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Conference Paper

Trade Liberalization and Poverty: A Macro-Micro Analysis in Ethiopia

Proceedings of the German Development Economics Conference, Berlin 2011, No. 44

Provided in Cooperation with:

Research Committee on Development Economics (AEL), German Economic Association

Suggested Citation: Kebede, Sindu; Fekadu, Belay; Aredo, Dejene (2011) : Trade Liberalization and Poverty: A Macro-Micro Analysis in Ethiopia, Proceedings of the German Development Economics Conference, Berlin 2011, No. 44, ZBW - Deutsche Zentralbibliothek für Wirtschaftswissenschaften, Leibniz-Informationszentrum Wirtschaft, Kiel und Hamburg

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Trade Liberalization and Poverty: A Macro-Micro Analysis in Ethiopia¹

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January, 2011

¹ This research is financed by the aid of a grant from Poverty and Economic Policy (PEP) Research Network, financed by the International Development Research Center (IDRC).

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Abstract

Using a CGE model, this study analyses the impact of trade liberalization on poverty at the household level taking Ethiopia as a case. Two scenarios (complete tariff cut and uniform tariff scheme) suggest that further liberalization of trade has little short-run effect on the overall economy. However, the agriculture-based manufacturing sector (in particular, textile and leather) is likely to be strongly affected by further tariff reduction. Reductions in import prices of textiles and leather products increase imports of these goods implying that trade liberalization is likely to dampen domestic production of textile and leather products.

Poverty shows a slight increase in both scenarios. At the national level, a complete tariff cut results in an increase in poverty by 2.8 percent, while a uniform tariff scheme raises poverty by 2.3 percent. Similarly, it is found that poverty gap and poverty severity indices show a slight increase. Comparing the effect of trade reform on different household groups, i.e. farm households, wage earner households and entrepreneur households, poverty in entrepreneur households increases by a higher percentage change (3.2 percent) in the complete tariff cut scenario. Poverty incidence increases by 1.7 and 1.5 percent for farm households and wage earners, respectively, under the complete tariff cut scenario. This comparison holds consistently when looking at the more realistic uniform tariff scheme. Entrepreneur households are at a disadvantage due to trade liberalization shown in the poverty gap and poverty severity indices. This is consistent with the theoretical argument that previously protected infant industries are highly affected by trade liberalization.

Key words: trade liberalization, poverty, CGE, import duties, macro-micro simulation

Acknowledgments

The authors are grateful to the Poverty and Economic Policy (PEP) research network for financing this research through the International Development Research Center (IDRC). We are grateful to the team of the PEP Africa office, especially to Bernard Decaluwe, Ismael Fofana and John Cockburn for their technical support. This paper has also benefited from useful comments by Ayele Gelan, Alemayehu Seyoum, Kassu Wamisho, Alemayehu Geda, Tadelle Ferede, Abi Kedir, Sherman Robinson, and Jorgen Levin. The authors would like to thank the International Food Policy Research Institute (IFPRI) for making the SAM available to this research work. Any errors remain our own.

List of Abbreviations

CoMESA	Common Market for East and Southern Africa
CES	Constant Elasticity of Substitution
CET	Constant Elasticity of Transformation
CGE	Computable General Equilibrium
CSA	Central Statistical Agency
EBA	Everything But Arms
EEA	Ethiopian Economic Association
EU	European Union
FDRE	Federal Democratic Republic of Ethiopia
GDP	Gross Domestic Production
GE	General Equilibrium
GTAP	Global Trade Analysis Project
HICE	Household Income Consumption and Expenditure
IFPRI	International Food Policy Research Institute
IMF	International Monetary Fund
MDGs	Millennium Development Goals
MoFED	Ministry of Finance and Economic Development
NBE	National Bank of Ethiopia
SAM	Social Accounting Matrix
SDT	Special and Differential Treatment
WB	World Bank
WTO	World Trade Organization

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1. Introduction

The overarching importance of trade has been recognized as a key element of sustainable development in both developed and developing countries. Inspired by the gains from trade, developing countries have adopted an outward-looking, export-oriented development approach aiming at restoring internal and external economic stability and enhancing efficiency of resource allocation (Berg and Krueger 2003). Trade liberalization is seen as a means of achieving industrialization and modernization through securing economies of scale, market access, and trade expansion.

The relation between trade and poverty through various mechanisms is extensively explored (Hertel and Reimer (2004), Winters (2002)). Hertel and Reimer (2004) state that trade and poverty are linked through prices, changes in external terms of trade, government taxes and transfers, and incentives for investment, among others. Winters (2002) identifies six trade-to-poverty channels including the extent to which price change and the effect of changes on the poor; changes in government revenue and expenditure; changes in risk and vulnerability; links via factor markets; effects on economic growth; and adjustment strains. Furthermore, effects of trade liberalization on poverty can be dampened partly due to stifling policies, high transaction costs, missing markets, factor immobility, and a host of other factors. This is particularly the case in developing countries as domestic capacity constraints may prevent the poor from taking advantages of opportunities created by trade liberalization and export market access.

Trade liberalization can lead to increased efficiency of domestic economic sectors depending on: a) the level and extent of initial protection of a given sector; b) the degree of openness of a sector, i.e. whether the sector is export-oriented or not; and c) the capacity of a given sector to compete against imports. Thus, one possible impact of eliminating tariff distortions is increased efficiency in resource use as productive factors flow from initially more protected sectors to less protected ones.⁵ In addition, it is very likely that export-oriented and import-dependant industrial sectors benefit most from trade liberalization efforts (Chitiga et al. 2005; Mbugu and Chitiga 2007, Annabi et al. 2005; Cororaton and Erwin 2006). This is

⁵ Some studies (e.g. Manson et al. 2005) suggest that it is the more capital-intensive sector which is likely to benefit most from trade liberalization.

mainly because of increased supplies of cheaper imported inputs (i.e. reduction in the domestic cost of production). In addition to input cost-saving (due to the fall in import prices), trade liberalization could lead to the expansion of a sector resulting from the following factors: a) low initial tariff rate; b) increasing opportunities for export expansion; and c) rising domestic demand.

Thus, trade liberalization is likely to lead to improved performance of domestic industries through efficiency gains and cost reductions. This implies that trade liberalization policies are likely to lead to faster economic growth than protectionist policies. The question of whether increased integration into the global economy through trade liberalization could help Ethiopia to substantially reduce poverty takes an interesting dimension since the country has started negotiation on the degree and sequence of trade liberalization as a part of its accession to the World Trade Organization (WTO).

Ethiopia requested for WTO accession on 13 January 2003 and the General Council established a Working Party to examine the application of Ethiopia on 10 February 2003. Ethiopia's Memorandum on its Foreign Trade Regime was circulated in January 2007. The Working Party on the Accession of Ethiopia held its first meeting in May 2008 to begin the examination of Ethiopia's foreign trade regime (WTO 2010). The on-going negotiation on Ethiopia's WTO accession is clear evidence for the country's status of opening up its economy.

The rest of this paper is organized as follows. The second section outlines the literature review. The third section presents overview of the Ethiopian economy with details on the structure and trends of economic growth, trade and poverty. The link between trade liberalization, growth and poverty is portrayed in the fourth section in the conceptual framework. The fifth section discusses data sources and methodology. Major findings of the study are discussed in the sixth section and the last section concludes.

2. Literature Review

Many studies have assessed the impact of trade liberalization on poverty (for example, Robilliard et al. (2003), Bussolo and Lay (2003), Ianchovichina et al. (2001), Hertel et al. (2004), Friedman (2001), Ravallion and Lokshin (2004), Chitiga et al. (2005), Philip and Ferede (2005), Gelan (2002)). However, the literature is far from being conclusive concerning the effects of trade liberalization on the livelihoods of the poor.

Philip and Ferede (2005) analyse the impact of Ethiopia acceding to WTO resulting from a tariff dismantling policy against the products originating from its trade partners. They used a dynamic Computable General Equilibrium (CGE) model to study the impacts on main fiscal, economic and social indicators, both at macro-economic and sectoral levels. The analysis shows that tariff dismantling has both negative and positive effects on the economy. The main negative effect is a reduction of government fiscal revenues, while likely positive effects include an increase in foreign investment and a stimulation of domestic demand that could result in higher economic growth due to an improvement in the purchasing power of households.

Gelan (2002) investigated the impact of external shocks (i.e. terms of trade disturbance in the external sector) on the goods and labor markets linkages and its differential impact on rural (mainly agriculture) and urban (predominantly industry and services) Ethiopia. Gelan developed a CGE model with a dualistic economy (urban and rural sector labor forces) and rural and urban real wage differentials. In addition, labor force migration is explicitly introduced in the model. The bi-regional SAM is constructed in 1996. The SAM contains two household groups (urban and rural) and four production sectors (urban traded goods, urban non-traded goods, rural traded goods, and rural non-traded goods). It has three separate wage-setting assumptions two of them applying to urban and one to rural region. In urban region, fixed nominal wage and fixed real wage is assumed while rural wage rate is determined by the market through interactions between labor supply and demand.

The study considers three simulations: a 50 percent nominal devaluation of the Ethiopian birr, a 50 percent reduction of imported tariffs, and a 50 percent reduction of export taxes. The results suggest that impacts of trade liberalization depend on wage-setting conditions in

the urban region. With a fixed urban real wage, the trade reform adversely affects overall economic growth, while both rural and urban regions experience an expansion in GDP with a flexible urban nominal wage. The simultaneous implementation of a nominal devaluation and a reduction in external trade tariffs would not enhance the structural transformation of the economy. The study concludes that the success of trade liberalization critically depends on the extent to which product and labor market reforms are synchronized.

Bussolo and Lay (2003) assess the impact of the 1990s tariff cuts on poverty in Columbia. They find that the rise in unskilled wages as well as the movement of workers from the informal to the formal (higher-wage) sector in rural areas leads to a substantial reduction in rural poverty. The study actually attributes more than half of the national poverty reduction over the period 1988-1995 to the tariff reforms. Recent studies, however, suggest that trade liberalization may not necessarily lead to reduced poverty and inequality (Berloff and Segnana 2006). Cororaton and Erwin (2006), in a CGE micro-simulation applied to the Philippines, demonstrated that both the poverty gap and the poverty severity could worsen due to trade liberalization, implying that the poorest of the poor could become even poorer. Chan and Dung (2006) found that trade liberalization could be pro-rich due to an essentially higher share of imported goods consumed by the rich. In addition, trade liberalization may have differential impacts on the various members of a given household. For example, a study by Siddiqui (2007) states that trade liberalization (along with a reduction in government expenditure) is not only pro-rich, but that it could also reduce the welfare of women as compared to that of men. Finally, a study by Chitiga et al. (2005) on Zimbabwe finds that although there is no strong evidence that trade liberalization will deepen poverty or vulnerability, there is no guarantee that the poor will always benefit. The study concludes that trade policies may affect the poverty status of different households differently.

Other studies assess the short-run and long-run effects of trade liberalization on poverty using dynamic analysis. In the short-run, trade liberalization may result in increased poverty due to the contraction of initially protected industries.⁶ For instance, Annabi et al. (2005), using a sequential dynamic CGE micro-simulation model, concluded that trade liberalization

⁶ The contraction of highly protected sectors, which are assumed to be inefficient due to the tariff distortion, would result from increased outflows of resources following trade liberalization.

induced small increases in poverty and inequality in the short-run as well as a contraction in the initially protected agricultural and industrial sectors. The same study argues that, following tariff reduction measures, agricultural output may contract as consumers substitute cheaper imports for domestic goods. Using a similar approach, Mabugu and Chitiga (2007) analyze the short-run and long-run effects of trade policy reforms on poverty and inequality in South Africa. The study finds that a complete tariff removal on imports has negative welfare and poverty reduction impacts in the short run, which turn positive in the long run due to factor accumulation effects. When the tariff removal is combined with an increase in total factor productivity, both the short-run and long-run effects are positive in terms of welfare and poverty reduction. Similarly, Bibi (2006), using a dynamic CGE micro-simulation model for Tunisia, demonstrated that trade openness could slow down poverty reduction efforts in the short-run, but enhance them in the long-run. A similar study by Cockburn et al. (2002) showed that rural poverty in Nepal could increase after trade liberalization as agriculture was initially highly protected. In sum, the above set of empirical studies show that, in the short-run, trade liberalization is likely to increase poverty, while, in the long-run, poverty is more likely to be reduced.

Why Different Empirical Results

Given the same time horizon, the same initial tariff levels and the same degree of tariff cuts, there are several reasons why the poverty impacts of trade liberalization might vary across different countries. These include differences in the poverty elasticity of growth (how poverty responds to growth), the inequality elasticity of poverty (how poverty responds to inequality), and the inequality elasticity of growth (how growth responds to inequality). The first two depend on the country's initial level of economic development and on the extent of inequality existing in a country.

Concerning the first reason, two sets of factors have been found to play an important role in reducing the degree of responsiveness of poverty to growth. These are the initial level of inequality and the way in which inequality changes over time. Ravallion (2001) showed that although, on average, poverty is falling even in countries in which inequality is rising with growth, it typically falls at a much slower rate than in countries experiencing more equitable

growth. This point has been reinforced by Ravallion (2004), showing that the elasticity of poverty to growth may decline appreciably as the extent of initial inequality rises.

A related issue is the channel through which the effects of growth are transmitted to poor households. In this connection, we note that there is a consensus that factor markets constitute the essential link between trade, trade policy and poverty for at least three reasons (Berloffia and Segnana 2006):

- (1) The “magnification effect,” i.e. changes in commodity prices due to trade liberalization “magnify” the resulting change in factor prices.
- (2) Households appear to be more specialized⁷ in factor markets than they are with respect to consumption behavior.
- (3) The combination of complete reliance on one income source together with the magnification effect, in turn, may easily dominate the impact of changes in food prices on the farm household.

The foregoing issues can be further discussed and substantiated with the reference to a very recent review of the literature (Narayana and Gulati 2008), which exclusively focuses on smallholder farmers and raises one fundamental question: whether small farmers can take advantages of the opportunities presented by globalization, including trade liberalization. Reviewing the literature on the price effects of trade liberalization on smallholders, Narayana and Gulati reached the following conclusions:

- (1) All in all, focus on estimating welfare effects of price changes in the short-term and on a single commodity tends to somewhat circumscribe the policy implications of the analysis.
- (2) The response to commodity-price changes induced by liberalization would determine whether the smallholder retreats into subsistence or integrates into the global system.

⁷ According to Berloffia and Segnana (2006), rural households can be stratified into five categories based on their income specialization (where the primary source of income accounts for 95 percent of total household income).

1. Agriculture (specialized households where the poor are over-represented);
2. Non-agricultural business (self-employment in non-agriculture);
3. Labor (households in wage- and salary-earning categories);
4. Diversified income type; and
5. Transfer-payment-specialized households.

- (3) In some cases, there could be asymmetric price transmission, where farmers pay more for what they buy, be it inputs or other importable items, but may not be able to gain from higher prices of agricultural output.

In a similar fashion, a review of the second-round long-run effects (i.e. spillover effects of commodity-price changes into factor earnings, through market linkages) tends to support the argument that the dynamics of the smallholders' livelihood strategies need special attention, and it is unlikely that models studying trade liberalization (however sophisticated) manage to capture the various dimensions in all complexity (Narayana and Gulati 2008).

By way of conclusion, the effects of trade liberalization on the livelihoods of smallholders can be summarized as follows (Narayana and Gulati 2008):

- (1) The vast literature on the topic gives mixed and varied results depending on the method employed (such as qualitative analysis, survey method and modeling).
- (2) Smallholders who are net sellers in inefficient sectors lose out, and net-buyer smallholders in efficient sectors in exporting countries face similarly adverse circumstances.
- (3) Smallholders who are able to successfully switch to high-value agriculture would, it seems, gain substantially from trade liberalization efforts.
- (4) Those smallholders who lack access to infrastructure, assets, finance, and markets may be adversely affected by liberalization measures.

We attempt to contribute to the existing body of literature by taking Ethiopia as a case to analyse the effect of trade liberalization on poverty at the household level. This will be, as such, a unique contribution since the study uses representative households rather than an aggregate household at the national level and identifies different household categories using price as a transmission mechanism to create a macro-micro linkage. This study addresses the following research questions:

1. What are the impacts of unilateral trade liberalization on domestic production, trade, demand, prices, and labor?
2. What is the effect of trade liberalization on poverty at the national level? and

3. How is the poverty level of different household categories affected by trade liberalization?

3. Overview of the Ethiopian Economy

In this section, we present an overview of the Ethiopian Economy with a focus on the economic structure, trends in sectoral growth, structure of trade, and poverty and income distribution.

Economic growth has been unstable in Ethiopia for many years. In the 1960s, the GDP growth rate was relatively stable with an annual growth rate of 3.8 percent from 1960/61-1972/73 (Yu et al. 2007). This was followed by a dramatic decline during the years 1973/74-1990/91 with an average annual growth rate of only 1.7 percent. The sharpest fall in the GDP growth rate was during the drought famine year of 1984/85 when the real per capita GDP growth rate plummeted by 13 percent. Between the years 1991/92-2004/05, GDP exhibited a relatively higher annual growth rate of 5.3 percent. This is attributed to policy changes, good weather and ‘catch-up’ growth following a long period of conflict.⁸

Generally, the economic performance of Ethiopia can be described as highly volatile, being positive in some years and negative in as many other years (see figure 1⁹). The variability in GDP growth could be attributed to, among others, structural rigidity, external shocks and internal conflicts. It is notable from figure 1 that GDP growth follows the growth trend of agriculture, implying the dependence of economic growth on agriculture in Ethiopia. For instance, in the early years of 2000, official sources (MoFED 2005) reported a 10 percent growth rate of GDP resulting mainly from a good performance of the agricultural sector, usually related to favorable weather conditions.

The Ethiopian economy is predominantly agrarian, where the agricultural sector accounts for almost half of the GDP (44.2 percent) and creates employment opportunities for about 85 percent of the population (MoFED 2005). About 63 percent of Ethiopian exports are

⁸ The internal civil war in Ethiopia that resulted in the change of the military ‘Dergue’ government ended in 1991.

⁹ The figure and all the tables are attached in the Annex.

agricultural products, generating 90 percent of export earnings (MoFED 2005). However, this dominant sector is characterized by traditional methods of farming with little surplus and is heavily influenced by changes in weather conditions. Except for some small areas of the highlands, where hoe cultivation is practiced, all land preparation in the country is carried out with oxen pulling the traditional plough. About 30 percent of farm production is supplied to local markets, while more than 60 percent is used for own consumption (MoFED 2005). Moreover, a considerable proportion of the rural households (more than 40 percent) are net purchasers of food (MoFED 2005).

The industrial sector in Ethiopia, which accounts for not more than 11 percent of GDP, is found at an infant stage in spite of decades of attempts to industrialize the Ethiopian economy. The manufacturing sub-sector, the major branch in the industrial sector, has played a limited role in creating employment opportunities. Moreover, it contributes only about 15 percent to foreign exchange earnings with no significant change in industrial value added (MoFED 1999). The low level of development of the sector is mainly due to its relatively high capital requirement for investment, outdated technology, and intensive use of imported inputs, which raises the cost of production (Enquobahrie 2004).

Unlike agriculture and industry, the service sector registered a high annual average growth rate of 7.5 percent between the years 1991/92-2004/05. It accounts for 45.1 percent of GDP, reflecting a higher contribution to GDP than the agricultural sector since 1992 (Yu et al. 2007). There is a weak and limited linkage between the three sectors. The agricultural sector is relatively isolated from the industry and service sectors, which are almost entirely concentrated in urban areas. This weak linkage between agriculture (rural) and industry and services (urban) limits the easy flow of resources and commodities from and to these sectors. For instance, the manufacturing sub-sector buys mainly imported raw materials instead of using products from the domestic agricultural sector and, thereby, enhancing agro-processing. This shows limited backward and forward linkages between agriculture and the industrial sector.

3.1. Trade and Trade Reform in Ethiopia

Trade in Ethiopia has shown a significant change in recent years with increased exports both in terms of volume and type. The total share of exports in GDP increased from 6.2 percent in 2003/04 to 7.7 percent in 2005/06 and declined to 4.6% in 2008/09 (NBE 2008/09). During the same period the total share of imports in GDP increased from 26.6 percent to 33.9 percent and declined to 24.5 percent in 2008/09, which resulted in a negative trade balance (-19.9 percent of GDP) in 2008/09 (see table 1).

Ethiopia exports primary and semi-processed products such as coffee, oilseeds and pulses, *chat*¹⁰, hides and skins, gold, leather and leather products, and live animals. As can be seen from table 1, the bulk of Ethiopia's export earnings come from coffee, which accounts for 26.0 percent of total exports. It is followed by oilseeds and *chat* which constitute a 24.6 and 9.6 percentage share, respectively. Leather and leather products, gold, pulses and live animals follow at a distance. A distinctive feature of Ethiopian exports is that, being agricultural commodities, they are vulnerable to weather conditions and adverse terms-of-trade shocks. Moreover, the traditional way of producing exportable items negatively influences the quality of these commodities and their price in international markets.

Major import items of Ethiopia include capital goods such as machinery and equipment, intermediate goods for agriculture and industry such as fertilizer and fuel, as well as food items, especially grains, and finished consumer goods. Capital goods are major import items accounting for 32.0 percent of total imports, followed by consumer goods taking 30.3 percent of total imports (table 1). Imports of fuel account for 16.3 percent while semi-finished goods take up 14.8 percent of total imports (NBE 2008/09).

The main regional trade partner of Ethiopia is Asia in imports and Europe in exports. In terms of exports, 41.7 percent of exports go to Europe and 35.6 percent to Asia, while Ethiopia's exports to Africa constitute 16.6 percent and to America 5.7 percent (see table 2). Regarding imports, the lion's share of Ethiopia's imports comes from Asia, accounting for

¹⁰ *Chat* contains the alkaloid called cathinone, an amphetamine-like stimulant which is said to cause excitement, loss of appetite and euphoria.

64.7 percent of total imports, followed by Europe with 24.8 percent. Imports from America account for 6.5 percent of the total share while it is only 3.9 percent from Africa (table 2).

At the country level, China is Ethiopia's main trade partner with 51 percent of its imports coming from and 34.4 percent of its exports going to China (NBE 2008/09). The other trade partners in Asia are Saudi Arabia (petroleum imports) and Japan (coffee exports). From Europe, the major trade partners are Germany (coffee and flower exports), Switzerland (gold exports), Italy (sector), and Belgium (sector). Djibouti and Somalia import chat, fruits, and live animals from Ethiopia, comprising 60 percent of Ethiopia's total exports to Africa. It is notable that all major trade partners of Ethiopia except Somalia are members of the WTO.

Trade Reforms and Structure of Protection

Trade liberalization is characterized by export-oriented and outward-looking policies that aim at increasing foreign currency reserves, productivity, growth and employment, and ultimately reducing poverty. The process of trade liberalization requires a careful sequencing of reforms and complementary policies implying that countries should involve in gradual reduction of tariff and non-tariff barriers to trade. Although it is believed that trade liberalization improves the allocation efficiency of resources, it may adversely affect previously protected infant industries resulting in a contraction of previously import-substituting industries (Chauvin and Gaulier 2002). This could be true, especially, if their capacity to compete with imported products is not improved.

Efforts of trade liberalization in Ethiopia started in 1992 with the re-structuring of the economy through the so-called Structural Adjustment Programme (SAP). Based on the SAP, Ethiopia has undertaken far-reaching policy and institutional reforms including a drastic devaluation of the domestic currency (the *birr*) and a reduction of tariff and non-tariff barriers. Currently, quantitative import restrictions are applied only to used clothes, harmful drugs and armaments for security reasons. Both tariff levels and tariff dispersion have been reduced significantly under the tariff reforms and specific tariffs have been converted into *ad-valorem* rates. By 2002, only 2.7 percent of total tariff lines had specific rates. The range of tariff rates narrowed from pre-reform 0-240 percent to 0-80 percent in 1995 and then to 0-

35 percent in 2002. Khandelwal (2004) states that by 2004 the maximum tariff rate had been reduced to 35 percent with an average rate of 17.5 percent (see table 4). In addition, revenue from trade taxes accounts for about 2.6 percent of GDP and 18.4 percent of total revenue.

The particular reforms undertaken in the agricultural sector include the liberalization of both the agricultural output and input markets, the removal of substantial taxation on agriculture, the removal of restrictions on private sector participation in grain movements and the quota system of grain delivery, the liberalization of fertilizer markets and the creation of a multi-channel distribution system. In addition, unprofitable state farms were transferred on favorable terms to farmers operating in the area, to employees or to private investors.

However, these reforms and various interventions could not raise per capita agricultural production as expected. The overall annual agricultural growth rate remained only at 3.4 percent on average during the period 1991/92-2004/05 (Yu et al. 2007). Moreover, government intervention in agriculture still remains strong as compared to other developing countries. For instance, agricultural land remains public property; a land market is banned; farm inputs, although liberalized, are supplied largely by the non-private enterprises; and prices of some food items are subsidized.

World Bank (2004) argues that despite far-reaching reforms implemented by the government, both agriculture and the manufacturing industry of Ethiopia are still protected. Textile and leather manufacturing industries are the most protected ones. Looking at customs taxes, over the period 1998 to 2004, the evolution of customs tax collection does not show a consistent trend (see table 5). A significant increase in customs taxes is observed between 2002 and 2003, while it decreased back in 2004. Imports on textile products generate the highest amount of duty taxes, followed by duties on wheat and similar products. Vegetable products, iron/steel bars and vehicles follow at a distant. Among these products, it seems that only iron/steel bars and vehicles for public transport can be considered as intermediary products whose tariff reduction could stimulate the economic activity (Phillip and Ferede 2005).

Ethiopia faces various opportunities and challenges by further opening up its economy. The main opportunities for Ethiopia would be market expansion and a related increase in the volume and processing level of its exports, provided that the international quality is achieved. Challenges may arise from non-tariff barriers for Ethiopian exports such as sanitary and phyto-sanitary requirements in QUAD (Canada, the EU, Japan, and United States) markets which are costly to meet and in some cases technically impossible. Xiaoyang et al. (2006) found that standards and technical regulations in developing countries adversely affect firm's propensity to export to developed countries. Other challenges involve easing Ethiopia's supply-side constraints including promotion of investments in road infrastructure, agricultural extension and institutional innovation to enhance market expansion.

In a country characterized by pervasive structural constraints, trade liberalization may pose significant challenges to poverty reduction. For instance, Ethiopia requires domestic capacity and marketing skills to take advantage of multilateral trade liberalization arrangements and preferential regimes (EEA 2004/05). Being one of the least developed countries, Ethiopia enjoys special and differential treatment (SDT), which the country has been unable to take advantage of due to limited domestic capacity and other supply-side constraints. However, SDT is non-binding, transitory, and primarily market-oriented (rather than being development oriented). The SDT is intended to facilitate the implementation of the WTO rules by the acceding country. The need for conformity with WTO agreements is central to the rationale for putting in place SDT. In addition, there are exceptions imposed on SDT. For example, under EU's Everything But Arms (EBA) arrangement, there could be import restriction on some commodities such as sugar, banana, and rice.

There are important barriers to the effective utilization of preference regimes, which are identified by a study of Ethiopian Economic Association (EEA 2004/05) as: a) lack of clear commitment to preference by granting countries; b) freedom to decide on the rules of origin irrespective of interest of the grant-receiving country; c) the existence of non-tariff barriers (such as sanitary and Phyto-sanitary standards); d) limited domestic capacity and lack of marketing, information, connections, etc, on the part of the benefiting country; and e) tariff escalation policy of rich countries may militate against processed exports from developing

countries. For a detailed summary of Ethiopia's tariff in the context of trade with COMESA member countries see Box 2 in the Annex.

3.2. Poverty in Ethiopia

The state of poverty in Ethiopia is among the worst by most social and human development indicators. Recent government statistics (1999/2000) illustrated that the head count poverty index was 44 percent implying that about half of the Ethiopian population lives in absolute poverty. Poverty is more pervasive in rural than urban areas which has been enhancing rural-urban migration over decades.

As shown in table 3, there is, in general, a sign of a fall in poverty in rural areas and a rise in poverty in urban areas towards the end of the 1990s (see also Devereux and Sharp 2003, Bigsten et al. 2003, Dercon 2002, and Dercon 2000). This could be explained, in part, by favorable terms of trade for agriculture, increased delivery of public services, and improved infrastructure. During this period, the government allocated much of its resources to lessen the structural bottleneck of the economy by investing in basic economic welfare in rural areas. Consequently, the size of the road network increased by 16 percent, additional 6.6 million people had access to clean water, and telephone and primary education coverage increased significantly. However, Ethiopia has to do a lot more to achieve a significant poverty reduction. For instance, recent estimates suggest that Ethiopia would require a GDP growth rate between 6-7 percent a year to achieve the Millennium Development Goals (MDGs) by 2015 (MoFED 2005). Moreover, even higher growth rates might be needed, depending on the composition of growth itself.

It is important to consider the multidimensional character of poverty in Ethiopia which goes beyond mere income and food provision. Poverty in Ethiopia includes many aspects, such as destitution of assets, vulnerability, human capabilities, and lack of sustainable livelihoods. Looking at other indicators of human welfare in Ethiopia, life expectancy at birth was only 42.3 years in 2000 with an infant and child mortality rate of 116 and 176 in 1000 live births, respectively. A closer examination of the poverty situation in Ethiopia clearly depicts the prevalence of inter-related factors that contribute to the persistence of poverty. Some of

these factors include low agricultural production, limited non-farm income, inadequate education and poor health, and high population growth and weak institutional structures.

Many authors argued that Ethiopia's current predicament fits well with theoretical and empirical descriptions of a "poverty trap" (Easterly 2002, Aassve et al. 2005, Carter et al. 2005). It is argued that more policy or governance reform, by itself, will not be sufficient to overcome this trap. Easterly (2002) states that for Ethiopia to escape from poverty and accelerate growth only a significant "big push" in the fundamentals through a program of institutional reform, accelerated human capital investment, further trade opening, and a good business climate for diversifying the economy is needed.

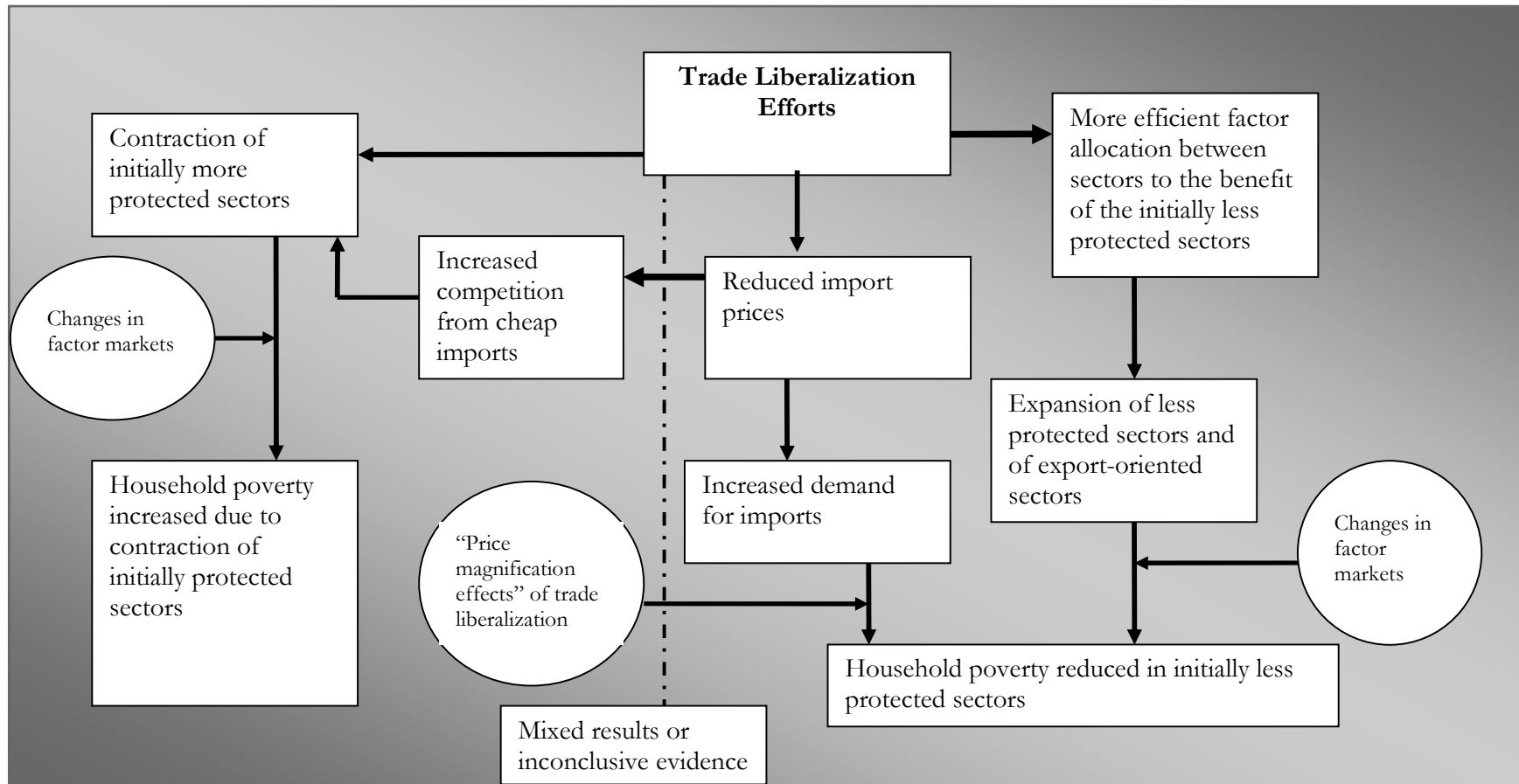
Closely related to poverty is the issue of income distribution. Looking at the trend of income distribution in Ethiopia, it had a high disparity between the years 1994 and 1997 with an increase in the Gini coefficient from 39.2 percent to 43.5 percent in 1997 (Bigsten et al. 2003). Bigsten et al. further showed that the income gap was slightly higher in urban areas as compared to rural areas. Official sources, based on household surveys, indicate that income inequality declined after 1997, with a Gini coefficient of 0.28 in 1999/00 (Federal Democratic Republic of Ethiopia (FDRE) 2002). Comparing income inequality between rural and urban areas in 1999/00 gives a consistent trend with Bigsten et al.'s finding. There is higher inequality in urban areas (0.36) than in rural areas (0.26) in the year 1999/00. A plausible explanation for lower income inequality in rural areas is the existing land distribution system that created an egalitarian land holding system (FDRE 2002).

4. Conceptual Framework

Based on the review of literature, we adopt a conceptual framework that links trade liberalization with growth and poverty. As indicated above, conventional literature suggests that trade liberalization follows two alternative paths to affect poverty in developing countries. First, liberalization, through the expansion of economic sectors and through increased demand for imports, could contribute to poverty reduction efforts in a reforming country. The second path proposes that trade liberalization could lead to increased poverty as some sectors of the economy may contract resulting from exposure to competition from cheap imports.

Drawing on insights from the more recent literature and on the specific conditions of developing countries (such as Ethiopia), it is possible to propose that trade liberalization may not have significant short-run impacts on poverty and inequality in economies characterized by weak initial conditions and structural rigidities or it can be argued that it may have differential impacts on different categories of households (e.g. net buyers and net sellers), or on specific sectors within an industry (or agriculture). We take this as a third “path” as indicated in box 1 by the dotted line.

Box 1: A Synopsis of the Effects of Trade Liberalization on Poverty: A Conceptual Framework



Source: Adopted from Annabi et al. (2005) and extended by the authors.

5. Methodology

The most widely used framework for impact assessment studies is Computable General Equilibrium (CGE) modeling. CGE models are recognized as powerful tools in economic analysis and are customary tools to assess the impact of exogenous shocks and changes in policy (such as trade liberalization, structural adjustment policies, energy and environmental policies) on endogenous variables (for instance, growth and income distribution) through their effects on factor prices and employment.

Since CGE models are based on a well developed neo-classical microeconomics theory, the effects that drive the results are known in reasonably simple models. CGE models also specify the behavior of producers and consumers endogenously and they are suitable for the analysis of complex price-driven policies. However, CGE models have their own limitations. The neo-classical assumptions of many models, such as perfect competition, are unrealistic and the role of money in the economy is missing in many models. In addition, CGE models require refined and enormous datasets and rely on elasticities that could be sometimes difficult to find and/or approximate. Some of these limitations are captured by data availability and by taking elasticities calculated by GTAP for Ethiopia to get exact approximation. In addition, CGE models assume that there exists an equilibrium at the base year and compare the baseline with the results after some policy shock. Consequently, the model results should be viewed with vis-à-vis with the above caveat.¹¹

Social Accounting Matrix

This paper uses the 2001/2002 SAM constructed by IFPRI. For the purpose of this study, the initial activity classification (which is based on location, scale and ownership) of the SAM is changed to output format by simple aggregation of the initial categories. The final SAM contains 10 production sectors, 10 commodities, 4 factors of production (family labor, wage labor, capital and land), 3 households (farm households, wage earner households, and entrepreneur households), 1 enterprise, 4 tax accounts (direct tax, indirect tax, import tax and export tax), and an investment-saving account. See table 7 for the sector aggregation of the SAM.

¹¹See Mitra-Kahn (2005), for blow by blow discussion on the critical assessment of CGE models.

The structure of the Ethiopian economy in the benchmark year, i.e. 2001/02, reveals that agriculture constitutes a large share (41 percent) of the total value-added (see table 8). The crop sector (including both subsistence and cash crops) includes 21 percent of the total value-added, while the livestock sub-sector generates almost 20 percent. The service sector generates about 48 percent of the total value-added. The rest, i.e. food, textile and leather, other manufacturing, and mining and construction accounts for 11 percent of the total value-added in the economy.

Similarly, agriculture constitutes the bulk of Ethiopia's export value. Coffee alone accounts for about two-thirds of the total exports. The crop sector has a high export value due to the fact that cash crops (such as coffee, *chat*, pulses and oil seeds) constitute the country's major export items. The fact that other primary exports, such as mining, come next to agricultural commodities in terms of export earnings confirms that primary products dominate earnings in Ethiopia. Moreover, trade, transport and communication are important sources of export earnings. The performance of the transport sector is influenced by a conspicuous contribution of Ethiopian Airlines.

Regarding the import component, textile and leather commodities and other manufacturing have high import to output ratios. For example, other manufacturing has the highest import/export ratio (i.e. 64.4 percent), which suggests a high degree of import dependence regarding manufactured goods. Looking at the export to output ratio, we note that mining, textile and leather, and cash crops exhibit high ratios. That is, these primary goods are meant mainly for exports.

CGE Model

The model used here is based on the EXTER model (Decaluwé et al. 2001) and is calibrated to the 2001/2002 SAM for Ethiopia. Elasticity values, which are not included in the SAM, are taken from Annabi et al. (2006) and Chitiga et al. (2005) that analyse countries with an economy structure similar to that of Ethiopia.

Production sectors in the model utilize a nested production technology. Factors of production and intermediate inputs are combined with a Leontief technology to constitute output. Value added, in turn, is a CES function of labor and capital. In this model, labor is fully mobile across sectors while capital and land are sector specific.

Household consumption demand is specified by a Stone-Geary utility function. On the income side, households receive income from wage, distributed profit (dividend), subsidy (transfer), and remittance from abroad. Household savings are a fixed proportion of total income. The government gets income from taxes and has fixed expenditures. Total government's expenditures for each good are fixed in real terms.

Domestically-produced and imported commodities are combined to produce composite goods in accordance with the Armington hypothesis (Armington 1969), which is tantamount to assuming a degree of imperfect substitution between domestically-produced and imported goods. A constant elasticity of transformation (CET) function is used to combine export and domestically consumed local commodities.

Assuming that the Ethiopian economy has no impact on international markets, the world prices of imports and exports are exogenous (open small country hypothesis). The current account balance is assumed to be always in equilibrium, with foreign savings equal to the current account deficit. In addition, total real investment is held fixed in the model and the producer price index is taken as the model's numeraire.

Scenarios

In this study, two scenarios are considered to analyze the effect of different regimes of Ethiopia's uniform trade liberalization on poverty. The two scenarios are full liberalization (100 percent tariff cut) and a uniform tariff scheme. Even though 100 percent liberalization is very unlikely in the Ethiopian case, this hypothetical experiment is undertaken as a benchmark to indicate the maximum effect trade liberalization has. The second scenario is a more realistic uniform tariff scheme where we bring all tariffs into the lowest non-zero tariff rate (i.e. 7.3 percent imposed on other manufacturing). Specifically, the trade liberalization scenarios considered in this study are:

Scenario I: 100 percent tariff cut.

Scenario II: Uniform tariff cut.¹²

Given the trend that many countries depend on direct taxation when abolishing foreign trade taxes, we use direct taxes as a compensation mechanism for the loss in government revenue after liberalization. The compensatory tax is introduced in such a way that the decline in government revenue due to the tariff cut is added to government revenue while the same amount is deducted from the household disposable income.

Household Model

We link the macro model to a non-behavioral household model in a sequential fashion. The change in the import tariffs simulated in the CGE model in both scenarios produces new sets of commodity and factor prices and consumption levels. The change in consumption from the macro-model is then used to update the final consumption of the households and the simulated prices of each commodity are used to deflate the nominal consumption. The sets of variables introduced into the household model are used to produce poverty indices.¹³

We use the 1999/2000 Household Income Consumption and Expenditure (HICE) survey which consists of 17,332 households. Consumption expenditure is used to measure poverty. This is because most households in developing countries underestimate their income. For instance, in the 1999/2000 HICE survey, 70 percent of the sampled households reported that their income level was less than their expenditure, while only 9.3 percent of households reported that their income was greater than their expenditure (CSA 2001). In addition, consumption directly measures the instantaneous utility obtained from consuming and reveals information about incomes at other dates, i.e. past and future, which makes it a good indicator of long-term average well-being.

The study classified households into farm households, wage earner households and entrepreneur households. Farm households are defined as households who mainly reside in rural areas and whose main income is derived from agricultural activities. Wage earner households are households entirely getting their income from wage. Entrepreneur

¹² Under this scenario, we reduced tariffs to the lowest possible tariff (i.e. 7.32), while leaving the zero tariff rate as it is.

¹³ DAD software is used to estimate poverty before and after the policy reform.

households are those households residing in urban areas and those who get their income from self-employed activities. Even though a significant part of the labor force in Ethiopia is engaged in informal sectors, the informal sector survey lacks adequate data to estimate the value added of this sector. Hence, the study could not incorporate the informal sector in the model.

Poverty Measurement

In computing consumption expenditure, the quantities consumed reported by households are taken together with the per unit prices from the nearby market. Food consumption from own stock, purchased, gifts and wages in kind are included in the consumption aggregates. To this, non-food consumption such as matches, soap, and clothes is added to construct total consumption expenditure of a household. This is then deflated by prices from CGE model and adult equivalence scales to adjust for differences in household composition. Finally, real consumption expenditure per adult equivalent is used to compare households' well-being with the threshold poverty line.

The Foster-Greer-Thorbecke (FGT) class of poverty decomposition approach (FGT, 1984) is used to estimate poverty indices as:

$$P_{\alpha} = \frac{1}{n} \sum_i^q \left(\frac{z - y_i}{z} \right)^{\alpha} \quad , \alpha \geq 0 \text{ for } Y \leq Z$$

Where P_{α} is a measure of poverty, Z is the poverty line (in terms of consumption expenditure or income), n is total population, q is total number of poor households, and Y is the total consumption expenditure or income. The poverty index, P_{α} changes when α takes different values. When α is 0, 1, and 2; P_{α} equals the head count index (P_0), the poverty gap index (P_1), and the poverty severity measure (P_2), respectively. In this measure P_2 gives the mean of squared proportionate poverty gaps. The national poverty line (1,075 Ethiopian birr¹⁴) calculated by MoFED (1995/96) is used as a threshold in the analysis.

¹⁴ 1,075 birr is approximately 65 USD using the exchange rate on 28. Feb, 2011.

6. Discussion of Results

This study analyses the impact of unilateral trade liberalization on poverty and inequality in Ethiopia using a CGE micro-simulation analysis. The analysis is based on the 2001/02 SAM constructed by IFPRI and on the Ethiopian Household Income and Consumption Expenditure (HICE) survey of 1999/2000, which covered 17,332 households. Two scenarios are constructed to experiment with alternative tariff regimes. In what follows, we discuss the major findings of the study by considering short-run effects of trade liberalization on the economic sectors and poverty.

Effect on trade

The study found that unilateral trade liberalization is likely to have strong, but adverse, effects on agricultural-based domestic manufacturing industries. A major effect of the scenario of uniform tariff scheme (i.e. 7.3 percent flat rate for all import items) is to increase imports of textile and leather goods, while exports of these sectors are little affected by liberalization. The complete elimination of tariffs (i.e. a 100 percent tariff cut) results in slightly more flows of imports of manufactured goods than what a uniform tariff rate of 7.3 percent could generate. This result may not be surprising given the fact that the textile and leather industry originally faced a high level of protection (i.e. 32.5 percent tariff rate).

The increase in the volume of imports can be explained in terms of a fall in import prices following a policy of tariff reduction or elimination. The experimentation of this study suggests that tariff reduction or elimination would lead to a fall in import prices. In particular, a policy of 100 percent tariff cut is likely to lead to a substantial cheapening of imports of textiles, leather, processed food, and beverages.

Competition from cheap, and, perhaps, better-quality imports, is likely to lead to reduced demand for domestic goods and, consequently, to a possible contraction of domestic manufacturing industries and to a shrinkage of the labor market in manufacturing industries. Both scenarios have generated a reduction in demand for domestic goods, although the magnitudes of changes in quantity demanded have remained very small. To the extent that the textile and leather sector is concerned, a high ratio of wage-to-value added could not prevent demand for textile products from falling. Domestic manufacturing industries (which

are already subjected to supply-side constraints) are incapable of enjoying opportunities for cost reduction (hence efficiency improvements) despite considerable cheapening of imported raw materials and intermediate goods.

Regarding changes in exports, the simulation exercise suggests that trade liberalization would consistently lead to only slight increases in exports of domestic manufacturing industries (textile/leather and food/beverage), and the magnitude of changes in exports is much lower than that of imports. Put differently, exports of textiles and leather respond very little to a change in the domestic demand for these goods. On the other hand, the simulation results suggested that agricultural imported commodities will decline in both scenarios while agricultural export increases slightly.

Effect on output and demand

The crop sector might experience an increase in output as the demand for its export increases internationally. This might imply that the farming agriculture (i.e. crop) sector appears to benefit from the reduced distortion (i.e. liberalization) through improved competitiveness. On the other hand, the output produced by agro-processing might decline as the competition from abroad becomes stiff and the migration of labor to the sectors. All in all, the overall output in the economy might decline slightly in both scenarios (see table 9). Commodity demanded generally shows a declining trend for most of the commodities due to a decline in demand for some of improved commodities (such as farming and livestock agriculture) and a fall in demand for domestically produced commodities (such as textile and leather).

Effect on welfare

Table 12 depicts changes in consumer prices, total consumption and equivalent variations by the different household groups included in the model. Farm households who represent more than 80 percent of the Ethiopian population face a decline in consumption under both scenarios, while wage earners and entrepreneur households' consumption increases slightly. This is due to the varying degree of reliance among the different group of households on the different competent of the labor market (see table 11).

Consumer prices increase for all household categories (see table 12). Notably, the increase in the consumer prices is higher than the change in nominal income which implies that real consumption and welfare (as measured by equivalent variation) decline for all household groups. However, farm households' (which mainly rely on agricultural commodities and their price increases) welfare deteriorates more than that of wage earners and entrepreneurs (see table 12).

What emerges from the foregoing is that trade liberalization (in the sense defined here) is likely to contribute to a decline in the domestic production (for both exports and domestic consumption) of agro-industries, including textile, leather, and processed food. Perhaps, this explains why the business sector in Ethiopia advocates a policy of infant industry protection. In fact, this concern has prompted the Ethiopian Government to protect the textile and leather industries with a relatively higher import tariff rate.

Effect on labor market

Consistent with findings with respect to effects of policy reforms on trade, the labor market in manufacturing industries (i.e. textile/leather and food/beverage) would tend to shrink considerably following trade liberalization measures. The magnitude of decline in the wages of hired labor is positively associated with the degree of liberalization as proxied by the extent of tariff cut. A uniform tariff scheme of 7.3 percent is likely to bring about a reduction in wages of hired labor. Perhaps, this implies that a deep cut in tariff could lead to increased unemployment and consequently, increased incidence of poverty among those sectors which are exposed to competition from cheap imports.

Effect on poverty

The effect of trade liberalization on poverty is shown by estimates of poverty head count index, poverty gap and poverty severity (see table 13). For all household categories, poverty shows a slight increase following the two trade liberalization scenarios. At the national level, a 100 percent tariff cut results in an increase in the poverty head count index by 2.8 percent, while a uniform tariff scheme increases the poverty head count index by 2.3 percent. By the same token, the poverty gap and poverty severity indices show a slight increment at the national level.

Comparing poverty increases amongst household categories in both scenarios shows that poverty in entrepreneur households increases by a higher percentage change. The poverty incidence of entrepreneur households increases by 3.2 percent, while it is 1.7 and 1.5 percent for farm households and wage earners, respectively, under the 100 percent tariff cut scenario. This comparison holds consistently true when looking at the more realistic uniform tariff scheme. The result that entrepreneur households are disadvantaged due to trade liberalization is also true in poverty gap and poverty severity indices. This is consistent with the theoretical argument that previously protected infant industries are highly affected by trade liberalization and, hence, the subsequent higher welfare loss especially by entrepreneur households.

A plausible explanation for the slight increase in poverty following the liberalization scenarios is that trade liberalization is likely to reduce demand for local products of textile/leather and food/beverage industries and shrinks the demand for labor in these industries. Trade liberalization would have a limited impact on the other manufacturing sectors and on the agricultural sector. This may imply that, in the short run, the net effect of trade liberalization on the macro-economy and welfare of households could be limited (though a slight increment for some households). This is especially true in a poor country predominantly characterized by subsistence production, a weak and small industrial sector, weak inter-sectoral linkages, and high transaction costs of doing business.

7. Conclusion

Using a CGE micro-simulation analysis based on the 2001/02 SAM and HICE survey of 1999/00 which covered 17,332 households, this study has experimented with two alternative scenarios of tariff regimes to investigate the effects of unilateral trade liberalization on the macro-economy and poverty in Ethiopia. The alternative scenarios are: a) complete elimination of tariffs, i.e. a 100 percent cut in tariff rates; and b) a uniform tariff scheme corresponding to the lowest non-zero tariff rate, i.e. 7.3 percent.

The liberalization of the major manufacturing sectors of the country, i.e. textile, leather, food and beverage (which are originally highly protected), results in increased flows of cheap

imports and reduced demand for domestic goods leading to a contraction of the labor market. Marginal increases in exports of manufactured goods could not offset the adverse effects of exposure to increased competition from cheap imports.

In general, the study suggests that wage-earning households in the country's small industries are likely to suffer from welfare loss (due to a contraction of these industries), while better-off urban consumer are likely to benefit from cheapening of imports. Suppliers of raw materials for agriculture-based manufacturing industries are likely to suffer from income loss as these industries tend to shrink following liberalization. The rest of the household categories, including the majority of the rural households are likely to be little affected by liberalization. However, in line with recent literature, we may argue that the effects of liberalization could not be uniform across different categories of rural households (e.g. net sellers, net buyers of food, and wage workers), which is an issue for further investigation. In addition, the prevalence of structural rigidities in an economy is likely to dampen the effects of price-based reforms (such as trade liberalization) and to limit the uses of standard economy-wide models (such as conventional CGE) in explaining the impact of unilateral trade liberalization on poverty in developing countries. Hence, further studies are required to apply structuralist CGE models to the conditions of developing countries suffering from structural rigidities and from institutional constraints.

An agenda for further research is in order. Currently, Ethiopia is engaged in negotiations to accede to the WTO. A further study is required to investigate the likely impacts of Ethiopia's accession to the WTO since this study only focused on unilateral trade liberalization. Ethiopia's trade relations with regional blocks and with emerging economies may change radically in the near future. China has already emerged as a top trade partner with Ethiopia. Moreover, Ethiopia has been negotiating trade arrangements with CoMESA, EU, and with the member states of the Sana Forum for Cooperation (i.e. Yemen, Sudan, and Somalia). Therefore, it is high time to investigate how Ethiopia's commitment to multilateral regional trade agreements would affect the welfare of different categories of households.

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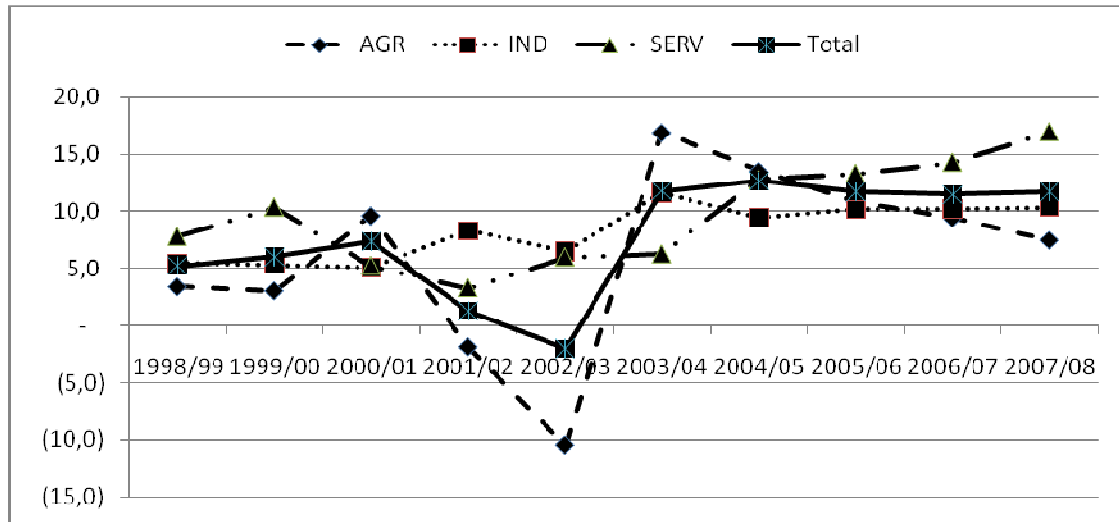
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Annexes

Figure 1: The Volatility of GDP Growth in Ethiopia



Source: MoFED (2009)

AGR: agriculture sector

IND: Industrial sector

SERV: Service sector

Table 1: Components of External Trade in Ethiopia (2003/04 – 2005/06)

	2003/04	2004/05	2005/06	2008/09
Exports (as percent of GDP)	6.2	7.6	7.7	4.6
Imports (as percent of GDP)	26.6	32.5	33.9	24.5
Trade balance (as percent of GDP)	-20.4	-24.9	-26.2	-19.9
Major export items				
Coffee	37.2	39.6	35.4	26.0
Oilseeds	13.8	14.8	21.1	24.6
Leather and leather products	7.3	8.0	7.5	5.2
Pulses	3.8	4.2	3.7	6.3
Meat and meat products	1.3	1.7	1.9	1.8
Fruits and vegetables	2.1	1.9	1.3	0.8
Live animals	0.3	1.5	2.8	3.6
Chat	14.7	11.8	8.9	9.6
Gold	8.1	7.0	6.5	6.8
Flowers	0.4	0.9	2.2	9.0
Others	11.1	8.6	8.8	6.3
Major import items (by group)				
Raw materials	1.0	1.4	1.8	4.6
Semi-finished goods	16.8	18.3	18.7	14.8
Fuel	12.0	18.4	14.9	16.3
Capital goods	33.9	33.0	33.2	32.0
Consumer goods	34.6	27.1	29.2	30.3
Miscellaneous	1.7	1.8	2.3	2.0

Source: Ethiopian Customs Authority (2008/09)

Table 2: Trade Partners of Ethiopia by Region in 2005/06 - 2008/09

	2005/06		2008/09	
	Export (percent share)	Import (percent share)	Export (percent share)	Import (percent share)
Asia	39.3	54.9	35.6	64.7
Europe	37.8	28.9	41.7	24.8
Africa	16.9	5.96	16.6	3.9
America	5.6	9.9	5.7	6.5
Oceania	0.36	0.20	0.4	0.10

Source: National Bank of Ethiopia Annual Report (2008/09)

Table 3: Poverty Profile of Ethiopia

Poverty measures	Geographical area	1995/96	1999/00	Percent change
Head count index (P0)	Rural	0.475	0.454	-4.42
	Urban	0.332	0.369	11.14
	Total	0.455	0.442	-2.86
Depth of poverty index (P1)	Rural	0.134	0.122	-8.96
	Urban	0.099	0.101	2.02
	Total	0.129	0.119	-7.75
Severity of poverty index (P2)	Rural	0.053	0.046	-13.21
	Urban	0.041	0.039	-4.88
	Total	0.051	0.045	-11.76

Source: MoFED (2005)

Table 4: Trade Tariffs and Revenues in Ethiopia in Percent (2004)

Maximum tariff	35
Simple average tariff	17.5
Trade tax revenue/GDP	2.6
Trade tax revenue/Total revenue	18.4
Effective collected tariff rate	13.7

Source: IMF (2004)

Table 5: Evolution of Customs Tax Collection (1997-2004)

	Customs taxes (annual percentage changes)						
	1998	1999	2000	2001	2002	2003	2004
Duty tax	74.97	-24.92	-12.08	51.73	-9.51	51.79	-7.54
Excise tax	215.4	-41.11	-19.34	59.92	-37.67	120.01	12.61
VAT*						50.07	-9.63
Total	95.00	-28.65	-13.46	53.18	56.70	56.03	-6.36

* VAT refers to Value Added Tax.

Source: Phillip and Tadelle (2005)

Table 6: CoMESA's Proposed Tariff and Ethiopia's Current Tariff Rates

Categories of import items	No. of categories items	Current average tariff w.r.t. CoMESA (%)	CoMESA's proposed tariff for Ethiopia (%)	No. of items covered by Ethiopia's zero tariff	Proportion of items to be covered by CoMESA's proposed tariff of zero percent	Ethiopia's gain (+) or loss (-) if CoMESA's tariff is implemented (million birr)
Raw materials	531	9.9	0.03	15	99.3	-101
Intermediate products	2207	15.0	10.0	79	04%	-108
Finished goods	1055	26.1	25.0	28	0.1%	+ 160
Capital goods	672	10.9	0.2	47	99.1%	- 520
Overall average or total	4465	16.4	11.1	69	29.8%	- 592

Source: Ethiopia's Tariff Book and Trade Statistics.

Notes: Examples of items currently facing zero tariffs:

1. **Raw materials:** Live goats & sheep, cereal seeds, potato seeds, some minerals, etc.
2. **Intermediate products:** Sodium nitrate, UREA, Vaccine, etc.
3. **Finished goods:** Fire extinguisher, military weapons, Christmas festival articles, coins of legal tender
4. **Capital goods:** Turbo jet, aircraft engine, radar apparatus, tank weapon, etc.

Table 7: Sectors Included in the Model

CROP	Crop Farming
LIVE	Livestock
FOOD	Food Processing
TELE	Textile and leather
OMAN	Other Manufacturing
MICO	Mining and Construction
UTLI	Utilities
TTCO	Trade, Transport & Communication
PADM	Public administration
OSER	Other services

Table 8: Sectoral Shares in 2001/02 (%)

SECTOR	Gross output	Value-added (or GDP) at factor cost	Labour value-added at factor cost	Capital value-added at factor cost	Land value-added at factor cost
CROP	14.16	21.00	23.45	3.36	76.68
LIVE	15.83	19.66	28.97	0.90	23.32
<i>Total Agriculture</i>	<i>29.98</i>	<i>40.65</i>	<i>52.42</i>	<i>4.26</i>	<i>100.00</i>
FOOD	3.97	3.02	0.97	7.65	0.00
TELE	2.10	0.83	0.58	1.51	0.00
OMAN	3.83	1.78	0.77	4.15	0.00
MICO	9.05	5.33	1.97	13.04	0.00
<i>Total Industry</i>	<i>18.95</i>	<i>10.97</i>	<i>4.29</i>	<i>26.35</i>	<i>0.00</i>
UTLI	1.91	2.41	1.42	4.86	0.00
TTCO	27.01	17.86	10.29	36.54	0.00
PADM	7.75	10.86	17.82	0.00	0.00
OSER	14.40	17.26	13.76	27.98	0.00
<i>Total Services</i>	<i>51.07</i>	<i>48.38</i>	<i>43.29</i>	<i>69.39</i>	<i>0.00</i>
TOTAL	100.00	100.00	100.00	100.00	100.00

Source: Computed from the 2001/02 Ethiopian SAM.

Table 9: Volume Changes Due to Trade Liberalization

Sectors	tm	100 percent tariff cut				Uniform tariff scheme			
		dMi	dEXi	dXSi	dDi	dMi	dEXi	dXSi	dDi
CROP	0	-10.77	5.56	0.84	-0.29	-4.9	2.4	0.34	-0.14
LIVE	0	-10.93	4.79	-1.31	-1.1	-5.12	2.22	-0.52	-0.43
FOOD	20.02	8.31	7.41	-2.2	-2.52	6.21	3.78	-1.49	-1.66
TELE	32.57	20.96	2.28	-6.63	-8.96	17.86	-0.03	-5.87	-7.37
OMAN	7.32	0.17	3.8	-0.61	-1.47	-0.86	0.97	0.61	0.54
MICO	0	0	4.51	-0.17	-0.41	0	1.27	0.23	0.17
UTLI	0	0	0	-1.11	-1.11	0	0	-0.68	-0.68
TTCO	0	-5.98	3.52	0.68	0.37	-2.6	1.45	0.25	0.12
PADM	0	0	0	-0.02	-0.02	0	0	0	0
OSER	0	-6.84	4.08	0.62	0.46	-3.3	2	0.37	0.3
ALL*	7.64	-0.08	4.3	-0.1	-0.46	-0.1	1.7	-0.07	-0.22

* Average variation for volumes - Laspeyres index variation for prices

Where: tm is import tariff, M is import, EX is export

XS is sectoral output, D is demanded commodity

Table 10: Price Changes Due to Trade Liberalization

Sectors	100 percent tariff cut			Uniform tariff scheme		
	dPMi	dPDi	dPi	dPMi	dPDi	dPi
CROP	7.49	-0.18	0.53	3.6	0.29	0.58
LIVE	7.49	0.24	0.25	3.6	0.33	0.33
FOOD	-10.44	-3.93	-3.72	-7.36	-2.49	-2.37
TELE	-18.92	-2.01	-0.35	-16.14	-1.52	-0.46
OMAN	0.16	1.27	1.86	3.6	2.64	2.69
MICO	0	1.06	1.23	0	1.99	2.02
UTLI	0	0.08	0.08	0	0.05	0.05
TTCO	7.49	2.9	3.12	3.6	1.72	1.81
PADM	0	0.64	0.64	0	0.53	0.53
OSER	7.49	2.22	2.32	3.6	1.11	1.15
ALL*	-0.14	1.15	1.41	1.64	0.9	1.02

* Average variation for volumes - Laspeyres index variation for prices

Explain variables

Table 11: Changes in Factor Remuneration and Demand Due to Trade Liberalization

	100 percent tariff cut				Uniform tariff scheme			
	Li/VAi	Li/VAi	dW	dW	Li/VAi	Li/VAi	dW	dW
Sectors	FLAB	WLAB	FLAB	WLAB	FLAB	WLAB	FLAB	WLAB
CROP	65.79	2.32	-0.98	1.15	65.79	2.32	-0.25	0.34
LIVE	89.5	0.33	-0.98	1.15	89.5	0.33	-0.25	0.34
FOOD	0	19.76	0	1.15	0	19.76	0	0.34
TELE	0	42.59	0	1.15	0	42.59	0	0.34
OMAN	0	26.48	0	1.15	0	26.48	0	0.34
MICO	6.48	16.13	-0.98	1.15	6.48	16.13	-0.25	0.34
UTLI	6	30	-0.98	1.15	6	30	-0.25	0.34
TTCO	5.95	30.04	-0.98	1.15	5.95	30.04	-0.25	0.34
PADM	0	100	0	0	0	100	0	0
OSER	5.33	43.87	-0.98	1.15	5.33	43.87	-0.25	0.34
ALL*	34.04	26.92	-0.98	0.72	34.04	26.92	-0.25	0.21

* Average variation for volumes - Laspeyres index variation for prices

Where L- labor demand, VA – sectoral value added, dW- Change in wage rate

FLAB – Farm labor, WLAB – Wage labor

Table 12: Changes in consumer price, total consumption and equivalent variation by household group

	100 percent tariff cut				Uniform tariff scheme			
	FHH	WHH	EHH	All	FHH	WHH	EHH	All
Change in total consumption	-0.62	0.7	0.17	-0.07	-0.16	0.21	0.03	-0.01
Change in household consumer price	0.72	0.92	0.34	1.85	0.36	0.32	0.04	1.38
Equivalent variation	-1.23	-0.18	-0.14	-0.7	-0.48	-0.1	0	-0.27

Where: FHH is farm households.

EHH is entrepreneur households.

WHH is wage earner households.

Table 13: Poverty results using normalized FGT measures by household group

		Base	100 percent tariff cut	Variation (percent change from base)	Uniform tariff scheme	Variation (percent Change from base)
Poverty head count index ($\alpha = 0$)	All	0.561 (0.0061)	0.589 (0.0060)	2.8	0.584 (0.0060)	2.3
	FHH	0.597 (0.0070)	0.614 (0.0069)	1.7	0.606 (0.0069)	0.9
	EHH	0.263 (0.0134)	0.295 (0.0138)	3.2	0.295 (0.0138)	3.2
	WHH	0.383 (0.0098)	0.398 (0.0098)	1.5	0.398 (0.0098)	1.5
Poverty gap ($\alpha = 1$)	All	0.169 (0.0024)	0.182 (0.0025)	1.3	0.18 (0.0025)	1.1
	FHH	0.181 (0.0028)	0.189 (0.0029)	0.8	0.185 (0.0029)	0.4
	EHH	0.073 (0.0047)	0.085 (0.0050)	1.2	0.085 (0.0050)	1.2
	WHH	0.11 (0.0036)	0.117 (0.0037)	0.7	0.117 (0.0037)	0.7
Poverty severity ($\alpha = 2$)	All	0.069 (0.0013)	0.076 (0.0014)	0.7	0.075 (0.0014)	0.6
	FHH	0.074 (0.0015)	0.078 (0.0016)	0.4	0.076 (0.0016)	0.2
	EHH	0.029 (0.0023)	0.034 (0.0026)	0.5	0.034 (0.0026)	0.5
	WHH	0.043 (0.0018)	0.047 (0.0019)	0.4	0.047 (0.0019)	0.4

Note: The figures in brackets are standard deviations.

Where: FHH is farm households.

EHH is entrepreneur households.

WHH is wage earner households.

Variables used in the tables

D(i)	Demand for domestic good i
P(i)	Producer price of good i
PD(i)	Domestic price of good i including tax
PV(i)	Value added price for sector i
PM(i)	Domestic price of imported good i
XS(i)	Production of sector i (volume)
VA(i)	Value added in sector i
FLAB	Family Labor
WLAB	Wage labor
EX(i)	Exports of good i
M(i)	Imports of good i

Box 2. Ethiopia's tariff in the context of trade with CoMESA member countries

As one of the signatories of CoMESA's trade protocols, Ethiopia has been studying the merits and demerits of joining the Free Trade Area of CoMESA. Currently, commodities imported from CoMESA member countries face a tariff which is 10 percent less than the tariff imposed on commodities imported from other countries or regions. CoMESA's proposed average tariff amounts to 11.1 percent as compared to Ethiopia's current tariff average of 17.5 percent. CoMESA's key proposal is that Ethiopia should fully liberalize imports of raw materials (the zero tariff will cover 99.3 percent of the 531 items included under raw materials) and of capital goods (the zero tariff will cover 99.1 percent of the 672 items included under capital goods), while finished goods will face a high tariff amounting to 25 percent and intermediate goods will face a tariff of 10 percent (see table 6).

The revenue implication of CoMESA's proposed tariff regime is interesting. All in all, Ethiopia would incur a large revenue loss amounting to 592 million *birr* if CoMESA's proposed tariff were implemented. But, the country could gain in terms of employment creation and export earnings from full liberalization of imports of raw materials and capital goods from member countries.