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Seeking Shared Prosperity through Trade

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Abstract

Increasing the trade integration of developing countries can make a vital contribution to boosting shared prosperity, but it also exposes producers and consumers to exogenous shocks that alter relative prices, sometimes positively and sometimes negatively. This paper discusses the short-run effects of trade-related shocks on households to capture the potential welfare impact on the poor. The discussion explores the channels through which trade shocks are transmitted to households in the bottom of the income distribution, namely through consumption, household production, and market-based labor activities. The degree to which price shocks are passed through from borders to point of sale is a key determinant of the gains from trade and the ultimate welfare impact. Trade changes in agriculture directly affect households through their consumption basket. Lower agricultural prices reduce the cost of consumables, but these welfare gains may be offset by lower earnings for households that produce these same goods. Poorer households tend to be net consumers of agricultural products, suggesting a net welfare gain, but agricultural wage workers could suffer from wage cuts. Because poorer households tend to consume relatively fewer nonagricultural products, that is nonessentials, any trade-related shocks to prices of nonagricultural product are likely to be transmitted via labor channels. Despite significant evidence that nonagricultural trade reform ultimately leads to job creation and enhanced productivity, the short-run effects can be mixed. The costs incurred by workers to transition to new jobs slow the adjustment of the economy to a new steady state. Labor mobility costs, which tend to be higher in developing countries and for unskilled workers, reduce the potential gains to trade by diverting labor market adjustment from its most efficient path.

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1. Introduction

Trade affects welfare through various channels. The objective of this paper is to explore the channels through which the potential gains and costs to increased trade integration are distributed across income groups at the bottom of the income distribution. We review the evidence available and discuss measurement strategies to quantify the trade impact through each of these channels in order to inform policy design. This review enables us to use the poverty lens to analyze the link between trade policies and the World Bank's twin goals of reducing extreme poverty and boosting shared prosperity (see Box 1). While more extensive reviews on the topic are available (e.g. Winters et al., 2004; Goldberg and Pavnick, 2005 and 2007; Harrison et al., 2011), this paper aims to add to this literature by highlighting the importance of two dimensions in determining the impact of trade on welfare, i.e. the transmission of prices from international markets to the households in various parts of the country; and the frictions in the labor market adjustment following a trade shock. This focus allows us to concentrate on the short-run effect of trade shocks, which we argue are particularly important from a policy maker's perspective.

Box 1: How are poverty and shared prosperity measured?

The Bank's twin goals of poverty reduction and shared prosperity are defined as follows:

1. Reduce the share of people living in extreme poverty to 3 percent of the global population by 2030;
2. Increase the average incomes of the bottom 40 percent of the population in each country.

The Bank uses both international and national poverty lines to provide country-specific poverty headcounts. For comparative purposes, the Bank relies on an international poverty line equal to US$1.25 per day (2005 prices), defined to correspond to the national poverty rates prevailing in the 15 poorest developing countries (World Bank 2014; see also Chen and Ravallion 2010).

The shared prosperity goal is intended to ensure that economic growth is inclusive. Typical measures of income growth have relied on per capita measures – i.e., dividing aggregate GDP by the population – which can mask differences in how individuals accrue these income gains. By focusing on the bottom 40 percent, we can assess the degree to which poorer income groups benefit. It is important to acknowledge that the Bank's shared prosperity measure does *not* capture inequality because it does not compare the relative gains of the bottom 40 percent to those of the top 60 percent.

The transmission channels through which a trade-related shock impacts individuals and firms include consumption and production. For individuals and households at the lower end of the income distribution, the main channels of direct influence are through consumption of final goods, especially food, consumption of inputs to household production, and employment links to the tradables sectors. For trade policies that translate into a change in the relative price of traded goods, the initial consumption and production baskets along with the short-term response of consumers and producers will determine whether the trade-related shock is welfare improving for the poor and the bottom 40 percent. This welfare impact, however, can vary over time, such that a negative short-term effect may be more than off-set by long-term gains. These effects can also be viewed through the prism of static vs. dynamic effects. Our conceptual framework helps us distinguish the

two types of effects, but the long-term dynamic gains/losses are empirically difficult to measure.[1] As a result, it is not possible to estimate the net impact in which the various effects are aggregated into a single credible welfare measure.

In this paper, we examine separately the various channels through which trade affects welfare. Specifically, we address the short-term effects of changes in trade on household consumption, household production of agricultural goods, and households' labor supply to trade-related activities in the informal and formal markets. We draw on recent research to highlight the importance of these various channels. And for each channel, we discuss options for quantifying the impact of a trade-related shock.

Our analysis considers trade-related shocks that can derive from direct and indirect trade policies ranging from tariffs and market access rules, to protective regulations, to changing patterns in global demand and supply. These trade-related shock shave differential impacts on the population: some producers or consumers may benefit, while others do not. For example, non-tariff measures (NTMs) can provide regulatory protection to specific sectors (e.g., through licensing requirements) but tend to benefit a small subset of producers, and may artificially raise prices and/or effectively reduce market access for small/remote/independent producers. Similarly, policies such as qualitative restrictions, export taxes or export bans are distortionary and anti-competitive and disproportionately benefit large producers that may be effective lobbyers, to the detriment of consumers and less networked producers. This paper does not address the welfare implications of these types of policy instruments, nor do we address a host of other aspects of trade that affect poverty and shared prosperity, such as the effects of integrating into regional or global value chains, network effects/lagging regions, services trade, NTMs or trade facilitation issues, inter alia.

The paper is organized as follows. The next section provides some arguments as to why international trade is relevant for shared prosperity; section three discusses the transmission channels from trade shocks to households via consumption and production highlighting the importance of price transmission and of distinguishing between manufacturing and agricultural sectors; section four discusses the effect of trade on shared prosperity via the labor channel, focusing on the role of frictions to labor mobility; section five concludes identifying some of the policy implications of the discussion.

2. Trade matters for shared prosperity

International trade can make a vital contribution to reducing poverty and increasing shared prosperity in developing countries. Trade allows countries to specialize in the production of goods and services in line with their comparative advantage. It also enables consumers and producers to access a wider range of products at lower prices. This broader range can increase the welfare of consumers as well as the productivity of firms (Goldberg et al., 2010). Consumption and production are the main channels that bring gains from trade to an economy.[2]

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[1] Arkolakis et al. (2012) provide a measure of the size of the welfare impacts from a foreign trade shock, which depends on the share of expenditure in domestic goods and the elasticity of importing with respect to variable trade costs. This measure, however, does not split the gains between static and dynamic effects.

[2] See Arkolakis et al. (2012) for a formal derivation of the size of the gains from trade for a large class of trade models.

There is significant evidence that a more open trade policy and more efficient, internationally diversified trade are associated with higher economic growth in the long run.[3] Globalizers exhibit accelerating GDP growth, catching up with rich countries, while non-integrated developing countries tend to fall further behind. As illustrated in Figure 1, the ranking of country groupings by trade openness (as a share of GDP) mirrors that of country income per capita. Whereas trade has become an increasingly important contributor to economic output in all groupings, the levels of trade openness are significantly higher for high- and middle-income countries, compared to low-income countries.

Figure 1: Trade openness is positively correlated with growth
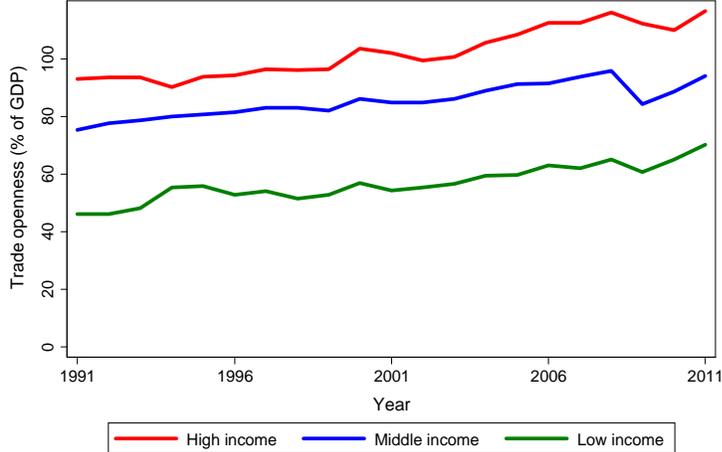
Source: World Development Indicators
Note: Trade openness is measured as exports plus imports of goods and services as a share of GDP.

Low-income countries appear to be losing market share to the rest of the world, particularly to emerging economies that have pursued aggressive integration into global markets. Figure 2 illustrates that whereas the share of global exports produced by low-income countries has stagnated at less than 1 percent of total exports, the BRICS (Brazil, Russia, India, China and South Africa) have tripled their share of global exports from 5 percent in 1991 to over 15 percent by 2011.

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[3] See Rodriguez and Rodrik (2000) for a critique of early studies establishing the positive link between trade openness and growth; see Feyrer (2009) and Brückner and Lederman (2012) for more recent evidence in support of the positive trade-growth link using new methods.

Figure 2: World export share, BRICS vs. low-income countries

Note: Low-income are a sample of 28 countries for which data on exports are available between 1991 and 2011.

As economic growth is the main driver of poverty reduction (Dollar and Kraay 2002; Ravallion, 2001; Dollar et al., 2013), increased trade also tends to be associated with poverty reduction in the long run (Dollar and Kraay 2004). Increased trade should also boost shared prosperity, given that the elasticity of income to GDP for the poor is similar to that for the non-poor (Dollar et al., 2013). Several recent examples demonstrate the role of export growth in 'poverty reduction miracles' observed in East Asia, South East Asia, Botswana and Mauritius, inter alia.

These observations are consistent with the correlations summarized in Figure 3 that suggest that even among developing countries poverty levels are statistically higher in more closed economies (as measured by the trade-to-GDP ratio (regression A in Figure 3)).[4] This relation holds true also when relating changes in poverty to changes in trade openness within countries; that is, within a specific country (controlling for fixed effects), as trade openness rises, poverty declines (Figure 3, regression B). And it also applies to the level (regression D) and growth in income of the bottom 40 percent of the income distribution. However the correlation ceases to be statistically significant once we control for the general increase over time in both poverty reduction and trade openness (regressions C and E).While these results are not based on causal inference, they do support the idea that the direct relationship between trade, poverty reduction and shared prosperity in the short run is more complex than the long-run positive association between trade openness and poverty reduction identified in the literature.

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[4] These regressions utilize poverty data from the World Bank povcalnet (measuring poverty as the number of people below US$1.25 at international PPP 2005 prices) and from the World Bank World Development Indicators for exports and imports as a share of GDP.

Figure 3: Regression coefficient for trade openness, and the 95 percent confidence interval
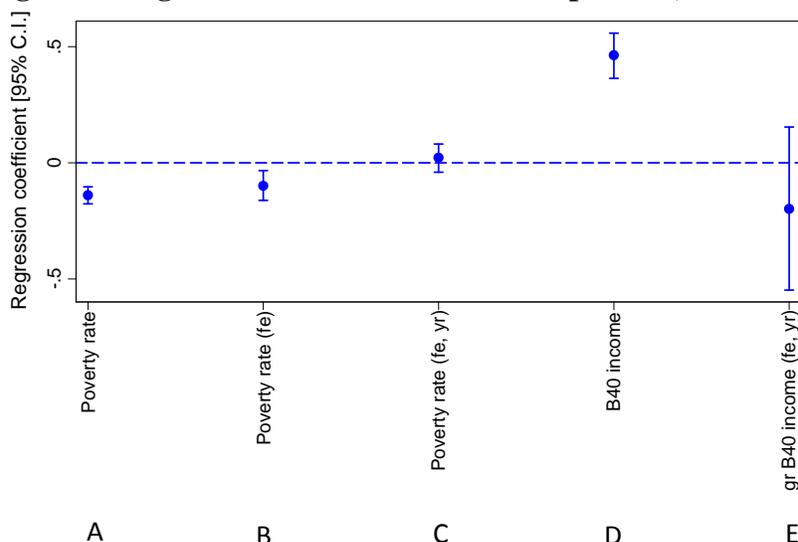
Note: The y-axis measures the regression coefficient for trade openness, and the brackets show the 95 percent confidence interval. When these confidence intervals cross zero, the correlation is not statistically significant.

This is because in the short run, a trade-related shock results in simultaneous responses by consumers and producers. Changes in trade policies or global trade patterns affect the prices of goods and services for domestic consumers and producers. The change in relative prices in turn affects labor demand, potentially increasing jobs or wages in some sectors and downsizing in others, thus affecting the earnings of producers and employees. For example, reducing a trade barrier on a good can reduce its domestic price and increase competition from international producers, causing domestic production to contract. Or an improvement in trade logistics can increase trade by reducing domestic prices that increase the international competitiveness of domestic production, fostering increased demand for exports. The net effect of a trade-related price shock and how it is transmitted to households will depend on whether or not the affected goods are consumables or inputs to domestic production or to exportables.

The short-run adjustments by producers and consumers to a trade-related shock will determine who benefits and who loses in the short run. This paper focuses on the short-run effects of trade on households in order to capture the potential welfare impact on the poor, guided by the Bank's twin goals. In addition to welfare and equity considerations, identifying potential winners and losers is important for the political economy of the trade reforms, given that potential "losers" tend to act as stumbling blocks to reform, which can result in inefficient trade policies (Baldwin and Robert-Nicoud 2007).

3. Trade shocks to welfare: Transmission channels to consumers and producers

The trade patterns associated with an economy's production structure, income levels and consumption habits determine which economic agents are linked to global markets and how they are affected by trade shocks. For a price increase in consumables, for example, households that consume these final goods will incur a higher cost and may reduce their consumption. If, on the other hand, households are engaged in the production of the consumable, the price increase would translate into increased earnings. But if the same product was an input into production, the higher

production cost would raise the price of the final good, reducing demand for the product by domestic and international buyers. Workers would subsequently face a reduced demand for their labor, translating into lower earnings and/or fewer work opportunities. In this section, we consider the transmission channels of trade shocks to consumers, household producers, and workers at the bottom of the income distribution (see Appendix Figure 1 for an illustration of transmission channels).

3.1. Price pass-through

Trade-related shocks or policy changes typically affect the price of traded goods or services at the border. These price changes affect the size of the gains from trade and ultimately the welfare of consumers and the incentives of producers and consumers. But the degree to which border price changes are translated to prices at the point of sale can vary significantly both across and within countries, and will determine the net impact as well as the distributional impact of the shock.

The degree of price pass-through is affected by the extent of market power of international buyers of domestic intermediate goods as well as by transport infrastructure. Sexton et al. (2007) argue that even small departures from perfect competition in the international downstream industry can result in international retailers appropriating much of the increases in export prices, rather than domestic producers. Consider, for example, the lifting of an export ban in a developing country, or a tariff reduction in an export destination market. Both measures would generate upward pressure on the export prices in the developing country. However, the evidence suggests that retailing and processing importers usually capture most of the price increase, thereby limiting the price pass-through to the domestic exporters in the developing country.

An example that illustrates this case is the liberalization of the Mozambican cashew nut sector. During the 1990s, the Government of Mozambique removed nearly all the heavy restrictions on raw cashew nut production, including an export ban. While these changes pushed up the export price, the pass-through to domestic raw cashew nut producers was small partly as a result of the market structure of the international downstream sector (McMillan et al. 2003). India was de facto a monopsony buyer of raw cashews from Mozambique and was therefore able to appropriate much of the increased export price of raw cashew nuts, instead of Mozambican producers. Domestic intermediaries also played an important role in limiting the pass-through to Mozambican producers (McMillan et al. 2003). This further reduced the gains accruing to the poorest households involved in agricultural production, while traders captured much of the benefits from the liberalization.

Highly concentrated market power among agricultural export processors can also limit the gains from trade integration for farmers. Using a simulation model, Porto et al. (2011) show how competition among processors in African countries is good for farmers by increasing the farm-gate price of the crop; greater competition among processors allows farmers to appropriate a higher share of an increase in the export price. Whereas more competition generally benefits farmers, the gains are not necessarily shared equally across income groups. In most cases, non-poor farmers benefit relatively more due to the low participation of poor households in producing export crops (Porto et al. 2011). The degree to which the poor benefit varies across countries and crops, and income gains tend to be relatively larger for poor growers of coffee, cocoa and cotton.

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Market power in the retail/distribution sector affects consumers as well. When Haiti introduced a temporary subsidy on imported rice to protect domestic consumers from the international price hikes of 2008/09, the domestic price initially fell as expected. However, in anticipation of the end of the subsidy, rice importers colluded to raise the domestic price of rice above what would have been the case without the subsidy (Arias and Carneus 2011).Similarly, Depetris and Porto (2014) estimate that increasing domestic competition can substantially reduce importers' markup in the Economic Community of West African States (ECOWAS), thus putting downward pressure on local farm gate prices.

Border price pass-through and its distributional impact also vary substantially within countries, because the degree of pass-through depends on multiple factors including distance between point of entry and point of sale, and the internal integration of markets. These factors are particularly relevant for developing countries, which are more likely to have constrained internal connectivity. For example, Atkin and Donaldson (2014) estimate that intra-national trade costs are four to five times higher in Nigeria and Ethiopia than in the US. Pass-through is particularly low in remote locations such as rural compared to urban areas (Marchand 2012 and Nicita 2009).The differential pass-through is one reason why tariff liberalization in Mexico during the 1990s led to much larger gains for households near the US border than those in the south of the country (see Figure 4). Similarly, Ugandan trade integration in the 1990s reduced inequality relatively more in districts close to border-posts compared to more remote districts (Calì 2014).

Poor infrastructure also contributes to the relatively low price pass-through and thus reduced net gains from trade, especially in remote regions, also impacting the distributional gains from trade. Krishna et al. (2010) conclude that in India, the transmission of tariffs to domestic prices is particularly low in lagging states characterized by poor infrastructure. This observed low price transmission in turn limited the poverty reducing effect of trade liberalization, reinforcing the slower income growth in lagging states. Consistent with this finding, cross-country analysis in South Asia suggests that countries with a smaller proportion of their populations in lagging regions experience greater reductions in poverty following trade liberalization (Krishna et al. 2010). And firm-level analysis across countries suggests that firms located in more connected "core" regions are more likely to be exporters than those located in more remote regions (Farole 2013). This is also because firms in the core have better access to imported inputs, which are key for productivity gains.

Figure 4: Increase in household real income following tariff liberalization in Mexico, 1990-2000
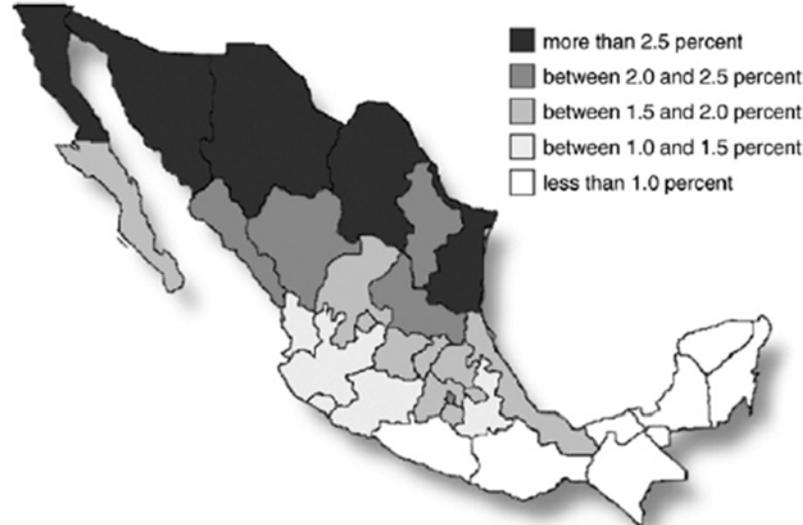
Source: Nicita (2009)

The flip side of low pass-through is that importers and distributors capture sizable shares of the gains from reduced international prices. Atkin and Donaldson (2014) show that intermediaries in Ethiopia and Nigeria capture a higher share of the benefits generated by a reduction in the border-price than consumers and producers. Intermediaries therefore do not pass on to the final buyers most of the price reductions; and given that intermediaries tend to be higher earners, this capture is typically regressive for the economy. The share captured by intermediaries is particularly high in remote locations, where their market concentration also tends to be higher (i.e., fewer intermediaries serve remote markets). Remote locations also exhibit higher deadweight loss associated with price changes than other locations, further reducing the gains from trade.

Policies that ensure a smooth price transmission can maximize the net benefits of trade integration for consumers and producers. Policy should be focused first on maximizing the net benefits, and secondly on distributing the gains. Two types of policies could be effective in achieving this objective. First, remote areas – whether far from trade nodes or less integrated with the rest of the economy– need to be better integrated with international markets, typically via the domestic economic core. Policies to develop or improve transport infrastructure will be key in this respect.

Secondly, it is important to ensure sufficient competition among importing and exporting intermediaries as well as processors. The lack of domestic competition in these sectors often benefits domestic elites who in many countries are politically connected (see e.g., Castañeda Valdez (2012) on Mexico; Diwan et al. (2013) on Egypt; and Rijkers et al. (2014) on Tunisia). The role of trade related policies is important in reducing barriers to entry in these intermediate sectors. This may involve strengthening competition laws and/or opening the domestic retail/distribution and export processing sectors to foreign competition while ensuring an adequately regulated framework to avoid the emergence of dominant foreign retailers in the market (Arkell 2010).

3.2. Household impact of trade shocks in agriculture

Once the price change induced by a trade-related shock reaches producers and consumers, it can affect household real income in the short-term through consumption, production and/or the labor market. For any given price change, these effects vary in intensity and direction across households according to their (i) initial consumption basket; (ii) preferences; (iii) production activities; and (iv) sector of employment.

Trade changes in agriculture directly affect households by changing the price of their consumption basket. Households at the bottom of the income distribution usually benefit from lower agriculture prices because their food share in total consumption is relatively high (in line with Engel's Law that food shares in consumption decreases with income). Lederman and Porto (2013) show that the share of food expenditures declines across increasing income quintiles in a sample of Latin American and African countries.

Low-income households are also more dependent on income derived from the production of agricultural products compared to other households. This pattern across quintiles mirrors that for consumption in Latin America and, with some exceptions, in sub-Saharan Africa as well (Lederman and Porto 2013). This dependence on agricultural income translates into income losses from lower agricultural prices, counteracting the likely consumption-based gains for poorer households.

On balance, poorer households in developing countries tend to be net consumers of agricultural products, implying a net welfare gain from agricultural trade liberalization or a net welfare loss from commodity price increases. For example, the spikes in international food prices observed in 2008 and 2010-11 were associated with short-term increases in poverty (Ivanic and Martin 2008; Ivanic et al. 2012). According to Ivanic et al. (2012), an estimated 68 million people fell into extreme poverty, while only 24 million people were raised out of extreme poverty as a result of the food price spikes in 2010-11.[5] A similar result emerges from reductions in tariffs and NTMs on agricultural products. Dabalen and Nguyen (2014) estimate that the elimination of import bans on eight groups of food commodities in Nigeria would reduce poverty by between 0.1 and 1.2 percentage points through lower food prices for consumers. The impact would be particularly important for poor rural households, which spend an estimated three-quarters of their budget on food.[6]

In addition to being engaged in agricultural production, poor households can also have wage earnings in the agricultural sector, and this effect could offset the net impact of changes in agricultural trade on household welfare. The importance of this wage effect depends on two factors: the degree to which agricultural wages respond to a change in agricultural prices (i.e., the wage-price elasticity), and the importance of agriculture in employment. It is possible that these two factors are sufficiently large to reverse the adverse poverty effect of food price spikes. Jacoby (2013) provides supportive evidence in the case of rice prices in India, where the average wage-price elasticity in agriculture is close 1; he concludes that those at the bottom of the income

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[5] They also consider consumption responses by households that substitute goods that have become more expensive with other goods. Production responses take longer to occur.

[6] Kelleher and Reyes (2014) also estimate large poverty reducing effects of reducing the burden of sanitary and phytosanitary measures for urban households in Guatemala.

distribution who are usually landless and employed in agriculture benefit from this channel (see Figure 5). In fact, the rural wage channel plays a much larger role in improving the welfare of the poor than the vast Indian public food distribution system. Ivanic and Martin (2013) similarly show that incorporating wage and output responses eliminates the long-term adverse poverty effects of higher food prices.[7]

Figure 5: The wage effect of higher rice prices reduces poverty in India
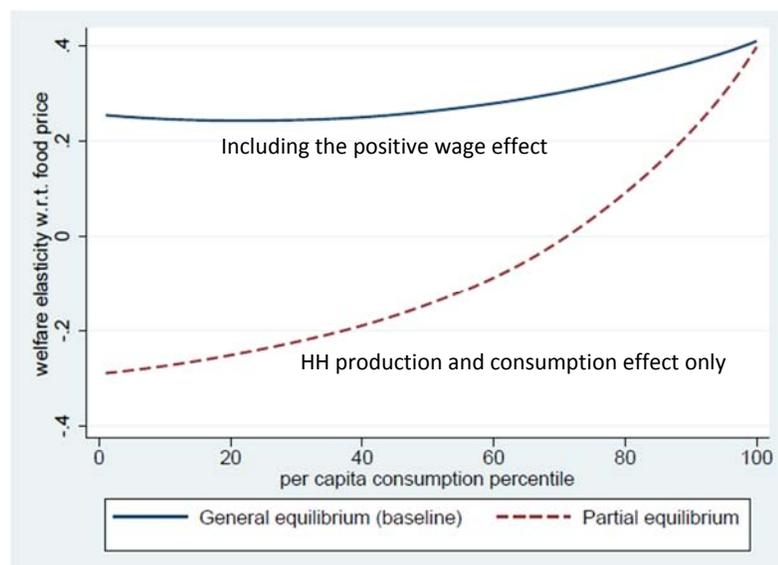
Source: Jacoby (2013)
Note: The partial equilibrium scenario only includes the household consumption and production effects of rice price changes; the general equilibrium scenario also incorporates the wage effect of price changes.

Households in the bottom income quintiles are vulnerable to changes in agricultural trade, but because of multiple transmission channels which vary across households, an accurate understanding of the impact of such changes is necessary for effective policy formulation. This is especially true for trade in basic food items. Understanding the potential welfare impact of changes in this trade (whether spurred by domestic policy or external shocks) requires a comprehensive accounting of the various channels underlying this impact beyond a simple consumption-based analysis.

Whereas it is hard to generalize, the evidence suggests that targeted transfers appear to be a useful policy tool to counteract potential welfare losses by poorer households as a result of trade changes in agriculture. Policy makers can provide temporary direct income support to negatively affected poor households. This could enable trade policy reform without undermining the achievement of the twin goals in the short-run. Broader safety net schemes can also be useful to shelter low-income households from adverse agricultural price shocks (Anderson et al. 2013). Attanasio et al. (2013) conclude that the conditional cash transfer program *Oportunidades* was an effective way to protect poor Mexican households from food price spikes. But effective safety nets are difficult to develop, require effective targeting and can be costly, especially in developing countries. Furthermore, Do

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[7] Ivanic and Martin (2014) argue that these responses happen only in the medium or long term and therefore the short-term impact of price changes on poverty would not be affected. However, as Jacoby (2013) suggests, the wage response can be relatively swift.

et al. (2013) argue that social transfers may generate counter-cyclical demand for food that may exacerbate the price hikes if those receiving the transfers have a greater propensity to spend on food than those being taxed to fund the transfers.

An important consideration when designing targeted transfers is to ensure such programs provide adequate assistance for negatively affected workers to search for alternative employment opportunities without preventing economy-wide restructuring following permanent price shocks. This implies that the support provided to displaced individuals should ideally not be provided indefinitely and should be tied to the search for alternative employment best suited to their skill set, or to acquiring new skills that increase the probability of finding alternative employment.

Other policies to protect household welfare from adverse price changes tend to be less effective. One example is temporary trade insulation, which may in fact exacerbate international price increases if all countries insulate at the same time. Martin and Anderson (2012) find that for the 2006–08 price surge, insulating policies affecting the rice market explain 45 percent of the increase in the international rice price. In addition, trade insulation may be difficult to reverse, thus preventing the insurance role played by trade in addressing idiosyncratic shocks. Finally, trade insulation appears to work only in the short run to reduce the pass-through from international prices; Ivanic and Martin (2014) show that domestic food prices in developing countries ultimately converged to international prices by 2013 (Figure 6).

Figure 6: International and domestic food price indices
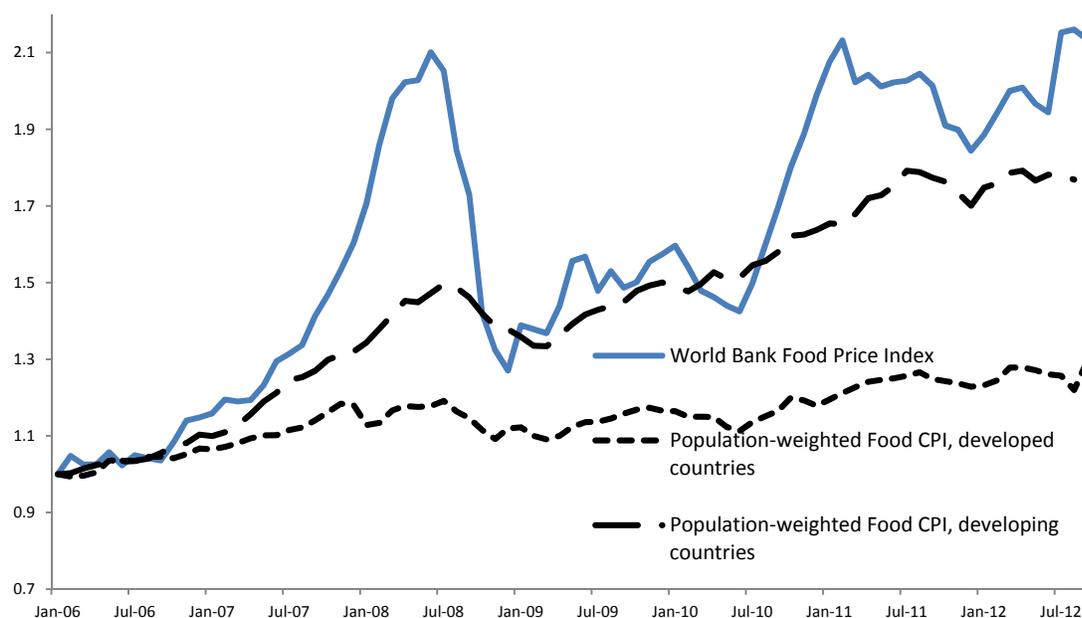
Source: Ivanic and Martin (2014) based on FAO and OANDA

Price subsidies represent another policy response to offset the adverse impact of agricultural trade shocks, but these tend to be costly, ineffective and highly distortionary. The above-mentioned evidence from Haiti suggests that price subsidies can have adverse consequences if not properly designed. Attanasio et al. (2013) argue that price subsidies are less effective than targeted transfers

to poor Mexican households because they are more expensive (due to lack of targeting), regressive, and distort prices.[8]

3.3. Household impact of trade shocks in non-agricultural sectors

In non-agricultural sectors the short-term impact of trade-related shocks on the twin goals is likely to transpire mainly via labor channels rather than consumption channels. Households at the bottom of the income distribution have very low shares of consumption of non-agricultural products. In Nigeria, for example, non-commodity items account for only 8 percent of total household expenditures for the two lowest quintiles, and only 10 percent in Tanzania (Lederman and Porto 2013). In addition, only a small share of household enterprises is engaged in non-agricultural production. Moreover, low income households – particularly non-rural households – are often employed in unskilled non-farm activities. These include non-tradable services such as retail trade and transport, manufacturing activities (tradable and non-tradable), and tradable services such as tourism. The labor channel is therefore likely to be critical to explaining the short-term impact of non-agricultural trade shocks on poverty and shared prosperity.

Empirical evidence supports the assertion that non-agricultural trade reform can be welfare-improving. For example, the Vietnam-US bilateral trade agreement (BTA) of 2001 had a marked poverty reducing effect in Vietnam through boosting exports of labor-intensive manufacturing products (McCaig 2011). The impact was especially favorable for the poor, given the preponderance of unskilled labor, and reduced the skilled-unskilled wage premium (Fukase 2013). It is well established in the literature that exporters are larger and more productive than non-exporting firms (Bernard and Jensen 1995, Bernard and Jensen 1999, Bernard, Jensen, Redding and Schott 2007, Clerides, Lach and Tybout 1998). To test the employment effect of expanding exports within firms, we apply the methodology of Cebeci, Ledermanand Rojas (2013) to a sample of 27 ECA countries.[9] As shown in Appendix Table 1, we find a positive and statistically significant correlation between increases in export share in total sales and increases in level of employment and level of unskilled employment using World Bank Enterprise Survey data. A one percentage point increase in the share of sales that are exported is associated with a 0.27 percent increase in total employment levels and a 0.41 percent increase in unskilled employment levels. We find no evidence on the direction of causality (the instrumental variable regression results were not significant) for the ECA sample as a whole, but firm survey data from Georgia shows that raising the export share leads to higher employment (Hollweg and Ruppert Bulmer 2015).[10]

The spill-overs from liberalized trade that increases demand for manufactures can also increase welfare through boosting trade-supporting activities. For example, increased demand for logistics

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[8] Gouel and Jean (2012) argue that a combination of insulating trade policies and subsidies to storage in times of domestic surplus provides a potentially effective policy option.

[9] We use World Bank Business Environment and Enterprise Performance Surveys from 2002, 2005 and 2009 for the following countries in the sample: Albania, Belarus, Georgia, Tajikistan, Ukraine, Uzbekistan, Russia, Poland, Romania, Serbia, Kazakhstan, Moldova, Bosnia and Herzegovina, Azerbaijan, Former Yugoslav Republic of Macedonia, Armenia, Kyrgyzstan, Estonia, Czech Republic, Hungary, Latvia, Lithuania, Slovakia, Slovenia, Bulgaria, Croatia, and Montenegro.

[10] Brambilla, Lederman and Porto (2012) and Cebeci, Lederman and Rojas (2013) identify a positive causal effect of changes in the exporting behavior of firms on employment levels, namely that increases in Turkish exports to the EU as a share of total sales for Turkish firms lead to higher employment levels within firms (there is no observed impact on wages).

and transport services creates demand in these labor-intensive and relatively unskilled sectors. In addition to non-traded services, traded services also have the potential to foster job creation and welfare improvements that are consistent with achieving the Bank's twin goals. Tourism is one of the largest export sectors in many developing countries and tends to employ unskilled labor (Ashley and Mitchell 2010). Unlike merchandise trade, opening services trade does not tend to displace domestic production in developing countries. Increased services imports can in fact improve the efficiency of domestic service provision in areas important to the poor, including financial, health and retail services.[11] On the other hand, under-regulated opening to foreign service providers risks undermining access to services by disadvantaged groups if it leads to excessive market concentration whereby foreign providers corner the most lucrative part of the market but do not meet the needs of poorer households (Calì et al. 2008).There are also general equilibrium effects to consider that may counter the gains to employment and wages, thus creating tradeoffs. If, for example, expanded tourism trade increases economy-wide prices of food/restaurants, transportation or construction, it may be welfare-reducing for some sectors or populations, and thereby affect the net result.

Non-agricultural trade also plays an indirect role in boosting economic growth and poverty reduction, namely through productivity and efficiency gains. Brambilla, Lederman and Porto (2012) find that firms with a larger share of exports in total sales – in particular exports to high-income countries – pay higher wages, reflecting a more productive and more skilled workforce. A more open trade regime can strengthen domestic trade competitiveness by enhancing firms' access to needed intermediate inputs. Expanded trading opportunities not only ensure access to cheaper inputs, but also to a greater variety of inputs, some of higher quality and/or that embody new technology, thus allowing firms to increase productivity and expand output.[12] This is also the case for services imports such as transport, finance and communications, which are key inputs for merchandise and other services production and exports.[13]

Minimizing trade-induced welfare losses in non-agricultural sectors requires policy makers to strike a balance between protecting domestic producers and workers from the adverse impact of import competition, and ensuring access to inputs and goods to the domestic economy. The indefinite protection of sectors from international competition is not conducive to achieving the twin goals in a sustainable way. On the other hand, sudden trade opening carries risks that can undermine the benefits of liberalization by unduly burdening lower income households. Effective policy requires an awareness of the potential trade-offs and measures to mitigate short-term adjustment costs for vulnerable households.

4. Labor adjustment to trade shocks

Retaining our focus on the short term, trade opening can potentially help or harm poor households in the aftermath of a trade-related shock, and in this section we explore the reaction of workers to changing price signals, the ways in which labor supply adjusts to trade-induced changes in labor

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[11] These are additional examples of consumption channels for improving the welfare of poor households.

[12] See Amiti and Konings (2007) for evidence on Indonesia, and Goldberg et al. (2010) for evidence on India.

[13] Arnold et al. (2011) and Duggan et al. (2013) provide evidence that services trade liberalization is associated with higher productivity of the manufacturing sector in Czech Republic and Indonesia, respectively.

demand, and how these adjustments can vary across different types of workers including unskilled or informal workers who are more likely to fall in the lower end of the income distribution.

Policy makers considering the impact of potential trade reforms on jobs would like answers to the following key questions:

> Q: *Would higher exports translate into more skilled or unskilled jobs, and with what impact on wages?*
> Q: *How costly is it for workers to adjust to a trade-related shock, and how do impediments to labor adjustment – in terms of workers transitioning to new jobs or new sectors – affect workers' welfare in terms of labor earnings?*
> Q: *Are unskilled or informal workers affected differently compared to higher wage earners?*

The post-shock adjustment to new prices affects both workers and firms, and this adjustment has a cost. Policy makers need to understand the magnitude of this cost in order to weigh the downside risks and net gains from trade and design mitigation measures to reduce any negative effects.

Based on a summary of existing literature, Hollweg, Lederman, Rojas and Ruppert Bulmer (2014) conclude that workers, rather than firms, bear the brunt of adjustment costs. When a trade shock hits a developing country, the labor mobility costs borne by workers moving to another job far outweigh the labor adjustment costs borne by firms. A firm's adjustment cost might be lost profits because of an overextended payroll or a short-term inability to sell unneeded capital assets, for example. But the relative costs incurred by workers in terms of lost or reduced wages or spells of unemployment far outweigh firm costs.

In this section, we examine how trade policies that permanently affect the relative prices of domestic and foreign production will in turn affect labor demand for the workers who produce these goods. When a trade parameter changes – such as through a tariff change or a persistent price shock in international markets – the change is transmitted to the domestic relative price of affected products with different degrees of pass-through, based on the preceding discussion. Producers and consumers respond to these new prices by altering their production and consumption of these goods, thereby altering the demand for labor in the affected domestic industries. At the same time, workers respond by adjusting their labor supply to new price and wage signals, ultimately leading to new market-clearing wage and employment levels across the labor market.

Although we typically assume that markets clear instantaneously – that is, that supply adjusts to price signals – in reality, labor supply does not adjust immediately to changes in demand. For instance, consider a trade-related shock such as a tariff reduction on imports of a particular product. The resulting competition from relatively cheaper imports will lead to a fall in domestic prices. Producers will scale back production, reducing the number of jobs and reducing wages. Workers facing lower wages or job displacement will need to reallocate their labor, but cannot do so instantaneously.

The reason for delayed adjustment is that changing jobs is costly. The costs associated with switching employment stem from various sources, and vary across individuals and industries. Labor mobility costs might include periods of unemployment and job search, re-training for a new sector or technology, geographical relocation, or family ties that increase the cost of moving.

Evidence from Mexico indicates that non-wage factors are more important than wages in determining job transitions, and 86 percent of voluntary job exits are in fact driven by changes in family circumstances such as marriage or family care (Kaplan, Lederman and Robertson 2013).

When frictions to the labor mobility of workers are large, workers delay or altogether avoid adjustment, reducing the potential gains from trade. *Labor mobility costs* are the costs perceived by a worker to move to a different firm or industry independent of the reason for the move. When, however, workers are unable to move in response to an exogenous shock because of labor mobility costs, the total costs incurred by workers – and the economy – are defined as *labor adjustment costs*. Mobility costs not only slow the pace of adjustment to new jobs, but also reduce the extent of labor reallocation, which in turn affects equilibrium wages. As a result, if the costs of labor reallocation across industries and employers are high, the gains from trade might be reduced. Idle labor or labor stuck in lower productivity firms and industries implies lost incomes and diminished gains to growth (see Hollweg, Lederman, Rojas and Ruppert Bulmer (2014) for a comprehensive analysis of labor mobility and adjustment costs).

Preliminary evidence suggests these costs may be borne disproportionately by poorer households. Workers face high mobility costs, especially workers in developing countries. For many developing countries, limited data means that estimates of labor mobility costs and their correlates are possible only at the aggregated country level. Using widely available data on manufacturing employment levels and average wages by sector for 47 countries (using the UNIDO Industrial Statistics Database), Artuç, Lederman and Porto (2013) estimate that mobility costs for workers in developing economies average 4.93 times the annual wage, compared to 2.41 times the annual wage in developed countries. This result suggests that workers in developing countries will be more vulnerable to a trade-related shock due to the higher cost of switching jobs. The higher the mobility costs, the slower the transition to the new steady state in the labor market, which in turn reduces the potential gains from the trade liberalization. In other words, workers' inertia results in foregone welfare gains from trade in terms of employment and earnings, reducing the positive welfare effects. Figure 7 illustrates the positive correlation between mobility costs and foregone gains.

Figure 7: Foregone gains from trade rise with mobility costs
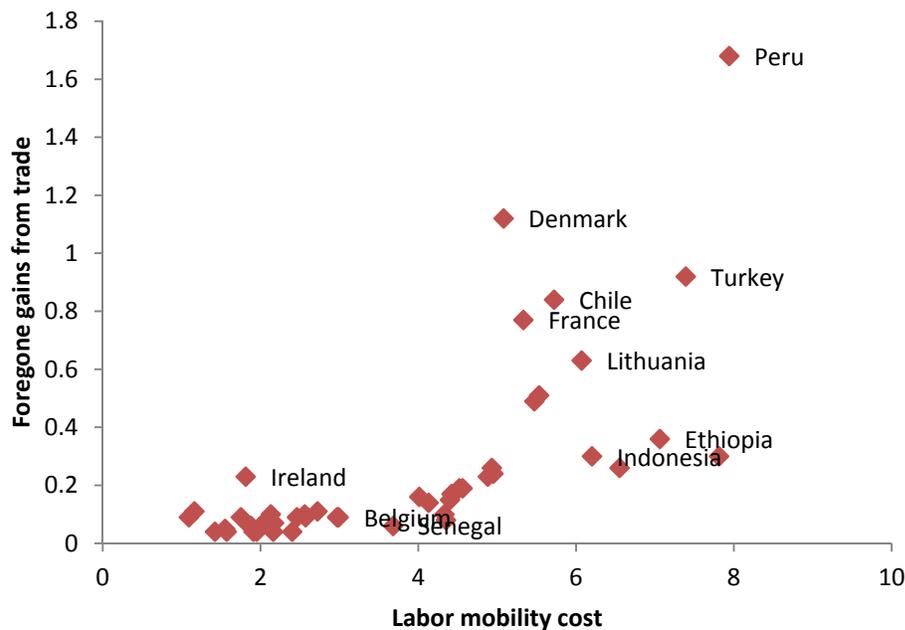
Note: Figure 7 plots estimated foregone gains from trade for each country measured as the ratio of the labor adjustment cost to potential gains from trade. The horizontal axis measures labor mobility costs as a ratio to annual average wage.

Countries with a large share of primary employment tend to have high labor mobility costs. To the extent that poorer households tend to be employed in the primary sector, including agriculture, they may face higher costs of transitioning into other sectors of an economy. Using cross-country estimates to test for various labor market-related correlates, Artuç, Lederman and Porto (2013) find a positive correlation between labor mobility costs and the employment share in the agriculture sector, suggesting that for countries in which employment opportunities are more diversified away from primary sectors, workers encounter lower mobility costs. They also find evidence that labor mobility costs are positively correlated with other frictions and constraints such as time to export, while countries with higher levels of tertiary education tend to have lower mobility costs.

Mobility costs vary by sector of employment. There is significant heterogeneity in the mobility costs for workers entering different industries, and these costs may be positively related to the amount of "specific" rather than "general" skills needed in specific industries. In countries where panel data are available on workers' employment transitions over time, it is possible to estimate mobility costs disaggregated at the sector level, as well as for different worker characteristics (e.g., skilled vs. unskilled, formal vs. informal, by gender) or disaggregated by firm size. In Mexico, for example, Kaplan, Lederman, and Robertson (2013) find that for formal sector workers, industries with the lowest entry costs for formal workers were construction, services, and retail and wholesale trade; transportation/communications and utilities had the highest costs of entry. By identifying relative entry costs, policy makers would be better equipped to anticipate the potential labor market impact of a policy reform in one sector and which alternative sectors displaced workers were likely to enter. Assistance can then be better targeted to reduce the cost. For costs related to geographical

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relocation, for instance, compensation of moving expenses could be provided to workers showing proof of relocation, with the level of compensation potentially tied to the destination market.

Even for the same industry, mobility costs vary by workers' skill level. In Georgia, Hollweg and Ruppert Bulmer (2015) find that it is more costly for unskilled workers to enter manufacturing and service jobs than skilled workers. Unskilled workers find it easier to access the agricultural and construction sectors of Georgia's economy. If workers in the bottom 40 percent of the income distribution are more likely to be low-skilled, these individuals may find it more costly to re-enter employment through other sectors of the economy and may be disproportionally affected by a trade shock.

Entry costs into formal employment are significantly higher than for informal employment. This result of Arias-Vázquez et al. (2013) is not intuitively surprising, and is illustrated by data on worker flows into and out of formal and informal employment. In Morocco and Mexico, for example, Arias-Vázquez et al. find that informal workers are more likely to exit to the residual sector (unemployed/out of the labor force) rather than enter formal employment. In Brazil, by contrast, informality and formality are equally likely entry points for employment, and workers in the informal sector are more likely to move to the formal than to the residual sector.

The fact that informal jobs are easier to access is critical to understanding how the poor are affected by trade-related shocks. Given the preponderance of informal employment in developing countries[14], and the relatively poor "quality" of informal jobs in terms of job security, benefits and earnings compared to formal jobs, on average vulnerable population groups at the bottom of the income distribution are more likely to be engaged in poorly paid informal activities. Hollweg, Lederman and Mitra (2014) conclude that trade liberalization that increases real wages can indeed be associated with increases in the share of informal employment. But the resulting increase in informal employment is not driven by an influx of displaced formal workers (which would represent a welfare loss), but rather by the entry into informality of previously marginalized workers, namely the unemployed or those outside the labor force. This result is illustrated by Arias-Vázquez et al. (2013) in simulations of the adjustment paths of sector wages and employment following an assumed trade shock that reduced manufacturing prices. The results indicate that a trade-related shock that permanently reduces domestic prices in developing countries leads to higher real wages (except in the negatively affected sector), which in turn provides incentives for workers to enter the labor force as the opportunity costs of remaining inactive rise. Alternatively, the increase in informal employment could be due to the "added worker" effect in which a second earner may enter the workforce from households hit by income losses. In both cases, workers choose to enter the labor force but mainly informally because entry costs are lower. This conclusion is consistent with evidence that trade opening increases economy-wide employment, and that the predominance of informal employment creation represents a welfare gain rather than indicating the destruction of "good" jobs.

Labor adjustment costs can be very large, and some workers will lose out in the short run, but workers generally gain in the long run through more jobs and higher wages. How are poor workers likely to fare in the short run? How long will it take for a displaced worker to return to his/her

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[14] According to the recent *World Development Report on Jobs* (World Bank 2012), global studies of the incidence of informal employment in the developing world suggest that informality ranges from 40 to 80 percent of those employed.

previous wage level? Simulations using the Trade and Labor Adjustment Costs toolkit in a large sample of countries suggest that for a 30 percent price reduction in the food and beverage sector, the adjustment to a new steady state takes from 2 to 15 years, and the gains tend to be positive and large. Despite an initial decline in real wages in the liberalized sector, it is temporary and wages tend to recover fully over time. The simultaneous increase in real wages in other sectors draws new entrants – both from the contracting sector and previously inactive workers – thus increasing employment in other sectors (see Figure 8 for an illustration of simulated labor adjustment paths following a tariff cut in food and beverages imports to Indonesia).

Figure 8: Employment and wages eventually recover after trade liberalization: a simulation of the Indonesian labor market
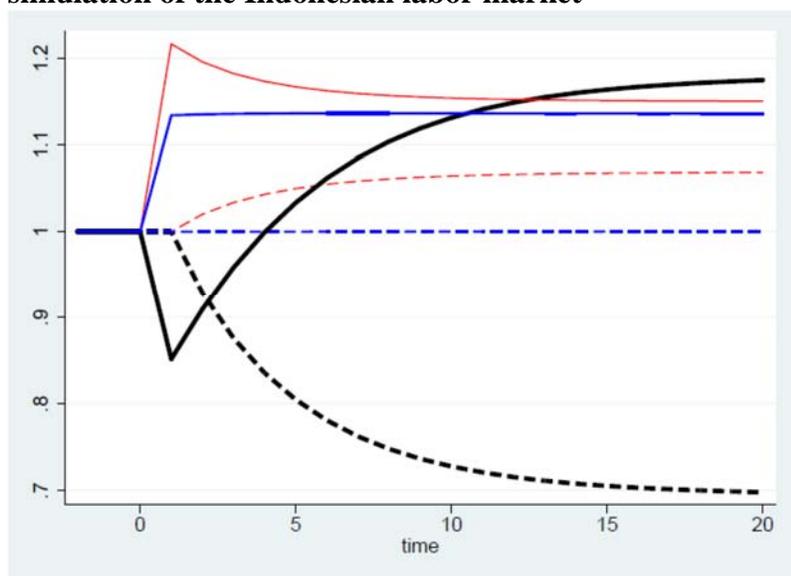
Source: Artuç, Lederman, and Porto 2013

Note: This figure shows simulations of labor market responses to a 30 percent price decline in food and beverages. The vertical axis measures the proportional change relative to the initial steady state of average real wages (solid lines) and employment (dashed lines). The horizontal axis measures time ($t = 0$ is the date of trade liberalization). Responses of the food and beverage sector are shown in black, of the residual nonmanufacturing sector in blue, and of the remaining traded sectors in red. The 30 percent decline in food and beverage prices translates into an immediate real sectoral wage cut of 14.8 percent in year 1, followed by full recovery to the initial wage level by year 5 and ultimately a net wage increase of 17.4 percent in the new steady state 12 years after the shock. At the same time, the initial wage cut leads to significant labor shedding in the sector (12 percent by year 2, 22 percent by year 5) and a reallocation to other sectors. Some of the workers transition to other manufacturing, where employment eventually increases by 6.8 percent, while others transition into the nonmanufacturing residual sector (depicted as a very small proportional inflow due to the large size of the residual sector). Real wages outside the food and beverage sector increase significantly post-shock due to increased purchasing power because food and beverages cost less, but the subsequent inflow of labor into other manufacturing pulls the wage down somewhat as the labor market adjusts.

Evidence from empirical studies using firm-level data to measure the labor impact of trade liberalization following EU accession or joining other trade blocs suggests different impacts across sectors and for different types of labor. Onaran (2006) finds that western European countries experienced little impact on employment creation and wages in the manufacturing sectors, especially for unskilled labor, despite improved exports of manufacturing goods. But this finding does not necessarily extend to other sectors of the economy including services. Von Euxkull and Shui (2014) estimate that implementation of ECOWAS's common external tariff in Nigeria would

have a small impact on labor in the sectors with the highest levels of protection, given these firms are making the highest profits This is despite significant and largely positive effects on Nigerian consumers and producers.

Whereas previous research has not explicitly disentangled the impact of trade shocks and greater trade integration on workers in the bottom 40 percent of the income distribution, the evidence presented above suggests an asymmetric one. These workers likely face larger mobility costs, given the preponderance of poor workers in informal and low-skilled jobs, and in primary sectors of the economy. As a result of these larger mobility costs, the labor adjustment costs and forgone gains to trade are expected to be greater for those in the bottom 40 percent compared to other groups of the population. So in general while trade leads to better labor market outcomes, greater labor market frictions may be reducing this benefit for those who need it most. Policies to reduce or mitigate labor mobility costs would therefore facilitate worker transitions to better work opportunities following a trade-induced shock that alters price signals. The result would be a faster adjustment of the economy to a new post-shock equilibrium.

5. Conclusions and policy implications

In this paper, we assess the impact of trade-related shocks on households and workers in the lower end of the income distribution, and the channels through which these shocks can generate welfare gains or losses for different segments of the population, particularly the poor. In the long run, a more open trade policy and the more efficient trade that results are associated with higher economic growth and thus higher poverty reduction. The short-run impact of trade on the Bank's twin goals is more ambiguous and depends on the net effects on consumption, production and the labor market. Trade-related shocks that alter relative prices are ultimately transmitted through these channels. The net welfare effect depends on the price pass-through, the importance of the affected products for producers and consumers, and the implications for labor demand and earnings.

Policies that ensure a smooth price transmission from the border to the point of sale can maximize the benefits of trade integration for consumers and producers. Policies to help achieve this objective would address (i) increased integration of remote areas with international markets and the domestic economic core, and (ii) greater competition among importing and exporting intermediaries.

Households in the bottom income quintiles are particularly vulnerable to changes in agricultural trade, especially food trade. This vulnerability suggests that a careful understanding of the net welfare impact of trade changes will be essential to designing appropriate policies to protect poorer households, preferably through targeted and/or conditional income support that is context-specific and does not distort economic incentives of household producers or consumers, or the incentives of displaced workers to search for alternative employment. In non-agricultural sectors policy makers need to strike a balance between protecting domestic producers and workers from the adverse short-term impact of import competition and ensuring access to inputs and goods to the domestic economy that will contribute to long-term and sustainable economic growth.

Whereas trade-related shocks to relative prices are often assumed to have an immediate effect on labor markets such as through job creation, labor shedding and sectoral reallocations, we find that

labor mobility costs can be very high, especially in developing countries. The result is that workers delay or avoid switching jobs in response to new wage incentives, which imposes adjustment costs on both workers and the economy. Policies that reduce labor mobility costs would reduce distortions affecting labor supply decisions and thus increase labor market flexibility, enabling workers to adjust more quickly to changing market signals. Such policies could be designed as direct targeted compensation (e.g., to finance through cost-sharing relocation or re-training costs), or could address indirect factors such as increasing education access and quality, or reducing the regulations that limit formal sector job creation, for example. Understanding the size and incidence of mobility costs could help policy makers anticipate the potential sectoral employment effects of a particular trade reform and design interventions to facilitate labor adjustment in ways that are welfare-improving.

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Appendix Figure 1: Channels of a trade-related shock to household welfare
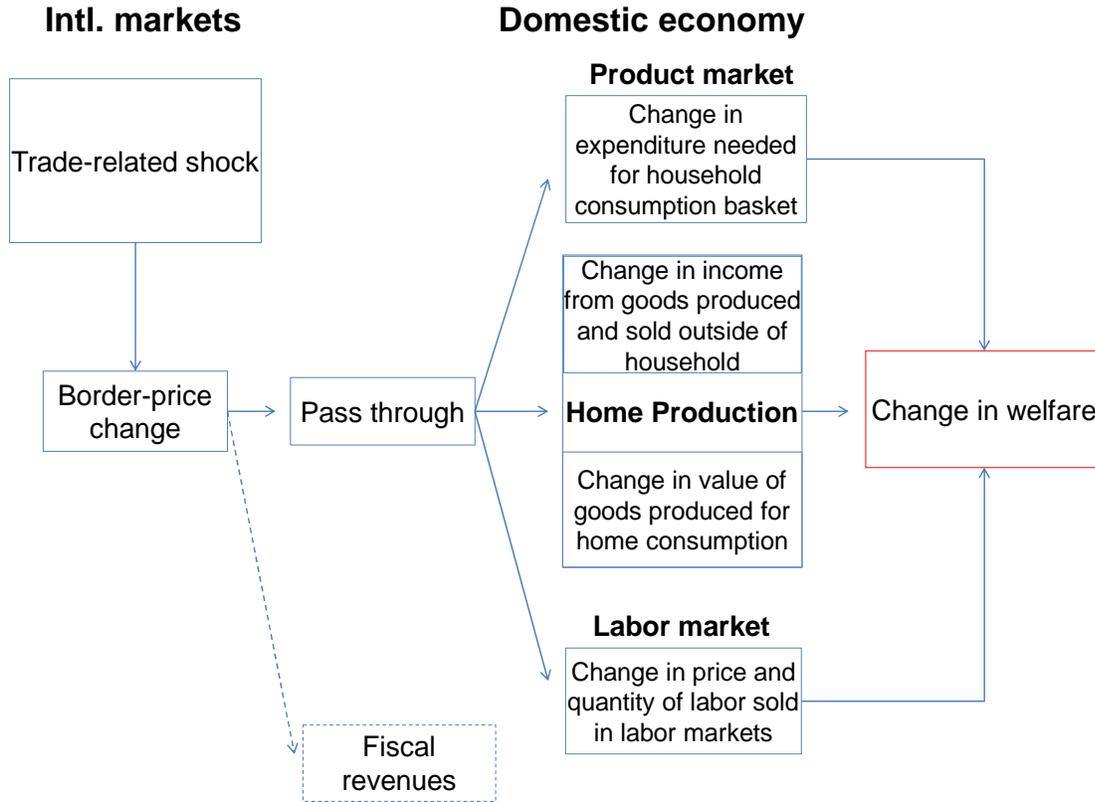
Source: Authors' elaboration

Appendix Table 1:ECA regional elasticity of labor market outcomes with respect to exporting

	OLS				IV			
	Employment	Skilled employment	Unskilled employment	Wages	Employment	Skilled employment	Unskilled employment	Wages
Export share	0. 2709*** (0.0934)	0.1532 (0.1775)	0.4141*** (0.1576)	0.2046 (0.2631)	-0.1697 (0.6202)	-0.6204 (1.7893)	-0.2357 (1.3433)	0.1113 (1.8879)
Sample size	919	615	674	365	919	615	674	365

Source: Hollweg and Ruppert Bulmer (2014)

Note: Sample of countries includes: Albania, Belarus, Georgia, Tajikistan, Ukraine, Uzbekistan, Russia, Poland, Romania, Serbia, Kazakhstan, Moldova, Bosnia and Herzegovina, Azerbaijan, FYROM, Armenia, Kyrgyz, Estonia, Czech Republic, Hungary, Latvia, Lithuania, Slovakia, Slovenia, Bulgaria, Croatia, Montenegro. * Significant at the 15 % level, ** at the 10 % level, *** at the 5% level. Standard errors are in parentheses. Industry fixed effects are defined at the 2-digit level of the ISIC classification.