structure of a CGE model is consistent with neoclassical economy theory but flexible enough to incorporate factor and commodity substitution into the structure of production and demand. The Walrasian system of equations of the model represents the equilibrium behaviour of factor markets, commodity markets, and economic institutions. The system can simulate economic responses to changes in policy variables vis a vis the base scenario. Endogenous prices adjust to changes until factor and commodity market equilibrium conditions are satisfied and consistent with endogenous factor incomes.

The first operational general equilibrium model was developed for the Norwegian economy in 1960 using tractable log linear specifications. Subsequent

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<sup>1</sup> This is not to neglect the important role of the functional specification embodied in the model.

applications of CGE models by the World Bank researchers on the developing countries are summarized in Dervis et al. (1982). Decaluw'e and Martens (1988) compared the structure of 73 CGE applications in developing countries, including that of Indonesia.

## **5.2. Applications of CGE Modeling on the Indonesian Economy**

Modeling developments in Indonesia (including CGE applications) have been generated in large part with support from external donor agencies, working with usually one government or university institution. As a result a rather impressive variety of models has been developed, but this variety has also brought with it a degree of duplication. This, in retrospect, might be viewed as somewhat unfortunate in terms of the opportunity costs of the resources involved. Moreover, most of the models are not firmly housed institutionally or supported in the sense of maintenance, updating and technical support, with the result that significant investment in the initial construction of the models has not been complemented by funds and support for their on-going use. While many of the models reveal a high degree of sophistication, there seems to be a major gap between the models and their eventual use in decision making. In particular, many of the models are not capable of providing real-time responses to policy initiatives since their implementation is often cumbersome and, in some cases, poorly documented and understood, especially from the Indonesian government side. As a result, many models are either not being used or play a marginal role in policy formulation and evaluation, thereby limiting access to essential resources for model maintenance and application. Models have been used to undertake a variety of analyses but too often the results have not been interpreted

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<sup>2</sup> Since in each stochastic equation of any econometric model contains residual errors or error terms.

and related to the on-going policy concerns or issues. Given the 'project-driven' rationale, the models are viewed as competitors. Few of them have undergone rigorous evaluation to document their accuracy, strengths/weaknesses and the degree to which similar models provide comparable interpretations of the functioning economy. Far too much attention has been devoted to the results generated by the models rather than to the benefits that could be derived from them in terms of policy analysis. The dominant thinking in the modeling community worldwide suggests a move towards a more holistic approach to model development, where there is more attention on the complementary nature of the models and an increasing recognition of the hierarchy and nesting processes associated with model development (Hewing, 1996). Not all-existing models on the Indonesian economy will be discussed in this chapter, but only those related to the CGE applications.

#### **a). Lewis Model<sup>3</sup>**

Lewis<sup>4</sup> (1991) developed an economy-wide multi-purpose CGE model for Indonesia with the main objective of providing a multisectoral frame work for analyzing the impacts of exogenous shocks, and trade and tax reforms, on fiscal performances, economic growth as well as on economic structure. An early version of the model has been used for analyzing the consequences of international commodity price fluctuations on macroeconomic, sectoral and distributional aspects (Behrman, Lewis and Lofti, 1989). The model outcomes suggested that one has to

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<sup>3</sup> In fact Lewis was not the first person to develop a CGE for Indonesian economy. There had already been attempts to develop such models. These models are not included in the discussion due to the lack of complete information. Institute of Social Science (ISS), Den Hag, in a collaboration work with the Central Bureau of Statistics, Indonesia, developed a form of Applied General Equilibrium Model in 1986 for analyzing the impacts of oil price fluctuations and changes in government fiscal policies on the Indonesian economy. Gelb (1988) also develop a CGE model for analyzing the 'Dutch Disease' in the oil exporting economy such as Indonesia.

<sup>4</sup> He was then an Institute Associate at Harvard Institute for International Development (HIID), serving as a resident adviser to the Customs and Economic Management (CEM) Project in the Ministry of Finance, Indonesia.

make tradeoffs in assessing the impacts of price instability since there is no case in which the impacts are only good or bad. There is also no clear-cut indication whether the fixed exchange rate specification dominates the flexible one, and vice versa for the Indonesian economy. The former seems to lead to better outcomes in the case of oil price shocks but not for agricultural product price shocks. A slightly different version of the model has been used to examine the efficacy of the 'rules-of-thumb' that typically guides structural adjustment policies in developing countries, particularly those concerned with tariff and real exchange rate policy (Devarajan and Lewis, 1991). It suggested that the 'rules-of-thumb' are based on models that bear virtually no resemblance to the economy in question and therefore could be justified only on the grounds of administrative simplicity and reduced rent seeking, rather than on the argument of improving economic welfare.

The latest use of the model -with some modifications to the labour market specification- was for analyzing the impacts of labour unionisation in relation to the benefits that could be gained from economic reform (Devarajan, Ghanem, and Thierfelder, 1997). The model has shown that 'passive' unions increase the welfare gains from trade liberalization because the trade reform lowers the wage premium enjoyed by the unionized sector, reducing distortions in the labour market. These gains are amplified when the unions are actively negotiating a contract with the employers.

The Lewis model was developed from Robinson's work on the US economy. It consists of 18 production activities, 6 factors of productions (capital, land and labour), 4 household types, and 3 institutions engaged in external borrowing. The economic sectors were further disaggregated into agriculture and non-agriculture as well as those using intermediate input and those not. The production technology was

specified with a set of nested CES and Cobb-Douglas functions. At the first level, domestic output was defined as a CES function of value added and intermediate inputs. At the second stage, the value added itself was set as Cobb-Douglas combination of the aggregate factor inputs (capital, labour, and land). There was an imperfect transformability between export and domestic markets on the production side, reflecting the adoption of the ‘small country’ assumption in the foreign trade regime. The economy was accordingly assumed to be a ‘price taker’, both in export and import markets. On the demand side, it was assumed that domestically produced and imported products were not identical (i.e. Armington specification), allowing for restricted substitution possibilities. There was also an attempt to capture short run and long run characteristics in the model. In the short run version, each factor was assumed to be sectorally fixed, while in the long run version all factors were mobile.

#### **b). Thorbecke Model**

In terms of market coverage, the most complete CGE model of the Indonesian economy seems to be the one developed by Thorbecke (Thorbecke et al. 1992). The model incorporated real and financial sides of the economy to analyze the short run and long run impacts of structural adjustment policies adopted in the mid-1980s. On the supply side, output was specified as a CES production function of a composite labour input and capital stock (assumed to be fixed in the short term and variable in the longer term). Export and domestic sales were determined by a CET function, reflecting the adoption of the small country assumption, in which export and import prices are exogenously determined by the rest of the world. On the demand side, imports and domestic sales were combined through an Armington function. Household consumption was derived in two stages. Firstly, aggregate consumption

for each household group was assumed to be a function of its permanent and transitory incomes. Each consumption expenditure on goods was then derived through a two-level utility maximizing specification. Secondly, at the upper level aggregation a restricted form of the almost ideal demand system (AIDS) was postulated, while for the lower level a conventional LES specification was chosen. There were 14 production sectors, 9 factors (4 labour and 5 capital), 8 households and other institutions including: 1 aggregated company, 4 categories of government current expenditure and 8 types of government capital expenditure categories, the rest of the world and other accounts such as trade and transport margins, indirect taxes and subsidies. In addition, more institutions were identified in the financial sectors, including commercial banks, and the central bank. In this financial market there were also 6 types of assets, namely currency, demand deposits, time deposits, foreign deposits, equities, and foreign bonds

The model's simulation indicated that the government could have adopted a better economic policy by cutting current spending more and reducing investment outlays less. In the medium term this would have given more rapid growth, a smaller external deficit, and a less unequal income distribution, because investment spending is more beneficial to rural households. Nevertheless, the adjustment strategy adopted by the Indonesian government was satisfactory.

### **c) Azis Models**

The first of Azis' models is an economy-wide model with a pollution factor in it. It was a modification of Robinson's stylized model, designed to demonstrate the relationship between economic and environmental variables. The model showed the standard macro economic aggregates and pollution variables could be determined



simultaneously through endogenous price setting. The main target was therefore a reduction in the pollution level in the context of searching for an optimal tax policy in an economy-wide framework.

There were two categories of sector, producing market goods and non-market goods, the latter being the pollution cleaning activity. The cleaning activity was treated as goods, which had prices or economic value. In the model, consumers maximized utility, which was derived from Linear Expenditure System (LES). Government expenditure on cleaning activity was set as the policy instrument (exogenous). Two scenarios were simulated: No pollution tax imposed (only government cleaning activity will determine the quality of environment) and the imposition of a pollution tax (in addition to the cleaning activity). The model then estimated the optimal pollution tax consistent with utility maximization.

The second of Azis' models was used to demonstrate the impacts of economic reform commonly adopted by developing countries not only on macroeconomic variables but also on income distribution, especially between urban and rural households. A specification of the financial block was made to enable the assessment of the nature and degree of openness of the capital account. This included the introduction of two parameters (obtained from an econometric estimation based on data during 1980-90), namely the 'Degree of openness'<sup>5</sup> (to reflect the intensity of government controls on capital flows) and 'Risk'<sup>6</sup> (to capture the fast emerging capital market). This specification will affect the size of capital stock/investment, which in turn will change the structure and magnitude of factor prices, leading to the changes in the labour market and household incomes.

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<sup>5</sup> It is basically a scalar which takes value from 0 -for totally closed to international capital flows- to 1 -for completely liberalized capital account.

There were 8 factors, 8 household groups, 3 borrowing agencies and 30 production sectors. A dynamic specification was also introduced through varying the capital stock, independent (econometric) estimations of foreign capital inflows, the risk factor and private investment. This specification sought to capture the long run characteristics in addition to the short run ones. In the short run version, each factor was assumed to be sectorally fixed while in the long run version all factors were mobile. There was also an introduction of imperfect substitutability characteristics on the demand side and imperfect transformability on the production side. The latter was a reflection of the small country assumption in foreign trade regime adopted in the model. The simulations were conducted for both static (one period) and dynamic (multi period) specifications. Based on the model's simulations, Azis concluded that the 'actual' policy adopted by the government<sup>7</sup> was not the optimal one.

#### **d) Other Models**

Roland-Holst developed a CGE model for the Indonesian economy (using data 1980 as the benchmark) to evaluate Indonesian adjustment policy in the period 1980-1986 with particular attention to the growth and distributional implications of the adjustment (Roland-Holst, 1992). The model was based on the Micro-Macro General Equilibrium model developed by Bourguignon, Branson and de Melo, which had been applied to Cote d'Ivoire and Marocco, a new version of which had been used for Greece and Mexico. There were 6 production sectors/activities, 8 factors, 8 types of households, other 4 institutions (government, firm, capital account and the rest of the world). Three alternative policies are considered, reflecting the actual

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<sup>6</sup> Its value was estimated as a function of ratio between amortization and interest paid by borrowing agencies and exports.

<sup>7</sup> There was no attempt to really capture the actual policies adopted by the government at that time.

fiscal policy adopted during the period concerned, changing in the trade reorientation, and using monetary policy for stabilization. It concluded that more efficacious policies could have been implemented, resulting in more moderate primary export dependence and less terms of trade instability. The alternative policies reflected a deliberate attempt to shift the export orientation of Indonesia toward more diversified and sustainable trade patterns.

By using SAM 1985 as the benchmark data, Sugiyarto in 1994 developed an economy-wide multi purpose CGE model for the Indonesian economy to evaluate the economic impacts and distributional consequences of each type of policy commonly adopted in the structural adjustment programme (Sugiyarto, 1994). The main concern was to clarify the effect of each policy on macroeconomic performance, welfare and income distribution. The model captured the all-important features of the Indonesian economy as reflected in the existing SAM. There were 5 production sectors, 5 domestic commodities, 5 imported commodities, 10 factors (8 labours and 2 capital), 6 types of households, and other 4 institutions (government, firm, capital account and the rest of the world). The policies considered were devaluation, changing in fiscal policy, tax and trade reforms, and restriction on capital flight (capital account). It concluded that devaluation seemed to have favourable impacts on economic performance and income distribution, government consumption had crucial impacts on welfare condition, and government subsidy to domestic industries seemed still necessary. The reliance of domestic industry on government protection was also confirmed by the simulation results of reducing import tariffs. On the other hand, tax reforms would have significantly reduced the government deficit, improved the income distribution, and seemed justifiable even on economic grounds.

In 1995, Temenggung developed an Interregional-CGE (IRCGE), using 1985 data as the benchmark, to examine the impacts of the tax revenue sharing system<sup>8</sup> adopted by the government (Temenggung, 1995). In this model, the economy was split into two regions: Java and Outer Islands. In each region there were 2 factor accounts, 9 production sectors/activities, 10 types of households and other institutions (regional and central governments, firm, capital account and the rest of the world). Based on the interregional-SAM (IRSAM)<sup>9</sup>, Temenggung then calculated the multiplier effects as well as run a set of counterfactual condition reflecting a revised tax policy. It was concluded that the existing tax policy provides a means to strengthen the economic performance (measured by GDP growth and current account balance), since it can be used for correcting vertical fiscal imbalance. It was also found that a revenue sharing system favouring outer islands may result in a better, regionally oriented fiscal policy.

By using a new data set, Wuryanto developed an IRCGE model for Indonesian economy in 1990 based on IRSAM similar to that used by Temenggung (Wuryanto 1996). Output was specified as a CES function of intermediate inputs and value added. The consumption of intermediate inputs was treated as a Leontief function with no substitution possibility intra- or inter- regionally. Labour was assumed to be free to move between sectors but not regions, since there was no labour migration specification. The small country assumption was adopted for the export and import markets. The simulation was then conducted by changing the existing fiscal policy of the central government. He concluded that decentralizing the

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<sup>8</sup> By this system, the central government collects all major taxes and then redistributes its revenue based on the central government policy. The pattern of distribution has nothing to do with the amount of tax revenue collected in each region.

<sup>9</sup> The IRSAM was first developed by Tirta Hidayat. Hidayat, T. (1991): The construction of a two-region social accounting matrix for Indonesia and its applications to some equity issues. Unpublished Ph.D. dissertation, Cornell University, Ithaca, New York).

existing fiscal system would generate greater national economic growth and a lower amount of government foreign borrowing.

In 1997, an agriculture sector focused CGE model was developed as a result of a collaborative work between the International Food Policy Research Institute (IFPRI) Washington D.C and the Center for Agro-Socioeconomic Research (CASER) Indonesia. The model was then used for analyzing the economy-wide impacts of commodity market interventions in production technology, protection and market structure on resource allocation, production and trade (Robinson et al. 1997). The model incorporated a specification of the rice market (subject to various government interventions) and modeled the behaviour of the Indonesian Logistic Agency (namely BULOG). CES and CET functions were used to represent production and trade aggregation functions. Consumer expenditures were determined using a Stone-Geary utility function for each household. Simulations of an adverse productivity shock, a favourable productivity shock and a favourable productivity shock without BULOG interventions were then introduced. The result showed that there would be an inefficient allocation of resources within the agriculture sector and the rest of economy if BULOG maintained its price support programmes when there were significant increases in the rice productivity. The program was also costly, straining the government accounts.

In addition to the models discussed above, there are also some other CGE type models concerning the Indonesian economy. These models were discussed in Thorbecke, et al. (1992), in which one of them was at some degree related to the model developed by ISS and CBS (1986). Khan, H and Thorbecke, E (1989) also provide an example of a SAM-based fixed price multiplier model on the Indonesian economy.

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## CHAPTER VI

# CGE MODELS FOR THE INDONESIAN ECONOMY IN 1985, 1990 AND 1993

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### 6.1. Main Features of the Models

The models were developed using the Indonesian SAMs for 1985, 1990 and 1993 –discussed in the Chapter IV- as the frameworks. They can therefore be categorised as economy-wide multipurpose models. The models' development and their counterfactual analyses are intended to, firstly, further understanding the response of the underlying economy to various cases (scenarios), secondly, assessing the effects of applying typical economic reform policies on the Indonesian economy, and thirdly, comparing the simulation results from applying the policy changes with the benchmark conditions. There will also be sequencing simulations in order to look for the optimal ordering of economic reforms in the Indonesian economy. The exercises are intended to distil some lessons for the design of better economic policies in the future. The policies concerned are, therefore, those commonly adopted as economic reform measures.

The economy considered, as reflected by the SAMs, is an open economy in the sense that transactions with the rest of the world (ROW) are not only in product markets (i.e. exports and imports) but also in factor and capital markets (i.e. in the form of remittance and capital flights). This can be seen from the existence of factor and transfer payments 'going to' and 'coming from' the ROW recorded in the SAMs. The ROW plays a crucial role in the Indonesian economy, especially as a source for

financing for the deficits of the government and of domestic firms. The transactions between the ROW and domestic economy in the product markets, factor markets, capital account, and transfer payments should therefore be reflected in the model's specification.

The models embody some 'structuralist'<sup>1</sup> features, as can be seen from the rigidity assumed for some factor prices and in the introduction of imperfect substitutability characteristics between factors and/or capital and between domestically produced and imported commodities (Armington specification: Armington, 1969). The wages of labour in the agricultural sectors and of production workers are fixed, allowing for unemployment. This is a reflection of the government's policies and direct interventions affecting the wages of these types of workers.<sup>2</sup> For other types of labour wages are allowed to adjust according to the market clearing levels. The introduction of substitution possibilities between labour and/or capital reflects the evidence that there have been significant changes in the share parameters of labour and capital in producing one unit of value added over the period concerned (1985-1993). It seems that the use of more restricted functional forms such as Cobb-Douglas and Leontief specifications are no longer justifiable

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<sup>1</sup>'Neo-classical' CGE models are characterised by perfect mobility of factors, no independent investment function (i.e. the economy is 'savings-driven'), and an assumption that the only equilibrating variables are product and factor prices. Therefore, all prices are flexible to clear markets so that the economy is in 'smooth' general equilibrium. This feature is very useful for exposition and is relevant for long run characteristics. However, it has very limited applications, especially for developing countries where markets of products and factors are subjected to various government policies that restrict price flexibility. On the other hand, 'structuralists' believe in the importance of the structural characteristics of an economy that are, in some cases, reflected in 'rigidity' of markets. Hence, it is necessary to limit the substitution elasticity in a variety of important relationships. Accordingly, it is important to impose restrictions on factor mobility, rigidity in prices, or even dis-equilibrium in some markets, and to consider how the balances of various macroeconomic aggregates such as saving-investment, government budget, and external accounts can be achieved. While these impositions raise complications in the underlying theory, their applications have proved useful for analysing various issues.

<sup>2</sup>The minimum wage of production workers has been set by the government at a very low level to attract more foreign direct investment (FDI). As a result of various labour disputes and external forces (i.e. from the USA) on human rights issues, the minimum wage (currently still below US \$2 per day) has been increased slightly. To compensate, the government gives more flexibility to FDI (i.e. foreigners can now own 100% of a company). For

(details on the shares of each type of labour and capital, calculated from the SAMs 1985, 1990 and 1993, are presented in **Appendices 6.4**). The introduction of the Armington feature in the model is especially important, for the simulations to be conducted with the model incorporate trade policy issues. It is necessary because the usual perfect substitutability assumption would systematically exaggerate the power that trade policy has over the domestic price system and economic structure. It would also rule out the possibility of two-way trade in the same commodity group (cross hauling) which exists even for developing countries. Moreover, the perfect substitutability assumption is also quite untenable as a workable approximation especially for a planning or policy model (and is contrary to the reality). On the other hand, treatment of domestically produced and imported commodities as perfect complementary would also introduce a great deal of rigidity, because there would be a tendency towards high specialisation which mostly contradicts the actual facts. In this case trade policy-induced changes in relative prices such as changes in the exchange rate can have no direct effect on the structure of the economy. This would create a foreign exchange gap that cannot be alleviated by trade and exchange rate policies (Dervis et al. 1982).

On the supply side, production functions for domestic activities were specified as a multi-level nesting of CES functions. At the top level, the domestic output was specified as an Input-Output (Leontief) function of intermediate inputs and value added. The intermediate input consumption was set as a CES aggregation of domestically produced and imported commodities, allowing for imperfect substitution between the two commodities (with different degree of substitution for

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agriculture labourers, wages have always been very low (almost at subsistence level) due to various government interventions to maintain low prices of agricultural products.



each type of commodity as reflected in its elasticity of substitution). On the value-added side, a detailed CES nesting function was employed. At the lowest stage of the nesting, similar types of labour (farmers, production workers, clerical and professional) and capital (corporate Capital) were respectively aggregated using CES functions. The production, clerical and professional workers were then aggregated further to form a 'non-farmer worker', who was then combined with a farmer into a composite worker (labour). On the capital side, the aggregated corporate capital, which consists of foreign, government, and corporate capital, was then combined with non-corporate and land and agriculture capital to form a composite capital. Therefore, the value added becomes a CES function of composite labour and composite capital. This specification allows for substitution between different types of labour with similar characteristics, different types of labour and capital with different characteristics and between labour and capital in general. The degree of substitution decreases as the similarity between labour and/or capital decreases. This is reflected by a decrease in the degree of substitution (i.e. the elasticity values used) as we move from the lowest level to highest level of the nesting.

The total production is then allocated to domestic demand and exports. Producers are assumed to be indifferent between selling domestically and exporting as they receive the same price. By employing this specification, it is possible to introduce some elasticity in the export demand of domestic products in the world market, including for the two extreme cases where the elasticity is set equal zero (perfectly inelastic, i.e. fixed exports) or infinity (perfectly elastic, i.e. unlimited exports at a fixed world price).

On the final demand side, total demand in the domestic market consists of demands for consumption and for investment purposes, both of which are derived from composite commodities. The total consumption is an aggregation of household and government consumptions, while investment is generated by the savings-investment account. The Cobb-Douglas utility function used in the model implies that the households in the models have a fixed consumption pattern. The government, on the other hand, is assumed to have a planned consumption, which cannot be affected by commodity prices and the government's income. This is reflected in the Leontief specification of the government's consumption. Government saving is accordingly set as a residual. In addition, the government also has access to foreign borrowing as the balancing item of its deficit.<sup>3</sup> The domestic firms also have an access to foreign borrowing for financing their deficit, contributing to the total of foreign loans. The direct transactions among these institutions (i.e. the ROW, government, firms and households) should therefore be portrayed in the models. This adds new features to the model that are lacking in the previous CGE models of the Indonesian economy.

Consistent with the government consumption behaviour in the model, aggregate investment is fixed in quantity, reflecting the 'investment driven' nature of the economy. This specification was chosen to reflect the fact that the Indonesian government (i.e. the main economic actor) has always set its budget and other macroeconomic targets at the beginning of year, which in turn affects the economic behaviour of both firms and households.

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<sup>3</sup> Since 1967, the Indonesian government has continuously adopted a 'balanced budget' principle, where its deficits can only be financed by foreign funds (regarded as revenues) and not by government's domestic debt securities or printing money (see **Chapter III** for detail).

## 6.2. Modelling Development

### 6.2.1. The Conceptual Basis

The model was developed by exploiting the fact that a SAM is a systematic and consistent way of representing all payments among actors in an economy and therefore can be used as a framework for applied general equilibrium models. There are functional relationships among cells in a SAM that can be specified algebraically, so that all definitional and linkage equations in the model can be derived from the structure of the SAM. This feature has been the basis of the development of SAM-based models, including both fixed price multiplier and flexible price CGE models. In the latter, the relationships between data and model specification can be manifested by reproducing exactly the base year value of all accounts in the model (this is so-called '**calibration**'<sup>4</sup>). To reach this stage, some information on other parameters that can not be calibrated using data from the SAM (i.e. elasticities of substitution between domestically produced and imported commodities, capital and labour, and elasticities of demand for exports) must be supplied by the modeller. In addition, closure rules have to be specified for balancing the number of equations and variables in the model. The choice of the closure rule is crucial, since it greatly influences the characteristics of the model and, hence, affects both the outcomes of policy simulations and their implications. The approach of using a SAM as a base for developing both fixed price multiplier and flexible price CGE models turns out to be a very useful way of understanding the economic structure embodied in a SAM. In

addition, it inherits the advantages of a SAM, that is in relation to the choice of detail issues which can be accommodated and the principle of making the best use of available data<sup>5</sup> (Drud et al. 1986, and Pyatt, 1988).

Since it will not be possible to determine the absolute price level in a general equilibrium model, it is necessary, therefore, to establish relative prices by setting one price as a base value for normalisation (the numéraire). In theory, one can choose any price in the model as a numéraire, however, if the model is going to be used as tool of policy analyses and formulation: "...it is best to use a price-normalisation rule that provides a 'no-inflation' benchmark against which all price changes are relative price changes". (Whalley et al., 1992, p.150). A common practice is to use a consumer price index (CPI) or price of the ROW account as the numéraire. In this model, the price of the ROW account is used as a numéraire<sup>6</sup>. Accordingly, all prices will be measured relative to the 'world price' (the price of the ROW account measured in domestic currency) and the domestic price level appears to be based on a real foundation<sup>7</sup> (Drud et al. 1986). Given the choice of numéraire, it is also implicitly assumed that the exchange rate is fixed during the simulations. This is consistent with the behavioural specifications of the government and firms in relation to the ROW account. Recall that government and firm foreign deficits are set as residuals (endogenously determined by the model) so that the exchange rate must be fixed to close the model. The assumption of an endogenous balance of payment

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<sup>4</sup>The ability to reproduce the base year data, however, does not guarantee that there will be solutions for any exogenous changes in the model.

<sup>5</sup> However, this approach may be quite limited when the economic behaviour of actors can not easily be expressed into the cells underlying a SAM, for instance in the case of firm entry/exit in response to abnormal profits losses and in models with economies of scale and oligopolistic pricing behaviour (de Melo, 1988).

<sup>6</sup> As a consequence, the price of the ROW account will always equal unity in all simulations, except for the real devaluation simulation where the price is increased.

deficit, however, suffers from the criticism that there will be a seemingly unlimited foreign borrowing available to the domestic economy (Robinson, 1989). Nevertheless, the empirical history of Indonesian economy until prior the Asian crisis suggests this choice. As far as foreign borrowing is concerned, the problem for Indonesia is more in limiting the total size of rather than in getting the foreign loans. This may be due to the fact that while the position of the government's foreign loans at that time has already been very high, the loans were mostly in the form of long term concessionary loans with relatively long grace periods. In addition, the government has consistently put its debt repayments as a priority, maintaining its credit-worthiness in the international debt market.<sup>8</sup> In 1994, Indonesia -as the head of the Non Alignment Movement (NAM)- was even asked to help in managing foreign loans in the other low income highly indebted countries (Far Eastern Economic Review, September 1994). There is also a consortium of Indonesia's foreign creditors, then known as the Inter-Governmental Group on Indonesia (IGGI), now as the Consultative Group on Indonesia (CGI).

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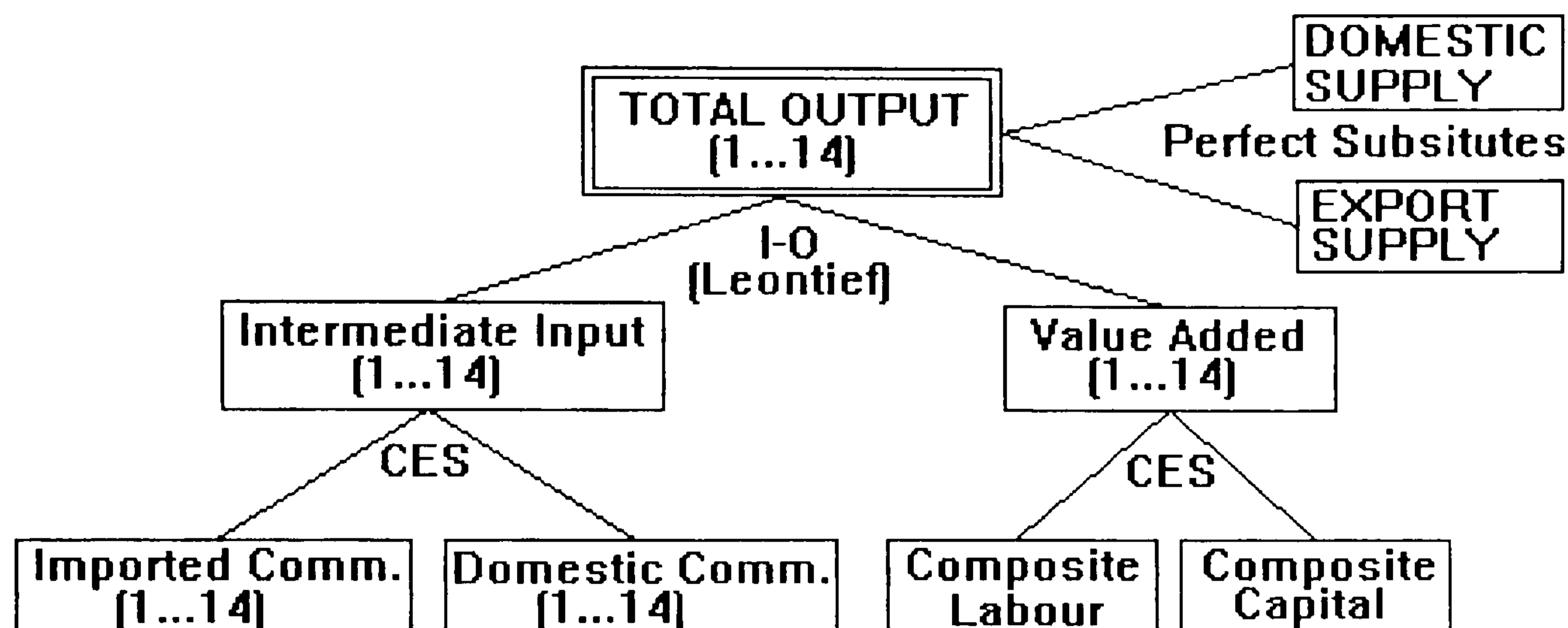
<sup>7</sup>Given the choice of the numéraire, any changes in domestic prices actually reflect the appreciation or devaluation of the country's real exchange rate (competitiveness).

<sup>8</sup> Pack & Pack, for instance, concluded that the foreign loans have stimulated private investments (Economic Journal, 1990). Fane also suggested that the accumulation of Indonesian foreign loans has reflected more on the growth of investment rather than on the growth of consumption (The World Economy, 1996).

## 6.2. 2. Formal Representation

### 6.2. 2.1. Production/Supply Side

The nesting of the CES production functions used in the model can schematically be represented as follows:



As a consequence of introducing imperfect substitutability between domestically produced and imported commodities, the intermediate consumption can now be derived from the composite commodities<sup>9</sup> and can be written as:

$$INT_i = A \left[ \alpha_d D_i^{(\sigma_i-1)/\sigma_i} + (1 - \alpha_d) M_i^{(\sigma_i-1)/\sigma_i} \right]^{\sigma_i/(\sigma_i-1)} \quad (S.1)$$

where:  $A$  = scale parameter,  $\alpha_d$  = share parameter for domestically produced commodities in the total commodities available in the domestic economy ( $0 < \alpha_d < 1$ ), and  $D_i$  and  $M_i$  are domestically produced and imported commodities, respectively. The elasticity of substitution between domestically produced and imported commodities is represented by the  $\sigma$ .

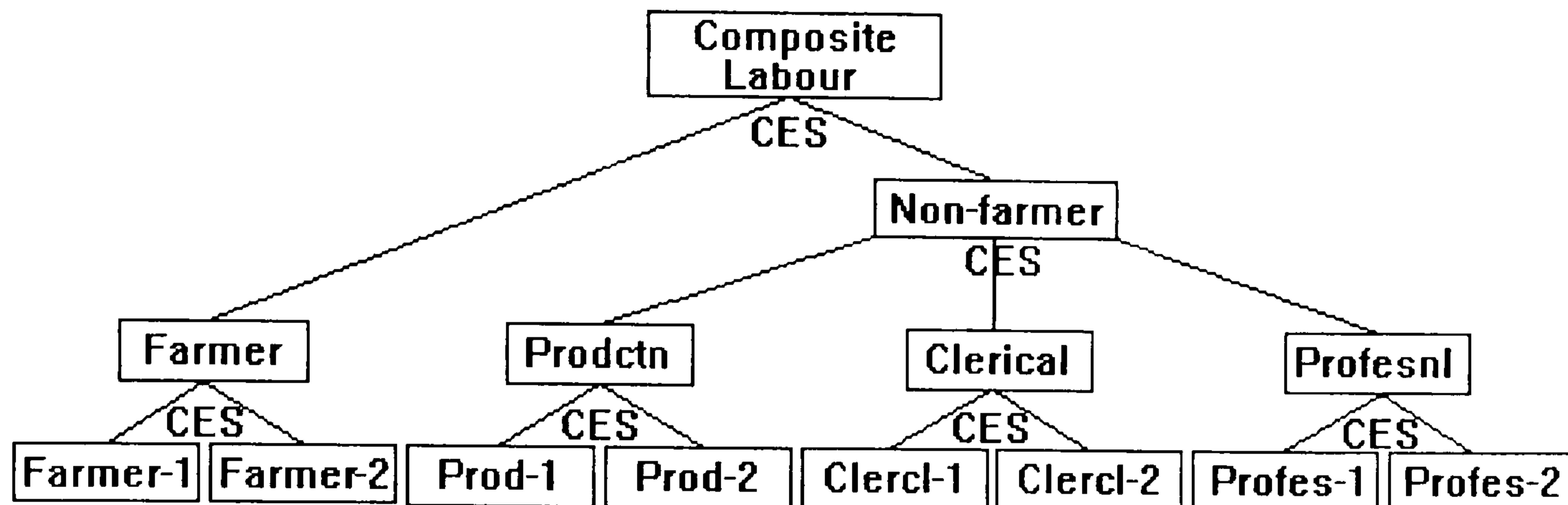
Similarly, the CES function of composite labour (CL) and capital (CK) on the value added side, can be written as:

$$V_i = A \left[ \alpha_d CL_i^{(\sigma_i-1)/\sigma_i} + (1 - \alpha_d) CK_i^{(\sigma_i-1)/\sigma_i} \right]^{\sigma_i/(\sigma_i-1)} \quad (S.2)$$

<sup>9</sup> This is also applied to the final consumption of households and government as well as the investment expenditure of capital account institution.

The nesting specifications of composite labour and Capital can schematically be presented as follows:

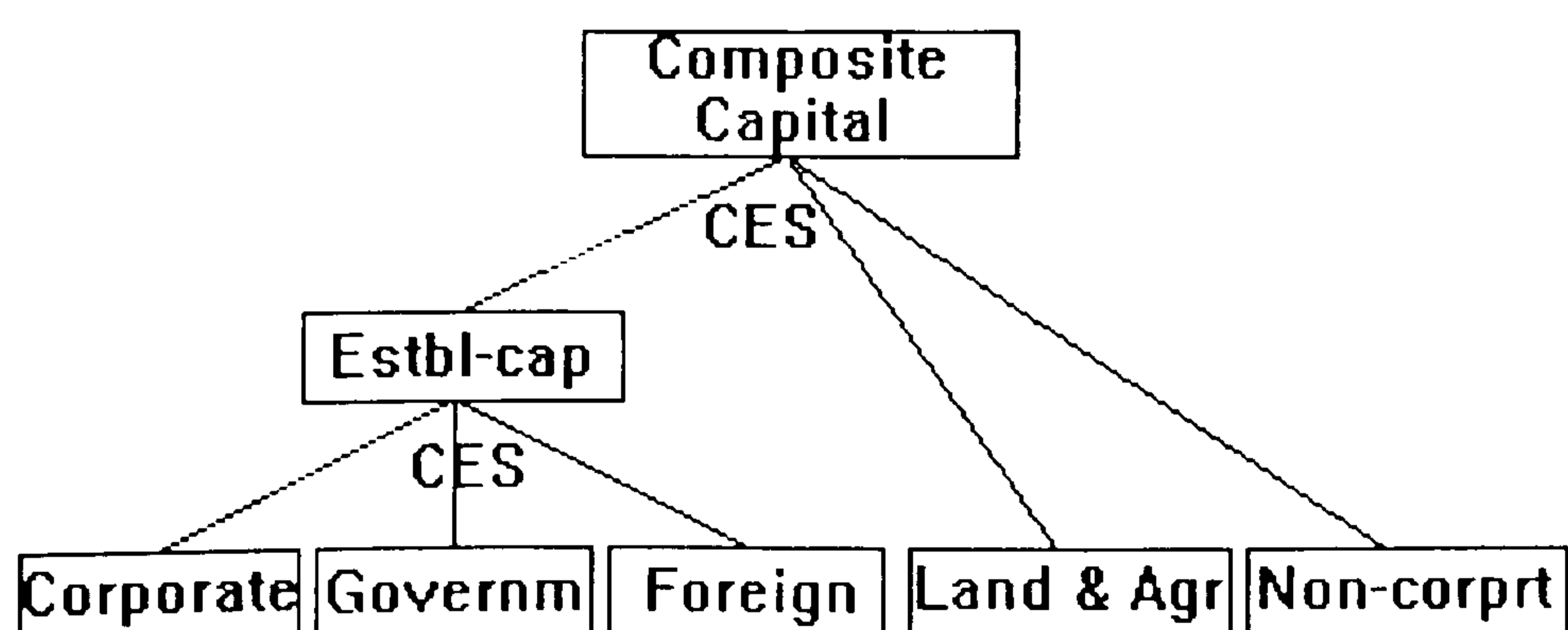
- **Nesting Labour**



Note that the two types of labour (i.e. wage and non-wage) in agriculture are aggregated to form a composite agriculture worker, which is then combined with the composite non-agriculture one to make the composite labour. The non-agriculture worker is formed from combined production, clerical, and professional workers. It is assumed that the elasticity of substitution among agriculture workers is the highest, which is then followed by those among production, clerical, and professional workers. Detailed information about the elasticities used in the nesting is presented in

**Table VI.3.**

- **Nesting Capital**



As can be seen, three types of capital from 'formal' establishments are combined to form 'establishment' capital, which is then aggregated further with Land

and Other agriculture capital, and Non-corporate capital to make composite capital. It seems reasonable to assume that the elasticity value at the bottom level of the nesting is higher (as the capital types there are more similar) than that at the top level. Detailed information about the elasticities used in the nesting is presented in **Table VI.3.**

Since total output is specified as an Leontief function of intermediate input and value added, it follows that the total output can be written as

$$Q_i = \text{Min} \{INT_i, V_i\} \quad (\text{S.3})$$

The total production is then allocated between domestic demand and exports.

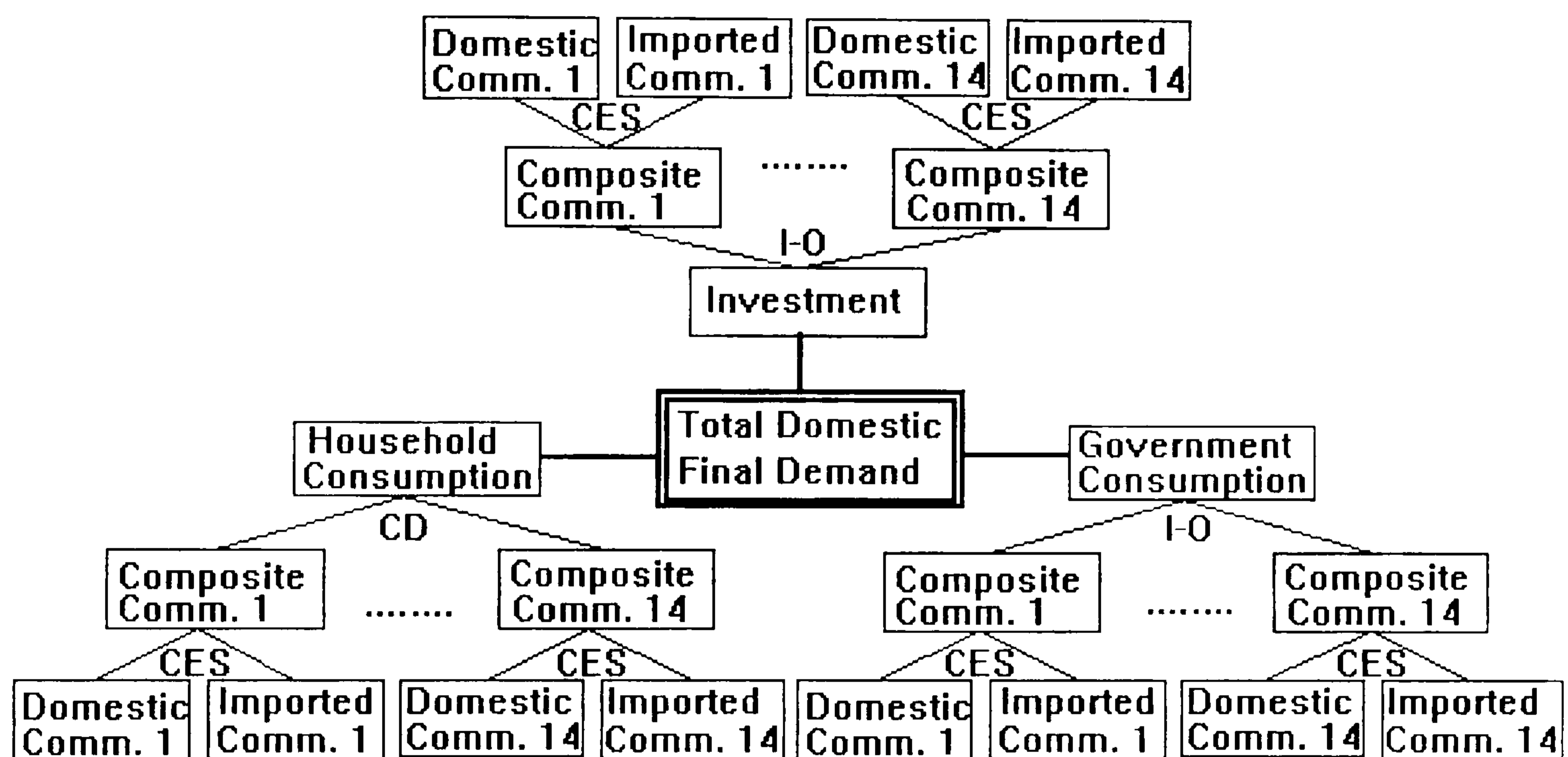
The production specification used implies that:

- (i) producers are assumed to be indifferent between selling domestically and exporting their products as they receive the same price
- (ii) there are substitution possibilities between labour and/or capital and between domestically produced and imported commodities
- (iii) producers are indifferent between selling domestically and exporting and it is also implicitly assumed that there are no quality differences (characteristics) between domestic products sold in the domestic market and those exported, and
- (iv) there is a demand function for each domestic product in the international market so that there is an elasticity of export demand attached to it.



### 6.2. 2.2. Demand Side

Total final demand in the domestic market consists of demands for consumption and for investment purposes, which are all derived from the pooling of composite commodities. Total final consumption is the sum of household and government consumption, while the demand for investment is generated by an aggregated saving-investment (capital) account. The structure of those final demands and their functional specifications can schematically be presented as follows :



Households in the model are assumed to have Cobb-Douglas utility functions defined by

$$U_h(\cdot) = \sum_{i=1}^{14} \alpha_{ih} \log(C_{ih}) \quad (D.1)$$

where  $\alpha_{ih}$  is the share of composite commodity  $i$  in consumption expenditure by

household  $h$ , and  $\sum_{i=1}^{14} \alpha_{ih} = 1 \forall h$ .

The demand system derived from this utility function is

$$C_{ih} = \alpha_{ih} Y_h / P_i \quad \forall i, \text{ and } h \quad (D.2)$$

On the other hand, the government is assumed to have an activity plan, so that its physical consumption of commodities is not affected by prices. It is fixed in quantity terms represented by adopting a Leontief specification. This can be written as:

$$C_{ig} = \alpha_{ig} C_g \quad (D.3)$$

On the investment side, total investment is exogenously determined and is distributed by sector on the basis of fixed shares (i.e. derived from the SAM):

$$I_i = \sum_i \bar{\delta}_i I \quad \text{and} \quad \sum_i \bar{\delta}_i = 1 \quad (D.4)$$

### 6.2. 2.3. Price Equations

The domestic price of each composite commodity ( $P_i$ ) can be written as a CES function of the domestic prices of imported ( $PM_i$ ) and domestically produced goods ( $PD_i$ ). Therefore :

$$P_i = \left[ \alpha_d PD_i^{(\sigma_i-1)/\sigma_i} + (1 - \alpha_d) PM_i^{(\sigma_i-1)/\sigma_i} \right]^{\sigma_i/(\sigma_i-1)} \quad (P.1)$$

The domestic price level is given by :

$$PD_i = \sum_j a_{ij} P_j + td_i PD_i \quad (P.2a)$$

$$PD_i = \sum_j a_{ij} P_j / (1 - td_i) \quad (P.2b)$$

where  $a_{ij}$  is the input output coefficient,  $td$  is the indirect tax rate on domestic products and  $\sigma$  is the elasticity substitution between domestically produced and imported commodities.

The aggregate sectoral profit functions are given by

$$PF_i = P_i(1 - td_i) X_i - \sum_i a_{ij} P_j X_i - \sum_s W_s L_{is} \quad (P.3)$$

where  $W_s$  is the wage of labour of type  $s$ .

The equation above can be rewritten as

$$PF_i = PN_i X_i - \sum_s W_s L_{is} \quad (\text{P.4a})$$

where

$$PN_i = P_i(1 - td_i) - \sum_j a_{ij} P_j \quad (\text{P.4b})$$

$PN$  is the Net price, which excludes indirect taxes. It follows that for domestically produced goods, the equation above becomes

$$PN_i = (1 - td_i) PD_i - \sum_j a_{ij} P_j \quad (\text{P.5})$$

On the import side, the small country assumption is adopted, which implies that the domestic economy is a price taker in the world market and there is an unlimited supply from the ROW at the given world price. This implies that price formation in the ROW is not modelled. The domestic price of imports is therefore given by

$$PM_i = \overline{PW}_i (1 + tm_i) \overline{ER} \quad (\text{P.6})$$

Where  $PW$  is the world price,  $ER$  is the exchange rate and  $tm$  is the tariff rate on imported commodities (the bar sign indicates that they are fixed).

Assuming that domestic products sold in the international market face a downward sloping demand curve, the export price(PWE) can be represented as

$$PWE_i = PD_i / (1 + te_i) \overline{ER} \quad (\text{P.7})$$

Where  $te$  is the export subsidy rate.

## 6.2. 2.4. Income Equations

### a. Household Incomes

Household incomes ( $Y_h$ ) can be broken down into factor incomes (wages and rent payments for its capital used domestically and abroad) and transfer incomes from the government  $(TGH)_{gh}$ , domestic firm  $(TFH)_{fh}$ , other households  $(THH)_{hh}$  and the ROW  $(TWH)_{wh}$ . These incomes can be written as :

$$Y_h = \left[ \sum_i \sum_k W_k L_{ki} + \sum_i (PN_i X_i - \sum_k W_k L_{ki})_h \right. \\ \left. + (TGH)_{gh} + (TFH)_{fh} + (THH)_{hh} + (\overline{TWH})_{wh} \overline{ER} \right] \quad (I.1)$$

### b. Firm Income

Firm income ( $Y_f$ ) includes payment for its capital used in the production, transfers from other firms  $(TFF)_{ff}$  and transfers from the ROW  $(TWF)_{wf}$ , which is set as a residual. Therefore, it is given by :

$$Y_f = \left[ \sum_i (PN_i X_i - \sum_k W_k L_{ki})_f + (TFF)_{ff} + (TWF)_{wf} \overline{ER} \right] \quad (I.2)$$

### c. Government Income

Government income ( $Y_g$ ) can be categorised into payment for its capital used in the production activities, income taxes (with tax ratio  $t$ ) from domestic institutions (households, domestic firm, and government owned company), income from indirect taxes levied on commodities, and transfer from ROW  $(TWG)_{wg}$ , which is set as a residual. Accordingly, it can be formulated as follows :

$$Y_g = \left[ \sum_i (PN_i X_i - \sum_k W_k L_{ki})_g + \sum_h t_h Y_h + \sum_f t_f Y_f + \right. \\ \left. + \sum_i t d_i X_i^S PD_i + (TWG)_{wg} \overline{ER} \right] \quad (I.3)$$

#### d. Saving and Investment Equations

Total saving in domestic economy consists of household savings ( $S_h$ ), firm saving ( $S_f$ ) and government saving ( $S_g$ ). It can be formulated as follows :

$$S = S_h + S_f + S_g \quad (\text{S-I.1})$$

where

$$\begin{aligned} S_h &= (\overline{MPS})_h (1 - t_h) Y_h \\ S_f &= (\overline{MPS})_f (1 - t_f) Y_f \\ S_g &= Y_g - E_g \end{aligned}$$

This aggregation of saving applies only for 1985 (when there was no capital injection from the ROW directly to the domestic capital account). In the 1990 and 1993 SAMs, there were capital injections from the ROW ( $S_w$ ) to the domestic saving-investment account. Accordingly the aggregated saving equation becomes :

$$S = S_h + S_f + S_g + \overline{S}_w \quad (\text{S-I.2})$$

MPS is the Marginal Propensity to Save from net income after tax payment. In the equilibrium, total saving is equal total investment, which is distributed to each sector based on fixed shares.

$$\begin{aligned} S &= I \\ I_i &= \sum_i \overline{\delta}_i I \quad \text{and} \quad \sum_i \overline{\delta}_i = 1 \end{aligned} \quad (\text{S-I.3})$$

Aggregate final demand (total final consumption of composite commodities) is accordingly given by

$$C_i = C_{ih} + C_{ig} + I_i \quad (\text{S-I.4})$$

where

$$C_{ij} = \delta_{ij} (1 - \overline{MPS}_j) Y_j, \quad j = h, g$$

## 6.2. 2.5. Expenditure Equations

### 1).Household

Household expenditure ( $E_h$ ) consists of consumption of composite commodities, direct tax payments to the government, transfers to the other household groups and savings. This can be written as :

$$E_h = \left( \sum_i C_{ih} \right) + \left( \sum_h t_h Y_h \right)_g + (THH)_{hh} + S_h \quad (E.1)$$

### 2).Firm

The expenditures of firms( $E_f$ ) consist of transfers to the household, direct tax payments to the government, transfers to other firm (retained profit), transfers to the ROW ( $TFW$ )<sub>fw</sub> and saving. This can be written as :

$$E_f = (TFH)_{fh} + \left( \sum_f t_f Y_f \right)_g + (TFF)_{ff} + (TFW)_{fw} + S_f \quad (E.2)$$

### 3).Government

The government expenditure( $E_g$ ) consists of consumption of composite commodities, transfers to the households ( $TGW$ )<sub>gh</sub>, transfers to the government ( $TGW$ )<sub>gg</sub>, transfers to the ROW ( $TGW$ )<sub>gw</sub> and saving. This can be represented as follows :

$$E_g = \left( \sum_i C_{ig} \right) + (TGH)_{gh} + (TGG)_{gg} + (TGW)_{gw} + S_g \quad (E.3)$$

Notice that from the last three equations above, while transfer payments from the ROW to the households are set exogenously (as shown by a bar sign), the transfers to government and firm are set endogenously (as residuals). This is consistent with the behaviour of domestic firms as well as the fiscal policy of the government; both are relying on the foreign sources for funding their deficits. These transfer payments consist of foreign loans, grants and other transfers.

## 6.2. 2.6. Labour Market

### Labour Market Equilibrium

1). For non-agricultural and non-production workers, the labour markets follow the neo-classical framework, in which wage is flexible to adjust to clear the market. Therefore, the wage is set in competitive market, reflecting the marginal product of labour. This can be written as follows

$$PN_i (\partial X_i / \partial L_{ki}) = W_k \quad (\text{L.1})$$

$$L_k^D = \sum_{i=1}^n L_{ki} \quad \text{and} \quad L_k^D = \bar{L}_k^S \quad (\text{L.2})$$

2) For labour in the agriculture sector and production workers, the wages are fixed and the last part of equation above becomes

$$L_k^D = L_k^S \quad \text{where} \quad L_k^S < L_k^{*S} \quad (\text{L.3})$$

Thus allowing for unemployment in the agriculture sector and among production workers.  $D$  and  $S$  in the equations above refer to demand and supply while  $W_k$  is the wage at equilibrium level.

## 6.2. 2.7. Foreign Trade Regimes

### 1).Export Demand Equation

$$E_i = \bar{E}_i (AVE_i / PWE_i)^\eta \quad (\text{F.1})$$

where :  $E$  = export when  $AVE_i = PWE_i$

$PWE_i$  = Supply price of domestic export in foreign currency

$AVE_i$  = Average world price of that commodity

$\eta$  = Export demand elasticity

### 2). Import demands Equation

$$M_i = (\delta_i / 1 - \delta_i)^{\sigma_i} (PD_i / PM_i)^{\sigma_i} D_i \quad (\text{F.2})$$

where :  $\delta$  = Share parameter and  $D_i$  = Total demand for domestic use

### 3). Balance of Payment Equilibrium

The BOP equilibrium equation is given by

$$\left[ \sum_i \bar{PW}_i M_i + (\overline{TSW})_{sw} + (TGW)_{gw} + (TFW)_{fw} + (RMTW)_{kw} \right] = \left[ \sum_i PWE_i E_i + (\overline{RMFW})_{wk} + (\overline{TWH})_{wh} + (TWF)_{wf} + (TWG)_{wg} \right] \quad (\text{F.3})$$

The left hand side of the equation above is the ROW revenue that consists of: import, capital flight, transfers from government and firm, and capital payment from foreign capital used in domestic production to the ROW (remittance). On the right hand side is the ROW total expenditure, covering exports, capital payments and transfers to domestic households, firm and government. Since the transfers from ROW to domestic firm and government are set as residuals, the current account deficit equation is given by



$$\left[ \sum_i \overline{PW}_i M_i + (\overline{TSW})_{sw} + (TGW)_{gw} + (TFW)_{fw} + (RMTW)_{kw} \right] - \left[ \sum_i PWE_i E_i + (\overline{RMFW})_{wk} + (\overline{TWH})_{wh} \right] = (TWF)_{wf} + (TWG)_{wg} \quad (F.4)$$

### 6.2. 2.8. Product market Equilibrium

Product market equilibrium is given by

$$D_i = (C_i + INT_i) \quad (EQ.1)$$

where  $D_i$  is the total demand for domestic used that consists of total final ( $C_i$ ) and intermediate input demand ( $INT_i$ ). Total production of domestically produced commodity is therefore given by

$$X_i^D = D_i + E_i \quad (EQ.2)$$

where  $E$  is the export. The product market equilibrium is therefore

$$X_i^D - X_i^S = 0. \quad (EQ.3)$$

### 6.3. Model Calibration

In order to model the characteristics of the Indonesian economy as well as addressing various issues later on, it is necessary to modify the initial SAMs (presented in the **Table IV.1**), to set up the closure rule and to choose the parameters that can not be calibrated in the model (i.e. the elasticities of substitution and of export demand). The modification is necessary since the computer package programme used (i.e. HERCULES) always works in the SAM context so that every variable in the model must firstly be expressed into an account of SAM that makes transactions with other accounts. As always in any SAM, each account must be balance i.e. total income equals total expenditure.

#### 6.3.1. Modifications of the Initial SAMs

The modifications were carried out as follows :

- **Introduction of Composite Commodity Accounts.**

In the initial SAMs, domestic institutions and production activities consume domestic and imported commodities directly. To accommodate imperfect substitutability characteristics between the two types of commodities, it is necessary to introduce Composite Commodity Accounts. This is done by treating the composite commodities as CES functions of two 'factors': domestically produced and imported commodities (Armington 1969). This is done by treating the composite commodities as commodity accounts that 'consume' domestic and imported commodities and receive payments from households, government and activities. Accordingly, all final and intermediate consumptions are now derived from the composite commodity. This is done for all types of commodities, so that the number of composite commodity

accounts equals the number of domestic commodity and imported commodity accounts. In the SAM context, this can schematically be illustrated as follows:

Account Type	Import Commodity	Composite Commodity	Activity & Institution Consumption	ROW
1.Domestic Commodity		Pooling Commodities (CES)		Export
1.Imported Commodity				
3.Composite Commodity			Intermediate and Final Consumption	
4. ROW	Import			

Accordingly, all final and intermediate consumptions are now derived from the composite commodity pool as shown by the schematic diagram above.

- **Introduction of Value Added (VA) Accounts.**

For modelling the production functions of activities as two level nested CES functions, it is necessary to introduce value added accounts so that production activities can be expressed explicitly as a function of intermediate inputs (derived from composite commodities) and value added (as part of GDP). The value-added accounts make payments to factors (labour and capital) and receive payments from the production activities. This is done for all production activities, so that the number of value added accounts equals the number of domestic activity accounts.

The introduction of value added accounts can schematically be illustrated as:

Account Types	Composite Commodities	Value Added	Activities	Total
Composite Commodities			Intermediate Input	
Value Added			Value Added Generation	Y
Factors		Value Added Allocation		
Total		Y		

- **Introduction of Composite capital and labour.**

For allowing substitution between labour and capital, it is necessary to introduce 'new' types of labour and capitals as intermediary accounts. On the labour side, eight different type of workers are aggregated into four: farmer, production, clerical and professional. The last three are then further combined to form non-farmer, which is then aggregated with farmer to form a composite labour. For the capital, the first step is to combine three types of capital from formal establishments to form 'establishment' capital, which is then aggregated with land, & other agriculture capital and non-corporate capital to form a composite capital. The value added is then expressed as a function of composite labour and capital. In the SAM context, the nesting process can schematically be illustrated as:

Type of Factors	Farmer	Productio	Clerical	Profession	Non	Composite	Establish	Composite	Value Added
1. Farmer-1	F-1								
2. Farmer-2	F-2								
3. Production-1		P-1							
4. Production-2		P-2							
5. Clerical-1			C-1						
6. Clerical-2			C-2						
7. Professional-1				PF-1					
8. Professional-2				PF-2					
9. <i>Production</i>					NF1				
10. <i>Clerical</i>					NF2				
11. <i>Professional</i>					NF3				
12. <i>Farmer</i>						FM			
13. <i>Non Farmer</i>						NF			
14. <i>Corporate-cap.</i>							EC1		
15. <i>Government cap</i>							EC2		
16. <i>Foreign-cap</i>							EC3		
17. <i>Land and Agr.cap</i>								CL1	
18. <i>Non-corporat cap.</i>								CL2	
19. <i>Establish. cap</i>								EC	
20. <i>Composite Lab</i>									CL
21. <i>Composite cap</i>									CC
<b>Total</b>	FM	PDN	CLR	PFN	NF	CL	EC	CC	

- **Categorisation of domestic institution incomes**

Domestic institutions' incomes need to be reclassified according to their sources, i.e. incomes from factor payments, from other domestic institutions and from the ROW. Therefore, it is necessary to introduce new institutions that receive each type of income and then transfer it to the account that collects all types of incomes. This is done for all domestic institution accounts. In addition to providing more information on the source of income, this method will also avoid linear dependency in the matrix, which would have occurred otherwise. In the SAM context, this can schematically be illustrated as follows:

Account Types	Factors	Institution-Income	ROW	ITD	ITA	Total
<b>Institution-Income(II)</b>	Income Allocation			Transfer	Transfer	Income (Y)
<b>Institution-Transfer Income from domestic Institution(ITD)</b>		Transfer				Transfer Income-Domestic
<b>Institution-Transfer Income from abroad(ITA)</b>			Transfer			Total Income-Abroad

- **Introduction of Institution Income & Consumption Account**

For modelling consumption behaviour of domestic institutions, it necessary to introduce an institution for income and an institution for consumption for each type of domestic institutions (i.e. household, firm and government) used in the model. The former receives factor and transfer incomes and makes transfer payments to other institutions, including to the corresponding institution consumption, which will spend

all of its income on consumption of goods & services. Schematically, it can be represented as follows:

Account Types	Factors	Institution-I	Institution-C	Total
<b>Institution- Income</b>	Income Allocation	Transfer		Total Income (Y)
<b>Institution- Consumption</b>		Income Allocation		Income available for consumption(C)
<b>Commodity</b>			Consumption	
<b>Total</b>		Total Expenditure (Y)	Total Consumption (C)	

- **Treatments for some specific transactions.**

There are also some specific transactions, such as Trade and Transport Margin (TTM) and factor (capital) payment from ROW, that need special attention. In many cases these transactions are very important, reflecting the specific characteristics of the Indonesian economy.<sup>10</sup> Detailed treatments of these transactions can be referred in the detailed SAMs used in the models.

The schematic representation of the new SAM as a result of the modifications above, which is then used as the benchmark data set of the model, is given in **Table**

## VI.1

<sup>10</sup> The transfers from the ROW to domestic institutions (including foreign loans, especially those to the government and domestic firm) in the 1985 SAM, for example, reflect the domestic current account deficit financing, which is not done through the domestic capital account as is common in various SAMs (and also in the Indonesian SAMs for 1990 and 1993). The capital payments to the ROW consists of direct investments to abroad -as a part of spreading portfolio risk of domestic institution's investments- and capital flights. This may be due to the current position of Indonesian foreign debt (as a result of the government budget deficits) and the adoption of open capital account, which in turn creates devaluation risk in domestic economy. The capital flight is also a typical feature of highly indebted country's economy such as Indonesian economy. Recall that, unsustainable macroeconomic policies (e.g. high inflation, public sector deficit, and accumulation of foreign debt) can make devaluation seems inevitable. Rational agents, therefore, will seek foreign assets as a hedge

### 6.3.2. Elasticity Value Chosen

Three types of elasticities used in the model need to be supplied: elasticities of substitution between labour and/or capital (in the nesting production function,  $\sigma_f$ ), between domestically produced and imported goods (in the pooling of composite commodities,  $\sigma_i$ ), and elasticities of demand for export ( $\eta$ ). Since there are no data available from other studies<sup>11</sup>, especially in the same aggregation as in the Indonesian SAMs used in the models, it is necessary to develop an ‘educated judgement’ method by making use of the international trade data from the existing SAMs as well as the characteristics of those elasticities. This method was developed given the fact that the estimated values of substitution elasticities between domestically produced and imported commodities as well as between capital and labour from the two economy (i.e. South Korea and USA) presented in the appendices, shows no clear pattern in term of their relationship both between sector and between the two types of elasticities. This suggests that the value of elasticities that should be used in the model really depends on the underlying economy.

Some principles may be defined for choosing the elasticity values, especially for the substitution elasticity between domestically produced and imported goods ( $\sigma$ ), and of export demand elasticity ( $\eta$ ). The principles can be describe as follows :

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<sup>11</sup> There is no estimate available for these elasticities. All CGE applications on the Indonesian economy reviewed in Chapter V make no estimate or even explanation on how the elasticity values are determined.



- The elasticity values used must still be in the 'reasonable range'. For the reference, estimation results from various studies are presented in the appendix.<sup>12</sup>
- For developing countries such as Indonesia, it is expected that the substitution elasticities for primary products are higher than those of manufacturing and service products. This assumption is derived from the fact that primary products are less differentiated and sophisticated than manufacturing and services, so that the domestically produced could reasonably be assumed to be close substitute to the imported one.
- The increase in the degree of substitutability/similarity between domestically produced and imported goods (as reflected by higher value of substitution elasticity) will reduce the possibility of two-way trade of those particular products. This will be reflected by higher gap between export and import of the same product. To make it comparable between sectors, the gap is measured by its share in the total production of the product. Accordingly the difference in the share of exports and imports in total production can be used as a ranking base in defining the values of elasticities. The ranking is set for each sector : primary sector and manufacturing and services sector. The elasticity values are then assigned to follow the ranking.
- A negative trade balance (i.e. more imports than exports) shows more complementary characteristics of imported goods<sup>13</sup> and therefore suggests

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<sup>12</sup> The estimated values of substitution elasticities between domestically produced and imported commodities as well as between capital and labour from the two economy (i.e. South Korea and USA) presented in the appendices shows no clear pattern for both between sector and between the two types of elasticities. This suggests that the value of elasticities that should be used in the model really depend on the underlying economy.

the substitution elasticities of that particular product should be low. In the context of export demand elasticity, trade surplus shows the power of domestically produced goods in the international market that is then reflected in higher elasticity, and vice versa.

Detailed results of the above method are presented in **Table VI.2.a.** to **Table VI.2.c.**

For defining elasticities of substitution between labour and/or capital in the nesting production function follows the rule that the assigned values of the elasticities decrease as the similarity characteristic between the two presumably decrease.

Detailed elasticity values used in the models are presented in **Table VI.3**

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<sup>13</sup> From the production side, this shows inability of domestic economy to produce 'similar' products, so that at the end the products must be imported from abroad.

#### 6.4. The Choice of Closure Rule

The closure rule is very important in CGE modelling. It defines the overall economic level and balances the number of equations and variables in the model. There are two types of closure rules that need to be specified by the modeller. Firstly, the closure rule for factor markets, where the degrees of freedom in the equations equal the number of factor classifications used in the model, and secondly, the closure rule for the savings-investment and current account deficits.

In the factor markets, setting all factors as fixed in quantity, for instance, will make the economy in classical equilibrium, since factor prices adjust to clear the market (GDP at factor cost will always be constant, reflecting the implicit full employment assumption). The alternative assumption of fixed prices for all factors will lead to the economy with no constraints from the availability of factors (i.e. the model becomes a fixed price model since all prices are determined independently of the activity level). The choice of closure of individual factor market depends specifically on aspects such as the time frame of analysis, institutional arrangements, and capacity utilisation in the underlying economy. In an economy characterised by strong trade unions, for instance, it would be reasonable to introduce some rigidities in wages, while for an economy characterised by unprotected informal sectors it is reasonable to set wages at the market clearing level.

In the models used here, all types of capital are set fixed in quantity so that price adjusts to clear the market. This reflects the scarcity and mobility of capital and is consistent with the characteristics of developing countries. In the labour markets, the wages of agricultural and production workers are fixed, allowing for

unemployment, while the wages of other types of workers are allowed to adjust according to their market clearing levels. The second closure rule is for balancing the rest of the model. The alternatives are whether the economy is 'investment-driven' or it is 'saving-driven'. Here the model is investment driven, since the aggregate investment is set exogenously and the current account deficit is accordingly set as a residual, which clears the saving-investment balance. The current account deficits are borne by the government and domestic firms. This choice is consistent with the characteristics of the underlying economy (i.e. government fiscal policy and the adoption of open capital account) and with the choice of the ROW as a numéraire (i.e. implying an adoption of a fixed exchange rate and endogenous BOP deficits).<sup>14</sup>

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<sup>14</sup> Other option of setting total saving as fixed ('saving-driven') so that the economic activities adjust accordingly seems inappropriate for the Indonesian case. This is one of the reasons why closure rule defines the overall economic activity.

Table VI.1: Schematic Representation of the Indonesian SAM used in the CGE Model

RECEIPTS	EXPENDITURE									
	Activities	Value Added	Labour	Capital	Household Incomes	Firm Incomes	Government Incomes	Household Consumption	Government Consumption	
1. Activities	1.	2.	3.	4.	5.	6.	7.	8.	9.	
2. Value Added	Activity's Value added									
3. Labour		Wages								
4. Capital		Profits /Rents								
5. Household Incomes			Wages Allocation	Profits /Rents Allocation	Transfers	Transfers	Transfers			
6. Firm Incomes				Profits /Rents		Transfers	Transfers			
7. Government Incomes				Profits /Rents	Direct Taxes	Direct Taxes	Direct Taxes			
8. Household Consumption					Consumption Payment					
9. Government Consumption							Consumption Payment			
10. Composite Commodities.	Intermediate Consumption							Final Consumption	Final Consumption	
11. Domestic Commodities										
12. Imported Commodities										
13. Exported Commodities										
14. TTM										
15. Net Indr. Tax										
16. Saving-Invst.					Savings	Savings	Savings		Savings	
17. ROW				Remittance		Transfers	Transfers		Transfers	

## EXPENDITURE

RECEIPTS	Composite Commodities.	Domestic Commodities	Imported Commodities	Exported Commodities	TTM	Net Indirect Tax	Saving-Investment	ROW
1.Activities	1.	2. Production Allocation	3.	4.	5. Income allocation	6.	7.	8.
2.Value Added								
3.Labour								
4.Capital								Remittance Transfers
5.Household Incomes								Transfers
6.Firm Incomes								Transfers
7.Government Incomes						Income transfer		Transfers
8.Household Consumption								
9.Government Consumption								
10.Composite Commodities.								
11.Domestic Commodities	Aggregation			Export Payments			Investment	Export
12.Imported Commodities	Aggregation						Investment	
13.Exported Commodities								
14.TTM		Mark-up for TTM	Mark-up for TTM					
15.Net Indirect Tax		Ind.Tax Payment	Ind.Tax Payment					
16.Saving-Invst.								
17.ROW			Import				Capital Outflows	

**Table VI.2.a: Parameter elasticity of substitution ( $\sigma$ ) and export demand ( $\eta$ ) used in the model 1985**

Types of Products	Total <sup>*)</sup>			Share (%)			Rank	$\sigma$	$\eta$
	Production	Export	Import	Export	Import	Gap			
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
AGRICULTURE									
1.AGR-FC	14511.8	144.4	421.97	1.00	2.91	-1.91	3	2.4	3.0
2.AGR-OTH	13861.3	1904.9	391.38	13.74	2.82	10.92	2	2.6	3.4
3.MINING	16706.3	9799.4	1157.49	58.66	6.93	51.73	1	2.8	3.6
NON-AGRICULTURE									
4.FOOD-PROC	15837.0	191.0	211.6	1.21	1.34	-0.13	6	1.8	2.4
5.TEXTILE	3403.4	664.6	148.8	19.53	4.37	15.15	2	2.0	2.8
6.CONSTRUCT.	20188.3	1351.2	3.5	6.69	0.02	6.68	3	2.0	2.8
7.PAP-METAL	6504.9	265.8	6393	4.09	98.28	-94.19	10	1.4	2.0
8.CHEMICAL	19385.7	6856.6	3797.2	35.37	19.59	15.78	1	2.0	2.8
9.TRADES	14319.5	171.3	117.6	1.20	0.82	0.37	5	1.8	2.4
10.HOTL-REST	5622.8	212.7	431.2	3.78	7.67	-3.89	8	1.6	2.0
11.TRANSCOM	8738.7	400.3	530.8	4.58	6.07	-1.49	7	1.6	2.0
12.BANK-INSR	3102.4	511.3	440.6	16.48	14.20	2.28	4	1.8	2.4
13.SERV-OTH	20409.7	48.9	1428.2	0.24	7.00	-6.76	9	1.6	2.0

Source : <sup>\*)</sup>Calculated from the 1985 SAM

**Table VI.2.b: Parameter elasticity of substitution ( $\sigma$ ) and export demand ( $\eta$ ) used in the model 1990**

Types of Products	Total <sup>*)</sup>			Share (%)			Rank	$\sigma$	$\eta$
	Production	Export	Import	Export	Import	Gap			
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
PRIMARY SECTOR									
1.AGR-FC	14511.8	144.4	421.9	1.00	2.91	-1.91	3	2.4	3.0
2.AGR-OTH	13861.3	1904.9	391.4	13.74	2.82	10.92	2	2.6	3.4
3.MINING	16706.3	9799.4	1157.5	58.66	6.93	51.73	1	2.8	3.6
MANUFACTURING AND SERVICES									
4.FOOD-PROC	35298.1	4064.9	1302.7	11.5	3.69	7.83	3	2.0	2.8
5.TEXTILE	47156.2	6621.4	37.8	14.0	0.08	13.96	2	2.0	2.8
6.CONSTRUCT	13984.4	5968.7	2599.8	42.7	18.59	24.09	1	2.0	2.8
7.PAP-METAL	20962.8	1931.6	23330.1	9.2	111.29	-102.1	10	1.4	2.0
8.CHEMICAL	40365.5	15175.1	12317.4	37.6	30.51	7.08	5	1.8	2.4
9.TRADES	30874.6	221.6	261.6	0.7	0.85	-0.13	7	1.6	2.0
10.HOTL-REST	14174.2	1110.9	959.4	7.8	6.77	1.07	6	1.8	2.4
11.TRANSCOM	19910.1	887.4	1130.9	4.5	5.68	-1.22	8	1.6	2.0
12.BANK-INSR	11420.3	1818.8	980.2	15.9	8.58	7.34	4	1.8	2.4
13.SERV-OTH	39321.2	361.8	3727.0	0.9	9.48	-8.56	9	1.6	2.0

Source : <sup>\*)</sup>Calculated from the 1990 SAM



**Table VI.2.c: Parameter elasticity of substitution ( $\sigma$ ) and export demand ( $\eta$ ) used in the model 1993**

Types of Products	Total <sup>*)</sup>			Share (%)			Rank	$\sigma$	$\eta$
	Production	Export	Import	Export	Import	Gap			
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
PRIMARY SECTOR									
1.AGR-FC	35644.8	171.9	1425.2	0.48	4.00	-3.52	3	2.4	3.0
2.AGR-OTH	40866.7	1752.8	449.9	4.29	1.10	3.19	2	2.6	3.4
3.MINING	35430.0	13251.7	2414.6	37.40	6.82	30.59	1	2.8	3.6
MANUFACTURING AND SERVICES									
4.FOOD-PROC	63452.8	6611.2	2614.2	10.42	4.12	6.30	4	1.8	2.4
5.TEXTILE	80964.1	13627.9	87.4	16.83	0.11	16.72	2	2.0	2.8
6.CONSTRUCT.	20336.5	14666.8	4901.9	72.12	24.10	48.02	1	2.0	2.8
7.PAP-METAL	32990.3	8491.1	34970.9	25.74	106.00	-80.27	10	1.4	2.0
8.CHEMICAL	61641.1	18357.1	18873.1	29.78	30.62	-0.84	7	1.6	2.0
9.TRADES	54570.8	421	463.4	0.77	0.85	-0.08	6	1.8	2.4
10.HOTL-REST	21880.5	2110.9	1699.3	9.65	7.77	1.88	5	1.8	2.4
11.TRANSCOM	35882.6	1686.1	2003.1	4.70	5.58	-0.88	8	1.6	2.0
12.BANK-INSR	19394.2	3455.8	1736.2	17.82	8.95	8.87	3	2.0	2.8
13.SERV-OTH	60307.2	692.1	6743.9	1.15	11.18	-10.03	9	1.6	2.0

Source : <sup>\*)</sup>Calculated from the 1993 SAM



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## CHAPTER VII

# EFFECTS OF ECONOMIC REFORM POLICIES ON THE INDONESIAN ECONOMY

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### 7.1. Introduction

This section analyses three different types of policy changes adopted as part of economic reform policies: Stabilisation, Trade Liberalisation, and Tax Reform. As discussed in **Chapter II**, each of these policy reforms could include a wide range of policy measures. Given the availability of data and the characteristics of the CGE models developed in this thesis, it is not possible to simulate all elements of the policy measures in the CGE context. The policy changes actually simulated in this thesis are listed below. In all cases the direction of the policy change can be justified on standard economic grounds (and by reference to the recommendations of various international agencies), but the size of the change is to some extent arbitrary. Two approaches to specifying the size of change are considered below.

- **Stabilisation**

This is modelled as a reduction in the government consumption expenditure on commodities (i.e. consumption of each commodity was reduced by 20 percent from the benchmark data). This reduction was chosen in the light of the consistent government deficit over the period concerned and the fact that the economy had also been suffering high inflation. In this type of situation, a stabilisation policy should involve a spending cut or dis-absorption policy to reduce inflationary pressure from the demand side. Monetary policy changes/reforms cannot be simulated in the models since financial markets and flows of funds are not modelled. The spending-

cut type of policy was part of the policy package of the IMF/World Bank stabilisation and structural adjustment programme.

- **Trade liberalisation**

Trade liberalisation is modelled as a cross-the-board reduction in the tariffs on imported commodities; initially the tariff rate of each imported commodity was reduced by 20 percent from the benchmark level. This cut was chosen given the facts that over the period concerned, the government had been reliant on import taxation as one of its income sources (and for protecting the domestic import-competing industries). The Indonesian government's commitments (with the WTO, APEC, and other ASEAN countries) towards more free international trade make trade liberalisation in the form of tariff reductions inevitable. The lowering of tariffs, in addition to other measures such as replacing quantitative restrictions with tariffs, has been part of the policy package of the IMF/World Bank conditional loans (see **Chapter II** for a detailed discussion of this).

- **Tax reform**

Here tax reform is modelled as a cross-the-board reduction in the indirect taxes levied on domestic commodities. In the initial simulations the indirect tax rate on each domestic commodity was reduced by 20 percent from the benchmark level. Over the period concerned, the government was increasingly dependent on domestic commodity taxation as one of its income sources, creating distortions in domestic markets and effectively discouraging production, since part of the output of taxed domestic goods is used for intermediate inputs to other domestic activities. The broadening of the tax base and the accompanying lowering of the tax rate, the common approach to tax reform, should reduce indirect taxation, especially for intermediate products (making domestic products more competitive).

The three scenarios of 20 percent reductions from the benchmark levels in government consumption, import tariffs, and indirect taxes on domestic commodities are then simulated for the three CGE models: 1985, 1990 and 1993.<sup>1</sup> Given the simulations chosen, it is important firstly to highlight the composition of government and household consumption with regard to the domestic and imported commodities. **Table VII.1a** summarises consumption expenditure of households (aggregated) and government on domestic and imported commodities during the periods concerned. Notice that, for both households and government, the shares of domestic commodities in consumption decline over time with corresponding increases in the share of imported commodities. In 1985, domestic commodities constituted more than 95 percent of government and household consumption, but decreased to around 91 percent in 1993. Accordingly, the share of imported commodities nearly doubled, from 5 to around 9 percent.

The shares of total consumption in total expenditure also decreased, even though in absolute terms the levels increased. During 1985-93, the share of household consumption in total household expenditure decreased from 82 to 77 percent, while for the government the change was from 53 to 40 percent. These data reflect a faster increase in total expenditure than in consumption for both households and government. Since total expenditure in any account equals total income, it follows that income increased faster than consumption. From the composition of household and government consumption, it is clear that the same changes (i.e. 20 percent reductions) in taxes on domestic commodities and import tariffs introduced

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<sup>1</sup> Given the level of aggregation in the activities and commodities used in the model, it is impossible to exactly replicate what was actually done by the Indonesian government. The same is also true for the types of simulation chosen and the magnitude of the changes. All are chosen for reasons of simplicity and clarity.

in the simulation would have different effects, as the former constitutes more than 90 percent of total consumption.

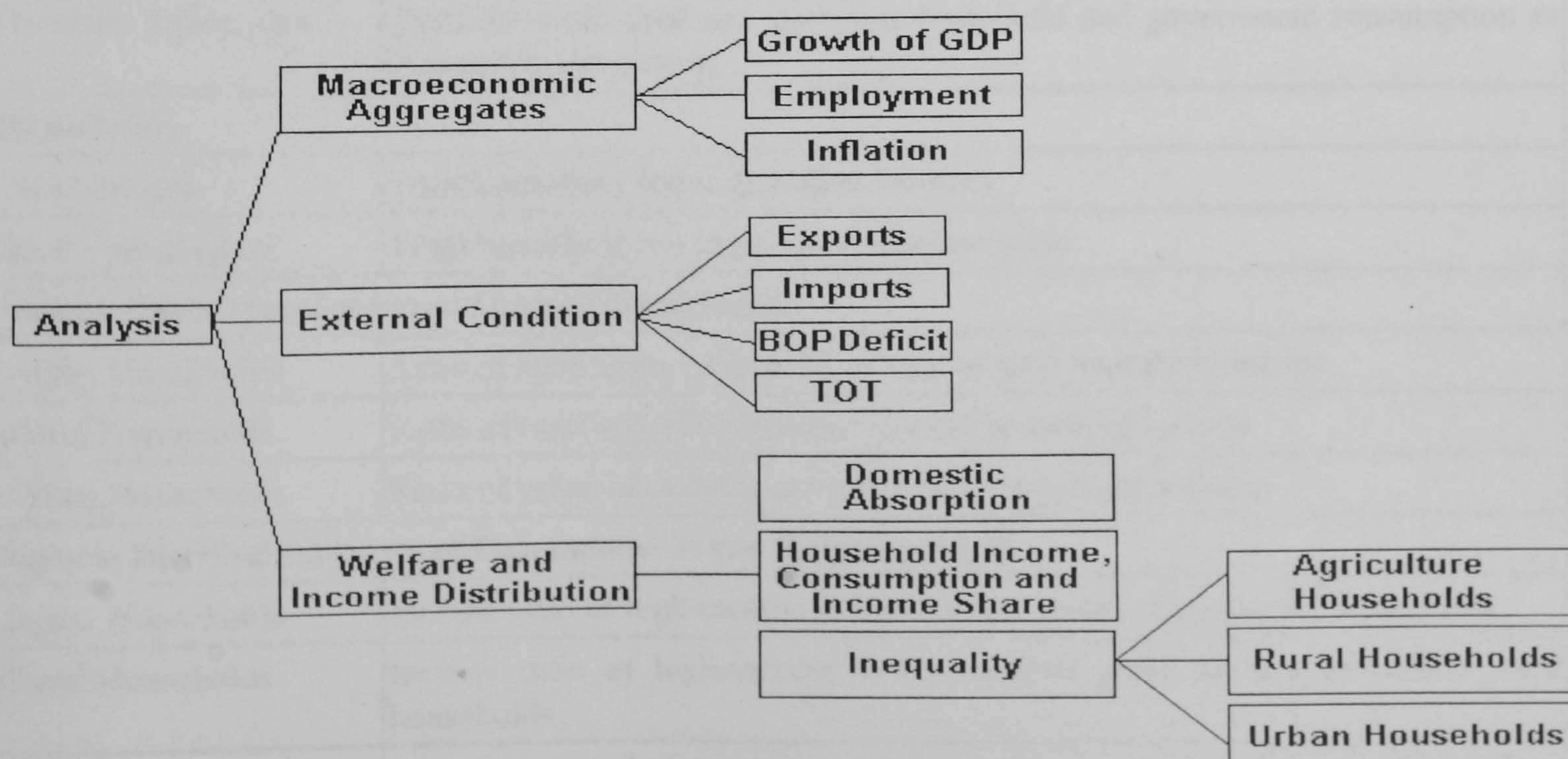
**Table VII.1a: Composition of Household and Government Consumption  
(Million Rupiah)**

Consumption of Commodities	Household			Government		
	1985	1990	1993	1985	1990	1993
(1)	(2)	(3)	(4)	(5)	(6)	(7)
Domestic	55990	117737	171261	9399	14348	22689
	(95.35)	(92.47)	(90.83)	(95.16)	(92.56)	(91.76)
Imported	2732	9593	17297	478	1154	2037
	(4.65)	(7.53)	(9.17)	(4.84)	(7.44)	(8.24)
Total Consumption	58723	127330	188559	9878	15502	24727
	[81.64]	[80.31]	[77.11]	[52.82]	[37.34]	[39.97]
Total Expenditure	71931	158544	244548	18702	41515	61867

Note: Numbers in the brackets ( ) and [ ] are percentages of total consumption and expenditure, respectively. Consumption here refers to total expenditure on products, while the expenditure refers to total outlays, including for transfers.

In analysing the simulation results, the main focus is on examining the effects of changes introduced in the simulations on key variables such as macroeconomic aggregates, external performance, welfare, incomes and income distribution.

Schematically, this can be represented as follows:



Detailed descriptions of the indicators used for analysing the effects of policy changes are summarised in **Table VII.1b**

**Table VII.1b: Description of Indicators Used in the Analysis**

<b>Variables Concerned</b>	<b>Descriptions and Measurements</b>
<b>A. Macroeconomic Aggregates (commonly used to measure economic performance)</b>	
1.GDP	Total value added measured at constant (benchmark) price. Alternatively, GDP at factor cost = GDP at market price – Net Indirect Taxes
2.Employment	Total all categories of workers in the economy
3.Inflation(GDP Deflator)	Ratio of GDP at current price to GDP at constant price. This reflects the price change faced by production sector.
<b>4.Consumer Price Index(CPI)</b>	
a. Household	Weighted average of price changes faced by households
b. Government	Weighted average of price changes faced by government
c. Total	Weighted average of price changes faced by households & government
<b>B. External Condition</b>	
<b>1. Foreign Trade</b>	
a. Real Export	Export at constant price
b. Real Import	Import at constant price
c. Trade Balance	Export-Import at constant price
d. Term of Trade	Difference between changes in the export price to that of import.
<b>2. BOP Deficit</b>	
a. Government	Current account deficits of the government account
b. Firm	Current account deficits of the domestic firm account
c. Total	Total current account deficits of the government and firm accounts
<b>C. Welfare and Distribution</b>	
1.Domestic Absorption	Total domestic final use, including household and government consumption as well as for investment
<b>2.Households</b>	
a. Total Income	Total household factor and other incomes
b. Real Consumption	Total household consumption at constant price
<b>c. Income Share (percent to total household income)</b>	
1).Agric. Households	Ratio of agriculture household income to total household income
2).Rural Households	Ratio of rural household income to total household income
3).Urban Households	Ratio of urban household income to total household income
<b>d. Income Distribution (ratio of high income to low income groups)</b>	
1).Agric. Households	Income ratio of high-income to low-income group of agriculture households
2).Rural Households	Income ratio of high-income to low-income group of non-agriculture rural households
3).Urban Households	Income ratio of high-income to low-income group of non-agriculture urban households

The indicators presented in the tables are percentage changes from the benchmark data, except for the terms of trade (TOT)<sup>2</sup>. In most cases, a positive number mean an increase or improvement, and vice versa. For income distribution indicators, positive numbers reflect an increase in income inequality which means a worsening of income distribution. Percentage changes in Balance of Payments (BOP) deficits and trade balances should also be interpreted carefully since the absolute (actual) numbers can switch from negative to positive.

The effects of individual policy changes on the variables concerned will be analysed in turn. Therefore, there are nine simulation results to be discussed, a combination of three different policies changes in three different models. In addition, an alternative scenario of standardising the magnitude of changes in the three simulations is introduced to clarify the effects as well as to make the results more comparable, especially when the same policy simulation is applied to the three models. The standardised changes are defined with respect to the benchmark GDP. For reducing government consumption, the standardised change is two percent of benchmark GDP (i.e. the government consumption was reduced such that the total amount of the reduction in GDP amounted to two percent ) while for the other two policy reforms both standardised changes result in a. approximate change of a half percent of the benchmark GDP . The two percent was chosen to correspond to the GDP changes resulting from the 20 percent reduction in government consumption in 1985, while the half percent cut in taxes/tariffs was chosen as the nearest ‘rounded’

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<sup>2</sup>  $TOT = (\text{exports at current price} / \text{import price deflator}) - \text{export at constant price}$ . A positive TOT indicates export prices are relatively higher than import prices and vice versa. By definition, TOT at the benchmark equals zero, since import and export price deflators are equal. Given the way the TOT was calculated, it is possible to construct a Gross Domestic Income (GDI), which is equal to GDP at market price + TOT. Some authors argue that GDI is actually a better economic indicator than GDP at constant price because it includes positive and negative benefits of changes in prices in the surrounding world.



number to correspond to the share (in term of GDP) of the 20 % reductions in the import tariffs in 1993.

As can be seen from **Table VII.1c**, for instance, reductions in government consumption amounting to two percent of GDP require a 20 percent cut in government consumption in 1995, a 26 percent cut in 1990 and a 25 percent cut in 1993. Similarly for import tariffs, reductions leading to a half percent of GDP need a 66 percent cut in 1985, a 33 percent cut in 1990 and a 24 percent cut in 1993. The same calculation is also applied to the reductions in indirect taxes (see last column of **Table VII.1c** for details).

**Table VII.1c: Calculation of the Equivalent Rates of Change for Standardised Change Simulations**

Description	Total	% to GDP	20% change to GDP	Equivalence rate for standard change*
(1)	(2)	(3)	(4)	(5)
<b>SAM 1985</b>				
1.Gov.Consumption	9878.11	9.91	1.98	0.20
2.Dom.Ind-Taxes	2029.22	2.04	0.41	0.25
3.Imp.Tariff	757.47	0.76	0.15	0.66
Total 2+3	2789.85	2.80	0.56	
GDP	99698.95	100.00	20.00	
<b>SAM 1990</b>				
1.Gov.Consumption	15502.78	7.76	1.55	0.26
2.Dom.Ind-Taxes	9204.5	4.61	0.92	0.11
3.Imp.Tariff	3064.94	1.53	0.31	0.33
Total 2+3	12269.42	6.14	1.23	
GDP	199755.6	100.00	20.00	
<b>SAM 1993</b>				
1.Gov.Consumption	24727.89	7.96	1.59	0.25
2.Dom.Ind-Taxes	15963.65	5.14	1.03	0.10
3.Imp.Tariff	6352.39	2.05	0.41	0.24
Total 2+3	22355.78	7.20	1.44	
GDP	310573.2	100.00	20.00	

\* Note: The standardised changes are defined by two percent of GDP for reduction in the government consumption and half percent of GDP for reductions in import tariff and indirect taxes, respectively.

Some sensitivity analyses are also conducted to determine the robustness of the results. This is done as follows: firstly, by using the same Armington and export

demand elasticity values for the three different models (i.e. instead of using three different sets of elasticity values for the three different models, as in the main simulations, in the first sensitivity analysis the elasticities values used in the 1985 model are applied in the 1990 and 1993 models); and in the second, all of the three different sets of elasticities used in the three models are halved. The first sensitivity analysis is implemented to investigate whether the different results of applying policy changes on the three different models are a result of the different reactions of the economy in the three years or of the use of three different sets of elasticity values in the models. The ‘halving’ simulation is conducted to determine how sensitive the simulation results are to the elasticity values chosen.

## 7.2. Reductions in Government Consumption

One of the underlying reasons for conducting economic reform in Indonesia has been to reduce the government deficit, or at least to maintain government revenue in the face of a perceived decrease in the government’s expected income due to factors such as an expected decrease in the world price of oil (Pangestu, 1996 and Hill, 1997). A sensible choice for simulating stabilisation is therefore a reduction in the government’s consumption. The choice is more relevant when there is high inflation, as in the Indonesian case.<sup>3</sup> **Table VII.2** summarises the results obtained from reducing the government consumption expenditure on commodities by 20 percent and by rates such that the reduction amounting to 2 percent of benchmark GDP (i.e. reductions of 20 % in 1985, 25 % in 1990 and 26 % in 1993. See column 5 of **Table VII.1c**).

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<sup>3</sup> During the period concerned, inflation in the Indonesian economy had been kept ‘under control’ (i.e. one digit inflation). The inflation rate was however still the highest among the neighbouring countries such as Singapore, Malaysia and Thailand (Hill, 1997)

In addition to decreasing government deficits (recall that the government has a planned or target consumption and finances its deficits through foreign sources such as loans), the direct effect of this policy change is a decrease in the domestic final demand that in turn brings down the domestic price level. The reduction in final demand will create fewer jobs, put downward pressure on wages and capital rents, and GDP will decrease (i.e. by nearly one percent in 1985 and a half percent in 1990 and 1993). Detailed simulation results (see the appendices to **Chapter VII**) reveal that all sectors experience declines, except for the mining sector. The most adversely affected sectors from the cut in the government spending are services, utilities, and hotels and restaurants. The simulation effects from the three CGE models look very similar, implying no significant changes in government consumption patterns.

Households are affected in both negative and positive ways. The fewer jobs mean lower aggregate incomes while the reductions in prices mean they can consume more from any given income. The overall results, however, suggest that households are worse off, as their real consumption decreases. As for the change in the external condition, the reduction in domestic prices will stimulate producers to export more, while imports decline following the decrease in domestic final demand. Accordingly, the trade balance improves, following the improvement in the government's current account deficit (a direct effect of this policy change).

Welfare decreases, as shown by the declines in domestic absorption, household income, and household real consumption. This policy has relatively favourable impacts on the agricultural households, as their share of income increases. This relative increase, however, hides the fact that their income reduction is less than other household groups, as overall household income decreases (in 1985, for instance, farmers' incomes decrease by 2.6 % while those of rural and urban

households both decrease by 2.8% (for detailed results see the appendices to **Chapter VII**). Since the simulation is a cut in government consumption, this implies that urban households receive the most benefit from higher government consumption, followed in sequence by rural and agriculture households. This can be seen in the magnitude of the negative effects of the cut on these three household groups. This policy has favourable impacts on the income distribution (i.e. reducing income ratio of top to bottom income groups) in 1990 and 1993, but not in 1985. This implies that the government's consumption during the period concerned had increasingly favoured households in the higher income groups, widening the inequality of the household income distribution.

From the results of the standardised simulations (see last three columns of **Table VII.2**), we can deduce that the adverse effects of this policy change actually declined over the period concerned. The government is also less dependent on foreign sources for financing its deficits (as can be seen from the less negative effect of this policy on the BOP deficits). It is important to note, however, that the higher adverse effects in the 1990 and 1993 results (comparisons between column 6 and 3 and between column 7 and 4 of **Table VII.2**) are partly due to the higher cut needed to obtain a standardised change of 2 percent in the benchmark GDP.<sup>4</sup>

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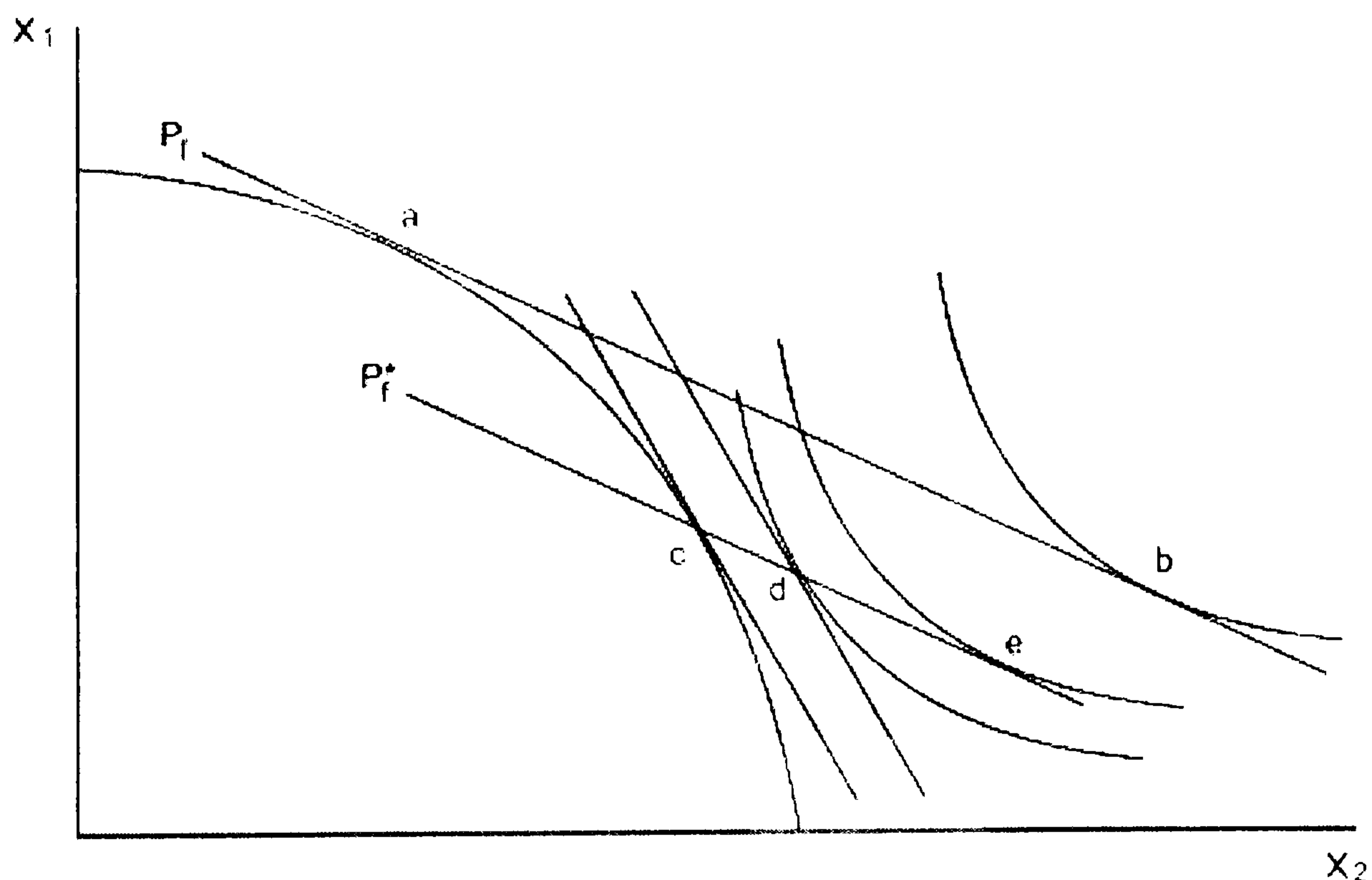
<sup>4</sup> This is in contrast to the other two other simulations, namely reductions in import tariff and indirect taxation, where lower cuts in 1990 and 1993 are enough to attain the standardised change (due to increasing share of incomes from import tariff and indirect taxation in the government total income).

**Table VII.2: Effects of Reduction in the Government Consumption on Commodities (percentage change from the benchmark)**

Variables Concerned	20% change			2% of the benchmark's GDP		
	1985	1990	1993	1985	1990	1993
(1)	(2)	(3)	(4)	(5)	(6)	(7)
<b>A. Macroeconomic Aggregates</b>						
1.GDP	-0.882	-0.534	-0.566	-0.882	-0.693	-0.705
2.Employment	-2.073	-1.135	-1.163	-2.073	-1.472	-1.451
3.Inflation(GDP Deflator)	-1.698	-1.075	-1.256	-1.698	-1.395	-1.566
<b>4.Consumer Price Index(CPI)</b>						
a. Household	-1.534	-0.851	-0.965	-1.534	-1.103	-1.203
b. Government	-1.508	-0.799	-0.906	-1.508	-1.036	-1.129
c. Total	-1.531	-0.846	-0.959	-1.531	-1.097	-1.197
<b>B. External Condition</b>						
<b>1. Foreign Trade</b>						
a. Real Export	4.783	2.785	2.822	4.783	3.628	3.535
b. Real Import	-3.675	-1.994	-2.206	-3.675	-2.584	-2.749
c. Trade Balance	23.351	76.666	60.277	23.351	99.652	75.339
d. Term of Trade	-345.716	-519.519	-948.346	-345.716	-678.541	-1190.310
<b>2. BOP Deficit</b>						
a. Government	-11102.60	-1850.59	-3093.68	-11102.60	-2400.01	-3858.44
b. Firm	594.564	121.601	113.776	594.564	157.667	141.873
c. Total	-418.285	-36.247	-20.060	-418.285	-47.041	-25.047
<b>C. Welfare and Distribution</b>						
1.Domestic Absorption	-2.373	-1.502	-1.583	-2.373	-1.951	-1.978
<b>2.Households</b>						
a. Total Income	-2.715	-1.386	-1.704	-2.715	-1.796	-2.124
b. Real Consumption	-1.209	-0.530	-0.727	-1.209	-0.687	-0.908
<b>c. Income Share (% to total household income)</b>						
1).Agric. Households	0.031	0.040	0.048	0.031	0.052	0.061
2).Rural Households	-0.018	0.018	-0.005	-0.018	0.023	-0.007
3).Urban Households	-0.013	-0.058	-0.043	-0.013	-0.075	-0.054
<b>d. Income Distribution (ratio of high income to low income groups)</b>						
1).Agric. Households	0.902	-0.052	-0.014	0.902	-0.068	-0.018
2).Rural Households	1.175	-0.343	-0.211	1.175	-0.447	-0.266
3).Urban Households	1.139	-1.038	-1.273	1.139	-1.352	-1.596

### 7.3. Reductions in Import Tariffs

Foreign trade liberalisation seeks to reduce all distortions caused by government policies in the form of tariffs or quantitative restrictions. In the following diagram, with relative world prices shown by the slope of the line  $P_f$ , under free trade the country will produce at point  $a$  and consume at point  $b$ , so exporting good  $X_1$  and importing  $X_2$ . If the country is 'small', imposing a tariff will not affect world prices, but will increase the relative domestic price of the import good to both producers and consumers. The economy will now produce at a point such as  $c$  and consume at a point such as  $d$ ,  $d$  necessarily being on a lower indifference curve than  $b$ .



The shift in production from  $a$  to  $c$  may be identified as the production effect, and could also be achieved by an appropriate subsidy to production of the importable (or an appropriate tax on the production of the exportable). Indeed, were such a subsidy used, with consumers allowed to buy at world prices, the consumption point would be at  $e$ , on an indifference curve higher than that with the tariff but lower than that under free trade. The consumption effect of the tariff (a distortion over and

above that due to the production subsidy) may therefore be identified with the difference between consumer welfare at points d and e.

**Table VII.3** summarises the results of reducing import tariffs by 20 percent of the existing rates and by such rates that the reduction in the tariff revenue amounting to 0.5 percent of benchmark GDP (i.e. reductions in import tariffs 66 % in 1985, 33 % in 1990 and 24 % in 1993. See column 5 of **Table VII.1c**). It seems that for 1990 and 1993 the a priori result of trade liberalisation is confirmed by the simulation results. The trade liberalisation increases the amount of trade and thus the availability of products in the domestic economy, which in turn increases both GDP and overall economic activity. However, in the model for 1985, the increase in imports was followed by a decrease in domestic production that make both GDP and employment decrease. Domestic absorption still increases as a result of the increase in the total goods available in the domestic economy (i.e. the increase in imports is greater than the decrease in domestic production). Applying trade liberalisation on the model for 1985 creates contractions in the economy, while on the models for 1990 and 1993 stimulate expansions. The trade liberalisations, however, produce similar effects on the three models in the form of reducing output of highly protected sectors such as chemicals, paper and metal, and food crops (see the detailed simulation results in the appendices to **Chapter VII**). Other adverse effects of this policy are the worsening of the trade balance (i.e. imports increase more than exports) and government current account deficit. The deficit deteriorates significantly due to the government's loss of income (from the tariff reduction) and adherence to its 'planned consumption'. In addition to the government's loss in income, the direct

effect of this policy is a reduction in the domestic price of imported commodities.<sup>5</sup> This will increase demand for imported products, contributing to increases in the total availability of products in the domestic economy and in aggregate demand. Demand for domestic products in the domestic economy is reduced since their prices have become relatively higher. This will induce producers to export more, but as the increase in imports is higher than that in exports, the trade balance worsens accordingly. The increase in the demand for imported products is also higher than the reduction in the demand for domestic products (due to the stronger price effect on the import side where the domestic economy is a price taker) that makes total supply of products in the domestic economy still increase. This in turn creates more activity in the domestic economy so that employment and GDP increase.

Welfare improves, as can be seen from the increases in the total domestic absorption and household real consumption in all years. This policy also has favourable impacts on income distribution among rural households (shown by a reduction in the household income ratio of top versus bottom groups) but not among the agricultural and urban households. Urban households seem to be the ones benefiting from the existing tariffs, being involved more in the activities under tariff protection. The overall impact on the households is favourable as their real consumption increases even though their nominal total incomes in 1985 and 1990 decrease.

Comparison of different years shows that the economy gets more benefits from trade liberalisation in more recent years as can be seen from the better results in the 1993 model and also from the decreasing adverse impacts of the trade

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<sup>5</sup> Recall that the domestic economy is a price taker for import market, so that a reduction in the import tariff will be fully translated into a reduction of the domestic price of the imported commodity. This reflects perfect substitution characteristics between imports and domestic goods.



liberalisation during 1985-93 (compare the first three columns of **Table VII.3**). The government, however, continues to pay the cost of this policy since its deficits deteriorate due to its reliance on income from import tariffs and its adherence to 'planned consumption' while facing a loss in its income from tariffs. This result is confirmed by the results from the simulations with standardised changes (last three columns of **Table VII.3**). The trade liberalisation has led the domestic economy to produce more, export more and import more. Finally, households end up on higher indifferent curves, as their real incomes and their real consumption both increase.

However, in reality the share of import tariff revenue in government income continually increased, from 0.76 percent of GDP in 1985 to 2.05 percent of GDP in 1993 (see **Table VII.1.c** for detail). As a consequence of this higher dependence on tariff revenue, the given change in policy has a greater impact on the government deficit in later years. Given the possible benefits from trade liberalisation, the simulation results call for the government to reduce its reliance from tariff revenue and to really embark on more free international trade.

**Table VII.3: Effects of Reduction in the Import Tariffs on Imported Commodities (percentage change from the benchmark)**

Variables Concerned (1)	20% change			0.5% of the benchmark's GDP		
	1985 (2)	1990 (3)	1993 (4)	1985 (5)	1990 (6)	1993 (7)
<b>A. Macroeconomic Aggregates</b>						
1.GDP	-0.003	0.005	0.017	-0.008	0.008	0.021
2.Employment	-0.007	0.010	0.036	-0.018	0.017	0.043
3.Inflation(GDP Deflator)	-0.025	0.001	0.012	-0.068	0.001	0.014
<b>4.Consumer Price Index(CPI)</b>						
a. Household	-0.122	-0.167	-0.241	-0.344	-0.276	-0.290
b. Government	-0.138	-0.192	-0.247	-0.387	-0.318	-0.296
c. Total	-0.124	-0.170	-0.242	-0.350	-0.281	-0.290
<b>B. External Condition</b>						
<b>1. Foreign Trade</b>						
a. Real Export	0.265	0.376	0.580	0.745	0.622	0.698
b. Real Import	0.554	0.599	0.955	1.580	0.997	1.150
c. Trade Balance	-0.370	-3.074	-3.700	-1.087	-5.163	-4.471
d. Term of Trade	-20.104	-76.129	-219.467	-56.763	-126.149	-263.883
<b>2. BOP Deficit</b>						
a. Government	605.865	172.213	366.734	1716.727	285.279	440.994
b. Firm	-43.892	-14.057	-14.785	-123.546	-23.231	-17.756
c. Total	12.370	0.851	1.135	35.801	1.461	1.386
<b>C. Welfare and Distribution</b>						
1.Domestic Absorption	0.036	0.068	0.136	0.103	0.114	0.163
<b>2. Households</b>						
a. Total Income	-0.062	-0.040	0.003	-0.171	-0.066	0.004
b. Real Consumption	0.062	0.126	0.242	0.176	0.209	0.292
<b>c. Income Share (% to total household income)</b>						
1).Agric. Households	0.012	0.003	-0.001	0.035	0.005	-0.001
2).Rural Households	-0.005	-0.006	-0.003	-0.013	-0.010	-0.003
3).Urban Households	-0.008	0.003	0.003	-0.022	0.005	0.004
<b>d. Income Distribution (ratio of high income to low income groups)</b>						
1).Agric. Households	-0.011	0.020	0.024	-0.030	0.034	0.029
2).Rural Households	-0.056	-0.001	-0.015	-0.157	-0.002	-0.018
3).Urban Households	-0.059	0.134	0.216	-0.165	0.222	0.259

#### **7.4. Reductions in Indirect Taxes on Domestic Products**

Tax reform in Indonesia includes simplifying the tax structure, broadening the tax base, levying lower and uniform tax rates and exempting taxes on intermediate inputs. The broadening of the tax base and lowering of the tax rate usually involve reductions in the level of indirect taxation on domestic commodities. In **Table VII.4**, the effects of 20 percent reductions in the indirect taxes levied on domestic products, and by such rates so that the reduction amounting to 0.5 percent of benchmark GDP, are examined.

On the production side, the direct effect of the reduction is a decrease in the domestic prices of domestic products, making them more competitive in the domestic market. This, in turn, stimulates domestic production, creates more employment and increases GDP. Detail results also show that all sectors expand, except highly protected sectors such as mining and chemicals (see appendices of **Chapter VII** for detail). The sectors benefiting most are trade, food processing, and hotel and restaurant. The increases in domestic production and employment raise household incomes, which in turn creates more demand for goods in the domestic market. Imports increase accordingly to meet the higher domestic demand, and therefore the trade balance deteriorates since exports decrease, as domestic market becomes more profitable for the producers. On the government side, this policy will reduce government income (from indirect taxation) and worsen the government deficit, as the 'lost income' has made the government less able to finance its 'planned' consumption, which is not affected by its income or by commodity prices.

In addition to improved macroeconomic performance, this policy also has positive impacts on welfare, as shown by increases in domestic absorption, household income and household real consumption. This policy also has favourable

effects on income distribution, especially among the agriculture households, as their ratio of top-to-bottom income groups continues to decline. The simulation results suggest that the government is the only agent to bear adverse effects of this policy, but this is partly due to the government's consumption behaviour and its initial budget deficits.

The actual cuts for attaining standardised changes in 1990 and 1993 decrease (i.e. from 25 percent in 1985 to 11percent and 10percent in 1990 and 1993, respectively), implying that the economy is increasingly getting more benefit from the indirect tax reform policy. The indirect tax cut stimulates producers to produce more, creating more jobs and increasing GDP. Households are better off as their incomes and real consumption continue to increase. The government, however, continues to pay the cost since its deficits worsen due to its increasing reliance on indirect taxation revenue<sup>6</sup> and its adherence to its 'planned consumption', while facing a loss in its income from taxation.

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<sup>6</sup> The share of indirect taxes in the government income continues to increase, from 2.04 percent of GDP in 1985 to 5.14 percent of GDP in 1993 (see **Table VII.1.c** for detail).

**Table VII.4: Effects of Reduction in the Indirect Taxes on Domestic Commodities (Percentage change from the benchmark)**

Variables Concerned	20% change			2% of the benchmark's GDP		
	1985	1990	1993	1985	1990	1993
(1)	(2)	(3)	(4)	(5)	(6)	(7)
<b>A. Macroeconomic Aggregates</b>						
1.GDP	0.183	0.421	0.470	0.229	0.230	0.233
2.Employment	0.429	0.895	0.967	0.539	0.488	0.479
3.Inflation(GDP Deflator)	0.303	0.886	1.091	0.382	0.483	0.540
<b>4.Consumer Price Index(CPI)</b>						
a. Household	-0.070	-0.002	-0.018	-0.086	-0.003	-0.012
b. Government	0.047	0.187	0.294	0.060	0.100	0.144
c. Total	-0.053	0.018	0.017	-0.065	0.008	0.006
<b>B. External Condition</b>						
<b>1. Foreign Trade</b>						
a. Real Export	-1.108	-1.355	-1.267	-1.388	-0.741	-0.629
b. Real Import	0.449	0.725	0.863	0.565	0.394	0.426
c. Trade Balance	-4.527	-33.505	-25.605	-5.676	-18.281	-12.682
d. Term of Trade	81.680	245.205	402.951	102.084	134.634	200.945
<b>2. BOP Deficit</b>						
a. Government	1358.273	410.553	794.100	1705.219	223.816	392.896
b. Firm	-49.702	-19.498	-20.054	-62.403	-10.645	-9.939
c. Total	72.213	14.922	13.917	90.654	8.120	6.870
<b>C. Welfare and Distribution</b>						
1.Domestic Absorption	0.497	0.900	0.981	0.623	0.491	0.486
<b>2.Households</b>						
a. Total Income	0.566	1.302	1.543	0.711	0.709	0.763
b. Real Consumption	0.638	1.300	1.550	0.799	0.710	0.769
<b>c. Income Share (% to total household income)</b>						
1).Agric. Households	-0.022	-0.041	-0.041	-0.027	-0.023	-0.020
2).Rural Households	0.010	0.007	0.012	0.012	0.004	0.006
3).Urban Households	0.012	0.034	0.029	0.015	0.019	0.014
<b>d. Income Distribution (ratio of high income to low income groups)</b>						
1).Agric. Households	-0.213	-0.030	-0.047	-0.266	-0.017	-0.023
2).Rural Households	-0.110	0.265	0.234	-0.138	0.145	0.117
3).Urban Households	-0.110	0.330	0.577	-0.138	0.181	0.289

## 7.5. Sensitivity Analysis

**Table VII.5a** to **Table VII.5f** summarise the simulation results for the sensitivity analyses. The sensitivity simulations were conducted by replicating the main or original simulations (i.e. reductions in the government consumption, import tariffs, and indirect taxes) but under two new scenarios. Firstly, by using the sets of Armington and export demand elasticity used in the model 1985 applied for the three different models (instead of using three different sets of elasticity values as in the original models) and secondly, by halving the elasticity values used in the original models.<sup>7</sup> The main purpose of the sensitivity analysis is, therefore, to observe the robustness of the functional specifications employed in the models by applying the different sets of elasticity values and reproducing the simulation results. The simulation results are then compared with the results of the original or main simulation to examine whether the results are very sensitive to the changes in the elasticity values used.

From the results of using common elasticity values in all three models (i.e. comparing the corresponding columns of **Table VII.5a** to **Table VII.5c**, respectively), there is relatively little evidence of significantly different results. The overall results seem insensitive to the three different sets of elasticity values used in the original models. The different results across the three models are therefore due more to the other parameters calibrated in the models. Moreover, the effect of using different elasticities is slightly more apparent on the price effects or nominal variables such as inflation, income and BOP deficits than on the real or constant price variables such as GDP, real consumption and foreign trade indicators.

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<sup>7</sup> Recall that in the original models, the Armington and export demand elasticities are set differently for each year (i.e. 1985, 1990 and 1993), according to the guidelines set and values chosen discussed in the Chapter VI.

Results from halving the elasticity values used in the three original models (i.e. comparing the corresponding columns of **Table VII.5e** to **Table VII.5f**, respectively), suggest that the assigned elasticity values are very crucial in determining the overall results. The ‘halving’ produces significantly different results and moreover, the difference is not only on the magnitude of changes but also on the sign of the changes. In general, for any policy changes introduced in the models, lower elasticities will produce bigger impacts on the economy. This is understandable since lower elasticity values reflect a less flexible response in the economy.

**Table VII.5a: Effects of 20 percent Reduction in the Government Consumption on Commodities under two new scenarios: the Original Models and Using the same (i.e. 1985) elasticity values for the three models.**  
(Percentage changes from the benchmark).

Variables Concerned (1)	Original Models			Using the same (1985) values		
	1985 (2)	1990 (3)	1993 (4)	1985 (5)	1990 (6)	1993 (7)
<b>A. Macroeconomic Aggregates</b>						
1.GDP	-0.882	-0.534	-0.566	-0.882	-0.533	-0.545
2. Employment	-2.073	-1.135	-1.163	-2.073	-1.131	-1.122
3. Inflation(GDP Deflator)	-1.698	-1.075	-1.256	-1.698	-1.056	-1.173
<b>4. Consumer Price Index(CPI)</b>						
a. Household	-1.534	-0.851	-0.965	-1.534	-0.836	-0.904
b. Government	-1.508	-0.799	-0.906	-1.508	-0.786	-0.849
c. Total	-1.531	-0.846	-0.959	-1.531	-0.831	-0.899
<b>B. External Condition</b>						
<b>1. Foreign Trade</b>						
a. Real Export	4.783	2.785	2.822	4.783	2.790	2.890
b. Real Import	-3.675	-1.994	-2.206	-3.675	-1.987	-2.151
c. Trade Balance	23.351	76.666	60.277	23.351	76.641	60.493
d. Term of Trade	-345.72	-519.52	-948.35	-345.72	-507.67	-881.07
<b>2. BOP Deficit</b>						
a. Government	-11102.60	-1850.59	-3093.68	-11102.6	-1850.320	-3094.290
b. Firm	594.564	121.601	113.776	594.564	121.471	113.227
c. Total	-418.285	-36.247	-20.060	-418.285	-36.344	-20.612
<b>C. Welfare and Distribution</b>						
1. Domestic Absorption	-2.373	-1.502	-1.583	-2.373	-1.499	-1.560
<b>2. Households</b>						
a. Total Income	-2.715	-1.386	-1.704	-2.715	-1.370	-1.614
b. Real Consumption	-1.209	-0.530	-0.727	-1.209	-0.528	-0.697
<b>c. Income Share (% to total household income)</b>						
1). Agric. Households	0.031	0.040	0.048	0.031	0.041	0.048
2). Rural Households	-0.018	0.018	-0.005	-0.018	0.018	-0.006
3). Urban Households	-0.013	-0.058	-0.043	-0.013	-0.058	-0.042
<b>d. Income Distribution (ratio of high income to low income groups)</b>						
1). Agric. Households	0.902	-0.052	-0.014	0.902	-0.055	-0.025
2). Rural Households	1.175	-0.343	-0.211	1.175	-0.346	-0.225
3). Urban Households	1.139	-1.038	-1.273	1.139	-1.042	-1.298



**Table VII.5b: Effects of 20 percent Reduction in the Import Tariffs on Imported Commodities under two new scenarios: the Original Models and Using the same (i.e. 1985) elasticity values for the three models.**  
(Percentage changes from the benchmark).

Variables Concerned (1)	Original Models			Using the same (1985) values		
	1985 (2)	1990 (3)	1993 (4)	1985 (5)	1990 (6)	1993 (7)
<b>A. Macroeconomic Aggregates</b>						
1.GDP	-0.003	0.005	0.017	-0.003	0.005	0.020
2.Employment	-0.007	0.010	0.036	-0.007	0.010	0.041
3.Inflation(GDP Deflator)	-0.025	0.001	0.012	-0.025	-0.001	0.007
<b>4.Consumer Price Index(CPI)</b>						
a. Household	-0.122	-0.167	-0.241	-0.122	-0.168	-0.244
b. Government	-0.138	-0.192	-0.247	-0.138	-0.194	-0.249
c. Total	-0.124	-0.170	-0.242	-0.124	-0.171	-0.245
<b>B. External Condition</b>						
<b>1. Foreign Trade</b>						
a. Real Export	0.265	0.376	0.580	0.265	0.393	0.688
b. Real Import	0.554	0.599	0.955	0.554	0.616	1.057
c. Trade Balance	-0.370	-3.074	-3.700	-0.370	-3.063	-3.531
d. Term of Trade	-20.104	-76.129	-219.467	-20.104	-77.221	-224.606
<b>2. BOP Deficit</b>						
a. Government	605.865	172.213	366.734	605.865	172.121	364.879
b. Firm	-43.892	-14.057	-14.785	-43.892	-14.045	-14.831
c. Total	12.370	0.851	1.135	12.370	0.855	1.013
<b>C. Welfare and Distribution</b>						
1.Domestic Absorption	0.036	0.068	0.136	0.036	0.069	0.142
<b>2. Households</b>						
a. Total Income	-0.062	-0.040	0.003	-0.062	-0.042	0.004
b. Real Consumption	0.062	0.126	0.242	0.062	0.126	0.246
<b>c. Income Share (% to total household income)</b>						
1).Agric. Households	0.012	0.003	-0.001	0.012	0.003	-0.001
2).Rural Households	-0.005	-0.006	-0.003	-0.005	-0.006	-0.002
3).Urban Households	-0.008	0.003	0.003	-0.008	0.003	0.004
<b>d. Income Distribution (ratio of high income to low income groups)</b>						
1).Agric. Households	-0.011	0.020	0.024	-0.011	0.021	0.026
2).Rural Households	-0.056	-0.001	-0.015	-0.056	-0.001	-0.007
3).Urban Households	-0.059	0.134	0.216	-0.059	0.135	0.232

**Table VII.5c: Effects of 20 percent Reduction in the Indirect Taxes on Domestic Commodities under two new scenarios: the Original Models and Using the same (i.e. 1985) elasticity values for the three models.**  
(Percentage changes from the benchmark).

Variables Concerned	Original Models			Using the same (1985) values		
	1985	1990	1993	1985	1990	1993
(1)	(2)	(3)	(4)	(5)	(6)	(7)
<b>A. Macroeconomic Aggregates</b>						
1.GDP	0.183	0.421	0.470	0.183	0.412	0.454
2.Employment	0.429	0.895	0.967	0.429	0.875	0.933
3.Inflation(GDP Deflator)	0.303	0.886	1.091	0.303	0.849	1.018
<b>4.Consumer Price Index(CPI)</b>						
a. Household	-0.070	-0.002	-0.018	-0.070	-0.030	-0.072
b. Government	0.047	0.187	0.294	0.047	0.161	0.245
c. Total	-0.053	0.018	0.017	-0.053	-0.009	-0.036
<b>B. External Condition</b>						
<b>1. Foreign Trade</b>						
a. Real Export	-1.108	-1.355	-1.267	-1.108	-1.378	-1.304
b. Real Import	0.449	0.725	0.863	0.449	0.711	0.836
c. Trade Balance	-4.527	-33.505	-25.605	-4.527	-33.668	-25.755
d. Term of Trade	81.680	245.205	402.951	81.680	225.884	344.479
<b>2. BOP Deficit</b>						
a. Government	1358.273	410.553	794.100	1358.273	410.038	792.751
b. Firm	-49.702	-19.498	-20.054	-49.702	-19.136	-19.533
c. Total	72.213	14.922	13.917	72.213	15.214	14.361
<b>C. Welfare and Distribution</b>						
1.Domestic Absorption	0.497	0.900	0.981	0.497	0.890	0.964
<b>2.Households</b>						
a. Total Income	0.566	1.302	1.543	0.566	1.261	1.465
b. Real Consumption	0.638	1.300	1.550	0.638	1.287	1.526
<b>c. Income Share (% to total household income)</b>						
1).Agric. Households	-0.022	-0.041	-0.041	-0.022	-0.041	-0.041
2).Rural Households	0.010	0.007	0.012	0.010	0.007	0.013
3).Urban Households	0.012	0.034	0.029	0.012	0.034	0.028
<b>d. Income Distribution (ratio of high income to low income groups)</b>						
1).Agric. Households	-0.213	-0.030	-0.047	-0.213	-0.027	-0.037
2).Rural Households	-0.110	0.265	0.234	-0.110	0.263	0.250
3).Urban Households	-0.110	0.330	0.577	-0.110	0.330	0.606

**Table VII.5d: Effects of 20 percent Reduction in the Government Consumption on Commodities under two new scenarios: the Original Models and Halving the elasticity values used in the original models.**  
(Percentage changes from the benchmark).

Variables Concerned (1)	Original Models			Halving the original values		
	1985 (2)	1990 (3)	1993 (4)	1985 (5)	1990 (6)	1993 (7)
<b>A. Macroeconomic Aggregates</b>						
1. GDP	-0.882	-0.534	-0.566	-1.075	-0.704	-0.781
2. Employment	-2.073	-1.135	-1.163	-2.525	-1.497	-1.606
3. Inflation (GDP Deflator)	-1.698	-1.075	-1.256	-2.731	-1.826	-2.138
<b>4. Consumer Price Index (CPI)</b>						
a. Household	-1.534	-0.851	-0.965	-2.383	-1.418	-1.616
b. Government	-1.508	-0.799	-0.906	-2.247	-1.317	-1.510
c. Total	-1.531	-0.846	-0.959	-2.367	-1.409	-1.606
<b>B. External Condition</b>						
<b>1. Foreign Trade</b>						
a. Real Export	4.783	2.785	2.822	4.432	2.533	2.499
b. Real Import	-3.675	-1.994	-2.206	-3.610	-2.049	-2.285
c. Trade Balance	23.351	76.666	60.277	22.085	73.364	57.165
d. Term of Trade	-345.72	-519.52	-948.35	-631.67	-936.30	-1663.76
<b>2. BOP Deficit</b>						
a. Government	-11102.60	-1850.59	-3093.68	-11115.5	-1845.91	-3072.69
b. Firm	594.564	121.601	113.776	691.054	127.884	119.625
c. Total	-418.285	-36.247	-20.060	-331.259	-30.092	-13.579
<b>C. Welfare and Distribution</b>						
1. Domestic Absorption	-2.373	-1.502	-1.583	-2.504	-1.633	-1.752
<b>2. Households</b>						
a. Total Income	-2.715	-1.386	-1.704	-3.769	-2.178	-2.665
b. Real Consumption	-1.209	-0.530	-0.727	-1.430	-0.762	-1.053
<b>c. Income Share (% to total household income)</b>						
1). Agric. Households	0.031	0.040	0.048	0.003	0.045	0.051
2). Rural Households	-0.018	0.018	-0.005	-0.007	0.020	0.001
3). Urban Households	-0.013	-0.058	-0.043	0.004	-0.065	-0.052
<b>d. Income Distribution (ratio of high income to low income groups)</b>						
1). Agric. Households	0.902	-0.052	-0.014	0.593	0.016	0.106
2). Rural Households	1.175	-0.343	-0.211	1.326	-0.350	-0.066
3). Urban Households	1.139	-1.038	-1.273	1.329	-1.006	-1.001

**Table VII.5e: Effects of 20 percent Reduction in the Import Tariffs on Imported Commodities under two new scenarios: the Original Models and by Halving the elasticity values used in the original models.**  
(Percentage changes from the benchmark).

Variables Concerned (1)	Original Models			Halving the original values		
	1985 (2)	1990 (3)	1993 (4)	1985 (5)	1990 (6)	1993 (7)
<b>A. Macroeconomic Aggregates</b>						
1. GDP	-0.003	0.005	0.017	0.001	0.009	0.027
2. Employment	-0.007	0.010	0.036	0.001	0.019	0.056
3. Inflation (GDP Deflator)	-0.025	0.001	0.012	-0.009	0.024	0.068
<b>4. Consumer Price Index (CPI)</b>						
a. Household	-0.122	-0.167	-0.241	-0.109	-0.149	-0.199
b. Government	-0.138	-0.192	-0.247	-0.126	-0.176	-0.208
c. Total	-0.124	-0.170	-0.242	-0.111	-0.152	-0.200
<b>B. External Condition</b>						
<b>1. Foreign Trade</b>						
a. Real Export	0.265	0.376	0.580	0.102	0.152	0.219
b. Real Import	0.554	0.599	0.955	0.324	0.370	0.586
c. Trade Balance	-0.370	-3.074	-3.700	-0.383	-3.216	-3.975
d. Term of Trade	-20.104	-76.129	-219.467	-15.875	-62.819	-171.936
<b>2. BOP Deficit</b>						
a. Government	605.865	172.213	366.734	614.808	173.679	372.730
b. Firm	-43.892	-14.057	-14.785	-45.433	-14.244	-15.099
c. Total	12.370	0.851	1.135	11.737	0.797	1.084
<b>C. Welfare and Distribution</b>						
1. Domestic Absorption	0.036	0.068	0.136	0.035	0.068	0.132
<b>2. Households</b>						
a. Total Income	-0.062	-0.040	0.003	-0.044	-0.017	0.058
b. Real Consumption	0.062	0.126	0.242	0.066	0.131	0.256
<b>c. Income Share (% to total household income)</b>						
1). Agric. Households	0.012	0.003	-0.001	0.013	0.003	0.000
2). Rural Households	-0.005	-0.006	-0.003	-0.005	-0.006	-0.003
3). Urban Households	-0.008	0.003	0.003	-0.008	0.003	0.003
<b>d. Income Distribution (ratio of high income to low income groups)</b>						
1). Agric. Households	-0.011	0.020	0.024	-0.007	0.018	0.015
2). Rural Households	-0.056	-0.001	-0.015	-0.058	-0.002	-0.033
3). Urban Households	-0.059	0.134	0.216	-0.061	0.132	0.181

**Table VII.5f: Effects of 20 percent Reduction in the Indirect Taxes on Domestic Commodities under two new scenarios: the Original Models and by Halving the elasticity values used in the original models.**  
(Percentage changes from the benchmark).

Variables Concerned (1)	Original Models			Halving the original values		
	1985 (2)	1990 (3)	1993 (4)	1985 (5)	1990 (6)	1993 (7)
<b>A. Macroeconomic Aggregates</b>						
1.GDP	0.183	0.421	0.470	0.220	0.483	0.552
2.Employment	0.429	0.895	0.967	0.516	1.027	1.136
3.Inflation(GDP Deflator)	0.303	0.886	1.091	0.536	1.256	1.516
<b>4.Consumer Price Index(CPI)</b>						
a. Household	-0.070	-0.002	-0.018	0.120	0.275	0.293
b. Government	0.047	0.187	0.294	0.210	0.438	0.583
c. Total	-0.053	0.018	0.017	0.133	0.293	0.326
<b>B. External Condition</b>						
<b>1. Foreign Trade</b>						
a. Real Export	-1.108	-1.355	-1.267	-1.009	-1.242	-1.155
b. Real Import	0.449	0.725	0.863	0.484	0.776	0.908
c. Trade Balance	-4.527	-33.505	-25.605	-4.285	-32.424	-24.725
d. Term of Trade	81.680	245.205	402.951	145.708	452.809	749.974
<b>2. BOP Deficit</b>						
a. Government	1358.273	410.553	794.100	1386.657	414.160	797.583
b. Firm	-49.702	-19.498	-20.054	-72.459	-22.644	-22.806
c. Total	72.213	14.922	13.917	53.884	12.316	11.426
<b>C. Welfare and Distribution</b>						
1.Domestic Absorption	0.497	0.900	0.981	0.521	0.940	1.037
<b>2. Households</b>						
a. Total Income	0.566	1.302	1.543	0.792	1.656	1.972
b. Real Consumption	0.638	1.300	1.550	0.671	1.375	1.668
<b>c. Income Share (% to total household income)</b>						
1).Agric. Households	-0.022	-0.041	-0.041	-0.014	-0.039	-0.037
2).Rural Households	0.010	0.007	0.012	0.006	0.005	0.007
3).Urban Households	0.012	0.034	0.029	0.007	0.035	0.031
<b>d. Income Distribution (ratio of high income to low income groups)</b>						
1).Agric. Households	-0.213	-0.030	-0.047	-0.126	-0.067	-0.114
2).Rural Households	-0.110	0.265	0.234	-0.139	0.239	0.111
3).Urban Households	-0.110	0.330	0.577	-0.148	0.280	0.344

## 7.6. Conclusions

The three policy changes chosen for representing stabilisation, trade liberalisation, and tax reform might not fully reflect the actual facts, but the results show that they can throw some light for understanding the effects of economic reform policies on the Indonesian economy. This is very important in the context of the current situation, where the prolonged economic crisis calls for the government to embark on economic reform. The time is matured (ripen) for the Indonesian government since other Asian countries experiencing the same financial and economic crisis such as Thailand, Malaysia, Singapore and South Korea have recovered or even bounced back from the slump (GDP growths in the year 2000 for South Korea is expected to be 7.8 %, Malaysia 6.2 %, Singapore 6.1 %, Hongkong 5.7 %, and Thailand 5.6 %. The most optimistic prediction for Indonesia is 4.2 %, which is still in doubt given the current development. See the *Economist*, April 15 and April 22, 2000).

From the stabilisation simulations we can learn that the spending cut policy, which is commonly taken as part of stabilisation process, will only make contractions in the economy, leading to the worsening of welfare status. This policy is only justifiable on the ground of improving household income distribution, as the government consumption has been increasingly favouring higher income groups, widening household income inequality. This, in turn, calls for a better resource allocation in the government fiscal policy. The adverse effects of this policy, however, decline and government seems less dependent on foreign sources for financing its deficits. The trade liberalisation simulations show that reducing import tariffs increases the amount of trade and then the availability of products in the domestic economy. This in turn improves macroeconomic performance and welfare

condition, as there are more imports, exports and production. However, the trade balance and government current account deficit worsen, as the increase in imports is higher than that in exports and the government has a 'planned consumption' while experiencing a loss in income from import tariffs. This policy has favourable impacts on the income distribution of rural households since urban households seem to be the ones benefiting from the existing tariff protection. The benefits that can be derived from having foreign trade liberalised seem to increase over the period concerned. From the tax reform simulations, reducing distortion in the domestic economy proves to improve macroeconomic performances, welfare condition and income distribution, especially among agriculture households. Government seems the only agent to bear the adverse effects of this policy. This is partly as a result of the government's consumption behaviour and initial budget deficits. The economy increasingly gets more benefits from this policy, since it stimulates domestic production and therefore creates more jobs.

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## CHAPTER VIII

# SEQUENCED VERSUS SIMULTANEOUS REFORMS AND THE IMPORTANCE OF INITIAL CONDITIONS

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### 8.1. Introduction

A general 'conclusion'<sup>1</sup> that emerges from the sequencing of economic reform literature, discussed in **Chapter II**, is that macroeconomic stabilization should precede any attempts at market liberalization (such as trade and capital account liberalization) and that trade liberalization should precede capital account liberalization. Macroeconomic stability is a necessary prerequisite for capital account liberalization because it is now recognized that excessive interest rate movements (due to capital account liberalization) contribute to financial sector fragility (as a consequence of adverse incentive and selection effects, such as borrowers undertaking riskier projects so that the quality of loans deteriorates as interest rates rise). This problem could be made worse if prudential supervision in the banking and financial sector is inadequate and/or incomplete (as in the Indonesian case prior to the crisis). A similar argument is also applied to any attempts at trade liberalization in an unbalanced macroeconomy characterized by high inflation or chronic government budget and balance of payment deficits. High inflation is likely to prompt a tightening of monetary policy, which could have a negative impact on attempts at trade liberalization if that policy leads to a substantial appreciation of the real exchange rate. High unemployment and chronic current account deficits will also increase political pressure for a reversal of the trade



liberalization (i.e. to increase protection and further employment). If the necessary condition of macroeconomic stability is not met, the adjustment costs as a result of adopting economic reform policies are likely to be higher than they would otherwise have been.

Moreover, the second argument, that trade liberalization should precede capital account liberalization, is due to the fact that the latter could increase domestic interest rates and lead to an appreciation of the real exchange rate. This would counteract the effects of trade liberalization attempts. With tariffs still in place, capital market liberalization will make allocation of capital be based on distorted prices and so might well magnify the existing distortion (Krugman 1986, Edwards 1989)

There have been some studies using the CGE approach to address issues on the effects of economic reform policy or structural adjustment programmes, including those applied to the Indonesian economy (discussed in **Chapter V**). However, none of those studies include aspects of sequencing issues in their simulations and discussions. By developing three CGE models based on three benchmark data sets for the same economy at different times, it is possible to investigate the different effects of applying the same policy changes to each of the three CGE models, since each benchmark could represent a different stage of economic development. The comparative static nature of the models, however, prevents an effective analysis of introducing a combination of policy changes in a different order, since in this context any sequence of policies introduced in the models will produce the same end result. In the comparative static context, there are no time horizon or dynamic aspects in the models, so that the relationship between the

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<sup>1</sup> Although still not unanimous.

initial and the ultimate states of the economy depend only on the differences between the initial and the ultimate values of the policy variables. This raises questions regarding the suitability of such models for addressing issues such as the sequencing of economic reforms. Moreover there is no financial sector in the models, which makes it impossible to address sequencing issues related directly to financial market reform. Nevertheless, other issues related to sequencing can be addressed, especially with regard to the role of the initial conditions in determining the ultimate result and hence the 'optimal path' of economic reform (defined as that which would give the greatest positive effects –as measured by the objective function of the government– on the economy). Since not all individual policy changes necessarily produce positive changes in the objective function, introducing a sequence of policy changes that gives a positive result initially is preferable to one that gives an initial negative change (especially if it will attract more support at the beginning of reform attempts or at least create less opposition). Another issue that can be addressed is whether the application of individual policy reforms is preferable to a simultaneous combination of two or three policy reforms.

In analyzing these issues, it is important to note one of the characteristics of reform in the Indonesian economy, that the capital account was liberalized before trade and other reforms (reflected in the models used here by an endogenously determined BOP deficit specification). The interpretation of the overall simulation results should therefore be put in the context of an already liberalized capital account.<sup>2</sup>

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<sup>2</sup> Through out the sequencing simulations, this feature is maintained to reflect the actual conditions. Possible changes such as introducing capital controls or adopting a flexible exchange rate so that BOP deficit is maintained are not implemented since this would significantly alter the behaviour of the models.

## 8.2. Sequencing of Economic Reform Policies

For sequencing analysis, it is helpful to establish a composite economic indicator that can be used as a basis for comparing the simulation results from applying different policy combinations to each of the three models. The indicator should reflect the main concerns of economic development. In this context, the main goal/strategy of Indonesian economic development has been to achieve **economic growth, stability and equality** (famously termed in Indonesian as “Trilogi Pembangunan Ekonomi”). Economic growth is necessary to increase the per capita income of the growing Indonesian population, while ‘stability’ refers not only to the domestic price level but also to such wider aspects as economic welfare. The economic growth and stability strategies aim at improving the aggregate welfare of the population, while the ‘equality’ strategy aims at reducing the income gap between the rich and the poor. It is difficult to specify ‘stability’ in the objective function,<sup>3</sup> it is assumed to be embodied in the improvement of both the level and the distribution of income. Accordingly, the objective function value (OFV) of the Indonesian economic development has been defined as:

$$\mathbf{OFV} = \mathbf{Y}^{\alpha} \mathbf{E}^{1-\alpha}$$

where:

Y = The improvement in the average living standard measure, alternative measures of which are growth in GDP, in total household consumption, or in total domestic absorption.

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<sup>3</sup> Normally we seek to maximise/minimise objective functions. It is difficult to do this for variables which need to be stabilised. A possible approach to overcoming this is by minimising the variation (around some specified level policy target level), but this is difficult in the CGE context (due to difficulties in setting the target and the lack of time series data).

$E =$  The change in equality, measured by changes in the income inequality index, which is calculated as one minus the coefficient of variation (CV) of household incomes, and

$\alpha =$  The typical Cobb Douglas parameter, which is used to represent the main emphasis of the Indonesian economic development. A higher value of  $\alpha$  implies a greater emphasis on growth rather than on equality, and vice versa. For simulating possible differences in emphasis, three values of  $\alpha$  were used, namely 0.3, 0.5 and 0.7.

The results of OFV calculations using the formula and the three living standard measures proposed above are identified as OFV-GDP Equality (OFV-GE), OFV-Consumption Equality (OFV-CE), and OFV-Absorption Equality (OFV-AE). The CV of household income is chosen as the dispersion measure (i.e. the inequality index) since it is unit free and relatively straightforward in terms of its interpretation. A higher CV reflects a higher income dispersion and vice versa. This clear indicator is preferable to other inequality indices, such as the Gini coefficient, since these can create complications in some cases so that they must be interpreted cautiously. The CV index is also free from 'group interest', since it is calculated across all household groups. In this respect, the CV represents income distribution in the social welfare function, neglecting political economy issues.<sup>4</sup>

The main emphasis of economic development also needs to be taken into account in defining the value of the  $\alpha$  parameter. As Indonesia's economy has developed the

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<sup>4</sup> Considering political economy issues may lead to different ways of measuring income inequality, since an improvement in income distribution of a particular household group such as agriculture, rural or urban households, could become the main concern of the government, especially for attracting support for the economic reform attempts.

emphasis on different aspects of economic development has been altered (as part of choosing the best strategy in the relevant situation). At the beginning, stabilization was set as the main concern, which was subsequently changed to growth and equality. Accordingly the calculation of the objective function is conducted under three scenarios: firstly, more emphasis on equality (i.e. where  $\alpha=0.3$ ); secondly, equal concern with growth and equality (i.e. where  $\alpha=0.5$ ); and thirdly, more emphasis on growth (i.e. where  $\alpha=0.7$ ).

**Tables VIII.A to Table VIII.C** summarize the results of calculating the objective function based on the results of the sequencing simulations, which involve the three policy changes discussed in **Chapter VII**, namely stabilization (ST), trade liberalization (TL) and tax reform (TR). The OFV calculation is carried out for the three different scenarios (i.e. three different values of  $\alpha$ ) and the three different living standard measures. In addition, Graphs VIIIA.1a to VIIC.3c present the changes in the OFV as a result of the introductions of the three policy changes alternately, so that the ‘optimal path’ of economic reform can be presented schematically.

The overall results from **Table VIII.A to Table VIII.C** suggest that:

- There is a trade off between the growth in living standards and reduced income inequality: policies that improve average living standards have adverse effects on the income distribution. This feature is consistent over all types of individual and combined policies, except for the individual policy of trade liberalization.
- The application of stabilization will produce the biggest adverse effects on the OFV, due to the decline in the average living standard, although income

equality actually improves. These results are consistent across all scenarios and living standard measures. The same pattern also applies to the application of stabilization plus trade liberalization (ST-TL), stabilization plus tax reform (ST-TR), and of all three policies at once. Rare exceptions of positive OFV are found for introducing ST-TR and for introducing all three policies at once in 1990 and 1993 (but even then only with  $\alpha = 0.30$  and use of the GDP indicator).

- Applying the individual policy of trade liberalization produces negative effects on the OFV in 1985. This is due to the decline in the average living standard, although the income distribution is improved. For 1990 and 1993, the results are very different, since the income distribution worsens while the growth in living standards could decrease or increase, depending on the indicators used (GDP increases for both years whereas absorption decreases. Household consumption decreases in 1990 but increases in 1993).
- Tax reform produces positive effects on the OFV due to the increase in the average living standard, but at the cost of greater income inequality. This result is consistent for all scenarios and living standard measures. The same pattern also obtains when applying tax reform plus trade liberalization (TR-TL), due to the stronger positive effects of tax reform.
- The third scenario (i.e.  $\alpha = 0.7$ , so putting greater emphasis on the growth in living standards) produces bigger effects in terms of OFV, both in positive and negative ways.

Other findings from **Table VIII.A** (using GDP as the living standard measure) are that the results for the 1985 models are different to those for 1990 and 1993. The results of the last two look very similar, except in the result of applying trade liberalization under the third scenario ( $\alpha = 0.7$ ). From **Table VIII.B** (using household consumption as the living standard measure), the results of the 1985 model are also different to those of 1990 and 1993, especially for the results of applying stabilization plus tax reform and all three policies with first scenario. The results for the 1990 and 1993 models are very similar, except when applying second scenario (i.e.  $\alpha = 0.5$ ) for combinations of stabilization and trade liberalization and of stabilization and tax reform. For **Table VIII.C** (using domestic absorption as the living standard measure), the results are similar to those of **Table VIII.B**, especially for the results of applying individual policy reforms and a combination of tax reform and trade liberalization. However, applying all three-policy reform always produces negative effects in all scenarios, and the results for 1985, 1990 and 1993 models are very similar.

Some lessons that can be derived from the simulations in this chapter are: Firstly, the different results from introducing the same policy changes in different years show that the initial conditions could be crucial in determining the results of any policy changes. For instance, applying a policy combination of ST-TL and ST-TR on the models for 1990 and 1993 seems justifiable, while this is not the case for the 1985 model. This difference may in turn affect the policy choices that can favourably be adopted.

Secondly, assuming that implementing first the policy changes that give positive effects for the economy is crucial for gaining support and establishing credibility (i.e.

creating less opposition), a sensible choice for sequencing of economic reform in Indonesia (given the existing conditions) should be to start with tax reform policies (i.e. removals of distortions in the domestic commodities market). This can then be followed by trade liberalization and stabilization policies. By having a less distorted domestic market (as a result of the adoption of tax reform policies), the benefits from the other reforms can be more readily realized.

Thirdly, if a reduction in the government budget deficit at the beginning of economic reform attempt is a matter of urgency (so that a stabilization policy must come first), then the sequencing results suggest that the stabilization should not be done only by an expenditure-reducing type of policy; rather it should include other policies that reduce the existing distortions in the domestic economy, such as the tax reform simulated in this thesis. The better results obtained by adopting tax policy reform after stabilization policy (i.e. comparing the results of stabilization and stabilization followed by tax reform) suggest that this is the case.

Fourthly, if the need to improve foreign sector performance is more urgent (i.e. tackling chronic capital account deficits), so that trade liberalization is called for, the results of the sequencing simulations suggest that trade liberalization can not be carried out by removing import tariffs only, since this will in fact make the deficits worse while improvements in macroeconomic performance are not guaranteed. The previous argument of the need to include policies directed at tackling distortions in the domestic markets, such as tax reform, is also applicable in this case.

Fifthly, in order to gain support and overcome credibility problems, it would be better for the Indonesian government to put more emphasis on income distribution issues



rather than on economic growth when setting the main objective of the economic reform policies.<sup>5</sup> This is based on the observation that the effect of economic reform policies on income distribution is more favourable than that on economic growth. Finally, if the Indonesian government can only maintain the existing conditions and adopt the policy reform introduced in this simulation, the best path seems to be to reform the existing taxation at the beginning of the economic reform, which can then be followed by adopting trade liberalization. Stabilization policies can then be introduced to further magnify the benefits of having less distorted domestic market and more international trade.

The fact that there is an urgent need to further dismantle the existing distortions in the domestic market (in order to gain from a typical economic reform policy such as reducing import tariffs) indicates that the actual government policies adopted during the period concern (1985-93) were not the 'best ones'. This is aside from other issues in liberalizing the capital account at an early stage, which is not really examined in this thesis.

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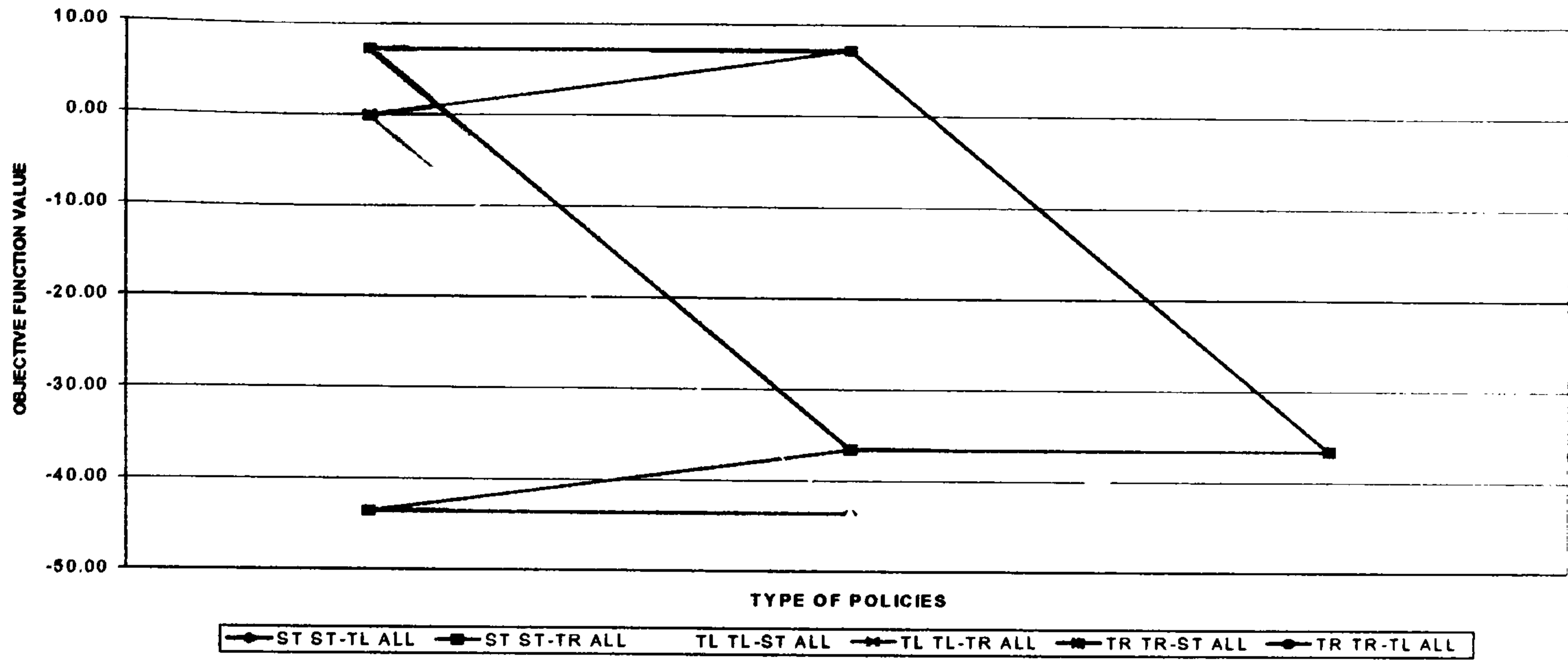
<sup>5</sup> Assuming the economic reform is announced at the beginning (as suggested in Chapter II) and the government is asked to be judged on the OFV defined.



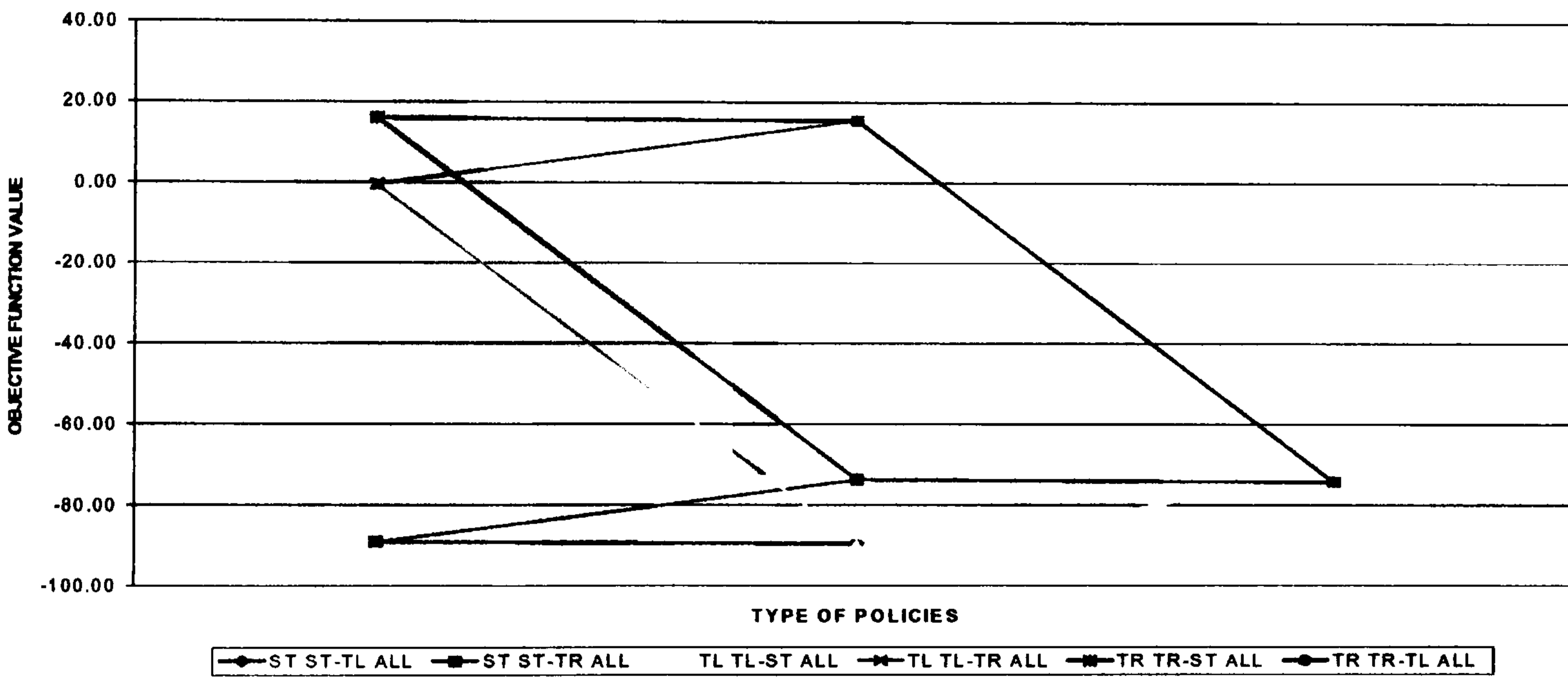




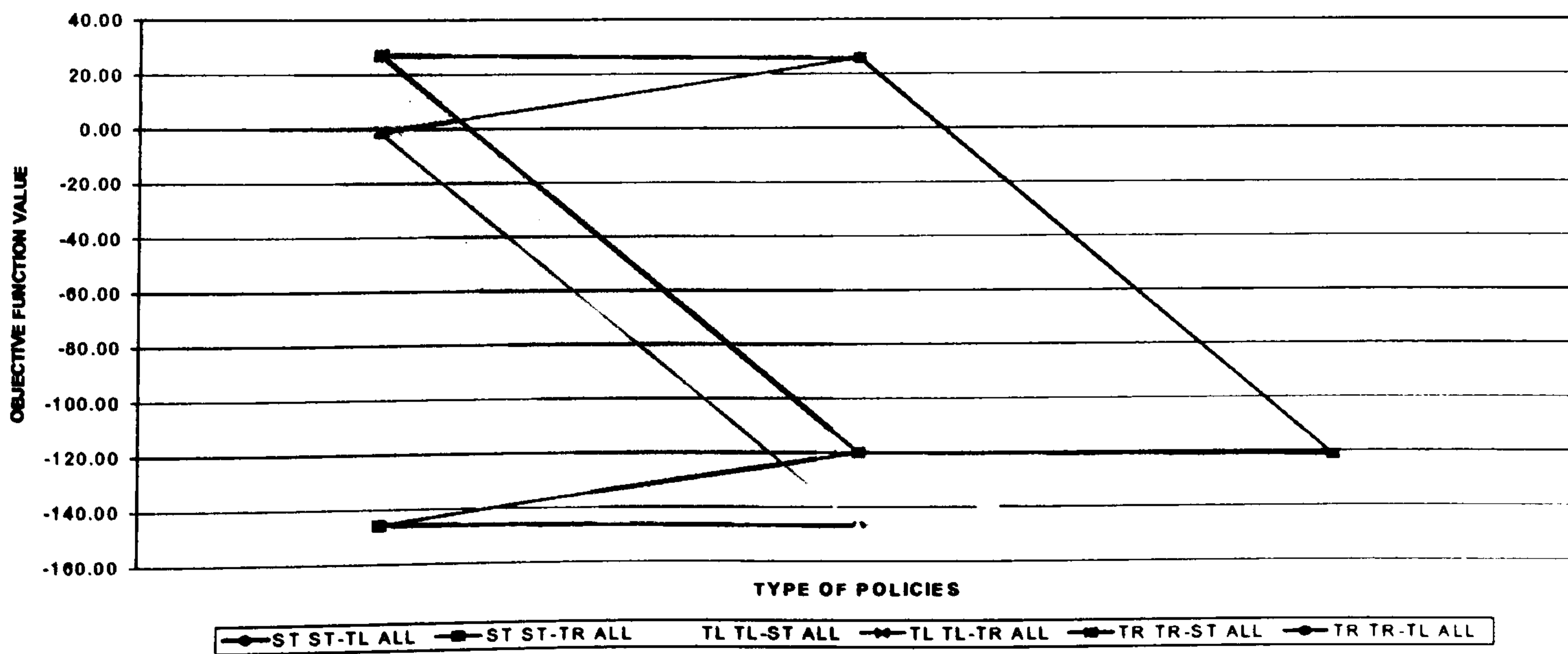
Graph VIII.1a: SEQUENCING OF ECONOMIC REFORM POLICIES, 1985  
(OFV: 0.3;0.7)



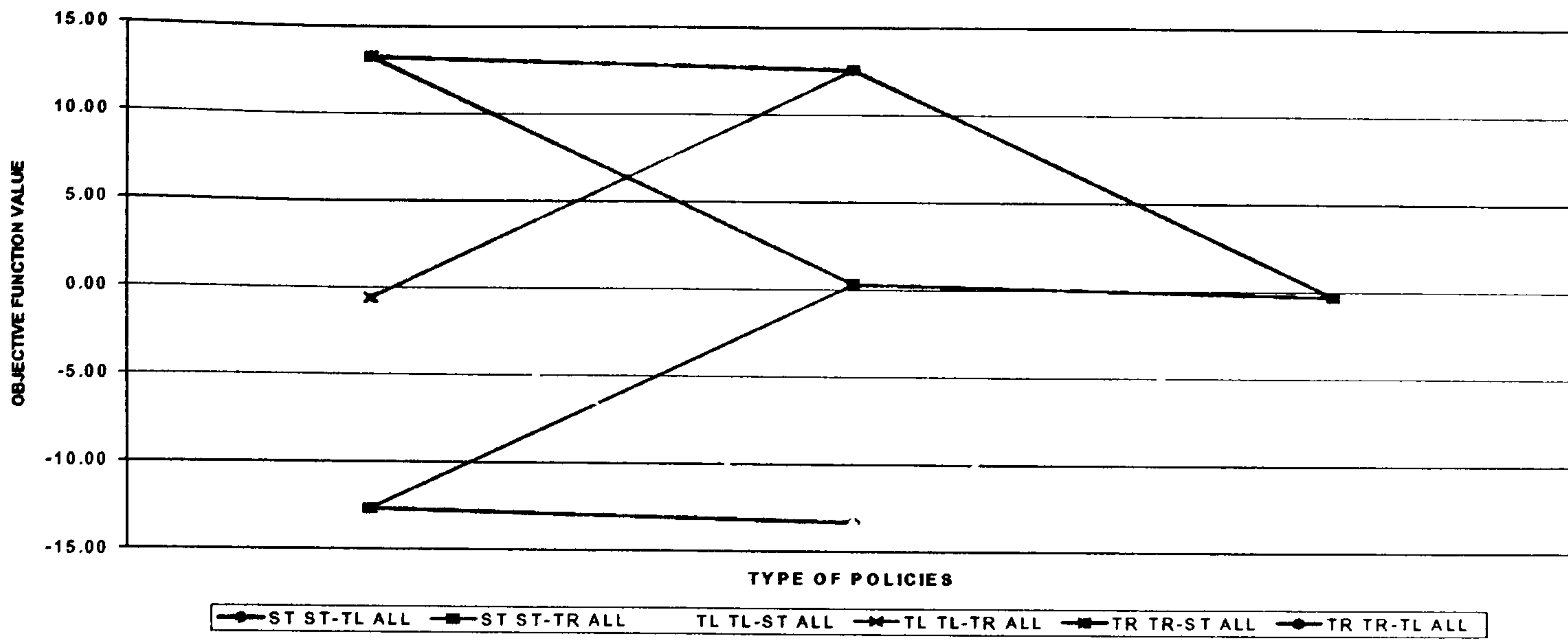
Graph VIII.1b: SEQUENCING OF ECONOMIC REFORM POLICIES, 1985  
(OFV: 0.5;0.5)



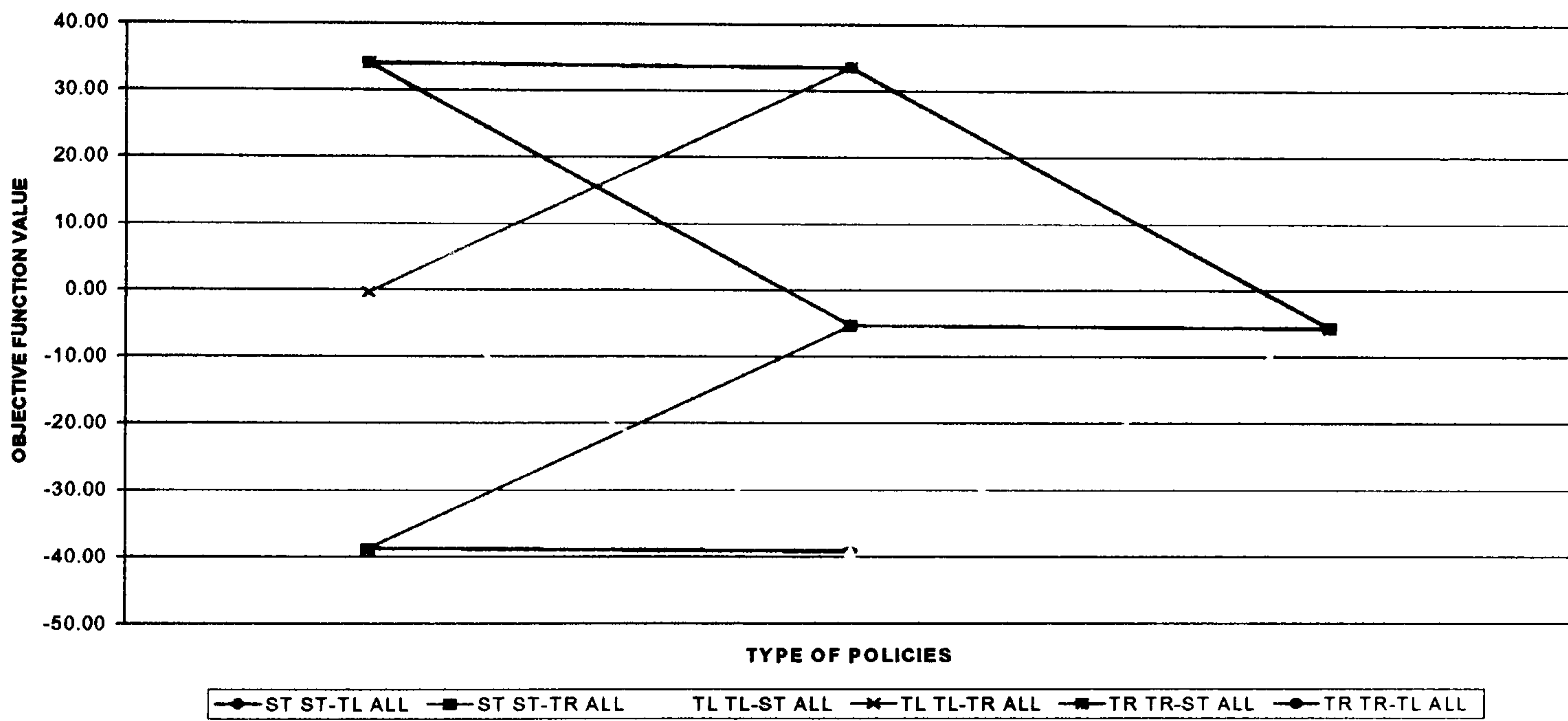
Graph VIII.1c: SEQUENCING OF ECONOMIC REFORM POLICIES, 1985  
(OFV: 0.7;0.3)



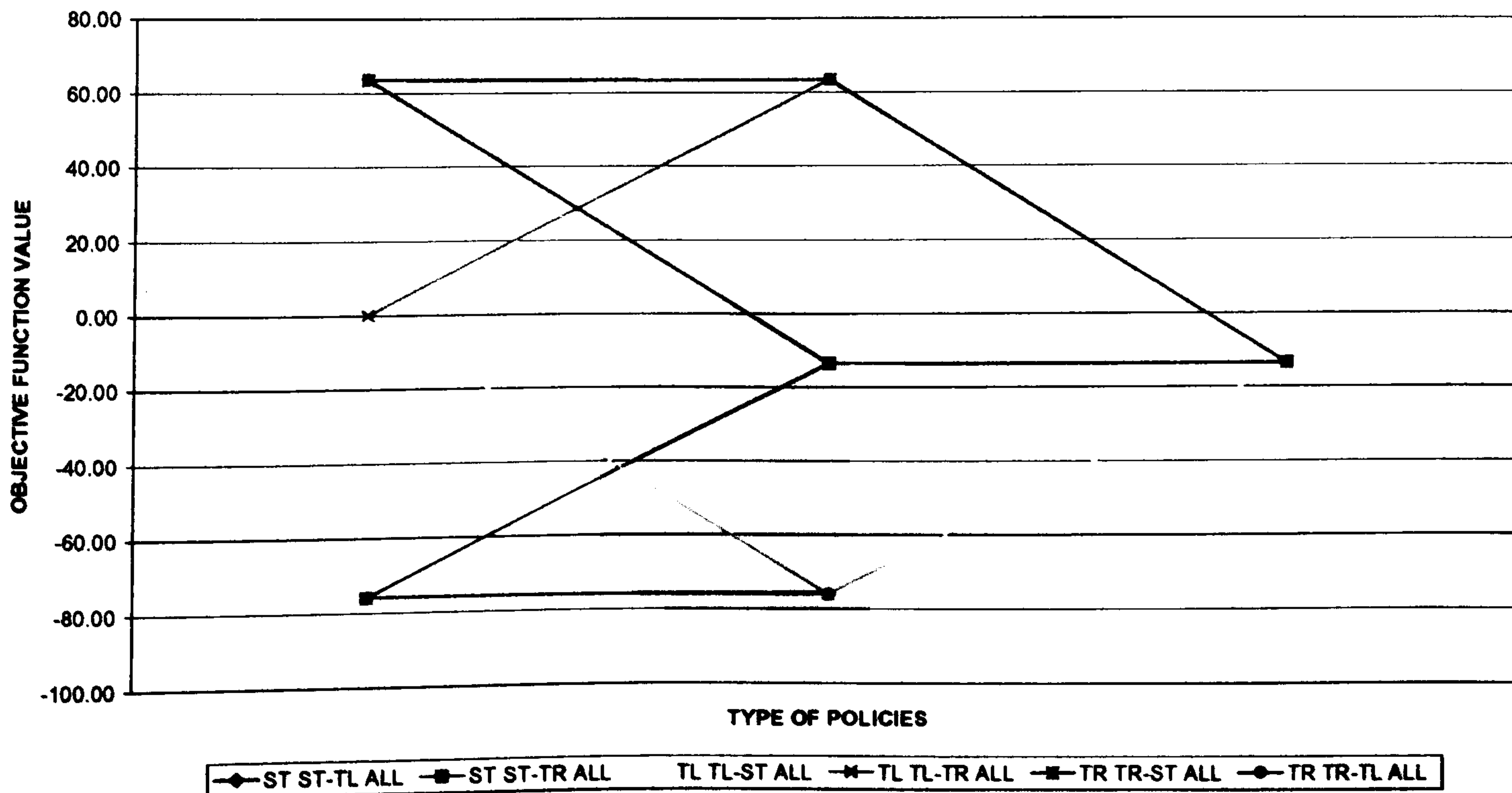
Graph VIII.2a: SEQUENCING OF ECONOMIC REFORM POLICIES, 1990  
(OFV: 0.3;0.7)



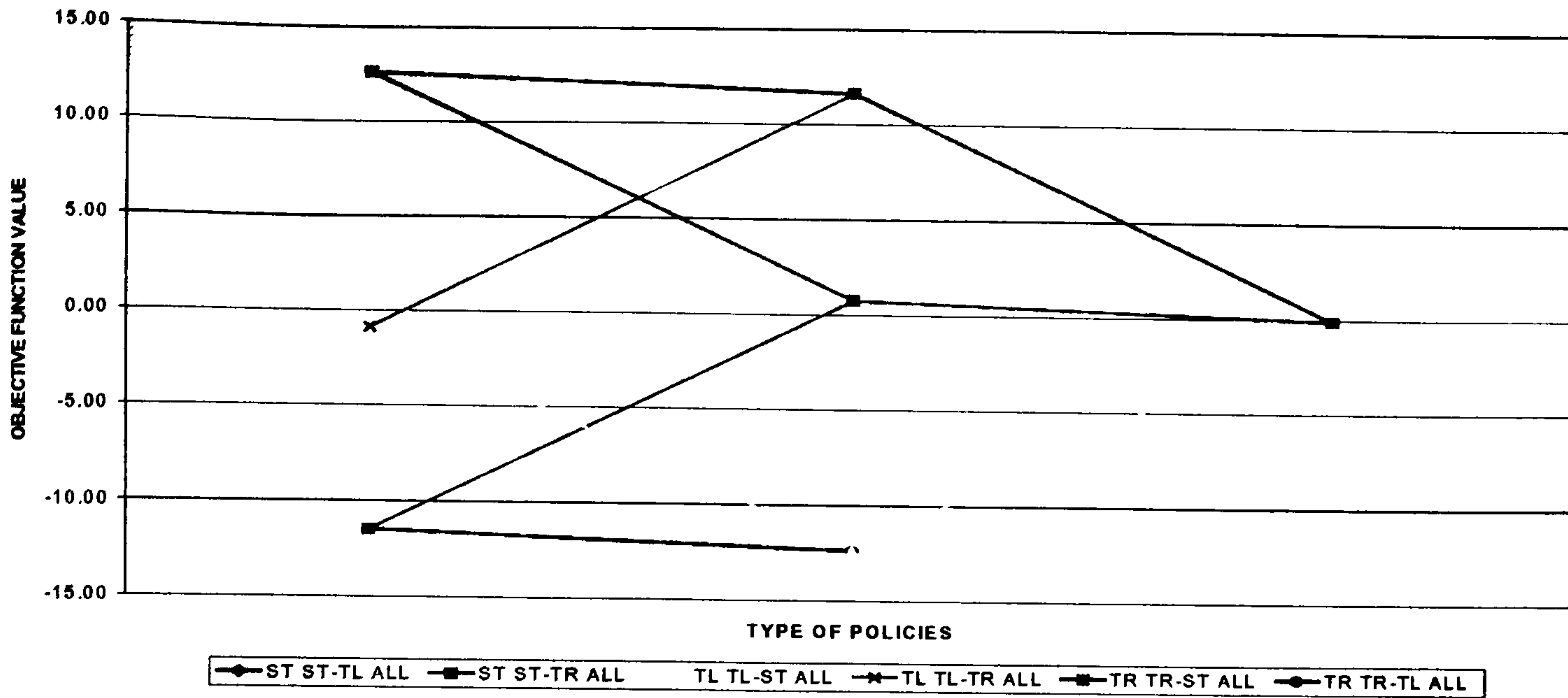
Graph VIII.2b: SEQUENCING OF ECONOMIC REFORM POLICIES, 1990  
(OFV: 0.5;0.5)



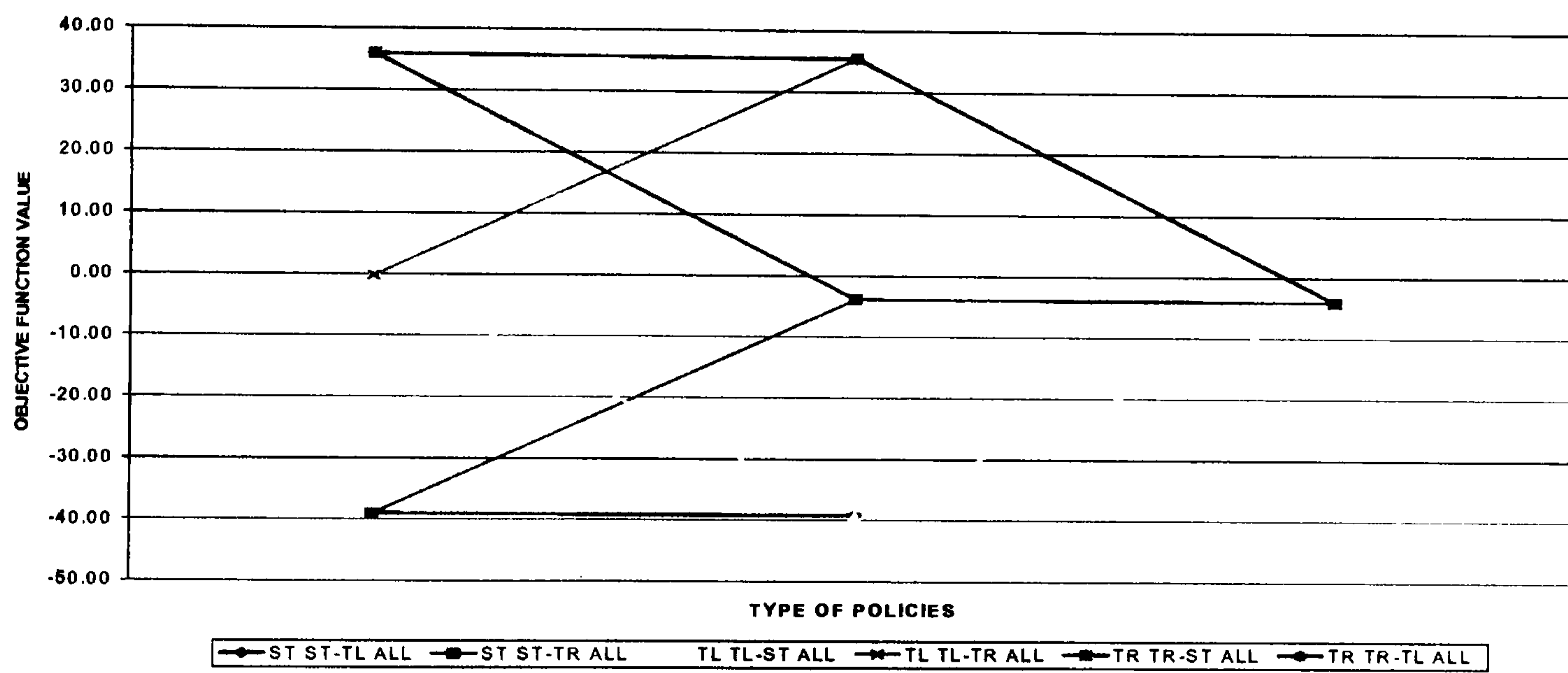
Graph VIII.2c: SEQUENCING OF ECONOMIC REFORM POLICIES, 1990  
(OFV: 0.7;0.3)



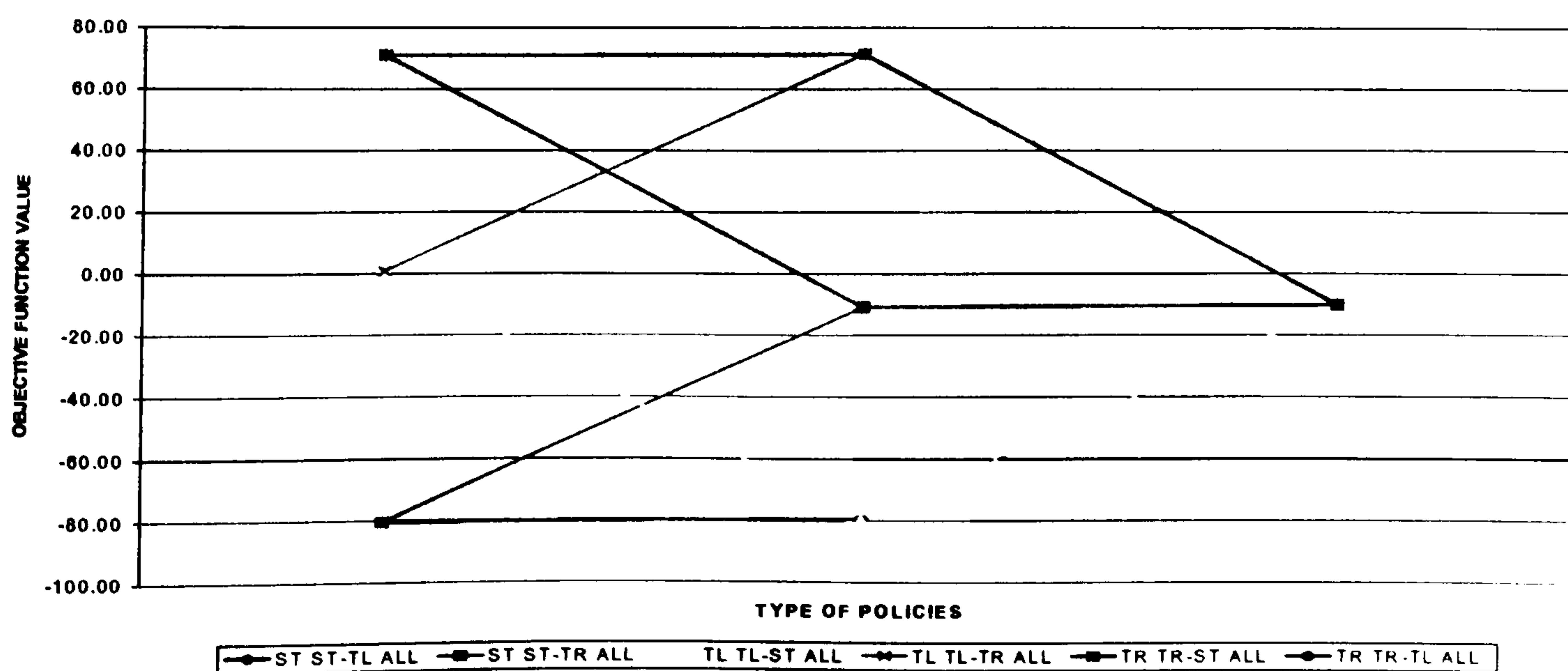
Graph VIII.3a: SEQUENCING OF ECONOMIC REFORM POLICIES, 1993  
(OFV: 0.3;0.7)



Graph VIII.3b: SEQUENCING OF ECONOMIC REFORM POLICIES, 1993  
(OFV: 0.5;0.5)



Graph VIII.3c: SEQUENCING OF ECONOMIC REFORM POLICIES, 1993  
(OFV: 0.7;0.3)



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## CHAPTER IX

### SUMMARY AND CONCLUSIONS

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The World Development Report 1991: "The Challenge of Development" highlights a consensus that has emerged among economists on the best approach to economic development, which is to adopt what is called the 'market friendly approach', including policies favouring openness and export-led growth. The perceived advantages of this approach have led to a major shift in the emphasis of economic policies pursued by many developing countries from inward-oriented, import-substituting policies to the outward-oriented, export-led growth policies. Many developing countries, including Indonesia, have embarked on economic reform to increase efficiency and to transform the domestic economy into an open-oriented one. The international donors and lenders have also attempted to push developing countries in the direction of greater outward orientation by making their assistance conditional on such economic reform. The empirical evidence, however, suggests that many economic reform attempts have been triggered by balance of payment and other crises, including major political and economic crises (as in the Indonesian case in the late 1960s and 1990s). Therefore there have been reforms to mitigate crisis conditions, to make a fundamental alteration in the underlying structure of economic policy, or to improve economic policy in general (Krueger 1992)

Problematic issues related to economic reforms include the role of initial conditions, the nature and extent of the reform, the role of outside agencies and creditors, the appropriate speed and sequencing of reforms, and credibility. While useful in identifying the gains from reforms, economic policy analysis is



insufficiently sensitive to be able to provide answers to all of the other issues, including the adjustment costs associated with economic reform (Krueger 1992, Greenaway & Morrissey 1992). In the absence of distortions, all markets can be liberalised immediately and simultaneously to reach the long run equilibrium. In the real world, however, many other issues should be taken into account. For examples, adjustment in the financial sector may be very fast, whereas the response in the real sector may be sluggish. Government can not undertake all liberalising measures simultaneously, and this might create negative welfare implications since distortions in one sector are reduced or eliminated while those in others remain. This shows that sequencing of economic reform is crucial and must be determined on a case-by-case basis (Falvey and Kim, 1992). There is an 'optimal' order of economic liberalisation, which may vary for different liberalising economies depending on their initial conditions and other factors. It seems that there is no single approach common across countries according to which policy reforms should proceed (McKinnon, 1993, Levy, 1993, Krueger and Frenkel in Edwards 1986, 1990). World Bank research on eight economies (i.e. Japan, Four Asian Tigers, Indonesia, Malaysia and Thailand) shows that there is no single "East Asian Model" of development. This reinforces the view that economic policies and policy advice must be country-specific.

In the context described above, CGE models developed in this thesis serve as a tool for conducting various economic policy analyses relevant to the on-going concern in the Indonesian economy. The modelling development was made possible given the availability of SAMs in Indonesia which has been an integral part of the national statistical system. The SAMs provide complementary economic indicators that concern not only the macroeconomic aggregates but also the socio-economic structure and distributional aspects of the economy. The Indonesian SAMs for 1985.

1990 and 1993 form the basis for the development of the CGE models in this study. The three SAMs have similar classifications and structure, which focus as much on the distributional aspects of income as on the structure of production (Pyatt and Round, 1977).

Descriptive analysis based on the three SAMs reveals that rapid economic growth in Indonesia during the last three decades has been accompanied by significant structural changes as reflected in the composition of the sectoral value added.<sup>1</sup> The role of agriculture sector declined relatively and was substituted for by manufacturing. At the same time the services sector has continued to grow as the economy moves from a traditional to a modern structure. During the period of 1985-1993, Indonesian GDP increased more than 6 % per year. The agriculture sector still grew at about 3% per year, but its share continued to decline, from 40.9 % (in 1985) to 31.4% (in 1993). This was due to the higher expansion (more than 10 % per year) in manufacturing and services (more than 7 % annually). Despite the decrease in the share of agriculture's value added in total GDP, the role of agriculture sector as the main source of income remained important, as can be seen from the share of the number of agriculture workers, which remained at about 43 %.

Summaries of the four different accounts derived from the SAMs (i.e. production, domestic institutions, savings-investment, and rest of the world accounts) yield more detailed information. The ratio of input to output increased from 41.3% in 1985 to 45.0% in 1993. During 1985-93, saving rate increased 17.7% annually, while household and government consumption increased at rates of 15.7% and 12.2%, respectively. The growth rate of savings was however still lower than the growth rate of investment, which grew at 19.7% per year. This created a savings-investment gap

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<sup>1</sup> It is important to note, however, that all economic indicators derived from the SAMs are calculated from the nominal values

of 2% in the economy that had to be financed externally. Export growth was also less than growth in imports (18.1% compared to 23.0%), which made the domestic economy increasingly dependent on the foreign sector.

The composition of value added in each sector shows that the Indonesian economy was still relatively labour intensive, and there was no fundamental change in the underlying production technologies during the period concerned. The share of wages in GDP was approximately constant at about 44% while the share of profit declined from 54% to 47%. This reflects an increase in the share of indirect taxes. The household income distributions worsened during the period concerned, especially among rural and urban households. The distribution of income among farmers improved between 1985 and 1990 but worsened afterwards. Moreover, urban households were in a relatively better condition as shown by the increase in their income share. The worst affected seemed to be the rural households.

Three CGE models for the Indonesian economy in 1985, 1990 and 1993- were then used to assess the effects of specified economic reform policies. The economy represented is an open economy where transactions with the rest of the world (ROW) are not only in the product market (i.e. exports and imports) but also in the factor, capital account and transfer markets. CGE modelling was chosen for its economy-wide general equilibrium effects, which are lacking from other types of approach. Given the three benchmark data sets used in the models (reflecting different stages of economic development) and the nature of Indonesian economic reform (liberalisation of capital account at the early stage) sequencing simulations (in which the policy changes are simulated in different order) are conducted. This has never been attempted before and raises methodological issues for its appropriateness, especially given the comparative static nature of the models. Nevertheless, the results

suggest that something can be learnt for designing better economic policies in Indonesian case.

The models embody some 'structuralist' features as can be seen from the rigidity assumed in the labour market, and imperfect substitutability between domestically produced and imported commodities, and between different types of labour and/or capital. Productions are specified as two-level nesting of CES functions with their output are then allocated to domestic demand and exports. On the import side the 'small country' assumption is adopted. Total demands, including consumption and investment, are derived from composite commodities of domestically produced and imported commodities. Households are assumed to have a fixed consumption pattern, while government is assumed to have a planned consumption, which cannot be affected by commodity prices and government's incomes. Government saving is accordingly a residual, which can be financed by foreign borrowing. It then follows that aggregate investment is fixed in quantity, reflecting the 'investment driven' nature of the economy.

Three types of policy changes as part of economic reform (i.e. Stabilisation, Trade Liberalisation, and Tax Reform) are simulated individually on the three CGE models. The representative policy changes are, respectively, reductions in government consumption, import tariffs, and indirect taxation. The economy-wide effects on important variables such as macroeconomic aggregates, external performance, welfare, income and income distributions, are then analysed. The policy change actually simulated in this thesis can be justified on standard economic grounds and by reference to the recommendations on the economic reform policies of various international agencies, but the size of the change is to some extent arbitrary. In many respect, however, the nature of the policy changes chosen can be

thought as concerning more on the illustrative nature and tractable effect analysis than on the really replicating the actual complicated government policies. The reduction of government consumption was chosen in the light of the consistent government deficit over the period concerned and the fact that the economy had also been suffering from high inflation. In this type of situation, a stabilisation policy should involve a spending cut or dis-absorption policy to reduce inflationary pressure from the demand side. Monetary policy changes/reforms cannot be simulated in the models since financial markets and flows of funds are not modelled. In addition the spending-cut type of policy has been part of the policy package of the IMF/World Bank stabilisation and structural adjustment programme.

On the import tariff reduction, the globalisation process and the Indonesian government's commitments (with the WTO, APEC, and other ASEAN countries) towards more free international trade make trade liberalisation in the form of tariff reductions (to say the least) inevitable. This is despite the fact that over the period concerned, the government had been reliant on import taxation as one of its income sources (and for protecting the domestic import-competing industries). The lowering of tariffs, in addition to other measures such as replacing quantitative restrictions with tariffs, has also been part of the policy package of the IMF/World Bank conditional loans (see **Chapter II** for a detailed discussion of this). It is important to note, however, that issues related to the quantitative restrictions have not been directly addressed in the model simulation, since it requires some modification in the existing models (and the SAMs), including some estimations for the shadow prices for the commodity subject to the quantitative restrictions. In the model discussed in this thesis, the extent of quantitative restriction (which is believed to be the case for some commodities) is embodied in the tax rate 'recorded' in the SAMs.

Simulation of the tax reform is modelled as a cross-the-board reduction in the indirect taxes levied on domestic commodities. This is in line with the common approach of tax reform policies, which should include broadening tax base and lowering tax rate, especially for the intermediate products to make domestic products more competitive.

The overall results from the stabilisation simulations suggest that the policy of cutting government spending (as part of stabilisation process) will lead to contractions in the economy, with a consequent worsening of welfare. This policy, however, has favourable impacts on income distribution. This reflects the fact that government consumption is strongly favourable to the higher income households, widening the inequality of household income distribution. This also poses a challenge for a better allocation of resources through the government fiscal policy.

The results from the trade liberalisation simulations show that, as expected, reducing import tariffs increases the amount of trade and thus the availability of products in the domestic economy. This in turn improves macroeconomic performance and welfare. However, there is a price that must be paid in terms of a worsening trade balance and an increased government current account deficit. The latter deteriorates as a result of the government's tax revenue falls and 'planned consumption'. This policy also has favourable impacts on income distribution for the rural households since urban households seem to be the ones benefiting from the existing tariff protection. Comparisons for three different years (i.e. 1985, 1990 and 1993) show that the economy is getting more benefits from trade liberalisation.

Reducing distortions in the domestic economy, represented by indirect tax reductions, proves to improve macroeconomic performance, welfare and the income distribution, especially among agricultural households. The government is the only

agent to bear the adverse effects of this policy (recall the government's consumption behaviour and initial budget deficits). The positive effects of this policy reform seem to increase over the period concerned. The tax reform stimulates producers to produce more, creating more jobs and increasing GDP.

The sequencing simulations show that initial conditions are crucial in determining the results of any policy changes. This in turn affects the policy choices that can favourably be adopted. Assuming that it very important that the first policy changes give positive effects in order to gain support and establish credibility (or create less opposition to the reform attempts), a sensible choice for sequencing of economic reform in Indonesia is to start with reducing distortions in the domestic market by introducing elements such as indirect tax reform.<sup>2</sup> This can then be followed by trade liberalisation and stabilisation type policies, such as reductions in the import tariffs and government consumption. By having a less distorted domestic market, the benefits from trade and other reform policies can then be better realised. If a deficit reduction is, however, a matter of urgency so that stabilisation policy is called for, the results of sequencing simulations suggest that spending cuts only can not overcome the problem, instead it should include other policies that reduce the existing distortions in the domestic economy. If the need for improving foreign trade performance is more urgent so that trade liberalisation is called for, this should not be carried out by removing import tariff only, but it should be accompanied by removing distortions in the domestic market at the same time. This seems to conform to the suggestion that preference should be given to the building up exports rather than (or as well as) import liberalisation in early stage of trade reform (Rodrik, 1989).

For the purpose of gaining support and overcoming the credibility problem, it might be better for the Indonesian government, in setting the main objective of economic reform, to put more emphasis on income distribution issues rather than on macroeconomic indicators such as economic growth. The economic reform policies have more favourable impacts on income distribution rather than on economic growth. The fact that there is an urgent need to further dismantle the existing distortions in the domestic market (i.e. as shown by the increase in the positive effects of tax reform over the period of 1985-93) indicates that the actual government policies adopted during the period concerned were 'not the best ones'.

Finally, possible improvements of the model can still be obtained by refining the model's specifications, such as the explicit modelling of quantitative restrictions and price controls for some domestic commodities, which have been prevalent in the Indonesian economy.<sup>3</sup> The refinement is necessary for addressing other issues related to trade liberalisation such as replacement of quantitative restrictions with tariffs. To do this, it is necessary to further disaggregate commodities and relevant factors and institutions to reflect the actual commodity market.

There is also a possibility for accommodating a more specific issue such as poverty in analysing the effects of economic reform policies. Accommodation of financial market/flow of funds as in Thorbecke's model will also make the models developed in this study more useful. This, however, requires a substantial amount of work on data collection and -in most cases- estimation, since the existing available data make it impossible. This restriction also applies to the possibility of estimating independently (econometrically) some parameters needed in the models, such as

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<sup>2</sup> This should not be confused with the empirical evidence from the successful reform in the developing countries that most successful tax reform are conducted at the later stage of economic reform. The 'content' of tax reform simulated in this thesis is quite different to those referred in the reviews.



substitution elasticities between factors, or between domestically produced and imported commodities, and elasticities of demand for export products.

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<sup>3</sup> See Robinson et al. 1997 for an example of incorporating a price control on commodity (i.e. rice) in a CGE model.

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**Table IV.2.1a: CLASSIFICATIONS OF DETAILED (ORIGINAL) SAM  
(106x106 sectors)**

		DESCRIPTION		CATEG.
(1)	(2)	(3)	(4)	(5)
F A C T O R  O F  P R O D U C T I O N	L A B O U R	Agriculture-wages	Rural	1
			Urban	2
		Agriculture-nonwages	Rural	3
			Urban	4
		Production-wages	Rural	5
			Urban	6
		Production-nonwages	Rural	7
			Urban	8
		Clerical-Wages	Rural	9
			Urban	10
		Clerical-nonwages	Rural	11
			Urban	12
		Mng/Professional-Wages	Rural	13
			Urban	14
		Mng/Professional-nonwages	Rural	15
			Urban	16
C A P I T A L	Non establishment	Land and other agriculture		17
		Own-occupied house		18
		Others-rural		19
		Others-urban		20
	Establishment	Private domestic		21
		Government		22
		Foreign		23
I N S T I T U T I O N  S	H O U S E H O L D S	Agriculture	Wages	24
			Small farmer	25
			Medium farmer	26
			Large farmer	27
	Non Agriculture	Rural	Lower group	28
			Dependent group	29
			Higher group	30
		Urban	Lower group	31
			Dependent group	32
			Higher group	33
Firm			34	
Government			35	



**Table IV.2.1a: CLASSIFICATIONS OF DETAILED SAM**  
(106x106 sectors)

Continued

DESCRIPTION		SECTOR	DOM.COM	IMP.COM
(1)	(2)	(3)	(4)	(5)
	Food Crops	36	60	82
S	Other Crops	37	61	83
E	Livestock	38	62	84
C	Forestry	39	63	85
T	Fisheries	40	64	86
O	Main Mining (Coal, Oil, Gas etc.)	41	65	87
R	Other Mining	42	66	88
	Food Processing	43	67	89
A	Textile	44	68	90
N	Construction	45	69	91
D	Papers and Metal products	46	70	92
	Chemical Industry	47	71	93
C	Utilities (Electricity, Gas and Water)	48	72	94
O	Trades	49	73	95
M	Restaurant	50	74	96
M	Hotel	51	75	97
O	Land Transport	52	76	98
D	Other Transport & Communication	53	77	99
I	Bank and Insurance	54	78	100
T	Real estate	55	79	101
Y	Public services	56	80	102
	Personal services	57	81	103
Trade Margin		58		
Transport Margin		59		
Capital Account		104		
Net Indirect Taxes		105		
Rest of the World		106		

**Table IV.2.1b: CLASSIFICATIONS OF SAM USED IN THE MODEL AND THEIR CORRESPONDING CLASSIFICATIONS IN THE ORIGINAL SAM**

DESCRIPTION			CODE OF SECTOR		
			Model	Original	
(1)	(2)	(3)	(4)	(5)	
FACTORS	L	Agriculture-wages	1	1-2	
		Agriculture-nonwages	2	3-4	
	A	Production-wages	3	5-6	
		Production-nonwages	4	7-8	
	O	Clerical-wages	5	9-10	
		Clerical-nonwages	6	11-12	
	R	Mng/Professional-wages	7	13-14	
		Mng/Professional-nonwages	8	15-16	
	CAPITAL	C A P I T A L	Land and other agriculture capital	9	17
			Non-Corporate Private Domestic	10	18-20
Corporate-Private Domestic			11	21	
Government			12	22	
Foreign			13	23	
INSTITUTIONS	H O U S E H O L D S	Agriculture	Employee	14	24
			Small farmer	15	25
			Medium farmer	16	26
			Large farmer	17	27
	Non Agriculture	Rural	Lower Group	18	28
			Dependent Group	19	29
			Higher Group	20	30
		Urban	Lower group	21	31
			Dependent group	22	32
			Higher group	23	33
Firm	Firm		24	34	
	Government		25	35	

**Table IV.2.1b: CLASSIFICATIONS OF SAM USED IN THE MODEL AND THEIR CORRESPONDING CLASSIFICATIONS IN THE ORIGINAL SAM**

Continued

DESCRIPTION		Model			Original		
		SEC-TOR	DOM. COM.	IMP. COM	SEC-TOR	DOM. COM.	IMP. COM
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
<b>S E C T O R  &amp;  C O M M O D I T I E S</b>	Agriculture-Food Crops	26	41	55	36	60	82
	Agriculture-Others	27	42	56	37-40	61-64	83-86
	Mining and Quarrying	28	43	57	41-42	65-66	87-88
	Food Processing	29	44	58	43	67	89
	Textile	30	45	59	44	68	90
	Construction	31	46	60	45	69	91
	Papers & Metal products	32	47	61	46	70	92
	Chemical	33	48	62	47	71	93
	Utilities (Electricity, Gas and Water)	34	49	63	48	72	94
	Trades	35	50	64	49	73	95
	Hotel & Restaurant	36	51	65	50-51	74-75	96-97
	Transport & Communication	37	52	66	52-53	76-77	98-99
	Bank and Insurance	38	53	67	54	78	100
Services	39	54	68	55-57	79-81	101-103	
Trade and Transport Margin		40			58-59		
Capital Account		69			104		
Net Indirect Taxes		70			105		
Rest of the World		71			106		

















		EXPENDITURE \ RECEIVE		106	TOTAL		
FACTORS OF PRODUCTION	LABOUR	Agric.-wages	Rural	1	2309.69		
			Urban	2	255.76		
		Agric.-nonwg.	Rural	3	8981.50		
			Urban	4	366.96		
		Prod.-wages	Rural	5	3158.16		
			Urban	6	3519.57		
		Prod.-nonwg.	Rural	7	1662.64		
			Urban	8	1356.23		
		Clerical-wages	Rural	9	2293.36		
			Urban	10	6121.73		
		Cler.-nonwg.	Rural	11	3231.04		
			Urban	12	3548.48		
		Mng/Prof.-wages	Rural	13	2044.08		
			Urban	14	3203.17		
		Mng/Prof.-nonwg	Rural	15	147.48		
			Urban	16	243.12		
		CAPITAL	Land and agric.cap		17		8839.94
			Own-occupied house		18		2411.90
Others-rural			19		4907.87		
Others-urban			20		4597.28		
Private domestic			21	246.60	8389.26		
Government-capital			22	604.54	12671.15		
	Foreign capital		23		12209.33		
HOUSEHOLDS	Agric.	Wages		24	0.37	2933.23	
		Small farmer		25	6.33	9466.19	
		Medium farmer		26	5.53	4701.96	
		Large farmer		27	5.67	9295.60	
	Non Ag.	Rural	Low		28	78.86	7087.67
			Dependent		29	36.40	2707.16
		Urban	High		30	23.24	7208.74
			Low		31	100.61	11842.97
			Dependent		32	32.04	3780.73
			High		33	111.95	12907.54
FIRM		34	313.30	29112.64			
Government		35	29.70	18702.44			
PRODUCTS	Food Crops		36		14511.83		
	Other Crops		37		5294.88		
	Livestock		38		4843.33		
	Forestry		39		1600.54		
	Fisheries		40		2122.50		
	Main Mining(Oil, Gas, Coal, etc)		41		15855.89		
	Other Mining		42		850.38		
	Food Processing		43		15837.01		
	Textile		45		3403.43		
	Construction		45		20188.33		
	Papers and Metal products		46		6504.99		
	Chemical Industry		47		19385.74		
	Utilities (Elect. Gas&Water)		48		1801.91		
	Trades		49		14319.47		
	Restaurant		50		4688.90		
	Hotel		51		933.91		
	Land Transport		52		5614.39		
	Other Trans & Com.		53		3124.32		
Bank and Insurance		54		3102.45			
Real estate		55		4831.42			
Public services		56		10547.63			
Personal services		57		5030.62			
Trade Margin		58		13813.41			
Transport Margin		59		4206.53			
DOMESTIC	Food Crops		60	144.44	16900.38		
	Other Crops		61	1473.51	6480.90		
	Livestock		62	34.03	5702.37		
	Forestry		63	124.74	2284.64		
	Fisheries		64	272.71	3225.73		
	Main Mining(Oil, Gas, Coal, etc)		65	9778.81	15886.45		
	Other Mining		66	20.55	1552.56		
	Food Processing		67	191.01	18848.73		
	Textile		68	664.57	3939.63		
	Construction		69	1351.24	21340.60		
	Papers and Metal products		70	265.83	7993.66		
	Chemical Industry		71	6856.56	22107.44		
	Utilities (Elect. Gas&Water)		72		1802.62		
	Trades		73	171.25	15196.78		
	Restaurant		74	86.32	4824.82		
	Hotel		75	126.43	968.73		
	Land Transport		76	11.40	5681.51		
	Other Trans & Com.		77	388.90	3135.97		
Bank and Insurance		78	511.30	3119.93			
Real estate		79	11.40	4979.13			
Public services		80	2.04	10592.21			
Personal services		81	35.46	5098.10			
IMPORTS	Food Crops		82		478.08		
	Other Crops		83		428.31		
	Livestock		84		18.94		
	Forestry		85		4.75		
	Fisheries		86		2.33		
	Main Mining(Oil, Gas, Coal, etc)		87		1055.44		
	Other Mining		88		163.94		
	Food Processing		89		296.69		
	Textile		90		199.39		
	Construction		91		5.61		
	Papers and Metal products		92		8275.80		
	Chemical Industry		93		5133.33		
	Utilities (Elect. Gas&Water)		94		0		
	Trades		95		2897.74		
	Restaurant		96		165.11		
	Hotel		97		266.14		
	Land Transport		98		54.35		
	Other Trans & Com.		99		476.49		
Bank and Insurance		100		440.61			
Real estate		101		464.33			
Public services		102		718.12			
Personal services		103		248.86			
Capital Account		104		25987.18			
Net Indirect Taxes		105		2789.85			
Rest of the World		106		24117.64			
TOTAL				24117.64			



























**Appendix 5.1: Model characteristics**

<b>Model :</b>	Behrman, J.R, Lewis, J.D, and Lofti, S (1989)
<b>Benchmark Data</b>	1980
<b>Main Purpose :</b>	To analyze impact of price fluctuations in international markets for primary products on the Indonesian economy. especially the macroeconomic, sectoral and distributional consequences.
<b>Dimensionality</b>	12 production sectors/activities, 5 factors, 4 households, 4 other institutions (government, firm, capital account and the rest of the world).
<b>Functional Forms/ Main Characteristics</b>	Follows closely the model of Lewis 1991.
<b>Simulation</b>	Changing world prices of oil and agricultural products. In addition there is a simulation of alternative exchange rate regimes (flexible and fixed exchange rate specifications).
<b>Main results /Conclusions</b>	One has to make trade-offs in assessing the impacts of price instability since there is no case in which the impacts are only good or bad. There is also no clear cut indication that the fixed exchange rate specification dominates flexible one, and vice versa.



**Appendix 5.2: Model Characteristics**

<b>Model :</b>	Jeffrey D. Lewis (1991)
<b>Benchmark Data</b>	1980 and then 1985
<b>Main Purpose :</b>	To examine issues of government finances and international trade, such as tax policy and government revenue performance, the consistency of Indonesia's medium term plan, macroeconomic implication of real exchange rate management and the structural impacts of export-oriented industrial growth.
<b>Dimensionality</b>	18 production sectors/activities, 6 factors, 4 types of households and 3 borrowing institutions.
<b>Functional Forms/ Main Characteristics</b>	Introduction of imperfect substitutability characteristics on the demand side and imperfect transformability on the production side (for the export and domestic markets).
<b>Simulation</b>	See Behrman, Lewis and Lofti, 1989; Devarajan and Lewis 1991; Devarajan, Ghanem and Thierfelder, 1997.
<b>Main results/ Conclusions</b>	See the summary of each model in Behrman, Lewis and Lofti, 1989; Devarajan and Lewis 1991; Devarajan, Ghanem and Thierfelder, 1997

**Appendix 5.3: Model Characteristics**

<b>Model :</b>	Devarajan, S. and Lewis, D (1991)
<b>Benchmark Data</b>	1985
<b>Main Purpose :</b>	Examining the appropriateness of rules-of-thumb commonly used as guidance for conducting economic reform package, namely devaluation, trade and capital account liberalizations, fiscal and monetary policies.
<b>Dimensionality</b>	13 production sectors/activities, 5 factors, 4 types of households, 4 other institutions (Government, firm, capital account and the rest of the world).
<b>Functional Forms/ Main Characteristics</b>	Follows closely Lewis, 1991. In addition, there is also a two sector analytic model for clarifying the impact of policy simulations.
<b>Simulation</b>	Devaluation, changing world prices and lowering tariff mean level and dispersion
<b>Main results /Conclusions</b>	The rules of thumb are based on models that bear virtually no resemblance to the economy in question. Therefore, they can be justified only on the grounds of administrative simplicity and reduced rent seeking, rather than on the argument that they improve economic welfare.

**Appendix 5.4: Model Characteristics**

<b>Model :</b>	Devarajan, S, Ghanem, H and Thierfelder (1997)
<b>Benchmark Data</b>	1985
<b>Main Purpose :</b>	To examine whether the presence of labor unions strengthens or weakens the benefits to be gained from economic reform.
<b>Dimensionality</b>	Follows the Lewis 1991 model. Production sectors (30 activities) were split into two categories: Unionized (17 sectors), and non-unionized (13 sectors)
<b>Functional Forms/ Main Characteristics</b>	Follows closely the Lewis 1991 model with a modification in the labour market specification for introducing a labour union, which is assumed to have a Cobb-Douglas utility function
<b>Simulation</b>	20 % reduction in the government spending
<b>Main results /Conclusions</b>	Greater freedom of unions is superior to the current minimum wage policies and is also preferable on equity grounds.

**Appendix 5.5: Model Characteristics**

<b>Model :</b>	David Roland-Holst (1992)
<b>Benchmark Data</b>	1980
<b>Main Purpose :</b>	To evaluate Indonesian adjustment policy over the period 1980-1986, with particular attention to the growth and distributional implications of adjustment
<b>Dimensionality</b>	6 production sectors/activities, 8 factors, 8 types of households, 4 other institutions (Government, firm, capital account and the rest of the world).
<b>Functional Forms/ Main Characteristics</b>	Based on the micro-macro general equilibrium model developed by Bourguignon, Branson and de Melo (1990).
<b>Simulation</b>	Three alternative policies are considered, reflecting the actual fiscal policy adopted during the period concerned, trade reorientation, and using monetary policy for stabilization.
<b>Main results /Conclusions</b>	More efficacious policies could have been implemented, resulting in more moderate primary export dependence and less terms of trade instability. The policies reflect a deliberate attempt to shift the export orientation of Indonesia toward more diversified and sustainable trade patterns.

**Appendix 5.6: Model Characteristics**

<b>Model :</b>	Thorbecke, E and Byung Kim (1992)
<b>Benchmark Data</b>	1980
<b>Main Purpose :</b>	To compare alternative adjustment packages to the ones actually adopted by the government in terms of their effects of on the Indonesian socioeconomic system, and particularly on income distribution.
<b>Dimensionality</b>	14 production sectors, 9 factors (4 types of labor and 5 kinds of capital), 8 types of households, and other institutions including: 1 aggregated company, 4 types government current expenditure categories and 8 types of government capital expenditure categories, the rest of the world and other accounts such as trade and transport margins, indirect taxes and subsidies. In addition, more institutions are identified in the financial sectors, including commercial bank, and the central bank. There are also 6 types of assets, namely currency, demand deposits, time deposits, foreign deposits, equity, and foreign bonds.
<b>Functional Forms/ Main Characteristics</b>	Integration of financial sector to portray the impact of stabilization policy through both the real and financial markets. Output is a CES function of a composite labor and capital (fixed in short term and flexible in long term). Export and domestic sales are determined by a CET function. Import and domestic sales are combined through an Armington function. Household consumption is derived in two sophisticated stages. Aggregate consumption for each household group is assumed to be a function of its permanent and transitory incomes. Each consumption on goods is derived through a two-level utility maximizing specification. At the upper level aggregation a restricted form of the almost ideal demand system (AIDS) is postulated and for the lower level, a conventional LES specification is chosen.
<b>Simulations</b>	Five scenarios are simulated, namely: equi-proportional budget retrenchment, increased government investment and reduced government current expenditures, accelerated devaluation, and monetary contraction and expansion
<b>Main results /Conclusions</b>	The adopted adjustment strategy conformed best to the prevailing preference function of the government, which included among its major objectives growth, equity and the restoration and maintenance of internal and external equilibrium.

**Appendix 5.7: Model Characteristics**

<b>Model :</b>	Temenggung, Y.A(1995)
<b>Benchmark Data</b>	1985
<b>Main Purpose :</b>	To examine the impacts of the tax sharing system currently adopted by the government.
<b>Dimensionality</b>	Two regions: Java and Outer Islands. In each region there are 2 factor accounts, 9 production sectors/activities, 10 types of households and other institutions (regional and central governments, firm, capital account and the rest of the world).
<b>Functional Forms/Main characteristics</b>	Follows closely the Lewis 1991 model, but with the additional introduction of regional issues
<b>Simulation</b>	Calculating multiplier effects as well as running a set of counterfactuals reflecting a presumably better tax policy.
<b>Main results /Conclusions</b>	The existing tax policy, in which central government collects 'major' taxes, provides a means to strengthen economic performance (measured by GDP growth and current account balance), since it can be used for correcting vertical fiscal imbalance. A revenue sharing system favoring outer islands may however result in a better, regionally oriented fiscal policy

**Appendix 5.8: Model Characteristics**

<b>Model :</b>	Iwan J. Azis (1996)
<b>Benchmark Data</b>	1985
<b>Main Purpose :</b>	To examine the impacts of economic reform on various macroeconomic variables and the income distribution
<b>Dimensionality</b>	30 production sectors/activities, 8 factors, 8 types of households and 3 borrowing institutions.
<b>Functional Forms/Main Characteristics</b>	Imperfect substitutability on the demand side and imperfect transformability on the production side as well as short run and long run characteristics. Introduction of two parameters: 'degree' (reflecting the intensity of government controls on capital flows) and 'risk' (to capture the fast emergence of the capital market).
<b>Simulations</b>	<p>Comparative static (one period) and dynamic (multi-period) simulations. Scenario 1: Emulation of actual conditions as well as policy responses by assuming that there were enlargements in the tax-base (reflected in the reduction of tax-rates), improvements in productivity (reflected in the intermediate input coefficients) and private investment, and reductions in price distortions (devaluation).</p> <p>Scenario 2: No improvement in the price distortions, tax-base and private investment. Emulation of actual conditions as well as policy responses by assuming that there were enlargements in the tax-base (reflected in the reduction of tax-rates), productivity improvements (as reflected in the intermediate use coefficients)</p> <p>Scenario 3: scenario 2 but with a change in the government investment allocation (less concern with agriculture).</p> <p>Scenario 4 : Scenario 3 but with productivity improvement</p> <p>Scenario 5: Scenario 2 but without adjustment in the exchange rate.</p> <p>Scenario 6: Scenario 1 but without current and capital accounts liberalizations.</p>
<b>Main results /Conclusions</b>	The presumably actual policies adopted by the government are not optimal.

**Appendix 5.9: Model Characteristics**

<b>Model :</b>	Wuryanto, L.E (1996)
<b>Benchmark Data</b>	1990
<b>Main Purpose :</b>	To examine the impacts of a more decentralized fiscal system on the Indonesian economy
<b>Dimensionality</b>	Two regions: Java and Outer Islands. In each region there are 2 factor accounts, 15 production sectors/activities, 10 types of households and other institutions (regional and central governments, firm, capital account and the rest of the world).
<b>Functional Forms/Main Characteristics</b>	Output is specified as a CES function of intermediate inputs and value added. The consumption of intermediate inputs is treated as a Leontief function with no substitution possibilities either intra- or inter-regionally. Labor is assumed to be free to move between sectors but not regions since there is no labor migration specification. The small country assumption is adopted for the export and import markets.
<b>Simulation</b>	Changing the existing fiscal policy of the central government.
<b>Main results /Conclusions</b>	Decentralizing the existing fiscal system would generate greater national economic growth and a lower amount of government foreign borrowing.



**Appendix 5.10: Model Characteristics**

<b>Model :</b>	Robinson, S, El-Said, M. et al. (1997)
<b>Benchmark Data</b>	1990
<b>Main Purpose :</b>	Analysing economy-wide impacts of changes in production technology, protection and market structure on resource allocation, production and trade.
<b>Dimensionality</b>	34 Activities/Commodities, 12 factors, and 11 institutions.
<b>Functional Forms/ Main Characteristics</b>	Incorporates a specification of the rice market and models the behaviour of the Indonesian Logistic Agency (BULOG). CES and CET functions are used to represent production and trade aggregation functions. Consumer expenditures are determined using Stone-Geary utility functions for each household.
<b>Simulations</b>	An adverse productivity shock, a favourable productivity shock and a favourable productivity shock without BULOG interventions.
<b>Main results /Conclusions</b>	There is inefficient allocation of resources within the agriculture sector and the rest of economy if BULOG maintains its price support programmes when there are significant increases in the rice productivity. The program is also costly and strains the government accounts.

## Appendices 6.2: Elasticity Specifications: South Korean Economy

Sector	Elasticity of substitution	
	Intermediate goods	Capital/Labour
1. Agriculture	1.139	0.789
2. Coal Mining	2.191	1.541
3. Metal Mining	1.274	1.541
4. Food, Beverages, & Tobacco	1.133	1.746
5. Textile & Apparel	2.708	1.151
6. Paper, Wood and Products	1.585	1.218
7. Chemical and allied products	2.612	1.098
8. Refined oil products	2.359	2.000
9. Coal products	2.359	2.000
10. Stone, clay and glass products	1.628	1.267
11. Primary metals	1.446	1.382
12. Fabricated metal products	3.280	0.943
13. General Machinery	3.066	0.677
14. Electrical & etc. equipment	2.110	0.521
15. Precision instruments	3.100	1.272
16. Transportation equipment	3.585	0.344
17. Other manufactures	1.984	1.272
18. Electricity	2.000	2.266
19. Gas utilities	2.000	2.266
20. Water utilities	2.000	2.266
21. Construction	2.000	1.105
22. Wholesale & retailing trade	2.000	2.266
23. Transportation & warehousing	2.000	1.457

## Appendices 6.3: GTAP Elasticities

Commodities	Elasticity of substitution	
	Between factors (labour and Capital)	Between imported and domestic goods
0 Paddy rice	0.56	2.20
1 Wheat	0.56	2.20
2 Other grains	0.56	2.20
3 Non-grain crops	0.56	2.20
4 Wool	0.56	2.20
5 Other livestock products	0.56	2.80
6 Forestry	0.56	2.80
7 Fisheries	0.56	2.80
8 Coal	1.12	2.80
9 Oil	1.12	2.80
10 Gas	1.12	2.80
11 Other minerals	1.12	2.80
12 Processed rice	1.12	2.20
13 Meat products	1.12	2.20
14 Milk and Milk products	1.12	2.20
15 Other food products	1.12	2.20
16 Beverages and Tobacco	1.12	3.10
17 Textiles	1.26	2.20
18 Wearing apparel	1.26	4.40
19 Leather products	1.26	4.40
20 Lumber	1.26	2.80
21 Pulp, paper products etc.	1.26	1.80
22 Petroleum and Coal	1.26	1.90
23 Chemicals, Rubbers and Plastics	1.26	1.90
24 Non-metallic minerals	1.26	2.80
25 Primary ferrous metals	1.26	2.80
26 Non-ferrous metals	1.26	2.80
27 Fabricated Metal products	1.26	2.80
28 Transport industries	1.26	5.20
29 Other machinery and equipment	1.26	2.80
30 Other manufacturing	1.26	2.80
31 Electricity, water and gas	1.26	2.80
32 Construction	1.40	1.90
33 Trade and Transport	1.68	1.90
34 Other services (private)	1.26	1.90
35 Other services (government)	1.26	1.90
36 Ownership of dwellings	1.26	1.90

Source: GTAP database

**Appendices 6.4a: Calculated share (factor) parameters in the Production (Value Added) functions**

Factor	Value added	Absolute			Share			Percentage Difference		
		1985	1990	1993	1985	1990	1993	85-90	85-93	90-93
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
LB-AG-WG	AG-FC	1502.7	3974.5	4954.8	0.117	0.156	0.156	33.3	33.3	0.0
LB-AG-NW	AG-FC	7360.3	14512.4	22992.3	0.574	0.568	0.722	1.0	25.8	27.1
LB-PRO-WG	AG-FC	4.9	21.8	26.1	3.85E-04	8.53E-04	8.21E-04	121.2	112.9	3.8
LB-PRO-NW	AG-FC	5.0	5.3	9.3	3.86E-04	2.08E-04	2.93E-04	46.2	24.0	41.1
LB-CLR-WG	AG-FC	2.3	3.5	4.8	1.77E-04	1.36E-04	1.50E-04	23.3	15.4	10.3
LB-CLR-NW	AG-FC	9.0	3.7	10.9	7.04E-04	1.45E-04	3.41E-04	79.4	51.5	135.7
LB-PROF-WG	AG-FC	0.9	2.6	3.2	6.87E-05	1.03E-04	1.01E-04	50.5	46.8	2.4
LB-PROF-NW	AG-FC	3.1	0.1	1.4	2.43E-04	5.48E-06	4.33E-05	97.7	82.2	690.8
CP-LAND-AG	AG-FC	3901.5	7008.1	3823.4	0.304	0.274	0.12	9.9	60.5	56.2
CP-PD-C	AG-FC	5.5	9.9	4.8	4.31E-04	3.89E-04	1.52E-04	9.9	64.8	61.0
CP-GOV	AG-FC	22.3	3.6	11.5	0.002	1.40E-04	3.60E-04	93.0	82.0	156.8
CP-FOREIGN	AG-FC	0.1	0.1		6.24E-06	5.48E-06	2.20E-06	12.2	64.8	59.9
LB-AG-WG	AG-OTH	1062.8	3440.1	6026.4	0.113	0.207	0.204	83.2	80.5	1.4
LB-AG-NW	AG-OTH	1988.2	3983.7	6363.4	0.211	0.24	0.216	13.7	2.4	10.0
LB-PRO-WG	AG-OTH	30.2	368.6	564.0	0.003	0.022	0.019	633.3	533.3	13.6
LB-PRO-NW	AG-OTH	14.2	27.6	43.9	0.002	0.002	0.001	0.0	50.0	50.0
LB-CLR-WG	AG-OTH	28.1	117.5	227.5	0.003	0.007	0.008	133.3	166.7	14.3
LB-CLR-NW	AG-OTH	5.8	6.4	11.6	6.11E-04	3.85E-04	3.93E-04	37.0	35.7	2.1
LB-PROF-WG	AG-OTH	12.9	22.6	46.7	0.001	0.001	0.002	0.0	100.0	100.0
LB-PROF-NW	AG-OTH	0.9	1.5	2.7	9.46E-05	9.04E-05	9.18E-05	4.4	2.9	1.5
CP-LAND-AG	AG-OTH	4938.4	6945.4	13023.0	0.525	0.419	0.441	20.2	16.0	5.3
CP-PD-C	AG-OTH	696.2	1203.4	2293.6	0.074	0.073	0.078	1.4	5.4	6.8
CP-GOV	AG-OTH	377.2	60.6	114.0	0.04	0.004	0.004	90.0	90.0	0.0
CP-FOREIGN	AG-OTH	255.9	407.4	805.6	0.027	0.025	0.027	7.4	0.0	8.0
LB-PRO-WG	BANKINS	28.3	49.3	93.4	0.012	0.006	0.007	50.0	41.7	16.7
LB-PRO-NW	BANKINS	1.9	0.2	1.5	8.14E-04	1.80E-05	1.06E-04	97.8	87.0	488.3
LB-CLR-WG	BANKINS	708.9	3027.2	4984.0	0.3	0.364	0.36	21.3	20.0	1.1
LB-CLR-NW	BANKINS	11.7	5.6	14.9	0.005	6.76E-04	0.001	86.5	80.0	47.9
LB-PROF-WG	BANKINS	152.1	270.3	497.9	0.064	0.033	0.036	48.4	43.8	9.1
LB-PROF-NW	BANKINS	1.1	1.1	2.1	4.83E-04	1.32E-04	1.52E-04	72.6	68.5	15.1
CP-PD-NC	BANKINS	42.4	819.3	987.2	0.018	0.099	0.071	450.0	294.4	28.3
CP-PD-C	BANKINS	121.8	2351.6	4125.1	0.052	0.283	0.298	444.2	473.1	5.3
CP-GOV	BANKINS	1208.6	194.2	176.7	0.512	0.023	0.013	95.5	97.5	43.5
CP-FOREIGN	BANKINS	82.5	1592.1	2961.5	0.035	0.192	0.214	448.6	511.4	11.5
LB-PRO-WG	CHEMIC	556.3	1722.6	2731.2	0.071	0.118	0.118	66.2	66.2	0.0
LB-PRO-NW	CHEMIC	77.0	220.4	327.9	0.01	0.015	0.014	50.0	40.0	6.7
LB-CLR-WG	CHEMIC	278.9	1039.1	1606.9	0.036	0.071	0.069	97.2	91.7	2.8
LB-CLR-NW	CHEMIC	5.3	3.9	8.5	6.71E-04	2.68E-04	3.66E-04	60.0	45.5	36.3
LB-PROF-WG	CHEMIC	152.3	195.6	372.3	0.019	0.013	0.016	31.6	15.8	23.1
LB-PROF-NW	CHEMIC	24.8	6.2	23.7	0.003	4.27E-04	0.001	85.8	66.7	134.0
CP-PD-NC	CHEMIC	1802.1	8353.5	14856.9	0.229	0.573	0.64	150.2	179.5	11.7
CP-PD-C	CHEMIC	1052.0	1076.6	970.5	0.134	0.074	0.042	44.8	68.7	43.2
CP-GOV	CHEMIC	3487.2	566.0	649.2	0.444	0.039	0.028	91.2	93.7	28.2
CP-FOREIGN	CHEMIC	419.6	1392.4	1670.1	0.053	0.096	0.072	81.1	35.8	25.0

Continued

Factor	Value added	Absolute			Share			Percentage Difference		
		1985	1990	1993	1985	1990	1993	85-90	85-93	90-93
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
LB-PRO-WG	CONSTRC	2527.2	1267.0	1823.2	0.363	0.285	0.283	21.5	22.0	0.7
LB-PRO-NW	CONSTRC	645.1	390.0	920.7	0.093	0.088	0.143	5.4	53.8	62.5
LB-CLR-WG	CONSTRC	185.0	143.6	168.5	0.027	0.032	0.026	18.5	3.7	18.8
LB-CLR-NW	CONSTRC	10.8	13.0	23.2	0.002	0.003	0.004	50.0	100.0	33.3
LB-PROF-WG	CONSTRC	200.3	24.9	91.0	0.029	0.006	0.014	79.3	51.7	133.3
LB-PROF-NW	CONSTRC	58.0	34.0	80.4	0.008	0.008	0.012	0.0	50.0	50.0
CP-PD-NC	CONSTRC	726.2	584.5	422.7	0.104	0.131	0.066	26.0	36.5	49.6
CP-PD-C	CONSTRC	1564.1	1306.3	1917.2	0.225	0.294	0.297	30.7	32.0	1.0
CP-GOV	CONSTRC	281.2	48.4	84.2	0.04	0.011	0.013	72.5	67.5	18.2
CP-FOREIGN	CONSTRC	761.0	635.5	921.0	0.109	0.143	0.143	31.2	31.2	0.0
LB-PRO-WG	ELECTGW	68.0	245.8	529.0	0.172	0.167	0.163	2.9	5.2	2.4
LB-PRO-NW	ELECTGW	6.5	7.5	13.5	0.016	0.005	0.004	68.8	75.0	20.0
LB-CLR-WG	ELECTGW	42.0	107.8	242.7	0.106	0.073	0.075	31.1	29.2	2.7
LB-CLR-NW	ELECTGW	1.6	0.6	1.8	0.004	3.95E-04	5.48E-04	90.1	86.3	38.8
LB-PROF-WG	ELECTGW	33.4	55.7	133.1	0.084	0.038	0.041	54.8	51.2	7.9
LB-PROF-NW	ELECTGW	3.1	1.7	4.2	0.008	0.001	0.001	87.5	87.5	0.0
CP-PD-NC	ELECTGW	32.3	376.6	972.0	0.082	0.256	0.299	212.2	264.6	16.8
CP-PD-C	ELECTGW	29.9	348.9	677.3	0.076	0.237	0.209	211.8	175.0	11.8
CP-GOV	ELECTGW	152.8	24.6	25.9	0.387	0.017	0.008	95.6	97.9	52.9
CP-FOREIGN	ELECTGW	25.7	299.9	647.9	0.065	0.204	0.2	213.8	207.7	2.0
LB-PRO-WG	FOODPRO	636.1	2328.8	4838.2	0.216	0.273	0.271	26.4	25.5	0.7
LB-PRO-NW	FOODPRO	317.3	258.5	514.2	0.108	0.03	0.029	72.2	73.1	3.3
LB-CLR-WG	FOODPRO	93.5	148.0	351.4	0.032	0.017	0.02	46.9	37.5	17.6
LB-CLR-NW	FOODPRO	11.8	13.1	23.9	0.004	0.002	0.001	50.0	75.0	50.0
LB-PROF-WG	FOODPRO	16.1	50.2	102.7	0.005	0.006	0.006	20.0	20.0	0.0
LB-PROF-NW	FOODPRO	4.0	11.9	15.1	0.001	0.001	8.46E-04	0.0	15.4	15.4
CP-PD-NC	FOODPRO	715.5	4182.2	8298.6	0.243	0.49	0.464	101.6	90.9	5.3
CP-PD-C	FOODPRO	134.7	805.4	1807.4	0.046	0.094	0.101	104.3	119.6	7.4
CP-GOV	FOODPRO	915.8	152.2	453.1	0.311	0.018	0.025	94.2	92.0	38.9
CP-FOREIGN	FOODPRO	97.7	584.0	1469.1	0.033	0.068	0.082	106.1	148.5	20.6
LB-PRO-WG	HOTLRES	11.8	47.4	75.5	0.005	0.008	0.008	60.0	60.0	0.0
LB-PRO-NW	HOTLRES	3.3	0.9	3.3	0.001	1.43E-04	3.39E-04	85.7	66.1	137.0
LB-CLR-WG	HOTLRES	267.0	1606.8	2474.0	0.117	0.255	0.254	117.9	117.1	0.4
LB-CLR-NW	HOTLRES	410.7	264.8	598.8	0.18	0.042	0.061	76.7	66.1	45.2
LB-PROF-WG	HOTLRES	23.2	22.1	47.0	0.01	0.004	0.005	60.0	50.0	25.0
LB-PROF-NW	HOTLRES	3.0	1.7	6.5	0.001	2.68E-04	6.69E-04	73.2	33.1	149.4
CP-PD-NC	HOTLRES	1315.9	3896.6	5611.4	0.576	0.619	0.576	7.5	0.0	6.9
CP-PD-C	HOTLRES	113.2	351.0	699.9	0.05	0.056	0.072	12.0	44.0	28.6
CP-GOV	HOTLRES	107.6	17.4	31.8	0.047	0.003	0.003	93.6	93.6	0.0
CP-FOREIGN	HOTLRES	28.2	91.2	198.2	0.012	0.014	0.02	16.7	66.7	42.9

Continued

Factor	Value added	Absolute			Share			Percentage Difference		
		1985	1990	1993	1985	1990	1993	85-90	85-93	90-93
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
LB-PRO-WG	MINING	320.4	1793.6	2473.6	0.022	0.071	0.079	222.7	259.1	11.3
LB-PRO-NW	MINING	60.3	43.2	93.2	0.004	0.002	0.003	50.0	25.0	50.0
LB-CLR-WG	MINING	267.6	240.1	370.1	0.018	0.009	0.012	50.0	33.3	33.3
LB-CLR-NW	MINING	7.2	0.7	4.8	4.95E-04	2.91E-05	1.53E-04	94.1	69.0	426.0
LB-PROF-WG	MINING	215.7	121.7	235.0	0.015	0.005	0.008	66.7	46.7	60.0
LB-PROF-NW	MINING	16.3	0.4	11.2	0.001	1.73E-05	3.59E-04	98.3	64.1	1969.2
CP-PD-NC	MINING	387.2	1490.4	2562.8	0.027	0.059	0.082	118.5	203.7	39.0
CP-PD-C	MINING	4.3	16.9	36.5	2.93E-04	6.64E-04	0.001	126.7	241.6	50.7
CP-GOV	MINING	3317.4	532.9	592.6	0.228	0.021	0.019	90.8	91.7	9.5
CP-FOREIGN	MINING	9954.8	21149.7	24797.6	0.684	0.833	0.795	21.8	16.2	4.6
LB-PRO-WG	PAP-MET	412.8	1912.4	2977.4	0.194	0.277	0.273	42.8	40.7	1.4
LB-PRO-NW	PAP-MET	58.8	238.3	333.9	0.028	0.035	0.031	25.0	10.7	11.4
LB-CLR-WG	PAP-MET	127.2	519.0	814.3	0.06	0.075	0.075	25.0	25.0	0.0
LB-CLR-NW	PAP-MET	1.1	5.3	6.5	5.23E-04	7.73E-04	5.95E-04	47.9	13.8	23.0
LB-PROF-WG	PAP-MET	107.8	142.0	277.3	0.051	0.021	0.025	58.8	51.0	19.0
LB-PROF-NW	PAP-MET	5.9	8.3	13.0	0.003	0.001	0.001	66.7	66.7	0.0
CP-PD-NC	PAP-MET	280.0	933.0	1123.9	0.132	0.135	0.103	2.3	22.0	23.7
CP-PD-C	PAP-MET	776.0	2618.5	4603.0	0.365	0.379	0.421	3.8	15.3	11.1
CP-GOV	PAP-MET	206.4	34.0	51.9	0.097	0.005	0.005	94.8	94.8	0.0
CP-FOREIGN	PAP-MET	147.2	496.7	720.8	0.069	0.072	0.066	4.3	4.3	8.3
LB-PRO-WG	SER-OTH	763.6	2552.9	3614.1	0.048	0.088	0.079	83.3	64.6	10.2
LB-PRO-NW	SER-OTH	772.8	1607.2	2553.4	0.048	0.055	0.056	14.6	16.7	1.8
LB-CLR-WG	SER-OTH	4766.5	8660.2	13408.0	0.298	0.299	0.292	0.3	2.0	2.3
LB-CLR-NW	SER-OTH	582.7	357.7	838.8	0.036	0.012	0.018	66.7	50.0	50.0
LB-PROF-WG	SER-OTH	4096.0	5308.4	8662.6	0.256	0.183	0.188	28.5	26.6	2.7
LB-PROF-NW	SER-OTH	229.4	215.0	416.6	0.014	0.007	0.009	50.0	35.7	28.6
CP-PD-NC	SER-OTH	3593.3	7970.4	12986.5	0.224	0.275	0.282	22.8	25.9	2.5
CP-PD-C	SER-OTH	892.3	2240.0	3377.5	0.056	0.077	0.073	37.5	30.4	5.2
CP-GOV	SER-OTH	325.3	64.6	114.0	0.02	0.002	0.002	90.0	90.0	0.0
LB-PRO-WG	TEXTILE	316.4	6977.1	12167.5	0.277	0.462	0.462	66.8	66.8	0.0
LB-PRO-NW	TEXTILE	262.7	428.7	695.5	0.23	0.028	0.026	87.8	88.7	7.1
LB-CLR-WG	TEXTILE	39.6	378.8	671.2	0.035	0.025	0.025	28.6	28.6	0.0
LB-CLR-NW	TEXTILE	8.2	2.4	7.9	0.007	1.62E-04	2.99E-04	97.7	95.7	85.4
LB-PROF-WG	TEXTILE	7.7	204.9	347.9	0.007	0.014	0.013	100.0	85.7	7.1
LB-PROF-NW	TEXTILE	5.1	10.2	11.9	0.004	6.72E-04	4.52E-04	83.2	88.7	32.7
CP-PD-NC	TEXTILE	117.5	1912.4	2734.2	0.103	0.127	0.104	23.3	1.0	18.1
CP-PD-C	TEXTILE	305.0	5052.1	9450.2	0.267	0.334	0.359	25.1	34.5	7.5
CP-GOV	TEXTILE	72.3	11.9	12.3	0.063	7.88E-04	4.66E-04	98.7	99.3	40.8
CP-FOREIGN	TEXTILE	7.8	129.9	251.5	0.007	0.009	0.01	28.6	42.9	11.1

Continued

Factor	Value added	Absolute			Share			Percentage Difference		
		1985	1990	1993	1985	1990	1993	85-90	85-93	90-93
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
LB-PRO-WG	TRADES	112.8	187.1	321.9	0.009	0.007	0.009	22.2	0.0	28.6
LB-PRO-NW	TRADES	69.3	30.4	87.2	0.006	0.001	0.002	83.3	66.7	100.0
LB-CLR-WG	TRADES	1236.6	4758.2	7089.6	0.103	0.189	0.187	83.5	81.6	1.1
LB-CLR-NW	TRADES	5691.7	13232.8	20514.6	0.473	0.526	0.542	11.2	14.6	3.0
LB-PROF-WG	TRADES	75.4	81.9	151.3	0.006	0.003	0.004	50.0	33.3	33.3
LB-PROF-NW	TRADES	21.7	11.0	19.9	0.002	4.37E-04	5.26E-04	78.2	73.7	20.5
CP-PD-NC	TRADES	1764.6	2100.3	2068.2	0.147	0.083	0.055	43.5	62.6	33.7
CP-PD-C	TRADES	1928.6	3559.0	5405.0	0.16	0.141	0.143	11.9	10.6	1.4
CP-GOV	TRADES	712.8	416.2	958.4	0.059	0.017	0.025	71.2	57.6	47.1
CP-FOREIGN	TRADES	428.9	788.3	1241.9	0.036	0.031	0.033	13.9	8.3	6.5
LB-PRO-WG	TRANCOM	887.0	1927.6	3311.4	0.188	0.171	0.171	9.0	9.0	0.0
LB-PRO-NW	TRANCOM	724.8	1062.2	1809.0	0.154	0.094	0.093	39.0	39.6	1.1
LB-CLR-WG	TRANCOM	371.9	798.6	1329.6	0.079	0.071	0.069	10.1	12.7	2.8
LB-CLR-NW	TRANCOM	22.1	9.2	25.7	0.005	8.12E-04	0.001	83.8	80.0	23.2
LB-PROF-WG	TRANCOM	153.5	110.1	240.8	0.033	0.01	0.012	69.7	63.6	20.0
LB-PROF-NW	TRANCOM	14.3	10.4	20.6	0.003	9.18E-04	0.001	69.4	66.7	8.9
CP-PD-NC	TRANCOM	1140.1	5797.6	9798.7	0.242	0.514	0.505	112.4	108.7	1.8
CP-PD-C	TRANCOM	519.1	1423.6	2725.9	0.11	0.126	0.141	14.5	28.2	11.9
CP-GOV	TRANCOM	880.0	143.1	133.4	0.187	0.013	0.007	93.0	96.3	46.2
Overall Average								70.3	71.3	48.7

**Appendices 6.4b: Calculated share parameters in the Household Consumption functions**

Composite commodities	Households Groups	Absolute			Share			Percentage Difference		
		1985	1990	1993	1985	1990	1993	85-90	85-93	90-93
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
CC-AG-FC	H-AG-LB-C	453.32	983.74	812.03	0.17	0.16	0.09	5.92	46.15	42.77
CC-AG-FC	H-AG-SF-C	2059.57	3666.26	3791.6	0.24	0.14	0.10	41.15	57.20	27.27
CC-AG-FC	H-AG-MF-C	791.85	916.91	1050.12	0.20	0.15	0.12	26.87	42.79	21.77
CC-AG-FC	H-AG-LF-C	1302.15	1231.33	1688.3	0.18	0.15	0.12	16.95	29.94	15.65
CC-AG-FC	H-NA-RL-C	797.19	1280.6	1552.82	0.14	0.15	0.13	6.52	7.25	12.93
CC-AG-FC	H-NA-RD-C	300.75	223.51	239.09	0.13	0.10	0.07	24.81	45.86	28.00
CC-AG-FC	H-NA-RH-C	612.15	2040.27	2606.04	0.11	0.11	0.08	0.00	20.95	20.95
CC-AG-FC	H-NA-UL-C	930.99	1436.73	1657.26	0.10	0.09	0.08	8.16	20.41	13.33
CC-AG-FC	H-NA-UD-C	278.84	490.83	703.21	0.09	0.13	0.13	47.19	49.44	1.53
CC-AG-FC	H-NA-UH-C	783.86	2652.32	4255.53	0.08	0.09	0.09	7.50	12.50	4.65
CC-AG-OTH	AG-LB-C	310.33	880.08	1017.69	0.12	0.14	0.12	22.41	0.86	19.01
CC-AG-OTH	AG-SF-C	1366.91	2450.53	3147.64	0.16	0.10	0.09	40.99	46.58	9.47
CC-AG-OTH	H-AG-MF-C	551.76	681.92	1025.82	0.14	0.11	0.11	22.14	20.00	2.75
CC-AG-OTH	H-AG-LF-C	933.22	1083.52	1925.63	0.13	0.13	0.14	2.36	11.81	9.23
CC-AG-OTH	H-NA-RL-C	657.87	1064.76	1659.02	0.11	0.12	0.14	7.02	19.30	11.48
CC-AG-OTH	H-NA-RD-C	289.55	222.65	315.39	0.13	0.10	0.10	21.88	25.78	5.00
CC-AG-OTH	H-NA-RH-C	668.8	1849.88	2784.42	0.12	0.10	0.09	17.39	22.61	6.32
CC-AG-OTH	H-NA-UL-C	953.28	1704.82	2400	0.10	0.11	0.11	7.00	13.00	5.61
CC-AG-OTH	H-NA-UD-C	317.34	280.44	371.7	0.10	0.08	0.07	26.47	31.37	6.67
CC-AG-OTH	H-NA-UH-C	1033.16	1480.61	1784.07	0.11	0.05	0.04	54.72	64.15	20.83
CC-MINING	H-AG-LB-C	0.12			0.00	0.00	0.00	63.92	52.16	32.60
CC-MINING	H-AG-SF-C	0.57	0.39	0.94	0.00	0.00	0.00	77.40	61.65	69.71
CC-MINING	H-AG-MF-C	0.22		0.38	0.00	0.00	0.00	65.68	25.77	116.28
CC-MINING	H-AG-LF-C	0.34	0.14	0.47	0.00	0.00	0.00	63.85	25.40	106.38
CC-MINING	H-NA-RL-C	0.21		0.28	0.00	0.00	0.00	62.07	36.69	66.94
CC-MINING	H-NA-RD-C	0.08		0.28	0.00	0.00	0.00	11.28	138.31	168.60
CC-MINING	H-NA-RH-C	0.14	0.13	0.28	0.00	0.00	0.00	72.23	62.88	33.67
CC-MINING	H-NA-UL-C	0.22		0.28	0.00	0.00	0.00	70.02	42.97	90.22
CC-MINING	H-NA-UD-C	0.06			0.00	0.00	0.00	44.66	11.23	60.40
CC-MINING	H-NA-UH-C	0.14	0.18	0.47	0.00	0.00	0.00	59.18	30.28	70.80
CC-FOODPRO	H-AG-LB-C	940.63	989.07	950.02	0.35	0.16	0.11	54.42	69.52	33.13
CC-FOODPRO	H-AG-SF-C	2871.21	8319.13	12522	0.34	0.32	0.34	4.14	1.48	5.86
CC-FOODPRO	H-AG-MF-C	1241.95	2072.78	3559.38	0.32	0.33	0.39	5.06	23.10	17.17
CC-FOODPRO	H-AG-LF-C	2187.47	2649.21	5191.48	0.30	0.32	0.38	6.38	28.19	20.50
CC-FOODPRO	H-NA-RL-C	1779.71	1332.53	1721.45	0.31	0.15	0.14	50.32	53.90	7.19
CC-FOODPRO	H-NA-RD-C	637.37	527.91	753.92	0.28	0.24	0.23	15.96	19.50	4.22
CC-FOODPRO	H-NA-RH-C	1368.35	6715.2	11830.13	0.24	0.35	0.38	47.23	60.85	9.25
CC-FOODPRO	H-NA-UL-C	2346.69	2490.58	3298.02	0.25	0.16	0.16	36.18	36.99	1.27
CC-FOODPRO	H-NA-UD-C	609.59	573.08	808.74	0.20	0.15	0.15	22.05	21.54	0.66
CC-FOODPRO	H-NA-UH-C	1775.36	7738.04	13243.94	0.18	0.25	0.28	37.91	54.40	11.95
CC-TEXTILE	H-AG-LB-C	64.06	29.64	39.88	0.02	0.01	0.00	79.17	83.33	20.00
CC-TEXTILE	H-AG-SF-C	175.58	73.52	102.21	0.02	0.00	0.00	85.71	85.71	0.00
CC-TEXTILE	H-AG-MF-C	102.67	18.81	29.71	0.03	0.00	0.00	88.46	88.46	0.00
CC-TEXTILE	H-AG-LF-C	207.18	30.78	53.83	0.03	0.00	0.00	85.71	85.71	0.00
CC-TEXTILE	H-NA-RL-C	145.72	21.58	31.9	0.03	0.00	0.00	92.00	88.00	50.00
CC-TEXTILE	H-NA-RD-C	70.84	5.9	8.17	0.03	0.00	0.00	90.32	93.55	33.33
CC-TEXTILE	H-NA-RH-C	228.07	69.44	96.16	0.04	0.00	0.00	89.74	92.31	25.00
CC-TEXTILE	H-NA-UL-C	244.17	65.14	89.25	0.03	0.00	0.00	84.62	84.62	0.00





Appendices of Chapter VI-11

CC-TRANCOM	H-AG-MF-C	99.27	100.03	157.92	0.03	0.02	0.02	36.00	32.00	6.25
CC-TRANCOM	H-AG-LF-C	223.49	151.1	243.73	0.03	0.02	0.02	40.00	40.00	0.00
CC-TRANCOM	H-NA-RL-C	314.37	642.27	1265.25	0.05	0.07	0.10	37.04	92.59	40.54
CC-TRANCOM	H-NA-RD-C	135.56	319.93	759.57	0.06	0.14	0.23	140.00	281.67	59.03
CC-TRANCOM	H-NA-RH-C	372.27	976.47	1609.8	0.06	0.05	0.05	21.88	20.31	2.00
CC-TRANCOM	H-NA-UL-C	1019.79	1695.07	2714.08	0.11	0.11	0.13	0.00	19.63	19.63
CC-TRANCOM	H-NA-UD-C	313.39	571.09	1021.81	0.10	0.15	0.19	52.00	94.00	27.63
CC-TRANCOM	H-NA-UH-C	1064.24	1999.11	2968.98	0.11	0.07	0.06	40.37	42.20	3.08
CC-BANKINS	H-AG-LB-C	18.55	44.59	57.86	0.01	0.01	0.01	0.00	0.00	0.00
CC-BANKINS	H-AG-SF-C	58.75	82.3	89.8	0.01	0.00	0.00	57.14	71.43	33.33
CC-BANKINS	H-AG-MF-C	56.41	33.88	38.01	0.01	0.01	0.00	64.29	71.43	20.00
CC-BANKINS	H-AG-LF-C	135.74	44.25	40.71	0.02	0.01	0.00	72.22	83.33	40.00
CC-BANKINS	H-NA-RL-C	81.59	163.42	214.74	0.01	0.02	0.02	35.71	28.57	5.26
CC-BANKINS	H-NA-RD-C	31.49	93.19	156.23	0.01	0.04	0.05	200.00	235.71	11.90
CC-BANKINS	H-NA-RH-C	150.84	690.85	1012.48	0.03	0.04	0.03	38.46	23.08	11.11
CC-BANKINS	H-NA-UL-C	93.67	1525.19	2886.72	0.01	0.10	0.14	860.00	1260.00	41.67
CC-BANKINS	H-NA-UD-C	32.79	120.3	174.07	0.01	0.03	0.03	190.91	200.00	3.13
CC-BANKINS	H-NA-UH-C	221.93	1907.35	2610.58	0.02	0.06	0.06	169.57	139.13	11.29
CC-SER-OTH	H-AG-LB-C	386.31	1008.56	1525.91	0.14	0.16	0.17	13.19	19.44	5.52
CC-SER-OTH	H-AG-SF-C	1053.95	4442.15	4925.38	0.12	0.17	0.14	39.52	8.87	21.97
CC-SER-OTH	H-AG-MF-C	497.04	1054.21	1230.08	0.13	0.17	0.13	34.13	6.35	20.71
CC-SER-OTH	H-AG-LF-C	1032.83	1258.42	1392.68	0.14	0.15	0.10	6.38	27.66	32.00
CC-SER-OTH	H-NA-RL-C	864.14	1631.13	1771.36	0.15	0.19	0.15	24.67	2.67	21.93
CC-SER-OTH	H-NA-RD-C	360.88	264.47	305.8	0.16	0.12	0.09	25.63	42.50	22.69
CC-SER-OTH	H-NA-RH-C	1040.84	1989.33	4251.38	0.18	0.10	0.14	43.02	24.02	33.33
CC-SER-OTH	H-NA-UL-C	1863.43	3007.98	3060.57	0.20	0.19	0.14	3.57	26.53	23.81
CC-SER-OTH	H-NA-UD-C	779.34	934.35	1127.2	0.25	0.25	0.21	0.80	14.40	13.71
CC-SER-OTH	H-NA-UH-C	2301.25	5983.56	9789.64	0.24	0.19	0.21	17.45	11.49	7.22

**Appendices 6.4: CGE MODELS FOR THE INDONESIAN ECONOMY IN 1985, 1990  
AND 1993 IN THE GAMS/HERCULES FORMAT**

\$TITLE GSMODEL: A CGE MODEL FOR INDONESIAN ECONOMY 1985,1990, 1993  
\$STITLE DEFINITION OF ACCOUNT SET AND ACRONYMS

SET ACC ACCOUNTS /

\*IN THIS PART ALL ACCOUNTS USED IN THE MODEL NEED TO BE DECLARED

\*labour

LB-AG-WG LABOUR AGRICULTURE WAGES  
LB-AG-NW LABOUR AGRICULTURE NON-WAGES  
LB-PRD-WG LABOUR PRODUCTION WAGES  
LB-PRD-NW LABOUR PRODUCTION NON-WAGES  
LB-CLR-WG LABOUR CLERICAL WAGES  
LB-CLR-NW LABOUR CLERICAL NON-WAGES  
LB-PROF-WG LABOUR PROFESSIONAL WAGES  
LB-PROF-NW LABOUR PROFESSIONAL NON-WAGES

\*Nesting labour

LB-AGALL LABOUR AGRICULTURE ALL TYPES  
LB-PRDALL LABOUR PRODUCTION ALL TYPES  
LB-CLRALL LABOUR CLERICAL ALL TYPES  
LB-PROFALL LABOUR PROFESSIONAL ALL TYPES  
LB-NAGALL LABOUR NON-AGRICULTURE ALL TYPES  
LB-COMPALL LABOUR COMPOSITE ALL TYPES

\*Nesting capital

CP-CORPALL CAPITAL CORPORATE ALL TYPES  
CP-COMPALL CAPITAL COMPOSITE ALL TYPES

\*capital

CP-LAND-AG CAPITAL LAND AND OTHER AGRICULTURE  
CP-PD-NC CAPITAL PRIVATE DOMESTIC NON CORPORATE  
CP-PD-C CAPITAL PRIVATE DOMESTIC CORPORATE  
CP-GOV CAPITAL GOVERNMENT  
CP-FOREIGN CAPITAL FOREIGN

CP-PDC-AMF PRIVATE DOMESTIC CORPORATE CAPITAL FROM ABROAD-INST FACTOR  
CP-GOV-AMF GOVERNMENT CAPITAL FROM ABROAD-INST FACTOR  
CP-PDC-AIC PRIVATE DOMESTIC CORPORATE CAPITAL FROM ABROAD-INST CONS  
CP-GOV-AIC GOVERNMENT CAPITAL FROM ABROAD-INST CONSUMPTION  
CP-PDC-VA PRIVATE DOMESTIC CORPORATE CAPITAL FROM ABROAD-VALUE ADDED  
CP-GOV-VA GOVERNMENT CAPITAL FROM ABROAD-VALUE ADDED

\*HOUSEHOLD AND DOMESTIC INSTITUTION FACTOR INCOME

H-AG-LB-FI AGR-EMPLOYEE HOUSEHOLD FACTOR INCOME  
H-AG-SF-FI AGR-SMALL FARMER HOUSEHOLD FACTOR INCOME  
H-AG-MF-FI AGR-MEDIUM FARMER HOUSEHOLD FACTOR INCOME  
H-AG-LF-FI AGR-LARGE FARMER HOUSEHOLD FACTOR INCOME  
H-NA-RL-FI NON-AGR-RURAL-LOW INCOME GROUP HH FACTOR INCOME  
H-NA-RD-FI NON-AGR-RURAL-DEPENDENT INCOME GROUP HH FACTOR INCOME  
H-NA-RH-FI NON-AGR-RURAL-HIGH INCOME GROUP HH FACTOR INCOME  
H-NA-UL-FI NON-AGR-URBAN-LOW INCOME GROUP HH FACTOR INCOME  
H-NA-UD-FI NON-AGR-URBAN-DEPENDENT INCOME GROUP HH FACTOR INCOME  
H-NA-UH-FI NON-AGR-URBAN-HIGH INCOME GROUP HH FACTOR INCOME  
FIRM-FI FIRM FACTOR INCOME  
GOV-FI GOVERNMENT FACTOR INCOME

\*HOUSEHOLD AND DOMESTIC INSTITUTION TRANSFER INCOME FROM DOMESTIC INSTITUTION

H-AG-LB-TI AGR-EMPLOYEE HOUSEHOLD TRANSFER INCOME  
H-AG-SF-TI AGR-SMALL FARMER HOUSEHOLD TRANSFER INCOME  
H-AG-MF-TI AGR-MEDIUM FARMER HOUSEHOLD TRANSFER INCOME  
H-AG-LF-TI AGR-LARGE FARMER HOUSEHOLD TRANSFER INCOME  
H-NA-RL-TI NON-AGR-RURAL-LOW INCOME GROUP HH TRANSFER INCOME  
H-NA-RD-TI NON-AGR-RURAL-DEPENDENT INCOME GROUP HH TRANSFER INCOME  
H-NA-RH-TI NON-AGR-RURAL-HIGH INCOME GROUP HH TRANSFER INCOME  
H-NA-UL-TI NON-AGR-URBAN-LOW INCOME GROUP HH TRANSFER INCOME  
H-NA-UD-TI NON-AGR-URBAN-DEPENDENT INCOME GROUP HH TRANSFER INCOME  
H-NA-UH-TI NON-AGR-URBAN-HIGH INCOME GROUP HH TRANSFER INCOME  
FIRM-TI FIRM INCOME FROM TRANSFER  
GOV-TI GOVERNMENT INCOME FROM TRANSFER

\*HOUSEHOLD AND DOMESTIC INSTITUTION TRANSFER INCOME FROM THE REST OF THE WORLD

H-AG-LB-IA AGR-EMPLOYEE HOUSEHOLD TRANSFER INCOME FROM ABROAD  
H-AG-SF-IA AGR-SMALL FARMER HOUSEHOLD T-INCOME FROM ABROAD  
H-AG-MF-IA AGR-MEDIUM FARMER HOUSEHOLD T-INCOME FROM ABROAD  
H-AG-LF-IA AGR-LARGE FARMER HOUSEHOLD T-INCOME FROM ABROAD  
H-NA-RL-IA NON-AGR-RURAL-LOW INCOME GROUP HH INCOME FA  
H-NA-RD-IA NON-AGR-RURAL-DEPENDENT GROUP HH INCOME FA  
H-NA-RH-IA NON-AGR-RURAL-HIGH INCOME GROUP HH INCOME FA  
H-NA-UL-IA NON-AGR-URBAN-LOW INCOME GROUP HH INCOME FA  
H-NA-UD-IA NON-AGR-RURAL-DEPENDENT INCOME GROUP HH INCOME FA  
H-NA-UH-IA NON-AGR-URBAN-HIGH INCOME GROUP HH INCOME FA  
FIRM-IA FIRM INCOME FROM ABROAD  
GOV-IA GOVERNMENT INCOME FROM ABROAD

\*HOUSEHOLD AND DOMESTIC INSTITUTION CONSUMPTIONS

H-AG-LB-C AGR-EMPLOYEE HOUSEHOLD CONSUMPTION  
H-AG-SF-C AGR-SMALL FARMER HOUSEHOLD CONSUMPTION  
H-AG-MF-C AGR-MEDIUM FARMER HOUSEHOLD CONSUMPTION  
H-AG-LF-C AGR-LARGE FARMER HOUSEHOLD CONSUMPTION  
H-NA-RL-C NON-AGR-RURAL-LOW INCOME GROUP HH CONSUMPTION  
H-NA-RD-C NON-AGR-RURAL-DEPENDENT INCOME GROUP HH CONSUMPTION  
H-NA-RH-C NON-AGR-RURAL-HIGH INCOME GROUP HH CONSUMPTION  
H-NA-UL-C NON-AGR-URBAN-LOW INCOME GROUP HH CONSUMPTION  
H-NA-UD-C NON-AGR-URBAN-DEPENDENT INCOME GROUP HH CONSUMPTION  
H-NA-UH-C NON-AGR-URBAN-HIGH INCOME GROUP HH CONSUMPTION  
GOV-C GOVERNMENT CONSUMPTION  
TTM-C TRADE AND TRANSPORT MARGIN CONSUMPTION  
SAVING-INV SAVINGS AND INVESTMENTS  
INDR-TAX NET INDIRECT TAX ACCOUNT

\*PRODUCTION ACTIVITIES

AC-AG-FC PRODUCTION ACTIVITY FOR AGRICULTURE-FOOD CROPS  
AC-AG-OTH PRODUCTION ACTIVITY FOR AGRICULTURE-OTHERS  
AC-MINING PRODUCTION ACTIVITY FOR MINING AND QUARRYING  
AC-FOODPRO PRODUCTION ACTIVITY FOR FOOD PROCESSING  
AC-TEXTILE PRODUCTION ACTIVITY FOR TEXTILE INDUSTRY  
AC-CONSTRC PRODUCTION ACTIVITY FOR CONSTRUCTION  
AC-PAP-MET PRODUCTION ACTIVITY FOR PAPER AND METAL PRODUCTS INDUSTRY  
AC-CHEMIC PRODUCTION ACTIVITY FOR CHEMICAL INDUSTRY  
AC-ELECTGW PRODUCTION ACTIVITY FOR ELECTRICITY GAS AND WATER  
AC-TRADES PRODUCTION ACTIVITY FOR TRADE SERVICES  
AC-HOTLRES PRODUCTION ACTIVITY FOR HOTEL AND RESTAURANT  
AC-TRANCOM PRODUCTION ACTIVITY FOR TRANSPORT AND COMMUNICATION  
AC-BANKINS PRODUCTION ACTIVITY FOR BANKING AND INSURANCE  
AC-SER-OTH PRODUCTION ACTIVITY FOR OTHER SERVICES  
AC-TTM PRODUCTION ACTIVITY FOR TRADE AND TRANSPORT MARGIN

\*VALUE ADDED

VA-AG-FC VALUE ADDED IN AGRICULTURE-FOOD CROPS  
VA-AG-OTH VALUE ADDED IN AGRICULTURE-OTHERS  
VA-MINING VALUE ADDED IN MINING AND QUARRYING  
VA-FOODPRO VALUE ADDED IN FOOD PROCESSING  
VA-TEXTILE VALUE ADDED IN TEXTILE INDUSTRY  
VA-CONSTRC VALUE ADDED IN CONSTRUCTION  
VA-PAP-MET VALUE ADDED IN PAPER AND METAL PRODUCTS INDUSTRY  
VA-CHEMIC VALUE ADDED IN CHEMICAL INDUSTRY  
VA-ELECTGW VALUE ADDED IN ELECTRICITY GAS AND WATER  
VA-TRADES VALUE ADDED IN TRADE SERVICES  
VA-HOTLRES VALUE ADDED IN HOTEL AND RESTAURANT  
VA-TRANCOM VALUE ADDED IN TRANSPORT AND COMMUNICATION  
VA-BANKINS VALUE ADDED IN BANKING AND INSURANCE  
VA-SER-OTH VALUE ADDED IN OTHER SERVICES

\*DOMESTIC COMMODITIES

CD-AG-FC DOMESTIC COMMODITY IN AGRICULTURE-FOOD CROPS  
CD-AG-OTH DOMESTIC COMMODITY IN AGRICULTURE-OTHERS  
CD-MINING DOMESTIC COMMODITY IN MINING AND QUARRYING  
CD-FOODPRO DOMESTIC COMMODITY IN FOOD PROCESSING  
CD-TEXTILE DOMESTIC COMMODITY IN TEXTILE INDUSTRY  
CD-CONSTRC DOMESTIC COMMODITY IN CONSTRUCTION  
CD-PAP-MET DOMESTIC COMMODITY IN PAPER AND METAL PRODUCTS INDUSTRY  
CD-CHEMIC DOMESTIC COMMODITY IN CHEMICAL INDUSTRY

CD-ELECTGW DOMESTIC COMMODITY IN ELECTRICITY GAS AND WATER  
 CD-TRADES DOMESTIC COMMODITY IN TRADE SERVICES  
 CD-HOTLRES DOMESTIC COMMODITY IN HOTEL AND RESTAURANT  
 CD-TRANCOM DOMESTIC COMMODITY IN TRANSPORT AND COMMUNICATION  
 CD-BANKINS DOMESTIC COMMODITY IN BANKING AND INSURANCE  
 CD-SER-OTH DOMESTIC COMMODITY IN OTHER SERVICES

\*EXPORTED COMMODITIES

CE-AG-FC EXPORTED COMMODITIES IN AGRICULTURE-FOOD CROPS  
 CE-AG-OTH EXPORTED COMMODITIES IN AGRICULTURE-OTHERS  
 CE-MINING EXPORTED COMMODITIES IN MINING AND QUARRYING  
 CE-FOODPRO EXPORTED COMMODITIES IN FOOD PROCESSING  
 CE-TEXTILE EXPORTED COMMODITIES IN TEXTILE INDUSTRY  
 CE-CONSTRC EXPORTED COMMODITIES IN CONSTRUCTION  
 CE-PAP-MET EXPORTED COMMODITIES IN PAPER AND METAL PRODUCTS INDUSTRY  
 CE-CHEMIC EXPORTED COMMODITIES IN CHEMICAL INDUSTRY  
 CE-TRADES EXPORTED COMMODITIES IN TRADE SERVICES  
 CE-HOTLRES EXPORTED COMMODITIES IN HOTEL AND RESTAURANT  
 CE-TRANCOM EXPORTED COMMODITIES IN TRANSPORT AND COMMUNICATION  
 CE-BANKINS EXPORTED COMMODITIES IN BANKING AND INSURANCE  
 CE-SER-OTH EXPORTED COMMODITIES IN OTHER SERVICES

\*IMPORTED COMMODITIES

CI-AG-FC IMPORTED COMMODITIES IN AGRICULTURE-FOOD CROPS  
 CI-AG-OTH IMPORTED COMMODITIES IN AGRICULTURE-OTHERS  
 CI-MINING IMPORTED COMMODITIES IN MINING AND QUARRYING  
 CI-FOODPRO IMPORTED COMMODITIES IN FOOD PROCESSING  
 CI-TEXTILE IMPORTED COMMODITIES IN TEXTILE INDUSTRY  
 CI-CONSTRC IMPORTED COMMODITIES IN CONSTRUCTION  
 CI-PAP-MET IMPORTED COMMODITIES IN PAPER AND METAL PRODUCTS INDUSTRY  
 CI-CHEMIC IMPORTED COMMODITIES IN CHEMICAL INDUSTRY  
 CI-TRADES IMPORTED COMMODITIES IN TRADE SERVICES  
 CI-HOTLRES IMPORTED COMMODITIES IN HOTEL AND RESTAURANT  
 CI-TRANCOM IMPORTED COMMODITIES IN TRANSPORT AND COMMUNICATION  
 CI-BANKINS IMPORTED COMMODITIES IN BANKING AND INSURANCE  
 CI-SER-OTH IMPORTED COMMODITIES IN OTHER SERVICES

\*COMPOSITE COMMODITIES

CC-AG-FC COMPOSITE COMMODITIES IN AGRICULTURE-FOOD CROPS  
 CC-AG-OTH COMPOSITE COMMODITIES IN AGRICULTURE-OTHERS  
 CC-MINING COMPOSITE COMMODITIES IN MINING AND QUARRYING  
 CC-FOODPRO COMPOSITE COMMODITIES IN FOOD PROCESSING  
 CC-TEXTILE COMPOSITE COMMODITIES IN TEXTILE INDUSTRY  
 CC-CONSTRC COMPOSITE COMMODITIES IN CONSTRUCTION  
 CC-PAP-MET COMPOSITE COMMODITIES IN PAPER AND METAL PRODUCTS INDUSTRY  
 CC-CHEMIC COMPOSITE COMMODITIES IN CHEMICAL INDUSTRY  
 CC-TRADES COMPOSITE COMMODITIES IN TRADE SERVICES  
 CC-HOTLRES COMPOSITE COMMODITIES IN HOTEL AND RESTAURANT  
 CC-TRANCOM COMPOSITE COMMODITIES IN TRANSPORT AND COMMUNICATION  
 CC-BANKINS COMPOSITE COMMODITIES IN BANKING AND INSURANCE  
 CC-SER-OTH COMPOSITE COMMODITIES IN OTHER SERVICES  
 FOR-INV INVESTMENT TO ABROAD  
 FORINV-TAX TAX OF INVESTMENT TO ABROAD  
 REST-WORLD REST OF THE WORLD ACCOUNT /

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ALIAS (ACC,ACCP);
*DEFINE ALL ACRONYMS USED IN THE MODELS
ACRONYMS MF MARKET FACTOR ACCOUNT
          NMF NON MARKET FACTOR ACCOUNT
          INST INSTITUTIONS INCOME ACCOUNT
          INSTC INSTITUTIONS CONSUMPTION ACCOUNT
          TAX INDIRECT TAX ACCOUNT
          AC ACTIVITY-COMMODITY ACCOUNT
          ROW REST OF THE WORLD ACCOUNT
          NP PRICE EXOGENOUS - NUMERAIRE
          Q QUANTITY EXOGENOUS
          P PRICE EXOGENOUS
          CD COBB-DOUGLAS PRODUCTION FUNCTION
          CES CES PRODUCTION FUNCTION
          EXPORT EXPORT DEMAND FROM THE REST OF THE WORLD
          IDIST INCOME DISTRIBUTION SPECIFICATION
          IMPORT PAYMENTS FOR IMPORTS
          IO INPUT-OUTPUT SPECIFICATION
          ITAX INDIRECT TAX SPECIFICATION
          DTAX DIRECT TAX ACCOUNT
          QEXO FIXED QUANTITY CONSUMPTION SYSTEM
          QSHR FIXED QUANTITY SHARE CONSUMPTION SYSTEM
          UNSPEC UNSPECIFIED OR RESIDUAL
          VEXO SPECIFICATION FOR EXOGENOUS VALUE
          VSHR VALUE SHARE CONSUMPTION SYSTEM
          TEXO EXOGENOUS TSOL
          FEXO EXOGENOUS FOREIGN
          MARKUP MARKUP OVER COST
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§STITLE DEFINITION OF SOCIAL ACCOUNTING MATRIX  
TABLE SAM(ACC,ACC) "THE SAM FOR INDONESIAN ECONOMY 1990"

\*THE SAMS USED IN THE MODELS ARE PRESENTED IN THE GAMS FORMAT AS SHOWN BELOW. \*JUST FOR AN EXAMPLE, HERE THE SAM FOR INDONESIAN ECONOMY IN 1990 IS \*USED.  
\*IN THE THESIS ALL THREE SAMS (I.E. 1985, 1990 AND 1993) ARE USED.

	AC-AG-FC	AC-AG-OTH	AC-MINING	AC-FOODPRO	AC-TEXTILE	AC-CONSTRC
CC-AG-FC	642.57	83.79	0.00	15799.48	72.37	0.00
CC-AG-OTH	160.99	3517.92	5.98	4624.84	3645.57	166.79
CC-MINING	0.00	15.89	150.73	9.48	3429.36	0.01
CC-FOODPRO	0.00	1493.30	0.00	3426.40	66.24	14.37
CC-TEXTILE	47.19	199.41	204.45	54.05	4142.72	46.54
CC-CONSTRC	26.78	58.21	61.98	70.63	71.14	6260.55
CC-PAP-MET	77.42	378.26	410.91	663.15	7283.42	155.98
CC-CHEMIC	1650.02	1232.37	572.79	601.21	11461.50	2285.96
CD-ELECTGW	0.00	45.85	9.08	99.30	58.96	146.66
CC-TRADES	0.00	3.39	6.06	27.58	14.26	7.56
CC-HOTLRES	10.38	51.91	179.62	88.94	314.22	37.32
CC-TRANCOM	22.68	111.68	214.69	290.99	271.61	101.67
CC-BANKINS	259.65	239.17	248.56	422.96	626.69	236.83
CC-SER-OTH	67.27	257.95	921.16	584.93	589.82	77.05
VA-AG-FC	25545.76					
VA-AG-OTH		16584.80				
VA-MINING			25389.57			
VA-FOODPRO				8534.14		
VA-TEXTILE					15108.38	
VA-CONSTRC						4447.15
+						
AC-PAP-MET		AC-CHEMIC	AC-ELECTGW	AC-TRADES	AC-HOTLRES	AC-TRANCOM
CC-AG-FC	0.96	3.95	0.00	0.51	616.18	0.56
CC-AG-OTH	38.53	1045.22	0.00	0.23	2549.85	5.86
CC-MINING	17.49	11955.81	551.71	0.09	0.04	0.15
CC-FOODPRO	7.34	67.35	0.00	5.60	2699.02	27.84
CC-TEXTILE	125.59	108.34	59.15	412.36	141.34	166.29
CC-CONSTRC	58.30	158.02	1.22	86.35	63.07	19.00
CC-PAP-MET	9062.78	682.05	333.50	559.27	192.32	699.84
CC-CHEMIC	3669.84	9133.97	1293.99	695.28	459.62	2571.83
CD-ELECTGW	169.95	465.87	668.50	386.05	387.96	72.39
CC-TRADES	23.17	32.82	0.01	69.14	3.37	1139.41
CC-HOTLRES	77.16	305.74	2.45	379.06	42.57	239.71
CC-TRANCOM	259.27	467.85	12.00	1081.65	169.37	835.02
CC-BANKINS	259.38	543.03	22.10	855.14	67.50	396.85
CC-SER-OTH	285.53	819.21	73.90	1178.72	482.23	2453.07
VA-PAP-MET	6907.55					
VA-CHEMIC		14576.30				
VA-ELECTGW			1469.10			
VA-TRADES				25165.17		
VA-HOTLRES					6299.75	
VA-TRANCOM						11282.29

+	AC-BANKINS	AC-SER-OTH	TTM-C	AC-TTM			
CC-AG-FC	0	72.42					
CC-AG-OTH	0	94.62					
CC-MINING	0	8.25					
CC-FOODPRO	1.4	197.34					
CC-TEXTILE	165.56	942.7					
CC-CONSTRC	2.03	265.99					
CC-PAP-MET	351.41	3839.07					
CC-CHEMIC	38.61	2590.57					
CD-ELECTGW	105.29	350.04					
CC-TRADES	0.23	3.26	31856.05				
CC-HOTLRES	247.71	117.14					
CC-TRANCOM	265.54	290.16	8252.48				
CC-BANKINS	1047.53	335.17					
CC-SER-OTH	884.16	1238.28					
VA-BANKINS	8310.89						
VA-SER-OTH		28976.27					
TTM-C				40108.53			
+	CD-AG-FC	CD-AG-OTH	CD-MINING	CD-FOODPRO	CD-TEXTILE	CD-CONSTRC	CD-
PAP-MET							
AC-AG-FC	28510.7						
AC-AG-OTH		24273.88					
AC-MINING			28375.57				
AC-FOODPRO				35298.07			
AC-TEXTILE					47156.23		
AC-CONSTRC						13984.44	
AC-PAP-MET							
20962.82							
AC-TTM	3173.63	4606.89	1060.47	5504.88	2278.35	1568.86	
4984.47							
INDR-TAX	201.23	200.11	244.44	2964.19	781.87	191.44	
736.22							
+	CD-CHEMIC	CD-ELECTGW	CD-TRADES	CD-HOTLRES	CD-TRANCOM	CD-BANKINS	CD-
SER-OTH							
AC-CHEMIC	40365.52						
AC-ELECTGW		4487.62					
AC-TRADES			30874.61				
AC-HOTLRES				14174.19			
AC-TRANCOM					19910.09		
AC-BANKINS						11420.34	
AC-SER-OTH							
39321.24							
AC-TTM	7397.58						
INDR-TAX	-484.28	19.42	2505.63	613.2	254.68	96.69	
879.66							
+	CI-AG-FC	CI-AG-OTH	CI-MINING	CI-FOODPRO	CI-TEXTILE	CI-CONSTRC	CI-
PAP-MET							
AC-TTM	90.05	80.94	83.08	378.62	11.66	452.13	
5581.45							
INDR-TAX	16.26	0.85	3.59	24.58	1.34	226.98	
2202.88							
REST-WORLD	632.82	198.82	2567.25	1302.65	37.77	2599.68	
23330.13							
+	CI-CHEMIC	CI-TRADES	CI-HOTLRES	CI-TRANCOM	CI-BANKINS	CI-SER-OTH	
AC-TTM	2855.47						
INDR-TAX	575.91					12.55	
REST-WORLD	12317.4	261.62	959.39	1130.95	980.22	3727.01	



Appendices of Chapter VI-18

+	CC-AG-FC	CC-AG-OTH	CC-MINING	CC-FOODPRO	CC-TEXTILE	CC-CONSTRC	CC-
PAP-MET							
CD-AG-FC	31662.61						
CD-AG-OTH		27527.26					
CD-MINING			16330.7				
CD-FOODPRO				39707.85			
CD-TEXTILE					43595.03		
CD-CONSTRC						9776.06	
CD-PAP-MET							
24751.91							
CI-AG-FC	739.13						
CI-AG-OTH		280.68					
CI-MINING			2653.91				
CI-FOODPRO				1705.88			
CI-TEXTILE					50.78		
CI-CONSTRC						3278.79	
CI-PAP-MET							
31114.46							
+	CC-CHEMIC	CC-TRADES	CC-HOTLRES	CC-TRANCOM	CC-BANKINS	CC-SER-OTH	
CD-CHEMIC	32103.69						
CD-TRADES		33158.65					
CD-HOTLRES			13676.44				
CD-TRANCOM				19277.35			
CD-BANKINS					9698.24		
CD-SER-OTH						39839.13	
CI-CHEMIC	15748.78						
CI-TRADES		261.63					
CI-HOTLRES			959.39				
CI-TRANCOM				1130.95			
CI-BANKINS					980.23		
CI-SER-OTH						3739.59	
+	LB-AG-WG	LB-AG-NW	LB-PRD-WG	LB-PRD-NW	LB-CLR-WG	LB-CLR-NW	LB-
PROF-WG							
H-AG-LB-FI	3540.37	70.36	489.48	10.89	118.74	53.55	14.51
H-AG-SF-FI	1223.12	8563.97	2870.92	143.04	637.17	584.25	137.17
H-AG-MF-FI	240.08	3147.79	670.03	43.55	143.15	139.5	54.29
H-AG-LF-FI	525.31	4731.41	942.1	71.83	230.27	216.93	79.68
H-NA-RL-FI	488.18	374.56	1135.31	510.28	267.07	1870.61	102.3
H-NA-RD-FI	47.11	37.8	462.8	6.57	119.63	20.21	51.29
H-NA-RH-FI	923.86	1454.75	4477.23	2189.96	2836.19	3760.69	
1797.75							
H-NA-UL-FI	260.09	53.98	3585.8	525.05	2519.41	3580.06	333.81
H-NA-UD-FI	14.68	2.82	744.98	3.93	544.61	28.98	69.98
H-NA-UH-FI	151.81	58.75	6023.39	815.32	14132.04	3664.45	
3972.16							
+	LB-PROF-NW	CP-LAND-AG	CP-PD-NC	CP-PD-C	CP-GOV	CP-FOREIGN	INDR-TAX
H-AG-LB-FI	0.08	511.56	1322.9				
H-AG-SF-FI	1.68	6332.39	5890.55				
H-AG-MF-FI	0.54	1479.96	1374.74				
H-AG-LF-FI	1.07	1793.12	1836.7				
H-NA-RL-FI	8.65	571.41	1903.9				
H-NA-RD-FI	0.1	88.58	1317.48				
H-NA-RH-FI	120.43	2448.86	3663.31				
H-NA-UL-FI	18.74	260.28	5793.14				
H-NA-UD-FI	0.27	401.79	2225.98				
H-NA-UH-FI	161.85	65.59	10526.63				
FIRM-FI			2561.42	22968.14	885.18	16793.14	
GOV-FI					1937.79		12269.42
REST-WORLD						10773.95	

+	REST-WORLD
CE-AG-FC	222.95
CE-AG-OTH	1553.62
CE-MINING	13349.78
CE-FOODPRO	4059.29
CE-TEXTILE	6621.42
CE-CONSTRC	5968.68
CE-PAP-MET	1931.6
CE-CHEMIC	15175.12
CE-TRADES	221.59
CE-HOTLRES	1110.98
CE-TRANCOM	887.42
CE-BANKINS	1818.82
CE-SER-OTH	361.78
CP-PDC-AMF	605.06
CP-GOV-AMF	553.41
H-AG-LB-IA	195.79
H-AG-SF-IA	111.27
H-AG-MF-IA	100.42
H-AG-LF-IA	1650
H-NA-RL-IA	431.13
H-NA-RD-IA	4.24
H-NA-RH-IA	200
H-NA-UL-IA	350
H-NA-UD-IA	169.71
H-NA-UH-IA	400
FIRM-IA	5343.46
GOV-IA	464.88
SAVING-INV	9032.09

+	H-AG-LB-IA	H-AG-SF-IA	H-AG-MF-IA	H-AG-LF-IA	H-NA-RL-IA	H-NA-RD-IA
H-AG-LB-FI	195.79					
H-AG-SF-FI		111.27				
H-AG-MF-FI			100.42			
H-AG-LF-FI				1650		
H-NA-RL-FI					431.13	
H-NA-RD-FI						4.24

+	H-NA-RH-IA	H-NA-UL-IA	H-NA-UD-IA	H-NA-UH-IA	FIRM-IA	GOV-IA
H-NA-RH-FI	200					
H-NA-UL-FI		350				
H-NA-UD-FI			169.71			
H-NA-UH-FI				400		
FIRM-FI					5343.46	
GOV-FI						464.88

+	CP-PDC-AMF	CP-GOV-AMF	CP-PDC-AIC	CP-GOV-AIC	CP-PDC-VA	CP-GOV-VA
CP-PDC-AIC	605.06					
CP-GOV-AIC		553.41				
CP-PDC-VA			605.06			
CP-GOV-VA				553.41		
CP-PD-C					605.06	
CP-GOV						553.41

+ NA-RH-FI	H-AG-LB-FI	H-AG-SF-FI	H-AG-MF-FI	H-AG-LF-FI	H-NA-RL-FI	H-NA-RD-FI	H-
H-AG-LB-TI 114.64	26.9	27.46	3.83	17.15	19.5	3.15	
H-AG-SF-TI 215.02	20.19	136.11	7.15	41.99	42.44	6.01	
H-AG-MF-TI 164.81	5.25	12.2	5.63	15.47	22.66	4.39	
H-AG-LF-TI 71.57	4.79	17.48	2.43	11.4	12.5	1.91	
H-NA-RL-TI 782.65	55.64	186.35	62.46	111.97	131.95	22.32	
H-NA-RD-TI 5.86	0.41	1.4	0.38	0.85	0.99	1.01	
H-NA-RH-TI 1.97	0.05	0.09	0.01	0.26	0.32	0.02	
H-NA-UL-TI 180.8	12.91	42.78	5.9	25.44	30.28	5.18	
H-NA-UD-TI 94.51	6.55	22.79	3.15	14.24	30.74	2.61	
H-NA-UH-TI 0.39	0.01	0.01	0	0.06	0.01	0	
GOV-TI 309.17	48.86	428.03	102.54	136	162.89	30.01	
H-AG-LB-C	6195.91						
H-AG-SF-C		25709.17					
H-AG-MF-C			6246.33				
H-AG-LF-C				8364.61			
H-NA-RL-C					8702.63		
H-NA-RD-C						2227.42	
H-NA-RH-C 19430.74							
SAVING-INV 3789.36	554.55	1999.26	1315.58	3616.26	1381.07	345.52	
+ H-AG-LB-TI	H-NA-UL-FI	H-NA-UD-FI	H-NA-UH-FI	FIRM-FI	GOV-FI	GOV-TI	
H-AG-SF-TI	55.53	2.84	92.06	13.31		227.42	
H-AG-MF-TI	153.37	7.4	247.07	49.61		1161.24	
H-AG-LF-TI	23.97	1.75	43.51	61.5		0.2	
H-NA-RL-TI	33.27	1.7	53.52	66.6		0.11	
H-NA-RD-TI	396.88	49.72	669.03	12.52		393.09	
H-NA-RH-TI	2.91	0.15	4.89	35.47		439.42	
H-NA-UL-TI	2.17	0.02	1.8	0.45		1281.3	
H-NA-UD-TI	122.07	4.76	155.34	1.53		1310.85	
H-NA-UH-TI	46.1	2.37	76.19	1.6		37.5	
FIRM-TI	0.05	0	0.33	0.15		872.24	
GOV-TI	0	0	0	1296.71		0	
GOV-FI	327.5	75.73	377.07	21121.26	3724.01		
H-NA-UL-C						21119.7	
H-NA-UD-C	15897.38						
H-NA-UH-C		3760.57					
GOV-C			30796.15				
SAVING-INV					15502.78		
REST-WORLD	2117	639.07	8328.28	19667.51	12010		
				7519.83	4555		
+ H-AG-LB-FI	H-AG-LB-TI	H-AG-SF-TI	H-AG-MF-TI	H-AG-LF-TI	H-NA-RL-TI	H-NA-RD-TI	
H-AG-SF-FI	603.79						
H-AG-MF-FI		2087.6					
H-AG-LF-FI			361.34				
H-NA-RL-FI				277.28			
H-NA-RD-FI					2874.58		
						493.74	
+ H-NA-RH-FI	H-NA-RH-TI	H-NA-UL-TI	H-NA-UD-TI	H-NA-UH-TI	FIRM-TI		
H-NA-UL-FI	1288.46						
		1897.84					

H-NA-UD-FI	338.35		
H-NA-UH-FI		873.25	
FIRM-FI			1296.71

+	H-AG-LB-C	H-AG-SF-C	H-AG-MF-C	H-AG-LF-C	H-NA-RL-C	H-NA-RD-C
CC-AG-FC	983.74	3666.26	916.91	1231.33	1280.6	223.51
CC-AG-OTH	880.08	2450.53	681.92	1083.52	1064.76	222.65
CC-MINING	0.1	0.39	0.12	0.14	0.12	0.07
CC-FOODPRO	989.07	8319.13	2072.78	2649.21	1332.53	527.91
CC-TEXTILE	29.64	73.52	18.81	30.78	21.58	5.9
CC-CONSTRC	265.94	710.7	194.79	307.38	381.71	55.12
CC-PAP-MET	351.64	859.7	225.47	467.85	315.99	96.34
CC-CHEMIC	648.28	1827.09	379.17	558.28	622.71	136.76
CD-ELECTGW	45.88	108.39	25.09	29.88	75.78	15.77
CC-TRADES	3.58	13.03	2.69	3.98	16.34	8.03
CC-HOTLRES	794.88	2661.77	540.46	548.49	1153.69	257.77
CC-TRANCOM	149.93	494.21	100.03	151.1	642.27	319.93
CC-BANKINS	44.59	82.3	33.88	44.25	163.42	93.19
CC-SER-OTH	1008.56	4442.15	1054.21	1258.42	1631.13	264.47

+	H-NA-RH-C	H-NA-UL-C	H-NA-UD-C	H-NA-UH-C	GOV-C	SAVING-INV
CC-AG-FC	2040.27	1436.73	490.83	2652.32	0	186.45
CC-AG-OTH	1849.88	1704.82	280.44	1480.61	21.52	230.81
CC-MINING	0.13	0.11	0.04	0.18	0	2844.2
CC-FOODPRO	6715.2	2490.58	573.08	7738.04	0	
CC-TEXTILE	69.44	65.14	11.3	109.34	588.63	35806.04
CC-CONSTRC	721.01	575.28	60.79	2332.53	93.26	153.07
CC-PAP-MET	1470.72	456.55	180	2873.97	961.31	22917.45
CC-CHEMIC	1089.98	1140.51	263.46	798.35	576.63	1553.69
CD-ELECTGW	102.84	277.88	58.36	622.04	179.25	
CC-TRADES	24.17	50.54	12.62	50.35	48.64	
CC-HOTLRES	1690.45	1471	203.91	2248.4	971.08	
CC-TRANCOM	976.47	1695.07	571.09	1999.11	662.43	
CC-BANKINS	690.85	1525.19	120.3	1907.35	412.59	
CC-SER-OTH	1989.33	3007.98	934.35	5983.56	10987.44	1103.84

+	LB-AGALL	LB-PRDALL	LB-CLRALL	LB-PROFALL	CP-CORPALL
LB-AG-WG	7414.63				
LB-AG-NW	18496.15				
LB-PRD-WG		21402.05			
LB-PRD-NW		4320.42			
LB-CLR-WG			21548.27		
LB-CLR-NW			13919.23		
LB-PROF-WG				6612.95	
LB-PROF-NW				313.41	
CP-PD-C					22363.08
CP-GOV					2269.56
CP-FOREIGN					27567.09

+	LB-NAGALL	LB-COMPALL	CP-COMPALL
LB-PRDALL	25722.47		
LB-CLRALL	35467.5		
LB-PROFALL	6926.36		
LB-AGALL		25910.78	
LB-NAGALL		68116.33	
CP-CORPALL			52199.73
CP-LAND-AG			13953.54
CP-PD-NC			38416.75

+	VA-AG-FC	VA-AG-OTH	VA-MINING	VA-FOODPRO	VA-TEXTILE	VA-CONSTRC	VA-
PAP-MET							
LB-COMPALL	18523.99	7967.98	2199.77	2810.37	8002.14	1872.5	
2825.37							
CP-COMPALL	7021.78	8616.81	23189.8	5723.77	7106.24	2574.65	
4082.19							

+	VA-CHEMIC	VA-ELECTGW	VA-TRADES	VA-HOTLRES	VA-TRANCOM	VA-BANKINS	VA-
SER-OTH							
LB-COMPALL	3187.78	419.08	18301.39	1943.62	3918	3353.79	
18701.33							

CP-COMPALL	11388.52	1050.01	6863.78	4356.13	7364.3	4957.1
10274.94						

	CE-AG-FC	CE-AG-OTH	CE-MINING	CE-FOODPRO	CE-TEXTILE	CE-CONSTRC	CE-
+ PAP-MET							
CD-AG-FC	222.95						
CD-AG-OTH		1553.62					
CD-MINING			13349.78				
CD-FOODPRO				4059.29			
CD-TEXTILE					6621.42		
CD-CONSTRC						5968.68	
CD-PAP-MET							
1931.60							
+ CE-CHEMIC	15175.12						
CD-CHEMIC	15175.12						
CD-TRADES		221.59					
CD-HOTLRES			1110.98				
CD-TRANCOM				887.42			
CD-BANKINS					1818.82		
CD-SER-OTH						361.78	

\$STITLE DEFINITION OF SPECIFICATION AND CELL TABLES  
 TABLE SPEC(ACC,ACC) SPECIFICATION TABLE

\*FUNCTIONAL SPECIFICATIONS OF THE CORRESPONDING SAM ABOVE ARE DEFINED BELOW AND  
 \*PRESENTED WITH THE SAME FORMAT OF THE SAM.  
 \*SEE THE ACRONYM DEFINITION FOR THE MEANING OF THE SPECIFICATION

	AC-AG-FC	AC-AG-OTH	AC-MINING	AC-FOODPRO	AC-TEXTILE	AC-CONSTRC
CC-AG-FC	IO	IO		IO	IO	IO
CC-AG-OTH	IO	IO	IO	IO	IO	IO
CC-MINING		IO	IO	IO	IO	IO
CC-FOODPRO		IO		IO	IO	IO
CC-TEXTILE	IO	IO	IO	IO	IO	IO
CC-CONSTRC	IO	IO	IO	IO	IO	IO
CC-PAP-MET	IO	IO	IO	IO	IO	IO
CC-CHEMIC	IO	IO	IO	IO	IO	IO
CD-ELECTGW		IO	IO	IO	IO	IO
CC-TRADES		IO	IO	IO	IO	IO
CC-HOTLRES	IO	IO	IO	IO	IO	IO
CC-TRANCOM	IO	IO	IO	IO	IO	IO
CC-BANKINS	IO	IO	IO	IO	IO	IO
CC-SER-OTH	IO	IO	IO	IO	IO	IO
VA-AG-FC	IO					
VA-AG-OTH		IO				
VA-MINING			IO			
VA-FOODPRO				IO		
VA-TEXTILE					IO	
VA-CONSTRC						IO
+						
	AC-PAP-MET	AC-CHEMIC	AC-ELECTGW	AC-TRADES	AC-HOTLRES	AC-TRANCOM
CC-AG-FC	IO	IO		IO	IO	IO
CC-AG-OTH	IO	IO		IO	IO	IO
CC-MINING	IO	IO	IO	IO	IO	IO
CC-FOODPRO	IO	IO		IO	IO	IO
CC-TEXTILE	IO	IO	IO	IO	IO	IO
CC-CONSTRC	IO	IO	IO	IO	IO	IO
CC-PAP-MET	IO	IO	IO	IO	IO	IO
CC-CHEMIC	IO	IO	IO	IO	IO	IO
CD-ELECTGW	IO	IO	IO	IO	IO	IO
CC-TRADES	IO	IO	IO	IO	IO	IO
CC-HOTLRES	IO	IO	IO	IO	IO	IO
CC-TRANCOM	IO	IO	IO	IO	IO	IO
CC-BANKINS	IO	IO	IO	IO	IO	IO
CC-SER-OTH	IO	IO	IO	IO	IO	IO
VA-PAP-MET	IO					
VA-CHEMIC		IO				
VA-ELECTGW			IO			
VA-TRADES				IO		
VA-HOTLRES					IO	
VA-TRANCOM						IO



+	AC-BANKINS	AC-SER-OTH	TTM-C	AC-TTM		
CC-AG-FC		IO				
CC-AG-OTH		IO				
CC-MINING		IO				
CC-FOODPRO	IO	IO				
CC-TEXTILE	IO	IO				
CC-CONSTRC	IO	IO				
CC-PAP-MET	IO	IO				
CC-CHEMIC	IO	IO				
CD-ELECTGW	IO	IO				
CC-TRADES	IO	IO	VSHR			
CC-HOTLRES	IO	IO				
CC-TRANCOM	IO	IO	VSHR			
CC-BANKINS	IO	IO				
CC-SER-OTH	IO	IO				
VA-BANKINS	IO					
VA-SER-OTH		IO				
TTM-C				IDIST		

+	CD-AG-FC	CD-AG-OTH	CD-MINING	CD-FOODPRO	CD-TEXTILE	CD-CONSTRC	CD-
PAP-MET							
AC-AG-FC	IO						
AC-AG-OTH		IO					
AC-MINING			IO				
AC-FOODPRO				IO			
AC-TEXTILE					IO		
AC-CONSTRC						IO	
AC-PAP-MET							
IO							
AC-TTM	ITAX	ITAX	ITAX	ITAX	ITAX	ITAX	
ITAX							
INDR-TAX	ITAX	ITAX	ITAX	ITAX	ITAX	ITAX	
ITAX							

+	CD-CHEMIC	CD-ELECTGW	CD-TRADES	CD-HOTLRES	CD-TRANCOM	CD-BANKINS	CD-
SER-OTH							
AC-CHEMIC	IO						
AC-ELECTGW		IO					
AC-TRADES			IO				
AC-HOTLRES				IO			
AC-TRANCOM					IO		
AC-BANKINS						IO	
AC-SER-OTH							
IO							
AC-TTM	ITAX						
INDR-TAX	ITAX	ITAX	ITAX	ITAX	ITAX	ITAX	
ITAX							

+	CI-AG-FC	CI-AG-OTH	CI-MINING	CI-FOODPRO	CI-TEXTILE	CI-CONSTRC	CI-
PAP-MET							
AC-TTM	ITAX	ITAX	ITAX	ITAX	ITAX	ITAX	
ITAX							
INDR-TAX	ITAX	ITAX	ITAX	ITAX	ITAX	ITAX	
ITAX							
REST-WORLD	IMPORT	IMPORT	IMPORT	IMPORT	IMPORT	IMPORT	
IMPORT							

+	CI-CHEMIC	CI-TRADES	CI-HOTLRES	CI-TRANCOM	CI-BANKINS	CI-SER-OTH
AC-TTM	ITAX					
INDR-TAX	ITAX					ITAX
REST-WORLD	IMPORT	IMPORT	IMPORT	IMPORT	IMPORT	IMPORT

+	CC-AG-FC	CC-AG-OTH	CC-MINING	CC-FOODPRO	CC-TEXTILE	CC-CONSTRC	CC-
PAP-MET							
CD-AG-FC	CES						
CD-AG-OTH		CES					
CD-MINING			CES				
CD-FOODPRO				CES			
CD-TEXTILE					CES		
CD-CONSTRC						CES	
CD-PAP-MET							CES
CI-AG-FC	CES						
CI-AG-OTH		CES					
CI-MINING			CES				
CI-FOODPRO				CES			
CI-TEXTILE					CES		
CI-CONSTRC						CES	
CI-PAP-MET							
CES							
+	CC-CHEMIC	CC-TRADES	CC-HOTLRES	CC-TRANCOM	CC-BANKINS	CC-SER-OTH	
CD-CHEMIC	CES						
CD-TRADES		CES					
CD-HOTLRES			CES				
CD-TRANCOM				CES			
CD-BANKINS					CES		
CD-SER-OTH						CES	
CI-CHEMIC	CES						
CI-TRADES		CES					
CI-HOTLRES			CES				
CI-TRANCOM				CES			
CI-BANKINS					CES		
CI-SER-OTH						CES	
+	LB-AG-WG	LB-AG-NW	LB-PRD-WG	LB-PRD-NW	LB-CLR-WG	LB-CLR-NW	LB-PROF-
WG							
H-AG-LB-FI	IDIST	IDIST	IDIST	IDIST	IDIST	IDIST	IDIST
H-AG-SF-FI	IDIST	IDIST	IDIST	IDIST	IDIST	IDIST	IDIST
H-AG-MF-FI	IDIST	IDIST	IDIST	IDIST	IDIST	IDIST	IDIST
H-AG-LF-FI	IDIST	IDIST	IDIST	IDIST	IDIST	IDIST	IDIST
H-NA-RL-FI	IDIST	IDIST	IDIST	IDIST	IDIST	IDIST	IDIST
H-NA-RD-FI	IDIST	IDIST	IDIST	IDIST	IDIST	IDIST	IDIST
H-NA-RH-FI	IDIST	IDIST	IDIST	IDIST	IDIST	IDIST	IDIST
H-NA-UL-FI	IDIST	IDIST	IDIST	IDIST	IDIST	IDIST	IDIST
H-NA-UD-FI	IDIST	IDIST	IDIST	IDIST	IDIST	IDIST	IDIST
H-NA-UH-FI	IDIST	IDIST	IDIST	IDIST	IDIST	IDIST	IDIST
+	LB-PROF-NW	CP-LAND-AG	CP-PD-NC	CP-PD-C	CP-GOV	CP-FOREIGN	INDR-
TAX							
H-AG-LB-FI	IDIST	IDIST	IDIST				
H-AG-SF-FI	IDIST	IDIST	IDIST				
H-AG-MF-FI	IDIST	IDIST	IDIST				
H-AG-LF-FI	IDIST	IDIST	IDIST				
H-NA-RL-FI	IDIST	IDIST	IDIST				
H-NA-RD-FI	IDIST	IDIST	IDIST				
H-NA-RH-FI	IDIST	IDIST	IDIST				
H-NA-UL-FI	IDIST	IDIST	IDIST				
H-NA-UD-FI	IDIST	IDIST	IDIST				
H-NA-UH-FI	IDIST	IDIST	IDIST				
FIRM-FI			IDIST	IDIST	IDIST	IDIST	
GOV-FI					IDIST		IDIST
REST-WORLD						IDIST	

+	REST-WORLD
CE-AG-FC	EXPORT
CE-AG-OTH	EXPORT
CE-MINING	EXPORT
CE-FOODPRO	EXPORT
CE-TEXTILE	EXPORT
CE-CONSTRC	EXPORT
CE-PAP-MET	EXPORT
CE-CHEMIC	EXPORT
CE-TRADES	EXPORT
CE-HOTLRES	EXPORT
CE-TRANCOM	EXPORT
CE-BANKINS	EXPORT
CE-SER-OTH	EXPORT
CP-PDC-AMF	TEXO
CP-GOV-AMF	TEXO
H-AG-LB-IA	TEXO
H-AG-SF-IA	TEXO
H-AG-MF-IA	TEXO
H-AG-LF-IA	TEXO
H-NA-RL-IA	TEXO
H-NA-RD-IA	TEXO
H-NA-RH-IA	TEXO
H-NA-UL-IA	TEXO
H-NA-UD-IA	TEXO
H-NA-UH-IA	TEXO
FIRM-IA	UNSPEC
GOV-IA	UNSPEC
SAVING-INV	TEXO

+	H-AG-LB-IA	H-AG-SF-IA	H-AG-MF-IA	H-AG-LF-IA	H-NA-RL-IA	H-NA-RD-IA
H-AG-LB-FI	IDIST					
H-AG-SF-FI		IDIST				
H-AG-MF-FI			IDIST			
H-AG-LF-FI				IDIST		
H-NA-RL-FI					IDIST	
H-NA-RD-FI						IDIST

+	H-NA-RH-IA	H-NA-UL-IA	H-NA-UD-IA	H-NA-UH-IA	FIRM-IA	GOV-IA
H-NA-RH-FI	IDIST					
H-NA-UL-FI		IDIST				
H-NA-UD-FI			IDIST			
H-NA-UH-FI				IDIST		
FIRM-FI					IDIST	
GOV-FI						IDIST

+	CP-PDC-AMF	CP-GOV-AMF	CP-PDC-AIC	CP-GOV-AIC	CP-PDC-VA	CP-GOV-VA
CP-PDC-AIC	IDIST					
CP-GOV-AIC		IDIST				
CP-PDC-VA			VSHR			
CP-GOV-VA				VSHR		
CP-PD-C					IO	
CP-GOV						IO

+ RH-FI	H-AG-LB-FI	H-AG-SF-FI	H-AG-MF-FI	H-AG-LF-FI	H-NA-RL-FI	H-NA-RD-FI	H-NA-
H-AG-LB-TI	IDIST	IDIST	IDIST	IDIST	IDIST	IDIST	
IDIST							
H-AG-SF-TI	IDIST	IDIST	IDIST	IDIST	IDIST	IDIST	
IDIST							
H-AG-MF-TI	IDIST	IDIST	IDIST	IDIST	IDIST	IDIST	
IDIST							
H-AG-LF-TI	IDIST	IDIST	IDIST	IDIST	IDIST	IDIST	
IDIST							
H-NA-RL-TI	IDIST	IDIST	IDIST	IDIST	IDIST	IDIST	
IDIST							
H-NA-RD-TI	IDIST	IDIST	IDIST	IDIST	IDIST	IDIST	
IDIST							
H-NA-RH-TI	IDIST	IDIST	IDIST	IDIST	IDIST	IDIST	
IDIST							
H-NA-UL-TI	IDIST	IDIST	IDIST	IDIST	IDIST	IDIST	
IDIST							
H-NA-UD-TI	IDIST	IDIST	IDIST	IDIST	IDIST	IDIST	
IDIST							
H-NA-UH-TI	IDIST	IDIST	IDIST	IDIST	IDIST	IDIST	
IDIST							
GOV-TI	DTAX	DTAX	DTAX	DTAX	DTAX	DTAX	
DTAX							
H-AG-LB-C	IDIST						
H-AG-SF-C		IDIST					
H-AG-MF-C			IDIST				
H-AG-LF-C				IDIST			
H-NA-RL-C					IDIST		
H-NA-RD-C						IDIST	
H-NA-RH-C							
IDIST							
SAVING-INV	IDIST	IDIST	IDIST	IDIST	IDIST	IDIST	
IDIST							
+ H-NA-UL-FI	H-NA-UD-FI	H-NA-UH-FI	FIRM-FI	GOV-FI	GOV-TI		
H-AG-LB-TI	IDIST	IDIST	IDIST		IDIST		
H-AG-SF-TI	IDIST	IDIST	IDIST		IDIST		
H-AG-MF-TI	IDIST	IDIST	IDIST		IDIST		
H-AG-LF-TI	IDIST	IDIST	IDIST		IDIST		
H-NA-RL-TI	IDIST	IDIST	IDIST		IDIST		
H-NA-RD-TI	IDIST	IDIST	IDIST		IDIST		
H-NA-RH-TI	IDIST	IDIST	IDIST		IDIST		
H-NA-UL-TI	IDIST	IDIST	IDIST		IDIST		
H-NA-UD-TI	IDIST	IDIST	IDIST		IDIST		
H-NA-UH-TI	IDIST	IDIST	IDIST		IDIST		
FIRM-TI			IDIST				
GOV-TI	DTAX	DTAX	DTAX	DTAX	DTAX		
GOV-FI						IDIST	
H-NA-UL-C	IDIST						
H-NA-UD-C		IDIST					
H-NA-UH-C			IDIST				
GOV-C					IDIST		
SAVING-INV	IDIST	IDIST	IDIST	IDIST	IDIST		
REST-WORLD				IDIST	IDIST		
+ H-AG-LB-TI	H-AG-SF-TI	H-AG-MF-TI	H-AG-LF-TI	H-NA-RL-TI	H-NA-RD-TI		
H-AG-LB-FI	IDIST						
H-AG-SF-FI		IDIST					
H-AG-MF-FI			IDIST				
H-AG-LF-FI				IDIST			
H-NA-RL-FI					IDIST		
H-NA-RD-FI						IDIST	
+ H-NA-RH-TI	H-NA-UL-TI	H-NA-UD-TI	H-NA-UH-TI	FIRM-TI			
H-NA-RH-FI	IDIST						
H-NA-UL-FI		IDIST					

H-NA-UD-FI  
H-NA-UH-FI  
FIRM-FI

IDIST

IDIST

IDIST

	H-AG-LB-C	H-AG-SF-C	H-AG-MF-C	H-AG-LF-C	H-NA-RL-C	H-NA-RD-C
+						
CC-AG-FC	VSHR	VSHR	VSHR	VSHR	VSHR	VSHR
CC-AG-OTH	VSHR	VSHR	VSHR	VSHR	VSHR	VSHR
CC-MINING	VSHR	VSHR	VSHR	VSHR	VSHR	VSHR
CC-FOODPRO	VSHR	VSHR	VSHR	VSHR	VSHR	VSHR
CC-TEXTILE	VSHR	VSHR	VSHR	VSHR	VSHR	VSHR
CC-CONSTRC	VSHR	VSHR	VSHR	VSHR	VSHR	VSHR
CC-PAP-MET	VSHR	VSHR	VSHR	VSHR	VSHR	VSHR
CC-CHEMIC	VSHR	VSHR	VSHR	VSHR	VSHR	VSHR
CD-ELECTGW	VSHR	VSHR	VSHR	VSHR	VSHR	VSHR
CC-TRADES	VSHR	VSHR	VSHR	VSHR	VSHR	VSHR
CC-HOTLRES	VSHR	VSHR	VSHR	VSHR	VSHR	VSHR
CC-TRANCOM	VSHR	VSHR	VSHR	VSHR	VSHR	VSHR
CC-BANKINS	VSHR	VSHR	VSHR	VSHR	VSHR	VSHR
CC-SER-OTH	VSHR	VSHR	VSHR	VSHR	VSHR	VSHR

	H-NA-RH-C	H-NA-UL-C	H-NA-UD-C	H-NA-UH-C	GOV-C	SAVING-INV
+						
CC-AG-FC	VSHR	VSHR	VSHR	VSHR		QSHR
CC-AG-OTH	VSHR	VSHR	VSHR	VSHR	QSHR	QSHR
CC-MINING	VSHR	VSHR	VSHR	VSHR		QSHR
CC-FOODPRO	VSHR	VSHR	VSHR	VSHR		
CC-TEXTILE	VSHR	VSHR	VSHR	VSHR	QSHR	QSHR
CC-CONSTRC	VSHR	VSHR	VSHR	VSHR	QSHR	QSHR
CC-PAP-MET	VSHR	VSHR	VSHR	VSHR	QSHR	QSHR
CC-CHEMIC	VSHR	VSHR	VSHR	VSHR	QSHR	QSHR
CD-ELECTGW	VSHR	VSHR	VSHR	VSHR	QSHR	
CC-TRADES	VSHR	VSHR	VSHR	VSHR	QSHR	
CC-HOTLRES	VSHR	VSHR	VSHR	VSHR	QSHR	
CC-TRANCOM	VSHR	VSHR	VSHR	VSHR	QSHR	
CC-BANKINS	VSHR	VSHR	VSHR	VSHR	QSHR	
CC-SER-OTH	VSHR	VSHR	VSHR	VSHR	QSHR	QSHR
FOR-INV						QSHR

+	FOR-INV	FORINV-TAX
FORINV-TAX	IO	
REST-WORLD		IDIST

	LB-AGALL	LB-PRDALL	LB-CLRALL	LB-PROFALL	CP-CORPALL
+					
LB-AG-WG	CES				
LB-AG-NW	CES				
LB-PRD-WG		CES			
LB-PRD-NW		CES			
LB-CLR-WG			CES		
LB-CLR-NW			CES		
LB-PROF-WG				CES	
LB-PROF-NW				CES	
CP-PD-C					CES
CP-GOV					CES
CP-FOREIGN					CES

	LB-NAGALL	LB-COMPALL	CP-COMPALL
+			
LB-PRDALL	CES		
LB-CLRALL	CES		
LB-PROFALL	CES		
LB-AGALL		CES	
LB-NAGALL		CES	
CP-CORPALL			CES
CP-LAND-AG			CES
CP-PD-NC			CES

```

+          VA-AG-FC  VA-AG-OTH  VA-MINING  VA-FOODPRO  VA-TEXTILE  VA-CONSTRC  VA-
PAP-MET
LB-COMPALL  CES          CES          CES          CES          CES          CES          CES
CP-COMPALL  CES          CES          CES          CES          CES          CES          CES

```

```

+          VA-CHEMIC  VA-ELECTGW  VA-TRADES  VA-HOTLRES  VA-TRANCOM  VA-BANKINS  VA-
SER-OTH
LB-COMPALL  CES          CES          CES          CES          CES          CES
CES
CP-COMPALL  CES          CES          CES          CES          CES          CES
CES

```

```

+          CE-AG-FC  CE-AG-OTH  CE-MINING  CE-FOODPRO  CE-TEXTILE  CE-CONSTRC  CE-
PAP-MET
CD-AG-FC    IO
CD-AG-OTH          IO
CD-MINING          IO
CD-FOODPRO          IO
CD-TEXTILE          IO
CD-CONSTRC          IO
CD-PAP-MET          IO

```

```

+          CE-CHEMIC  CE-TRADES  CE-HOTLRES  CE-TRANCOM  CE-BANKINS  CE-SER-OTH
CD-CHEMIC    IO
CD-TRADES          IO
CD-HOTLRES          IO
CD-TRANCOM          IO
CD-BANKINS          IO
CD-SER-OTH          IO

```

\*DEFINE THE PARAMETERS USED IN THE MODELS (ELASTICITY OF EXPORT DEMANDS FOR EACH \*COMMODITY)

```

SET ACCEX(ACC) EXPORTED COMMODITIES
/CE-AG-FC,CE-AG-OTH,CE-MINING,CE-FOODPRO,CE-TEXTILE,CE-CONSTRC,
CE-PAP-MET,CE-CHEMIC,CE-TRADES,CE-HOTLRES,CE-TRANCOM,CE-BANKINS,CE-SER-OTH/

```

PARAMETER ETAS(ACCEX) ELASTICITY OF DEMAND FOR EXPORTS

```

/CE-AG-FC=3.0,CE-AG-OTH=3.4,CE-MINING=3.6,CE-FOODPRO=2.8,CE-TEXTILE=2.8,CE-
CONSTRC=2.8,

```

```

CE-PAP-MET=2.0,CE-CHEMIC=2.4,CE-TRADES=2.0,CE-HOTLRES=2.4,CE-TRANCOM=2.0,CE-
BANKINS=2.4,CE-SER-OTH=2.0 /

```

\* DEFINE AND FILL THE CELL TABLE:

```

PARAMETER CT(ACC,ACC,*) CELL TABLE;

```

```

CT(ACC,ACCP,"TBASE")          = SAM(ACC,ACCP);
CT(ACC,ACCP,"SPECS")          = SPEC(ACC,ACCP);
CT(ACCEX,"REST-WORLD","ETA") = ETAS(ACCEX);

```

\$STITLE ACCOUNT TABLE AND ACCOUNT TOTALS

```

TABLE AT(ACC,*) ACCOUNT TABLE

```

	TYPE	FIX	SIGMA
LB-AG-WG	MF	P	
LB-AG-NW	MF	P	
LB-PRD-WG	MF	P	
LB-PRD-NW	MF	P	
LB-CLR-WG	MF	Q	
LB-CLR-NW	MF	Q	
LB-PROF-WG	MF	Q	
LB-PROF-NW	MF	Q	
CP-LAND-AG	MF	Q	
CP-PD-NC	MF	Q	
CP-PD-C	MF	Q	
CP-GOV	MF	Q	
CP-FOREIGN	MF	Q	
CP-PDC-AMF	INST		

CP-GOV-AMF	INST
CP-PDC-AIC	INSTC
CP-GOV-AIC	INSTC
CP-PDC-VA	AC
CP-GOV-VA	AC



*Nesting labour			
LB-AGALL	AC		1.6
LB-PRDALL	AC		1.4
LB-CLRALL	AC		1.4
LB-PROFALL	AC		1.4
LB-NAGALL	AC		1.2
LB-COMPALL	AC		0.6
*Nesting capital			
CP-CORPALL	AC		1.7
CP-COMPALL	AC		0.8
H-AG-LB-FI	INST		
H-AG-SF-FI	INST		
H-AG-MF-FI	INST		
H-AG-LF-FI	INST		
H-NA-RL-FI	INST		
H-NA-RD-FI	INST		
H-NA-RH-FI	INST		
H-NA-UL-FI	INST		
H-NA-UD-FI	INST		
H-NA-UH-FI	INST		
FIRM-FI	INST		
GOV-FI	INST		
H-AG-LB-TI	INST		
H-AG-SF-TI	INST		
H-AG-MF-TI	INST		
H-AG-LF-TI	INST		
H-NA-RL-TI	INST		
H-NA-RD-TI	INST		
H-NA-RH-TI	INST		
H-NA-UL-TI	INST		
H-NA-UD-TI	INST		
H-NA-UH-TI	INST		
FIRM-TI	INST		
GOV-TI	TAX		
H-AG-LB-IA	INST		
H-AG-SF-IA	INST		
H-AG-MF-IA	INST		
H-AG-LF-IA	INST		
H-NA-RL-IA	INST		
H-NA-RD-IA	INST		
H-NA-RH-IA	INST		
H-NA-UL-IA	INST		
H-NA-UD-IA	INST		
H-NA-UH-IA	INST		
FIRM-IA	INST		
GOV-IA	INST		
H-AG-LB-C	INSTC		
H-AG-SF-C	INSTC		
H-AG-MF-C	INSTC		
H-AG-LF-C	INSTC		
H-NA-RL-C	INSTC		
H-NA-RD-C	INSTC		
H-NA-RH-C	INSTC		
H-NA-UL-C	INSTC		
H-NA-UD-C	INSTC		
H-NA-UH-C	INSTC		
GOV-C	INSTC	Q	
SAVING-INV	INSTC	Q	
TTM-C	INSTC		
AC-TTM	TAX		
INDR-TAX	TAX		
AC-AG-FC	AC		
AC-AG-OTH	AC		
AC-MINING	AC		
AC-FOODPRO	AC		
AC-TEXTILE	AC		
AC-CONSTRC	AC		

AC-PAP-MET	AC	
AC-CHEMIC	AC	
AC-ELECTGW	AC	
AC-TRADES	AC	
AC-HOTLRES	AC	
AC-TRANCOM	AC	
AC-BANKINS	AC	
AC-SER-OTH	AC	
VA-AG-FC	AC	0.5
VA-AG-OTH	AC	0.5
VA-MINING	AC	0.5
VA-FOODPRO	AC	0.5
VA-TEXTILE	AC	0.5
VA-CONSTRC	AC	0.5
VA-PAP-MET	AC	0.5
VA-CHEMIC	AC	0.5
VA-ELECTGW	AC	0.5
VA-TRADES	AC	0.5
VA-HOTLRES	AC	0.5
VA-TRANCOM	AC	0.5
VA-BANKINS	AC	0.5
VA-SER-OTH	AC	0.5
CD-AG-FC	AC	
CD-AG-OTH	AC	
CD-MINING	AC	
CD-FOODPRO	AC	
CD-TEXTILE	AC	
CD-CONSTRC	AC	
CD-PAP-MET	AC	
CD-CHEMIC	AC	
CD-ELECTGW	AC	
CD-TRADES	AC	
CD-HOTLRES	AC	
CD-TRANCOM	AC	
CD-BANKINS	AC	
CD-SER-OTH	AC	
CE-AG-FC	AC	
CE-AG-OTH	AC	
CE-MINING	AC	
CE-FOODPRO	AC	
CE-TEXTILE	AC	
CE-CONSTRC	AC	
CE-PAP-MET	AC	
CE-CHEMIC	AC	
CE-TRADES	AC	
CE-HOTLRES	AC	
CE-TRANCOM	AC	
CE-BANKINS	AC	
CE-SER-OTH	AC	
CI-AG-FC	AC	
CI-AG-OTH	AC	
CI-MINING	AC	
CI-FOODPRO	AC	
CI-TEXTILE	AC	
CI-CONSTRC	AC	
CI-PAP-MET	AC	
CI-CHEMIC	AC	
CI-TRADES	AC	
CI-HOTLRES	AC	
CI-TRANCOM	AC	
CI-BANKINS	AC	
CI-SER-OTH	AC	
CC-AG-FC	AC	2.4
CC-AG-OTH	AC	2.6
CC-MINING	AC	2.8
CC-FOODPRO	AC	2.0
CC-TEXTILE	AC	2.0
CC-CONSTRC	AC	2.0

CC-PAP-MET	AC		1.4
CC-CHEMIC	AC		1.8
CC-TRADES	AC		1.6
CC-HOTLRES	AC		1.8
CC-TRANCOM	AC		1.6
CC-BANKINS	AC		1.8
CC-SER-OTH	AC		1.6
FOR-INV	AC		
FORINV-TAX	MF	P	
REST-WORLD	ROW	NP	

\$STITLE MODEL DEFINITION, EXPERIMENTS SOLUTION AND REPORT  
 MODEL GSMODEL "A CGE MODEL FOR INDONESIAN ECONOMY 1990"  
 / ACC, AT, CT / ;

\* BASIC SOLUTION  
 SOLVE GSMODEL USING HERCULES;

**Table VII.6a: Detail Effects of 20 percent Reduction in the Government Consumption on Commodities Based on CGE Model 1985**

GS85GOV				
VARIABLES	BASE	CURRENT PRICES	CONSTANT PRICES	PRICE INDEX
(1)	(2)	(3)	(4)	(5)
GDP AT FACTOR COST	99698.95	97141.07	98819.13	0.983
NET INDIRECT TAXES	20809.79	20389.05	20654.92	
INCOME EFFECT			-11.898	
FINAL USE	113459.7	109180.7	110767.1	0.986
EXPORTS	22522.5	23254.07	23599.79	0.985
IMPORTS	-15473.5	-14904.7	-14904.7	1
GDP AT MARKET PRICES	120508.7	117530	119462.2	0.984
TERMS OF TRADE			-345.716	
GROSS DOMESTIC INCOME	120508.7	117530	119116.4	
RESOURCE GAP	-7049.05	-8349.34	-8349.34	

ACCOUNT	PSOL	QSOL	YSOL	YBASE
LB-AG-WG	1	2480.316	2480.316	2565.45
LB-AG-NW	1	9038.233	9038.233	9348.46
LB-PRD-WG	1	6342.133	6342.133	6675.73
LB-PRD-NW	1	2868.012	2868.012	3018.87
LB-CLR-WG	0.958	8415.09	8063.172	8415.09
LB-CLR-NW	0.958	6779.52	6496.001	6779.52
LB-PROF-WG	0.958	5247.25	5027.811	5247.25
LB-PROF-NW	0.958	390.6	374.265	390.6
LB-AGALL	1	11518.55	11518.55	11913.91
LB-PRDALL	1	9210.146	9210.146	9694.6
LB-CLRALL	0.958	15194.61	14559.17	15194.61
LB-PROFALL	0.958	5637.85	5402.076	5637.85
LB-NAGALL	0.971	30035.53	29171.4	30527.06
LB-COMPALL	0.979	41551.94	40689.94	42440.97
CP-CORPALL	0.985	32405.99	31927.91	32418.6
CP-COMPALL	0.985	53162.98	52368.74	53175.59
CP-LAND-AG	0.985	8839.94	8705.292	8839.94
CP-PD-NC	0.985	11917.05	11735.53	11917.05
CP-PD-C	0.985	8389.26	8265.803	8389.26
CP-GOV	0.985	12671.15	12486.79	12671.15
CP-FOREIGN	0.985	12209.33	12026.46	12209.33
CP-PDC-AMF			246.6	246.6
CP-GOV-AMF			604.54	604.54
CP-PDC-AIC	0.985	250.283	246.6	246.6
CP-GOV-AIC	0.985	613.466	604.54	604.54
CP-PDC-VA	0.985	250.283	246.6	246.6
CP-GOV-VA	0.985	613.466	604.54	604.54
H-AG-LB-FI			2835.09	2933.23
H-AG-SF-FI			9182.784	9466.19
H-AG-MF-FI			4583.986	4701.96
H-AG-LF-FI			9100.173	9295.6
H-NA-RL-FI			6835.574	7087.67
H-NA-RD-FI			2661.266	2707.16

Appendices of Chapter VII-2

	PSOL	QSOL	YSOL	YBASE
H-NA-RH-FI			7032.671	7208.74
H-NA-UL-FI			11437.31	11842.97
H-NA-UD-FI			3714.584	3780.73
H-NA-UH-FI			12595.64	12907.54
FIRM-FI			30573.24	29112.64
GOV-FI			12635.13	16035.73
H-AG-LB-TI			106.47	109.38
H-AG-SF-TI			401.839	411.38
H-AG-MF-TI			96.745	98.84
H-AG-LF-TI			256.636	262.69
H-NA-RL-TI			815.923	825.07
H-NA-RD-TI			689.78	685.8
H-NA-RH-TI			1390.421	1337.22
H-NA-UL-TI			1176.225	1186.41
H-NA-UD-TI			1069.865	1057.14
H-NA-UH-TI			2500.009	2416.38
FIRM-TI			347.648	331.04
GOV-TI			15808.64	15815.99
H-AG-LB-IA			0.37	0.37
H-AG-SF-IA			6.33	6.33
H-AG-MF-IA			5.53	5.53
H-AG-LF-IA			5.67	5.67
H-NA-RL-IA			78.86	78.86
H-NA-RD-IA			36.4	36.4
H-NA-RH-IA			23.24	23.24
H-NA-UL-IA			100.61	100.61
H-NA-UD-IA			32.04	32.04
H-NA-UH-IA			111.95	111.95
FIRM-IA			2176.07	313.3
GOV-IA			-3267.79	29.7
H-AG-LB-C	0.984	2634.449	2592.923	2682.68
H-AG-SF-C	0.984	8371.67	8237.032	8491.25
H-AG-MF-C	0.984	3892.568	3831.551	3930.16
H-AG-LF-C	0.985	7301.053	7188.252	7342.62
H-NA-RL-C	0.985	5657.356	5570.451	5775.89
H-NA-RD-C	0.985	2255.135	2220.35	2258.64
H-NA-RH-C	0.985	5753.724	5668.621	5810.54
H-NA-UL-C	0.985	9347.656	9205.09	9531.58
H-NA-UD-C	0.985	3114.172	3067.133	3121.75
H-NA-UH-C	0.985	9685.602	9541.928	9778.21
GOV-C	0.985	7902.488	7783.316	9878.11
TTM-C	0.983	18000.23	17695.2	18019.94
SAVING-INV	0.99	25987.18	25727.8	25987.18
INDR-TAX			2693.849	2789.85
AC-AG-FC	0.982	14382.01	14118.67	14511.83
AC-AG-OTH	0.984	13840.71	13617.86	13861.25
AC-MINING	0.985	17332.51	17072.2	16706.27
AC-FOODPRO	0.983	15660.93	15398.62	15837.01
AC-TEXTILE	0.985	3391.26	3340.972	3403.43
AC-CONSTRC	0.987	20116.82	19848.39	20188.33
AC-PAP-MET	0.99	6451.017	6384.973	6504.99

ACCOUNT	PSOL	QSOL	YSOL	YBASE
AC-CHEMIC	0.986	19549.28	19282.42	19385.74
AC-ELECTGW	0.988	1740.144	1718.908	1801.91
AC-TRADES	0.982	14308.22	14055.91	14319.47
AC-HOTLRES	0.984	5466.33	5379.376	5622.81
AC-TRANCOM	0.984	8644.622	8509.289	8738.71
AC-BANKINS	0.984	3084.741	3034.133	3102.45
AC-SER-OTH	0.983	18938.27	18610.62	20409.67
AC-TTM			17695.2	18019.94
VA-AG-FC	0.981	12702.94	12462	12817.6
VA-AG-OTH	0.983	9396.742	9238.121	9410.69
VA-MINING	0.985	15096.46	14865.57	14551.01
VA-FOODPRO	0.983	2909.775	2860.105	2942.49
VA-TEXTILE	0.982	1138.225	1117.518	1142.31
VA-CONSTRC	0.982	6934.132	6809.546	6958.78
VA-PAP-MET	0.983	2105.464	2069.897	2123.08
VA-CHEMIC	0.984	7921.709	7796.945	7855.44
VA-ELECTGW	0.983	381.653	375.085	395.2
VA-TRADES	0.982	12032.76	11811.16	12042.22
VA-HOTLRES	0.983	2220.379	2183.145	2283.94
VA-TRANCOM	0.982	4661.95	4579.809	4712.69
VA-BANKINS	0.983	2345.833	2305.564	2359.3
VA-SER-OTH	0.981	14866.74	14584.22	16021.81
CD-AG-FC	0.982	16749.19	16442.51	16900.38
CD-AG-OTH	0.984	17667.42	17382.95	17693.64
CD-MINING	0.985	18092.72	17820.99	17439.01
CD-FOODPRO	0.983	18639.17	18326.97	18848.73
CD-TEXTILE	0.985	3925.543	3867.331	3939.63
CD-CONSTRC	0.987	21265.01	20981.26	21340.6
CD-PAP-MET	0.99	7927.335	7846.177	7993.66
CD-CHEMIC	0.986	22293.94	21989.61	22107.44
CD-ELECTGW	0.988	1740.83	1719.585	1802.62
CD-TRADES	0.982	15184.84	14917.07	15196.78
CD-HOTLRES	0.984	5632.318	5542.724	5793.55
CD-TRANCOM	0.984	8722.544	8585.991	8817.48
CD-BANKINS	0.984	3102.122	3051.228	3119.93
CD-SER-OTH	0.983	19179.31	18847.49	20669.44
CE-AG-FC	0.982	152.674	149.878	144.44
CE-AG-OTH	0.984	2013.08	1980.667	1904.99
CE-MINING	0.985	10348.01	10192.6	9799.36
CE-FOODPRO	0.983	198.913	195.581	191.01
CE-TEXTILE	0.985	692.96	682.684	664.57
CE-CONSTRC	0.987	1403.033	1384.312	1351.24
CE-PAP-MET	0.99	271.358	268.58	265.83
CE-CHEMIC	0.986	7125.579	7028.31	6856.56
CE-TRADES	0.982	178.721	175.569	171.25
CE-HOTLRES	0.984	219.684	216.189	212.75
CE-TRANCOM	0.984	413.134	406.666	400.3
CE-BANKINS	0.984	532.008	523.279	511.3
CE-SER-OTH	0.983	50.637	49.761	48.9
CI-AG-FC	1	452.988	452.988	478.08
CI-AG-OTH	1	431.849	431.849	454.33

ACCOUNT	PSOL	QSOL	YSOL	YBASE
CI-MINING	1	1184.865	1184.865	1219.38
CI-FOODPRO	1	284.45	284.45	296.69
CI-TEXTILE	1	191.01	191.01	199.39
CI-CONSTRC	1	5.426	5.426	5.61
CI-PAP-MET	1	8081.58	8081.58	8275.8
CI-CHEMIC	1	4967.118	4967.118	5133.33
CI-TRADES	1	113.746	113.746	117.6
CI-HOTLRES	1	407.661	407.661	431.25
CI-TRANCOM	1	510.979	510.979	530.84
CI-BANKINS	1	421.369	421.369	440.61
CI-SER-OTH	1	1291.194	1291.194	1431.31
CC-AG-FC	0.982	17049.32	16745.62	17234.02
CC-AG-OTH	0.984	16086.04	15834.13	16242.98
CC-MINING	0.987	8929.236	8813.255	8859.03
CC-FOODPRO	0.984	18724.63	18415.84	18954.41
CC-TEXTILE	0.986	3423.553	3375.658	3474.45
CC-CONSTRC	0.987	19867.4	19602.37	19994.97
CC-PAP-MET	0.995	15737.27	15659.18	16003.63
CC-CHEMIC	0.99	20134.77	19928.42	20384.21
CC-TRADES	0.983	15119.83	14855.25	15143.13
CC-HOTLRES	0.985	5820.217	5734.195	6012.05
CC-TRANCOM	0.985	8820.292	8690.303	8948.02
CC-BANKINS	0.986	2991.393	2949.317	3049.24
CC-SER-OTH	0.984	20419.57	20088.92	22051.85
FOR-INV	1	3231.25	3231.25	3231.25
FORINV-TAX	1	3231.25	3231.25	3231.25
REST-WORLD	1		23414.5	24117.64

**Table VII.6b: Detail Effects of 20 percent Reduction in the Import Tariff on Imported Commodities Based on CGE Model 1985.**

GS85IMP				
VARIABLES	BASE	CURRENT PRICES	CONSTANT PRICES	PRICE INDEX
(1)	(2)	(3)	(4)	(5)
GDP AT FACTOR COST	99698.95	99671.61	99696.13	1
NET INDIRECT TAXES	20809.79	20655.08	20827.67	
INCOME EFFECT			-0.606	
FINAL USE	113459.7	113323.7	113500.3	0.998
EXPORTS	22522.5	22561.99	22582.1	0.999
IMPORTS	-15473.5	-15559.2	-15559.2	1
GDP AT MARKET PRICES	120508.7	120326.5	120523.2	0.998
TERMS OF TRADE			-20.104	
GROSS DOMESTIC INCOME	120508.7	120326.5	120503.1	
RESOURCE GAP	-7049.05	-7002.84	-7002.84	

ACCOUNT	PSOL	QSOL	YSOL	YBASE
LB-AG-WG	1	2565.179	2565.179	2565.45
LB-AG-NW	1	9347.471	9347.471	9348.46
LB-PRD-WG	1	6674.658	6674.658	6675.73
LB-PRD-NW	1	3018.385	3018.385	3018.87
LB-CLR-WG	1	8415.09	8413.964	8415.09
LB-CLR-NW	1	6779.52	6778.613	6779.52
LB-PROF-WG	1	5247.25	5246.548	5247.25
LB-PROF-NW	1	390.6	390.548	390.6
LB-AGALL	1	11912.65	11912.65	11913.91
LB-PRDALL	1	9693.043	9693.043	9694.6
LB-CLRALL	1	15194.61	15192.58	15194.61
LB-PROFALL	1	5637.85	5637.095	5637.85
LB-NAGALL	1	30525.5	30522.71	30527.06
LB-COMPALL	1	42438.15	42435.36	42440.97
CP-CORPALL	1	32418.27	32405.38	32418.6
CP-COMPALL	1	53175.26	53153.85	53175.59
CP-LAND-AG	1	8839.94	8836.313	8839.94
CP-PD-NC	1	11917.05	11912.16	11917.05
CP-PD-C	1	8389.26	8385.934	8389.26
CP-GOV	1	12671.15	12666.18	12671.15
CP-FOREIGN	1	12209.33	12204.4	12209.33
CP-PDC-AMF			246.6	246.6
CP-GOV-AMF			604.54	604.54
CP-PDC-AIC	1	246.698	246.6	246.6
CP-GOV-AIC	1	604.777	604.54	604.54
CP-PDC-VA	1	246.698	246.6	246.6
CP-GOV-VA	1	604.777	604.54	604.54
H-AG-LB-FI			2932.737	2933.23
H-AG-SF-FI			9463.962	9466.19
H-AG-MF-FI			4700.611	4701.96
H-AG-LF-FI			9292.411	9295.6
H-NA-RL-FI			7084.212	7087.67



ACCOUNT	PSOL	QSOL	YSOL	YBASE
H-NA-RD-FI			2704.385	2707.16
H-NA-RH-FI			7201.276	7208.74
H-NA-UL-FI			11837.16	11842.97
H-NA-UD-FI			3776.511	3780.73
H-NA-UH-FI			12894.27	12907.54
FIRM-FI			28962.06	29112.64
GOV-FI			16013.65	16035.73
H-AG-LB-TI			109.308	109.38
H-AG-SF-TI			410.935	411.38
H-AG-MF-TI			98.713	98.84
H-AG-LF-TI			262.406	262.69
H-NA-RL-TI			822.848	825.07
H-NA-RD-TI			683.617	685.8
H-NA-RH-TI			1330.786	1337.22
H-NA-UL-TI			1182.861	1186.41
H-NA-UD-TI			1053.672	1057.14
H-NA-UH-TI			2405.008	2416.38
FIRM-TI			329.328	331.04
GOV-TI			15752.05	15815.99
H-AG-LB-IA			0.37	0.37
H-AG-SF-IA			6.33	6.33
H-AG-MF-IA			5.53	5.53
H-AG-LF-IA			5.67	5.67
H-NA-RL-IA			78.86	78.86
H-NA-RD-IA			36.4	36.4
H-NA-RH-IA			23.24	23.24
H-NA-UL-IA			100.61	100.61
H-NA-UD-IA			32.04	32.04
H-NA-UH-IA			111.95	111.95
FIRM-IA			175.786	313.3
GOV-IA			209.642	29.7
H-AG-LB-C	0.999	2684.986	2682.229	2682.68
H-AG-SF-C	0.999	8497.278	8489.251	8491.25
H-AG-MF-C	0.999	3933.377	3929.032	3930.16
H-AG-LF-C	0.999	7348.895	7340.101	7342.62
H-NA-RL-C	0.999	5780.141	5773.072	5775.89
H-NA-RD-C	0.999	2258.912	2256.325	2258.64
H-NA-RH-C	0.998	5813.44	5804.523	5810.54
H-NA-UL-C	0.999	9538.159	9526.904	9531.58
H-NA-UD-C	0.999	3122.256	3118.266	3121.75
H-NA-UH-C	0.999	9782.165	9768.158	9778.21
GOV-C	0.999	9878.11	9864.506	9878.11
TTM-C	0.999	18023.95	18014.12	18019.94
SAVING-INV	0.997	25987.18	25906.2	25987.18
INDR-TAX			2640.948	2789.85
AC-AG-FC	1	14508.82	14503.58	14511.83
AC-AG-OTH	0.999	13863.73	13854.82	13861.25
AC-MINING	0.999	16715.32	16706.25	16706.27
AC-FOODPRO	0.999	15836.47	15825.78	15837.01
AC-TEXTILE	0.998	3403.93	3398.405	3403.43
AC-CONSTRC	0.998	20196.75	20154.6	20188.33

ACCOUNT	PSOL	QSOL	YSOL	YBASE
AC-PAP-MET	0.996	6472.575	6443.844	6504.99
AC-CHEMIC	0.999	19359.69	19339.2	19385.74
AC-ELECTGW	0.998	1802.461	1798.472	1801.91
AC-TRADES	1	14321.54	14315.11	14319.47
AC-HOTLRES	0.999	5623.975	5619.411	5622.81
AC-TRANCOM	0.999	8743.086	8734.323	8738.71
AC-BANKINS	0.999	3103.189	3101.488	3102.45
AC-SER-OTH	0.999	20413.29	20394.9	20409.67
AC-TTM			18014.13	18019.94
VA-AG-FC	1	12814.94	12812.77	12817.6
VA-AG-OTH	1	9412.37	9409.641	9410.69
VA-MINING	1	14558.9	14553.33	14551.01
VA-FOODPRO	1	2942.389	2941.568	2942.49
VA-TEXTILE	1	1142.478	1142.233	1142.31
VA-CONSTRC	1	6961.681	6960.101	6958.78
VA-PAP-MET	1	2112.501	2111.89	2123.08
VA-CHEMIC	1	7844.886	7842.096	7855.44
VA-ELECTGW	1	395.321	395.214	395.2
VA-TRADES	1	12043.96	12041.54	12042.22
VA-HOTLRES	1	2284.413	2283.736	2283.94
VA-TRANCOM	1	4715.05	4713.885	4712.69
VA-BANKINS	1	2359.862	2359.217	2359.3
VA-SER-OTH	1	16024.65	16021.98	16021.81
CD-AG-FC	1	16896.87	16890.78	16900.38
CD-AG-OTH	0.999	17696.8	17685.43	17693.64
CD-MINING	0.999	17448.46	17438.99	17439.01
CD-FOODPRO	0.999	18848.08	18835.36	18848.73
CD-TEXTILE	0.998	3940.208	3933.813	3939.63
CD-CONSTRC	0.998	21349.5	21304.94	21340.6
CD-PAP-MET	0.996	7953.827	7918.521	7993.66
CD-CHEMIC	0.999	22077.74	22054.37	22107.44
CD-ELECTGW	0.998	1803.171	1799.18	1802.62
CD-TRADES	1	15198.98	15192.15	15196.78
CD-HOTLRES	0.999	5794.751	5790.047	5793.55
CD-TRANCOM	0.999	8821.895	8813.054	8817.48
CD-BANKINS	0.999	3120.673	3118.962	3119.93
CD-SER-OTH	0.999	20673.1	20654.48	20669.44
CE-AG-FC	1	144.596	144.544	144.44
CE-AG-OTH	0.999	1909.157	1907.93	1904.99
CE-MINING	0.999	9818.533	9813.203	9799.36
CE-FOODPRO	0.999	191.32	191.191	191.01
CE-TEXTILE	0.998	667.6	666.516	664.57
CE-CONSTRC	0.998	1359.168	1356.331	1351.24
CE-PAP-MET	0.996	268.206	267.015	265.83
CE-CHEMIC	0.999	6876.923	6869.644	6856.56
CE-TRADES	1	171.435	171.358	171.25
CE-HOTLRES	0.999	213.096	212.923	212.75
CE-TRANCOM	0.999	401.104	400.702	400.3
CE-BANKINS	0.999	511.973	511.693	511.3
CE-SER-OTH	0.999	48.988	48.944	48.9
CI-AG-FC	0.997	480.896	479.504	478.08

ACCOUNT	PSOL	QSOL	YSOL	YBASE
CI-AG-OTH	0.997	456.997	455.665	454.33
CI-MINING	0.998	1221.316	1219.407	1219.38
CI-FOODPRO	0.988	302.846	299.2	296.69
CI-TEXTILE	0.985	204.725	201.636	199.39
CI-CONSTRC	0.98	5.821	5.703	5.61
CI-PAP-MET	0.988	8321.382	8219.786	8275.8
CI-CHEMIC	0.992	5184.422	5144.886	5133.33
CI-TRADES	1	117.521	117.521	117.6
CI-HOTLRES	1	430.756	430.756	431.25
CI-TRANCOM	1	530.216	530.216	530.84
CI-BANKINS	1	440.187	440.187	440.61
CI-SER-OTH	1	1430.506	1429.874	1431.31
CC-AG-FC	1	17233.16	17225.74	17234.02
CC-AG-OTH	0.999	16244.64	16233.17	16242.98
CC-MINING	0.999	8851.241	8845.192	8859.03
CC-FOODPRO	0.999	18959.57	18943.37	18954.41
CC-TEXTILE	0.998	3477.298	3468.933	3474.45
CC-CONSTRC	0.998	19996.15	19954.31	19994.97
CC-PAP-MET	0.992	16006.83	15871.29	16003.63
CC-CHEMIC	0.997	20385.07	20329.61	20384.21
CC-TRADES	1	15145.07	15138.31	15143.13
CC-HOTLRES	0.999	6012.411	6007.881	6012.05
CC-TRANCOM	0.999	8951.008	8942.568	8948.02
CC-BANKINS	1	3048.887	3047.457	3049.24
CC-SER-OTH	0.999	22054.62	22035.41	22051.85
FOR-INV	1	3231.25	3231.25	3231.25
FORINV-TAX	1	3231.25	3231.25	3231.25
REST-WORLD	1		24199.56	24117.64

**Table VII.6c: Detail Effects of 20 percent Reduction in the Indirect Taxes on Domestic Commodities Based on CGE Model 1985.**

GS85TAX				
VARIABLES	BASE	CURRENT PRICES	CONSTANT PRICES	PRICE INDEX
(1)	(2)	(3)	(4)	(5)
GDP AT FACTOR COST	99698.95	100184.2	99881.12	1.003
NET INDIRECT TAXES	20809.79	20505.23	20873.48	
INCOME EFFECT			-0.89	
FINAL USE	113459.7	113877.7	114023.8	0.999
EXPORTS	22522.5	22354.53	22272.85	1.004
IMPORTS	-15473.5	-15542.9	-15542.9	1
GDP AT MARKET PRICES	120508.7	120689.3	120753.7	0.999
TERMS OF TRADE			81.68	
GROSS DOMESTIC INCOME	120508.7	120689.3	120835.4	
RESOURCE GAP	-7049.05	-6811.61	-6811.61	

ACCOUNT	PSOL	QSOL	YSOL	YBASE
LB-AG-WG	1	2582.984	2582.984	2565.45
LB-AG-NW	1	9412.355	9412.355	9348.46
LB-PRD-WG	1	6745.102	6745.102	6675.73
LB-PRD-NW	1	3050.241	3050.241	3018.87
LB-CLR-WG	1.009	8415.09	8487.9	8415.09
LB-CLR-NW	1.009	6779.52	6838.178	6779.52
LB-PROF-WG	1.009	5247.25	5292.651	5247.25
LB-PROF-NW	1.009	390.6	393.98	390.6
LB-AGALL	1	11995.34	11995.34	11913.91
LB-PRDALL	1	9795.343	9795.343	9694.6
LB-CLRALL	1.009	15194.61	15326.08	15194.61
LB-PROFALL	1.009	5637.85	5686.63	5637.85
LB-NAGALL	1.006	30627.51	30808.05	30527.06
LB-COMPALL	1.004	42622.76	42803.39	42440.97
CP-CORPALL	1.002	32420.49	32493.32	32418.6
CP-COMPALL	1.002	53177.48	53298.45	53175.59
CP-LAND-AG	1.002	8839.94	8860.443	8839.94
CP-PD-NC	1.002	11917.05	11944.69	11917.05
CP-PD-C	1.002	8389.26	8408.059	8389.26
CP-GOV	1.002	12671.15	12699.22	12671.15
CP-FOREIGN	1.002	12209.33	12237.18	12209.33
CP-PDC-AMF			246.6	246.6
CP-GOV-AMF			604.54	604.54
CP-PDC-AIC	1.002	246.049	246.6	246.6
CP-GOV-AIC	1.002	603.204	604.54	604.54
CP-PDC-VA	1.002	246.049	246.6	246.6
CP-GOV-VA	1.002	603.204	604.54	604.54
H-AG-LB-FI			2953.214	2933.23
H-AG-SF-FI			9522.497	9466.19
H-AG-MF-FI			4724.329	4701.96
H-AG-LF-FI			9330.609	9295.6
H-NA-RL-FI			7138.04	7087.67
H-NA-RD-FI			2716.677	2707.16

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ACCOUNT	PSOL	QSOL	YSOL	YBASE
H-NA-RH-FI			7252.118	7208.74
H-NA-UL-FI			11923.4	11842.97
H-NA-UD-FI			3796.196	3780.73
H-NA-UH-FI			12982.06	12907.54
FIRM-FI			29019.65	29112.64
GOV-FI			16043.24	16035.73
H-AG-LB-TI			109.976	109.38
H-AG-SF-TI			413.235	411.38
H-AG-MF-TI			99.24	98.84
H-AG-LF-TI			263.876	262.69
H-NA-RL-TI			826.103	825.07
H-NA-RD-TI			685.993	685.8
H-NA-RH-TI			1333.799	1337.22
H-NA-UL-TI			1187.124	1186.41
H-NA-UD-TI			1057.416	1057.14
H-NA-UH-TI			2410.468	2416.38
FIRM-TI			329.983	331.04
GOV-TI			15790.77	15815.99
H-AG-LB-IA			0.37	0.37
H-AG-SF-IA			6.33	6.33
H-AG-MF-IA			5.53	5.53
H-AG-LF-IA			5.67	5.67
H-NA-RL-IA			78.86	78.86
H-NA-RD-IA			36.4	36.4
H-NA-RH-IA			23.24	23.24
H-NA-UL-IA			100.61	100.61
H-NA-UD-IA			32.04	32.04
H-NA-UH-IA			111.95	111.95
FIRM-IA			157.585	313.3
GOV-IA			433.107	29.7
H-AG-LB-C	0.999	2704.128	2700.957	2682.68
H-AG-SF-C	0.999	8548.681	8541.758	8491.25
H-AG-MF-C	0.999	3951.87	3948.858	3930.16
H-AG-LF-C	0.999	7375.439	7370.273	7342.62
H-NA-RL-C	0.999	5822.882	5816.937	5775.89
H-NA-RD-C	0.999	2268.434	2266.58	2258.64
H-NA-RH-C	0.999	5848.958	5845.504	5810.54
H-NA-UL-C	0.999	9603.323	9596.312	9531.58
H-NA-UD-C	1	3135.747	3134.521	3121.75
H-NA-UH-C	1	9838.271	9834.664	9778.21
GOV-C	1	9878.11	9882.737	9878.11
TTM-C	0.993	18211.13	18090.46	18019.94
SAVING-INV	1	25987.18	25997.16	25987.18
INDR-TAX			2414.761	2789.85
AC-AG-FC	1.004	14605.54	14659.87	14511.83
AC-AG-OTH	1.002	13909.37	13942.7	13861.25
AC-MINING	1.002	16568.85	16606.59	16706.27
AC-FOODPRO	1.002	16007.65	16035.1	15837.01
AC-TEXTILE	1.003	3410.21	3419.443	3403.43
AC-CONSTRC	1.003	20191.6	20258.23	20188.33
AC-PAP-MET	1.002	6522.745	6535.009	6504.99

ACCOUNT	PSOL	QSOL	YSOL	YBASE
AC-CHEMIC	1.003	19170.71	19223.62	19385.74
AC-ELECTGW	1.005	1805.656	1813.791	1801.91
AC-TRADES	1.003	14496.65	14541.18	14319.47
AC-HOTLRES	1.001	5671.833	5677.114	5622.81
AC-TRANCOM	1.002	8770.775	8792.498	8738.71
AC-BANKINS	1.002	3107.5	3115.029	3102.45
AC-SER-OTH	1.003	20464.79	20531.03	20409.67
AC-TTM			18090.47	18019.94
VA-AG-FC	1.004	12900.37	12947.28	12817.6
VA-AG-OTH	1.003	9443.361	9471.032	9410.69
VA-MINING	1.002	14431.32	14465.87	14551.01
VA-FOODPRO	1.003	2974.194	2983.1	2942.49
VA-TEXTILE	1.003	1144.586	1148.447	1142.31
VA-CONSTRC	1.003	6959.906	6982.857	6958.78
VA-PAP-MET	1.003	2128.875	2135.122	2123.08
VA-CHEMIC	1.003	7768.306	7788.102	7855.44
VA-ELECTGW	1.003	396.022	397.226	395.2
VA-TRADES	1.003	12191.22	12233.27	12042.22
VA-HOTLRES	1.003	2303.853	2310.517	2283.94
VA-TRANCOM	1.003	4729.982	4745.024	4712.69
VA-BANKINS	1.003	2363.141	2370.293	2359.3
VA-SER-OTH	1.004	16065.08	16123.69	16021.81
CD-AG-FC	1.003	17009.52	17052.99	16900.38
CD-AG-OTH	1.002	17755.07	17782.51	17693.64
CD-MINING	1.002	17295.56	17330.79	17439.01
CD-FOODPRO	0.995	19051.82	18947.32	18848.73
CD-TEXTILE	1.001	3947.478	3951.703	3939.63
CD-CONSTRC	1.001	21344.05	21359.69	21340.6
CD-PAP-MET	0.999	8015.479	8004.26	7993.66
CD-CHEMIC	1.009	21862.22	22058.01	22107.44
CD-ELECTGW	1.004	1806.368	1814.363	1802.62
CD-TRADES	0.991	15384.81	15253.9	15196.78
CD-HOTLRES	0.995	5844.062	5815.025	5793.55
CD-TRANCOM	1.001	8849.834	8855.902	8817.48
CD-BANKINS	1.001	3125.009	3129.07	3119.93
CD-SER-OTH	1.001	20725.27	20740.08	20669.44
CE-AG-FC	1.003	143.338	143.704	144.44
CE-AG-OTH	1.002	1895.011	1897.941	1904.99
CE-MINING	1.002	9727.835	9747.65	9799.36
CE-FOODPRO	0.995	193.548	192.486	191.01
CE-TEXTILE	1.001	662.583	663.292	664.57
CE-CONSTRC	1.001	1348.472	1349.46	1351.24
CE-PAP-MET	0.999	266.576	266.203	265.83
CE-CHEMIC	1.009	6687.514	6747.404	6856.56
CE-TRADES	0.991	174.799	173.311	171.25
CE-HOTLRES	0.995	214.88	213.812	212.75
CE-TRANCOM	1.001	399.752	400.026	400.3
CE-BANKINS	1.001	509.709	510.371	511.3
CE-SER-OTH	1.001	48.83	48.865	48.9
CI-AG-FC	1	484.183	484.183	478.08
CI-AG-OTH	1	458.221	458.221	454.33

ACCOUNT	PSOL	QSOL	YSOL	YBASE
CI-MINING	1	1214.802	1214.802	1219.38
CI-FOODPRO	1	296.925	296.925	296.69
CI-TEXTILE	1	200.417	200.417	199.39
CI-CONSTRC	1	5.62	5.62	5.61
CI-PAP-MET	1	8282.112	8282.112	8275.8
CI-CHEMIC	1	5199.583	5199.583	5133.33
CI-TRADES	1	117.227	117.227	117.6
CI-HOTLRES	1	431.536	431.536	431.25
CI-TRANCOM	1	533.5	533.5	530.84
CI-BANKINS	1	442.77	442.77	440.61
CI-SER-OTH	1	1436.832	1436.832	1431.31
CC-AG-FC	1.002	17350.35	17393.47	17234.02
CC-AG-OTH	1.002	16318.28	16342.8	16242.98
CC-MINING	1.002	8782.523	8797.945	8859.03
CC-FOODPRO	0.995	19155.19	19051.76	18954.41
CC-TEXTILE	1.001	3485.313	3488.829	3474.45
CC-CONSTRC	1.001	20001.2	20015.85	19994.97
CC-PAP-MET	0.999	16031.01	16020.17	16003.63
CC-CHEMIC	1.007	20373.98	20510.19	20384.21
CC-TRADES	0.992	15327.23	15197.81	15143.13
CC-HOTLRES	0.995	6060.71	6032.749	6012.05
CC-TRANCOM	1.001	8983.582	8989.376	8948.02
CC-BANKINS	1.001	3058.07	3061.469	3049.24
CC-SER-OTH	1.001	22113.27	22128.05	22051.85
FOR-INV	1	3231.25	3231.25	3231.25
FORINV-TAX	1	3231.25	3231.25	3231.25
REST-WORLD	1		24197.36	24117.64

- CI-NAVAL
- CI-CONFALI
- CI-CCPALL
- CI-CONFPALL
- CI-AND-AG
- CI-IND
- CI-DC
- CI-GOV
- CI-SEEDIN
- CI-OC-ANP
- CI-OW-ANP
- CI-ACAC
- CI-ACAC
- CI-DOVA
- CI-ANVA
- IR-AC-DR-FI
- IR-AN-FI
- IR-AY-FI
- IR-AG-FI
- IR-NA-RL-FI
- IR-NA-RD-FI

**Table VII.7a: Detail Effects of 20 percent Reduction in the Government Consumption on Commodities Based on CGE Model 1990**

GS90GOV				
VARIABLES	BASE	CURRENT PRICES	CONSTANT PRICES	PRICE INDEX
(1)	(2)	(3)	(4)	(5)
GDP AT FACTOR COST	199755.6	196551.3	198688	0.989
NET INDIRECT TAXES	52377.97	51838.38	52198.57	
INCOME EFFECT			-8.422	
FINAL USE	248896.2	243189.1	245158.9	0.992
EXPORTS	53283.05	54247.45	54766.97	0.991
IMPORTS	-50045.7	-49047.7	-49047.7	1
GDP AT MARKET PRICES	252133.6	248388.8	250878.1	0.99
TERMS OF TRADE			-519.519	
GROSS DOMESTIC INCOME	252133.6	248388.8	250358.6	
RESOURCE GAP	-3237.34	-5199.75	-5199.75	

ACCOUNT	PSOL	QSOL	YSOL	YBASE
LB-AG-WG	1	7289.226	7289.226	7414.61
LB-AG-NW	1	18183.32	18183.32	18496.19
LB-PRD-WG	1	20878.38	20878.38	21402.04
LB-PRD-NW	1	4214.706	4214.706	4320.42
LB-CLR-WG	0.98	21548.28	21107.99	21548.28
LB-CLR-NW	0.98	13919.23	13634.83	13919.23
LB-PROF-WG	0.98	6612.94	6477.831	6612.94
LB-PROF-NW	0.98	313.41	307.006	313.41
LB-AGALL	1	25472.55	25472.55	25910.78
LB-PRDALL	1	25093.08	25093.08	25722.47
LB-CLRALL	0.98	35467.51	34742.82	35467.5
LB-PROFALL	0.98	6926.35	6784.837	6926.36
LB-NAGALL	0.987	67482.9	66620.74	68116.33
LB-COMPALL	0.991	92954.53	92093.29	94027.11
CP-CORPALL	0.988	52186.61	51567.15	52199.73
CP-COMPALL	0.988	104556.9	103299.5	104570
CP-LAND-AG	0.988	13953.54	13783.58	13953.54
CP-PD-NC	0.988	38416.75	37948.81	38416.75
CP-PD-C	0.988	22968.14	22696.47	22968.14
CP-GOV	0.989	2822.97	2793.306	2822.97
CP-FOREIGN	0.988	27567.09	27235.84	27567.09
CP-PDC-AMF			605.06	605.06
CP-GOV-AMF			553.41	553.41
CP-PDC-AIC	0.988	612.302	605.06	605.06
CP-GOV-AIC	0.989	559.287	553.41	553.41
CP-PDC-VA	0.988	612.302	605.06	605.06
CP-GOV-VA	0.989	559.287	553.41	553.41
H-AG-LB-FI			6844.368	6932.02
H-AG-SF-FI			28239.11	28583.13
H-AG-MF-FI			7642.31	7755.39
H-AG-LF-FI			12192.2	12355.7
H-NA-RL-FI			10399.81	10537.98
H-NA-RD-FI			2649.297	2649.55



ACCOUNT	PSOL	QSOL	YSOL	YBASE
H-NA-RH-FI			24795.93	25161.49
H-NA-UL-FI			18946.9	19178.2
H-NA-UD-FI			4480.775	4546.08
H-NA-UH-FI			40155.97	40845.24
FIRM-FI			55991.62	49848.05
GOV-FI			28404.58	35791.79
H-AG-LB-TI			615.604	603.79
H-AG-SF-TI			2159.543	2087.6
H-AG-MF-TI			364.693	361.34
H-AG-LF-TI			282.506	277.28
H-NA-RL-TI			2867.358	2874.58
H-NA-RD-TI			527.442	493.74
H-NA-RH-TI			1374.693	1288.46
H-NA-UL-TI			1978.004	1897.84
H-NA-UD-TI			336.829	338.35
H-NA-UH-TI			931.985	873.25
FIRM-TI			1456.524	1296.71
GOV-TI			28650.47	26843.07
H-AG-LB-IA			195.79	195.79
H-AG-SF-IA			111.27	111.27
H-AG-MF-IA			100.42	100.42
H-AG-LF-IA			1650	1650
H-NA-RL-IA			431.13	431.13
H-NA-RD-IA			4.24	4.24
H-NA-RH-IA			200	200
H-NA-UL-IA			350	350
H-NA-UD-IA			169.71	169.71
H-NA-UH-IA			400	400
FIRM-IA			11841.17	5343.46
GOV-IA			-8138.16	464.88
H-AG-LB-C	0.992	6169.607	6117.566	6195.91
H-AG-SF-C	0.991	25622.81	25399.74	25709.17
H-AG-MF-C	0.991	6209.409	6155.253	6246.33
H-AG-LF-C	0.991	8325.405	8253.923	8364.61
H-NA-RL-C	0.991	8663.099	8588.522	8702.63
H-NA-RD-C	0.991	2246.727	2227.208	2227.42
H-NA-RH-C	0.992	19312.49	19148.44	19430.74
H-NA-UL-C	0.991	15842.42	15705.65	15897.38
H-NA-UD-C	0.991	3738.359	3706.549	3760.57
H-NA-UH-C	0.992	30526.27	30276.46	30796.15
GOV-C	0.992	12402.22	12303.1	15502.78
TTM-C	0.991	40133.54	39754.9	40108.53
SAVING-INV	0.994	64795.55	64394.14	64795.55
INDR-TAX			12083.48	12269.42
AC-AG-FC	0.99	28453.06	28175.39	28510.71
AC-AG-OTH	0.99	24259.14	24014.81	24273.9
AC-MINING	0.989	29045.1	28716.26	28375.58
AC-FOODPRO	0.99	35260.02	34916.74	35298.08
AC-TEXTILE	0.992	47136.9	46763.03	47156.26
AC-CONSTRC	0.992	14118.46	14010.88	13984.44
AC-PAP-MET	0.994	20903.76	20768.13	20962.84

ACCOUNT	PSOL	QSOL	YSOL	YBASE
AC-CHEMIC	0.991	40662.35	40280.72	40365.53
AC-ELECTGW	0.992	4412.888	4375.392	4487.63
AC-TRADES	0.99	30887.17	30590.19	30874.62
AC-HOTLRES	0.99	13996.01	13856.07	14174.19
AC-TRANCOM	0.99	19776.06	19587.18	19910.11
AC-BANKINS	0.99	11370.94	11255.55	11420.36
AC-SER-OTH	0.991	37241.41	36903.38	39321.28
AC-TTM			39754.9	40108.53
VA-AG-FC	0.99	25494.11	25238.54	25545.77
VA-AG-OTH	0.989	16574.72	16397.37	16584.79
VA-MINING	0.988	25988.63	25682.31	25389.57
VA-FOODPRO	0.989	8524.938	8430.166	8534.14
VA-TEXTILE	0.989	15102.18	14942.64	15108.38
VA-CONSTRC	0.989	4489.77	4440.994	4447.15
VA-PAP-MET	0.989	6888.083	6813.023	6907.56
VA-CHEMIC	0.989	14683.48	14515.77	14576.3
VA-ELECTGW	0.989	1444.632	1428.396	1469.09
VA-TRADES	0.99	25175.4	24923.18	25165.17
VA-HOTLRES	0.989	6220.556	6151.046	6299.75
VA-TRANCOM	0.989	11206.33	11082.31	11282.3
VA-BANKINS	0.989	8274.926	8184.628	8310.89
VA-SER-OTH	0.99	27443.59	27162.45	28976.27
CD-AG-FC	0.99	31821.1	31510.55	31885.56
CD-AG-OTH	0.99	29063.22	28770.51	29080.88
CD-MINING	0.989	30380.8	30036.84	29680.48
CD-FOODPRO	0.99	43719.96	43294.31	43767.14
CD-TEXTILE	0.992	50195.87	49797.73	50216.45
CD-CONSTRC	0.992	15895.63	15774.5	15744.74
CD-PAP-MET	0.994	26608.34	26435.69	26683.51
CD-CHEMIC	0.991	47626.49	47179.5	47278.82
CD-ELECTGW	0.992	4431.985	4394.326	4507.04
CD-TRADES	0.99	33393.82	33072.74	33380.24
CD-HOTLRES	0.99	14601.5	14455.5	14787.39
CD-TRANCOM	0.99	20029.03	19837.73	20164.77
CD-BANKINS	0.99	11467.21	11350.84	11517.03
CD-SER-OTH	0.991	38074.54	37728.95	40200.9
CE-AG-FC	0.99	229.607	227.366	222.95
CE-AG-OTH	0.99	1608.023	1591.827	1553.62
CE-MINING	0.989	13908.36	13750.9	13349.78
CE-FOODPRO	0.99	4172.026	4131.408	4059.29
CE-TEXTILE	0.992	6770.718	6717.014	6621.42
CE-CONSTRC	0.992	6097.899	6051.431	5968.68
CE-PAP-MET	0.994	1956.912	1944.215	1931.6
CE-CHEMIC	0.991	15522.46	15376.78	15175.12
CE-TRADES	0.99	225.913	223.741	221.59
CE-HOTLRES	0.99	1138.1	1126.72	1110.98
CE-TRANCOM	0.99	904.618	895.978	887.42
CE-BANKINS	0.99	1863.894	1844.979	1818.82
CE-SER-OTH	0.991	368.438	365.094	361.78
CI-AG-FC	1	720.315	720.315	739.13
CI-AG-OTH	1	272.673	272.673	280.61

ACCOUNT	PSOL	QSOL	YSOL	YBASE
CI-MINING	1	2592.946	2592.946	2653.92
CI-FOODPRO	1	1666.089	1666.089	1705.85
CI-TEXTILE	1	49.783	49.783	50.77
CI-CONSTRC	1	3236.168	3236.168	3278.79
CI-PAP-MET	1	30707.03	30707.03	31114.46
CI-CHEMIC	1	15483.89	15483.89	15748.78
CI-TRADES	1	257.689	257.689	261.62
CI-HOTLRES	1	927.516	927.516	959.39
CI-TRANCOM	1	1104.881	1104.881	1130.95
CI-BANKINS	1	952.978	952.978	980.22
CI-SER-OTH	1	3488.108	3488.108	3739.56
CC-AG-FC	0.99	32311.72	32003.5	32401.74
CC-AG-OTH	0.99	27727.84	27451.35	27807.94
CC-MINING	0.99	19064.97	18878.89	18984.61
CC-FOODPRO	0.991	41213.87	40828.99	41413.73
CC-TEXTILE	0.992	43474.93	43130.5	43645.81
CC-CONSTRC	0.994	13033.76	12959.24	13054.85
CC-PAP-MET	0.997	55358.04	55198.5	55866.37
CC-CHEMIC	0.994	47587.07	47286.61	47852.47
CC-TRADES	0.99	33425.58	33106.69	33420.28
CC-HOTLRES	0.991	14390.84	14256.3	14635.83
CC-TRANCOM	0.991	20229.21	20046.63	20408.3
CC-BANKINS	0.991	10556.21	10458.84	10678.47
CC-SER-OTH	0.992	41194	40851.97	43578.72
REST-WORLD	1		71753.58	72894.51

**Table VII.7b: Detail Effects of 20 percent Reduction in the Import Tariff on Imported Commodities Based on CGE Model 1990.**

GS90IMP				
VARIABLES	BASE	CURRENT PRICES	CONSTANT PRICES	PRICE INDEX
(1)	(2)	(3)	(4)	(5)
GDP AT FACTOR COST	199755.6	199766.1	199764.9	1
NET INDIRECT TAXES	52377.97	51762.08	52441.48	
INCOME EFFECT			-2.288	
FINAL USE	248896.2	248465.6	249066.3	0.998
EXPORTS	53283.05	53407.32	53483.45	0.999
IMPORTS	-50045.7	-50345.6	-50345.6	1
GDP AT MARKET PRICES	252133.6	251527.3	252204.1	0.997
TERMS OF TRADE			-76.129	
GROSS DOMESTIC INCOME	252133.6	251527.3	252128	
RESOURCE GAP	-3237.34	-3061.71	-3061.71	

ACCOUNT	PSOL	QSOL	YSOL	YBASE
LB-AG-WG	1	7415.722	7415.722	7414.61
LB-AG-NW	1	18498.88	18498.88	18496.19
LB-PRD-WG	1	21406.63	21406.63	21402.04
LB-PRD-NW	1	4321.344	4321.344	4320.42
LB-CLR-WG	1	21548.28	21552.11	21548.28
LB-CLR-NW	1	13919.23	13921.71	13919.23
LB-PROF-WG	1	6612.94	6614.127	6612.94
LB-PROF-NW	1	313.41	313.466	313.41
LB-AGALL	1	25914.6	25914.6	25910.78
LB-PRDALL	1	25727.97	25727.97	25722.47
LB-CLRALL	1	35467.51	35473.82	35467.5
LB-PROFALL	1	6926.35	6927.593	6926.36
LB-NAGALL	1	68121.83	68129.39	68116.33
LB-COMPALL	1	94036.43	94043.99	94027.11
CP-CORPALL	1	52199.66	52196.53	52199.73
CP-COMPALL	1	104570	104563.6	104570
CP-LAND-AG	1	13953.54	13952.68	13953.54
CP-PD-NC	1	38416.75	38414.39	38416.75
CP-PD-C	1	22968.14	22966.77	22968.14
CP-GOV	1	2822.97	2822.82	2822.97
CP-FOREIGN	1	27567.09	27565.42	27567.09
CP-PDC-AMF			605.06	605.06
CP-GOV-AMF			553.41	553.41
CP-PDC-AIC	1	605.096	605.06	605.06
CP-GOV-AIC	1	553.439	553.41	553.41
CP-PDC-VA	1	605.096	605.06	605.06
CP-GOV-VA	1	553.439	553.41	553.41
H-AG-LB-FI			6929.377	6932.02
H-AG-SF-FI			28569.01	28583.13
H-AG-MF-FI			7754.821	7755.39
H-AG-LF-FI			12355.43	12355.7
H-NA-RL-FI			10532.53	10537.98
H-NA-RD-FI			2643.551	2649.55

ACCOUNT	PSOL	QSOL	YSOL	YBASE
H-NA-RH-FI			25148.37	25161.49
H-NA-UL-FI			19163.21	19178.2
H-NA-UD-FI			4545.569	4546.08
H-NA-UH-FI			40839.08	40845.24
FIRM-FI			49074.19	49848.05
GOV-FI			35722.91	35791.79
H-AG-LB-TI			600.578	603.79
H-AG-SF-TI			2071.915	2087.6
H-AG-MF-TI			360.241	361.34
H-AG-LF-TI			276.151	277.28
H-NA-RL-TI			2868.402	2874.58
H-NA-RD-TI			487.68	493.74
H-NA-RH-TI			1272.415	1288.46
H-NA-UL-TI			1881.143	1897.84
H-NA-UD-TI			337.723	338.35
H-NA-UH-TI			862.331	873.25
FIRM-TI			1276.579	1296.71
GOV-TI			26507.14	26843.07
H-AG-LB-IA			195.79	195.79
H-AG-SF-IA			111.27	111.27
H-AG-MF-IA			100.42	100.42
H-AG-LF-IA			1650	1650
H-NA-RL-IA			431.13	431.13
H-NA-RD-IA			4.24	4.24
H-NA-RH-IA			200	200
H-NA-UL-IA			350	350
H-NA-UD-IA			169.71	169.71
H-NA-UH-IA			400	400
FIRM-IA			4592.331	5343.46
GOV-IA			1265.462	464.88
H-AG-LB-C	0.998	6204.325	6193.548	6195.91
H-AG-SF-C	0.999	25731.51	25696.47	25709.17
H-AG-MF-C	0.999	6254.462	6245.872	6246.33
H-AG-LF-C	0.998	8377.781	8364.424	8364.61
H-NA-RL-C	0.999	8711.193	8698.13	8702.63
H-NA-RD-C	0.999	2225.565	2222.377	2227.42
H-NA-RH-C	0.998	19454.75	19420.6	19430.74
H-NA-UL-C	0.999	15907.67	15884.95	15897.38
H-NA-UD-C	0.998	3765.977	3760.147	3760.57
H-NA-UH-C	0.998	30857.88	30791.5	30796.15
GOV-C	0.998	15502.78	15472.95	15502.78
TTM-C	0.999	40118.75	40097.71	40108.53
SAVING-INV	0.995	64795.55	64459.28	64795.55
INDR-TAX			11664.37	12269.42
AC-AG-FC	1	28506.03	28500.28	28510.71
AC-AG-OTH	1	24280.98	24269.02	24273.9
AC-MINING	1	28380.45	28370.6	28375.58
AC-FOODPRO	0.999	35305.75	35285.62	35298.08
AC-TEXTILE	0.997	47208.16	47082.01	47156.26
AC-CONSTRC	0.997	14021.12	13973.48	13984.44
AC-PAP-MET	0.995	20850.58	20745.83	20962.84

ACCOUNT	PSOL	QSOL	YSOL	YBASE
AC-CHEMIC	0.999	40304.75	40259.77	40365.53
AC-ELECTGW	0.998	4489.587	4480.214	4487.63
AC-TRADES	1	30879.34	30866.79	30874.62
AC-HOTLRES	0.999	14178.45	14169.27	14174.19
AC-TRANCOM	0.999	19922.13	19901.21	19910.11
AC-BANKINS	0.999	11424.12	11417.63	11420.36
AC-SER-OTH	0.999	39344.52	39291.09	39321.28
AC-TTM			40097.7	40108.53
VA-AG-FC	1	25541.57	25542.63	25545.77
VA-AG-OTH	1	16589.64	16589.76	16584.79
VA-MINING	1	25393.93	25392.69	25389.57
VA-FOODPRO	1	8535.993	8535.871	8534.14
VA-TEXTILE	1	15125.01	15125.22	15108.38
VA-CONSTRC	1	4458.815	4458.809	4447.15
VA-PAP-MET	1	6870.558	6870.537	6907.56
VA-CHEMIC	1	14554.35	14553.92	14576.3
VA-ELECTGW	1	1469.741	1469.71	1469.09
VA-TRADES	1	25169.02	25170.07	25165.17
VA-HOTLRES	1	6301.643	6301.535	6299.75
VA-TRANCOM	1	11289.1	11288.97	11282.3
VA-BANKINS	1	8313.627	8313.595	8310.89
VA-SER-OTH	1	28993.39	28994.27	28976.27
CD-AG-FC	1	31880.34	31873.91	31885.56
CD-AG-OTH	1	29089.39	29075.06	29080.88
CD-MINING	1	29685.58	29675.28	29680.48
CD-FOODPRO	0.999	43776.66	43751.7	43767.14
CD-TEXTILE	0.997	50271.75	50137.41	50216.45
CD-CONSTRC	0.997	15786.04	15732.4	15744.74
CD-PAP-MET	0.995	26540.64	26407.3	26683.51
CD-CHEMIC	0.999	47207.65	47154.96	47278.82
CD-ELECTGW	0.998	4509.015	4499.602	4507.04
CD-TRADES	1	33385.36	33371.79	33380.24
CD-HOTLRES	0.999	14791.83	14782.26	14787.39
CD-TRANCOM	0.999	20176.97	20155.77	20164.77
CD-BANKINS	0.999	11520.84	11514.3	11517.03
CD-SER-OTH	0.999	40224.7	40170.07	40200.9
CE-AG-FC	1	223.085	223.04	222.95
CE-AG-OTH	1	1556.225	1555.458	1553.62
CE-MINING	1	13366.48	13361.84	13349.78
CE-FOODPRO	0.999	4065.777	4063.459	4059.29
CE-TEXTILE	0.997	6671.216	6653.389	6621.42
CE-CONSTRC	0.997	6025.84	6005.363	5968.68
CE-PAP-MET	0.995	1951.156	1941.353	1931.6
CE-CHEMIC	0.999	15215.84	15198.86	15175.12
CE-TRADES	1	221.77	221.68	221.59
CE-HOTLRES	0.999	1112.708	1111.988	1110.98
CE-TRANCOM	0.999	889.287	888.353	887.42
CE-BANKINS	0.999	1821.304	1820.268	1818.82
CE-SER-OTH	0.999	362.765	362.272	361.78
CI-AG-FC	0.996	746.506	743.221	739.13
CI-AG-OTH	0.999	280.823	280.653	280.61

ACCOUNT	PSOL	QSOL	YSOL	YBASE
CI-MINING	1	2651.458	2650.74	2653.92
CI-FOODPRO	0.997	1713.93	1708.991	1705.85
CI-TEXTILE	0.995	51.053	50.783	50.77
CI-CONSTRC	0.986	3343.196	3296.908	3278.79
CI-PAP-MET	0.986	31312.05	30868.68	31114.46
CI-CHEMIC	0.993	15870.7	15754.63	15748.78
CI-TRADES	1	261.499	261.499	261.62
CI-HOTLRES	1	958.461	958.461	959.39
CI-TRANCOM	1	1129.655	1129.655	1130.95
CI-BANKINS	1	979.359	979.359	980.22
CI-SER-OTH	0.999	3737.617	3735.108	3739.56
CC-AG-FC	1	32403.74	32394.09	32401.74
CC-AG-OTH	1	27813.99	27800.26	27807.94
CC-MINING	1	18970.57	18964.19	18984.61
CC-FOODPRO	0.999	41424.8	41397.23	41413.73
CC-TEXTILE	0.997	43651.58	43534.8	43645.81
CC-CONSTRC	0.994	13103.12	13023.94	13054.85
CC-PAP-MET	0.99	55900.71	55334.62	55866.37
CC-CHEMIC	0.997	47862.14	47710.73	47852.47
CC-TRADES	1	33425.09	33411.61	33420.28
CC-HOTLRES	0.999	14637.59	14628.73	14635.83
CC-TRANCOM	0.999	20417.33	20397.08	20408.3
CC-BANKINS	0.999	10678.9	10673.39	10678.47
CC-SER-OTH	0.999	43599.55	43542.91	43578.72
REST-WORLD	1		73068.23	72894.51

**Table VII.7c: Detail Effects of 20 percent Reduction in the Indirect Taxes on Domestic Commodities Based on CGE Model 1990.**

GS90TAX				
VARIABLES	BASE	CURRENT PRICES	CONSTANT PRICES	PRICE INDEX
(1)	(2)	(3)	(4)	(5)
GDP AT FACTOR COST	199755.6	202374.6	200597.5	1.009
NET INDIRECT TAXES	52377.97	51063.09	52697.56	
INCOME EFFECT			-5.279	
FINAL USE	248896.2	251038.9	251137.1	1
EXPORTS	53283.05	52806.18	52560.98	1.005
IMPORTS	-50045.7	-50408.3	-50408.3	1
GDP AT MARKET PRICES	252133.6	253436.8	253289.8	1.001
TERMS OF TRADE			245.205	
GROSS DOMESTIC INCOME	252133.6	253436.8	253535	
RESOURCE GAP	-3237.34	-2397.87	-2397.87	

ACCOUNT	PSOL	QSOL	YSOL	YBASE
LB-AG-WG	1	7513.157	7513.157	7414.61
LB-AG-NW	1	18741.93	18741.93	18496.19
LB-PRD-WG	1	21816.05	21816.05	21402.04
LB-PRD-NW	1	4403.994	4403.994	4320.42
LB-CLR-WG	1.016	21548.28	21895.07	21548.28
LB-CLR-NW	1.016	13919.23	14143.25	13919.23
LB-PROF-WG	1.016	6612.94	6719.378	6612.94
LB-PROF-NW	1.016	313.41	318.454	313.41
LB-AGALL	1	26255.09	26255.09	25910.78
LB-PRDALL	1	26220.05	26220.05	25722.47
LB-CLRALL	1.016	35467.51	36038.32	35467.5
LB-PROFALL	1.016	6926.35	7037.832	6926.36
LB-NAGALL	1.01	68611.43	69296.2	68116.33
LB-COMPALL	1.007	94865.96	95551.29	94027.11
CP-CORPALL	1.01	52210.8	52744.85	52199.73
CP-COMPALL	1.01	104581.1	105664.8	104570
CP-LAND-AG	1.01	13953.54	14100	13953.54
CP-PD-NC	1.01	38416.75	38819.99	38416.75
CP-PD-C	1.01	22968.14	23202.24	22968.14
CP-GOV	1.009	2822.97	2848.536	2822.97
CP-FOREIGN	1.01	27567.09	27852.54	27567.09
CP-PDC-AMF			605.06	605.06
CP-GOV-AMF			553.41	553.41
CP-PDC-AIC	1.01	598.955	605.06	605.06
CP-GOV-AIC	1.009	548.443	553.41	553.41
CP-PDC-VA	1.01	598.955	605.06	605.06
CP-GOV-VA	1.009	548.443	553.41	553.41
H-AG-LB-FI			7014.71	6932.02
H-AG-SF-FI			28922.86	28583.13
H-AG-MF-FI			7852.885	7755.39
H-AG-LF-FI			12493.76	12355.7
H-NA-RL-FI			10673.13	10537.98
H-NA-RD-FI			2673.677	2649.55



ACCOUNT	PSOL	QSOL	YSOL	YBASE
H-NA-RH-FI			25512.48	25161.49
H-NA-UL-FI			19426	19178.2
H-NA-UD-FI			4602.419	4546.08
H-NA-UH-FI			41437.07	40845.24
FIRM-FI			49233.08	49848.05
GOV-FI			35858.61	35791.79
H-AG-LB-TI			606.547	603.79
H-AG-SF-TI			2088.801	2087.6
H-AG-MF-TI			364.622	361.34
H-AG-LF-TI			279.283	277.28
H-NA-RL-TI			2904.255	2874.58
H-NA-RD-TI			489.823	493.74
H-NA-RH-TI			1277.67	1288.46
H-NA-UL-TI			1894.561	1897.84
H-NA-UD-TI			342.025	338.35
H-NA-UH-TI			865.857	873.25
FIRM-TI			1280.713	1296.71
GOV-TI			26615.24	26843.07
H-AG-LB-IA			195.79	195.79
H-AG-SF-IA			111.27	111.27
H-AG-MF-IA			100.42	100.42
H-AG-LF-IA			1650	1650
H-NA-RL-IA			431.13	431.13
H-NA-RD-IA			4.24	4.24
H-NA-RH-IA			200	200
H-NA-UL-IA			350	350
H-NA-UD-IA			169.71	169.71
H-NA-UH-IA			400	400
FIRM-IA			4301.588	5343.46
GOV-IA			2373.457	464.88
H-AG-LB-C	1.001	6262.282	6269.819	6195.91
H-AG-SF-C	0.999	26031.17	26014.75	25709.17
H-AG-MF-C	0.999	6328.657	6324.854	6246.33
H-AG-LF-C	1	8460.54	8458.073	8364.61
H-NA-RL-C	1.001	8804.188	8814.237	8702.63
H-NA-RD-C	1	2247.276	2247.703	2227.42
H-NA-RH-C	0.999	19720.91	19701.79	19430.74
H-NA-UL-C	1.001	16080.92	16102.79	15897.38
H-NA-UD-C	1.001	3801.51	3807.174	3760.57
H-NA-UH-C	1	31248.58	31242.37	30796.15
GOV-C	1.002	15502.78	15531.72	15502.78
TTM-C	0.994	40703.81	40473.7	40108.53
SAVING-INV	1.001	64795.55	64892.32	64795.55
INDR-TAX			10589.37	12269.42
AC-AG-FC	1.008	28883.48	29109.72	28510.71
AC-AG-OTH	1.007	24439.15	24604.62	24273.9
AC-MINING	1.009	27886.61	28146.35	28375.58
AC-FOODPRO	1.005	36037.05	36226.99	35298.08
AC-TEXTILE	1.005	47134.46	47386.92	47156.26
AC-CONSTRC	1.005	13980.91	14050	13984.44
AC-PAP-MET	1.004	21056.49	21139.75	20962.84

ACCOUNT	PSOL	QSOL	YSOL	YBASE
AC-CHEMIC	1.007	39968.51	40253.99	40365.53
AC-ELECTGW	1.007	4515.097	4544.798	4487.63
AC-TRADES	1.007	31395.57	31618.22	30874.62
AC-HOTLRES	1.004	14368.27	14431.32	14174.19
AC-TRANCOM	1.006	20033.35	20154.69	19910.11
AC-BANKINS	1.007	11447.56	11531.5	11420.36
AC-SER-OTH	1.007	39555.9	39821.15	39321.28
AC-TTM			40473.72	40108.53
VA-AG-FC	1.008	25879.77	26089.04	25545.77
VA-AG-OTH	1.009	16697.71	16845.55	16584.79
VA-MINING	1.01	24952.06	25203.84	25389.57
VA-FOODPRO	1.009	8712.804	8794.083	8534.14
VA-TEXTILE	1.009	15101.4	15232.78	15108.38
VA-CONSTRC	1.009	4446.029	4486.224	4447.15
VA-PAP-MET	1.009	6938.41	7001.4	6907.56
VA-CHEMIC	1.01	14432.93	14572.59	14576.3
VA-ELECTGW	1.009	1478.092	1492.085	1469.09
VA-TRADES	1.008	25589.78	25796.54	25165.17
VA-HOTLRES	1.009	6386.008	6445.998	6299.75
VA-TRANCOM	1.009	11352.13	11457.39	11282.3
VA-BANKINS	1.009	8330.687	8406.46	8310.89
VA-SER-OTH	1.008	29149.17	29392.17	28976.27
CD-AG-FC	1.007	32302.47	32514.4	31885.56
CD-AG-OTH	1.005	29278.88	29436.55	29080.88
CD-MINING	1.008	29169.04	29392.23	29680.48
CD-FOODPRO	0.992	44683.43	44310.5	43767.14
CD-TEXTILE	1.002	50193.27	50304.97	50216.45
CD-CONSTRC	1.002	15740.77	15780.09	15744.74
CD-PAP-MET	0.998	26802.75	26760.24	26683.51
CD-CHEMIC	1.009	46813.81	47244.78	47278.82
CD-ELECTGW	1.006	4534.636	4560.532	4507.04
CD-TRADES	0.992	33943.47	33671	33380.24
CD-HOTLRES	0.996	14989.86	14930.78	14787.39
CD-TRANCOM	1.004	20289.61	20360.94	20164.77
CD-BANKINS	1.006	11544.48	11609.6	11517.03
CD-SER-OTH	1.002	40440.81	40533.83	40200.9
CE-AG-FC	1.007	218.619	220.053	222.95
CE-AG-OTH	1.005	1525.51	1533.724	1553.62
CE-MINING	1.008	12988.43	13087.81	13349.78
CE-FOODPRO	0.992	4155.676	4120.993	4059.29
CE-TEXTILE	1.002	6580.335	6594.979	6621.42
CE-CONSTRC	1.002	5927.13	5941.936	5968.68
CE-PAP-MET	0.998	1937.741	1934.668	1931.6
CE-CHEMIC	1.009	14845.02	14981.68	15175.12
CE-TRADES	0.992	225.191	223.383	221.59
CE-HOTLRES	0.996	1121.561	1117.14	1110.98
CE-TRANCOM	1.004	881.213	884.311	887.42
CE-BANKINS	1.006	1794.432	1804.553	1818.82
CE-SER-OTH	1.002	360.122	360.95	361.78
CI-AG-FC	1	760.811	760.811	739.13
CI-AG-OTH	1	286.965	286.965	280.61



**Table VII.8a: Detail Effects of 20 percent Reduction in the Government Consumption on Commodities Based on CGE Model 1993**

GS93GOV				
VARIABLES	BASE	CURRENT PRICES	CONSTANT PRICES	PRICE INDEX
(1)	(2)	(3)	(4)	(5)
GDP AT FACTOR COST	310573.2	304938.7	308816.8	0.987
NET INDIRECT TAXES	89553.1	88522.73	89233.36	
INCOME EFFECT			-14.638	
FINAL USE	393265.9	383414	387040	0.991
EXPORTS	85243.34	86700.81	87649.16	0.989
IMPORTS	-78383	-76653.7	-76653.7	1
GDP AT MARKET PRICES	400126.2	393461.1	398035.5	0.989
TERMS OF TRADE			-948.346	
GROSS DOMESTIC INCOME	400126.2	393461.1	397087.2	
RESOURCE GAP	-6860.31	-10047.1	-10047.1	

ACCOUNT	PSOL	QSOL	YSOL	YBASE
LB-AG-WG	1	10792.13	10792.13	10981.18
LB-AG-NW	1	28850.21	28850.21	29355.67
LB-PRD-WG	1	34667.88	34667.88	35546.57
LB-PRD-NW	1	7223.475	7223.475	7406.55
LB-CLR-WG	0.979	33742.59	33046.07	33742.59
LB-CLR-NW	0.979	22091.71	21635.69	22091.71
LB-PROF-WG	0.979	11208.88	10977.51	11208.88
LB-PROF-NW	0.979	629.38	616.395	629.38
LB-AGALL	1	39642.34	39642.34	40336.86
LB-PRDALL	1	41891.36	41891.36	42953.13
LB-CLRALL	0.979	55834.3	54681.77	55834.32
LB-PROFALL	0.979	11838.26	11593.91	11838.28
LB-NAGALL	0.987	109557.1	108167	110625.7
LB-COMPALL	0.991	149198.1	147809.4	150962.6
CP-CORPALL	0.985	77142.99	75969.61	77188.11
CP-COMPALL	0.984	156412.4	153976.3	156457.6
CP-LAND-AG	0.984	16846.37	16578.01	16846.37
CP-PD-NC	0.984	62423.08	61428.7	62423.08
CP-PD-C	0.985	39928.86	39325.11	39928.86
CP-GOV	0.987	4726.86	4666.998	4726.86
CP-FOREIGN	0.984	35685.36	35130.49	35685.36
CP-PDC-AMF			1835.05	1835.05
CP-GOV-AMF			1317.94	1317.94
CP-PDC-AIC	0.985	1863.223	1835.05	1835.05
CP-GOV-AIC	0.987	1334.845	1317.94	1317.94
CP-PDC-VA	0.985	1863.223	1835.05	1835.05
CP-GOV-VA	0.987	1334.845	1317.94	1317.94
H-AG-LB-FI			9355.739	9498.81
H-AG-SF-FI			40314.56	40940.31
H-AG-MF-FI			10947.5	11137.66
H-AG-LF-FI			17801.42	18083.4
H-NA-RL-FI			14066.14	14314.44
H-NA-RD-FI			3883.385	3914.89

	PSOL	QSOL	YSOL	YBASE
H-NA-RH-FI			44821.2	45642.63
H-NA-UL-FI			24830.85	25201.79
H-NA-UD-FI			6337.922	6454.71
H-NA-UH-FI			68022.71	69359.67
FIRM-FI			86914.47	77251.69
GOV-FI			43879.96	55351.23
H-AG-LB-TI			854.773	855.47
H-AG-SF-TI			2721.794	2676.77
H-AG-MF-TI			501.542	506.31
H-AG-LF-TI			180.864	180.94
H-NA-RL-TI			3685.895	3736.53
H-NA-RD-TI			656.295	627.77
H-NA-RH-TI			1702.872	1629.55
H-NA-UL-TI			2338.946	2287.32
H-NA-UD-TI			393.073	399.02
H-NA-UH-TI			1017.147	973.27
FIRM-TI			2340.283	2080.1
GOV-TI			36435.39	34863.15
H-AG-LB-IA			307.56	307.56
H-AG-SF-IA			94.73	94.73
H-AG-MF-IA			77.74	77.74
H-AG-LF-IA			2253.71	2253.71
H-NA-RL-IA			400.12	400.12
H-NA-RD-IA			2.07	2.07
H-NA-RH-IA			234.01	234.01
H-NA-UL-IA			530.17	530.17
H-NA-UD-IA			234.64	234.64
H-NA-UH-IA			624.98	624.98
FIRM-IA			19563.84	9151.54
GOV-IA			-11929.5	398.49
H-AG-LB-C	0.991	8826.528	8744.191	8877.91
H-AG-SF-C	0.99	36310.86	35953.5	36511.55
H-AG-MF-C	0.99	9079.29	8989.54	9145.69
H-AG-LF-C	0.99	13526.51	13394.59	13606.77
H-NA-RL-C	0.99	12070.79	11953.09	12164.09
H-NA-RD-C	0.99	3323.99	3290.396	3317.09
H-NA-RH-C	0.99	31046.29	30745.01	31308.47
H-NA-UL-C	0.99	21171.11	20959.82	21272.93
H-NA-UD-C	0.99	5230.162	5179.302	5274.74
H-NA-UH-C	0.991	46602.83	46172.66	47080.17
GOV-C	0.991	19782.31	19603.16	24727.89
TTM-C	0.989	67242.86	66534.75	67197.31
SAVING-INV	0.992	109628.3	108741.3	109628.3
INDR-TAX			21987.98	22355.78
AC-AG-FC	0.99	35511.99	35157.82	35644.84
AC-AG-OTH	0.988	40835.88	40344.49	40866.67
AC-MINING	0.986	36245.01	35731.05	35429.98
AC-FOODPRO	0.989	63303.89	62598.04	63452.83
AC-TEXTILE	0.99	81121.68	80337.13	80964.1
AC-CONSTRC	0.991	20581.82	20399.88	20336.52
AC-PAP-MET	0.992	33001.85	32747.06	32990.27

ACCOUNT	PSOL	QSOL	YSOL	YBASE
AC-CHEMIC	0.988	62071.94	61357.22	61641.1
AC-ELECTGW	0.989	8160.443	8072.536	8252.97
AC-TRADES	0.989	54593.78	54018.63	54570.79
AC-HOTLRES	0.988	21660.46	21398.16	21880.48
AC-TRANCOM	0.989	35709.53	35299.03	35882.61
AC-BANKINS	0.988	19395.52	19160.98	19394.18
AC-SER-OTH	0.99	57121.13	56522.46	60307.2
AC-TTM			66534.75	67197.31
VA-AG-FC	0.99	31723.88	31404.6	31842.56
VA-AG-OTH	0.987	29500.03	29123.71	29522.29
VA-MINING	0.985	31894.64	31418.3	31177.45
VA-FOODPRO	0.986	17831.86	17590.64	17873.81
VA-TEXTILE	0.988	26401.35	26077.38	26350.07
VA-CONSTRC	0.987	6529.904	6447.892	6452.08
VA-PAP-MET	0.987	10925.9	10783.44	10922.08
VA-CHEMIC	0.986	23379.4	23047.23	23217.13
VA-ELECTGW	0.986	3210.844	3166.556	3247.25
VA-TRADES	0.989	37874.11	37460.87	37858.15
VA-HOTLRES	0.986	9648.353	9517.945	9746.37
VA-TRANCOM	0.987	19301.51	19042.86	19395.06
VA-BANKINS	0.987	13845.17	13664.56	13844.22
VA-SER-OTH	0.988	43542.92	43039.73	45971.64
CD-AG-FC	0.99	40101.06	39701.13	40251.08
CD-AG-OTH	0.988	47738.88	47164.42	47774.88
CD-MINING	0.986	38670.12	38121.78	37800.56
CD-FOODPRO	0.989	80818.33	79917.2	81008.48
CD-TEXTILE	0.99	86098.69	85266.01	85931.44
CD-CONSTRC	0.991	24617.26	24399.65	24323.87
CD-PAP-MET	0.992	42475.71	42147.78	42460.8
CD-CHEMIC	0.988	72706.37	71869.2	72201.72
CD-ELECTGW	0.989	8202.882	8114.517	8295.89
CD-TRADES	0.989	58364.83	57749.95	58340.25
CD-HOTLRES	0.988	22597.41	22323.77	22826.95
CD-TRANCOM	0.989	36146.35	35730.83	36321.55
CD-BANKINS	0.988	19556.6	19320.12	19555.25
CD-SER-OTH	0.99	58477.83	57864.95	61739.58
CE-AG-FC	0.99	177.127	175.36	171.88
CE-AG-OTH	0.988	1826.505	1804.526	1752.85
CE-MINING	0.986	13950.86	13753.04	13251.73
CE-FOODPRO	0.989	6737.031	6661.912	6558.15
CE-TEXTILE	0.99	14003.81	13868.38	13627.89
CE-CONSTRC	0.991	14929.57	14797.6	14666.79
CE-PAP-MET	0.992	8623.693	8557.115	8491.05
CE-CHEMIC	0.988	18787.29	18570.96	18357.13
CE-TRADES	0.989	431.838	427.289	421
CE-HOTLRES	0.988	2173.513	2147.193	2110.88
CE-TRANCOM	0.989	1725.534	1705.698	1686.09
CE-BANKINS	0.988	3575.549	3532.312	3455.8
CE-SER-OTH	0.99	706.839	699.43	692.1
CI-AG-FC	1	1553.954	1553.954	1598
CI-AG-OTH	1	596.1	596.1	616.57

ACCOUNT	PSOL	QSOL	YSOL	YBASE
CI-MINING	1	2526.687	2526.687	2611.63
CI-FOODPRO	1	3595.052	3595.052	3686.63
CI-TEXTILE	1	122.455	122.455	125.2
CI-CONSTRC	1	6141.228	6141.228	6231.51
CI-PAP-MET	1	46966.08	46966.08	47643.56
CI-CHEMIC	1	25085.83	25085.83	25519.7
CI-TRADES	1	454.728	454.728	463.38
CI-HOTLRES	1	1639.035	1639.035	1699.27
CI-TRANCOM	1	1954.268	1954.268	2003.14
CI-BANKINS	1	1681.972	1681.972	1736.17
CI-SER-OTH	1	6312.229	6312.229	6783.61
CC-AG-FC	0.99	41477.71	41079.72	41677.19
CC-AG-OTH	0.988	46508.36	45956	46638.58
CC-MINING	0.987	27245.28	26895.43	27160.46
CC-FOODPRO	0.989	77675.96	76850.34	78136.92
CC-TEXTILE	0.99	72217.32	71520.08	72428.78
CC-CONSTRC	0.995	15828.62	15743.28	15888.57
CC-PAP-MET	0.997	80817.27	80556.74	81613.32
CC-CHEMIC	0.992	79003.07	78384.07	79364.28
CC-TRADES	0.99	58387.67	57777.38	58382.61
CC-HOTLRES	0.989	22062.73	21815.61	22415.38
CC-TRANCOM	0.989	36374.88	35979.4	36638.61
CC-BANKINS	0.989	17662.79	17469.78	17835.64
CC-SER-OTH	0.991	64082.71	63477.75	67831.07
REST-WORLD	1		116454.9	116913.2

- LB-PROT
- LB-GALL
- LB-PRDA
- LB-CRAC
- LB-PROF
- LB-NACAL
- LB-COMPAL
- CP-ORPALL
- CP-COMPAL
- CP-LAND M
- CP-IND M
- CP-PA-C
- CP-PAV
- CP-FORIGN
- CP-PRPANT
- CP-GRVAM
- CP-BOCAL
- CP-DOVAR
- CP-FDCVA
- CP-GOVVA
- H-A-R
- H-A-SER
- H-A-MER
- H-A-F
- H-A-PL
- H-A-RD-H

**Table VII.8b: Detail Effects of 20 percent Reduction in the Import Tariff on Imported Commodities Based on CGE Model 1993.**

GS93IMP				
VARIABLES	BASE	CURRENT PRICES	CONSTANT PRICES	PRICE INDEX
(1)	(2)	(3)	(4)	(5)
GDP AT FACTOR COST	310573.2	310663.5	310627.4	1
NET INDIRECT TAXES	89553.1	88349.59	89784.96	
INCOME EFFECT			-6.01	
FINAL USE	393265.9	392625.7	393799.9	0.997
EXPORTS	85243.34	85518.63	85738.1	0.997
IMPORTS	-78383	-79131.6	-79131.6	1
GDP AT MARKET PRICES	400126.2	399012.7	400406.4	0.997
TERMS OF TRADE			-219.467	
GROSS DOMESTIC INCOME	400126.2	399012.7	400186.9	
RESOURCE GAP	-6860.31	-6387.02	-6387.02	

ACCOUNT	PSOL	QSOL	YSOL	YBASE
LB-AG-WG	1	10987.04	10987.04	10981.18
LB-AG-NW	1	29371.27	29371.27	29355.67
LB-PRD-WG	1	35573.8	35573.8	35546.57
LB-PRD-NW	1	7412.233	7412.233	7406.55
LB-CLR-WG	1.001	33742.59	33764.14	33742.59
LB-CLR-NW	1.001	22091.71	22105.82	22091.71
LB-PROF-WG	1.001	11208.88	11216.04	11208.88
LB-PROF-NW	1.001	629.38	629.789	629.38
LB-AGALL	1	40358.31	40358.31	40336.86
LB-PRDALL	1	42986.03	42986.03	42953.13
LB-CLRALL	1.001	55834.3	55869.96	55834.32
LB-PROFALL	1.001	11838.26	11845.83	11838.28
LB-NAGALL	1	110658.6	110701.8	110625.7
LB-COMPALL	1	151016.9	151060.1	150962.6
CP-CORPALL	1	77187.96	77184.6	77188.11
CP-COMPALL	1	156457.4	156450.4	156457.6
CP-LAND-AG	1	16846.37	16845.6	16846.37
CP-PD-NC	1	62423.08	62420.23	62423.08
CP-PD-C	1	39928.86	39927.13	39928.86
CP-GOV	1	4726.86	4726.695	4726.86
CP-FOREIGN	1	35685.36	35683.77	35685.36
CP-PDC-AMF			1835.05	1835.05
CP-GOV-AMF			1317.94	1317.94
CP-PDC-AIC	1	1835.13	1835.05	1835.05
CP-GOV-AIC	1	1317.986	1317.94	1317.94
CP-PDC-VA	1	1835.13	1835.05	1835.05
CP-GOV-VA	1	1317.986	1317.94	1317.94
H-AG-LB-FI			9498.252	9498.81
H-AG-SF-FI			40932.32	40940.31
H-AG-MF-FI			11140.71	11137.66
H-AG-LF-FI			18089.7	18083.4
H-NA-RL-FI			14315.69	14314.44
H-NA-RD-FI			3907.514	3914.89



ACCOUNT	PSOL	QSOL	YSOL	YBASE
H-NA-RH-FI			45644.4	45642.63
H-NA-UL-FI			25189.84	25201.79
H-NA-UD-FI			6456.204	6454.71
H-NA-UH-FI			69381.17	69359.67
FIRM-FI			75858.24	77251.69
GOV-FI			55214.76	55351.23
H-AG-LB-TI			852.6	855.47
H-AG-SF-TI			2658.063	2676.77
H-AG-MF-TI			505.797	506.31
H-AG-LF-TI			180.553	180.94
H-NA-RL-TI			3733.563	3736.53
H-NA-RD-TI			619.705	627.77
H-NA-RH-TI			1608.343	1629.55
H-NA-UL-TI			2268.253	2287.32
H-NA-UD-TI			398.815	399.02
H-NA-UH-TI			960.586	973.27
FIRM-TI			2042.579	2080.1
GOV-TI			34408.7	34863.15
H-AG-LB-IA			307.56	307.56
H-AG-SF-IA			94.73	94.73
H-AG-MF-IA			77.74	77.74
H-AG-LF-IA			2253.71	2253.71
H-NA-RL-IA			400.12	400.12
H-NA-RD-IA			2.07	2.07
H-NA-RH-IA			234.01	234.01
H-NA-UL-IA			530.17	530.17
H-NA-UD-IA			234.64	234.64
H-NA-UH-IA			624.98	624.98
FIRM-IA			7798.502	9151.54
GOV-IA			1859.889	398.49
H-AG-LB-C	0.997	8904.753	8877.389	8877.91
H-AG-SF-C	0.998	36589.63	36504.43	36511.55
H-AG-MF-C	0.998	9168.235	9148.197	9145.69
H-AG-LF-C	0.998	13644.42	13611.51	13606.77
H-NA-RL-C	0.998	12192.71	12165.15	12164.09
H-NA-RD-C	0.998	3317.606	3310.84	3317.09
H-NA-RH-C	0.998	31385.09	31309.69	31308.47
H-NA-UL-C	0.998	21306	21262.84	21272.93
H-NA-UD-C	0.998	5287.646	5275.961	5274.74
H-NA-UH-C	0.997	47220.37	47094.76	47080.17
GOV-C	0.998	24727.89	24666.92	24727.89
TTM-C	0.999	67273.68	67222.06	67197.31
SAVING-INV	0.994	109628.3	109023.3	109628.3
INDR-TAX			21127.49	22355.78
AC-AG-FC	1	35629.91	35623.99	35644.84
AC-AG-OTH	0.999	40870.84	40842.77	40866.67
AC-MINING	0.999	35411.84	35393.67	35429.98
AC-FOODPRO	0.999	63452.05	63399.85	63452.83
AC-TEXTILE	0.996	81097.74	80802.71	80964.1
AC-CONSTRC	0.996	20431.53	20357.63	20336.52
AC-PAP-MET	0.994	32932.7	32737.26	32990.27

ACCOUNT	PSOL	QSOL	YSOL	YBASE
AC-CHEMIC	0.998	61404.37	61255.13	61641.1
AC-ELECTGW	0.997	8261.539	8235.162	8252.97
AC-TRADES	0.999	54627.26	54590.99	54570.79
AC-HOTLRES	0.999	21893.57	21877.98	21880.48
AC-TRANCOM	0.999	35926.31	35879.14	35882.61
AC-BANKINS	1	19405.18	19395.63	19394.18
AC-SER-OTH	0.999	60353.65	60270.28	60307.2
AC-TTM			67222.11	67197.31
VA-AG-FC	1	31829.23	31837.07	31842.56
VA-AG-OTH	1	29525.29	29528.37	29522.29
VA-MINING	1	31161.47	31161.14	31177.45
VA-FOODPRO	1	17873.59	17874.73	17873.81
VA-TEXTILE	1	26393.56	26396.98	26350.07
VA-CONSTRC	1	6482.224	6482.968	6452.08
VA-PAP-MET	1	10903.01	10903.99	10922.08
VA-CHEMIC	1	23127.96	23128.6	23217.13
VA-ELECTGW	1	3250.622	3250.782	3247.25
VA-TRADES	1	37897.34	37904.98	37858.15
VA-HOTLRES	1	9752.191	9752.817	9746.37
VA-TRANCOM	1	19418.68	19420.05	19395.06
VA-BANKINS	1	13852.07	13853.3	13844.22
VA-SER-OTH	1	46007.05	46014.76	45971.64
CD-AG-FC	1	40234.22	40227.53	40251.08
CD-AG-OTH	0.999	47779.75	47746.94	47774.88
CD-MINING	0.999	37781.2	37761.82	37800.56
CD-FOODPRO	0.999	81007.48	80940.85	81008.48
CD-TEXTILE	0.996	86073.28	85760.15	85931.44
CD-CONSTRC	0.996	24437.51	24349.12	24323.87
CD-PAP-MET	0.994	42386.71	42135.16	42460.8
CD-CHEMIC	0.998	71924.43	71749.63	72201.72
CD-ELECTGW	0.997	8304.507	8277.994	8295.89
CD-TRADES	0.999	58400.62	58361.85	58340.25
CD-HOTLRES	0.999	22840.61	22824.34	22826.95
CD-TRANCOM	0.999	36365.79	36318.03	36321.55
CD-BANKINS	1	19566.34	19556.71	19555.25
CD-SER-OTH	0.999	61787.13	61701.79	61739.58
CE-AG-FC	1	171.966	171.937	171.88
CE-AG-OTH	0.999	1756.949	1755.742	1752.85
CE-MINING	0.999	13276.24	13269.43	13251.73
CE-FOODPRO	0.999	6571.115	6565.71	6558.15
CE-TEXTILE	0.996	13767.67	13717.59	13627.89
CE-CONSTRC	0.996	14773.47	14720.03	14666.79
CE-PAP-MET	0.994	8592.736	8541.742	8491.05
CE-CHEMIC	0.998	18446.68	18401.85	18357.13
CE-TRADES	0.999	421.672	421.392	421
CE-HOTLRES	0.999	2114.492	2112.987	2110.88
CE-TRANCOM	0.999	1690.527	1688.307	1686.09
CE-BANKINS	1	3460.565	3458.863	3455.8
CE-SER-OTH	0.999	694.016	693.057	692.1
CI-AG-FC	0.993	1623.588	1612.316	1598
CI-AG-OTH	0.985	640.906	631.029	616.57

ACCOUNT	PSOL	QSOL	YSOL	YBASE
CI-MINING	0.997	2624.825	2617.092	2611.63
CI-FOODPRO	0.983	3794.745	3730.83	3686.63
CI-TEXTILE	0.968	132.681	128.43	125.2
CI-CONSTRC	0.991	6303.018	6246.744	6231.51
CI-PAP-MET	0.986	47947.82	47271.56	47643.56
CI-CHEMIC	0.982	25973.81	25517.35	25519.7
CI-TRADES	1	463.294	463.294	463.38
CI-HOTLRES	1	1697.988	1697.988	1699.27
CI-TRANCOM	1	2001.261	2001.261	2003.14
CI-BANKINS	1	1735.141	1735.141	1736.17
CI-SER-OTH	0.999	6786.405	6778.46	6783.61
CC-AG-FC	1	41685.75	41667.91	41677.19
CC-AG-OTH	0.999	46663.53	46622.23	46638.58
CC-MINING	0.999	27129.77	27109.48	27160.46
CC-FOODPRO	0.998	78230.26	78105.95	78136.92
CC-TEXTILE	0.996	72438.18	72170.99	72428.78
CC-CONSTRC	0.994	15966.95	15875.83	15888.57
CC-PAP-MET	0.989	81740.84	80864.98	81613.32
CC-CHEMIC	0.993	79448.3	78865.13	79364.28
CC-TRADES	0.999	58442.24	58403.75	58382.61
CC-HOTLRES	0.999	22424.1	22409.34	22415.38
CC-TRANCOM	0.999	36676.52	36630.99	36638.61
CC-BANKINS	1	17840.92	17832.99	17835.64
CC-SER-OTH	0.999	67879.52	67787.19	67831.07
REST-WORLD	1		117296.8	116913.2

CI-FOODPRO  
 CI-TEXTILE  
 CI-CONSTRC  
 CI-PAP-MET  
 CI-CHEMIC  
 CI-TRADES  
 CI-HOTLRES  
 CI-TRANCOM  
 CI-BANKINS  
 CI-SER-OTH  
 CC-AG-FC  
 CC-AG-OTH  
 CC-MINING  
 CC-FOODPRO  
 CC-TEXTILE  
 CC-CONSTRC  
 CC-PAP-MET  
 CC-CHEMIC  
 CC-TRADES  
 CC-HOTLRES  
 CC-TRANCOM  
 CC-BANKINS  
 CC-SER-OTH  
 REST-WORLD  
 CI-FOODPRO  
 CI-TEXTILE  
 CI-CONSTRC  
 CI-PAP-MET  
 CI-CHEMIC  
 CI-TRADES  
 CI-HOTLRES  
 CI-TRANCOM  
 CI-BANKINS  
 CI-SER-OTH  
 CC-AG-FC  
 CC-AG-OTH  
 CC-MINING  
 CC-FOODPRO  
 CC-TEXTILE  
 CC-CONSTRC  
 CC-PAP-MET  
 CC-CHEMIC  
 CC-TRADES  
 CC-HOTLRES  
 CC-TRANCOM  
 CC-BANKINS  
 CC-SER-OTH  
 REST-WORLD

**Table VII.8c: Detail Effects of 20 percent Reduction in the Indirect Taxes on Domestic Commodities Based on CGE Model 1993.**

GS93TAX				
VARIABLES	BASE	CURRENT PRICES	CONSTANT PRICES	PRICE INDEX
(1)	(2)	(3)	(4)	(5)
GDP AT FACTOR COST	310573.2	315436.2	312033.4	1.011
NET INDIRECT TAXES	89553.1	87408.82	90204	
INCOME EFFECT			-9.299	
FINAL USE	393265.9	397338.2	397124.4	1.001
EXPORTS	85243.34	84566.36	84163.41	1.005
IMPORTS	-78383	-79059.7	-79059.7	1
GDP AT MARKET PRICES	400126.2	402844.9	402228.1	1.002
TERMS OF TRADE			402.951	
GROSS DOMESTIC INCOME	400126.2	402844.9	402631.1	
RESOURCE GAP	-6860.31	-5506.72	-5506.72	

ACCOUNT	PSOL	QSOL	YSOL	YBASE
LB-AG-WG	1	11137.82	11137.82	10981.18
LB-AG-NW	1	29774.35	29774.35	29355.67
LB-PRD-WG	1	36279.02	36279.02	35546.57
LB-PRD-NW	1	7559.174	7559.174	7406.55
LB-CLR-WG	1.017	33742.59	34321.01	33742.59
LB-CLR-NW	1.017	22091.71	22470.41	22091.71
LB-PROF-WG	1.017	11208.88	11401.03	11208.88
LB-PROF-NW	1.017	629.38	640.176	629.38
LB-AGALL	1	40912.16	40912.16	40336.86
LB-PRDALL	1	43838.19	43838.19	42953.13
LB-CLRALL	1.017	55834.3	56791.42	55834.32
LB-PROFALL	1.017	11838.26	12041.21	11838.28
LB-NAGALL	1.01	111506.2	112670.8	110625.7
LB-COMPALL	1.008	152417.3	153583	150962.6
CP-CORPALL	1.014	77227.74	78289.46	77188.11
CP-COMPALL	1.014	156497.2	158700.3	156457.6
CP-LAND-AG	1.014	16846.37	17088.93	16846.37
CP-PD-NC	1.014	62423.08	63321.89	62423.08
CP-PD-C	1.014	39928.86	40474.56	39928.86
CP-GOV	1.011	4726.86	4780.999	4726.86
CP-FOREIGN	1.014	35685.36	36186.89	35685.36
CP-PDC-AMF			1835.05	1835.05
CP-GOV-AMF			1317.94	1317.94
CP-PDC-AIC	1.014	1810.309	1835.05	1835.05
CP-GOV-AIC	1.011	1303.016	1317.94	1317.94
CP-PDC-VA	1.014	1810.309	1835.05	1835.05
CP-GOV-VA	1.011	1303.016	1317.94	1317.94
H-AG-LB-FI			9630.179	9498.81
H-AG-SF-FI			41529.57	40940.31
H-AG-MF-FI			11303.5	11137.66
H-AG-LF-FI			18323.99	18083.4
H-NA-RL-FI			14537.07	14314.44
H-NA-RD-FI			3963.617	3914.89

ACCOUNT	PSOL	QSOL	YSOL	YBASE
H-NA-RH-FI			46386.56	45642.63
H-NA-UL-FI			25569.79	25201.79
H-NA-UD-FI			6556.602	6454.71
H-NA-UH-FI			70519.98	69359.67
FIRM-FI			76303.5	77251.69
GOV-FI			55514.12	55351.23
H-AG-LB-TI			864.143	855.47
H-AG-SF-TI			2687.399	2676.77
H-AG-MF-TI			513.598	506.31
H-AG-LF-TI			183.206	180.94
H-NA-RL-TI			3790.748	3736.53
H-NA-RD-TI			624.055	627.77
H-NA-RH-TI			1619.353	1629.55
H-NA-UL-TI			2291.191	2287.32
H-NA-UD-TI			404.994	399.02
H-NA-UH-TI			967.15	973.27
FIRM-TI			2054.569	2080.1
GOV-TI			34643.73	34863.15
H-AG-LB-IA			307.56	307.56
H-AG-SF-IA			94.73	94.73
H-AG-MF-IA			77.74	77.74
H-AG-LF-IA			2253.71	2253.71
H-NA-RL-IA			400.12	400.12
H-NA-RD-IA			2.07	2.07
H-NA-RH-IA			234.01	234.01
H-NA-UL-IA			530.17	530.17
H-NA-UD-IA			234.64	234.64
H-NA-UH-IA			624.98	624.98
FIRM-IA			7316.249	9151.54
GOV-IA			3562.899	398.49
H-AG-LB-C	1.002	8983.748	9000.692	8877.91
H-AG-SF-C	0.999	37080.83	37037.07	36511.55
H-AG-MF-C	0.999	9295.282	9281.866	9145.69
H-AG-LF-C	0.999	13802.96	13787.8	13606.77
H-NA-RL-C	1.002	12330.54	12353.28	12164.09
H-NA-RD-C	1.001	3355.938	3358.376	3317.09
H-NA-RH-C	0.998	31867.87	31818.77	31308.47
H-NA-UL-C	1.002	21534.77	21583.56	21272.93
H-NA-UD-C	1.002	5346.153	5358.006	5274.74
H-NA-UH-C	1	47884.3	47867.77	47080.17
GOV-C	1.003	24727.89	24800.66	24727.89
TTM-C	0.996	68167.8	67924.98	67197.31
SAVING-INV	1.004	109628.3	110012.6	109628.3
INDR-TAX			19483.8	22355.78
AC-AG-FC	1.008	36187.81	36486.39	35644.84
AC-AG-OTH	1.009	41187.86	41546.41	40866.67
AC-MINING	1.012	34807.53	35234.4	35429.98
AC-FOODPRO	1.005	64968.87	65286.65	63452.83
AC-TEXTILE	1.007	80845.1	81410.03	80964.1
AC-CONSTRC	1.006	20261.23	20384.32	20336.52
AC-PAP-MET	1.005	33094.47	33264.5	32990.27

ACCOUNT	PSOL	QSOL	YSOL	YBASE
AC-CHEMIC	1.009	61058.15	61600.98	61641.1
AC-ELECTGW	1.009	8293.95	8365.487	8252.97
AC-TRADES	1.008	55434.7	55854.33	54570.79
AC-HOTLRES	1.004	22184.9	22270.54	21880.48
AC-TRANCOM	1.007	36112.27	36373.16	35882.61
AC-BANKINS	1.009	19392.09	19571.24	19394.18
AC-SER-OTH	1.008	60663.16	61163.97	60307.2
AC-TTM			67925.02	67197.31
VA-AG-FC	1.008	32327.61	32599.87	31842.56
VA-AG-OTH	1.011	29754.31	30087	29522.29
VA-MINING	1.013	30629.7	31040.72	31177.45
VA-FOODPRO	1.012	18300.86	18519.96	17873.81
VA-TEXTILE	1.011	26311.33	26592.41	26350.07
VA-CONSTRC	1.011	6428.192	6498.765	6452.08
VA-PAP-MET	1.011	10956.57	11082.26	10922.08
VA-CHEMIC	1.013	22997.56	23288.98	23217.13
VA-ELECTGW	1.012	3263.374	3303.336	3247.25
VA-TRADES	1.009	38457.49	38814.71	37858.15
VA-HOTLRES	1.012	9881.958	10000.15	9746.37
VA-TRANCOM	1.012	19519.19	19750.33	19395.06
VA-BANKINS	1.011	13842.73	14001.6	13844.22
VA-SER-OTH	1.01	46242.98	46703.1	45971.64
CD-AG-FC	1.007	40864.22	41150.03	40251.08
CD-AG-OTH	1.007	48150.37	48496.45	47774.88
CD-MINING	1.011	37136.46	37528.27	37800.56
CD-FOODPRO	0.989	82943.97	82072.14	81008.48
CD-TEXTILE	1.004	85805.14	86130.5	85931.44
CD-CONSTRC	1.004	24233.81	24325.36	24323.87
CD-PAP-MET	1	42594.91	42579	42460.8
CD-CHEMIC	1.011	71518.89	72308.9	72201.72
CD-ELECTGW	1.008	8337.082	8400.29	8295.89
CD-TRADES	0.995	59263.84	58940.82	58340.25
CD-HOTLRES	0.996	23144.54	23041.21	22826.95
CD-TRANCOM	1.005	36554.02	36729.12	36321.55
CD-BANKINS	1.008	19553.14	19701.27	19555.25
CD-SER-OTH	1.004	62103.99	62326.15	61739.58
CE-AG-FC	1.007	168.323	169.501	171.88
CE-AG-OTH	1.007	1710.683	1722.979	1752.85
CE-MINING	1.011	12760.38	12895.01	13251.73
CE-FOODPRO	0.989	6726.591	6655.888	6558.15
CE-TEXTILE	1.004	13484.24	13535.37	13627.89
CE-CONSTRC	1.004	14556.61	14611.6	14666.79
CE-PAP-MET	1	8497.396	8494.222	8491.05
CE-CHEMIC	1.011	17958.2	18156.57	18357.13
CE-TRADES	0.995	426.559	424.234	421
CE-HOTLRES	0.996	2133.669	2124.144	2110.88
CE-TRANCOM	1.005	1670.052	1678.052	1686.09
CE-BANKINS	1.008	3383.537	3409.17	3455.8
CE-SER-OTH	1.004	687.175	689.633	692.1
CI-AG-FC	1	1649.944	1649.944	1598
CI-AG-OTH	1	633.922	633.922	616.57

ACCOUNT	PSOL	QSOL	YSOL	YBASE
CI-MINING	1	2670.602	2670.602	2611.63
CI-FOODPRO	1	3703.018	3703.018	3686.63
CI-TEXTILE	1	126.202	126.202	125.2
CI-CONSTRC	1	6291.757	6291.757	6231.51
CI-PAP-MET	1	47797.78	47797.78	47643.56
CI-CHEMIC	1	25835.27	25835.27	25519.7
CI-TRADES	1	466.107	466.107	463.38
CI-HOTLRES	1	1709.7	1709.7	1699.27
CI-TRANCOM	1	2033.029	2033.029	2003.14
CI-BANKINS	1	1770.253	1770.253	1736.17
CI-SER-OTH	1	6863.767	6863.767	6783.61
CC-AG-FC	1.007	42345.79	42630.56	41677.19
CC-AG-OTH	1.007	47073.56	47407.39	46638.58
CC-MINING	1.01	27046.31	27303.86	27160.46
CC-FOODPRO	0.99	79920.07	79119.3	78136.92
CC-TEXTILE	1.004	72447.11	72721.34	72428.78
CC-CONSTRC	1.002	15968.91	16005.52	15888.57
CC-PAP-MET	1	81895.29	81882.56	81613.32
CC-CHEMIC	1.007	79394.29	79987.6	79364.28
CC-TRADES	0.995	59303.37	58982.69	58382.61
CC-HOTLRES	0.996	22720.54	22626.77	22415.38
CC-TRANCOM	1.005	36916.96	37084.09	36638.61
CC-BANKINS	1.007	17939.77	18062.35	17835.64
CC-SER-OTH	1.003	68280.52	68500.28	67831.07
REST-WORLD	1		117565.3	116913.2

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