

Trade Liberalisation and Income Distribution: Evidence from a Small Open Economy

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Abstract: Over the last few decades there has been a great deal of interest in investigating the link between trade liberalisation and income distribution in developing countries. Although there is a significant amount of empirical evidence to support the positive link between trade liberalisation and growth, the evidence on the relationship between trade liberalisation and income distribution among different household groups has been inconclusive. This study investigates the effects of trade liberalisation on income distribution in the Sri Lankan economy using a computable general equilibrium model. In terms of income distribution it can be observed that tariff reduction in manufacturing industries tends to widen the income gap between the low and the high income earners. Understanding these distributional effects of trade liberalisation will help in designing better targeted and robust welfare programmes in order to mitigate the adjustment costs of further liberalisation in developing countries like Sri Lanka.

Keywords: Income Distribution, Trade Liberalisation, Computable General Equilibrium Model, Sri Lanka

JEL Classification Number: C68; F13; D31

I. Introduction

There has been an increasing interest concerning the distributional impact of trade liberalisation in developing countries over the last two decades as evidenced by many empirical studies. Although there is a large body of empirical literature to support the positive link between trade liberalisation and growth, the evidence on the relationship between trade liberalisation and income distribution among different household groups has been inconclusive (see Goldberg and Pavcnik, 2007 for an excellent survey). The changes in the economic structure and relative prices resulting from trade policy reforms may favour certain groups of households while having a negative impact on others. Therefore, in some fast growing developing countries such as China, India and Vietnam, income disparities between different household groups have been increasing with their rapid integration into the world economy. Very often, many analysts attempt to investigate the

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distributional impact of trade liberalisation using multi-country studies. However, it is common knowledge that there are considerable variations in developing countries in relation to various structural features and institutional aspects that have a direct bearing upon the trade liberalisation outcome. Therefore, there is a need for detailed case studies.

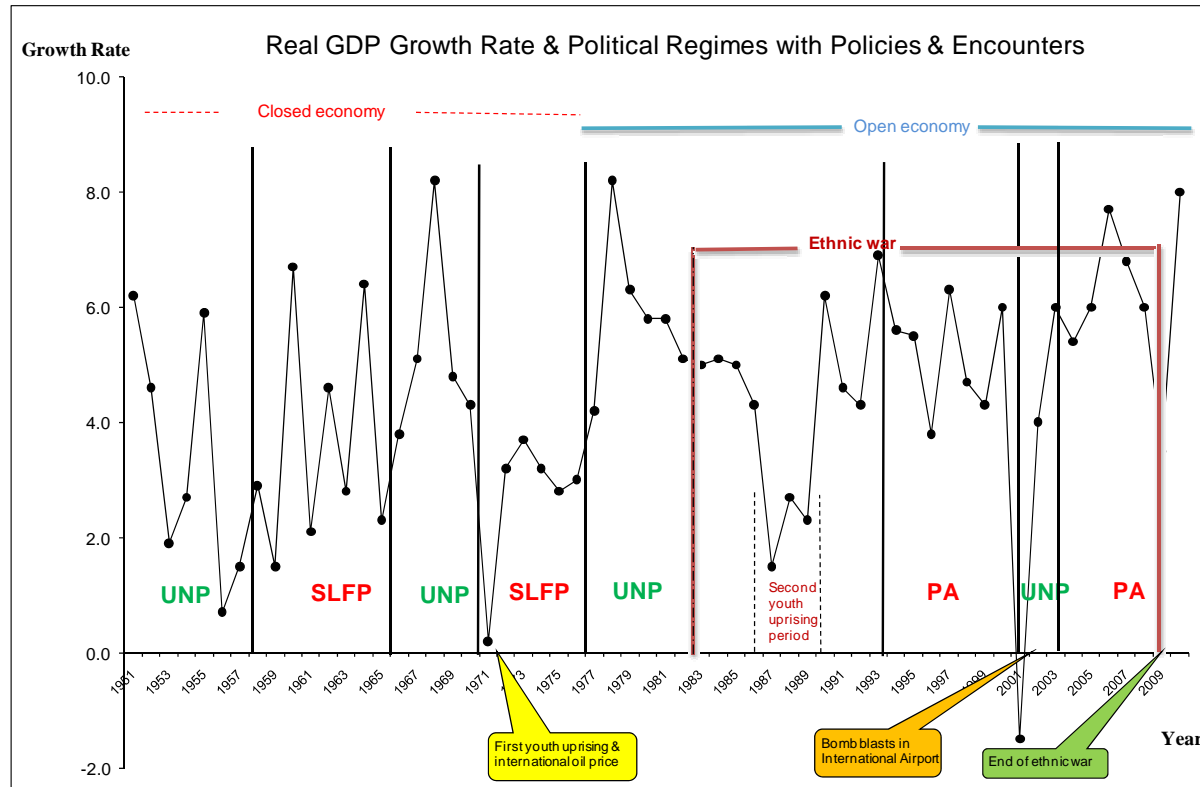
The main objective of this study is, therefore, to investigate the effects of trade liberalisation on income distribution in the Sri Lankan economy using a computable general equilibrium model. The rest of the paper is arranged as follows: Section 2 provides a brief overview of trade liberalisation process and the stylised facts on income distribution in Sri Lanka. Section 3 presents a brief introduction to the Sri Lankan CGE model, while Section 4 reports the simulation results and discusses the main findings. The final section presents concluding remarks.

2. Trade Liberalisation and Income Distribution in Sri Lanka: Stylised Facts

After gaining independence in 1948, Sri Lanka implemented an import-substitution protectionist trade policy until 1977, except for a brief episode of open economic policies between 1948 and 1956 and an episode of partial liberalisation during 1965-1970. The year 1977 was a turning point of trade policy in Sri Lanka which became the first South Asian country to open the economy by implementing a range of liberalisation policies. Although the country was going through a terrible period of separatist war from 1983 to 2009, the successive governments managed to continue with open economic policies with some temporary setbacks from time to time. As Bandara and Jayasuriya noted (2009, p.418) “despite periods of slow progress and occasional backsliding, the trend in overall policy has been towards progressive trade liberalisation, and the country is now perhaps the most open regime in South Asia.” Since there is a large body of literature we do not intend to present the details of the trade liberalisation process². Figure 1 presents an historical overview of trade policy regimes in Sri Lanka.

² For a detailed overview of trade reform process in Sri Lanka, see Athukorala and Rajapatirana (2000) and Athukorala and Jayasuriya (2000).

Figure 1: Real GDP Growth Rate and Political Regimes with Policies and Encounters in Sri Lanka

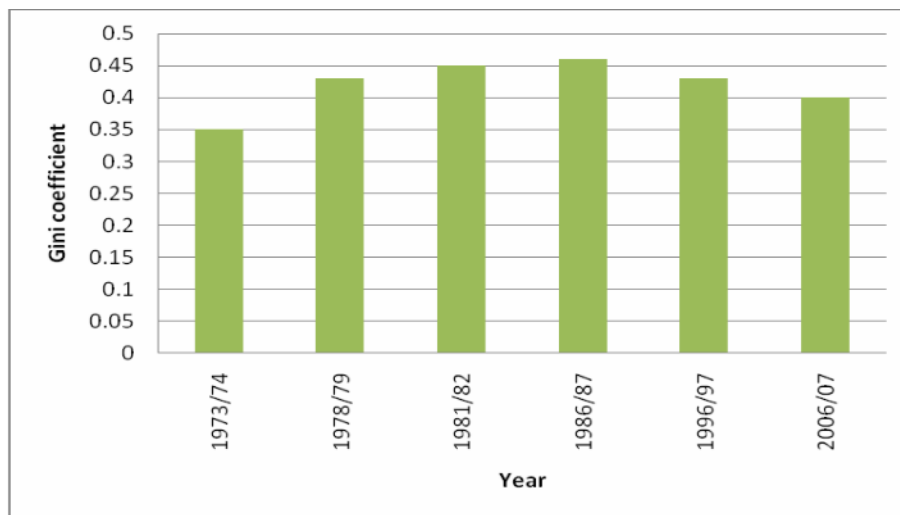


Note: UNP= United National Party; SLFP=Sri Lanka Freedom Party; PA= People's Alliance

Source: Central Bank of Sri Lanka, annual reports

As shown in Figure 1, the Sri Lankan economy grew at a satisfactory rate, if not a spectacular one, even during the three decades of war. However, the income inequality has grown too. Figure 2 shows the trends in income distribution in Sri Lanka. It demonstrates that there has been a gradual increase in income inequality since 1973/74 despite a slight decline in 2006/2007. Against this background, it is important to examine the link between trade liberalisation and income distribution in Sri Lanka within an economy-wide framework.

Figure 2 : Trends in Income Distribution in Sri Lanka



Source: Central Bank of Sri Lanka, Consumer Finances and Socio-Economic Surveys

3. A Brief Overview of the CGE Model of the Sri Lankan Economy

In order to examine the trade-poverty nexus, Naranpanawa (2005) developed a multi-household CGE model (*SLGEM-P*) for Sri Lanka (including 38 industries, 38 commodities and 5 household groups), which has the capabilities of capturing poverty³. In this study we extend the *SLGEM-P* to incorporate the income distribution component of the Sri Lankan economy. Therefore, the starting point of the present model was the *SLGEM-P* a SAM based CGE model of the Sri Lankan economy (Naranpanawa, 2005) which was a variant of

³³ Sri Lanka has a long history of CGE models. See Blitzer & Eckaus (1986); Jayawardena *et al.* (1987); Bandara (1989); CIE (1992); Herath (1994); Somaratne (1998); Bandara & Coxhead (1999); Kandiah (1999); Naranpanawa (2005). For a comprehensive survey of CGE applications for the Sri Lankan economy see Bandara (1990).

the *IDCGEM* model of South African economy (Horridge *et al.*, 1995). The well-known GEMPACK software is used to solve the model (see Harrison and Pearson, 1998 for details). The model was implemented using the Social Accounting Matrix (SAM) developed for Sri Lanka for the year 1995 (Naranpanawa, 2005). The detailed theoretical structure of this model is given in Naranpanawa (2005) and, therefore, we do not intend to provide the details of the core model. Some details of the extension to the household sector are given below.

There are fourteen household groups in the model that can be defined on the basis of geographical area (such as rural, urban and estate) and household income levels (such as low-income and high-income). The low income groups in all three geographic areas are further disaggregated based on the income distribution functional forms estimated by Naranpanawa (2005).

In this study we have disaggregated each of the low income household groups into four quarters. Therefore, this model consists of fourteen income groups: (1) Urban low income group (lower 25% - 1st quarter) (2) Urban low income group (2nd quarter) (3) Urban low income group (3rd quarter) (4) Urban low income group (upper 25% - 4th quarter) (5) Rural low income group (lower 25% - 1st quarter) (6) Rural low income group (2nd quarter) (7) Rural low income group (3rd quarter) (8) Rural low income group (upper 25% - 4th quarter) (9) Estate low income group (lower 25% - 1st quarter) (10) Estate low income group (2nd quarter) (11) Estate low income group (3rd quarter) (12) Estate low income group (upper 25% - 4th quarter) (13) Urban high income group (14) Rural high income group.

4. Assessing the Impact of Trade Liberalisation on Income Distribution: Simulation Results

A simulation experiment was carried out using the Sri Lankan CGE model to examine the short run impacts of 100 per cent tariff cuts in manufacturing industries on macro variables, industry level variables and the household income distribution. In CGE modelling literature, the classification of variables into exogenous and endogenous variables is known as the “closure” or “economic environment”. In this simulation we use the short run closure⁴ to assess the impacts.

⁴ On the supply side of the economy, both the physical capital stocks and the real wages have been exogenised. The physical capital stock is fixed in each industry, assuming that the industry level output can be changed only through the changes in labour input. We also assume that the economy faces a slack labour market, thus allowing the aggregate employment as well as the employment levels of various categories of labour to be determined endogenously. Furthermore, other primary

4.1. Macroeconomic Effects

The percentage change results of important macro variables over the base year values for the above simulation experiment are summarised in Table 1. According to Table 1, trade liberalisation leads to an increase in real GDP, aggregate employment and export volume. These macro results are consistent with traditional trade theory. In this paper we mainly focus more on the distributional impacts and do not plan to discuss the macroeconomic impacts in detail.

Table 1: Projections of Percentage Change in Macro Variables under Policy shock

Variable	% change
Real GDP	0.47
Consumer price index	-1.549
Aggregate employment	1.259
Export volume index	7.963
Import volume index	5.31

4.2. Industry Level Effects

One of the main advantages of the general equilibrium framework is its capacity to trace the sectoral implications of any policy shock. Table 2 presents the sectoral impacts of the previously discussed simulation experiment on variables such as output by industry and employment by industry. Under this simulation, which consisted of 100 per cent import tariff cuts in all manufacturing sectors within the fixed sectoral capital and slack labour market (short run closure), some industries have shown an expansion while others have either shown a contraction or remained neutral. These varied effects can be attributed to different reasons as explained below.

Firstly, the tariff cut leads to a reduction in prices of imported inputs in manufacturing industries, which tends to lower the cost of production of those industries. Secondly, as described in the previous section, tariff cuts will lead to a reduction in the consumer price

factors such as land and the technical changes in the production process are assumed to be fixed during the projection period.

On the demand side of the economy, in line with the standard short run closure, real private consumption expenditure, real investment expenditure, real government expenditure and real demands for inventories are set to be exogenously determined. However, the balance of trade is allowed to be determined endogenously.

index. As the nominal wages are fully indexed to the price index, tariff reductions would lead to a decrease in the labour cost resulting in a drop in the cost of production. Due to both of these reasons the cost of production of industries will fall. This can lead to an expansion of industries that are significantly catering to the export market.

Table 2: Projections of Percentage Change in Industry Activity Level and Employment Effects

Industry	% change in industry activity level	% change in industry employment level
Agric. plantation	0.433	1.07
Agric. other	0.189	1.422
Forestry	0.149	0.897
Fishing	0.058	0.752
Mining	0.336	1.125
Textile	2.418	7.042
Garments	1.642	4.906
Other Manufacturing	0.782	5.336
Electricity	0.279	1.358
Construction	0.012	0.018
Trade	0.704	2.115
Hotels	0.103	0.157
Transport	0.41	1.407
Communication	-0.074	-0.074
Banking	0.465	0.609
Dwellings	0	0
Public admin	0.02	0.02
Other services	0.172	0.202

4.3. Household Level Effects

The impact of trade policy liberalisation at household level can be traced from the CGE results. This is the main focus of the study. The CGE model developed in this study captures the changes that occur among the occupational labour categories through the differential impacts observed at industry level and the associated derived demand for occupational labour categories. Similarly, the household income flows are determined by taking into account the changes of wage income, government transfers, other transfers, gross operating surplus and other sources of household income. Moreover, taking into

account the household tax payments generates the change in disposable income for different household groups over the base case. Tables 3 and 4 present the projection of aggregate employment among different occupational groups and post tax real income among different household groups respectively.

The simulation results indicate an overall increase in derived demand for occupational labour categories following industry expansion due to a slack labour market. Furthermore, results demonstrate that an increase of 1.99 per cent of Sales workers followed by an increase of 1.75 per cent of Production and related transport equipment operators & labourers as a result of an expansion of both the trading industries and the manufactured product industries under this simulation.

Table 3: Projections of Percentage Change in Aggregate Employment by Different Occupational Groups

Occupational group	% change
Professional, technical and related workers	0.561
Administrative and managerial workers	0.869
Clerical & related workers	0.587
Sales workers	1.99
Service workers	0.534
Agricultural, animal husbandry, fisheries and forestry workers	1.655
Production and related transport equipment operators & labourers	1.75
Other workers	1.056

The industry expansions and contractions affect the derived demand for primary factor inputs; so does the factor income. The results reveal an expansion of real post tax income in the majority of low-income household groups. It further indicates a comparatively slow expansion in the income of rural low-income households. The main reasons for this moderation in income are the reduction of government transfer payments to low-income households following the reduction of government revenue as a result of tariff cuts. Although the import tariff rates of manufactured products are moderate in size, the total revenue loss is significant due to high import volume. Interestingly, the rural low-income households receive approximately 83 per cent of government transfer payments. In contrast, the estate low-income households receive a relatively higher expansion of real

income due to the expansion of tea, rubber and coconut processing export industries that are categorised under other manufacturing industries in this model. These industries are stimulated by the tariff cuts as well as the subsequent currency devaluation.

The high-income households, however, are benefited most, as the expansion of manufacturing industries contributes to the expansion of the gross operating surplus of those industries. More importantly, service industries such as trade and transport, which account for a sizeable portion of gross operating surplus, form a significant income source for high-income groups.

In terms of income distribution it can be observed that tariff reduction in manufacturing industries tends to widen the income gap between the low and the high income earners. However, the results reveal that inequality within these broad groups has decreased as the percentage change in real income of the lower 50 per cent of households has increased relative to that of the higher 50 per cent of households in all three low income categories. This suggests that trade liberalisation helps to reduce absolute poverty within low income households.

Table 4: Projections of Percentage Change in Real Post Tax Income among Different Household Groups

Urban low income group (lower 25% - 1st quarter)	1.234
Urban low income group (2nd quarter)	1.04
Urban low income group (3rd quarter)	0.965
Urban low income group (upper 25% - 4th quarter)	0.9
Rural low income group (lower 25% - 1st quarter)	0.409
Rural low income group (2nd quarter)	0.376
Rural low income group (3rd quarter)	0.353
Rural low income group (upper 25% - 4th quarter)	-0.032
Estate low income group (lower 25% - 1st quarter)	1.343
Estate low income group (2nd quarter)	1.331
Estate low income group (3rd quarter)	1.131
Estate low income group (upper 25% - 4th quarter)	0.805
Urban high income group	2.885
Rural high income group	2.272

5. Concluding Remarks

This paper has demonstrated how a CGE model focusing on income distribution can be used to analyse the distributional impact of trade liberalisation using a case study of Sri Lanka. Our results show that all household groups gain from trade liberalisation except rural low income household groups. It is also evident that inequality within broad low income groups has decreased, suggesting that tariff reduction helps to reduce absolute poverty within low income households. However, the simulation results suggest that tariff reduction in manufacturing industries tends to widen the income gap between the low and the high income earners in the short run. In our view, the use of a CGE model with a detailed income distribution component can generate much valuable information for policy makers on the distributional impact of trade liberalisation that will help in designing better targeted and robust welfare programmes in order to mitigate the adjustment costs of further trade liberalisation in developing countries like Sri Lanka.

References

- Athukorala, P. and Jayasuriya, S., 2000. Trade Policy Reforms and Industrial Adjustment in Sri Lanka. *World Economy*, 23(3), 387-404.
- Athukorala, P. and Rajapatirana, S., 2000. Liberalization and Industrial Transformation: Lessons from the Sri Lankan Experience. *Economic Development and Cultural Change*, 48 (3), 543-63.
- Bandara, J.S. and B. Coxhead, 1999. Can Trade Liberalization Have Environmental Benefits in Developing Country Agriculture? A Sri Lankan Case Study, *Journal of Policy Modeling*, 21:349-374.
- Bandara, J.S. and Jayasuriya, S., 2009. Sri Lanka in Distortions to Agricultural Incentives in Asia, (Eds) Anderson, K. and Martin, W., The World Bank, Washington, DC.
- Bandara, J.S., 1989. A Multi Sectoral General Equilibrium Model of the Sri Lankan Economy with an Application to the Analysis of the Effects of External Shocks, Unpublished Ph.D. Thesis, School of Economics, Melbourne: La Trobe University.
- Bandara, J.S., 1990. Recent Experience of Computable General Equilibrium Modelling in Sri Lanka: A Survey, *Upanathi*, 5(1&2):57-81.
- Blitzer, C.R. and R.S. Eckaus, 1986. Modelling energy-economy interactions in small developing countries: A case study of Sri Lanka, *Journal of Policy Modelling*, 8:471-501.
- Central Bank Sri Lanka, Annual Report (various issues). Central Bank of Sri Lanka, Colombo.

Central Bank Sri Lanka, Consumer Finances and Socio-Economic Surveys (various issues). Central Bank of Sri Lanka, Colombo.

Centre For International Economics – CIE, 1992. The Composition and Level of Effective Taxes for Exporting and Import Competing Production in Sri Lanka, Canberra.

Goldberg, P.K. and N. Pavcnik, 2007. Distributional Effects of Globalization in Developing Countries, *Journal of Economic Literature*, Vol. 45, pp. 39–82.

Harrison, W.J. and K.R. Pearson, 1998. Documentation of the GEMPACK Software System, Centre of Policy Studies and Impact Project, Monash University, Melbourne.

Herath, P.W.R.B.A.U., 1994. An Investigation of the Impact of Some recent External and Internal Shocks on the Economy of Sri Lanka, Colombo: Central Bank of Sri Lanka.

Horridge, J.M., B.R. Parmenter, M. Cameron, R. Joubert, A. Suleman and D. de Jong, 1995. The Macroeconomic, Industrial, Distributional and Regional Effects of Government Spending Programs in South Africa, Working Paper No.G-109, The Centre of Policy Studies, Monash University, Melbourne.

Jayawardena, L., A. Maasland and P.N. Radhakrishnan, 1987. Stabilization and Adjustment Policies and Programs: Sri Lanka, WIDER Working Paper, Helsinki: WIDER.

Kandiah, K., 1999. A computable general equilibrium model of the Sri Lankan economy with applications to analysis of the effects of the financial liberalisation, Unpublished Ph.D. Thesis, School of Economics, Brisbane: Griffith University.

Naranpanawa, R.M.A.K.B., 2005 Trade Liberalisation and Poverty in a Computable General Equilibrium (CGE) Model: The Sri Lankan Case, Unpublished Ph.D. Thesis, Department of Accounting, Finance and Economics, Griffith Business School, Griffith University, Queensland.

Somaratne, W.G., 1998. Policy Reforms and the Environment: A General Equilibrium Analysis of Land degradation in Sri Lanka, Unpublished Ph.D. Thesis, School of Business, Melbourne: La Trobe University.