DISCUSSION PAPER SERIES

No. 9947

TRADE LIBERALISATION AND POVERTY: WHAT HAVE WE LEARNED IN A DECADE?

L. Alan Winters and Antonio Martuscelli

DEVELOPMENT ECONOMICS and INTERNATIONAL TRADE AND REGIONAL ECONOMICS

Centre for Economic Policy Research

www.cepr.org

Available online at: **www.cepr.org/pubs/dps/DP9947.php**

ISSN 0265-8003

TRADE LIBERALISATION AND POVERTY: WHAT HAVE WE LEARNED IN A DECADE?

L. Alan Winters, University of Sussex, IZA, GDN and CEPR
Antonio Martuscelli, Sussex University

Discussion Paper No. 9947
April 2014

Centre for Economic Policy Research
77 Bastwick Street, London EC1V 3PZ, UK
Tel: (44 20) 7183 8801, Fax: (44 20) 7183 8820
Email: cepr@cepr.org, Website: www.cepr.org

CEPR Discussion Paper No. 9947

April 2014

ABSTRACT

Trade Liberalisation and Poverty: What have we learned in a decade?*

This paper reviews key recent literature on the effects of trade liberalisation on poverty in developing countries and asks whether our knowledge has changed significantly over a decade. The conclusion that liberalisation generally boosts income and thus reduces poverty has not changed; some suggest that this is not true for very poor countries, but this is not an established finding. On microeconomics, recent literature again confirms that liberalisation has very heterogeneous effects on poor households, depending, inter alia, on what trade policies are liberalised and how the household earns its living. Working in the export predicts gains and in the import-competing sector losses, a finding that is reinforced by studies of the effects of liberalisation on wages. New research has suggested several ways in which intra-sectoral wage inequality is increased by trade, but this does not generally indicate that the poor actually lose. A fairly common finding is that female workers gain from trade liberalisation.

JEL Classification: 024, F13, F14 and O19
Keywords: developing countries, growth, poverty, tariffs and trade liberalisation

L. Alan Winters
Department of Economics
University of Sussex
Arts Building E
Falmer, Brighton BN1 9SN

Email: l.a.winters@sussex.ac.uk

For further Discussion Papers by this author see:
www.cepr.org/pubs/new-dps/dplist.asp?authorid=101976

Antonio Martuscelli
Department of Economics
University of Sussex
Mantell Building
Falmer, Brighton BN1 9RF

Email: a.martuscelli@sussex.ac.uk

For further Discussion Papers by this author see:
www.cepr.org/pubs/new-dps/dplist.asp?authorid=173485

*This paper was prepared for the Volume 6 of the Annual Review of Resource Economics, 2014. We are grateful to the editor and a referee for helpful comments on the first draft. An early and incomplete version of the material was presented at the Arnoldshain XI Seminar in Antwerp in June 2013 and we are also grateful for the comments received there.

When citing this paper, please use the following: Winters L. A. and A. Martuscelli, 2014. “Trade Liberalisation and Poverty: What have we learned in a decade?” Annu. Rev. Econ. 6: Submitted. DOI: 10.1146/annurev-resource-110713-105054

Submitted 10 April 2014

Introduction

The last decade of the twentieth century started off with a huge enthusiasm for free markets as the route to economic progress. One manifestation was the euphoria following the creation of the World Trade Organisation, which was viewed as the crowning glory of the Uruguay Round of trade talks which ended in 1994. Those talks had already resulted in a good deal of trade liberalisation and the international community immediately set off with an ambitious agenda to widen and deepen this. Within a few years, however, voices were raised against unrestrained trade liberalisation, culminating in the riots at the third WTO Ministerial Meeting in Seattle in 1999. Prominent among the criticisms was that trade liberalisation was bad for the poor and/or created poverty in the developing world – see, for example, Oxfam (1999). Surprisingly the economics profession had rather little with which to address these accusations – the Stolper-Samuelson Theorem, for all its elegance, seemed to have little to say on the ground.

With this background, and with support from the UK's Department for International Development (DFID), one of us set off to document what we did actually know about trade liberalisation and extreme poverty in a series of publications such as McCulloch et al (2001), Winters (2002) and Winters et al (2004). This paper asks whether the experience and the large research effort of the last dozen years have changed the conclusions of that research programme. The answer is 'not a great deal, but we are now more confident about some of the findings'.

Winters et al (2004) concluded that there can be no simple general conclusion about the relationship between trade liberalisation and poverty. There is a strong presumption that trade liberalisation will be poverty-reducing in the long run and on average through its effects on the level of national income, but there is no guarantee that the static and micro-economic effects will always be beneficial for the poor. Trade liberalisation will almost inevitably reduce the well-being of some people (at least in the short term) and some of these may be poor: its precise effects depend, *inter alia*, on factors such as the pre-liberalisation economic situation, the trade reforms actually undertaken, who the poor are and how they sustain themselves. On the plus side, however, poverty effects are relatively straight-forward to predict provided that analysts garner the basic information required, and so liberalisation may be tailored to avoid the worst poverty impacts and accompanied by targeted compensatory measures.

Following Winters (2002), Winters et al (2004) grouped their survey of empirical results around four themes. One was macroeconomic - economic growth – and three referred to microeconomic channels through which shocks and policy interventions at the border (trade shocks and trade policy) were transmitted to the poor - households and markets, factor markets (in effect labour markets) and government revenue. In each case it explored what we know about a few key questions. Similarly, this paper starts with the macroeconomic questions of growth and productivity and then moves to the micro-economics; but now, taking the earlier taxonomy as given, it divides the literature less by channel of causation than by principal source of evidence. Thus under households and markets we examine papers that

look directly at the outcomes for households using household survey data. They include outcomes transmitted through labour markets and/or the government account but seek to identify the overall effects of liberalisation on household income. When we turn to labour markets, the approach is to focus on how liberalisation changes wages – especially of the poor or of the poor relative to the better off. Since we look at real wages, the transmission of price shocks frequently contributes to the outcome, but the key difference from the previous section is that only labour incomes are considered. For sure, these are only part of the poverty story, but the differences between households reside so much more heavily in differences in the way that they earn their livelihoods than in differences in their consumption bundles that a focus on labour incomes can be an appropriate simplification.

Winters et al (2004) argued strongly that the question of whether trade liberalisation reduced or increased poverty was an empirical one and this remains our position. Thus the work we survey is *ex post*, based on real data about actual outcomes and real policies, although we briefly allude to simulation exercises where it is useful to do so. For reasons of space, however, we do not go into computable general equilibrium modelling.

Finally, the work on which we report needs a definition of poverty. Poverty is correctly seen as multi-dimensional – e.g. Sen (1993) or Alkire & Foster (2011) – but in most empirical economics authors rely on simple income measures. While how and where to draw the poverty line and how to aggregate across individuals to obtain average results are hugely important, these are not dimensions that we have space to pursue here.

Trade Liberalisation, Growth and Poverty

Economists have long believed that economic growth reduces poverty, and although it cannot be demonstrated always to do so, Kraay (2006) suggests that for periods of about seven years or more, economic growth is by far the largest determinant of a country's success in reducing poverty. [1] This is relevant because there is also a strong belief that trade liberalisation boosts economic growth. Winters (2004) surveyed the literature up to the turn of the century and concluded that there was indeed a reasonable presumption that this belief was true, but that the empirical literature faced a number of serious challenges in establishing it beyond doubt. The challenges included defining and measuring the openness of an economy, establishing the causal links between trade liberalisation and growth (or equivalently trade and income), and separating openness from other policies that might affect growth - the attribution problem. Since 2004, the literature has continued to multiply, with arguably the greatest strides taken in terms of causation and the heterogeneity of responses across countries. These are both critical issues in policy terms: establishing causation is the *sine qua non* of policy advice, whilst recognising differences across countries is an essential part of the tailoring of policy to the real world.

[1] This is not to say, as is sometimes claimed, that re-distribution does not matter for poverty reduction: maybe it was not tried very much in Kraay's samples.

The causality problem is most pressing if one uses the trade to GDP ratio as the indicator of openness: economic growth could clearly lead to higher exports and/or imports as well as be caused by them - but similar issues could arise with policy-based measures (Winters 2004). The common approach to dealing with endogeneity problem is to use instrumental variables to isolate a genuinely exogenous component in the potentially compromised explanatory variable and see if that has the predicted explanatory power. As Deaton (2009) stresses, one must be able to explain why the instrument is not only exogenous but also excludable from the main relationship being estimated. The latter means not only that it should play no role in the explanation of the dependent variable, other than via the variable it is instrumenting, but also that one should be confident that it is uncorrelated with the error term in that equation. Bazzi & Clemens (2013) point out that such excludability implies that if one is using instrument Z for openness in one's growth equation, one strictly has to believe that every other study that has used Z as an instrument for some other variable in a growth equation (e.g. for aid flows, investment, trade partners' growth) is completely wrong. Otherwise Z will be correlated with the errors in one's own equation. This is a very demanding requirement.

Following Frankel & Romer (1999) trade economists thought they had a good story. Setting aside the possible endogeneity of national borders, geography seemed to provide good exogenous instruments for trade links and hence openness. Thus, for example, when Noguer and Siscart (2005) improved on Frankel and Romer by using a fuller dataset for the instruments, their estimate that a 1% increase in openness induced, on average, a 1% increase in GDP p.c. seemed strong and robust. However, Bazzi & Clemens (2013, table 5) have subsequently shown that country size has been used as an instrument for several other variables in growth equations, and that without country size other instruments are usually weak.

Even before Bazzi and Clemens the problem of using time-invariant geographical instruments had been identified by Feyrer (2009) who argued that variability through time is potentially less prone to confounding by omitted variables. He exploits relative differences in the sea and air distance between trade partners: for example, Rotterdam - New York is virtually the same distance by sea and air, but Rotterdam-Tianjin is not. The importance of these differences changed significantly as air travel became cheaper, with trade routes with relatively long air distances becoming relatively cheaper and hence trading more. Feyrer uses several panel techniques to estimate the links between trade and growth and concludes that an increase in the volume of trade of 1%, raises output per head by around 0.5%. A further time-variant instrument for openness is tariffs in the USA, which presumably affect countries' ability to export: Romalis (2007) uses this to suggest that openness has strong growth effects. There is the problem, however, that tariffs vary by commodity, so that Romalis' results may be reflecting other commodity-specific factors rather than tariff levels *per se*. Also many would argue that tariff levels affect the level of income not to the growth rate directly as Romalis assumes.

Time variation plays a direct role in many studies of the effect of trade liberalisation. For example, Wacziarg & Welch (2008) and Kneller et al (2008) explore the differences in growth rates 'before' and 'after' liberalisation finding that liberalisation is followed by higher

values of openness, investment and growth but with a good deal of heterogeneity, which we turn to below. The problem with the 'before and after' approach is the lack of, or the lack of specificity in, a control group.

Billmeier & Nannicini's (2009, 2013) 'synthetic control groups' approach offers a possible solution to the latter problem. For each liberaliser they define a small control group from the liberaliser's region which has reasonably similar weighted GDP p.c. and GDP p.c. growth to the target country over the 10 years preceding the liberalisation. The liberalisation effect is then the difference in GDP p.c. growth between the liberaliser and the control group over the subsequent 10 years. Trade liberalisations generally appear to be followed by significant upturns, but recent liberalisations, most of which are in Africa, are an exception, which the authors attribute to African countries being late entrants into an already liberalised world and to their agricultural specialisation. This is a potentially fruitful methodology, but it arguably requires some fine tuning: neither using China as a control for Cape Verde nor concluding that Chile lost from its trade liberalisation seems plausible to us.

The classic time-series approach to causality is Granger causality, but it is seriously compromised if anticipation plays a role, as is plausible in policy matters. Nonetheless, the simple descriptions of whether growth follows a liberalisation or vice versa may still be useful. Among studies that identify some causation running from trade to income as well as back again are: Awokuse (2005) on South Korea 1963 to 2001, Gries et al (2009) on 16 Sub-Sahara Africa countries over 1970-2003, Gries & Redlin (2012) also on Africa, and Sakyi et al (2012), on middle income countries. Reverse feedback from income to trade is sometimes presented as diluting the policy advice in favour of liberalisation, but as long as some causation is established from trade to growth the reverse feedback provides positive reinforcement of its benefits.

An obvious extension of the studies above, once we have sufficient data to do the estimation, is to ask whether the effects of trade liberalisation are conditional. Since 2000 a number of studies have pursued this route and suggested that the growth effects of trade liberalisation may be weaker or absent for low-income countries. This at least poses a question to the idea that trade liberalisation will aid poverty reduction. For example, Bhattacharyya et al (2009) suggest that the benefits of openness depend on institutional quality and Kneller et al (2008) that post-liberalisation growth effects are more positive the higher the quality of intermediate goods and the higher the mean years of secondary and tertiary education in the initial situation[2].

Two studies attempt to condition the growth effect of trade liberalisation on policy stances. First, Bolaky & Freund (2008) conduct a cross-section exercise on early 2000s GDP p.c. levels and growth for 126 countries, using Doing Business indicators to measure the investment climate and economic flexibility. They examine the interactions between the trade share and each, in turn, of the ease of firm entry, labour market flexibility, and the strength of property rights. In each case increased flexibility significantly enhances the benefits of

[2] Additionally, Dejong & Ripoll (2006) suggest that growth effects are stronger the higher a country's initial level of income but Bazzi & Clemens (2013) criticise their identification.

openness. They also consider (again one-by-one) interactions with education levels, financial development and the role of law, and similarly conclude that these factors enhance openness. In all cases countries that rank very poorly in a measure of flexibility or development apparently lose from increased openness, although not statistically significantly.

Chang et al (2009) likewise examine interactions with a number of complementary factors that might affect the impact of trade openness on growth. They apply panel methods to 5-yearly growth rates in 82 countries over 1980-2000. While, on average, trade openness has a strongly positive impact on growth, various 'second generation' reforms affect the advantage that countries can take of being open. Countries with weak education, high inflation, weak telecoms, weak governance, inflexible labour markets or inflexible firm entry or exit may not benefit from openness. The thresholds for experiencing harm are low, but within current ranges of experience, so again poor countries may be vulnerable to losses.

Like several of the time series studies, these two papers suggest that trade liberalisation has been less beneficial for the (mostly African) poor countries that liberalised later; but they cannot say why. The interaction variables all sort countries roughly by level of development and, because they are highly correlated and tested only one by one, all pick up basically the same empirical phenomenon. Thus it may be that estimations are picking up the facts that the liberalisations for poor countries mostly refer to African countries in the 1980s and 1990s and that these counties had disappointing growth performance for reasons quite independent of their trade policies[3]. Thus while one clearly needs to recognise the reservation about trade liberalisation that these results imply for poor countries, it is premature to conclude that there are no benefits. Rather we need research to disentangle and distinguish the heterogeneities.

The last decade has seen an explosion in studies of trade liberalisation at the firm level based on the new availability of data. The almost universal conclusion is that trade liberalisation increases average productivity in the sectors it affects. This result follows from the seminal theoretical paper on firms and trade, Melitz (2003), which stresses selectivity effects. Increased opportunities to export and competition from imports favour more efficient firms and so factors tend to migrate in their direction – see, for example, Fernandes (2007).

There are also other channels through which increased trade or trade liberalisation affects productivity. Amiti & Konings (2007) argue that Indonesian liberalisation 1991-2000 raised productivity by allowing local firms a greater selection of intermediate inputs. Goldberg et al (2010) found similar effects in India, with the main effect being improved access to new intermediates rather than lower prices of the ones they already use. Almeida & Fernandes (2008) associate trade with technology transfers in a large sample of developing countries.

All this seems like good news for poverty reduction since higher productivity is the only basis for sustainably higher incomes and hence for economic growth. However, there is a danger that while liberalised sectors become more efficient they also become smaller, and

[3] A further caution is that the functional form used in these studies imposes identical interactions at all levels of income; thus if middle income countries gain less from openness than high income ones, the equation *must* show low income ones doing worse still, and similarly for the various rigidities that Chang et al explore.

that the labour they shed might move into even less productive activities. This could reduce aggregate output if the inter-sectoral displacement effect outweighs the intra-sectoral productivity increase. McMillan & Rodrik's (2011) study of structural change in developing countries suggests that this has been a problem for non-Asian countries since 1980 (not just following trade liberalisations), although earlier work by Timmer & de Vries (2009), who compiled the definitive dataset, are less pessimistic about the trade-off between productivity and structural change.

All told, the evidence is very strong that greater openness is generally associated with higher levels of income and, equivalently, trade liberalisation with temporary increases in growth. The relationship appears to be causal, but is not absolutely invariable. There is some evidence that its strength depends on policies inducing flexibility in economies and on conditions such as human capital, infrastructure and the rule of law that allow output to expand. It is possible that very poor countries do not benefit from liberalisations but this is not, in our judgement, an established result.

Households and Markets

This section summarises some of the research that focuses directly on outcomes for households based on the results of household surveys. Winters' earlier conclusion was that while many of the effects of trade policy on poverty were, roughly speaking, predictable, they displayed great heterogeneity, and thus that general conclusions were impossible to draw.

The simplest starting point is the observation that, given labour and transfer incomes, the first order approximation to the welfare effect of a small change in the price of a single good, i, which households might both produce and consume is

$$\Delta W = (q_i - c_i)\,\Delta p_i \qquad (1)$$

where q_i is production, c_i consumption and Δp_i the price change of good i - see Deaton (1997) for example. An obvious example of its use is in several articles on the effects of the food price boom on poverty. For example, Ivanic et al (2012) consider the boom in 2010 in the prices of 38 agricultural commodities using detailed data on patterns of production and consumption in 28 countries. They find 'considerable heterogeneity in the impacts, but estimate that poverty rose (*sic*) by 44 million people, with 68 million people falling into poverty and 24 million people raised out of poverty at the extreme poverty line of $1.25 per day.' This is a useful analytical result, but we highlight 'rose' in the quotation because the approach is one of simulation modeling and the conclusion is really a prediction rather than a measured outcome: welfare is unobservable and much more could be happening than is implied by equation (1).

Similar first order exercises are by de Janvry & Sadoulet (2010) on food prices in Guatemala and Porto (2010) on improvements in access to export markets for Argentinean households.

The former finds that price transmission from the border to poor households is quite weak and that many farm households are net consumers of food.

These studies simulate what are typically short-run effects that do not consider dynamic spillover effects in particular on rural wages. Jacoby (2013) accounting for such wage responses in India finds that rural households across the entire income distribution gain from higher food prices. A key determinant of the extent of the gains is the degree of labour mobility across sectors of the economy. In a context of perfect mobility gains are much higher than in a segmented labour market. This highlights the importance of labour mobility in the adjustment process, a topic we return to below. Along the same lines, Ivanic & Martin (2011) find that taking into account dynamic responses on the demand and supply side substantially reduces the adverse impact on poverty, although for most of the crops/countries considered it remains negative.

A more sophisticated first order exercise is the elegant paper by Porto (2006) on the distributional effects on Argentinean households of the tariff changes implied by the creation of Mercosur. Porto takes theory seriously and uses the neo-classical model to derive simple semi-reduced form equations that he can estimate and substitute into an expression that relates the change in welfare to the change in tariffs 1992-1996. The starting point is an indirect utility function presumed to apply to every household, *j*:

$$u_j = v(p,x_j) \equiv v(p_T, p_{NT}, x_j) \qquad (2)$$

where *u* is utility, *p* the vector of prices, disaggregated into vectors of traded (T) and non-traded (NT) prices and *x* income. Differentiating with respect to p_T - the prices that are changed by trade reforms – Porto obtains the following equation for the negative proportionate compensating variation for household *j*:

$$\frac{dx_0^j}{e^j} = \left(s_i^j + \sum_{k \in NT} s_k^j \frac{\partial \ln p_k}{\partial \ln p_i} - \sum_m \theta_m^j \varepsilon_{wmpi}^j \right) \frac{\partial \ln p_i}{\partial \ln \tau_i} d \ln \tau_i \qquad (3)$$

where s_i^j is *j*'s budget share spent on good *i* , θ_m^j is the share of the labour income of household member *m* in total family income and τ_i is the power of the tariff on *i*. The wage-price elasticities, ε_{wmpi}^j, capture the proportional change in the wage earned by member *m* caused by a change in the price of good *i*.

The budget shares of different goods (s_i^j) and different sources of labour income (θ_m^j) for each of 21,127 households are calculated from a household survey. Porto estimates simple equations relating the wages for three kinds of labour to four traded goods prices, to obtain the Stolper-Samuelson coefficients. Then given that non-traded goods prices are determined by the equality of demand and supply, which depend on traded goods prices and wages which, in turn, are determined by traded goods prices, he estimates the relationship between traded and three non-traded goods prices. Porto considers the tariff changes implied by Mercosur by weighting together the intra-Mercosur and extra-Mercosur rates and assumes that tariffs are fully passed through into internal prices of traded goods. Once he has the

implied welfare changes by household from equation (3), he estimates the relationship between welfare change and initial income non-parametrically to identify how the trade policy change affected different parts of society.

Porto finds that Mercosur was progressive in its effects; this is because the common external tariff on food and agriculture exceeded Argentina's initial tariff and so the creation of Mercosur increased agricultural protection and domestic prices, while other sectors experienced significant declines in protection. The poor have larger budget shares on food than the rich and also higher shares on the non-traded sector housing, transport and communication, the prices of which depend strongly on food and agriculture prices. Thus the consumption effects harmed the poor, whereas richer households gained because other goods, which figure relatively more heavily in their budgets, experienced prices declines. The labour effects, on the other hand, were strongly progressive because unskilled wages depend positively on food and agricultural prices while college educated labour's wages depend negatively on them and vice versa for more sophisticated traded goods' prices. Households are more specialised in their income sources than in their consumption baskets and so the differences between households are mostly driven by the wage effects, which, in this case, benefit the poor and harm the rich.

This relatively detailed account of Porto (2006) emphasises how case-specific the microeconomic elements of the trade and poverty story are. Even if the links from traded goods prices to non-traded goods prices and wages generalised broadly to other countries, the final result depends crucially on how liberalisation changes the pattern of protection.

Nicita (2009), who studies Mexico and NAFTA, uses the same approach as Porto. He replaces Porto's small open economy assumption with estimates of the pass-through from border prices to the internal prices of traded goods. These are allowed to vary by state and show a marked tendency to decline with distance from the border with the USA. (The bulk of Mexico's trade is with the USA.) He also differs from Porto in not explicitly considering non-traded goods prices and in allowing the prices of agricultural goods to affect farm households' incomes as well as consumption. Nicita suggests that NAFTA's effects were small but regressive, the poorest gaining about 1% of initial income and the rich 2%. The net effect was uneven geographically, with the southern states barely gaining and the northern ones gaining more that 2.5% of initial income. Marchand (2012) on India is also similar: he draws a rural-urban distinction and like Nicita finds pass-through well below 100%. He finds that liberalisation favoured the urban sector more than the rural sector but that it was pro-poor in both. Nicita et al (2014) using a similar framework look at the pro-poor bias in the structure of protection of six Sub-Saharan countries finding that SSA's own trade policy tends to be in favour of poor households while the rest of the world's trade policies are biased in favour of SSA's rich households. This implies that poor SSA's households would benefit relatively more from a reduction in trade protection of SSA's trading partners than from their own liberalization.

Porto's method is elegant and persuasive, but it requires very low dimensionality for the estimation to be feasible. One extension therefore is to increase the dimensionality and

sacrifice estimation. This is the approach of computable general equilibrium (CGE) simulation modelling in which relatively detailed structural equations are used to make predictions, but where, for lack of data, less effort can be devoted to estimating the behavioural relationships. Examples of this approach include Hertel & Winters (2006), Hoekman & Olarreaga (2007) and Hertel et al (2009) on the poverty effects of the WTO's Doha Round. This literature re-inforces the result that the principal source of heterogeneity between households is their sources of income and shows that, at the level of individual sectors or regions, the analysis of poverty depends on heavily on quite specific features of the case in hand.

We move now from predictions of welfare changes a la Porto to actual changes, usually measured by changes in household real consumption. As noted above, we now encounter the attribution problem, for many things could explain the single observation of the change in consumption. Notionally the approach requires estimates of the following equation:

$$\Delta ln\ rc_j = ... \beta\ (\Sigma_i\ w_{ji} \Delta ln\ \tau_i\ ) + controls + u_j \qquad (4)$$

where rc_j is real consumption, w_{ji} are (known) weights reflecting authors' views of the transmission of changes in tariff i to household j, $\Delta ln \tau_i$ the tariffs (or trade policy) that are changed and *controls* a series of other variables that might explain the evolution of consumption. This is a reduced form equation in which the w_{ji} capture all the economics of interest. They include the first order effects of the sort seen above and the second order effects in response to the trade shock. In practice, however, the w_{ji} are extremely difficult to determine, so most economists use the simpler form:

$$\Delta ln\ rc_j = ... \beta\ (exposure) + controls + u_j \qquad (4')$$

where *exposure* is some empirical measure of the exposure of the household (or group of households) to the trade shock. It may, for example, be the share of their or their state's output that comes from tradable goods or their employment in export or import competing industries. Critical also in equation (4') is defining the changes over an appropriate time period.

Estimating equation (4') is heavily dependent on data: ideally one requires a panel whereby the same households can be observed over a period of trade liberalisation. One country that has such data is Vietnam and an early exercise covering the period 1993 to 1997/8 is Niimi et al (2007). A problem with this period is that it did not see a single step change in protection but rather a gradual and widespread opening up which massively stimulated exports; thus exposure is defined in terms of the household's engagement with the export sector. Niimi et al classify households into poor and non-poor in each year and use a multinomial logit model to explain transitions from one state to another. Moving out of poverty is strongly associated with households' initial engagement in rice and coffee production and the shares of their adult membership employed in one of four manufacturing export sectors. Coello et al (2010) conduct a similar exercise on a post-2000 panel with similar results in principle but with coffee production now being a barrier to moving out of poverty because prices were much lower by then.

McCaig (2011) analyses the 2001 U.S.–Vietnam Bilateral Trade Agreement (BTA), which granted Vietnam mfn status in the US market. This has the huge advantage that, unlike other bilateral trade agreements, the U.S. tariff offer was not influenced by Vietnamese industries. Using variation in the structure of the labour force across provinces prior to the trade agreement, McCaig constructs provincial measures of exposure to U.S. tariff cuts, and finds that provinces that were more exposed experienced faster decreases in poverty between 2002 and 2004. He also shows that the movement of less-skilled workers across provinces was limited and that for these workers (but not for highly skilled ones) the most exposed provinces experienced faster wage growth.

The advantages of being in the export sector when trade is liberalised are reinforced by Brambilla et al (2012) who consider the opposite – the effects of US anti-dumping duties on Vietnamese catfish at household level. They examine catfish-producing households in the Mekong delta between 2002 and 2004 and find that income growth was significantly slower among those initially more heavily involved in catfish farming. They found a relative decline in both catfish income and net revenues from other farm activities and explicitly observed that affected households found it difficult to diversify out of farming and fishing.

Other important aspects of exporting and poverty include the presence of local markets to allow farmers to make the initial sale – Balat et al (2009) on Uganda – and the role which standards in the import country might play. Maertens & Swinnen (2009) and Maertens et al (2011) explore the income and poverty effects of high sanitary standards, integrating company and household survey data from the vegetable export chain in Senegal. Exports grew strongly despite increasing standards in Europe, and contributed importantly to rural incomes and poverty reduction. The mechanism was that raising standards induced a shift from smallholder contract farming to integrated estate production, switching poor households' income source from the product to the labour market.

The lessons of the previous paragraphs are that workers in exporting firms gain from trade liberalisation and that it is labour immobility that prevents the gains from being spread more widely. A much regarded study of the importer side is Topalova's (2010) on the 1991 liberalisation in India. Imposed on India by the IMF, this is generally held to have been largely immune to Indian political influence and may therefore be considered as relatively exogenous in its sectoral pattern. Topalova exploits variation in this pattern and in the sectoral composition of production across districts to construct a difference-in-difference estimate of the impact on consumption or measured poverty in a sample of 77 urban regions and about 450 rural districts[4]. Specifically, her explanatory variables include the employment-weighted import tariff for each district, district fixed effects and a fixed effect for the post-trade-liberalisation period. The first means that she is capturing only districts' exposure to import competition, with any specialisation in exports broadly captured by district fixed effects. The last captures any overall effect of the liberalisation on Indian consumption or poverty and so means that her coefficients on trade exposure capture only

[4] The Indian NSS data are repeated cross-sections rather than panels, so Topalova has to create a pseudo-panel at district/region level.

relative effects. In the light of this, it is hardly surprising that she finds that rural districts with more exposed production sectors experienced slower declines in poverty and lower consumption growth. No theory has ever suggested that import competing sectors or regions will do relatively well out of a trade liberalisation. Moreover, in earlier related work Topalova (2007) finds, albeit in somewhat less technically secure estimates, that while import exposure increases poverty, export exposure over this period reduces it. Castilho et al (2012) find a similar dichotomy between export and import oriented results in Brazil.

For all their elegance, Topalova's estimates take us little nearer to answering the question of whether liberalisation helped to reduce Indian poverty. From a policy perspective, however, they do emphasise the importance of labour mobility in response to trade shocks – a theme we return to below: she finds that the impact of liberalisation was most pronounced among the least geographically mobile, at the bottom of the income distribution, and in Indian states where inflexible labour laws impeded factor reallocation across sectors.

Topalova's results have been challenged by other researchers. Hasan et al (2007), updated by and Cain et al (2010), find that trade liberalisation aids poverty reduction in a more aggregated (state-level) exercise on India, which also includes the liberalisation of non-tariff barriers. Krishna et al (2010) also find that trade liberalisation is associated with reduced poverty, but that the effect is smaller in lagging states. This appears to be because the transmission of international prices to domestic prices is weaker in lagging states, especially in the rural sector. The authors also suggest that South Asian countries with a smaller proportion of their populations in lagging regions experience a greater reduction in poverty following trade liberalisation. Again, it seems that mobility – this time geographical – is the key to the even distribution of the gains from trade. It may be that the state-level data used by these studies allows a more equal mixture of import and export effects so that the overall positive effect dominates.

Wages and Labour Markets

The last decade has seen a boom in studies analysing the effects of trade and trade policy on labour market outcomes, focusing in particular on the skill premium and wage inequality. Few studies have addressed the poverty implications directly but, given that the poor are mostly unskilled, the effect of trade liberalisation on the skill premium offers partial insight into its poverty effects. An increase in the skill premium could arise from an absolute decrease in unskilled workers' wages, which would clearly be likely to have adverse effects on poverty. But even if unskilled wages fall, the link to poverty as usually measured at the household level will be confounded by the fact that many households survive by selling goods or services directly rather than labour, and that many households have multiple

workers. Despite these challenges, this literature is worth considering to illustrate the mechanisms through which the poor could lose from liberalisation[5].

Recent advances in the positive economics of international trade have shown how the stronger firms within a sector typically gain more from trade liberalisation than do other firms. The new literature on income distribution recognises that different firms may have different labour demands, or may be better equipped to select better labour or to monitor job performance, so that liberalisation can change the composition of the sector's employment[6]. This can change relative wages or employment economy-wide, or, when combined with limited worker mobility between firms, have strong distributional effects within sectors or even within firms. Following discussion of these possibilities, this section also considers the ways in which trade liberalisation might impact on labour market informality and on gender differentials.

Trade and wage inequality

The traditional link between trade liberalisation and inequality has been the Stolper-Samuelson theorem which predicts that liberalisation will increase the wages of unskilled labour in developing countries, which in turn would reduce wage inequality. As Winters et al (2004) and Goldberg & Pavcnik (2007) note, however, the evidence has been unkind to Stolper-Samuelson, and many developing countries have seen rising skills premia and wage inequality at the same time as they have opened up their economies – e.g. Mexico, Colombia, Brazil, Argentina, India and China. Moreover, there is little evidence of labour reallocation from contracting to expanding sectors, the key mechanism within the theorem.

Fukase (2013) has recently argued that Stolper-Samuelson applied in Vietnam, however, and Goldberg & Pavcnik (2007) note that the skill premium could increase if low skill-intensive sectors had been the beneficiaries of protection or if the model were modified to include a combination of countries with different degrees of unskilled-labour abundance. In the case countries opening to trade with more unskilled-abundant countries could experience an increase in the skill premium and in wage inequality (Davis 1996; Davis & Mishra 2007).

More recently the literature on international trade has shifted its focus from countries and sectors to firms as the central unit of analysis. Models of heterogeneous firms have shown that differences in firm characteristics have an important role in shaping the effect that trade has on the economy and that firms are unevenly affected by trade liberalisation. This new wave of theoretical models has also provided a different setting for considering the distributional impact of trade policy. In particular the observation that a large part of the effect of trade liberalisation happens within sectors has led to a growing literature on intrasectoral changes in the wage distribution. These studies provide an alternative

[5] Harrison et al (2011) discuss some of these models, but from a more theoretical perspective.

[6] Given our focus on extreme poverty, we restrict our attention to work on developing countries, but there is also interesting work on trade and labour markets in developed countries – e.g. Autor, Dorn & Hanson (2013) and Moretti (2013).

mechanism through which trade liberalization can influence inequality in developing countries.

One stream of research has emphasized changes in the returns to worker characteristics and in the workforce composition as the main driver of wage variation across firms. It assumes competitive labour markets in which workers with the same characteristics receive the same wage and relies on trade liberalisation causing export sectors to change the composition of their workforces. Verhoogen (2008) introduces quality-upgrading into the heterogeneous firm model: more productive firms produce higher quality goods for the export market using a higher quality workforce and paying higher wages. As in Melitz (2003), trade liberalisation allows the stronger firms to expand in size and/or in number and this increases the relative demand for higher quality labour. Verhoogen tests the theory using Mexican plant level data and the Mexican peso devaluation of 1994 as a proxy for trade liberalisation, comparing the 1993-1997 peso devaluation period with the 1997-2001 "placebo" period. He finds that higher productivity plants have a higher export share, pay higher wages and have a higher ratio of white to blue collars and also that these effects are stronger during the devaluation than during the placebo period. Thus quality upgrading contributed to rising wage inequality within industries in Mexico. An important feature of the results, however, is that both more- and less-skilled wages increase absolutely, which suggests benign poverty effects.

A similar mechanism is highlighted by Bustos (2011) which studies the impact of MERCOSUR on Argentinean firms. In her study firms can choose between two production technologies that differ in terms of their skill-intensity. In equilibrium there are three types of firms: the skill-intensive exporters, the unskilled exporters and the unskilled domestic oriented. A tariff reduction in an export market induces more firms to enter and upgrade to the skill-intensive technology and increases the market share of more productive firms. This generates higher demand for skilled workers and increases the skill premium. The least productive firms are forced to downgrade their skills. Using Argentinean firm data Bustos finds that small firms downgraded skills while larger firms upgraded in response to Brazil's tariffs reduction. The net effect on the share of skilled labour is positive and implies that one third of the increase in the employment share of skilled labour in Argentina between 1992 and 1996 is explained by the reduction in Brazil's tariffs.

Frias et al (2012) look at the effect of exporting on the within-plant wage distribution using employer-employee data for Mexico and an identification strategy similar to Verhoogen's. They find that exporting is associated with higher wages on average but that when disaggregated by quantiles of the *within*-firm wage distribution there is no evidence of an impact of exporting at the tenth percentile while the effect is significant and increasing at higher percentiles. Thus exporting increases the dispersion of within-plant wages but apparently does not deepen poverty.

A second line of research has focused on labour market frictions as the explanation for increasing wage inequality across firms, which ties up with the importance of factor immobility observed in the household results. Fair wage models, efficiency wage models and match and search frictions models have all been suggested as plausible frameworks. The

main implication of these models is that not only the composition of the workforce can change differentially across firms following trade liberalisation but also that workers with identical characteristics can be paid different wages depending on the trading status of their employer. This happens because of the link between wages and firm revenues implied by the labour market assumptions[7].

Helpman et al (2010) develop a model of heterogeneous firms where the labour market is characterized by search and matching frictions. In this framework firms have an incentive to screen workers in order to select those with high abilities. More productive and larger firms screen more intensively and thus have a workforce with higher average ability and higher wages (because they are more difficult to replace). Trade liberalisation, which expands the number of more productive firms in the export market also increases their capacity to screen workers and select those of higher ability. This results in exporting firms improving the composition of their workforces and paying relatively higher wages than non-exporting firms. The main implication is that trade liberalisation increases wage inequality. A second implication of the model is that the relationship between wage inequality and trade costs is first increasing and then decreasing. This results from the fact that what drives wage inequality in this model is the share of exporting firms. At the two extremes of 0% and 100% exporting firms wage inequality is unchanged.[8]

The above model is tested in Helpman et al (2012) using matched employer-employees Brazilian data between 1986 and 1995. They identify four main features that are consistent with the theory: first, most of the wage inequality is due to within-sector-occupation wage inequality; second, residual wage inequality accounts for a large part of total wage inequality; third, between-firm wage dispersion accounts for a large part of the growth of within sector-occupation wage inequality; and fourth, larger firms and exporters pay higher wages on average. They estimate the parameters of the models and run counterfactual exercises to assess the impact of lowering trade costs on wage inequality. The estimates show that opening a closed economy to trade (a massive shock) raises wage inequality by around 10%.

Krishna et al (2011) also affirm the importance of labour market matching mechanisms in a study of the composition of the workforce of exporting firms. They hypothesise that firms change the composition of their workforce systematically in terms of workers' innate ability and/or firm-worker match, factors that are unobservable from the data. In this case, analysis looking only at average firm-level wages may be biased. The higher wages apparently paid by exporters may then be attributed to their having a better workforce in terms of unobservables. Krishna et al show that once controlling for the endogeneity of the worker-

[7] Akerman et al (2013) and Helpman et al (2012) show that in Brazil and Sweden a large part of the overall wage inequality is explained by within sector-occupations inequality and that it is mainly a residual wage inequality (after controlling for workers' observable characteristics).

[8] Liu (2013) finds evidence of the non-monotonic relationship between wage inequality and trade for the US. Residual wage inequality first increases with openness and then decreases with a turning point estimated at a ratio of export to domestic sales of 0.3. However, to the best of our knowledge there is no direct evidence of this non-monotonic relationship for any developing country.

firm matching through the inclusion of worker-firm match effects, there is no significant effect of lower tariffs on wages in either domestic-oriented and exporting firms.

Amiti & Davis (2011) extend the heterogeneous firm model to separate trade in final and intermediate goods. Crucially, they also adopt a fair wage model of wage determination which ties wages to firm performances. The model predicts that lower tariffs on final goods increase the wages of workers at exporting firms while reducing wages in domestic-oriented firms. Lowering input tariffs on the other hand, raises wages at importing firms but reduces wages at firms that do not import any inputs. Using Indonesian firm data for the 1991-2000 period of trade liberalisation the empirical exercise confirms the prediction of the model, showing that a 10 percentage point reduction in output tariffs increases wages by up to 3% in exporting firms but reduces wages by 3% in domestic oriented firms. A 10 percentage point reduction in input tariffs increases wages by up to 12% in importing firms but has an insignificant effect on firms that do not import. The lower wages in domestic oriented firms could worsen poverty if, as seems likely, these are also the unskilled-labour intensive firms.

While the above studies suggest that trade liberalisation increases wage inequality, Amiti & Cameron (2012) reach a different conclusion for Indonesia. They look at the impact of trade liberalisation on within-firm wage skill premia, distinguishing between reductions in input tariffs and output tariffs. They show that reducing input tariffs actually reduces the wage skill premium while there is no significant effect from reducing tariffs on final goods. These results arise because in Indonesia intermediate inputs production has higher skill intensity than final goods production. Their explanation for this finding, in contrast with most of the literature, is that Indonesia is one of most unskilled-abundant countries while most of the previous studies have focused on middle-income countries with a relatively lower concentration of unskilled labour.

Another important issue is the potential inter-sectoral reallocation of workers following trade liberalisation which can also have important welfare implications. Davis & Harrigan (2011) insert efficiency wages into a heterogeneous firms model. In this setting firms are heterogeneous not only in their productivity level but also in the capacity to monitor workers' effort. The model shows that while the aggregate effect on employment is small there is a lot of turnover in the labour market and particularly that "good jobs", the ones with above average pre-liberalisation wages, form an important share of the jobs lost. This is so because conditional on a given productivity, firms that exit the market (and so destroy jobs) are the ones that are less efficient in monitoring and thus have to pay higher wages to elicit effort. In their simulation exercise they find that trade brings substantial aggregate gains and that aggregate unemployment is barely affected. However, there is a large amount of churning in the labour market and one-fourth of all good jobs are destroyed.

Menezes-Filho & Muendler (2011) analyze workers' displacement following trade liberalisation in Brazil. They find that tariff cuts do generate worker displacements but that exporters fail to absorb these workers. This implies that following trade liberalisation expanding firms expand their output but not their workforces. Lower product tariffs actually

increase the transition out of the manufacturing sector and into unemployment and out of the labour force. However, lower intermediate-input tariffs have the opposite effect.

The results surveyed in this section certainly suggest that trade liberalisation could increase wage inequality and via that income inequality. They do not generally suggest, however, that this is associated with increases in absolute poverty. Rather it seems to be the case that, in the small number of countries for which the exercises are possible, less-skilled workers (who are more likely to be from poor households) gain from trade liberalisation, albeit by smaller amounts than more skilled ones.

Trade and informal labour market

Another labour market channel through which trade is said to affect poverty is through informality. Goldberg & Pavcnik (2007) surveyed a few studies and found mixed results. We take up their thread. First, however, we must note that poor and informal are far from identical sets, especially in Latin America where most of the evidence comes from.

Aleman-Castilla (2006) uses a heterogeneous firms model similar to Melitz's (2003) where the firm can choose whether to be in the informal or in the formal sector. The model offers ambiguous predictions about the impact of trade liberalisation on the employment share of the informal sector, but contrary to Goldberg & Pavcnik (2003) includes the possibility that trade liberalisation could reduce the share of informal workers. On the one hand trade liberalisation, which reduces trade costs increases real wages in the industry and thus reduces entry into formality and so induces an increase in the informality rate. On the other hand, less productive informal firms will be forced to exit the market while the more productive formal firms will export and expand, which tends to increase the share of formal workers. Estimating the relative strength of these two forces on Mexican data, Aleman-Castilla shows that lower import tariffs significantly reduce the probability of informal employment.

Paz (2014) adds endogenous payroll tax compliance to the heterogeneous firms model. With Brazilian data he finds that lower import tariffs reduce the average formal wage but have an ambiguous effect on the share of informal workers. The reduction in trading partners' import tariffs, on the other hand, increases the formal average wage, decreases the share of informal workers and is ambiguous about the average informal wage.

Bosh et al (2012) find that trade liberalisation had almost no impact on the share of informal workers in Brazil, but that new labour regulation, which increased firing costs, increased it significantly. Similarly, Menezes-Filho & Muendler (2011) find that lower product tariffs increase the probability of being forced out of the formal sector and into unemployment, but find no evidence of increased transition into the informal sector.

Viollaz (2013) analyzes the link between tariff reductions and informality in Argentina between 1980 and 2001. She finds that trade liberalisation increased the probability of working in the informal sector in the short-run but the magnitude of the effect depends on the average firm size operating in the industry. When small and medium firms prevail the impact is higher and significant, but it becomes insignificant when large firms prevail. In the long-

run however the effect is reversed in manufacturing industries and informality decreases after tariff reductions. On the contrary, in the long-run informality tends to increase in the non-tradable sector.

These results are very limited geographically, but they suggest that the evidence that trade liberalisation increases informality has, if anything, become weaker over time.

The effects of trade liberalisation on gender

A potentially important aspect of poverty is the gender gap[9]. Female headed houses are often among the poorer ones and within households higher wages for females may improve their standing in intra-household decision-making. A number of recent studies have sought the effects of trade liberalisation on female wages, which at least partly determines their poverty status. They identify three main channels: inter- and intra-sectoral reallocations and discrimination.

First, if trade liberalisation favours female-intensive sectors female wages or employment will increase. Aguayo-Tellez et al (2010) look at the impact of tariff reductions caused by the NAFTA on gender outcomes in Mexico. They decompose the change in the female share in employment and wage bill into the between and within-industry components. Women's share of the wage bill increased by 5.3 percentage points between 1990 and 2000, 40% of which was accounted for by between-industry shifts caused by tariff changes favouring initially female-intensive industries. The within-industry changes are discussed below.

Gaddis & Pieters (2012) analyze the effect of trade liberalisation on women's labour outcomes in Brazil. They use the variation in state level measures of trade exposure to identify causal effects of trade liberalisation on the female labour outcomes. They find that states with greater exposure to trade liberalisation experienced faster increases in female labour force participation and employment. The increase in the female share of total employment is driven mainly by the expansion of the service sector which is more female labour intensive. They also provide evidence, however, that the increase in female labour market participation and employment might be caused by increased male unemployment and job insecurity.

Second, trade can affect the within-sector gender composition. As noted above, trade liberalisation stimulates more productive firms and higher quality products. This frequently entails skilled and cognitive tasks replacing unskilled and manual tasks and may also involve technological upgrading. This can affect gender labour market outcomes if women have a comparative advantage in less physically intensive and higher skilled activities. Juhn et al (2012) build a model in which firms choose between old and new technologies requiring different amounts of white and blue-collar inputs. Both tasks can be performed by male or female workers, but they hypothesise that new technologies replace physically demanding tasks with computerized production, making women more productive in blue-collar jobs.

[9] A longer survey is provided by Papyrakis et al (2012), but the surveyed studies pre-date the more recent contribution of the heterogeneous firms literature applied to analyse gender dynamics.

Trade liberalisation induces more firms to enter the foreign markets and to upgrade their technology in this way. Juhn et al (2013) test this model and find that tariff reductions induced the entry of new firms into the export sector, that the newly exporting firms upgraded their technology, particularly with new computerized equipment, and that the tariff reduction increased the ratio of female to male blue-collars workers as well as the relative wage of female blue-collar workers. Consistently with their model, they find no effect in white-collar occupations.

Peri & Poole (2013) explore whether changes in task composition in response to offshoring affect gender outcomes in Brazil. While they confirm that increased openness is associated with higher demand for skilled labour, in particular associated with cognitive tasks, they do not find any effect on the share of female employment.

The third link is the reduction in gender discrimination, which Becker (1971) had predicted would fall as competition increased. Trade liberalisation could clearly operate via this margin. Ederington et al (2010) use plant level data to analyze the impact of Colombia trade liberalisation on the share of female workers employed in Colombian plants. They find that establishments experiencing a greater decline in tariff protection increased their share of female employees. The effect is due not to the exit from the market of discriminating firms but to plants hiring more women.

Menon & Rodgers (2009) test the discrimination hypothesis at the industry level in India and find that increasing trade openness is associated with growing wage gaps between men and women in manufacturing. They attribute this to the behaviour of sectors not exposed to domestic competition (concentrated sectors). Following the reductions in rents caused by the trade liberalisation these firms try to cut costs at the expense of workers with less bargaining power - typically women. Similarly, but less directly, Edmonds et al (2010) argue that households in the Indian districts that Topalova (2010) identifies as losing tariff protection, cut education expenditure to save money and that the burden fell disproportionately on girls.

Maertens & Swinnen (2012) look at the gender impact of the expansion of modern supply chains for the export of high value agricultural goods in Senegal. They find that modern supply chains although being gender discriminating in several aspects have a lower gender wage gap than other employment sectors and can thus contribute to reduce gender wage inequality in rural labour markets.

The reviewed studies show overall mixed results concerning the gender impact of trade liberalisation. However, there is recent evidence that inter-industry shifts might be a potentially favourable channel for improved female labour outcomes following trade liberalisation.

Conclusion

A decade ago Winters et al (2004) concluded that there is no simple general conclusion about the relationship between trade liberalisation and poverty. This conclusion still pertains, but we have learned more about the process since then. The literature of the last decade has re-inforced the presumption that trade liberalisation generally raises average incomes (i.e. boosts economic growth temporarily), and has also shown that the response to trade liberalisation is likely to vary with a series of complementary conditions many of which refer to the ease with which factors of production can migrate between sectors. The latter feature has raised the possibility – as yet unproven - that the beneficial effect of trade liberalisation may not extend to the poorest countries. Exploring this possibility is a priority for future research.

The recent literature has also re-affirmed that the static and micro-economic effects of trade liberalisation cannot be guaranteed to be benign. Because it changes relative prices, trade liberalisation almost inevitably reduces the welfare of some people and some of them may be poor: its precise effects will depend especially on the nature of the trade reforms that are actually undertaken and how the poor make their livings. The consumption of the poor is more heavily weighted towards food than that of the more affluent, and so is more at risk if agricultural trade is reformed or if food prices spike; in the longer run, however, the general equilibrium effects on incomes tend to offset at least a good share of these vulnerabilities. More important is that the differences between the rich and poor are even greater in the ways that they earn their livings than in consumption, so that the differential effects on income tend to dominate in the overall effects of trade reform; this is most obvious in in Porto (2006).

One area of considerable advance has been in exploring how trade liberalisation might increase wage inequality. Recent advances in trade theory at a firm level have suggested that liberalisation may be more unequalising between skilled and unskilled workers than previously thought. This raises the possibility of adverse poverty effects, but these are far from inevitable because increasing inequality is quite consistent with even the lowest of wages rising to some extent (as Verhoogen, 2008, suggests), and besides, households may have several sources of income. An interesting hint that is starting to emerge from this literature is that women may tend to gain relatively from trade liberalisation.

A recurring theme in the recent literature is that factor, and especially labour, mobility is key to reaping the gains from trade and sharing them reasonably equally. This is evident from several macro-economic studies and from several household studies which show that, absent reasonable mobility, working in the export sector or firm is ‘good news’ and in an import-competing one ‘bad news’. This is barely surprising, but it is not always fully appreciated that one cannot generalise from observing the pain of import-competing workers to the malignity of trade liberalisation. Fostering mobility is a policy margin that deserves a good deal more attention.

Literature

Aguayo-Tellez E, Airola J, Juhn C. 2010. *Did Trade Liberalization Help Women? The Case of Mexico in the 1990s.* NBER Work. Pap. 16195

Akerman A, Helpman E, Itskhoki O, Muendler M, Redding S. 2013. Sources of Wage Inequality. *Am. Econ. Rev.: Papers & Proceedings* 103(3):214–19

Aleman-Castilla B. 2006. *The Effect of Trade Liberalization on Informality and Wages: Evidence from Mexico.* CEP Discussion Paper No 763

Alkire S, Foster J. 2011. Understandings and misunderstandings of multidimensional poverty measurement. *J. of Econ. Inequal. 9*(2):289-314

Almeida R, Fernandes AM. 2008. Openness and Technological Innovations in Developing Countries: Evidence from Firm-Level Surveys. *J. Dev. Stud.* 44(5):701-27

Amiti M, Cameron L. 2012. Trade Liberalization and the Wage Skill Premium: Evidence from Indonesia. *J. Int. Econ.* 87(2):277–87

Amiti M, Davis D. 2011. Trade, Firms, and Wages: Theory and Evidence. *Rev. Econ. Stud.* 79(1):1-36

Amiti M, Konings J. 2007. Trade Liberalization, Intermediate Inputs, and Productivity: Evidence from Indonesia. *Am. Econ. Rev.* 97(5):1611-38

Autor D, Dorn D, Hanson G. 2013. The China Syndrome: Local Labor Market Effects of Import Competition in the United States. *Am. Econ Rev* 103(6): 2121–2168

Awokuse T. 2005. Exports, economic growth and causality in Korea. *Appl. Econ. Lett.* 12(11):693-696.

Balat J, Brambilla I, Porto G. 2009. Realizing the gains from trade: Export crops, marketing costs, and poverty. *J. of Int. Econ. 78*(1):21-31

Bazzi S, Clemens MA. 2013. Blunt instruments: avoiding common pitfalls in identifying the causes of economic growth. *Am. Econ. J.: Macroecon. 5*(2):152-86

Becker G. 1971. *The economics of discrimination.* Chicago: University of Chicago Press

Bhattacharyya S, Dowrick S, Golley J. 2009. Institutions and trade: competitors or complements in economic development?. *Econ. Rec.* 85(270):318-30

Billmeier A, Nannicini T. 2009. *Trade openness and growth: pursuing empirical glasnost*. IMF Staff Papers 56:447–75

Billmeier A, Nannicini T. 2013. Assessing Economic Liberalization Episodes: A Synthetic Control Approach. *Rev. of Econ. and Stat.* 95(3):983-1001

Bolaky B, Freund C. 2008. Trade, Regulations, and Income. *J. Dev. Econ.* 82(2):309-21

Bosch M, Goni E, Maloney W. 2012. Trade Liberalization, Labor Reforms and Formal-Informal Employment Dynamics. *Lab. Econ.* 19:653–67

Brambilla I, Porto G, Tarozzi A. 2012. Adjusting to trade policy: Evidence from US antidumping duties on Vietnamese catfish. *Rev. Econ. and Stat.* 94(1):304-19

Bustos P. 2011. *The Impact of Trade Liberalization on Skill Upgrading Evidence from Argentina*. Work. Pap. 1189, Dep. Econ., Universitat Pompeu Fabra

Cain JS, Hasan R, Mitra D. 2010. *Trade Liberalization and Poverty Reduction: New Evidence from Indian States.* Work. Pap., Program on Indian Economic Policies, Columbia University

Castilho M, Menéndez M, Sztulman A. 2012. Trade liberalization, inequality, and poverty in Brazilian states. *World Dev.* 40(4):821-35

Chang R, Kaltani L, Loayza NV. 2009. Openness can be good for growth: The role of policy complementarities. *J. Dev. Econ.* 90(1):33-49

Coello B, Fall M, Suwa-Eisenmann A. 2010. *Trade liberalization and poverty dynamics in Vietnam 2002-2006.* Work. Pap. 2010-13, Paris School of Economics

Davis D. 1996. *Trade Liberlization and Income Distribution*. NBER Work. Pap. 5693

Davis D, Harrigan J. 2011. Good jobs, bad jobs, and trade liberalization. *J. Int. Econ.* 84:26–36

Davis D, Mishra P. 2007. Stolper-Samuelson Is Dead: And Other Crimes of Both Theory and Data. In *Globalization and Poverty*, ed. Harrison A. University of Chicago Press

Deaton A. 1997. *The Analysis of Household Surveys: A Microeconometric Approach to Development Policy.* Baltimore and London: John Hopkins University Press for the World Bank

Deaton A. 2009. *Instruments of development: Randomization in the tropics, and the search for the elusive keys to economic development.* NBER Work. Pap. 14690

De Janvry A, Sadoulet E. 2010. The Global Food Crisis and Guatemala: What Crisis and for Whom?. World Dev. 38(9):1328–39

DeJong DN, Ripoll M. 2006. Tariffs and growth: an empirical exploration of contingent relationships. *Rev. Econ. Stat.* 88(4):625-40

Ederington J, Minier J, Troske K. 2010. *Where the Girls Are: Trade and labor market segregation in Colombia*. IZA Discussion Paper No.4131

Edmonds EV, Pavcnik N, Topalova P. 2010. Trade Adjustment and Human Capital Investments: Evidence from Indian Tariff Reform. *Am. Econ. J.: Appl. Econ.* 2:42–75

Feyrer J. 2009. *Trade and income: exploiting time series in geography*. NBER Work. Pap. 14910

Fernandes AM. 2007. Trade policy, trade volumes and plant-level productivity in Colombian manufacturing industries. *J. int. econ.* 71(1):52-71

Frankel JA, Romer D. 1999. Does trade cause growth?. *Am. Econ. Rev.* 89(3):379-99

Frías J, Kaplan D, Verhoogen E. 2012. Exports and Within-Plant Wage Distributions: Evidence from Mexico. *Am. Econ. Rev.* 102(3):435-40

Fukase E. 2013. Export Liberalization, Job Creation, and the Skill Premium: Evidence from the US–Vietnam Bilateral Trade Agreement (BTA). *World Dev.* 41:317-337.

Gaddis I, Pieters J. 2012. *Trade Liberalization and Female Labor Force Participation: Evidence from Brazil.* IZA Discussion Paper No. 6809

Goldberg PK, Khandelwal AK, Pavcnik N, Topalova P. 2010. Imported Intermediate Inputs and Domestic Product Growth: Evidence from India. *Q. J. Econ.* 125(4):1727-67

Goldberg PK, Pavcnik N. 2003. The response of the informal sector to trade liberalization. *J. Dev. Econ.* 72:463-96

Goldberg PK, Pavcnik N. 2007. Distributional Effects of Globalization in Developing Countries. *J. Econ. Lit.* 45:39–82

Gries T, Kraft M, Meierrieks D. 2009. Linkages between financial deepening, trade openness, and economic development: causality evidence from Sub-Saharan Africa. *World Dev.* 37(12):1849-60

Gries T, Redlin M. 2012. *Trade Openness and Economic Growth: A Panel Causality Analysis*. Work. Pap. 52, University of Paderborn, Germany

Harrison A, McLaren J, McMillan M. 2011. *Recent perspectives on trade and inequality*. Policy Res. Work. Pap. 5754, The World Bank

Hasan R, Mitra D, Ural BP. 2007. Trade liberalization, labor-market institutions and poverty reduction: Evidence from Indian states. In *India Policy Forum* Vol. 3, pp. 71-122

Helpman E, Itskhoki O, Muendler M, Redding S. 2012. *Trade and Inequality: From Theory to Estimation*. NBER Work. Pap. No. 17991

Helpman E, Itskhoki O, Redding S. 2010. Inequality and Unemployment in a Global Economy. *Econometrica* 78(4):1239-83

Hertel TW, Keeney R, Ivanic M, Winters LA. 2009. Why isn't the Doha Development Agenda more poverty friendly? *Rev. Dev. Econ.* 13(4), 543-59

Hertel TW, Winters LA. 2006. *Poverty and the WTO: Impacts of the Doha development agenda*. World Bank

Hoekman B, Olarreaga M. 2007. *Global Trade and Poor Nations: The Poverty Impacts and Policy Implications of Liberalization.* Brookings Institute.

Ivanic M, and Martin W. 2011. *Short and Long-run Impacts of Food Price Changes on Poverty*. Presented at IATRC 2011 Annu. Meet.

Ivanic M, Martin W, Zama H. 2012. Estimating the Short-Run Poverty Impacts of the 2010–11 Surge in Food Prices. *World Dev.* 40(11):2302–17

Jacoby H. 2013. *Food Prices, Wages, and Welfare in Rural India.* Policy Res. Work. Pap. 6412, The World Bank

Juhn C, Ujhelyi G, Villegas-Sanchez C. 2012. *Men, Women, and Machines: How Trade Impacts Gender Inequality.* NBER Work. Pap. 18106

Juhn C, Ujhelyi G, Villegas-Sanchez C. 2013. "Trade Liberalization and Gender Inequality." *Am. Econ. Rev.* 103(3):269-73.

Kneller R, Morgan CW, Kanchanahatakij S. 2008. Trade liberalisation and economic growth. *World Econ.* 31(6):701-19

Kraay A. 2006. When is growth pro-poor? Evidence from a panel of countries. *J Dev. Econ.* 80(1):198-227

Krishna P, Mitra D, Sundaram A. 2010. *Trade, Poverty and the Lagging Regions of South Asia. NBER* Work. Pap. 16322

Krishna P, Poole J, Senses M. 2011. *Wage Effects of Trade Reform with Endogenous Worker Mobility*. NBER Work. Pap. No. 17256

Liu D. 2013. International trade and wage inequality: A non-monotonic relationship. *Econ. Lett.* 121:244–46

Maertens M, Colen L, Swinnen JF. 2011. Globalisation and poverty in Senegal: a worst case scenario?. *Eur. Rev. Agricult. Econ. 38*(1):31-54

Maertens M, Swinnen JF. 2009. Trade, standards, and poverty: Evidence from Senegal. *World Dev. 37*(1):161-78

Maertens M, Swinnen JF. 2012. Gender and Modern Supply Chains in Developing Countries. *J. Dev. Stud. 48*(10):1412-30

Marchand BU. 2012. Tariff pass-through and the distributional effects of trade liberalization. *J. Dev. Econ.* 99(2):265-81

McCaig B. 2011. Exporting out of poverty: Provincial poverty in Vietnam and US market access. *J. of Int. Econ. 85*(1):102-13

McCulloch N, Winters L A, Cirera X. 2001. *Trade Liberalization and Poverty: A Handbook.* CEPR, London

McMillan M, Rodrik D. .2011. *Globalization, Structural Change and Productivity Growth*. NBER Work. Pap. 17143

Melitz M. 2003. The Impact of Trade on Intra-Industry Reallocations and Aggregate Industry Productivity. *Econometrica* 71(6):1695-725

Menezes-Filho N, Muendler M. 2011. *Labor Reallocation in Response to Trade Reform.* NBER Work. Pap. No. 17372

Menon N, Rodgers Y. 2009. International Trade and the Gender Wage Gap: New Evidence from India's Manufacturing Sector. *World Dev.* 37(5):965–81

Nicita A. 2009. The price effect of tariff liberalization: Measuring the impact on household welfare. *J. Dev. Econ.* 89(1):19-27

Nicita A, Olarreaga M, Porto G. 2014. Pro-Poor Trade Policy in Sub-Saharan Africa. *J. Int. Econ*. 92(2):252–265

Niimi YP, Vasuveda-Dutta P, Winters LA. 2007. Trade Liberalization and Poverty Dynamics in Vietnam. *J. Econ. Integr.* 22(4):819-51

Noguer M, Siscart M. 2005. Trade Raises Income: A Precise and Robust Result. *J. Int. Econ.* 65(2):447–60

Oxfam. 1999. *Loaded Against the Poor.* Oxfam, Oxford

Papyrakis E, Covarrubias A, Verschoor A. 2012. Gender and Trade Aspects of Labour Markets. *J. Dev. Stud.* 48(1):81–98

Paz L. 2014. *The Impacts of Trade Liberalization on Informal Labor Markets: A Theoretical and Empirical Evaluation of the Brazilian Case. J. Int. Econ.* 92(2):330–348

Peri G, Poole J. 2013. *Offshoring and Firm-Level Task Composition: Is There a Gender Component?*. Presented at AEA 2013 Annu. Meet.

Porto GG. 2006. Using survey data to assess the distributional effects of trade policy. *J. Int. Econ. 70*(1):140-60

Porto GG. 2010. International Market Access and Poverty in Argentina. *Rev. Int. Econ. 18*(2):396-407

Romalis, J. 2007. Market access, openness and growth. NBER Work. Pap. 13048.

Sakyi D, Villaverde J, Maza A, Chittedi KR. 2012. Trade Openness, Growth and Development: Evidence from Heterogeneous Panel Cointegration Analysis for Middle-Income Countries. *Cuadernos de Economía* 31(57):21-40

Sen A. 1993. Capability and Well-Being. In *The Quality of Life,* eds. Nussbaum M, Sen A, Oxford: Clarendon Press

Shapiro C, Stiglitz J. 1984. Equilibrium Unemployment as a Worker Discipline Device. *Am. Econ. Rev.* 74(3):433-44

Timmer MP, de Vries GJ. 2009. Structural Change and Growth Accelerations in Asia and Latin America: A New Sectoral Data Set. *Cliometrica*, 3(2):165-90

Topalova P. 2007. Trade Liberalization, Poverty and Inequality: Evidence from Indian Districts. In *Globalization and Poverty*, ed. Ann Harrison, 291–336. Chicago: University of Chicago Press.

Topalova P. 2010. Factor immobility and regional impacts of trade liberalization: Evidence on poverty from India. *Am. Econ. J.: Appl. Econ.* 2(4):1-41

Verhoogen E. 2008. Trade, Quality Upgrading, and Wage Inequality in the Mexican Manufacturing Sector. *Quart. J. Econ.* 123(2):489-530

Viollaz M. 2013. *Trade Liberalization and Labor Informality: Inspecting the Mechanisms*. Presented at IZA YSP 2013

Wacziarg R, Welch K. 2008. Trade liberalisation and growth: New evidence. *World Bank Econ. Rev.* 22(2):187-231

Winters LA. 2002. Trade Liberalisation and Poverty: What are the Links?. *World Econ.* 25(9):1339-67

Winters LA. 2004. Trade liberalisation and economic performance: an overview. *Econ. J.* 114(493): F4-21

Winters LA, McCulloch N, McKay A. 2004. Trade Liberalization and Poverty: The Evidence so far. *J. Econ. Lit* 42:72-115