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A Survey of Findings on the Poverty Impacts of Agricultural Trade Liberalization[1]

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Abstract: *The purpose of this survey is to review the available empirical evidence on the impacts of agricultural trade liberalization on poverty – considering both the impact of domestic and international liberalization. Since trade liberalization is generally an economy-wide phenomenon, with tariff cuts occurring across a wide range of commodities, we do not restrict ourselves to episodes where only agricultural trade was liberalized, although emphasis in this survey is given to agricultural trade policies. Furthermore, given the difficulty of isolating the effects of trade policies alone, we will also consider the impact of other types of external shocks which have the effect of changing the relative prices of tradeable and non-tradeable goods. By examining the way in which households adjust to such external shocks, we can learn a great deal about how they would respond to sharp reductions in tariffs, or significant changes in a country's international terms of trade engendered by multilateral trade liberalization.*

Keywords: Poverty, rural development, agriculture

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I. Introduction

The impact of trade policy – particularly trade policy in the developed economies – on poverty and inequality in developing countries has recently moved to center stage in the debate over international trade and development. All of the major international agencies concerned with trade policy have been devoting considerable resources to the analysis of this issue, and the current Doha Round of WTO talks has made development and poverty impacts a top priority. Developing countries, too, have placed greater emphasis on assessing the distributional consequences of domestic policies. All of this interest has fueled a wealth of empirical studies on the links between trade policy, inequality and poverty.

The purpose of this survey is to review the available empirical evidence on the impacts of agricultural trade liberalization on poverty – considering both the impact of domestic and international liberalization. Since trade liberalization is generally an economy-wide phenomenon, with tariff cuts occurring across a wide range of commodities, we do not restrict ourselves to episodes where only agricultural trade was liberalized, although emphasis in this survey is given to agricultural trade policies. Furthermore, given the difficulty of isolating the effects of trade policies alone, we will also consider the impact of other types of external shocks which have the effect of changing the relative prices of tradeable and non-tradeable goods. By examining the way in which households adjust to such external shocks, we can learn a great deal about how they would respond to sharp reductions in tariffs, or significant changes in a country's international terms of trade engendered by multilateral trade liberalization.

Since households in developing countries are very diverse, and they are likely to be affected in very different ways by agricultural trade reforms, we must also decide where to place the primary emphasis when it comes to poverty impacts. Since the majority of poverty in developing countries is in rural areas, and since agriculture remains the most important activity there, we will focus much of our discussion on rural households and how they adjust to external shocks. However, if we wish to understand the impact of a given trade reform on

national poverty, we cannot ignore the impacts on other segments of the population, including those in the urban areas, and these impacts will also be discussed.

Following the broad conceptual framework laid out by Winters (2000), and the literature reviews offered by Winters, McCullogh and McKay (2004), and Hertel and Reimer (2004), we will break our analysis of trade-poverty linkages into several distinct components. In particular, the survey begins at the border, where domestic trade liberalization results in lower market prices for imports, and foreign trade liberalization results in changes in *cif* import prices and the *fob* prices of exports. From there, we focus on the extent of price transmission from the border to producers and consumers – and households in general. We find that the extent to which agents in the economy experience these changes is quite varied, and depends on the quality of infrastructure, the behavior of domestic marketing margins, as well as geographic factors. We will see that the degree of price transmission from the border to the local market can vary widely, even within a single country.

Once the local market price changes are determined, we are in a position to assess the initial impact of trade liberalization on households. This depends on the particular spending and earning profile of each household and how that profile is correlated with the price changes induced by trade liberalization. Not surprisingly, households that are net sellers of products whose prices rise, in relative terms, benefit in this first round, while net purchasers of such goods are found to lose. However, we will also see from the empirical literature that these first round effects much be significantly altered in the wake of subsequent household adjustments in consumption and production. In response to changing relative prices, they are likely to modify their consumption basket, adjust working hours and possibly change their occupation, and there is also evidence that these changes in relative prices can even affect a household's long term investment in human capital.

As households change their spending levels and employment patterns and firms adjust their hiring, there are also ripple effects throughout the economy. For example, if the trade reform

stimulates agricultural production, then a general increase in unskilled wages is likely to ensue. This, in turn, has benefits for households that are net suppliers of unskilled labor. Finally, we will consider the long run growth effects associated with trade liberalization. These include increases in firm productivity due to access to new inputs and technologies as well as potential gains due to disciplinary effect of foreign competition on domestic markups.

II. The Transmission of Border Price Effects to Consumers and Producers

The first issue that must be addressed when considering the potential impact of trade reforms on the poor is the extent to which changes in prices at the border even reach the households in question. Recent work by Arndt et al. (2000) in Mozambique underscores the empirical significance of marketing margins in low-income countries. The authors report producer-consumer margins as high as 300% (cassava). In general, the biggest margins reported in their study are for food products, which tend to dominate both the consumption and production bundles of the poor in that country. So the existence and behavior of these margins is critically important for any poverty study. As pointed out by Winters, McCulloch, and McKay (2004), if we assume these marketing costs are solely a function of the quantity transported (i.e., *specific*, as opposed to *ad valorem* in nature), then they will dampen the impact of world commodity price changes on domestic consumers, while exaggerating the impact of such price changes on producers of export products.

Milner, Morrissey and Rudaheranwa (2001) examine the impact of transport margins on the effective protection of domestic sales and the effective taxation of exports in Uganda over the decade: 1987-97. While a series of trade policy reforms over this period largely eliminated the implicit taxation of exports through trade policies, the implicit taxation due to poor infrastructure and high transport costs remained very high relative to competitor countries such as Kenya. These authors estimate that the transport-induced effective rate of taxation on exports from Uganda in 1994 was equal to nearly two-thirds of value-added. Effective protection for domestic sales due to the transport-induced trade barriers remained high throughout this period of reform. They argue that these “non-policy” barriers to trade,

represent an important reason for the sluggish response of the Ugandan economy to the extensive trade policy reforms undertaken over this period.

A recent study by Nicita (2003) of the impact of NAFTA on rural producers and consumers in Mexico addresses the question of price transmission from the border to domestic markets directly. He estimates a modified version of the popular exchange rate pass-through model (e.g., Goldberg and Knetter, 1997). This model incorporates differential pass-through of Mexican tariff changes, by region. This is estimated to be a function of the region's distance from the United States, which the author argues is the primary source of most Mexican imports. In keeping with this literature, Nicita finds incomplete pass-through of the tariff changes to consumers in Mexico, with the extent of pass-through being smaller for agriculture commodities than for manufactured goods. When coupled with a rapid erosion of pass-through with increasing distance from the border, this means that agricultural tariff cuts have little or no impact on the more remote regions of Mexico. Nicita argues that this low pass-through for agricultural products is due to high transportation costs, as well as the fact that these products face more competition from domestic sources. Therefore, local production quickly becomes more profitable as one moves away from the border. Indeed, he notes that for some regions: "domestic supply is likely to set the price of certain agricultural products regardless of border measures" (p. 23). Figure 1 reports Nicita's estimates of the regional welfare impacts of trade reforms undertaken by Mexico in the 1990's. From this it is clear that there is considerable regional variation in the impacts, with some regions gaining more than 5% of real income, while others register negligible gains.[2]

III. Initial Impacts of Price Changes on Households

For self-employed, rural households, the impact of a given set of border price changes,

[2] Trade liberalization can also have an impact on the marketing margins themselves, particularly to the extent it opens up the opportunity for investment in logistics, transport and marketing activities that may have previously been dominated by monopolies. Badiane and Kherallah (1999) explore this in the case of several African countries.

transmitted to the "farm gate" depends on their net sales position. If the household is a net exporter of a product whose price has risen, it will benefit. If it is a net importer, then it will lose. By summing over the net sales-weighted price changes, we obtain an estimate of the overall change in household welfare. So once we have the changes in hand, assessing the initial household impact is quite straightforward. Martin Ravallion and his co-authors have exploited this idea to assess *ex ante* impacts of trade liberalization in the cases of China (WTO accession, investigated by Chen and Ravallion, 2003) and Morocco (unilateral liberalization of grains trade, reported on by Ravallion and Lokshin, 2004).[3]

In their study of China's WTO accession, Chen and Ravallion find that the initial impact of this change in trade policy is to hurt rural households, while benefiting urban households. This is because China is required to reduce protection on a number of important agricultural imports, whereas the average rate of manufacturing protection is quite low for most sectors due to the widespread use of duty drawbacks for manufactured goods as well as generally lower average tariffs. The largest percentage change in welfare is for the poorest households (Figure 2), with the poorest rural households losing more than 2% of their income and the poorest urban households gaining nearly 2% of initial income. However, overall the effects of WTO accession on China appear to be rather modest, in part due to the fact that the deepest tariff cuts had already been made in anticipation of this agreement, but also due to the difficulty of quantifying the potential price effects of the accession agreement as it pertains to foreign commercial presence in the services sector of China (Walmsley, Hertel and Ianchovichina, 2003).

In the case of tariff cuts for cereals imports in Morocco, Ravallion and Loshkin also find adverse impacts on rural poverty while urban poverty falls. The most interesting result in their study is the decomposition of the aggregate change in inequality (which increases) into its vertical and horizontal components. The vertical component evaluates the change in

[3] However, like most studies of this sort, these two do not take account of incomplete price transmission from the border to the local level.

inequality due to differential impacts on households at different pre-reform levels of welfare. By this measure, inequality declines slightly following reforms. This makes sense, since the poor tend to spend a disproportionate share of their income on grains, and grains prices fall under the reforms. However, the dominant impact of grains reforms is to increase horizontal inequality – which assesses the impact on different households at the same level of pre-reform welfare. This is due to the fact that the poor in rural areas tend to be net sellers of grains, and thereby lose from the price declines, while the poor in urban areas are net buyers and therefore gain. Because the horizontal component dominates, overall inequality rises following cereals import reforms in Morocco.

In his study of the distributional consequences of devaluation in Rwanda, Nicholas Minot (1998) emphasizes the importance of home production. He finds that a devaluation which raises the price of tradeables, relative to non-tradeables by about 40% has only a modest negative impact on the poorest rural households, whose cash purchases comprise only about one-third of total expenditure. On the other hand, the largest proportional loses accrue to the wealthiest urban households, who devote 96% of their income to cash purchases. Since one of the most important features of trade liberalization is often a change in the real exchange rate, this point is worth bearing in mind. The rural, and low-income households are likely to be less severely affected either positively or negatively) due to the importance of home production in their overall consumption profile.

IV. Household Adjustments to Terms of Trade Shocks

With the exception of the Minot study, the preceding analyses have simply used the households' initial sales and expenditure weights in the welfare analysis, thereby ignoring any potential for adjustment in response to the price changes. Of course, we expect households to reduce consumption of higher priced goods, while increasing their supply, thereby enhancing the potential for gains from a given set of exogenous price changes. Some studies have attempted to measure the potential for such adjustment and how it affects the incidence of external shocks on the rural poor. One recent study of the potential of consumer substitution

in the face of higher border prices is offered by Friedman and Levinsohn (2002), who estimate the effect of the Indonesian financial crisis on consumer welfare assuming: (a) no substitution – as with the studies by Ravallion and co-authors -- and (b) substitution among goods and services based on estimated own- and cross-price elasticities of demand. They find that, in this particular case, substitution in consumption dampens the welfare losses from the Asian crisis by about 50%.

The Indonesian crisis has also provided a laboratory for studying household responses on the income side of the picture. Smith et al. (2002) offer a comprehensive analysis of changes in employment, wages and family incomes during the 1986 – 1998 period, with a special focus on households' responses to the crisis of 1997/98. They find that, while real wages were sharply reduced during the crisis – by as much as 60% in the case of formal sector employment in rural areas -- combined family income in these rural areas fell by only about 37% during the crisis. They attribute this dampening effect to the relatively stable returns to self-employment activities (primarily agriculture) and the increased allocation of family labor to self-employment. When the value of production for home use is also included in the calculations, the authors find that "full" family incomes (wages, plus self-employment income, plus production for home consumption) in rural areas fell by only 21%, or about one-third of the decline in wages. They conclude (p.191) that: "Indonesian families have displayed a remarkable capacity for resilience in the face of the crisis."

The urban households in Indonesia were not so fortunate. While urban wages fell by somewhat less than rural wages (55%), Smith et al. (2002) find that full family income in the urban areas fell by twice as much as in the rural areas (43% vs. 21% in rural areas) during the first year of the crisis. An important part of the rural households' ability to withstand the Indonesian crisis was due to the relative increase in the price of food, as well as farmers' ability to increase production in response to higher food prices. In fact, during this crisis, the agricultural sector showed a remarkable ability to absorb workers, with the farm labor force expanding by 20% (7.2 percentage points, when measured relative to the entire workforce)

during the period of just one year. This flexibility in the face of external shocks suggests considerable potential for such rural economies to adapt to, and benefit from, the higher world prices for agricultural products that are expected to follow multilateral trade liberalization.

Another way of assessing the potential for developing countries to benefit from higher agricultural prices in the wake of trade liberalization is to estimate the agricultural commodity supply elasticity. We know that households will gain from a price increase if they are net suppliers. But even if a given household is not a net supplier prior to the reforms, given sufficient output response to the price hike, they might become a net supplier after the price increase. Thus their chances of a welfare gain are considerably enhanced in the presence of large supply elasticities. The evidence on agricultural supply response in developing countries suggests that the supply elasticities for individual crops are substantial, while those for the sector as a whole are quite small (Sadoulet and de Janvry, 1995, chp. 3). Infrastructure has been shown to have a very significant impact on supply response (Binswanger, 1989). In the case of the poorest households, their ability to increase production may be constrained by the lack of key productive assets (Deininger and Olinto, 2000). In summary, limited supply response can hinder the potential for such commodity price increases to pull households out of poverty in the absence of complementary policies aimed at improving access to credit and improved technology.

One study of the effects of agricultural trade reforms on poverty and inequality that takes into account both consumer demand and producer supply response to commodity price changes is offered by Minot and Goletti (2000). They offer an in-depth examination of how rice market liberalization in Viet Nam was expected to affect income and poverty in that country. The centerpiece of Minot and Goletti's analysis is a multi-market spatial equilibrium model of rice production and consumption that is used to conduct a series of policy experiments, including (i) removing the rice export quota, (ii) changing the quota level, (iii) replacing the quota with a tax, and (iv) removing restrictions on the internal movement of food. The distributional consequences of these counterfactuals are determined by way of the net rice sales position of

different household classes, but these sales positions can change in response to changes in the price of rice. It is found that export liberalization raises rice prices within the country, particularly in the country's rice exporting areas. The higher prices have a positive effect on rural incomes, and are generally favorable with regard to the number of people in poverty. Relaxing the restrictions on the internal movement of rice from south to north generates net benefits for the country, without increasing most measures of poverty.

Since rice production is quite labor intensive in Viet Nam, a rise in rice prices should increase demand for agricultural labor, and consequently the agricultural wage rate. Higher rice prices would then lead to a greater decrease in poverty, particularly in households that derive a share of their income from agricultural labor. Unfortunately, Minot and Goletti's counterfactual analysis assumes that labor demand and wage rates remain constant. They point out that landlessness and the use of hired labor are not widespread in Viet Nam, however, as we see in the next section, this need not be the case in other countries.

V. Factor Market Effects

In the longer run, by stimulating the demand for unskilled labor in rural areas, higher agricultural prices can result in higher rural wages, thereby benefiting wage labor households in addition to self-employed farmers. In his study of rural labor markets in Bangladesh, Ravallion (1990) addresses this very issue in a partial equilibrium model that seeks to measure both the short- and long-run impacts of an increase in the price of rice on rural wages and poverty. He derives a simple condition which may be used to determine whether such households will gain from an increase in the price of rice. This requires that the elasticity of wages with respect to the price of rice exceeds the ratio of net food (rice) expenditures divided by net wage income. Based on his short and long run estimates of this wage elasticity, he concludes that the average landless poor household loses from an increase in the rice price in the short run, but gains in the long run (5 years or more). This is because the increase in household income (dominated by unskilled wages) is large enough to exceed the

increase in household expenditures, of which less than half is comprised of rice for the poorest households.

Porto (2003a, 2003b) offers a natural generalization of Ravallion's work for the case of Argentina. Adopting a general equilibrium mindset, he estimates a set of wage equations for unskilled, semi-skilled and skilled labor, where the explanatory variables are international prices for *all* merchandise commodities (not just agricultural goods), educational attainment and individual household characteristics. He then utilizes the resulting wage-price elasticities to estimate the impact on wages of potential changes in domestic commodity prices owing to trade reforms. He uses these relationships to provide an *ex post* analysis of the distributional consequences of MERCOSUR for households in Argentina (Porto, 2003b). His results are summarized in Figure 3, which show that MERCOSUR benefited the poorest households in Argentina substantially (6% of income), while the richest households may well have lost (the dotted lines give the 95% confidence interval on these results). By removing policies that favored the rich relatively more, MERCOSUR is estimated to have a favorable impact on the distribution of income in Argentina. In a separate paper, Porto (2003a) uses the same framework to conduct an *ex ante* assessment of prospective domestic and foreign trade policy reforms. In this case, he draws on outside estimates of the impact of foreign trade reforms on world prices. He concludes this work by noting that foreign reforms are more important than domestic reforms when it comes to potential poverty alleviation in Argentina.

The previously mentioned study of Mexican trade reforms by Nicita (2003) uses the same approach as Porto to estimate how Mexican trade liberalization in the 1990's affected wages. He concludes that low income Mexican households gained from lower priced consumption goods, but that these gains were largely offset by reductions in unskilled wages and agricultural profits. As a consequence, the poorest households gained much less than the rich from Mexican trade reforms which he argues have contributed to increased income inequality. These findings are summarized in Figure 4, excerpted from Nicita. While all households

appear to gain from the reforms, the richest households gain three times as much as the poorest.

The preceding analyses are premised on the assumption that commodity price changes are eventually translated into factor market changes and that the subsequent changes in wages affect household welfare. However, in some cases, transactions costs may be high enough to preclude household participation in these markets (e.g., the cost of getting to the nearest job is prohibitive). This can have effects that go well beyond the "missing market" itself. In their paper on the role of market failure in peasant agriculture, de Janvry, Fafchamps, and Sadoulet (1991) show that missing markets for labor and/or staple foods, serve to substantially dampen the supply response of peasant households to changes in cash crop prices. This line of reasoning, coupled with the prevalence of subsistence producers in Mexico in the early 1990's, led de Janvry, Sadoulet, and de Anda (1995) to conclude that the majority of the maize producers in the *ejido* sector would be little affected by the grains price declines expected to arise under the North American Free Trade Agreement (NAFTA). As a consequence, their estimates of the overall reduction in maize production were considerably smaller than those models assuming a fully functioning labor market (e.g., Robinson et al., 1993).

In fact, maize production in Mexico has not fallen at all in the wake of these price declines, and Taylor et al. (2003) attempt to explain this phenomenon using a village-level CGE analysis. He emphasizes the role of local labor and land markets in redistributing land away from the large commercial producers towards smaller subsistence farmers as land rents paid by these farmers have dropped, and wages received for working on the commercial farms have also declined. Taylor argues it is the subsistence producers, who have expanded cultivated area, that have bolstered maize production in the wake of the price drops.

Since the main endowment of the poor is their own labor, the market that deserves greatest attention by those studying trade and poverty is clearly the labor market. And assessing how

well the labor market in a given economy functions becomes a central empirical question. Fortunately, there is an emerging body of literature aimed at testing for market failure – or as the issue is often framed: testing for the *separation* of household and firm decisions. If the labor market is functioning effectively, the amount of labor used on a farm should depend only on the wage rate and not on the number of working age individuals in the farm households.

Benjamin (1992) provides an excellent example of how to test the separation hypothesis. He does so, in the context of rice production in Indonesia, by incorporating demographic variables in the farm firm's labor demand equation and testing for the significance of the associated coefficient. Interestingly, he fails to reject the separation hypothesis, meaning that markets appear to be working. However, the lack of wage labor income among many of the poorest rural households in some of the poorest countries suggests that this hypothesis might well be rejected in other cases. Hertel et al. (2004) note that nearly 40% of the households in the poorest developing countries are completely specialized in farm income. These households are also disproportionately poor. Therefore, further examination of the separation hypothesis appears to be warranted.

This brings us to the more general question of labor mobility – both across sectors and between the formal and informal (self-employed) sectors of the economy. Hertel et al. (2003) emphasize this point in their analysis of factor market closure and its implications for the impacts of trade liberalization on poverty. If self-employed workers and physical capital are immobile across sectors, then the pattern of poverty impacts that arises following trade liberalization is quite heterogeneous, since trade reforms invariably hurt some sectors (e.g., manufacturing) at the expense of others (e.g., agriculture). However, with self-employed labor and capital mobile between agriculture and non-agriculture, they find a much more uniform pattern of poverty reduction, with real unskilled wages the driving force behind these changes.

Which specification is correct? This will surely vary by country, and it calls for additional econometric analysis – although this time at the level of markets, as opposed to households. Recent econometric evidence from rural China suggests that the degree of off-farm labor mobility is quite low, particularly for households with low educational attainment (Sicular and Zhao, 2002). Hertel, Zhai, and Wang (2004) find that off-farm mobility is the key determinant of whether poverty amongst agricultural households is reduced following China's accession to the WTO. At higher levels of off-farm mobility, the boost in unskilled manufacturing wages is transmitted back to the farm, and lifts the welfare of low-income households, despite lower farm prices.

VI. Productivity and Economic Growth

Large, permanent reductions in poverty require economic growth. So the question naturally arises: To what extent will trade reforms stimulate such growth? There are numerous mechanisms through which this can work. Here, we focus on three possibilities: increased investment in physical or human capital, access to improved technology, and increased competition.

In a recent study of Vietnam's rice market reforms of the 1990's, Edmonds and Pavcnik (2002) show that the resulting boost to agricultural prices and hence rural incomes enabled the rural poor to invest in human capital. These authors find that trade reforms in Vietnam that raised the price of rice, and hence rural incomes, substantially reduced the incidence of child labor, while simultaneously increasing the rate of school attendance. In fact, the rise in rice prices in Vietnam during the reform period of the 1990's explains fully half of the decline in child labor during this period. This is precisely the kind of effect that will result in long run reductions in poverty.

Of course this process can work in reverse. In their analysis of the impacts of the Indonesian financial crisis on household spending, Thomas et al. (1999) observe substantial reductions in the amount of spending allocated to education and health care in the wake of this external

shock. And the reductions are most pronounced amongst the poor. This reduction in human capital investment "suggest that for these households the impact of the crisis is likely to be felt for many years to come" (Thomas et al., 1999, p. 1).

Increased trade can also bring with it access to new technologies that can in turn have a significant impact on productivity. High trade barriers, both tariff and non-tariff in nature, often prevent access to some technologies/goods altogether, thereby impeding productivity growth (Romer, 1994). Gisselquist and Pray (1997) provide a compelling example of the importance of imported technology in the case of maize production in Turkey. Prior to 1982, Turkey restricted importation of new varieties of agricultural commodities through a single-channel system, which gave the Ministry of Agriculture authority over seed production and trade. Between 1982 and 1984, this was relaxed, permitting foreign investment in this sector, importation of new varieties and elimination of price controls on seeds. The impact on yields was dramatic. Gisselquist and Pray have compared actual with predicted yields under previous technology to show that these reforms contributed to a 50% increase in maize yields in Turkey. They estimate that the increase in average returns to maize production amounted to 25% of gross economic value. This is precisely the kind of non-marginal gain from more liberal trade that Romer refers to in his influential 1994 paper.

There is also evidence that exporting can lead to enhanced productivity (Bernard and Jensen) and that imports can effectively discipline domestic markups in imperfectly competitive industries, thereby encouraging firms to move down their average total cost curve (Ianchovichina, Binkley and Hertel, 2000). In addition, many trade agreements have explicit components aimed at stimulating Foreign Direct Investment (FDI), which can stimulate growth by adding to the host country's capital stock as well as bringing with it new technologies and managerial capacity. For example, in a study of FDI, research and development, and spillover efficiency in Taiwan, Chuang and Lin (1999) use firm level data to confirm the existence of beneficial spillovers from FDI. They find that a 1.0% increase in an industry's FDI ratio produces a 1.40% to 1.88% increase in domestic firms' productivity.

In a recent CGE analysis of the Japan-ASEAN FTA, Itakura, Hertel and Reimer (2003) seek to incorporate some of these mechanisms into a dynamic CGE model. They utilize econometrically estimated coefficients for the impact of FDI, exporting and importing on manufacturing productivity and they find that the estimated GDP gains from this FTA increase by more than 50 percent when these additional mechanisms are considered. Unfortunately, those authors do not take the next step and analyze the impact of economic growth on poverty.

However, in his forthcoming book on trade and poverty, Cline (2004) attempts to make the link between trade liberalization, productivity growth and poverty. Specifically, he combines econometrically estimated elasticities of growth with respect to trade, as well as the elasticity of growth with respect to poverty, with a CGE analysis of global trade liberalization. This permits him to synthesize an estimate of the aggregate, long run poverty reduction that might arise from such a policy change. He begins with the global CGE model of Harrison, Rutherford, and Tarr (1997), augmenting the static gains from trade (the focus of the studies cited above) with the "steady-state" quasi-dynamic gains that follow in the long run from increased investment.

To this, he adds another pure productivity effect which he infers by multiplying the increase in trade for each region – as estimated by the CGE model – by a "central estimate" of the elasticity of output with respect to trade. (The latter is distilled from a review of the now vast cross-country growth regression literature.) Having obtained an estimate of long run growth in per capita income resulting from trade reform, Cline then applies a country-specific "poverty elasticity" with respect to growth, based on an assumed log-normal income distribution for each region, in order to obtain his final estimate for poverty reduction. His estimates are large, totaling nearly 650 million people – the bulk of these in Asia – where the absolute number of poor (based on a $2/day metric) is large, and trade growth is relatively high following multilateral trade liberalization.

Cline's growth-based estimates of poverty reductions stemming from trade liberalization are considerably larger than those obtained by the World Bank Development Prospects Group (2003). These authors use a recursively dynamic, CGE model to estimate the poverty reduction in 2015, owing to gradual global trade liberalization between 2005 and 2010. Like Cline, they use a poverty elasticity with respect to income (in this case uniformly assumed to be 2.0) to convert economic growth into poverty reductions. But unlike Cline, they actually track the accumulation of capital in response to increased investment, and the openness/productivity multiplier is also an explicit part of their model. They conclude that such trade reforms would reduce $2/day poverty by 320 million –roughly half of Cline's estimate.

Cline's synthetic estimates – as well as those from the Development Prospects Group (2003) – highlight the potential for trade liberalization to have a substantial long run impact on poverty. However, in order to get to this estimate, he must follow a long and arduous path, crossing several research "minefields" in the process: "steady-state" CGE analysis, growth theory, and cross-country regression analysis, in addition to the literature on income distribution and poverty. It will be some time before these individual pieces are strong enough to support anything more than back-of-the-envelope estimates of potential long run poverty impacts of trade reform. In the meantime, we expect that most of this literature will continue to emphasize the short- to medium-run income distributional impacts of trade reform on poverty resulting from comparative static estimates of the ensuing commodity and factor price changes. To the extent that most policymakers focus on this shorter time frame, and because short run impacts are especially important for households facing extreme poverty, we believe this emphasis is justified. With this in mind, we turn next to a potential research agenda that emphasizes the short- to medium run impacts of trade liberalization on poverty.

VII. Summary and Conclusions

Agricultural trade liberalization can have an important impact on poverty and inequality. Since the bulk of the world's poor live in rural areas where the dominant livelihood is farming, any trade reforms that boost agricultural prices tend to reduce poverty. However, the specific impacts depend on a number of factors. First of all, the extent of price transmission from the border to local markets can vary widely – even within a given country – as was seen in the case of Mexico. Poor infrastructure and high transactions costs serve to insulate rural consumers from world price rises, while penalizing exporters. Any policies aimed at reducing domestic marketing costs will enhance rural welfare and improve the chances of rural producers benefiting from trade reform.

Households' ability to adjust to the price changes flowing from trade reform also varies considerably across countries, localities and types of households. The more responsive a given household is to the price changes, the greater the chance that they will be able to gain from trade reform. If they can increase supplies of products whose price has risen, while reducing consumption of these same goods, then any initial losses will be lessened, and gains will be enhanced. Of course, their ability to increase supplies is likely to be greater the better their access to capital assets and credit – something which is notably difficult for the poorest farmers.

In the medium run, labor markets play a very important role in determining the poverty impacts of trade reform. Net purchasers of agricultural commodities can still gain from higher prices, provided these prices translate into higher wages, and provided they have access to employment at these higher wages. In fact, since the dominant endowment of the poor is unskilled labor, the impact of trade reforms on unskilled wages is central to the poverty story. This underscores the importance of domestic policy reforms aimed at improving the functioning of labor markets.

Long run poverty reductions from trade reform hinge critically on economic growth. The impact of trade liberalization on economic growth is an area of intense research at present.

Preliminary findings, based on the currently available empirical evidence on the trade-growth linkage suggest that this can be a very important vehicle for reducing poverty. As our knowledge about this linkage improves in the future, our ability to asses the long run impact of trade reforms on poverty will be greatly enhanced.

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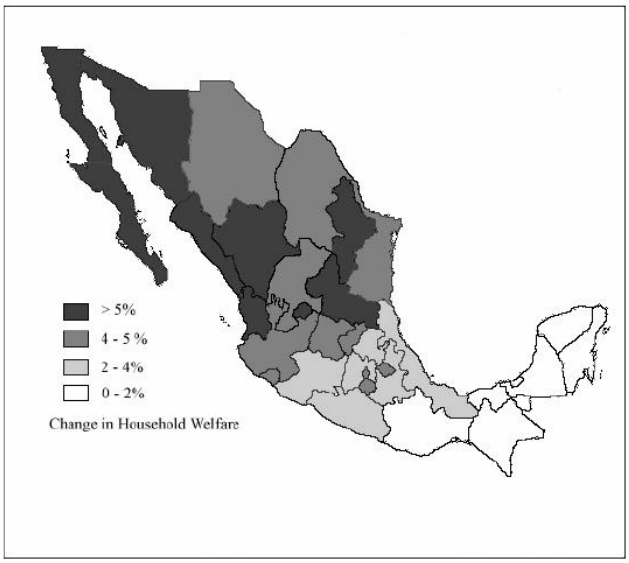
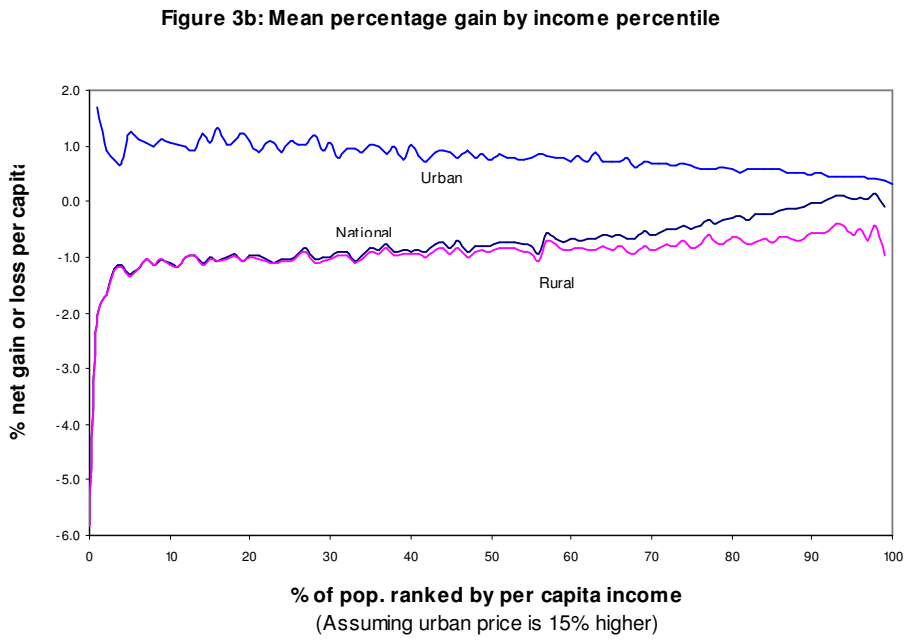
Figure 1. The Regional Impact of Trade Liberalization in Mexico: Percentage gain in Real Income

Figure 5.3 Trade Liberalization and Households Welfare: Regional Effects.



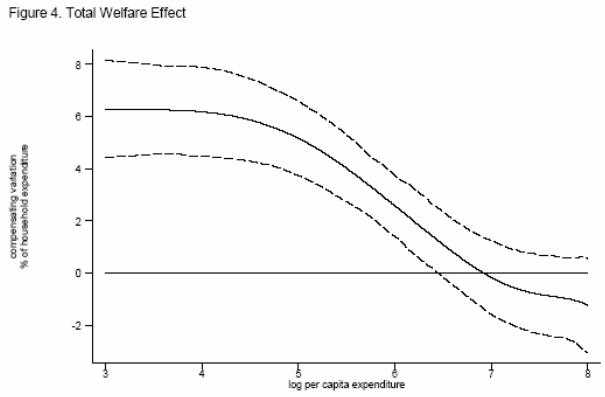
Source: Nicita, 2003.

Figure 2. The Initial Impact of China's Accession to the WTO on Rural, Urban and National Average Households, by Income Level



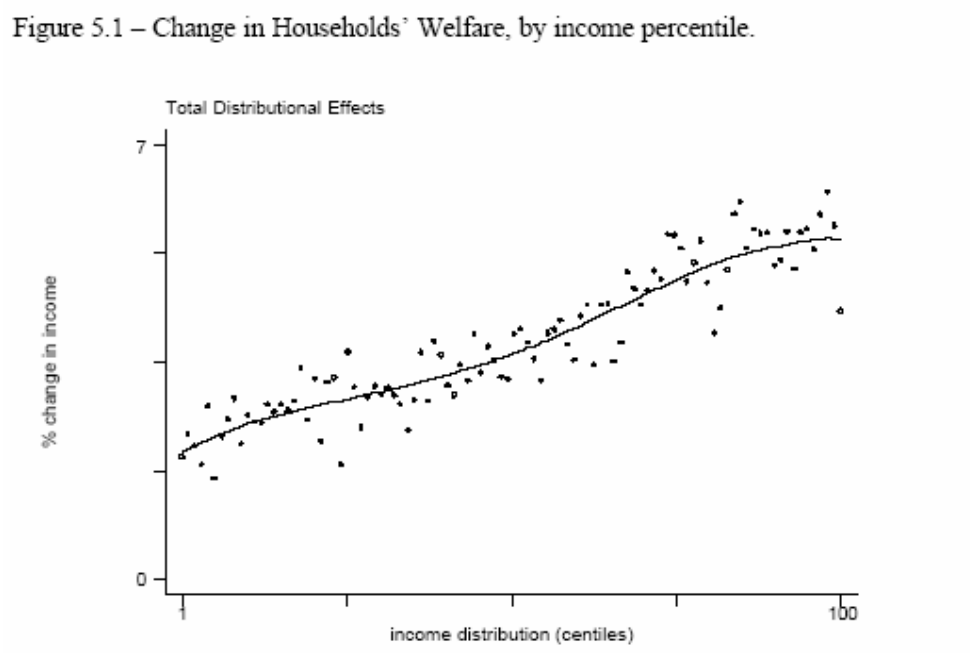
Source: Chen and Ravallion, 2003.

Figure 3. The Impact MERCOSUR on Households in Argentina: Percentage Gain in Real Income, by Expenditure (Income) Level



Source: Porto (2003b).

Figure 4. The Impact of Mexican Trade Liberalization in the 1990's on Household Welfare: Percentage Change in Real Income, by Income Level



Source: Nicita, 2003.