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**No. 02/22**

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**by**

**L. Alan Winters, Neil McCulloch and Andrew McKay**

**Centre for Research in Economic Development and International Trade, University of Nottingham**

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**Acknowledgements**
We are grateful to Enrique Blanco de Armas, Xavier Cirera, Abbi Mamo Kedir and Carolina Villegas Sanchez for research assistance, to Rosie Bellinger, Janet Ellis and Amy Sheehan for logistical help, to innumerable colleagues for help and advice and to three anonymous referees for comments on an earlier version of this paper. Naturally none of these people is responsible for the paper's remaining imperfections.

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October 2002

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**Abstract**
This paper assesses the current state of evidence on the widely debated issue of the impact of trade policy reform on poverty in developing countries. There is relatively little empirical evidence addressing this question directly, but a lot of related evidence concerning specific aspects. This paper summarises this based on an analytic framework which addresses four key areas: economic growth and stability; households and markets; wages and employment and government revenue. Within this framework twelve key questions are identified. We argue strongly that there can be no simple generalisable conclusion about the relationship between trade liberalisation and poverty, so that the picture is much less negative than is often suggested in popular debate. In the long run and on average, trade liberalisation is highly likely to be poverty alleviating, and there is no convincing evidence that it will generally increase overall poverty or vulnerability. But trade reform also involves important adjustments, and there is evidence that the poor may be less well placed in the short run to protect themselves against adverse effects and take advantage of favourable opportunities.

**Outline**

## 1. INTRODUCTION

Most economists accept that in the long run open economies fare better in aggregate than do closed ones, and that relatively open policies contribute significantly to development. Many commentators fear, however, that in the shorter run, one of the steps towards openness - trade liberalisation - harms poorer actors in the economy and that even in the longer run successful open regimes may leave some people behind in poverty. This paper takes these concerns seriously by examining empirical evidence about whether developing countries' own trade liberalisations have reduced or increased poverty.[1]

If trade liberalisation and poverty were both easily measured, and if there were many historical instances in which liberalisation could be identified as the main economic shock, it might be simple to derive simple empirical regularities linking the two. Unfortunately, these conditions do not hold, so there is relatively little direct empirical evidence on this question. Analysts therefore have been obliged to try to decompose the link into steps and compile the evidence on each of them individually. A conceptual framework decomposing the links between trade policy and poverty has been developed by Winters (2000a, 2002a), and the review in this paper is based on an examination of the empirical evidence about each of those components[2]. Even this, it turns out, can only be partial, for often there are no direct studies of the effects of trade and trade liberalisation. In these cases we have sought evidence from experiences that might have parallels with trade liberalisation, such as domestic market liberalisation and public sector retrenchments. This latter process, however, has sometimes threatened to open up too large a literature, so a good deal of selection and judgement has had to be exercised to keep the output manageable.

The paper is explicitly empirical in focus. We report theoretical work if it informs empirical studies, but our emphasis is primarily on the study of *ex post* data pertaining to actual instances of trade liberalisation and related shocks. We also review a little of the

1 While we focus on trade liberalisation, the analysis mostly generalises to other real-side shocks such as commodity price booms and slumps and exchange rate changes.

2 In related papers we have examined a subset of relevant empirical results (McKay, Winters and Kedir, 2000), explored policy responses to the possibility that liberalisation causes poverty (Winters 2002b) and provided an extended treatment for policy-makers, including the discussion of specific trade negotiation issues (McCulloch, Winters and Cirera 2001).

Computable General Equilibrium (CGE) modelling literature, which, while fundamentally theoretical, does at least rely on some data.

The paper starts with a very brief account of our analytical framework, which provides the organisational framework for the paper. We then survey the evidence on trade liberalisation and poverty under four headings: macro-economic aspects (growth and fluctuations), households and markets, wages and employment and government revenue and spending. While for each component trade liberalisation can facilitate poverty alleviation, in none of them can an unambiguous generalisation be made either in theory or empirically.

The ambiguity arises because there are so many reasons why people are poor; and even within broadly defined groups there are huge differences in the circumstances of individual households. The conclusions of much of the work surveyed below are conditional on these circumstances, so a crucial part of any specific analysis must be to identify the different characteristics of the poor including information about their consumption, production and employment activities. Given the variety of circumstances, it will hardly be surprising that there are no general comparative static results about whether trade liberalisation will increase or reduce poverty. Simple statements about 'the poor' will, at best, lose information and simple generalisations about all countries will just be wrong.

An important aspect of any analysis of poverty is the definition and measurement of poverty itself. Poverty is a complex and multi-dimensional phenomenon and there is considerable controversy in the literature about how it should be defined and measured.[3] However, the vast majority of the empirical economic literature on poverty adopts an absolute income or consumption metric. Therefore, while recognising that there are many legitimate approaches to the measurement of poverty, the evidence that we review focuses on this approach. Moreover, a sensible first step towards understanding the effects of trade on poverty and communicating them clearly is to focus on the simplest and most directly observable measures of welfare. Much of the methodological

3 Sen (1993) discusses many of the central issues; Baulch (1996) offers a useful account of different poverty measures and World Bank (2001) a discussion of different concepts.

discussion would generalise to other dimensions of poverty if the later could be measured precisely.

Finally, it is worth emphasising that our concern is with poverty, not inequality. Since trade liberalisation tends to increase the opportunities for economic activity, it can very easily increase income inequality while at the same time reducing poverty. Consequently, statements about its effects on inequality cannot be translated directly into statements about its impact on absolute poverty. There may be sound positive and normative reasons for interest in inequality, but they are not the concerns of this paper.

## 2. AN ANALYTICAL FRAMEWORK

As argued already we approach the question of trade liberalisation and poverty by constructing an analytical framework into which to slot the various pieces of theory and evidence. This section briefly outlines such a framework - based on Winters (2000a, 2002a) - and from it extracts twelve key questions around which we organise our survey of empirical results. It considers, in turn, economic growth and stability, the behaviour of households and markets, wages and employment and the government.

### *Economic Growth and Stability*

The key to sustained poverty alleviation is economic growth and this is the link that has seen the most sustained debate among economists. Although growth can be unequalising, it has to be very strongly so if it is to increase absolute poverty. This appears not to be the case either in general or for growth associated with freer trade. The arguments that trade liberalisation and openness stimulate long-run growth have a good deal of empirical support, but have certainly not yet been completely proven; there is, however, no evidence that they are harmful to growth. Sustained growth requires increases in productivity, and most of the evidence suggests that trade liberalisation operates through this route. This link, however, warns us that in the short run some factor owners could suffer if productivity increases faster than output. Finally, openness is likely to influence the sort of shocks that affect an economy, so we need to consider macro-economic volatility and its effects on growth.

Section 3 of this paper addresses these issues under three broad headings.

- Does liberalisation stimulate growth and relieve poverty?

- Does trade liberalisation boost productivity?
- Are open economies less stable?

***Households and Markets***

Given that the majority of the poor are self-employed, the best way of thinking about poor households is in terms of the 'farm household', which produces goods or services, sells its labour and consumes. An increase in the price of something of which the household is a net seller (labour, goods, services) increases its real income, while a decrease reduces it. Poor households typically have several sources of income, including transfers, remittances from absent family members and income in kind, as well as wages and profits from production. The framework needs to ask how trade liberalisation affects all of these, as well as considering consumption. We also note that shocks to a household can impinge differently on different family members. Thus, women might bear the burden of adjustment if they have to start to work outside the home as well as continuing to bear all family responsibilities. Similarly, one needs to consider whether trade liberalisation affects household investments in child welfare, such as basic education and health.

Once we have a view of how price changes affect the poor, we ask how a trade liberalisation affects prices. Even simple economies have several stages between the border, where trade policy operates, and the poor household, so one consideration is how much of any price change gets passed through to the poor. Unchanged internal distribution costs attenuate proportionate border price shocks as they pass through to households for importables, but exacerbate them for exportables. Shocks can even get lost completely if distribution is monopolised, as, for example, with official marketing boards or the private monopolies that sometimes replace them.

More important than price changes is whether markets exist at all: trade reform can both create and destroy markets. Extreme adverse poverty shocks are often associated with the disappearance of a market, while strong poverty alleviation can arise when markets are created for previously untraded or unavailable goods. Another critical issue is how households are able to respond to the price (and other) changes that reach them: can households respond to favourable price movements (e.g. in the price of an agricultural

output), are poorer households less able to respond than richer households, and are they less able to protect themselves against adverse movements?

Obviously a household's ability to adjust to a trade shock affects the size of any impact it suffers, but not generally its sign. Adjustment, however, is also the mechanism by which shocks in one market spill over into another. If these spillovers are particularly deep and narrow, they can be very significant locally. For example, a major attraction of liberalising agriculture is argued to be that the direct beneficiaries – farmers – spend much of their extra income on goods and services provided locally by the poor such as construction, personal service and simple manufactures.

A common worry is that opening up an economy will expose it and its component households to increased risk. Certainly, it will expose them to *new* risks, but the net effect can be to reduce overall risk because world markets (which have many players) are more stable than domestic ones or because they offer portfolio benefits. On the other hand, trade liberalisation can increase risk either by undermining existing stabilisation mechanisms (either autonomous or policy-based) or because residents consciously switch to a portfolio that offers higher average rewards but greater variability.

Section 4 takes up these issues under five headings.

- Do border price shocks get transmitted to poor households?
- Are markets created or destroyed?
- How well do households respond?
- Do the spillovers benefit the poor?
- Does trade liberalisation increase vulnerability?

***Wages and Employment***

In all countries some of the poor, and in some countries most of the poor, rely on labour markets for the bulk of their income. Thus the effects of trade reform on wages and employment are important, especially those of unskilled workers. If reform boosts the demand for labour-intensive products, it boosts the demand for labour and either (or both) of wages or employment will increase. However, if the poor are mostly in completely unskilled families, while it is semi-skilled labour that receives the boost, poverty will be unaffected – or, possibly, worsened. It is also important where the

various wage rates lie relative to the poverty line. If wages are pushed up from subsistence to higher levels, or if the expanding sectors offer above poverty-line wages, then poverty will be alleviated. On the other hand, if poverty is measured by counting individuals below the poverty line - the headcount index - and wages do not cross critical thresholds, recorded poverty could be unaffected, despite changes in welfare.

In relatively unskilled labour abundant countries trade liberalisation will generally relieve poverty, but not all developing countries fall into this class. For example, many Latin American and some African countries have very strong endowments of mineral and agricultural resources and so liberalisation will stimulate these sectors rather than labour-intensive ones. Similarly, if the unskilled are primarily employed in non-traded sectors, while exports draw mainly on the semi-skilled, a liberalisation accompanied by a real exchange rate depreciation could have adverse effects.

Even if favourable in the long-run, the static gains from trade rely largely on adjusting a country's output bundle. Hence some people are likely to suffer temporary adverse shocks, most specifically in the form of unemployment. The initially non-poor can generally tide themselves over these periods, so poverty statistics will, and public policy should, respond mainly to those who are initially relatively poor, but who suffer such temporary setbacks.

Part 5 of this paper considers these issues under two key headings:

- Does liberalisation raise wages or employment?
- Is transitional unemployment concentrated on the poor?

***Government Revenue and Spending***

Trade reform can affect government revenue, but actually does so less frequently and less adversely than is popularly imagined, because, for example, trade volume and collection rates increase as tariffs fall or because tariff exemptions are removed. Even where revenue falls (as eventually must be true as tariffs fall to zero), it is not inevitable that the poor suffer. It is ultimately a political decision whether the new taxes necessary to make up the shortfall or the cuts in government expenditure that result from falling revenue impinge heavily on the poor.

Thus the final substantive section of the paper asks:

- Does liberalisation actually cut government revenue?
- Do falling tariff revenues hurt the poor?

## 3. ECONOMIC GROWTH AND STABILITY

This section examines the macro-economic links between trade liberalisation, openness and growth. It identifies the effect via growth as the critical – and most contentious – one, considering whether liberalisation aids growth and whether growth aids poverty alleviation. In both cases the answer is 'yes', but not unconditionally. The section then discusses the effects of liberalisation on productivity growth – generally very strong – and its consequences for macro-economic stability, which appear to be mixed.

### 3.1 Does Trade Liberalisation Enhance Growth and hence Alleviate Poverty?

In the long run economic growth is the key to the alleviation of absolute poverty. It creates the resources to raise incomes, and even if 'trickle-down' were insufficient to bring the benefits to the poor, governments will have scope for stronger redistributive measures when income is higher and growth faster. This section considers the question in the title in two parts.

***From Openness to Growth***

Economic theory offers many reasons to expect trade liberalisation to stimulate economic growth. In the medium term reaping the static (efficiency) benefits of trade could look rather like growth. In the long-run the potential positive forces include access to technology and to appropriate intermediate and capital goods; the benefits of scale and competition; the flexibility induced by relying on market signals, and the constraints on government incompetence or corruption, see Grossman and Helpmann (1991) or Lucas (1988), for example, for a discussion. Unfortunately, however, none of the benefits is guaranteed and it is not difficult to construct models in which openness pushes countries into less dynamic sectors (e.g. primary extraction) and harms growth see, for example, Rodriguez and Rodrik (2001). Thus ultimately the openness-growth link is an empirical matter, and it is that literature which this section briefly surveys.

Over the 1990s the conviction that openness is good for economic growth was fostered by several highly visible and well-promoted cross-country studies e.g. Dollar (1992),

Sachs and Warner (1995), Edwards (1998). Recently, however, these have received rough treatment from Rodriguez and Rodrik (2001), who argue, inter alia, that their measures of openness are flawed and their econometrics weak. Moreover, liberal trade is usually only one of several indicators of openness used, and one which often seems to weigh rather lightly in the overall result – see, also, Harrison (1996). Baldwin (2002) argues, however, that since trade liberalisation is never recommended or applied in isolation, trying to isolate its effects from those of associated policies makes little sense.

The difficulty of establishing an empirical link between liberal trade and income or growth arises from at least three sources. First, once one comes inside the boundary of near autarchy, measuring trade stances is difficult: for example, tariffs need to be aggregated, quantitative restrictions assessed and then aggregated, and the levels of credibility and enforcement measured[4]. These different dimensions of trade restriction are far from perfectly correlated (see, for example, Pritchett, 1996) and need to be aggregated into a single index for econometric purposes. Anderson and Neary's (1996) Trade Restrictiveness Index provides a coherent way of aggregating tariffs (given highly restrictive assumptions about behaviour and a pile of data), but can handle non-tariff barriers only once their tariff equivalents are known. The latter are difficult to establish (even conceptually) on a case-by-case basis, and quite impossible for all goods in a broad range of countries.

Second, causation is difficult to establish. Rodriguez and Rodrik (2001) rightly observe that actual openness, usually measured by imports plus exports relative to GDP, is likely to be endogenous, but there is also concern that even policy-based measures, e.g. average tariffs, could be so. Recently, Frankel and Romer (1999) and Irwin and Trevio (2002) have tried to address this problem by instrumenting openness in the income equation, with populations, land areas, borders and distances between trading partners. This appears to be successful although Rodriguez and Rodrik (2001) worry that the instruments might be correlated with factors that boost growth independently of trade – for example, health and institutions - and that adding geographical variables directly to

4Effective openness requires predictability, transparency and convenience of the trade regime, as well as low barriers *per se*. For example, although in 1997 Brazil and Chile had broadly equal average tariffs (12% and 11% respectively), the former was much less open than the latter because its import regime was complex and subject to a good deal of discretionary intervention.

the growth equation undermines the result. Deeper investigation of these concerns, however by Frankel and Rose (2002) suggests that they are inapplicable, and so the latter infer that there is good evidence for a positive causal relationship between openness and income, and hence between liberalisation and medium-term growth.

The third complication is that, while liberal trade policies are likely to be beneficial under any circumstances (because they enlarge the set of opportunities for economic agents), a quasi-permanent effect on growth almost certainly requires combination with other good policies as well. The sort of policies envisaged here are those that encourage investment, allow effective conflict resolution and promote human capital accumulation. Unfortunately, the linear regression model (standard to this literature) is not equipped to identify the necessity of variables rather than their additivity in the growth process. Hints of the importance of these policies, however, can be found in exercises identifying the structural relationships through which openness affects growth. Thus, for example, Taylor (1998) and Wacziarg (2000) both find that investment is a key link and thus that poor investment policies could undermine trade benefits. Rodrik (1999) also contributes by showing how the negative effects of external shocks on growth are mitigated by better institutions for managing distributional conflict

A further avenue for growth effects is the possibility that openness is correlated with improvements in other policies - see Krueger (1978, 1990). Perhaps the most important dimension is corruption: recent evidence from Ades and Di Tella (1997, 1999) shows a clear cross-country connection between higher rents, stemming from things such as active industrial policy and trade restrictions, and higher corruption. The latter, in turn, reduces investment and hence growth.[5] On standard macroeconomic policy, inflation appears to be lower in open economies. Romer (1993) suggests that this is because real depreciation is more costly in terms of inflation in open economies, so that such economies are less likely to run the risks of excessive money creation.

The weight borne by cross-section studies in the recent growth literature is remarkable, particularly since so many economists profess to distrust them. The cross-sectional (or panel) assumption that the same model and parameter set applies to Austria and Angola

is heroic; so too is the neglect of dynamics and path dependency implicit in the view that the data reflect stable steady state relationships; there are huge cross-country differences in the measurement of many of the variables used; obviously important idiosyncratic factors are ignored; and there is no indication of how long it takes for the cross sectional relationship to be achieved.[6] Nonetheless the attraction of simple generalisations has seduced most of the profession into taking their results seriously. One exception is Srinivasan and Bhagwati (2001), who chide the profession for forgetting the problems and neglecting other approaches to the openness-growth link. The latter include detailed case studies of particular countries, which consider a wide variety of causes and channels for growth, but frequently find openness at the heart of the matter, as, for example, with the NBER studies summarised in Krueger (1978).

A second alternative approach is to specify the links between openness and growth and examine them separately. Some studies associate openness strongly with higher accumulation – Levine and Renelt (1992), Taylor (1998), Wacziarg (2000) -- and hence stronger growth, especially over relatively short periods (5 years or so). Others examine the link to productivity using sectoral or firm level date for particular countries, as well as cross-country methods. The latter are discussed in section 3.2 below.

Despite the econometric difficulties of establishing beyond doubt that openness enhances growth, the weight of experience and evidence seems strongly in that direction. Jones (2001) argues that despite the uncertainty about this size of the effect "our best estimate is that trade restrictions are harmful to long-run incomes". Even Rodriguez and Rodrik concede that there is no coherent body of evidence that openness is bad for growth.

***From Growth to Poverty***

Economists generally argue that economic growth tends to reduce poverty – i.e. that the general benefits of growth are not typically off-set by simultaneous worsenings in income distribution – see Bruno, Squire and Ravallion (1998). However, this proposition

5 Wei (2000), on the other hand, suggests that the losses from corruption increase with openness, because corruption impinges disproportionately on foreign transactions, and as a result that open countries have greater incentives to develop better institutions.

6 Brock and Durlauf (2001) also question the ability of economic theory to specify growth equations in tight enough a way to permit traditional classical statistical inference in cross-country regressions, especially given that the determinants of growth might genuinely be highly correlated.

has recently stirred up a surprising degree of controversy, to which we briefly turn now. One recent, but unremarked, contribution is Gallup, Radelet and Warner (1998), who conclude from a cross-country regression that, on average, the incomes of the poor (the lowest 20% of the income distribution) increase proportionately with overall average incomes. They recognise that in some countries the poor see less than proportionate growth (i.e. 'anti-poor' growth), but argue that there are as many converse cases in which the poor have done better than average. They use a sample of 60 countries, including several developed countries, over varying periods since the mid-sixties, and use GDP per head as the proxy for mean incomes[7]. In addition they identify additional independent factors stimulating the growth of the poor's incomes: lower initial income; better health; temperate location; government savings (held to be a proxy for a sound macro stance) and political stability. Openness – defined by the Sachs-Warner (1995) dummy variable – appears to have roughly the same (beneficial) effect on the growth of the incomes of the poor as on average incomes.

These results were more or less replicated by those of Dollar and Kraay (2000) although the latter use a larger sample and considerably more sophisticated econometric techniques which examine the relationship both in levels across countries and in changes through time (national growth rates). Dollar and Kraay relate the mean income of the poor (bottom 20%) to overall mean income plus some additional variables. They never reject the hypotheses that the mean income of the poor is proportional to mean income nor, with the exception of inflation, that a variety of other variables affect it only via mean income. Thus while inflation appears to have an adverse effect on the poor in addition to its growth-reducing effects, countries' income distributions are not significantly affected by: government consumption, the rule of law, democracy, social expenditure, primary school enrolment and two measures of openness. The residual errors of Dollar and Kraay's equations are large and so are perfectly consistent with there being some instances in which growth hurts the poor. But, as with Gallup et al, such cases are, on average, offset by those in which they benefit the poor.

White and Anderson (2001) categorise growth histories into 'pro' and 'anti' poor experiences and find that in over one quarter of cases, distributional changes off-set

7 It is desirable to use different sources of data for the income of the poor and mean income to reduce the chances that the measurement errors in the two variables are highly correlated.

growth effects – i.e. that the mean and 'poor' incomes moved in different directions. They are not very successful, however, at identifying the factors that make growth pro- or anti-poor. They run 'standard' growth equations for the income growth of each quintile and examine differences in the resulting co-efficients. It is hard to detect clear patterns, but one stark result is that openness is associated with significantly higher income growth everywhere except in the top quintile, and that the greatest effects proportionally are for lower quintiles. That is, openness appears to be progressive.

In a similar vein, Lundberg and Squire (October, 2000), who model growth and income inequality simultaneously, also present quintile regressions. They, too, find positive effects from openness (the only one of their variables that is significant across all quintiles) but with increasing co-efficients as income rises (i.e. regressivity)[8]. Their co-efficients for the top and bottom quintiles are significantly different, but as a group the five co-efficients are not.

There are several questions about the robustness of these studies of growth, openness and poverty (in addition to those raised above in relation to cross-country regressions). First, the data on the incomes of the poor are clearly subject to error[9]. Reporting errors and sample biases are likely to be serious at the bottom of the distribution and in many cases Dollar and Kraay had to infer the share of the lowest quintile from a broader measure of income distribution. The World Bank's sample of income Gini co-efficients (e.g. Ravallion and Chen, 1997 and several later extensions) has been criticised for severe implausibility - e.g. by Atkinson and Brandolini (2001). Knowles (2001) shows that the relationship between inequality and growth can change once one distinguishes between data based on income measures of inequality from those based on consumption data.

Second, some, e.g. White and Anderson (2001), argue that Dollar and Kraay essentially estimate an identity because the mean income of the poor is identically equal to overall mean income multiplied by the poor's share of that income divided by the proportion of observations included in the definition of 'the poor'. But since Dollar and Kraay include in their equation not the share of the poor but a series of variables that are said to explain

8 Lundberg and Squire's first draft of this paper suggested that openness increased poverty and attracted a good deal of comment. It proved to be incorrect, however.

it, and since what these variables do not explain could in principle be picked up by mean income, driving its elasticity away from unity, the critique is misplaced.[10]

Third, there is also a possibility of endogeneity problems. Recent research has suggested that income distribution (and by association, poverty) could influence growth rates (and hence mean incomes) – see Aghion, Caroli and Garcia-Peñalosa (1999), although the most recent research suggests the contrary – Forbes (2000). In addition, the share of the poor and mean incomes could have common determinants.

Fourth, Srinivasan (2000a) cautions on data and argues that since so many aspects of the poverty-growth link are *sui generis,* we will learn more from detailed case-studies than from broad-brush regressions. He summarises his views elsewhere as being that 'it is simplistic to postulate and seek a stable, one-way relationship between growth and poverty' (Srinivasan, 2000b).

Finally, the average income of the poorest quintile is a very crude indicator of poverty – especially absolute poverty. Ravallion (2001) offers a general discussion of the poverty-growth link and also regresses the absolute poverty ratio on mean income. A 1% increase in mean income results, on average, in a fall of 2.5% of the number in absolute poverty, or 2% if the mean income measure is instrumented to allow for errors of observation. Of course, individual experience will vary around this average growth elasticity of poverty, with one of the most important determinants being initial levels of inequality. The more compact the income distribution the greater the share of population likely to be clustered about the poverty line and hence the greater the effect of moving the distribution bodily in one direction or the other.[11]

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9 So too, of course, are those on mean income, but probably less so.

10 Viewing the Dollar and Kraay approach as explaining the share of the bottom quintile with mean income and a series of other variables does not permit a more sophisticated concern. The share of the poorest quintile is a pure number bounded strictly between 0 and 0.2 and effectively between about 0.04 and 0.15. Mean income is unbounded and defined in monetary units. As the sample is expanded to include countries with a larger and larger range of mean incomes, the co-efficient on mean income will tend towards zero in order to accommodate the bounded share to the expanding independent variable. However, this would not prevent us from identifying an underlying relationship in which over the observable range of income the share of the poor fell systematically. Thus there is still content in Dollar and Kraay's failure to find such a relationship.

11 Ravallion (1998) suggests the robust empirical rule of thumb that the elasticity of the poverty count with respect to mean incomes is roughly proportional to (1 - index of inequality).

Ravallion and Datt (1999) explore the factors behind pro-poor growth more thoroughly in the context of differences between Indian states. Higher farm yields, higher development spending and lower inflation all appear to reduce poverty. Most interesting, however, is higher non-farm output: this also helps to reduce poverty but much more strongly where farm productivity is higher, the rural-urban divide smaller and rural education better (all of which indicate relatively higher initial levels of rural income). Translated into the terms of national growth (and probably openness), pro-poor growth seems more likely to occur where initial conditions give the poor the ability to take advantage of the opportunities it generates.

The evidence is quite convincing that growth, *on average*, benefits the poor, and that growth generated by greater openness is no worse in this respect (and may even be better) than other growth. These observations are an important antidote to frequently voiced concerns to the contrary, and place the burden of proof on those who would argue the contrary in any specific case. It is quite clear, however, that on occasions growth can be accompanied by worsening poverty and the challenge is to identify why. Indeed, much of this paper can be seen as trying to answer precisely this question in the case of trade liberalisation.

### 3.2 Trade Liberalisation and Productivity

An alternative approach to the links between trade liberalisation, growth and poverty is to consider the first's effects on productivity. By universal agreement improved productivity is necessary for sustained economic growth and development. However, it may not be sufficient and, because of its distributional implications, its beneficial effects on poverty could be less direct than those of growth emanating from other sources. Thus, for example, if higher productivity reflected declining inputs rather than increasing outputs, its short-term effect could be to reduce employment and hence exacerbate poverty. Moreover, despite the strong presumption in modern growth theory, with its references to increased competition, access to new technology and better intermediate goods and so on, the response of productivity to trade liberalisation is ultimately ambiguous[12]. Thus, as ever, there is an empirical issue to be settled.

An influential cross-country analysis of trade and aggregate productivity is Coe,

Helpman and Hoffmaister (1997). They construct an index of total knowledge capital (measured by accumulated investment in R&D) in each industrial country. Trading partners get access to a country's stock of knowledge in proportion to their imports of capital goods from that country. Using import-weighted sums of industrial countries' knowledge stocks to reflect developing countries' access to foreign knowledge, they find that, interacted with the importing country's openness, the latter has a statistically significant positive effect on total factor productivity (TFP). Their sample comprises quinquennial observations on 77 developing countries over 1971-90.

Intuitive as these results are, they leave some questions unanswered. First, they do not seriously consider competing explanations of access to knowledge capital. Second, they imply an excessive bilateralism in access to knowledge. Coe et. al.'s measure implies that the only way for, say, Ghana to obtain French knowledge is to import equipment from France. But if Germany imports from France (and so, by hypothesis, accesses French knowledge), then Ghana's then imports from Germany, should give it at least some access to French knowledge. Lumenga-Neso, Olarreaga and Schiff (2001), who advance this explanation, show that recognising such indirect knowledge flows offers a better explanation of TFP than the earlier studies.

A second approach to the link between trade liberalisation and productivity is cross-sectoral studies for individual countries. Many of these have shown that reductions in trade barriers were followed by significant increases in productivity, generally because of increased import competition. See, for example, Hay, (2001) and Ferriera and Rossi (2001) on Brazil, Jonsson and Subramanian (1999) on South Africa[13], and Lee (1996) on Korea. Kim (2000), on the other hand, also on Korea, suggests that most of the apparent TFP advance is actually due to the compression of margins and to economies of scale. Import competition makes some contribution via these effects, and also directly on "technology", but overall Kim argues that it was not the major force. Trade liberalisation plays a similarly minor role in Sharma, Jayasuriya and Oczkowski's (2000) results on Nepal, although its effects are small mainly, the authors argue, because necessary complementary policies such as infrastructure investment were absent.

12 A sceptical view of the early literature on the links is Pack (1988).

The sectoral studies relate TFP to a sector's own trade barriers and thus imply that competition is the causal link. But for general liberalisations it is likely that barriers on imported inputs also fall and this could be equally important. At an aggregate and sectoral level Esfahani (1991) and Feenstra et al (1997) suggest such a link, as do Tybout and Westbrook (1995) at the firm level. The last study provides a comprehensive view of Mexican manufacturing firms over the liberalisation of 1984-90. Among its more important findings are that rationalisation gains (the shrinking or elimination of inefficient firms) are an important contributor to sectoral productivity gains, that cheaper intermediates provide significant productivity and profitability stimuli, and that competition from imports seems to stimulate increases in technical efficiency (with the strongest effects in industries that are already most open).

Firm level data also allow one to test the perennial claim that exporting is the key to technological advance. While macro studies or case-studies have suggested links to productivity, enterprise level data have shown a much more nuanced picture. Bigsten et al (2000) find a positive stimulus from exports to productivity in Africa, and Kraay (1997) is ambiguous for China, but Tybout and Westbrook (1995) and Aw, Chung and Roberts (1999) find little evidence for it in Latin America and Asia respectively. The fundamental problem is that of causation: efficiency and exporting are highly correlated because efficient firms export[14]. Hence researchers must first identify this link (by careful modelling of the timing of changes in exports and productivity) if they are then to isolate the reverse one. Tybout's (2000) excellent survey suggests that the positive results for Africa and China may have arisen because data shortages obliged their authors to use much simpler dynamic structures than the Asian and American exercises.

The strong positive relationship between openness and productivity generally found at the sectoral level and the somewhat weaker one at the firm level may be reconciled by noting that exporting will allow more efficient firms to grow faster than less efficient ones and that import competition may pick off the weaker domestic firms. Firm turnover is significant in developing countries (Roberts and Tybout, 1996) and evidence for the

13 Jonsson and Subramanian also conduct a time series exercise which links TFP positively to the openness ratio - (exports plus imports)/GDP.

14 The same causation difficulty arises in interpreting the observation that where a region exports heavily, *all* firms are more productive: is it positive spill-overs or comparative advantage?

beneficial rationalisation effects of trade liberalisation may be found in Tybout and Westbrook (1995) and inferred from the lower productivity dispersion across plants in open economies (Tybout, de Melo and Corbo, 1991).

Rationalisation effects highlight the poverty concerns about openness. Particularly in Africa, significant numbers of industrial enterprises have been unable to cope with increased import competition, and, in places, this has resulted in a substantial contraction in industrial employment. Lall's (1999) study of technological adaptation in the Kenyan, Tanzanian and Zimbabwian engineering and garment sectors finds the majority of firms responding to pressure by contracting rather than upgrading aggressively. Among the reasons Lall advances for this are the lack of preparation of firms for competition, the absence of policies to promote technological improvement (especially among SMEs) and the poor technological and human infrastructure in these very poor countries. Direct evidence on micro and small enterprises confirms the need for adjustment: based on evidence from five African countries, Parker et al (1995) found that firms that adapted quickly were net beneficiaries of import liberalisation, while those ill-prepared to face competition lost out.

Sectoral analyses are applied almost exclusively to industrial sectors. In many cases these will lie at the heart of development strategies and the generally positive link to openness is a cause for long-run optimism. For most of the poor, however, even if productivity in rural non-farm activities is important, agricultural productivity will be of the most direct interest. Historically there has been considerable debate about whether productivity improvements are good for the poor, but recently the tendency has been on the optimistic side – see, for example, Datt and Ravallion (1998).

What is less clear is how agricultural productivity is related to openness and trade liberalisation. In section 4.2 below we note that the liberalisation of farm input markets stimulated output per head in Bangladesh, but, of course, not all this is productivity gain in the TFP sense. Martin and Mitra (1999) show that TFP increases are generally higher in agriculture than in industry, but do not seek to explain them. They do note, however, a strong tendency for international convergence of productivity levels, which suggests

effective transmission forces. Whether these are via trade or via technology transfer, however, is unclear.[15]

Of course, openness in a broad sense - openness to foreign technology - lay behind the greatest leap in agricultural productivity in recent times - the Green Revolution. The huge increase in grain productivity benefited farmers directly, but also in different proportions in different places, consumers, wage labourers and rural non-farm workers. Renkow (2000) makes the obvious point that the distribution of the gains depends very much on whether the country is open: if trade determines the price of a food product, productivity increases mainly benefit producers, whereas in closed economies the benefits come mostly as price declines for consumers. Moreover, despite fears expressed at the time, poor farmers were able to take advantage of the advances by learning appropriate technologies and because some high yield varieties were developed for low-input cultivation (IFAD, 2001).

One complication in virtually all this literature is actually measuring TFP. The prevailing methodology – e.g. Bernard and Jones (1996) – assumes perfect competition and equates marginal products with factor shares as is implied by Cobb-Douglas technology. Attempts to relax these assumptions by, say, estimating production or cost functions econometrically have proved disappointing especially for developing countries, with apparently implausible estimates very common (e.g. see Griliches and Mairesse, 1995). Besides, measuring factor inputs (especially capital) is difficult, not only conceptually, but even merely in terms of obtaining data – see, for example, Larson, Butzer, Mundlak and Crego (2000) on agricultural inputs.

Overall the recent empirical evidence seems to suggest that openness and trade liberalisation have a strong influence on productivity and its rate of change. In many cases the latter will be immediately and directly poverty-alleviating and in the long run they are a necessary part of any viable poverty-reduction strategy. As we noted at the outset, however, the immediate effect of an increase in productivity could be to reduce inputs as well as to raise output. The net effect on employment will then depend on the relative sizes of the output and productivity shocks and will be influenced by factors

15 Their work also raises the general issue that it is actually rather difficult to get accurate measures of productivity or even of factor inputs.

such as the flexibility of labour and credit markets. It is not difficult to imagine adverse short-term implications for jobs and poverty, and so we review the evidence on these in Part 5 below.

### 3.3 Are Open Economies Less Stable?

Macroeconomic volatility is one of the most important sources of risk for all households, both poor and non-poor. Hence we examine briefly the links from trade liberalisation to output volatility and terms of trade volatility. The presumption is usually that open economies are less stable - see, for example, Rodrik (1998) who explains the positive correlation between openness and government size in such terms - but this is not particularly well-grounded empirically.

As Razin and Rose (1992) elaborated, more open capital markets should be associated with smoother consumption but more volatile investment, whereas more open goods markets should be associated with greater output volatility. This is because goods market integration allows economies to specialise and thus reduces risk spreading in production.[16] Moreover, if export markets display random, undiversifiable shocks, greater openness increases exposure.

In their empirical tests over 1980-88, however, they find no significant correlations between openness and volatility – mainly because many shocks appear to be common across countries. Easterly and Kraay (2000), on the other hand, find that small states, which are generally more open than larger states, tend to have more volatile growth rates, albeit around higher averages. The reason is not that their terms of trade are more volatile, but that a given terms of trade volatility has greater effects on output the more open the economy.

Turning to the literature linking openness to terms of trade (ToT) volatility and the impact of such volatility on growth, the Prebisch-Singer hypothesis suggests that, if the supply of primary products is relatively price inelastic (compared to that of manufactures) fluctuations in world demand will make primary commodity prices more volatile than those of manufactures. If trade liberalisation encourages specialisation

16 These results do depend on the nature of the shocks.

towards primary commodities, this suggests that it will increase the volatility of developing countries' ToT. In fact, however, Lutz and Singer (1994) find the very opposite – a mild tendency for openness to reduce volatility – while Easterly and Kraay (2000) find no relationship between volatility and country size (which, in turn, is correlated with openness).

Bevan, Collier and Gunning (1990) however suggest that the causality between the ToT and openness may operate in the opposite direction, with ToT shocks giving rise to trade reform. They cite the case of Kenya in which an increase in the world price of coffee raised government revenues and consequently public expenditure on infrastructure. When prices fell, the government liberalised in order to access foreign finance for their expenditure programmes. This is a plausible story, and one which could dominate any empirical relationship between trade liberalisation and the terms of trade. However, it concerns a single specific change in the terms of trade, not volatility per se. It is possible that a series of such episodes would suggest a connection between repeated ToT changes and increasing liberalisation, but the case remains to be made.

Turning to the effects of ToT volatility on growth, the simple presumption would be that volatility causes uncertainty which, in turn, reduces investment and therefore growth. Empirical tests of this hypothesis however give mixed results, starting with MacBean's (1966) classic refutation. Singer and Lutz (1994) provide a fairly detailed empirical analysis. They find no evidence that volatility in the Net Barter Terms of Trade harms growth – indeed, signs of the reverse – but they do find that volatility in the income terms of trade does. However, this is not, apparently, true in low-income or primary product exporting countries, the two groups where poverty is most prevalent. Basu and McLeod (1992) construct a simple open economy stochastic growth model and test it using VARs for twelve developing countries. Their results confirm the existence of persistent effects of ToT shocks on output levels and suggest that greater ToT variability reduces economic growth.

Guillaumont et al (1999) use cross-country data to argue that Africa exhibits higher "primary" instabilities (i.e. structural instabilities including ToT shocks) than countries from other regions, and that this has negatively affected its growth by increasing the instability of investment and the real exchange rate. These latter "intermediate"

instabilities affect growth more by reducing the rate of total factor productivity growth than through reductions in the rate of investment. Although such costs to ToT volatility are relevant to open economies, the role of openness in generating these instabilities is not spelt out; hence it is not clear whether, even in the volatility dimension alone, reducing openness would help.

A third possible link is via financial markets. Svaleryd and Vlachos (2001) argue that protection might deter the growth of financial markets because governments use it to shelter firms from shocks. If so, trade liberalisation could promote financial development, as, indeed, their data tend to suggest. In turn, financial development is often claimed to be an important input to growth – e.g. Easterly, Islam and Stiglitz (2000).

## 4. HOUSEHOLDS AND MARKETS

This part turns to households and markets. Treating the household as the basic unit of which poverty is defined, it asks how the price changes generated by trade reforms impinge on poor households given their consumption and production bundles. The starting point is the observation that, given labour and transfer incomes, the first order approximation of the welfare effect of a change in prices is

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

where $q_i$ is production of good: $c_i$ consumption and $\Delta p_i$ the price change. Deaton (1997, chapter 3) provides the analytical background as well as interesting examples of this approach applied on domestic reforms.

Even in its simplest form, (1) provides a powerful starting point for identifying the poverty effects of trade liberalisation. Barrett and Dorosh (1996) predict the short-run effects of rice price changes in Madagascar (partly induced by import policy) by applying kernel estimates to household data on net sales as a share of income [i.e. $(q_r - c_r)/y$]. They estimate that one third of poor rice farmers could lose from higher prices or price variability.

Sahn and Sarris (1991) apply basically this methodology to several African countries to determine the consequences of structural adjustment programmes on rural small-holders. (They consider wages as well as sales of output as sources of income). Their work is attractive in its reliance on observed *ex post* price data but of course they do not relate these to trade policy changes. Levinsohn, Berry and Friedman's (1999) study of changes in Indonesian price indices by class of household is essentially (1) with quantities set at zero. They find that the poor suffered more from price increases in 1997 than the non-poor, although with significant geographical variations. Their's are not estimates of the poverty effects of the crisis per se, however, because they ignore changes in income, and any induced changes in consumption.

Thomas et al (1999) and Suryahadi et al (2000) also examine the consequences of the Indonesian crisis and conclude that the greatest challenge in making poverty assessments is constructing the correct price deflator. The former, in a very thorough study, also show that households in agricultural regions fared relatively well in income terms, essentially because the prices of their output increased relatively more.[17] Regions with many civil servants, on the other hand, fared particularly badly because wages were held back far behind prices.

This part of the paper comprises sections on: how prices are transmitted from the border to poor households; whether markets for their output, purchases or services are destroyed or created by trade liberalisation; how households respond to trade-related price shocks; whether spill-overs between households exacerbate or alleviate poverty; and whether trade reform increases household vulnerability.

### 4.1 The Transmission of Border-Price Shocks

In any economy there are several steps of transmission between changes in (tariff-inclusive) border prices following external liberalisation and price changes experienced by producers or consumers at local levels. The extent of transmission may be limited by a number of factors including transport costs and other costs of distribution; the extent of competition between traders and the functioning of markets more generally; and infrastructure, domestic taxes and regulations. Some of these costs, such as transport

[17] This result refers to all households, not just poor ones.

costs, are inevitable (though they may be increased by other factors such as fuel taxes or inadequate infrastructure); others represent direct economic inefficiency such as monopoly or monopsony power exercised by traders.

At its simplest, we can represent the local price of an importable good ($P^m_l$) as

$$P^m_l = P_w r\,(1+t_m) + \gamma_m \qquad (2a)$$

Where $P_w$ is the world price, r the exchange rate, $t_m$ the proportional tariff or tax and $\gamma_m$ the transaction costs on importables. For an exportable the corresponding equation is

$$P^x_l = P_w r\,(1-t_x) - \gamma_x \qquad (2b)$$

These equations illustrate four simple points. First, the proportional changes in $P^m_l$ are smaller than those in tax-inclusive border prices [$P_w r\,(1+t_m)$], while those in $P^x_l$ are larger than those in $P_w r\,(1-t_x)$. Second, changes in trade taxes ($t_i$) could be (partially) offset by changes in world prices if the country or countries under consideration are large. For certain export products this is probably true for some developing country producers – see, for example, Lutz and Singer (1994) – but we do not pursue it further here. Third, correcting exchange rate distortions can have major effects on the prices faced by the poor - see, for example, Krueger (1992). Fourth, changes in border taxes ($t_i$) can be off-set or exacerbated by changes in $\gamma_i$. These may be exogenous – i.e. due to (domestic) policy changes such as when trade liberalisation is accompanied by marketing reforms – or endogenous, as, for example, when an imperfectly competitive distribution sector absorbs some of the border price change into its own margins.

The available evidence on the effectiveness of transmission mainly concerns prices in agriculture (where the issue is perhaps most important) at the national level. Many export crops, especially those of small farmers, are sold through public or private marketing agencies, whose prices are less than the f.o.b. export price (see, for instance,

Mundlak and Larson, 1992; Lloyd et al, 1999). The differential reflects transport, marketing and the other costs of the agencies (McKay et al, 1997), plus, in many instances, monopsonistic profits.[18] In the case of public sector marketing agencies, the purpose of their operations was often to insulate farmers from world price fluctuations and thus trade liberalisation per se would not be transmitted at all. The evidence suggests that this was not always achieved (Mundlak and Larson, 1992) but in any case the net effect was usually to tax farmers on average. In the case of Pakistan, Dorosh and Valdes (1990) find that farm gate prices received by farmers increased significantly as a result of trade reform, in large measure because of reduced exchange rate overvaluation which had any eroded any benefits from trade policy.

The mere presence of transactions costs provides natural protection to local producers of import competing products, a factor found to be important by Milner, Morrissey and Rudaheranwa (2001) in Uganda. But such costs also tax prospective purchasers of imports (producers and consumers) and prospective suppliers of exports. Moreover, as just noted, they attenuate and magnify price changes respectively. Glewwe and de Tray (1989) illustrate the attenuation effect in the potato market in Peru.

Price transmission is likely to be particularly ineffective for poor people living in remote rural areas (where $\gamma_i$ will be higher), in the absence of specific policy interventions to improve it. In extreme instances producers or consumers can be completely insulated from changes taking place at the border – i.e. goods cease to be tradable. Goetz (1992) reports that high fixed transport costs prevent some households from trading in many parts of sub-Saharan Africa, and IFAD (2001) lay the blame substantially on poor infrastructure. Minot (1998) found in Rwanda in the early 1980s that changes in relative prices at the border had little effect on the predominantly rural low income households because of their isolation from the cash economy. This presumably reflects their physical isolation, which curtails their ability to gain from trade (even within Rwanda) and trade liberalisation, and thus reduces the level of their income significantly. Thomas et al (1999) find that isolated regions of Indonesia were insulated from much of the 1997 crisis.

18 And monopoly profits where the agency also controls the distribution of inputs.

Once internal trade, and hence transmission, is possible, both the level and the (endogenous) change in transactions costs are relevant. For example, Vietnam experienced significant increases in rice producer prices as export restrictions were lifted over the 1990s, and transformed itself from a net importer into a significant exporter.[19] Nonetheless, Goletti, Minot and Berry (1997) argue that rice exports are constrained by a relatively underdeveloped marketing system controlled by a small number of state enterprises. Measures to enable competition between central and local state enterprises, have helped, but these authors argue that significantly greater liberalisation, including the entry of the private sector, is required to enable Vietnam to realise its full potential as a rice exporter. This, they argue, will reduce the level of transactions costs and the extent to which border price changes can be absorbed into distribution rather than being passed on to farmers.

The transmission of price shocks to local levels is related, but not identical, to the issue of spatial market integration. The degree of market integration is typically assessed in terms of movements in spatial price spreads – the extent to which prices in different regions (including the border) move in parallel (see, for example, Dercon, 1995). If this is high, border changes will be transmitted strongly, but it does not necessarily indicate the competitiveness of local markets (Badiane, 1997) because it does not take account of the level of costs and so does not demonstrate that price *levels* converge (Baulch, 1997). For the Philippines, Baulch (1997) finds arbitrage between markets to be quite efficient despite large constant difference in price levels due to transaction costs.

But introducing private distribution will not help if it amounts merely to the creation of private monopolies[20] (Badiane, 1997, 1998; Goletti et al, 1997), as recent evidence on the privatisation of marketing arrangements in Zambia and Zimbabwe illustrates (Oxfam-IDS, 1999; Winters 2000b). In Zimbabwe, three private buyers emerged after the privatisation of cotton purchasing, including one owned by the farmers. There was increased competition, resulting in higher output prices and better supplies of inputs (including provision of credit) and farm income increased appreciably. In Zambia, on the other hand, when the government abolished the official monopsony in maize, the activity became dominated by two private firms, which possibly colluded to keep prices low and

19 Equations (3) do not easily cope with quantitative restrictions of this kind, but this case may be thought of as the transmission of border policies despite high domestic transactions costs.

which abandoned purchasing altogether in remote areas. The last point essentially reflected the deterioration of critical infrastructure – rural roads – which raised transaction costs above viable levels. It illustrates the importance of physical as well as policy-based frictions to trade (see also section 4.2).

Badiane and Kherallah (1999) show that the domestic liberalisation of food crop farming in Africa had a strong effect on reducing poverty. They argue that it brought about increased levels of investment by private traders, and an expansion in their activities. This created employment for low skilled labour in itself, but, in addition, it reduced retail prices for food, and various transactions costs. Thus domestic agricultural reforms can amplify the benefits of agricultural trade reform for poverty, even if it reduces natural protection for some.

### 4.2 Are markets created or destroyed?

The biggest impacts of trade reform are often associated with the creation or destruction of markets. Greater openness can result in a wider variety of commodities being available, or create new opportunities for production (e.g. by allowing imported inputs). At the same time other markets may cease to exist, for instance due to the effects of increased import competition on a local market. Often, however, it is the measures that accompany trade liberalisation, such as the privatisation of marketing arrangements, that eliminate markets, rather than trade liberalisation itself.

Romer (1994) argues that the most substantial welfare costs of trade restrictions come from the goods and services that they exclude from the market and the loss of productive activities that results from that exclusion. A good or service will not be produced – or imported – if fixed costs make it unprofitable, as Romer elegantly shows by applying Dupuit's bridge building example to trade policy. Even if a bridge is operated as a monopoly by the firm that constructed it, it can still provide substantial social benefits in terms of the surplus it provides – the "Dupuit triangle". An ad valorem tax on bridge crossings does not affect the monopolists' optimal price or output as long as the bridge is still built. It does reduce the monopolist's profits, however, so that, at some level, profits no longer cover fixed costs and the bridge will not be built; at this point the welfare cost of the tax to society becomes substantial.

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20 Unless the private sector is immensely more efficient technically.

This basic point applies widely, including to trade taxes. Substantial welfare benefits can come from technological change and diffusion of knowledge, for which trade is often a very important vehicle. Romer argues that the main costs of trade restriction may come from its adverse impact on the adoption of new technologies, and on the variety of productive activities and commodities. The growth literature surveyed above is suggestive, and Gisselquist and Harun-ar-Rashid (1998) report significant direct benefits to agricultural producers in Bangladesh as liberalisation increased the availability of inputs. Consumers too benefit from the increased availability of goods. Booth et al (1993), in a participatory study in Tanzania, find that, following liberalisation, the greater availability of goods at international prices was regarded as a substantial improvement compared with the past, even by quite poor rural people, and particularly by women. On balance, the communities considered the improved availability of goods to have more than compensated for the steep rises in real prices that had accompanied improved supply.

But where trade liberalisation, or accompanying changes in domestic marketing arrangements, destroys markets, households can become completely isolated from the market and suffer substantial income losses (Winters, 2000b). For instance, if official marketing boards provided small farmers with inputs secured against future output, whereas, post-liberalisation, private agents or banks do not, such farmers could lose even if output prices have risen substantially. As noted above, the abolition of the official maize purchasing monopsony in Zambia in the early 1990s led to the abandonment of purchasing altogether in remote areas, reportedly causing great hardship.[21] In part this was due to the deterioration of the roads, which made the transactions costs of collecting small consignments in rural Zambia too high to make any trade worthwhile. But it also illustrates a simple, and sometimes neglected, methodological point: the effects of reform depend on the effects of the policies that it is undoing. In Zambia the marketing board's policy of pan-seasonal and pan-regional pricing was essentially a subsidy to small and remote farmers (a large one in view of the poor infrastructure in remote areas). The privatisation removed the subsidy, so it is not surprising that these farmers suffered.

21 We say 'reportedly', for one commentator has argued privately to us that farmers in the remote Northern Province never sold much to the official buyers, preferring instead to trade informally over the border with Malawi.

The extent of their suffering was emphasised, however, by the discontinuous nature of the change.

Finally, in an environment of trade liberalisation, policy interventions can help to create markets that would be viable for the poor but which would otherwise not form. One example is the creation of jobs for young women in the clothing export factories in Bangladesh. Despite their short-comings by Western standards, it is widely accepted that these jobs have transformed the lives of these women - see, for example, Kabeer (2000). Two other examples illustrate the gains from trade by highlighting the problems that its removal causes. Head (1998) reports the widespread distress of female workers in Paarl, a town in South Africa, when the EU scaled back its imports of their canned fruit.[22] Similarly, Henson et al (2000) report that the near cessation of EU imports of fish from Tanzania over 1997-8 cut fishermen's incomes by 80% (p.14). In these examples the loss of trade implies the cessation of the activity concerned. A more modest version of the same story occurs if transactions costs cause a product to become non-tradable, as postulated in the simulation model of de Janvry, Falchamps and Sadoulet (1991). They show how such non-tradabilities could affect the responses of other tradables to market shocks and hence the welfare consequences of the latter. Unfortunately, there is to our knowledge no empirical (as opposed to numerical) implementation of these ideas.

### 4.3 How do households respond?

To the extent that the effects of trade reform are transmitted to local levels, the next question is how agents respond to them. To what extent are agents in general – and the poor in particular – able to protect themselves against any potential adverse impacts and to take advantage of potentially favourable effects? Such ability affects the magnitude of a real income shock – raising it algebraically - although not normally its sign. Again the nature of local markets and the quality of local infrastructure are likely to play an important role. Both the production and consumption responses of household are important.

22Head writes that "working in the canning lines for 5 or 6 months of the year…the women workers…developed…a sense of independence" (p.10) which was the first casualty of the retrenchment of the canning plant, and that the workers moved from 'a hard but honourable life, to a life of despair and destitution' (p.2).

***Production***

The most plentiful evidence on production effects concerns responses to changes in prices, usually in agriculture, based on aggregate time series data. Many such supply response studies, whether for individual crops (e.g. Bond, 1983) or agriculture as a whole (e.g. Schiff and Montenegro, 1997), suggest that in aggregate agricultural producers are quite responsive to price incentives, when they have access to the necessary complementary inputs such as inputs or credit (McKay et al., Morrisey and Vaillant 1997), and with complementary policies from government such as information and extension services.

But to assess the poverty impact of price changes, one needs to focus on the responses of individual producers, especially small farmers. This is most easily explored using micro (farm) level data, though few such studies have been conducted. Using micro level panel data for farm households in Zambia over the period 1993/94 to 1994/95, Deininger and Olinto (2000) show that for many households a major constraint on improvements in agricultural productivity following external liberalisation was the absence of key productive assets (draft animals, implements). Similarly, based on a small panel of farm households in Mexico, López, Nash and Stanton (1995) find that those with low levels of capital inputs were, on average, less responsive to price incentives than those with higher levels. But farmers with little capital were also those who had more problems obtaining credit, were less likely to use purchased inputs, were less educated and farmed poorer quality land, any or all of which could account for their lower supply response. Similar results were found by Heltberg and Tarp (2001) for Mozambique. These studies highlight the importance of complementary policies targeted at small farmers to enable them to benefit from new opportunities, for example in fostering asset accumulation, improving access to credit, and providing good quality extension services.

A case where constrained responses are frequently alleged to have rendered trade liberalisation harmful is the effect of NAFTA on poor corn producers in Mexico. Several *ex ante* studies forecast problems for small farmers - e.g. Levy and Van Wijnbergen (1992) - but Nadal (2000) is, to our knowledge, the only thorough *ex post* study. He finds that though the corn price fell, small and poor farmers maintained their production

levels of corn, even increasing their planted areas[23]. In part this presumably reflected the costs of switching activities, but it was also partly because much of their output was for subsistence purposes, and the prices of substitute crops also fell sharply. With so little adjustment, the fall in the price of maize reduced these producers' incomes both directly and through reduced non-farm employment opportunities; increasing the cultivated area could only cushion this marginally. The depth of these farmers' plight, however, seems to lie less with trade liberalisation per se, than in the fact that the peso crisis of 1994 led the government to abandon both the phasing in of liberalisation and the adjustment support measures planned for the transition period.

Two other aspects of this story warrant note. First, one aspect of the response of households to the reduced employment opportunities in rural areas was male labour migration, which increased the workloads for women and children remaining behind (Watkins, 1997). Second, the prospective consumer gains from corn liberalisation – lower consumer prices – also failed to materialise. Nadal notes that the cartelised tortilla sector was able to maintain prices despite the reduction in its costs following liberalisation.

As well as its impact on production, trade liberalisation in agriculture frequently provides incentives for such producers to start to supply the market - i.e. for commercialisation.. Heltberg and Tarp (2001) find this effect to be substantial in the case of Mozambique in 1996-97. They find that the same factors influence both poor and non-poor farmers' decisions about whether to market their output, notably land and capital endowments, and the characteristics of the farms such as yield and risk. However, the non-poor are generally better endowed than the poor with respect to these factors, and so are better placed to respond.

In addition, some agricultural households are better placed than others to deal with the commercialised environment that results from trade liberalisation. For instance, in Malawi, trade liberalisation encouraged the emergence of traders who buy food commodities from farmers and sell in urban areas or export (Parris, 1999). However because most smallholders are unable to store their output, they tend to sell in the immediate post-harvest period when prices are low rather than wait until prices would be

23 Confusingly, Nadal uses the term "subsistence farmers" for such people.

higher. This inability to cope with fluctuating prices can penalise poor farmers and compromise food security, for as well as selling low they may need to buy in the lean period when prices are high. Rather than being an argument against commercialisation and trade liberalisation per se, however, this example rather emphasises the importance of appropriate institutions to help or encourage farmers to cope with fluctuating prices (such as access to storage or credit).

One aspect of a move towards more commercialised agriculture is the switch from food to cash crops. A concern frequently expressed about this is that it could compromise household food security or health status. Elson and Evers (1997) write of Uganda: '… adjustment measures have elicited a positive export supply response but the greater demands on female labour time have damaging repercussions for the health and well being of children. Survey data reveal that the expansion of NTAE [non-traditional agricultural exports] has meant that men work for wages on others' farms to the neglect of land preparation on their wives' food farms. Increasing workloads of women have led to a decline in breast feeding and worsening child care practices and food insecurity has been intensified …'. But the effect on nutrition is not necessarily adverse if commercialisation leads to significant gains in smallholder income (von Braun, 1989; von Braun, Hotchkiss and Immink, 1989), and increased agricultural commercialisation can have other favourable impacts on poverty, for example on the demand for landless workers (Kennedy and Cogill, 1987).

***Consumption and Labour Supply***

Equation (1) provides a first order approximation of the welfare effects of a price change. If we take quantities as given (determined by a separable income-generation model) we can use consumer theory to explore how consumption changes to take advantage of the new price vector. Such changes are typically calculated by estimating the demand system for a (representative) consumer (or class of consumer) and applying predicted or observed price changes to it. This is very much in the tradition of tax reform analysis, some parts of which include trade taxes - see Newbery and Stern (1987).

A pertinent example of this approach, although only of a hypothetical policy change, is Ravallion and van de Walle's (1991) study of Indonesian rice reform. They use detailed data to estimate household demand equations and apply to them assumed income and

price changes. They show, inter alia, that the results depend partly on how the government passes the budget shock implied by rice price changes onto consumers and on what poverty line is used. The very poor are net consumers of rice and so suffer from the price rises, whereas farmers just below the standard poverty line are net producers and hence benefit and show positive chances of escaping from poverty. Given that so much of the worst poverty is among self-employed farmers, changes in input and output prices can be just as important a determinant of poverty as changes in wage rates.

A major technical problem with empirical demand systems is that, having data for only one period, researchers have had to rely on the geographical variation of prices to identify the price effects. Deaton (1988) shows that the unit values of purchases reported by individual households will reflect quality, which is endogenous and correlated with income, as well as true prices, which are exogenous. This will bias the estimates unless relatively sophisticated methods are used (See Deaton, 1997, for an accessible account.) Deaton (1997) uses these methods to discuss the implications of tax reform in India and Pakistan. In Pakistan a reduction in the effective domestic subsidies to rice and wheat (due, in the case of rice, to export taxes) would be efficiency enhancing, but in both cases the burden falls relatively heavily on the poor, who have high and relatively inflexible expenditure share on these items. Ideally, the adverse distributional effects of such tax reform could be addressed by appropriate complementary policies.

As hinted above, an important dimension of poor households' response to shocks is labour supply. Although we consider labour markets in section 5 below, we briefly consider supply responses here. The important point is that for poor households with some subsistence activities, wage employment, self employment and consumption are likely to be jointly determined, so that shocks to one affect the other. De Janvry, Fafchamps and Sadoulet (1991) model these interactions numerically and show that missing markets for, say, wage employment, seriously disturb households' responses to commodity price shocks. Serious attempts to reflect such factors in empirical work include Benjamin (1992) on Java, and Lambert and Magnac (1997) on Côte d'Ivoire, although neither deals specifically with poor households. These studies also conclude that, in general, the separability of consumption and production decisions cannot be rejected, but probably more because of poor data quality than because underlying behaviour is separable.

A related literature shows that 'imperfect labour markets' within the household can constrain supply responses. Udry (1996) and Smith and Chavas (1999), for example, show that distortions to the allocation of responsibilities among household members both impose absolute losses (i.e. are inefficient) and prevent optimal responses to price signals.

An interesting recent analysis of Vietnam - Edmonds and Pavcnik (2002) - suggests that trade reform has reduced the incidence of child labour via its income effects. Observing an average increase in the rice price of 29% between two household surveys in 1992/3 and 1997/8, Edmonds and Pavcnik find that reductions in child labour are well correlated with rice price increases across households and communes. Many of the households concerned are poor, so this is a powerful result for our purposes provided that trade reform explains the price increase. Edmonds and Pavcnik basically just assert that link, but Niimi, Vasudeva and Winters (2002) produce at least circumstantial evidence that it exists.

In summary there is plenty of evidence that households will respond to the impacts of trade liberalisation that affect them as producers or as consumers, both to take advantage of opportunities and to protect themselves from adverse effects. But there is a very important role for complementary policies in helping to ensure that poorer as well as richer households are able to respond, where access to key inputs, markets or infrastructure are often crucial.

### 4.4 Do the spillovers benefit the poor?

Trade liberalisation will benefit the poor if it increases the returns to the factors owned by them. Even if they do not benefit directly from increased demand generated by a trade liberalisation, they may do so indirectly as those who do benefit directly increase their demands for inputs and consumption goods and services. Mellor and Gavian (1999) argue that one of the main advantages of stimulating agriculture is that it strongly increases the demand for goods and services produced by the poor.

The literature on growth linkages distinguishes production (or inter-sectoral) linkages (Hirschmann 1958) from expenditure linkages (Mellor 1976). Production linkages can

be either 'upstream' (or 'backward'), which refer to a sector's demand for factors or intermediate outputs, or 'downstream' (or 'forward') linkages which occur when the expansion of a sector induces investments in processing and distribution in sectors using its output. Expenditure linkages refer to the extent to which increased incomes in one sector (typically farming) increase the demand for the outputs, and hence factor inputs, of another sector (typically the non-farm sector). This is the standard Keynesian multiplier effect, although for poverty analysis there can be benefits even if the increased demand is reflected in higher factor rewards rather than increased activity.

Given that linkages are often strong in rural areas, a trade liberalisation that benefits one group is likely to have strong benefits for the rest of the rural economy. It is now widely accepted that in Asia, the increases in agricultural productivity brought about by the green revolution in the 1970s reduced poverty, at least partly because an extra dollar of agricultural income was typically associated with an additional 80 cents of non-agricultural income for local enterprises (Delgado *et al.* 1998). Johnston and Kilby (1975) and Mellor and Johnston (1984) emphasise production linkages, while Mellor (1976) and Hazell and Roell (1983) point to the strength of consumption expenditure linkages.[24] In general, surveys show that large shares of rural households' incomes and consumption are related to locally produced non-tradeables, such as services, bulky traditional starch items, perishable foods, and locally processed foods. This means that expenditure linkages are particularly important for the rural poor (Delgado 1995).

Until recently, it was thought that growth linkages were weaker in Africa because of smaller inter-industry flows (due in part to thin markets and high transaction costs) and the absence of important construction and maintenance expenditures associated with the Asian irrigated agriculture (Haggblade *et al.* 1989). However, a survey of the evidence by Delgado et al (1998) drawing on panel data sets from Burkina Faso, Niger, Senegal, Zambia and Zimbabwe finds the contrary. It finds that adding $1.00 of new farm income could increase total household income by $2.88 in Burkina Faso, $1.96 in Niger, $2.48 in the Central Groundnut Basin of Senegal and $2.57 in Zambia. Hazell and Hojjati (1995) show that growth multipliers in the Eastern Province of Zambia are driven

24 Although Harriss (1987) has criticised these studies for failing to assess the sensitivity of the quantitative results to the large number of assumptions made.

primarily by household consumption demands and are largely intra-agricultural because of high marginal propensities to consume local non-tradable foods.

For policy purposes it is useful to know which sectors yield the largest growth linkages. Hazell and Haggblade, (1991) show that growth multipliers in India are higher for irrigated than for rainfed agriculture, suggesting that, for example, a boom in rice exports could provide a large stimulus. Early evidence from Malaysia and Nigeria suggested that it is the households operating the largest farms which have the expenditure patterns most desirable for the generation of indirect labour-intensive growth (Mellor 1983). However, Hazell and Roell (1983) and Haggblade et al. (1989) contend that the multipliers are bigger for small to medium-sized farms than for very large farms, as does econometric evidence from India (Hazell and Haggblade 1991).

The literature on growth linkages tends to focus on overall regional growth rather than the fortunes of particular groups (notably the poor). By contrast, CGE modelling can explore the impact of policy changes or specific interventions upon different household groups albeit essentially *a priori* rather than *ex post*.[25] For example, Löfgren (1999) shows that reduced agricultural protection in Morocco is likely to yield substantial welfare gains in aggregate, but that producers and workers in rain-fed agriculture – mainly livestock farmers – would be significantly disadvantaged. Further simulations suggested, however, that appropriate income transfers could ensure that the gains from trade liberalisation are shared relatively evenly among all household groups.

The effectiveness of linkages in raising the incomes of the poor also depends upon local businesses being able to respond to increased demand. If institutional or other rigidities prevent this then the benefits may be dissipated in higher inflation. For example, Delgado et al (1998) warn that rising food staple prices have the potential to choke off growth from demand-side linkages if the conditions for a high supply response to prices are not in place. Of course, price increases will still raise the incomes of net suppliers of those goods or services and it is still relevant to ask whether these are the poor. But the overall impact on growth will be less in such cases and it seems likely that its impact upon poverty will also be smaller.

### 4.5 Does trade liberalisation increase vulnerability?

In addition to its impact on mean income, it is often claimed that trade liberalisation increases the risks faced by poor households and their vulnerability to external shocks. Vulnerability is a key element of poverty and a major concern of the poor – see for example World Bank (2001). However, though clearly related, poverty and vulnerability are not coterminous. Almost by definition, poverty reflects well-being *status,* while vulnerability is dynamic and stochastic. Pritchett, Suryhadi and Sumarto (2000) define vulnerability as having a high probability of being below the poverty line, and thus introduce the uncertainty as well as its level.[26]

Trade liberalisation will typically affect both the means and variances of a household's sources of income, and could in four ways affect household vulnerability: changes in mean incomes; changes in the portfolio of activities undertaken by households; changes in the variability of existing income sources (and/or the correlation between them); and poverty traps. The impact of trade liberalisation on the mean incomes of the poor is the focus of much of the rest of this article; this section considers the other three effects.

***Portfolio Choice***

Household surveys in developing countries have shown that households often have a large number of different sources of income (Reardon, 1997). An optimising household will choose a portfolio which maximises its utility taking into account its degree of risk aversion (Ellis, 1993, Lipton, 1968), and clearly trade liberalisation could alter the optimal portfolio. The obvious example is a liberalisation which encourages farmers to switch from subsistence to cash crops. The latter may have higher returns but also a higher variance. Whether this increases the vulnerability of the household will then depend on the relative sizes of these shifts.[27] In fact, whether the change is made at all will depend on these things.

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25 CGE models are discussed at a little more length in section 5.1.

26 The concept of vulnerability is thus closely related to the concept of "expected poverty" introduced by Ravallion (1988). He shows how an increase in risk in the Rothschild-Stiglitz sense, will increase expected poverty as measured by any member of the Atkinson class of poverty measures if the household welfare function is concave in the risky variable. Chambers (1989) gives a broader discussion of vulnerability in developing countries.

27 A similar argument can be made about employment in an Export Processing Zone (EPZ) which may be better paid, but less secure than, say, employment in government.

If households are fully informed of the consequences of changing their portfolios and such changes are made freely, then we may assume that such switches will not result in welfare losses. Of course, *ex post*, a household may lose from an unlucky outcome, but the change in portfolio should not be regarded as welfare reducing *ex ante*. Thus increases in observed poverty can be consistent with *ex ante* improvements in welfare if households trade higher mean incomes for higher variances.

The flip-side of this argument is that poorer households may be unable or unwilling to undertake potentially profitable new activities because of risk aversion. Fafchamps and Pender (2000) show that credit constraints faced by poor farmers in India make them unwilling to sink non-divisible and irreversible investments in risky tubewells despite the substantially higher returns associated with irrigated production when tubewells are successful. Other studies indicate the impact of risk aversion on poor farmers' portfolios of agricultural investments (Rosenzweig and Wolpin, 1993) and cultivation patterns (Kurosaki, 1995). In each case, the existence of undiversifiable risk could undermine the potential gains from trade liberalisation among the poor and result in poverty traps.

In addition, the poor may lack information about the risks associated with new activities leading to sub-optimal choices. However, such information problems are likely to be short-lived as individuals and communities learn the true extent of the risks faced. Besides, trade liberalisation usually involves shifts in the relative returns of activities that are already being undertaken, in which case information will already exist on the risks associated with the activity.

***The Variability of Existing Income Sources or Prices***

Trade liberalisation could also increase income vulnerability by increasing the variance of important income sources or prices.[28] One possibility is that, say, due to favourable production conditions, the domestic market is typically stable and that opening it up 'imports' price variation. Similarly, trade liberalisation (either domestic or international) may eliminate institutions or policies that actually smooth domestic prices.[29] For example, abolishing official purchasing has increased cocoa price variances

28 Barrett and Dorosh (1996) show formally that the costs of variability increase with the share of the commodity or income source in total income.

29 Although not all policies designed to do this succeed.

in West Africa (Gilbert and Varangis 2002), while removing binding import quotas or variable import levies destabilised agricultural prices in Europe.

A further parable is Newbery and Stiglitz's (1984) 'Pareto worsening trade'. They consider two identical countries producing a good with an elasticity of demand of one which is subject to national random supply shocks: under autarchy producer revenue is completely stable with price fluctuation perfectly off-setting quantity shocks. However, if these two economies are integrated through international trade and if their shocks are perfectly negatively correlated, then trade stabilises the price and destabilises revenue. In this case, if the poor are producers rather than consumers, they will become more vulnerable.

On the other hand trade liberalisation can reduce risk if it increases competition, since this will make households less vulnerable to decisions made by individual traders or employers. Liberalisation may also reduce price volatility if it allows households to import goods that would otherwise have been subject to large price swings due to the limited size of the local market.[30] Consequently whether liberalisation increases or reduces price risk is an empirical rather than a theoretical matter. Unfortunately, evidence on this issue is extremely limited, since it requires time series data on prices before and after liberalisation. Del Ninno and Dorosh (2001) show how trade liberalisation helped to mitigate Bangladesh's post-flood food crisis in 1998, with private imports stabilising prices and increasing supplies. Srinivasan and Jha (2001) use simulation models to show that trade is stabilising in Indian food-grain markets (and incidentally for world food prices too). On the other hand, Lloyd et al. (1999) provide evidence that domestic marketing arrangements in Cote d'Ivoire substantially smoothed price fluctuations (although at very high cost) suggesting that liberalisation would increase the variance of prices. However, whether this would increase the vulnerability of poor farmers is not clear given the likely concurrent increase in prices associated with liberalisation.

Even if liberalisation does increases price volatility at the border, whether household vulnerability increases will depend on how prices are transmitted through the economy (see section 4.1), and on the ability of households to insure against income risk and to

cope with shocks. The large body of literature on the ways in which households respond to idiosyncratic and covariant risk in developing countries shows that poor households take several steps to insure themselves against bad outcomes,[31] or to protect themselves ex post from the effects of negative shocks[32].

Unsurprisingly, however, the poor are much less well insured and less able to cope with negative shocks than are the non-poor (Jalan and Ravallion, 1999). This makes it particularly important to consider the effectiveness of the mechanisms available to the poor to smooth consumption when introducing trade reforms likely to increase the variability of their incomes. It is also possible that trade reforms disrupt (or enhance) the ability of the poor to cope with shocks. For example, if trade reforms abolish an institution responsible for fixing prices at low levels this may reduce vulnerability even if it increases price volatility; but if the same institution was responsible for providing a social safety net (e.g. by allowing deferred payment or providing subsidised inputs), then it is possible that the trade reform could increase vulnerability overall. The association of state owned enterprises with the provision of pensions and health cover in transition economies is one possible example.

***Poverty Traps***

Finally shocks, including those induced by trade liberalisation, may give rise to poverty traps: that is, actual realisations of bad outcomes may of themselves change the inter-temporal distribution of income. Morduch (1994) shows how credit constraints on the poor can result in them preferring low-return low-risk activities to potentially highly profitable but risky activities. Since credit constraints are related to income or wealth this can create a poverty trap (Galor and Zeira, 1993). Alternatively, if households are forced to deplete productive assets in order to maintain consumption, this can reduce their permanent income and create a cycle of expected poverty[33]. Banerjee and Newman (1994) elaborate a model of poverty traps relying only on the fact that the poor

30 Similarly, exporting may also stabilise local prices.

31 These include diversifying income sources (Ellis, 1998), precautionary saving, entering into sharecropping tenancy arrangements (Townsend and Mueller, 1998), maintaining buffer stocks of key assets (Rosenzweig and Wolpin, 1993) and building social capital (Grimard, 1997). See Besley (1995) for a general discussion.

32 For example, asset depletion (Rosenzweig and Wolpin, 1993), borrowing (Udry, 1995), changes in labour supply (Kochar, 1995), temporary migration (Lambert, 1994) and reductions in human capital investment (Jacoby and Skoufias, 1997).

are closer to the lower bound of utility than the rest of the population; they therefore have less to lose from reneging on credit agreements and consequently find it harder to borrow and insure.

Overall, however, the little empirical evidence available does not suggest the widespread existence of poverty traps (i.e. situations in which, once a household falls below the poverty line, it is impossible for them to escape). For example, Lokshin and Ravallion (2000) find no evidence of such non-convexities using a panel of Hungarian households in the 1990s, although it generally takes households several years to recover from transient shocks. There is, however, evidence for the existence of spatial poverty traps. Ravallion and Jalan (1997) show that there are geographical externalities in rural China whereby neighbourhood endowments of physical and human capital affect the productivity of a household's own capital. Similarly there can be inter-generational transmission of poverty effects if the response to a trade shock is to reduce expenditure on education - as Thomas et al (1999) identified for rural families following the Indonesian crisis of 1997 - or on child nutrition or health - see, for example, Strauss and Thomas (1998).

Most of the myriad causes of vulnerability in developing countries have little direct connection with trade liberalisation. Furthermore, given the multiple causes of vulnerability it is extremely difficult to unpick the impact of trade liberalisation from that of other events influencing households. Thus, though Glewwe and Hall (1998) use panel data from Peru in the late 1980s to show how some groups are more vulnerable to macroeconomic shocks than others, their results do not explicitly consider trade reforms[34]. They do, though, find that subsistence farmers and other relatively autarchic households are less affected by, and thus less vulnerable to, economic shocks, while those in the construction, manufacturing and agricultural export sectors are more sensitive, including, presumably, external shocks.

Although there is little existing evidence directly linking trade liberalisation to vulnerability at the household level, it seems likely that some trade liberalisations have

33 Similarly, if they reduce expenditure on children, affecting nutrition and both physical and mental development, poverty is transmitted across generations.

34 Glewwe and Hall (1998) define a household as being vulnerable if it has a larger than average percentage fall in consumption.

increased the risks faced by the poor and that, in some cases, this will have increased their vulnerability. One can certainly identify circumstances where this can happen (e.g. where effective mechanisms of social protection are absent), but there is no evidence about how widespread such outcomes are in practice, or, indeed about cases in which trade liberalisation reduces vulnerability.

## 5 WAGES AND EMPLOYMENT

For the self-employed the main determinant of income is the price commanded by their output, but for employees commodity prices need to be translated into factor prices (wages) or employment opportunities before they have an effect. This Part considers this vital link between trade liberalisation and poverty, first, via permanent shifts in wages and employment and second via adjustment stresses.

### 5.1 Does Liberalisation Raise Wages or Employment?

An important mechanism by which foreign shocks are translated into poverty impacts is through factor markets, especially the labour market. Indeed, obtaining employment is one of the surest ways out of poverty, while the loss of a job is probably the most common reason for the precipitate declines into poverty that catch most public attention. The structure of the labour market is critical to how trade liberalisation gets translated into wage and employment changes.

#### *Wages and Employment*

Traditional international trade theory assumes that factor supplies are fixed and wages are flexible. The Stolper-Samuelson Theorem predicts that an increase in the price of the good that is labour-intensive in production will increase its production and thus increase the real wage. Unfortunately, however, while its basic insight is almost certainly robust, the Stolper-Samuelson Theorem is not sufficient to answer questions of trade and poverty in the real world. For example, the theorem is less powerful in multi-commodity, multi-factor, models, and the functional and personal distributions of income are only loosely related. Thus even if increases in the prices of unskilled-labour-intensive goods raise unskilled wages, poverty will be alleviated only if poor households rely largely on unskilled wage earners. Lloyd (2000) formalises this issue theoretically. He characterises the effect of a trade shock on a given household in terms of the latter's endowments of factors, its consumption pattern and the matrix mapping changes in

prices into changes in factor rewards. Lloyd shows that each household gains from at least one price increase and loses from at least one other, and that, provided households differ sufficiently, a change in the price of a good which is actually produced will benefit at least one household and hurt at least one other.

The alternative polar view of labour markets in developing countries is that labour is available in perfectly elastic supply. In this case the wage will be fixed exogenously by what labour can earn elsewhere and the adjustment will take place in terms of employment. Then the reason for the fixity of the wage matters. If it is fixed by the existence of a subsistence sector, moving workers into the formal sector will alleviate poverty only if the loss of labour in subsistence agriculture is so large that the workers remaining in that sector increase their 'wage'. This is the case of successful development which is likely to require far more than just trade liberalisation to achieve.

Alternatively, the labour markets may be segmented for, say, legal or institutional reasons. The formal sector may pay a minimum or conventional wage at above what we might loosely think of as "poverty levels", and at which there is excess supply, while the subsistence or informal sector pays wages below "poverty levels". Then poverty will potentially be affected by a trade shock. If the latter raises the value of the marginal product of labour in the formal sector (e.g. by raising the price of its output), trade liberalisation reduces the producer real wage, increases employment and alleviates poverty. If, on the other hand, it reduces the value of the marginal product and thus reduces employment, it has adverse consequences. Clearly the poverty impact depends not only on employment but also on where the different wage levels lie relative to the poverty line.[35]

The critical issues, then, are the effects of trade liberalisation on the demand for labour – the shock to the labour market – and the elasticity of labour supply - where the economy actually lies between the two polar extremes of vertical and horizontal supply curves of labour. If we recognise several classes of labour, these factors are likely to vary across clauses. In addition, empirical analysis should recognise that adjustment takes time, so that short-run effects may differ from long-run ones (see, for example, Edwards, 1988

35 Winters (2000a, 2002a) offers more discussion of the significance of these alternative views of the labour markets.

and Milner and Wright 1998); allow for non-traded goods and their prices in the analysis; and distinguish between formal and informal supplies. It is also important to remember that factor market effects depend wholly on trade reform first changing output, which in turn depends on the structure of goods markets and on the substitutability between imports, exports and locally produced varieties (Falvey 1999).

There are many studies of the labour market effects of trade reform, but most of them presume segmented markets and deal only with the manufacturing sector and so make it difficult to draw conclusions about overall poverty. Moreover, they rely on inter-sectoral or inter-firm variations to identify effects and so have little to say on general equilibrium effects (which one would expect to be smaller than partial equilibrium ones). Nonetheless, the most striking common feature of these studies is the smallness of the wage and employment effects they find; the most striking difference, the variety of explanations offered for it.

An early discussion of trade and employment was Krueger (1983), who argued that developing-country trade liberalisation should boost labour–intensive output and increase employment. Her case studies showed that developing countries' manufactured exports were, indeed, labour–intensive, but that the employment effects of liberal trade policies were generally rather muted. Calling for more research, she tentatively concluded that this was because of other distortions in factor markets.

More recent exercises have had more liberalisations to consider and better data, and although they show mixed results the general tendency is still towards small effects. For example, Rama (1994), applying a model of monopolistic competition to a panel of 39 sectors in Uruguay over 1979-86, found a significant positive relationship between protection and employment in manufacturing, but no significant effects on real wages. Currie and Harrison (1997) find that employment responses in Morocco depended heavily on firm characteristics (especially public vs. private ownership). Where profit margins were slim initially, the liberalisation of manufacturing led to job loss, but in most firms it led to lower margins and almost no change in output or employment. Thus trade liberalisation here probably raised efficiency and aggregate welfare by addressing goods market imperfections.

Revenga (1997), on the other hand, attributed the low employment effects of Mexican trade reforms to factor–market imperfections. (She found no effect on employment from tariff cuts and a statistically significant but small negative response to quota abolition). She did, however, find real wages falling in manufacturing (3-4% on average; 10-14% in some sectors), which she attributed to the erosion of rents: with high rates of unionisation, formal labour had been able to appropriate some of the rents created by trade barriers. Again, there are likely to have been overall poverty benefits from this element of trade liberalisation, for few formal sector workers are likely to have been pushed into poverty by such wage cuts, while the erosion of rents will presumably have benefited consumers. Similarly small employment effects elsewhere in Latin America are reported by, for example, Marquez and Pages-Serra (1998) for Latin America and the Caribbean in general, Levinsohn (1999) for Chile and Moreira and Najberg (2000) for Brazil.

Milner and Wright (1998) explore industry level data on Mauritius and find a slightly more encouraging response to liberalisation. After an initially adverse wage effect they find fairly strong long-run growth in wages and employment in the exportables sector (mainly of female labour producing clothes).[36] But they also find, surprisingly, growth in the import-competing sector, which they attribute to Mauritius' overall strong economic performance. In fact, Mauritius opened up via export promotion rather than import liberalisation and, according to Rodrik (1997) and Subramanian (2001), owes its success to its institutions rather than its trade policy. Thus it is doubtful that its case is typical.

Lal (1986) applies a modified Stolper-Samuelson Theorem directly to the Philippines. Distinguishing only tradable and non-tradable goods, but allowing for flows of inputs between sectors, he explains the periodic declines in real wages in terms of real exchange rate changes. As the relative price of non-tradables (the labour-intensive sector) falls, real wages decline. Winters (2000b) suggests similarly that the real exchange rate depreciation could explain the simultaneous increase in formal and decrease in informal manufacturing employment in India in the 1990s, the non-traded sector being "informal intensive".

36 Similarly trade liberalisation and trade growth have vastly increased female employment in clothing in Bangladesh.

From a poverty perspective, an important question is what happened to those who lost their informal manufacturing jobs. If they could move back into agriculture or other informal services at approximately the same wage, the answer would be not much, and the increase in observed formal employment at higher wages would be poverty alleviating. If, on the other hand, the loss of an informal manufacturing job signals a descent (deeper) into poverty, the net effects of these changes would be negative for poverty alleviation. Unfortunately, we just do not know, although given that urban informal wages average only just over the Indian poverty line for a family of five, we should not be too sanguine.

***Wage Inequality***

Recently at least as much attention has been paid to relative wages between skilled and unskilled labour - the so-called skills gap – as to employment and wages generally. This is frequently linked to income inequality and thence, casually and less justifiably, to poverty. The debate is pertinent to this paper, however, because a widening skills gap could reflect falling unskilled wages (relative to the no-reform counter-factual) and because many commentators have interpreted the widening skill gap in developing countries as a refutation of the factor-abundance model of trade and income distribution in which skilled and unskilled labour are separate factors.

Most of the recent evidence concerns Latin America, and as argued by Wood (1997), Latin America's increasing skills gap contrasts with the earlier experience of East Asia, where liberalisation was accompanied by a narrowing of the gap.[37] Wood considers various explanations for this difference. Some concern the different timing of the liberalisations: the entry of large labour abundant countries into world markets (especially China) in the 1980s and 1990s which meant that Latin America was not actually unskilled labour abundant when it opened up, the burst of skill-biased technical progress in the 1980s and 1990s, the greater international mobility of highly skilled labour and capital in the later period and the effect of the debt crisis.

[37] Among researchers finding an increased skills gap in Latin America are Feenstra and Hanson (1995), Hanson and Harrison (1999), Feliciano (1996) and Cragg and Epelbaum (1996) for Mexico; Beyer, Rojas and Vergara (1999) for Chile, and Robbins and Grindling (1999) for Costa Rica.

Also a matter of timing, was the growth of outsourcing over the 1990s. Industrial country firms operating abroad may not wish to use the lowest-grade labour in host developing countries; thus while the labour they use is unskilled by, say, US standards, it is relatively skilled by local standards – see Feenstra and Hanson (1995) on Mexico. Robbins and Grindling (1999) adduce a similar bias towards skilled workers in Costa Rica's liberalisation. They identify the bias using fairly robust non-parametric methods and then offer some regression evidence that it is due to the increasing stock of imported machinery in the economy. If liberalisation encourages higher capital goods imports and if these embody recent biases towards skilled labour use, then liberalisation could widen the skills gap.

These latter explanations warn us that, within developing countries, it is not guaranteed that the least-skilled workers, and thus the most likely to be poor, are the most intensively used factor in the production of exportable goods. For example, the wages of workers with completed primary education may increase with trade liberalisation, while those of illiterate workers may not. One of the reasons that agricultural liberalisation is so important for poverty alleviation is that for this sector one can be reasonably confident that very-low-skilled workers in rural areas will benefit through the production responses.

Other explanations for the skills-gap are more structural. For example, from Wood: the Latin American countries are relatively abundant in natural resources, whereas East Asian countries were relatively abundant in (initially) unskilled labour; Latin American liberalisation involved mainly import liberalisation while East Asian liberalisation also involved providing incentives to exporters; and the vast expansion of basic education in East Asia increased productivity and also the relative supply of skilled labour.

In addition, the initial structure of tariffs in many Latin American countries protected unskilled workers, so it is hardly surprising that liberalisation reduced their wages - see Hanson and Harrison (1999) on Mexico. And it may take time for markets to clear. Chile’s liberalisations were associated with worsening inequality over the 1980s, but inequality measures have now returned to pre-reform levels – and at vastly higher average income levels and lower poverty levels – Ferreira and Litchfield (1999). Finally, very recent evidence suggests that the skills gap stabilised or even reversed over the

1990s - see Wood (##), for example - but with no discernible reduction in the speed of trade liberalisation.

Among the relatively small amount of recent evidence on countries outside Latin America, Milner and Wright (1998) find that trade liberalisation in Mauritius increased the relative wages for female and unskilled labour in the exportables sector.

One potentially important dimension of the skills gap is whether openness stimulates developing countries' demand for education and acquisition of human capital. Simple Stolper-Samuelson theory suggests that the returns to skill will decline and with them the incentives for education – see Wood and Ridao-Cano (1999), who find some suggestion of such a problem empirically. The alternative analyses just discussed, however, have quite the opposite implication.

This section has shown that the effects of trade liberalisation on trade and employment are complex to predict in detail. Although liberalisation will usually raise the demand for relatively unskilled workers in many developing countries and so, on average, be poverty alleviating, there are bound to be exceptions e.g. possibly where natural resources dominate exports and where out-sourcing is important – as well as cases where segmented import-competing sectors suffer adverse shocks.

***Computable General Equilibrium Modelling***

One response to the complexities of using econometric methods to track commodity price shocks resulting from trade policy through factor prices to poor households has been to build computable general equilibrium (CGE) models. These are essentially numerical manifestations of theoretical systems and thus lay out precisely and quantify many of the steps discussed in our framework. They are not strictly empirical (which classically means "without theory"), but if they are carefully constructed and grounded in real data, they can provide useful insight. The danger is that they depend critically on parameters and functions which can barely be tested one-by-one, let alone in combination. CGE models are indeed almost the only tool available for predicting the

effects of future trade policy changes, but care must be taken not to fall for their spurious precision.[38]

One approach is to use a CGE model with a single 'representative' consumer to generate changes in commodity and factor prices from a trade liberalisation experiment and then apply these to household data to calculate the poverty impacts. This is akin to the first order approximation exercises described in the introduction to Part 4 above. Nicita and Soloaga (2002) take this approach to setting all Mexico's tariffs to zero. They devote considerable effort to matching the income and expenditure classes of the household survey data to those of the CGE model and then apply the estimated price changes to each household in the survey. The data show that changes in the cost of living vary by income level (because consumption baskets vary), and the authors estimate that, combining price and income changes, all households would gain from trade liberalisation with larger proportionate changes for poorer households.

Hertel et al. (2002) distinguish five classes of household according to their predominant source of income and disaggregate within each class by 20 income levels. They estimate a very general consumption model, and combining the income and expenditure profiles with a CGE model, they explore the effects of possible liberalisation in the Doha round on households clustered around the poverty line ($1.50 per head per day at 1985 PPP prices). Hertel et al. examine seven countries, of which four suggest reductions in poverty following global liberalisation (Indonesia, Philippines, Uganda and Zambia) and three increases (Brazil, Chile and Thailand).

A second approach is to embed the household disaggregation within the CGE model. This sacrifices detail, but has the advantage of being internally consistent. The behavioural changes at household level, ignored above, are both modelled and fed back into the macroeconomic solution. An early approach of this sort is by Bourguignon, Branson and de Melo (1991) and more recent examples include Cogneau and Robillard (2000) and Harrison et al. (2002). Cogneau and Robillard estimate a household model from survey data on Madagascar to explain labour income decisions and embed it in a three-sector CGE model. Among their simulations is one of an increase in the world

38 McCulloch, Winters and Cirera (2001, chapter 5) and Reimer (2002) discuss CGE modelling and poverty in more detail.

price of export crops, which reduces rural poverty significantly but increases urban poverty slightly. Cockburn (2001) uses a similar approach for Nepal and concludes that because liberalisation mainly reduces agricultural prices, it benefits the urban poor and harms the rural poor.

All of these simulation exercises are instructive and should be important inputs into the policy-making process. In particular they help to identify household types that are vulnerable even when trade liberalisations are beneficial on average. They are all predictions, however, and are complementary to, not substitutes for, genuine empirical work on ex post data. Only the latter permit us to test our models and really understand the world as it actually is.

### 5.2 Is transitional unemployment concentrated on the poor?

There is always a possibility of temporary unemployment as a liberalising economy adjusts to new prices. Even in cases where the overall aggregate effect is small, change may still be taking place at a more disaggregated level. This adjustment process will be associated with some transitional unemployment as workers lose one job and require time to find another. In Chile, for instance, Edwards and Edwards (1996) find a positive association between the degree of liberalisation a sector experienced and the extent of layoffs; the sectors experiencing the greatest liberalisation were also the ones where the duration of unemployment was longest.

There is surprisingly little evidence on the nature and extent of transitional unemployment and even less of its incidence among the poor. A multi-country study of trade liberalisation before 1985 (Michaely et al., 1991) argued that experiences varied from case to case, but that, on the whole, transitional unemployment was quite small. In a survey of more than fifty studies of the adjustment costs of trade liberalisation in the manufacturing sector, Matusz and Tarr (1999) argue that the adjustment costs associated with transitional unemployment are not high and unemployment durations generally quite short. Indeed, in some case employment appears to increase more or less instantly – as, for example, Harrison and Revenga (1998) report for Costa Rica, Peru and Uruguay. Overall, however, there is too little evidence to form a general view on manufacturing employment, and still less on whether similar points apply to agriculture or services, or indeed outside the formal sector.

Moreover, the available studies do not answer the question of whether those laid off following trade liberalisation are disproportionately poor. To answer this would require information on the characteristics of those losing their jobs, including their re-employability. Enterprise surveys report the responses of firms to trade liberalisation, but typically give little information on the characteristics of their employees, while household surveys, which do provide this information, cannot easily be matched to enterprises. The latter do, however, generally suggest that, in many low income countries, very few of the poorest are employees in the formal manufacturing sector.

Evidence is available on the relationship between public sector job loss and poverty. Although this job loss is not a consequence of trade liberalisation, it does deal with transitional unemployment resulting from a shock to the formal sector, and so may inform us also about the effects of trade liberalisation. Thus for example, in Ecuador, employees dismissed from the Central Bank earned on average only 55% of their previous salary 15 months later (Rama and MacIsaac, 1999). Evidence from Zambia (McCulloch, 2001) suggests that job shedding occurred in the public sector at the lower end of the earnings distribution, although it does not show definitively whether these people were poor, nor what happened to them following their retrenchment. In Ghana, Younger (1996) finds that most retrenched civil servants were able to find new work, but at substantially lower income levels; nonetheless after retrenchment the income levels and incidence of poverty among their households were not substantially different from the average for the whole country.

Thus retrenchment from the public sector typically does generally lead to transitional unemployment (which may be quite long lasting, as seen in the case of Guinea where the average duration of unemployment was two years; Mills and Sahn 1996) and/or lower income levels. However, there is very little evidence on whether transitional unemployment is disproportionately concentrated among the poor, or on whether this loss of employment (even if temporary) is an important cause of poverty. And we do know that in low income countries the majority of the poor are not likely to be directly affected by retrenchment because they are not working in the formal sector in the first place (although some may be indirectly affected by loss of transfers or remittances).

It is likely that adjustment costs will be greater the more protected the sector was originally and the greater the shock. In local labour markets, large losses of employment can have (negative) multiplier effects on income, and markets can become dysfunctional because even normal turn-over ceases as incumbents dare not resign for fear of not finding a new job. Thus major reforms – e.g. transition or concentrated reforms such as closing the only plant in a town – seem likely to generate larger and longer-lived transitional losses through unemployment than more diffuse reforms. On the other hand, it is precisely the sectors with highest protection or the economies with most widespread distortion that offer the greatest long-run returns to reform. Rama and Scott (1999) analyse the effects of retrenching the only plant in a series of one-plant towns in Kazakhstan. They estimate that for a reduction in the employment in the plant equal to 1% of the local labour force, labour income in the town falls by 1.5%. This is essentially a Keynesian multiplier effect. The hysteresis of the labour market would serve to deepen and prolong it further.

## 6. GOVERNMENT REVENUE AND SPENDING

The final link from trade liberalisation to poverty is via the government account. Trade reforms potentially reduce revenues and, especially for low income countries, this could unbalance the government budget. This section considers first how large the revenue losses typically are and, second, whether adjustment to declines in tariff revenues when they occur typically hit the poor either via replacement taxation or expenditure reductions. We make the point that any such impact is essentially a political decision, not, as is sometimes implied by critics, a law of nature.

### 6.1 Does liberalisation actually cut government revenue?

A key concern about trade liberalisation is that it will reduce government revenue. The share of trade taxes in total revenue is negatively associated with the level of economic development, with many low-income countries earning half or more of their revenue from trade taxes.[39] McCulloch, Winters and Cirera (2001) show that, of the 96 countries for which these data are available over 1994-6, 58 report a share exceeding 5%, with an unweighted average of 20.3% and 16 countries report a share of over 25%. For these countries significant shares of revenue are at stake, although especially for the least

39 This reliance may reflect various factors, including difficulties in administering a tax system effectively and the relatively small share of the formal sector (Ebrill, Stotsky and Gropp 1999)

developed countries, trade taxes are substantially smaller proportion of government expenditure than of their revenues.

Neither theory nor evidence suggests a simple link between trade reform and revenues, however. Theoretically, a number of factors are important (Greenaway and Milner 1991). In the case of tariffs, revenue will increase with liberalisation if the initial tariff level exceeds its revenue maximising level[40]. It can also increase in the many instances where reforms involve the replacement of quantitative restrictions by tariffs, provided, as is usual, that the government did not previously capture the quota rent associated with the restriction. Falvey (1994) shows that a Welfare Improving Revenue Enhancing (WIRE) tariff reform will always exist unless the compensated radial elasticities of all goods are the same (which is highly unlikely in practice given that tariffs reflect protective as well as revenue raising motives)[41]. However, designing such a package is well beyond most governments (Edwards 1997), especially since short and long-run responses may differ (e.g. Bevan 1995). And, of course, once the condition is approximately met, reductions in tariff rates will cut revenues.

Improvements in collection efficiency can also increase revenue. Official ad valorem tariff rates are often substantially higher than the ratio of tariff revenue to import values (collected rates). Pritchett and Sethi (1994) find for a sample of developing countries that official rates and collected rates are only weakly correlated, and that the divergence between them increases with the level of the official tariff. Evasion and exemptions are the key factors here, and tightening them up can yield substantial revenue gains. For instance, according to official estimates, the revenue foregone via tariff exemptions in Tanzania in 1986 was almost equivalent to total revenue collected (Greenaway and Milner 1991). Trade reforms that simplify tariff structures also often have favourable revenue effects by simplifying administration and reducing opportunities and incentives for evasion. This is one of the main practical motivations behind proposals for uniform tariff rates.

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40 The revenue maximising tariff will be $t = \left(\varepsilon_s - \varepsilon_d\right) \Big/ -\varepsilon_s \left(1 + \varepsilon_d\right)$ where $t$ is the ad valorem tariff rate, $\varepsilon_s$ is the elasticity of import supply, and $\varepsilon_d$ is the elasticity of import demand (Ebrill, Stotsky and Gropp 1999).

Turning to the empirical evidence, Greenaway and Milner (1991) focus on five countries which received World Bank Structural Adjustment Loans (SALs) requiring important trade policy reforms. Three of these countries experienced revenue enhancement (Mauritius, Kenya and Jamaica) and two revenue depletion (Morocco and Côte d'Ivoire). They identify a number of clues as to why. First, revenue tends to fall if the existing tariffs are below the revenue maximising rate as in Morocco and Côte d'Ivoire, but not in the other three countries. Second, in all the revenue enhancing cases, some kind of temporary tariff surcharge was introduced when quantitative restrictions were removed; in the revenue depleting cases no such taxes were introduced. Third, the induced changes in the import/export base appear to have been important, particularly in the case of Mauritius. And finally, of the two cases where export incentives were planned, the Mauritian reforms were successful because they were administratively simple, funded by the introduction of other non-trade taxes, and the exchange rate was allowed to depreciate. In the other case - Côte d'Ivoire - none of these conditions applied and the reforms failed.[42]

Ebrill, Stotsky and Gropp (1999) draw a similar set of lessons from detailed studies of trade liberalisation in Argentina, Malawi, Morocco, the Philippines, Poland and Senegal. Furthermore, in a cross-country panel regression they found that countries that reduced tariffs over the period 1980-92 did not have significantly lower revenue from import tariffs as a proportion of GDP than those that did not. On the other hand, those which dismantled quantitative restrictions did have significantly higher revenue from import tariffs as a proportion of GDP than those that did not.

Detailed individual country studies bear all this out. Glenday (2000), for example, examines the impact of Kenyan liberalisation between 1989-99 on import duty revenues. The simple average import duty rate was approximately halved over this period and import licensing requirements and foreign exchange controls were abolished. However, duty as a share of imports rose, as did import duty revenues as a proportion of GDP. The expansion of the revenue base appears to have been an important factor here, along with tighter exemption management, increased duty rates on oil products and certain

41 The compensated radial elasticity of good j is defined as the proportionate reduction in purchases of product j with respect to a common proportionate increase in all taxes, holding utility constant – see Fane (1991).

42 The revenue enhancing cases also involved significant changes in tariff exemption arrangements but this was also at least formally true of the revenue depleting cases.

agricultural commodities, and a shift in imports towards high duty classes. However, improvements in customs administration and the introduction of a pre-shipment inspection program could also have accounted for some of the improvement.

### 6.2 Do falling tariff revenues hurt the poor?

The previous section suggests that many trade reforms will not have revenue costs. However, designing revenue-neutral packages is complex and liable to error, and eventually, as tariffs approach zero, so too must revenue. Hence this section briefly considers responses to falling tariff revenues. From a trade policy perspective such considerations are central, for fiscal crises are one of the strongest correlates of the reversal of trade liberalisation.

The first response is to seek alternative non-trade sources of revenue. Clearly the impact of replacement taxes upon the poor depends on the choice of fiscal instrument, and in general there is no economic reason why the burden should fall on the poorest. Nonetheless, both the evidence and common sense suggest caution, particularly where simple low cost trade tax instruments are replaced by more complex and higher cost domestic ones. (See World Bank, 1988 on the cost/yield ratios of different taxes.) Some CGE models suggest that the welfare significance of tariff revenue losses depends on the nature of the replacement taxes introduced (e.g. Konan and Maskus (2000) and Harrison, Rutherford and Tarr (2001)).[43] But there is little ex post evidence on these issues.

The alternative response to a fall in revenue is to cut public expenditure. There is a large literature describing the effects of structural adjustment in developing countries on poverty and the impact felt via public expenditure and social sector expenditure in particular[44]. But the evidence for this is mixed at best (Van der Gaag 1991; Sahn, 1992). While there have been major declines in social expenditure in some countries, the consensus is that social expenditures have been relatively protected, with capital and education expenditures being most severely affected. Van de Gaag (1991) examines spending in the three years before and after donor financed adjustment programmes

43 CGE models have also been used to explore the implication of trade reform for revenue stability (e.g. Dawkins and Whalley, 1997).

44 Killick (1995) provides an excellent short review of the findings of such work; White (1997) provides a comprehensive review of the literature; while Squire (1991) and van der Hoeven (1996) provide reviews of the linkages between adjustment and poverty in the 1980s.

began, and finds no pattern of increase or decrease in real levels of total and social sector expenditures. Similarly, Sahn et al. (1997) argue that, except in a very few cases, those declines in social expenditure that have occurred have not been part of an attempt to balance the government's fiscal position.

The East Asia crisis - a shock far greater than any trade shock - also provides evidence that, with political will and careful planning, social sector spending can be protected. World Bank (2001) reports Korea's large expansion of social spending in the face of the crisis, while Cameron (2002) reports the success of Indonesia's targeted scholarships at keeping up school enrollments in the face of declining incomes.

There is strong evidence that social expenditures in many developing countries are not well targeted to the poor (Castro-Leal Dayton, Demery and Mehra, 1999) and Lanjouw and Ravallion (1999) show how some schooling and anti-poverty programmes in India are captured by the non-poor. However, this does not necessarily mean that cuts on social expenditures have less impact upon the poor; in fact conventional methods for assessing benefit incidence can underestimate the gains to the poor from higher public outlays and underestimate the losses from cuts (Lanjouw and Ravallion 1999). Thus there are latent dangers even in the absence of direct evidence.

In summary, there is no direct evidence relating trade liberalisation to social spending. However, the evidence from other circumstances suggests that, despite the dangers, reductions in public expenditures of importance to the poor are not inevitable even if trade liberalisation does result in losses of revenue. Alternative sources of revenue are available and, with political will, social spending and especially that oriented towards the poor, may be shielded. Moreover, if liberalisation assists economic growth, this should become easier than it was in the face of decline and crisis. Nonetheless, care needs to be taken if trade liberalisation is going to be pursued in a political context in which replacement taxation is likely to be regressive or where social expenditures are likely to be cut.

## 7. CONCLUSIONS

The evidence surveyed in this paper demonstrates that there can be no simple generalisable conclusion about the relationship between trade liberalisation and poverty.

There is a strong presumption that trade liberalisation will be poverty-alleviating in the long run and on average, and no evidence that it will generally increase poverty or vulnerability. There can be no unconditional guarantees, however, and we certainly cannot be sure that static and micro-economic effects of liberalisation will always be beneficial for the poor. While there are many causes for optimism, the ultimate outcome depends on many factors, and even within most of the individual causal channels we have identified, the outcome will vary from case to case.

Lest this seem too depressing, let us be clear that we are not saying that these things are unknowable. They are substantially predictable using the framework and evidence laid out here and the largest impacts may be relatively easy to predict provided that analysts garner the basic information required.[45] There is some evidence that poorer households may be less able than richer households to protect themselves against adverse effects or to take advantage of positive opportunities. Thus there is an important role for such predictions in guiding complementary policies to accompany trade reform, both to strengthen social protection for losers and to enhance the ability of poorer households to exploit potentially beneficial changes.

45 McCulloch, Winters and Cirera (2001) give a thorough discussion of the practical dimensions of such predictions.

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