

TRADE ADJUSTMENT COSTS AND ASSISTANCE: THE LABOUR MARKET DYNAMICS

6

By Joseph Francois, Marion Jansen and Ralf Peters

Acknowledgements

This paper has been published as a chapter in the ILO-EU co-publication “Trade and Employment: From Myths to Facts” (M. Jansen, R. Peters and J. M. Salazar Xirinachs (Eds.)) that has been produced with the assistance of the European Union. The contents of this chapter are the sole responsibility of the authors and can in no way be taken to reflect the views of the European Union or the International Labour Organization.

6.1 INTRODUCTION

To benefit from trade and trade liberalization, economies have to reallocate factors of production within and between sectors. This structural change is the source of gains from trade but brings with it costs of adjustment. Evidence has, for instance, confirmed that some groups of workers tend to face temporary unemployment and lower income when their jobs are lost as a result of international competition

Adjustment to trade reform or to changes in trade flows have always tended to be rather high on policy-makers’ agendas. In the United States, for instance, the Trade Adjustment Assistant programme (US-TAA) was established as early as 1974. The programme aims at assisting workers and enterprises that are negatively affected by trade reforms or changes in trade flows. The European Union (EU) introduced a similar programme, the European Globalization Adjustment Fund, in 2006. Also at the multilateral level, trade negotiators have felt compelled to deal with the issue of adjustment. The World Trade Organization’s (WTO’s) Agreement on Safeguards and Countervailing Measures, for instance, contains explicit references to the adjustment process following changes in trade flows. The adjustment process following trade reform has also been the subject of studies published by relevant international institutions¹ and is being discussed in the context of Aid for Trade.²

Compared with the attention that adjustment challenges have received in the political debate, the academic literature on the subject is rather meagre, notwithstanding a certain revival of interest in the subject in recent years. This lack of academic interest in the topic may be due to the fact that in early empirical work, adjustment costs were estimated to be negligible when compared to the long-run gains for the

¹ See, for instance, OECD (2005a), UNCTAD (Laird and de Córdoba, 2006), and the references to Brahmabhatt (1997) and Bacchetta and Jansen (2003) in Chapter 9 of Davidson and Matusz (2010).

² See, for instance, ILO, OECD, World Bank and WTO (2010).

economy as a whole. It can also partly be explained by the difficulty in obtaining data necessary to estimate adjustment effects and by the complexities adjustment considerations introduce into standard trade models.

Because of this relative lack of analytical and empirical work on the phenomenon of adjustment to trade, policy-makers often look in vain for clear answers on crucial policy questions, such as the duration of the adjustment process following trade reform, the likelihood and extent of unemployment surges following trade shocks or reforms and the best policies to facilitate relevant adjustment processes. Finding answers to these questions is of political importance for a variety of reasons:

- Policy-makers need to be able to evaluate the political and economic (for example, budgetary) consequences of possible temporary drops in gross domestic product (GDP) or surges in unemployment.
- Evidence suggests that the distribution of adjustment costs is skewed and that adjustment costs can, as a consequence, be very substantial for certain individuals. Policy-makers may wish to consider assisting individuals suffering from particular hardship during adjustment processes.
- Costly adjustment processes reduce the net gains from trade reform. This is particularly worrisome if poorly executed adjustment processes impede economies from reaching the optimal equilibrium.
- Those suffering during the adjustment process following trade reform may oppose trade reform. Guidance on how to pre-empt such opposition would be beneficial for policy-makers and in the long-run for the economy as a whole.

This chapter tries to address these and other relevant questions by providing a summary of the existing economic literature on the subject of adjustment to trade liberalization. After a presentation of the definition of adjustment costs used in this chapter, the measurement of adjustment costs is discussed in detail in section 6.3. In particular, indices measuring intra-sectoral employment churning are developed. In that section, different methodologies to measure adjustment costs, both ex-ante and ex-post, are presented and a summary of existing empirical evidence and simulation exercises is provided. Most of the empirical evidence focuses on industrialized countries, as evidence on developing countries is particularly scarce. In section 6.4, arguments in favour of adjustment assistance are presented, based on a discussion of the relevant theoretical economic literature. A discussion of different policy options to address adjustment challenges and of existing evidence on the effectiveness of different policy options follows. Section 6.5 concludes.

6.2 DEFINING ADJUSTMENT COSTS

The measurement of the effects of trade liberalization on welfare generally involves comparison of welfare levels before and after liberalization, i.e. after all factors of

production have found their new long-run occupations. However, such calculations need to be adjusted for possible losses during the transition to the new long-run situation, in particular if this transition takes a long time. That is, proper welfare calculus needs to allow for social *adjustment costs*.

One standard metric of the adjustment costs an economy faces is the value of output that is foregone in the transition to new long-run production patterns because of the time taken to reallocate factors from their pre- to their post-liberalization occupations. In figure 6.1, the long-run equilibrium path is represented by Y_T . If trade liberalization takes place at time=0, output would jump from Y_0 to Y_T in the absence of adjustment costs. In the presence of adjustment costs, instead, output will follow a path as the curved line $Y(t)$, i.e. output may drop below the original output level Y_0 , remain below it until t_{Y0} , and ultimately exceed Y_0 to slowly approach Y_T .

Adjustment costs would, therefore, correspond to the properly discounted difference between Y_T and the curve $Y(t)$ in figure 6.1.³ In this chapter, we refer to this value as gross adjustment costs. Gross gains correspond to the discounted value of Y_T minus Y_0 . As a consequence, net gains from trade reform equal the discounted value of $Y(t)$ minus Y_0 .

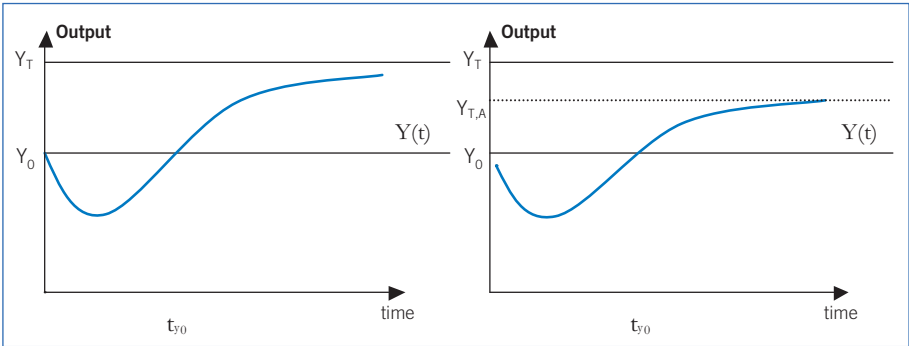
In the left-hand part of figure 6.1, it is assumed that output drops temporarily below the output level Y_0 that preceded trade reform. In many of the papers discussed in this chapter, adjustment costs are considered to be only those costs that bring output below its pre-reform level. In figure 6.1, this would correspond to the discounted difference between Y_0 and $Y(t)$ between the time of the reform and t_{Y0} , i.e. the period in which output reaches pre-reform levels again. In this chapter, we will refer to that value as the adjustment costs, as opposed to gross adjustment costs defined in the previous paragraph.

Net losses such as those depicted in figure 6.1 for the first years following reform, though possible, do not always occur (Bacchetta and Jansen, 2003). Indeed, the adjustment costs such as unemployment and lower output in some sectors may be outweighed by benefits in others. In this case, $Y(t)$ does not fall below Y_0 . According to the definition used in this chapter, adjustment costs would then be zero, even though gross adjustment costs are positive. Even if net losses occur during the beginning of the adjustment period, the overall benefits from trade liberalization (equal to the surface between $Y(t)$ and Y_0) are very likely to be significantly positive, in particular if the period of net losses is short.

In the theoretical literature, another scenario has been discussed quite prominently that has received relatively little attention in empirical work. A number of theoretical studies find that the long-run free trade equilibrium may be affected negatively by the existence of adjustment costs. Graphically this could, for instance, take the form of an adjustment path as the one depicted in the right-hand part of figure 6.1, where the long-run equilibrium after trade liberalization would shift from Y_T to Y_{TA} in the presence of adjustment costs. Mussa (1978), for instance, finds in a

³ This method of calculating adjustment costs was suggested by Neary (1982) and has also been used by Davidson and Matusz (2004b).

Figure 6.1: Adjustment paths following trade liberalization



Heckscher-Ohlin framework that the original free trade equilibrium may not be reached in the presence of adjustment costs. In that paper, the adjustment of capital is assumed to be costly, while labour moves smoothly from the shrinking import to the expanding export sector. Davidson and Matusz (2004a), instead, assume that the labour market is characterized by frictions. In particular, they assume that finding new jobs in the exporting sector involves a search process and that this search process is categorized by congestion externalities. In that set-up, a temporary terms-of-trade shock can lead to multiple equilibriums, a “good” steady state with high job-acquisition rates and high output, and a “bad” steady state with lower job-acquisition rates and lower output. Government intervention is warranted in order to guide the economy towards the “good” path.

In theory, trade liberalization may entail a net welfare loss if the gains are sufficiently small relative to the adjustment costs, i.e. if the discounted sum of the annual net gains following t_{Y_0} is smaller than the discounted sum of the annual net losses in the first years following trade reform and until t_{Y_0} is reached. However, adjustment costs would have to be very large relative to the standard gains from trade liberalization in order to dominate the latter. Adjustment costs tend to be temporary and must be set against an indefinite stream of future higher incomes. It would therefore take very large costs, or a very short-run perspective (i.e. a high discount rate) in order for the net costs to outweigh the net gains. This is further reinforced by the fact that the (static) gains from trade liberalization tend to grow over time as a result of general economic growth.⁴

Figure 6.1 above provides a graphical representation of the possible adjustment costs to the economy as a whole. Those costs are sometimes referred to as social costs. A substantive amount of literature has looked at individual components of those social adjustment costs, i.e. at the costs occurring to labour, capital or the public sector. Table 6.1 provides an overview of the different possible components.

⁴ Trade liberalization may under certain circumstances also lead to long-term net losses for some economies, i.e. $Y_T < Y_0$. Peters and Vanzetti (2004) show, for example, that some countries could expect long-term losses from multilateral agricultural trade liberalization, e.g. due to preference erosion.

Table 6.1: Components of adjustment costs⁵

Social adjustment costs (aggregate)	Private adjustment costs	Labour	Unemployment Lower wage during transition Obsolescence of skills Training costs Personal costs (e.g. mental suffering; not considered here)
		Capital	Underutilized capital Obsolete machines or buildings Transition cost of shifting capital to other activities Investments to become an exporter
	Public-sector adjustment costs		Lower tax revenue Social safety net spending Implementation costs of trade reform

Source: Author's table based on Laird and de Córdoba (2006).

There is a fair amount of empirical evidence that trade liberalization may entail significant losses for some groups. For instance, several studies report that replaced workers may earn substantially less in their new occupations, even several years after replacement. Jacobson, Lalonde and Sullivan (1993a; 1993b) provide examples for the United States. Whether this is a temporary phenomenon, and thus an adjustment cost, or a permanent phenomenon is often difficult to determine. In addition to costs that are borne by workers, capital owners and firms can be adversely affected. Machines may become obsolete, and firms that want to capture new export opportunities may have to invest in order to become an exporter.

One reason why it is important to look at private adjustment costs is that they are typically unevenly distributed, as some factor markets work more smoothly than others to redirect resources that are freed up through liberalization. Adjustment costs may be concentrated in specific sectors, as would be predicted by traditional trade theory, whereby industries with a comparative advantage increase and others decrease; or they may be concentrated among companies of a specific size, as predicted by the so-called new new trade theory that predicts reallocation within industries with larger, more productive firms being more likely to grow and smaller, less productive firms being more likely to shrink. There may also be strong differences in regions or personal characteristics, such as skill levels, that imply that different factor owners

⁵ Matusz (2001) argues that not all private costs are societal costs. Someone deciding to accept a lower wage before retirement, who continues to be paid according to his productivity, entails a private cost but no societal cost. We focus only on the transition period and, thus, if the worker would continue to receive a lower wage, it would be a permanent change and, therefore, not an adjustment cost.

Box 6-1: Ongoing adjustment pressure

In open markets, adjustment is a permanent occurrence. One reason is the exposure to external shocks. These shocks may or may not require structural adjustment. There is evidence, for example, that the 2008–09 crisis had in numerous countries the effect of a business cycle dip, where production and trade return to the previous pattern after a limited period.

A second reason is the acceleration of structural change in production processes as well as other areas in open markets. Higher competition and continuously changing production patterns, such as global value chains, put permanent pressure on economies to adjust.

These phenomena are linked to open markets but they are not transitional consequences of a trade policy change, such as a reduction of tariffs, and are thus not the focus of this chapter. The policy conclusion of this chapter, that coherent trade and labour market policies, and generally available social security programmes can contribute to mitigating adjustment costs, though, does also hold for these aspects of ongoing adjustment.

experience different adjustment costs. These distribution effects caused by adjustment have to be distinguished from long-term distributional effects where, for example, the skill premium increases as a result of trade reform.

The distributional consequences of adjustment can have two important ramifications. First, they may generally be perceived as being undesirable, and may thus call for some form of government intervention on equity grounds. But the least-cost way of providing this assistance would very rarely be in the form of protection, but more plausibly in the form of retraining, flexible housing markets, income support, and so on (see section 6.4).

Another reason why adjustment costs may be important involves the political economy. Private adjustment costs are significant determinants, together with the long-run effects of trade liberalization, of the identity of winners and losers from trade liberalization. They influence the line-up of interests that might oppose trade liberalization, despite any aggregate gains it may bring. Because individual workers or enterprises often do not know in advance whether they will be among the winners or the losers of trade reform, those opposing trade reform *ex-ante* may even exceed the number of those who would eventually lose from reform.⁶ Individual adjustment costs – real or expected – may therefore have significant consequences for political strategies.

6.3 ADJUSTMENT COST: MEASUREMENT AND DETERMINANTS

In this section, approaches to quantify the economic adjustment costs and factors that impact the costs are discussed. A distinction is made between *ex-post* analyses and *ex-ante* analyses. *Ex-post* analyses typically use econometric methods to evaluate

⁶ This argument has been made by Fernandez and Rodrik (1991), albeit with a view on long-term gains and losses from trade liberalization rather than short-term costs.

the adjustment costs of trade reforms or trade shocks that have taken place in the past. Ex-ante analyses, instead, use simulation methods to evaluate adjustment costs of trade reforms or shocks before the costs have actually materialized. They can therefore represent a useful planning tool for policy-makers. While early studies using ex-post evaluations date back to the 1970s, the inclusion of adjustment costs in ex-ante analyses is a rather recent phenomenon. Costs that are harder to quantify, such as the mental suffering of unemployed workers, are typically ignored in both types of analysis.

6.3.1 Factors determining adjustment costs

The magnitude of adjustment costs is a direct reflection of the speed at which the economy manages to redirect resources in response to liberalization. These costs depend on a large number of factors that determine, for instance, the ease with which firms expand or contract, and the likelihood of expansion being accompanied by employment creation and vice versa. In this context, the flexibility of labour markets and credit markets are of particular importance.

If firms in sectors with potential for expansion do not have strong incentives to hire new employees, for instance because of administrative regulations or externally imposed labour market contract requirements, the adjustment will be more costly than otherwise. Likewise, firms will need to invest in order to exploit new opportunities, and this requires access to credit. The possibility of smooth adjustment also depends on the functioning of other markets. For example, the willingness of workers to accept employment in other geographical areas may depend on the housing market. The likelihood of displaced workers finding work in expanding firms may depend on their skills. Their education level and the availability of relevant (re)training opportunities may therefore also affect an economy's capacity to adjust to a trade reform or trade shock.

Adjustment costs are also influenced by the degree of ease with which firms in contracting sectors or with low productivity are able to release factors. For instance, if production in these firms is maintained through government support, the adjustment process might be prolonged. This is not to say, however, that it would be economically desirable that factors are laid off immediately after liberalization. From a purely economic point of view, minimization of adjustment costs requires a careful balance between the speed at which factors are released and the speed at which they can be re-employed. It is sometimes argued that the existence of adjustment costs makes it desirable for the trade liberalization process itself to be gradual, for instance, in order to avoid congestion in labour markets. The question of the appropriate speed of trade liberalization is complex, however, and typically also involves the question of political credibility.

It should be stressed that the literature on adjustment costs has focused on developed countries where the nature and the magnitude of the adjustment costs may be different for several reasons, such as greater diversification or the existence of institutions or social safety nets. Rodrik (2004) argues that such results ought not be

extrapolated to developing countries. This is because of the greater role played by the informal sector, sparse social safety nets and the less-diversified nature of developing country economies. OECD (2005b) instead argues that differences between developed and developing countries exist but that key findings of the literature on adjustment costs are broadly applicable across countries, albeit with differing degrees of emphasis.

6.3.2 Measuring adjustment costs: Ex-post analysis

The empirical literature on the magnitude of adjustment costs from trade liberalization was rather thin until recently. This is probably a reflection of the perception among researchers during the 1960s and 1970s that adjustment costs were negligible in proportion to the aggregate gross gains, an impression that is supported by the limited number of studies that were undertaken. The interest in the topic increased when evidence suggested that the costs may be significant and new sources of data at the micro level allowed researchers to inquire at a more detailed level of analysis.

6.3.2.1 Magnitude of adjustment costs and long-term trade liberalization

Although the evidence about the relationship between long-term gains and temporary adjustment costs is mixed, a majority of studies finds that the benefits outweigh the adjustment costs. The two main contributions to the early literature on this topic (Magee, 1972; Baldwin, Mutti and Richardson, 1980) found adjustment costs of less than 5 per cent of total benefits from trade liberalization.

Both studies assessed the temporary income loss roughly by multiplying an estimate of the average amount of time workers are unemployed by an estimate of their average wages before unemployment.⁷ For instance, Magee (1972) calculates the output changes if all import restrictions in the United States were dismantled. The output changes are converted into changes in employment. The average length of unemployment estimated for workers who switch their jobs after trade liberalization is multiplied by the estimated wages of displaced workers. Magee finds a ratio of adjustment costs to total gains from trade of around 4 per cent. He ignores other costs, such as those of moving capital, and thus underestimates the total costs. Baldwin, Mutti and Richardson (1980) include estimated costs for adjustment of firms' capital stocks and find that labour bears nearly 90 per cent of the total adjustment costs. In order to estimate individual wage losses, the authors disaggregate the United States economy into 327 sectors, and calculate the amount by which each sector would contract or expand. They assume that workers in contracting sectors would spend an average period of unemployment that is based on workers' characteristics. The net effect is then multiplied by sector-specific wages to calculate the lost wages due to

⁷ With the same method, private adjustment costs can be assessed. Bale (1976), for example, from a sample of workers assisted under the United States Trade Expansion Act of 1962, estimated that the average income loss was US\$3,370 during 1969–70 for a worker who was displaced because of import competition, before taking into account such factors as trade adjustment assistance and unemployment insurance.

adjustment. According to their estimates, the bulk of adjustment costs occur in their set-up during the first year after liberalization. Net welfare effects, however, are positive even during the first year.

Takacs and Winters (1991) use a similar approach in a sectoral study that evaluates the adjustment costs of the removal of quantitative restrictions in the British footwear industry. One specific aspect of their study is that they take into account the fairly high natural rate of turnover in the industry (almost 17 per cent per year) when estimating the duration of unemployment of trade-displaced workers. The authors find that even under their most pessimistic scenario, the adjustment costs are almost negligible in comparison to the potential gains from trade liberalization – that is, slightly less than £10 million in losses compared to £570 million in gains. Their results point to a ratio of costs to gains from liberalization of 0.5 to 1.5 per cent for the first year after quota elimination.

De Melo and Tarr (1990) use a computable general equilibrium (CGE) model in another sectoral study that quantifies the adjustment costs of the elimination of import quotas on textiles and clothing, steel and cars in the United States. They find that during the first six years after liberalization, adjustment costs represent about 1.5 per cent of the gains from trade liberalization. The result is influenced by the type of liberalization, since gains from quota removal are usually higher than those from tariff reduction.

Another approach that has been used to estimate social adjustment costs is to study outlays in Trade Adjustment Assistance (TAA) schemes in the United States (see section 6.4.4). According to Richardson (1982), total outlays in TAA under the United States Trade Expansion Act of 1962 were approximately US\$75 million for the period 1962–75. The corresponding figure for assistance under the United States Trade Act of 1974 for the period 1975–79 was approximately US\$870 million, with a sharp increase in 1980–81 due to the auto-centred recession.

More recent work often finds a higher ratio of adjustment costs to total gains from trade. Either the adjustment costs are higher, or the total gains are lower, or both. Davidson and Matusz (2000) find that, in economies with sluggish labour markets, the adjustment costs might offset the gains to a significant extent because of the decrease in output and income associated with unemployment. However, most studies still find that the benefits are higher than the costs, for example, Bradford, Grieco and Hufbauer (2005) find that benefits are seven times the estimated costs. Davidson and Matusz (2004b) explicitly take into account the time and resource costs of re-training and job search in their estimation of adjustment costs. According to their most modest estimates, roughly 30 per cent of gross benefits will be eaten away by adjustment. This share goes up to 80 per cent under different model assumptions.

The amount of literature dealing with developing countries is considerably smaller than that dealing with developed countries. For developing countries, the lack of available data is a limitation. Matusz and Tarr (1999), and Laird and de Córdoba (2006), review several developing-country studies. Some reviewed studies are directly related to trade liberalization and labour markets, such as Milner and Wright (1998) who studied the economy of Mauritius after liberalization; others are

about other shocks, such as the experience of downsizing public sectors. Broadly, the empirical studies conclude that the benefits are also higher than the costs even in the short term.

Despite differences in methodological approach and in underlying assumptions, ex-post empirical studies typically convey the message that social adjustment costs are smaller, in aggregate, than the standard gains from trade liberalization. It should be noted, however, that regardless of the method employed, the estimates presented above should be viewed with caution. For instance, since the costs and benefits of liberalization are typically distributed unevenly through time, they are sensitive to the assumed rate of discounting of future gains and losses – an assumption that by its very nature must be quite arbitrary. Even if aggregate adjustment costs are small compared to long-term welfare gains, individual costs can be very significant for those affected. They are the object of the discussion in the following subsections.

6.3.2.2 Evidence on employment-related adjustment costs

Workers who are laid off as a result of structural adjustment triggered by trade liberalization bear adjustment costs in the forms of: potential unemployment, generally associated with an income loss during that period; potential lower wages in a new job during a transition period until new skills needed for the new job are obtained; and other costs, such as costs related to finding and taking up a new job.

In our definition of individual adjustment costs, we do not include lower wages that workers may have to accept in a new job unless the lower wage is temporary. The longer-term effect of trade liberalization on wages is discussed in McMillan and Verduzco in Chapter 2 of this volume, where it is shown that trade-displaced workers frequently have to accept lower wages though some find better-paid jobs. This subsection, instead, focuses on adjustment costs measured in terms of changes in the number of unemployed.

Assessments of the adjustment costs of trade reform or shocks in terms of numbers of unemployed have tended to focus on two questions. One strand of literature has analysed whether unemployment may temporarily increase as a consequence of trade reform, while a second strand of literature has analysed whether the nature of unemployment is different for those displaced by trade reform than for those displaced for other reasons. Indeed, it turns out to be quite difficult to measure the incidence of trade-related displacement, since there are so many other factors influencing movement, and the impact depends on the degree of the trade policy change.

Overall, evidence does not seem to confirm labour reallocation across sectors on a large scale after liberalization as it could be expected from traditional trade theory (Hoekman and Porto, 2010). Attanasio, Goldberg and Pavcnik (2004), for instance, analyse household data for Colombia during its trade liberalization and fail to find evidence that industry-level employment is affected by the shock of import liberalization. De Melo and Roland-Holst (1994) build a CGE model of the Uruguayan economy and include rigidities in the labour market. They quantify the relocation of the labour force and find, for one scenario, that 5 per cent of the labour force was removed as a result of the liberalization. This failure to observe significant levels

of labour turnover may explain why empirical work has so far not found strong evidence of temporary unemployment surges following trade reform.

A comprehensive World Bank study of trade reform in developing countries, Papageorgiou et al. (1991), found that in eight out of nine countries manufacturing employment was higher during and one year after the liberalization period than before. Only in Chile did manufacturing employment decrease significantly.

Rama (1994) finds a negative effect of trade liberalization on employment in Uruguay in the late 1970s and early 1980s. Milner and Wright (1998) studied the economy of Mauritius after liberalization and show, in contrast, that manufacturing employment increased significantly in the period directly after liberalization.

Harrison and Revenga (1995) track total employment growth for six countries that underwent significant liberalization (cited in Matusz and Tarr, 1999). Employment continued to grow throughout the period prior to, during, and after reform in Costa Rica, Peru and Uruguay. They found, however, the opposite for three countries in transition but argue that these countries undertook reforms that went well beyond trade liberalization.

Two studies on the effects of the Canada-United States free trade agreement (FTA) have estimated the job losses induced by the implementation of a trade agreement that took place in a period in which both Canada and the United States were going through a significant recession. Gaston and Trefler (1997) estimate that 9-14 per cent of the jobs lost in the period following trade reform were induced by the FTA-mandated tariff cuts. In a follow-up paper, Trefler (2004) finds a bigger role for the tariff cuts and estimates that close to 30 per cent of the observed employment losses in manufacturing had been the result of FTA-mandated tariff cuts. That paper also finds that employment levels only recovered their pre-FTA level after a period of seven years.⁸

Studies belonging to the second strand of literature, which analyses the nature of unemployment caused by trade reform or shocks, find that trade-displaced workers are likely to go through significant spells of unemployment. Bale (1976) finds, for example, an average of 31 weeks of unemployment in the United States. Some studies analyse whether the duration of unemployment is higher for job losses related to trade liberalization than those caused by other lay-offs. Kletzer (2001) finds for the United States, and the OECD (2005a) for 14 EU countries, that the share of re-employed workers after two years is only slightly lower in sectors with high import competition. These studies also look at the characteristics of dismissed workers and find that, on average, the groups appear quite similar in terms of education and work experience, though the trade-related unemployed are slightly older, have more tenure and slightly higher earnings related to the lost job. Previous studies found that being older and having less formal education is associated with greater post-displacement difficulties (see OECD, 2005a).

⁸ Even taking into account that employment typically recovers slower than output after a shock, this is a long period compared with the finding in Davidson and Matusz's (2004b) simulations, that output recovers after 2.5 years or less.

Overall, therefore, the existing empirical literature does not provide strong evidence of trade-induced unemployment being very different from unemployment caused by other economic shocks or changes. There is also no strong evidence of trade reform having a strong negative effect on unemployment rates, although there are some indications that trade reform can add significantly to job displacement if undertaken when the job market is already under stress, such as situations of economic recession or major structural change.

6.3.3 *Measuring adjustment costs: CGE models*

The basic approach to ex-ante assessment (in a developed or developing country context) involves the application of a partial or general equilibrium simulation model (see Francois and Reinert, 1997; Francois, 2004).⁹ Francois (2004) offers a range of indices for use in CGE models to track factors that drive adjustment costs. In this section, we expand on these by defining a range of indexes that track various aspects of structural adjustment linked to trade. In particular, some of the indices discussed in this section will explicitly deal with the firm-level dimension of adjustment to trade reform, a dimension emphasized in recent literature on changes in the composition and size of firms within sectors in response to trade-related changes in the business climate (Brulhart, 2000; Schott, 2004; Davis, Faberman and Haltiwanger, 2006). The discussion in this section focuses on adjustment in employment levels. Readers not familiar with statistical formulations may consider to skip the equations and focus instead on the descriptive text. The annex to this chapter provides a related discussion on indices to measure adjustment in output and changes in inequality levels.

CGE-based simulations of the effects of trade reforms usually generate information on sectoral employment levels after adjustment to the reform. Using information on pre-reform employment levels, changes in sectoral employment levels (\hat{l}_j) can easily be computed with the use of such models. In order to find out the total change in employment as a result of trade reform, it is enough to take the sum of the changes at sectoral level:

$$m_L = \sum_{j=1}^n \lambda_j \hat{l}_j \quad (1)$$

where λ_j reflects the share of sector j 's employment in total employment, and n represents the number of sectors.

Trade reform will typically induce some sectors to shrink and others to grow. The economy-wide change in employment found may thus turn out to be minor, even if changes in sectoral employment levels are large. This is the case because sectoral gains and losses will (partially) cancel out, with the result that net changes

⁹ See also Piermartini and Teh (2005) for background information on the functioning of computable general equilibrium models (CGEs) and the effect of different modelling assumptions on the welfare effects generated by CGE simulations.

in total employment may be much smaller than gross movements. In fact, most CGE models assume that, in the long run, employment levels are unchanged. By definition, the economy-wide change of employment levels would therefore be zero.

Looking at the sum of sectoral changes is therefore not useful. Instead, it is necessary to look at a variance-based measure such as the one described in the equation below:

$$s_{L,across}^2 = \sum_{j=1}^n \lambda_j (\hat{l}_j - m_L)^2 \quad (2)$$

Taking the square root of $s_{L,across}^2$ gives us a measure of variation of employment across sectors and thus a measure of the actual number of workers that change jobs by moving across sectors. This index, which can easily be calculated using standard CGE models, thus provides a useful indication for the adjustments taking place in labour markets following trade reform. Unfortunately, they are likely to underestimate the actual amount of job churning that occurs. Indeed, workers who change jobs but do not change sectors are not captured by the above measure. In order to capture those workers, it would be necessary to have information on employment changes at the firm level ($\hat{l}_{i,j}$, where the subscript i describes individual firms), information not available in typical CGE models.

Variation of employment within sector j would be:¹⁰

$$s_{L,j;within}^2 = \sum_{i=1}^{f_j} \theta_{ij} (\hat{l}_{ij} - m_{L,j})^2 \quad \text{where} \quad m_{L,j} = \sum_{i=1}^{f_j} \theta_{ij} \hat{l}_{ij} \quad (3)$$

A measure for adjustments in the labour market, capturing all worker movements, those within and across sectors, would look as follows:

$$\begin{aligned} s_{L,Total}^2 &= \sum_{j=1}^n \sum_{i=1}^{f_j} \lambda_j \theta_{ij} (\hat{l}_{ij} - m_{L,j})^2 \\ &= \sum_{j=1}^n \lambda_j s_{L,j;within}^2 + s_{L,across}^2 \end{aligned} \quad (4)$$

In the absence of information on changes in firm-level employment, it is not possible to compute the within-sectoral variation, i.e. the first of the two terms on the right-hand side of the equation. We are left to working with the second term and thus with an index only based on shifts across sectors. To the extent that changes within individual sectors have been found to be very important in the recent literature mentioned above, indices based on equation (2) – or the second element on the right-hand side of equation (4) – run the risk of grossly misrepresenting the actual extent to which workers are displaced.

¹⁰ Where θ_{ij} is the employment share of firm i in sector j , and j , and $\sum_{i=1}^{f_j} \theta_{ij} = 1$.

Alternative measures for gross displacement of workers are defined in equations (5) and (6):

$$\Delta_{L,j} = \left(1/2\right) \sum_{i=1}^{f_j} \theta_{ij} \text{ABS}(\hat{l}_{ij}) \tag{5}$$

$$\Delta_L = \left(1/2\right) \sum_{j=1}^n \sum_{i=1}^{f_j} \lambda_j \theta_{ij} \text{ABS}(\hat{l}_{ij}) = \sum_{j=1}^n \lambda_j \Delta_{L,j} \tag{6}$$

Equation (5) provides an approximate gross measure of the total workers displaced within a sector (and an exact measure when net displacement is zero). Equation (6) provides a measure of total, economy-wide displacement of workers. Again, firm-level data would be necessary to compute these measures. A variation of equation (6) has been employed in recent European Commission studies of the social impact of trade agreements; known as sustainability impact assessments (SIAs). They can be calculated for models with representative or identical firms based on weighted industry-level deviations in output (see ECORYS, 2009a, 2009b). However, even in this context it is limited to adjustment across sectors, and not adjustment within sectors (i.e. across firms). Indeed, such displacement across firms is widely ignored in this literature.

Given the absence of firm-level information in CGE models, existing studies therefore rely on estimates concerning labour displacement across sectors in order to give an indication of the possible adjustment costs following trade liberalization. In the following, we present a number of those findings. Table 6.2 presents estimates for the cross-sectoral displacement following an EU-Andean trade liberalization agreement and is based on Development Solutions, CEPR and Manchester 1824 (2009). The table presents findings for the short run and the long run where, in the short

Table 6.2: Effect on EU and Andean labour displacement for unskilled and skilled workers (shifts in total employment in per cent)

	Static/short-term effects				Dynamic/long-term effects			
Country	Modest liberalization		Ambitious liberalization		Modest liberalization		Ambitious liberalization	
	Unskilled	Skilled	Unskilled	Skilled	Unskilled	Skilled	Unskilled	Skilled
EU27	0.0	0.0	0.03	0.0	0.0	0.0	0.0	0.0
Bolivia	1.0	1.5	1.0	1.4	2.1	3.0	2.1	2.9
Colombia	1.3	0.9	0.9	1.3	2.0	1.8	2.0	1.8
Ecuador	2.2	1.7	1.7	2.2	2.7	2.9	2.7	2.8
Peru	0.7	0.6	0.6	0.7	1.1	1.2	1.1	1.2

Source: Development Solutions, CEPR and Manchester 1824 (2009).

run, capital is assumed to be fixed, while in the long-run capital allocations adjust to the new price signals created by trade liberalization. Labour markets are assumed to adjust smoothly in both scenarios and full employment is assumed. The estimated labour displacement effects are thus purely based on labour shifts across sectors as reflected in equation (2) above. The table indicates that, in the long run, close to 3 per cent of the employed labour force in Bolivia and Ecuador would be involved in inter-sectoral shifts in employment, giving rise to accompanying adjustment costs. This is based on the weighted standard deviation of shifts in employment (weighted by sectoral employment shares). The corresponding numbers for the other Andean countries are lower, and displacement in the EU is negligible.

Table 6.3 presents estimations for the labour displacement effects of an EU-Central American FTA for two different liberalization scenarios.¹¹ Under both scenarios, labour displacement is significant in Costa Rica, Nicaragua and Panama. This is the case in both the short run and the long run. For Panama, a high standard deviation is predicted even in the short term, which implies that labour-related adjustment costs in Panama can be expected to be high. Combined with the estimations' findings that long-run wage effects in Panama will be negative, the country is likely to experience substantial and negative labour market impacts from an FTA with the EU.

Both the EU-Andean FTA simulations (Development Solutions, CEPR and Manchester 1824, 2009) and the EU-Central American FTA simulations (ECORYS, 2009a) predict small labour adjustment effects in the EU. Also, ECORYS (2009b), which presents findings of simulations for a hypothetical EU-Indian FTA, finds that

Table 6.3: Effect on EU and Central American labour displacement for unskilled and skilled workers, standard deviation of sector changes in employment (expressed as percentage of total employment)

Country	Static/short-term effects				Dynamic/long-term effects			
	Comprehensive FTA		Very comprehensive FTA		Comprehensive FTA		Very comprehensive FTA	
	Unskilled	Skilled	Unskilled	Skilled	Unskilled	Skilled	Unskilled	Skilled
EU27	0.2	0.2	0.3	0.3	0.2	0.2	0.3	0.3
Costa Rica	6.2	6.2	10.6	10.7	6.3	6.3	11.2	11.2
Guatemala	2.0	2.0	2.7	2.7	2.1	2.1	2.7	2.7
Nicaragua	3.6	3.6	5.2	5.2	3.5	3.5	5.1	5.1
Panama	15.0	15.0	17.1	17.1	15.2	15.2	17.4	17.4

Source: ECORYS (2009a).

¹¹ The "comprehensive FTA" assumption assumes 90 per cent bilateral tariff reductions in agriculture and manufacturing, a 25 per cent reduction in trade costs to services, and a reduction in trade costs of 1 per cent due to less restrictive non-tariff measures (NTMs). The corresponding values for the "very comprehensive FTA" are 97 per cent, 75 per cent and 3 per cent.

labour market adjustment in the EU is small. The study predicts a mean absolute change in employment by sector of between 0.25 and 0.36 per cent of baseline employment, or between 250 and 360 workers in EU27 per 100,000. The estimated number for India is larger, between 1,830 and 2,650 workers change sector per 100,000.

6.4 ADJUSTMENT ASSISTANCE

6.4.1 *Definition of trade adjustment assistance*

As shown in the previous sections, increasing trade and trade liberalization cause adjustment costs as factors of production are reallocated within and between firms and sectors. It is difficult to identify where exactly the costs occur and what the magnitude of the costs is. Until recently, the focus was on industry-level adjustment, i.e. those sectors that have a comparative advantage benefit from liberalization, while others are likely to shrink. New evidence shows that even within industrial sectors, reshuffling occurs. Less efficient companies may shrink or close down while more efficient ones grow.

The details of the adjustment costs are important for policy-makers who have to identify priorities and trade-offs between likely long-term gains and short-term costs from trade liberalization. Knowledge about the adjustment costs is also important with respect to the decision whether to provide trade adjustment assistance (TAA) and, if so, what kind of assistance and how to best target it.

The term “trade adjustment assistance” is commonly used for programmes providing assistance for workers and firms in industries that have suffered from competition with imports or for firms in expanding industries that are not able to fully use new export opportunities.¹²

Few examples of assistance programmes explicitly targeting trade-affected workers or firms exist. The best known one is arguably the United States Trade Adjustment Assistance (US-TAA) that provides support to workers, firms or regions that are adversely affected by increased imports. TAA programmes can also comprise assistance for companies to become an exporter in expanding sectors. In the policy community, such programmes are also often referred to as assistance to overcome supply constraints. For example, Cadot, Dutoit and Olarreaga (2005) estimate for Madagascar that a sunk cost of 120 to 150 per cent of the annual output is necessary to shift out of subsistence farming and to become an exporter. Assistance programmes can help potential exporters to meet the fixed costs or increase their productivity. The Food and Agricultural Organization (FAO), for example, provides technical assistance to potential exporters in countries with a comparative advantage in agriculture to meet the high standards in importing countries (for example, FAO, 2007).

Lower wages for some workers as a result of trade policy changes may not be temporary but permanent. Someone losing his or her job in the car industry and

¹² Partly based on *Deardorff's Glossary of International Economics*.

Table 6.4: Categorization of adjustment policies related to labour market issues

	Labour market and social policies		Trade policies	
		Examples		Examples
Coherent policies to facilitate adjustment	Passive labour market policy	Unemployment insurance	Gradual liberalization	Transition period in trade agreements
	Active labour market policy	Unemployment services; training	Early announcement	Implementation period after conclusion of agreement
	Social security	Health care		
Specific trade-adjustment policies	Extending and targeting labour market policies to trade-affected workers	Services in case of mass lay-offs	Safeguard measures	GATT Article XIX

finding a job in a fast-food restaurant may have to accept a lower wage and may never reach his or her former wage. Since this is not a temporary loss, we do not consider any assistance to compensate for the loss as trade adjustment assistance. Some programmes, however, include such payments.

The consequence of temporary unemployment or wage losses can be very severe for individuals and can have long-lasting negative effects on growth and development. Policy-makers can, to a certain extent, influence the adjustment costs that workers and firms face as a consequence of their trade policies through appropriate policies and assistance programmes. In the following section, those policies and adjustment assistance programmes are discussed.

Two major areas where policy-makers can influence the adjustment cost are distinguished and considered here. First, given a certain trade policy or trade liberalization scheme, adjustment assistance programmes or other domestic policy measures can mitigate the adjustment costs. Second, the trade policy itself can be chosen in a way where adjustment costs are taken into consideration. Other policies, such as exchange rate policies or other macroeconomic policies, could also impact on the adjustment costs, but they are not discussed here.

6.4.2 *Reasons for adjustment assistance*

Motivation for adjustment assistance may arise from efficiency and equity objectives. If markets are absent or are not functioning well, policy interventions to improve functioning of markets can mitigate the frictional costs of reallocations and therefore

increase efficiency and, ultimately, the net gains from trade liberalization.¹³ For example, if a rigid labour market prevents workers moving from firms that are shrinking due to import competition to other firms that are expanding due to improved export opportunities, programmes that facilitate those moves may be efficiency-increasing.¹⁴ If financial markets are weak, private investors may find it difficult to get the capital to move into expanding sectors. Private adjustment activities that have positive externalities, such as on-the-job learning, which cannot be fully captured by firms that pay for them, may be subsidized to increase efficiency as well. Marcal (2001), for instance, finds some evidence that training under the US-TAA programme increases the re-employment rates, i.e. those trained have a higher probability to find a new job than those not trained.

An argument for adjustment assistance linked to the equity context is the political economy consideration by which losers of trade-policy changes would be compensated in order to reduce opposition against that policy change. In agriculture, for example, the Australian Government provided farmers with special retirement schemes to compensate for losses resulting from its agricultural liberalization. The WTO Agreement on Agriculture (AoA) explicitly exempts such retirement schemes from reduction commitments (AoA Annex II).¹⁵ Compensating opponents may in some cases be the only way to achieve necessary support for policy changes. Aho and Bayard (1984) argue that the alternative to special TAA programmes is increased trade barriers or greater difficulty in reducing existing trade restrictions because of the political power of the potential “losers”. Davidson and Matusz (2006) show that an optimal way to compensate those who have to move jobs is to offer a wage subsidy to them.¹⁶ They also show that the optimal way to compensate losers who remain trapped in the import-competing sector is to offer an employment subsidy. In another paper, co-authored with Douglas Nelson (Davidson, Matusz and Nelson, 2007), the authors show that such policies can indeed increase voters’ support for trade liberalization.

The public debate and also the economic literature focusing on equity concerns, though, tends to use the concept of compensation as a compensation for both the short-run and long-run losses suffered by individuals. This debate thus goes beyond the concept of “adjustment assistance” as it is used in this chapter.¹⁷

¹³ Laird and de Córdoba (2006), p. 63.

¹⁴ See also WTO (2008), p. 154.

¹⁵ A compensation policy for cotton producers in developed countries that is not trade-distorting could perhaps also contribute to overcome difficulties in the current Doha Round.

¹⁶ “Optimal policies” are defined here as policies that fully compensate losers while imposing the smallest distortion on the economy.

¹⁷ Another point worth noting is the one made by Baldwin (2006), who argues that resistance against liberalization decreases as liberalization increases since export-oriented enterprises would grow and intensify lobbying while enterprises in sectors that are affected by import competition shrink and lose political influence. Thus, the political economy argument is stronger for economies with relatively high protection.

6.4.3 Labour market policies to facilitate adjustment

Governments decide whether no adjustment assistance, specific programmes for trade-related adjustment, or generally available programmes that facilitate adjustment are desirable. In modern and market-oriented economies, the appearance of new companies and the disappearance of some enterprises, changed skill requirements as well as other changes such as in tastes, are normal and frequent. This constantly causes movements and adjustments independent of trade-policy changes. Rama (2003) argues that it is not desirable to disentangle adjustment costs caused by trade or other factors, since pressure comes from globalization as a whole and not trade agreements in particular. Another argument is that it may not be feasible to identify adversely affected persons or firms for at least two reasons. First, the production process is more and more interlinked, and it would be difficult to decide at what point of the value chain persons or firms are adversely affected due to trade policy changes. Second, as discussed above, new evidence shows that it is not necessarily entire sectors that are positively or negatively affected, which makes the identification of winners and losers difficult.

However, specific TAA may be justified for political economic reasons or if the consequences of trade-related job losses are systematically different from job losses due to other reasons. Yet, the work by Kletzer (2001) on the United States, and by OECD (2005a) discussed above, indicates that there are no significant and systematic differences between the unemployment and re-employment experiences of workers laid off for trade-related reasons and those displaced for other reasons. These findings, together with the fact that it is difficult to identify workers negatively affected by trade, provide strong arguments in favour of general – as opposed to trade-specific – policies that assist workers who lose their jobs. Labour market policies can be designed to address this issue, the challenge being that labour market policies should assist and protect those suffering from trade reform or shocks, while at the same time guaranteeing sufficient flexibility in markets for the economy to be able to benefit from the opportunities provided by globalization.

Labour market policies comprise income replacement, usually labelled passive labour market policy (PLMP), and labour market integration measures available to the unemployed or those threatened by unemployment, usually labelled as active labour market policy (ALMP). There is evidence that a well-designed and country-specific combination of active and passive labour market policies can go a long way in reducing the burden of adjustment for workers, providing protection in times of shocks, while at the same time facilitating the adjustment processes following trade reform.

6.4.3.1 Passive labour market policy

The constant reallocation of capital and labour, as well as employment being a “discrete” event,¹⁸ is part of our modern economic model. Most workers highly value security and insurance against adverse consequences of job losses. Governments use

¹⁸ In industrialized urban societies, workers either work or do not work. If they do not work, they are unable to resort to self- or home-production (Vodopivec, 2009).

different tools to bridge this. Those tools include job-security regulation that provides a disincentive for employers to lay off workers and income replacement that provides the unemployed with a certain minimum level of income.

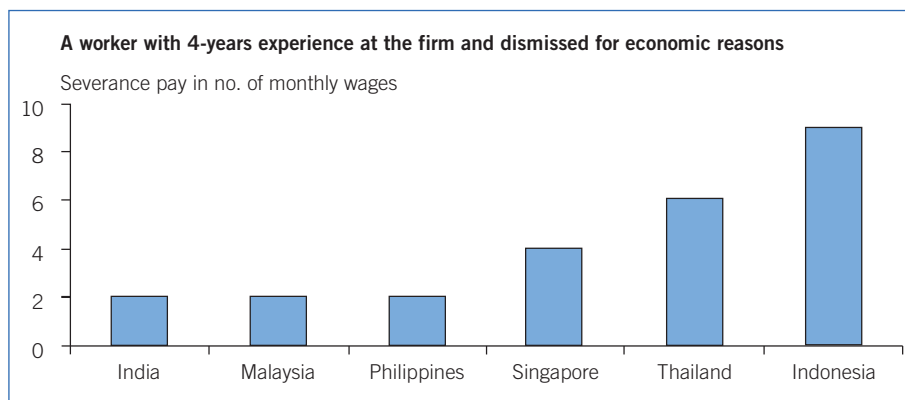
Job security regulation typically consists of a combination of two elements: the obligation of employers to pay dismissed workers a severance payment (often consisting of multiple times the workers' monthly salaries), and the obligation to announce dismissal a stipulated number of months in advance. Both provisions make it costly for employers to lay off workers and have a tendency to increase job stability for workers. Measures that increase lay-off costs in order to provide disincentives to lay off workers have also proven to be a useful tool to deal with temporary fluctuations or demand shocks (Gamberoni et al. 2010). During the economic crisis in 2008–09, short-time working schemes, such as the German *Kurzarbeit* scheme or the French *chômage partiel*, have proved to be particularly effective in protecting viable jobs (OECD, 2010). However, tools preserving jobs are less appropriate in the case of structural changes such as those induced by trade policy changes.

Indeed, if job security legislation impedes workers from moving out of uncompetitive firms or industries into competitive ones, one of the main mechanisms of securing gains from trade is lost. If labour is not mobile across sectors or firms, trade can lead to significant losses for some workers (Saint-Paul, 2007). Ideally, therefore, labour market policies would provide workers with security while maintaining incentives to move jobs. Blanchard (2005) argues that this can be reached by protecting workers rather than jobs, in the sense of providing a certain level of income insurance also during unemployment (protect workers) but while not creating disincentives to lay off workers (do not protect jobs). This approach favours unemployment insurance over job-security regulations and has typically been associated with the term “flexicurity”. The flexicurity model is arguably followed in a number of Scandinavian countries that allow for a high degree of flexibility of the factor labour while providing security through relatively generous unemployment benefits. Blanchard (2005) argues that such a system is efficient, since it provides the demanded security, and those countries would be characterized by high employment levels compared to the OECD average.¹⁹

Many developing countries have relatively restrictive severance pay programmes, (see, for example, figure 6.2) and it has been argued that removing excessive job protection could boost the creation of more and better jobs, and improve job prospects for vulnerable groups (see section 6.4.3.2 below; Heckman and Pages, 2000). Yet reducing job protection is an extremely sensitive task that can have highly undesirable effects for workers if not accompanied by a strengthening of income protection programmes. In other words, introducing flexibility without accompanying security can have significant equity effects. Absence of unemployment insurance can also be counterproductive for the efficiency objective, as it discourages the emergence or expansion of more risky jobs and industries (Acemoglu and Shimer, 2000).

¹⁹ See Cazes and Nesperova (2007) for a discussion of the potential role of flexicurity in Central and Eastern Europe.

Figure 6.2: Severance pay in Asia



Source: Hill and Aswicahyono (2004).

To date, the incidence of unemployment benefit programmes is strongly related to the level of development. Unemployment benefits are common in most developed countries, though with varying degrees of entitlements. About 80 per cent of high-income countries provide unemployment benefits – in general, these are not trade related (ILO, 2010). Few developing countries have any unemployment benefits. Provisions exist in only about 10 per cent of low-income countries and about half of middle-income countries. In developing countries, often only a minority of the labour force is covered. Coverage rates, in terms of the proportion of unemployed who receive benefits, are lowest in Africa, Asia and the Middle East (less than 10 per cent) (ILO, 2010). The low incidence of unemployment benefit schemes in low-income countries can partly be explained by the fact that they are administratively more challenging to handle than, for instance, job security legislation. However, prompted by increased market openness and fearing future global crises, more developing countries – including lower middle-income developing countries, such as the Philippines – are contemplating introducing those systems (Vodopivec, 2009). Such considerations appear to be backed by the prospect of efficiency and distributive advantages of reforming social protection programmes for workers in developing countries. Due to the predominance of the informal economy, in low-income countries social protection is typically confined to the minority of workers. Providing social protection to workers in the informal economy remains, therefore, a major challenge (Jansen and Lee, 2007). Vodopivec (2009) attempts to develop an unemployment insurance scheme for developing countries that includes the informal sector.

Another challenge that policy-makers face when designing unemployment benefit schemes is setting income replacement rates at such a level that they provide income protection without having negative effects on the reallocation speed, as unemployment benefits may provide a disincentive to take up a new job with a lower wage (see, for example, Boone and von Ours, 2004). Another possible drawback of unemployment benefit schemes is that they are not designed to improve workers'

employability in any fundamental sense. Despite those drawbacks, it has been argued that a key strength of unemployment insurance programmes is its good provision of protection, enabling strong consumption-smoothing, for all covered workers (Vodopivec, 2009). This can make it a useful tool to contribute to both the efficiency and the equity objective in the case of trade-related adjustment costs. Furthermore, it appears to perform well under all types of shocks, which is important due to the difficulties in determining trade-related shocks and other causes, including globalization and technological change.

6.4.3.2 Active labour market policy

Particularly in OECD countries, there has been an increasing effort to “activate” passive measures in order to enhance the integration of the unemployed and underemployed (Cazes, Verick and Heuer, 2009). The ALMPs include a wide range of activities, intended to increase the quality of labour supply (for example, retraining); to increase labour demand (for example, direct employment creation such as public work schemes); or to improve the matching of workers and jobs (for example, job search assistance) (World Bank, 1999). ALMPs also include promotion of self-employment and employment subsidies to promote the hiring of vulnerable groups, such as new labour force entrants.

“Activation” programmes differ from free public employment services in that participation is obligatory for relevant target groups (OECD, 2005a). Key examples of activation programmes are requirements on unemployed people to attend intensive interviews with employment counsellors, to apply for job vacancies, to accept offers of suitable work, and to participate in training programmes.

The metaphors “safety net” and “trampoline”, contrasting the passive and active approaches, suggest that the latter is a successful policy to assist the unemployed. However, as the experience of the past decades has demonstrated, actually implementing an active labour market policy poses many challenges, and the cost-effectiveness of some measures could be low or negative.

Heckman et al. (1999) review several microeconomic evaluation studies. They conclude that active labour market programmes have a modest impact on participants’ labour market prospects. The gains from existing programmes are not sufficiently large to lift many economically disadvantaged persons out of poverty, nor to significantly reduce unemployment rates. However, there is considerable heterogeneity in the impact of these programmes; for some groups, the policies are more effective and can generate high rates of return, while for other groups these policies have had no impact and may have been even harmful.

Boone and von Ours (2004) confirm the mixed evidence and show that some ALMPs are more effective than other programmes, using data from 20 OECD countries. An increase in expenditures on both labour market training and public employment services (PESs), such as placement and vocational guidance, cause unemployment to fall. Expenditures on labour market training seem to have a larger impact on the functioning of the labour market than expenditures on PESs have. The authors fail to find significant effects of expenditures on subsidized jobs on un-

employment. Betcherman et al. (1999) reviewed several studies and found that training for youth or the long-term unemployed is less cost effective than other measures, such as job-search assistance, and may even have a negative rate of return. Drawbacks of many ALMPs are that positive effects for an individual unemployed worker may not be effective in terms of the aggregate level of unemployment (the “crowding-out” effect) or that they may stimulate workers to reduce their search efforts instead of increasing them (the “locking-in” effect). Sapir (2006), however, finds that active labour market policies that are coupled with measures to increase the incentive and obligation to seek work appear to have the potential to raise the employment rate. Furthermore, crowding out may be relatively less prevalent in the case of structural adjustment, where workers also move between industries as a result of trade liberalization.

Results of the effectiveness of ALMPs appear to depend also on the economic environment. Fay (1996) found no evidence that services in the case of mass lay-offs reduce the unemployment duration during economic downturn. On the other hand, the effectiveness of job-search assistance seems to increase when economic conditions improve and when new jobs are being generated. During the decline in unemployment rates in the Netherlands in the late 1980s, programme participants were more likely to be employed than those in the control group (OECD, 1993). Since trade liberalization can have positive growth effects ALMPs could lead to positive results during the adjustment period.

The general picture that occurs seems to be that the effectiveness depends on the specific type and design of the policy, and that the impact on different groups can vary significantly. Due to the growth and structural change effect accompanying trade liberalization, a well-designed and targeted ALMP can have positive but probably relatively small effects on those unemployed who lost their job due to trade increases.

6.4.4 Specific trade adjustment assistance

Two well-known programmes that explicitly serve the purpose of private trade-related adjustment assistance are the US-TAA programme and the European Globalisation Adjustment Fund (EGF).

The US-TAA comprises programmes for workers, firms, farmers and fishermen.²⁰ The TAA for Workers programme is by far the largest of the three existing programmes. In order to receive assistance, workers must show that they lost their jobs due to any one of the following three eligibility criteria: an increase in imports; laid off from either an upstream or downstream producer; or a shift in production to another country. The criteria must have “contributed importantly” to a firm’s decline in production and sales. Covered workers are eligible to receive assistance such as for maintenance payments, training expenses, wage insurance, under which older workers may be eligible to receive half the difference between their old and new wages, and

²⁰ United States Department of Labor; see: <http://www.doleta.gov/tradeact/benefits.cfm#2>.

parts of costs associated with job-searching and job relocation. The wage subsidy is only available for older workers under the Alternative TAA, for whom retraining may not be appropriate.

The objective of the TAA for Firms programme is to help manufacturers and producers injured by increased imports prepare and implement strategies to guide their economic recovery by providing technical assistance.

The EGF is a significantly more recent programme that provides one-off, time-limited individual support to workers who have suffered redundancies as a result of globalization. The EGF does not finance company costs for modernization or structural adjustment, which is covered by other EU assistance programmes such as the Structural Funds.

The EGF supports workers who lose their jobs as a result of changing global trade patterns so that they can find another job as quickly as possible.²¹ When a large enterprise shuts down, or a factory is relocated to a country outside the EU, or a whole sector loses many jobs in a region, EU Member States design active labour market policies for redundant workers, such as job search, occupational guidance, training, upskilling, outplacement and entrepreneurship promotion, and apply for EGF support of up to 65 per cent of the total costs. A maximum amount of €500 million per year is available to the EGF to finance such interventions. Applications were received from a range of countries and sectors from 2007 until 2010. Dominating sectors are textile, automotive, motor industry supplier, printing industry and electronic equipment. The EGF has also been used as part of Europe's response to the global financial crisis.

Adjustment assistance is also discussed as one out of four main areas of the Aid for Trade initiative.²² The Aid for Trade initiative has emerged during the Doha Round of trade negotiations to address "supply-side" constraints in developing countries. The specific objective of Aid for Trade is to help developing countries, in particular the least developed, to play an active role in the global trading system and to use trade as an instrument for growth and poverty alleviation. Adjustment assistance is provided to help with any transition costs from liberalization, including preference erosion, loss of fiscal revenue or declining terms of trade and, in the context of Aid for Trade, the discussion has so far mostly focused on assistance to overcome supply constraints; albeit, the possibility of using it for labour market-related concerns has been raised (Jansen and Lee, 2007; ILO, OECD, World Bank and WTO, 2010).

A specific reference to labour market adjustment in a trade agreement is made in the (interim) Economic Partnership Agreements (EPAs) between the EU and African, Caribbean and Pacific (ACP) States (see, for example, CARIFORUM EPA Articles 195 and 196). The EPAs are accompanied by development assistance, including to cover adjustment assistance (ODI, ECDPM, CaPRI and EU, 2009).

²¹ See: <http://ec.europa.eu/egf/>.

²² The others are trade policy and regulation, economic infrastructure and productive capacity building.

The labour market-related components of trade-related adjustment assistance programmes usually include passive or active labour market policy components that are discussed above. Given that trade-displaced workers tend not to differ significantly from other displaced workers, the justification for providing different or even privileged (for instance, in the form of longer duration of unemployment benefit coverage) treatment to trade-displaced workers is not easily justifiable.

One possible justification is that trade reform has a higher potential to lead to large-scale structural change, with resulting mass lay-offs as a result of plant closures. As such mass lay-offs are more likely to lead to congestion effects or other negative externalities, targeted intervention may be justified on efficiency grounds. But also in those cases, the evidence on the effects of intervention is mixed.

Betcherman et al. (1999) reviewed 12 studies relating to retraining programmes for workers displaced through mass lay-offs (related to public sector restructuring). They found that some retraining programmes result in a modest increase in re-employment probabilities, though this result is often statistically insignificant. The effect on post-programme earnings is, however, more discouraging since wages of participants, compared to the control-group workers, are rarely higher and, in most cases, even lower.

The results for specific trade-related adjustment assistance training are similar to those of the studies about mass lay-offs. Marcal (2001) also found evidence of a higher re-employment ratio of US-TAA trainees relative to the control group that did not receive training and to those that had exhausted unemployment insurance benefits. Furthermore, both Decker and Corson (1995) and Marcal (2001) fail to find a positive impact on the re-employment wage.

In the context of public sector downsizing in developing countries or economies in transition, Matusz and Tarr (1999) cite similar evidence based on government-sponsored retraining programmes in Hungary and Mexico. In Hungary, evidence suggests that the re-employment rate is slightly higher among participants of programmes than among the control group. The difference is, however, the impact on wages of the re-employed where, in Hungary, evidence suggests a positive impact on the participants that was not found in the other studies cited above. In Mexico, the retraining programme seemed only to increase the re-employment rate and the new wages for trainees who had previous work experience and for adult male participants. Rama (1999) argues that the failure of targeted retraining programmes is partly due to the wrong focus of the programmes, which often concentrate on updating previous skills rather than acquiring entirely new skills.

A major challenge of specific trade-related adjustment assistance programmes is to decide who is eligible to receive assistance. Due to the traditional trade theory, adjustment was expected across sectors as production would increase in the exporting sector and decrease in the import-competing sectors. Adjustment assistance was thus targeted at sectors that lack comparative advantage. Eligibility for assistance under the TAA, for example, was based on an increase in imports of articles of the same nature or directly competitive with articles produced by sectors that subsequently experienced lay-offs (Magee, 2001). The 2002 reform broadened the group of eligible

workers to include those laid off in plant relocations, reflecting the concern of foreign direct investment (FDI) abroad, and those laid off in upstream suppliers or downstream customers of firms affected by trade liberalization (WTO, 2008).

Recent theoretical developments and empirical analysis that have emphasized the heterogeneity of firms and adjustment within industries, however, suggest that even such broadening fails to capture all workers that are affected by trade and may prove the impossibility to identify them. Scheve and Slaughter (2004) support this research with a survey on how liberalization affects the felt job security: workers in very different types of industries felt greater insecurity.

Taking into account the difficulties in appropriately targeting specific TAA and the fact that there are not many reasons why trade-affected workers should be dealt with differently than other displaced workers, it is tempting to conclude that strong general labour market policies represent a better tool to deal with workers' adjustment costs triggered by trade reform. By assisting all displaced workers, they are sure to capture all trade-displaced workers and they also treat equally those displaced by trade, migration, FDI, technological change, macroeconomic or other shocks. In an integrated world where it is hard to foresee from where the next shock will hit, and where workers are constantly exposed to changes, broadly targeted labour market policies that provide income to those without jobs and assist the jobless in finding new jobs are likely to perform better than specifically designed trade adjustment programmes.

6.4.5 Trade policies addressing adjustment costs

Trade policy itself is another very important instrument to address adjustment costs. Postponing or lowering the degree of trade liberalization would eliminate or reduce the adjustment costs, but this policy would be at the expense of gains from trade liberalization. As discussed above, empirical studies suggest that the benefits of international trade are often large and generally greater than the costs associated with it.

Multilateral as well as regional trade agreements often comprise provisions to mitigate adjustment costs. These provisions include transition periods for phasing-in liberalization, safeguard measures that can be used when imports of a particular product increase and cause injury to the domestic industry, and subsidies of certain kinds to ease the adjustment process (Bacchetta and Jansen, 2003). North-South regional trade agreements (RTAs) are also often linked to development assistance. An example is the European Development Fund for ACP countries.

6.4.5.1 Gradual liberalization with early announcement of policy change

Gradual liberalization with early announcement of the policy change and flanking measures may substantially reduce adjustment costs that mostly take place upfront (Laird and de Córdoba, 2006). Reducing protection gradually can above all be useful to avoid congestion problems and in cases where individual actors underestimate adjustment costs. Congestion may, for instance, occur in labour markets in the cases of mass lay-offs. If a drastic change in tariffs leads to mass lay-offs, while a gradual

reduction of tariffs leads to a gradual displacement of workers, the latter scenario may be more desirable as it avoids congestion and related costs. Mussa (1986) has analysed this phenomenon in a set-up where trade reform triggers mass lay-offs because of the presence of minimum wages. He confirms that gradual liberalization would lead to gradual adjustment, with lower costs to the economy.

Gradual liberalization can also be a useful tool when individuals underestimate adjustment costs, as may be the case if an industry is a major local, regional or national employer. Shrinkage of the industry would then have serious repercussions and negative spillovers on the surrounding economy. Those repercussions represent externalities, which, if not taken into account, may result in excessive lay-offs (Bacchetta and Jansen, 2003). Gradual liberalization may in these cases manage to soften the adjustment process. Given that developing country economies tend to be characterized by more concentrated production structures than industrialized countries (Imbs and Wacziarg, 2003), the arguments in favour of gradual liberalization are arguably stronger in the case of the former.

Early and credible announcement of policy changes can give companies and workers time to prepare for the change. This can be particularly useful in environments where credit constraints are prevalent. Early announcement then gives firms and workers the opportunity to make the savings necessary to prepare for the policy change or to bridge the costly adjustment period. Levy and van Wijnbergen (1995) argue in favour of gradual agricultural liberalization in the context of the North American Free Trade Agreement (NAFTA) in Mexico together with well-targeted adjustment programmes of investments in land improvements. Early announcements may also play a particularly important role in environments where companies are not used to working in a competitive environment. Examples are companies representing a public monopoly. If such companies have to go simultaneously through a process of privatization and exposure to foreign competition, they are unlikely to survive. If privatization is first conducted behind closed borders and then followed by international liberalization, the industry may, instead, have time to prepare for the competitive environment. Pastor et al. (2000) and Vives (2000), for example, show that the competitiveness of the Spanish banking sector was increased through domestic deregulation before the sector was opened for foreign competitors as part of the EU's Single Market programme.

Typically, trade agreements determine that new commitments, such as tariff reductions or revising domestic legislation, are implemented over a couple of years. The Uruguay Round agreement, for example, allowed developed countries to phase in new tariff commitments over four years and developing countries over six years. Similar provisions are agreed in most RTAs. The EPAs between the EU and several ACP countries, for example, envisage full implementation in some sectors over 25 years (Meyn and Kennan, 2010).

6.4.5.2 Safeguards

Transition periods allow countries to address ex-ante anticipated adjustment costs. Safeguards instead offer countries to react ex-post to problems caused by unforeseen

Table 6.5: Overview of safeguard measures in WTO provisions

Measure	Agreement	Description
Measures to limit imports that cause or threaten to cause serious injury to domestic industry	GATT Article XIX and Agreement on Safeguards	Measures shall be applied to prevent or remedy injury and to facilitate adjustment
Renegotiate bound tariff rates	GATT Article XXVIII	Difficult process; requires compensation
Restrictions to safeguard the balance of payment	GATT Article XII and Article XVIII.B	Can be used in reaction to an unsustainable deterioration in a country's external financial position, but not in reaction to sector-specific adjustment problems
Infant industry protection in developing countries	GATT Article XVIII.C	Barely used
Emergency safeguard in services	GATS Article X	Mandate to negotiate
Special agricultural safeguard	Agreement on Agriculture Article 5	Additional duty possible in case of price decrease or import surge; right to use had to be reserved during Uruguay Round

Source: WTO agreements, and Bacchetta and Jansen (2003).

events, such as import surges (Bacchetta and Jansen, 2003). The safeguard measures include temporary tariff increases and quantitative restrictions. It is often argued that governments may be reluctant to sign trade agreements that lead to substantial liberalization without the insurance that a safeguard provision would provide.

The WTO Agreement on Safeguards refers explicitly to structural adjustment in its preamble and creates certain mechanisms to address that objective. Remedies, such as quantitative restrictions, can be used temporarily and evidence of adjustment of the industry is necessary to justify extending the measure. Progressive liberalization is intended to facilitate adjustment in cases of measures originally imposed for longer than one year.²³

Safeguards may be justified from a political economic point of view and helpful in unusual circumstances, but their role as contributing to adjustment has been

²³ Safeguard measures may be broader in scope than anti-dumping measures and cover imports from all sources. However, anti-dumping measures have much more often been used than safeguard measures (Bown and McCulloch, 2007). With increasing liberalization and higher exposure to external shocks, safeguards may perhaps be used more frequently in the future.

questioned. Davidson and Matusz (2004a) show that temporary tariffs can be useful in cases where the presence of congestion externalities pushes economies into low-output equilibria as a result of a temporary trade shock. In such a case, temporary protection impedes the economy adjusting to a temporary shock, as this adjustment may be undesirable.

If changes in trade flows are permanent, though, adjustment is desirable. Bown and McCulloch (2007) argue that most safeguard measures are far from promoting adjustment, and can actually have an anti-adjustment bias. A temporary import-restricting policy, for instance, does nothing to cause an industry to become more internationally competitive but rather allows the industry to continue production in a protected environment. Moreover, since these measures encourage productive inputs to remain in their former use, policies that slow adjustment out of uncompetitive industries would also have the effect of slowing expansion of newly competitive industries. Indeed, safeguard measures such as those in the WTO Agreement on Safeguards appear to be designed for the purpose of helping industries to recover competitiveness and not for the purpose of helping an economy to adjust to the fact that uncompetitive industries shrink (Bacchetta and Jansen, 2003).

A special agricultural safeguard mechanism for developing countries is one of the major sticking points in the current Doha Round of trade negotiations. Most developing countries request a Special Safeguard Mechanism (SSM) to protect their domestic producers from suddenly falling import prices and import surges. They argue that this measure is the only possibility to protect their farmers from volatile world market prices and subsidized imports. Agricultural exporters, however, are concerned about the potential negative implications for market access and predictability. Other elements currently under negotiation are the sensitive and special product provisions where tariffs for some agricultural products (for example, those that are important for rural development, food security and livelihood security) would not have to be reduced or only to a lesser extent. This would eliminate or reduce any adjustment requirements, but also potential benefits from trade liberalization. It has been argued, however, that in the presence of externalities, such as food security and lower rural-urban migration, it might be justifiable from an economic point of view.

6.4.6 Other domestic policies

A wide basket of other domestic policies can facilitate adjustment processes. Stable macroeconomic conditions (such as realistic exchange rates), the absence of anti-export bias, adequate infrastructure and secure property rights are all likely to affect the ease and speed of adjustment. Because of the nature of this book, labour adjustment has received quite a lot of attention in this chapter. Capital is another input factor in the private sector that needs to adjust when economic activities shift. Adjustment costs related to capital are opportunity costs of underutilized or obsolete machines, buildings and other physical capital goods. To shift capital from one activity to another causes transition costs. Since financial capital is more mobile than physical capital, the costs of shifting the former are usually lower. When credit markets do

not function efficiently, companies may face credit constraints and may not be able to obtain funding for adjustment-related investments (Bacchetta and Jansen, 2003).

Functioning capital and credit markets are important to reduce adjustment costs related to capital movement. Since, in many developing countries, capital mobility may be limited by a lack of capital and credit markets, resulting costs are higher (Laird and de Córdoba, 2006). In agriculture, adjustment costs can be significant because it takes time for new crops to grow. McMillan et al. (2002), for instance, demonstrate the adjustment difficulties in the case of cashews. Adjustment costs are typically expected to be lower for field crops than for tree crops, such as wine, coffee, tea or rubber. Thus, adjustment assistance programmes may be efficiency-increasing but, as in the case of labour markets, the question of special programmes or general policies easing adjustment is to be considered. Hoekman and Javorcik (2004) stress the importance of policies that encourage adjustment by firms to globalization. Barriers that hinder entry and exit of firms should be removed, and policies should be “neutral” towards small enterprises. If externalities exist, subsidies or similar incentives would help expand innovation and risk-taking.

6.5. CONCLUSION AND POLICY RECOMMENDATION

Structural adjustment is a necessary condition to benefit from trade liberalization. It implies a reallocation of resources. The shifts of labour and capital are likely to lead to adjustment costs that occur until all factors are in their long-term equilibrium. The costs depend very much on the magnitude of liberalization and the functioning of markets, i.e. the time that is needed to reach the new equilibrium.

Aggregate adjustment costs appear to be significantly smaller than the long-term benefits. Recent analysis shows, however, that the costs can be high, especially in the case of very rigid labour markets. The factor labour appears to bear the bulk of the costs, although it appears that trade reforms do not have strong negative effects on unemployment rates. Costs for unlucky individuals can be substantial. Although trade competition does not appear to target particular types of workers, evidence suggests that trade-displaced workers tend to be slightly older, have more tenure and higher earnings related to the lost job. There is no strong evidence, though, of trade-induced unemployment being very different from unemployment caused by other shocks.

A reason contributing to the observation that the characteristics and duration of unemployment of trade-displaced workers are similar to those losing their job for other reasons could be that trade liberalization does not necessarily cause entire non-comparative sectors to shrink and others to expand, but also that labour churning within sectors occur. We therefore developed indices measuring intra-sectoral employment movements.

Adjustment assistance, i.e. policy measures to mitigate the costs of adjustment from trade, can be designed to redistribute income or to increase efficiency, depending on the political goals. It appears that from an economic perspective, generally available

adjustment measures should be preferred over targeted TAA. Apart from moral concerns why those affected by trade liberalization should be treated differently than those affected by other shocks, including those stemming from globalization as a whole, targeted assistance appears to have had rather mixed success in facilitating structural adjustment. In addition, it appears nearly impossible to identify all workers adversely affected by trade liberalization.

The political economy argument – that there is more support for liberalization if adjustment assistance exists – is important, but may be less relevant if a good generally available social protection system is in place. Very concentrated structural changes, such as mass lay-offs or regional concentration, though, may justify specific TAA.

Demand for social protection in developing countries, especially emerging economies, appears to be increasing as the exposure to external shocks is increasing with globalization. Strengths and weaknesses of passive and active labour market policies have been discussed in this chapter. Many of the instruments may presently be beyond reach in many developing countries but important lessons can be learned from experiences in developed countries.

A strong case can be made that it is important that adjustment policy measures focus on supporting the distribution of gains from globalization more equally and to increase efficiency of the adjustment process. Most adjustment costs appear to be borne by workers. In many countries, the majority of workers seem to be very concerned about trade liberalization. Labour market policies can have significant leverage here, as they have the potential to raise support for liberalization among voters if liberalization is expected to bring net benefits for a country.

REFERENCES

- Acemoglu, D.; Shimer, R. 2000. "Productivity gains from unemployment insurance", in *European Economic Review*, Vol. 44, No. 7, pp. 1195-1224.
- Aho, C.M.; Bayard, T.O. 1984. "Cost and benefits of trade adjustment assistance", in R.E. Baldwin; A.O. Krueger (eds): *The structure and evolution of recent U.S. trade policy* (University of Chicago Press), pp. 151-193.
- Bacchetta, M.; Jansen, M. 2003. "Adjusting to trade liberalization: The role of policy, institutions and WTO disciplines", *WTO Special Study 7* (WTO).
- Baldwin, R.E. 1989. "The political economy of trade policy", in *Journal of Economic Perspectives*, Vol. 3, No. 4, pp. 119-135.
- Baldwin, R.E. 2006. "Multilateralising regionalism: Spaghetti bowls as building blocks on the path to global free trade", in *The World Economy*, Vol. 29, No. 11, pp. 1451-1518.
- Baldwin, R.E.; Francois, J.; Portes, R. 1997. "The costs and benefits of eastern enlargement: The impact on the EU and central Europe", in *Economic Policy*, Vol. 12, No. 24, pp. 125-176.
- Baldwin, R.E.; Mutti, J.; Richardson, D. 1980. "Welfare effects on the United States of a significant multilateral tariff reduction", in *Journal of International Economics*, Vol. 10, No. 3, pp. 405-23.
- Bale, M.D. 1976. "Estimates of trade-displacement costs for U.S. workers", in *Journal of International Economics*, Vol. 6, No. 3, pp. 245-250.
- Beaudry, P.; Green, D.A.; Sand, B.M. 2007. "Spill-overs from good jobs", *NBER Working Paper* No. 13006.
- Betcherman, G.; Amit D.; Luinstra, A.; Ogawa, M. 1999. "Active labor market policies: Policy issues for East Asia", mimeo (World Bank).
- Blanchard, O. 2005. "European unemployment: The evolution of facts and ideas", *NBER Working Paper* No. 11750.
- Boone, J.; van Ours, J.C. 2004. "Effective Active Labour Market Policies", *CEPR Discussion Paper* No. 4707.
- Bown, C.P.; McCulloch, R. 2007. "Trade adjustment in the WTO system: Are more safeguards the answer?", in *Oxford Review of Economic Policy*, Vol. 23, No. 3, pp. 415-439.
- Bradford, S.C.; Grieco, P.L.E.; Hufbauer, G.C. 2005. "The payoff to America from global integration", in *The United States and the world economy: Foreign economic policy for the next Decade* (Bergsten, C.F. and the Peterson Institute for International Economics).
- Brahmbhatt, M. 1997. *Global Economic Prospects and the Developing Countries* (Washington, DC, World Bank).
- Brühlhart, M. 2000. "Dynamics of intraindustry trade and labor-market adjustment", in *Review of International Economics*, Vol. 8, No. 3, pp. 420-435.
- Burda, M.; Dluhosch, B. 2000. "Fragmentation, globalization and labor markets", *GEP Research Paper Series* No. 2001/05.
- Cadot, O.; Dutoit, L.; Olarreaga, M. 2005. "Subsistence farming, adjustment costs and agricultural prices: Evidence from madagascar", *ETSG 2005 conference paper*.
- Casas, F.R. 1984. "Imperfect factor mobility: A generalization and synthesis of two-sector models of international trade", in *The Canadian Journal of Economics*, Vol. 17, No. 4, Nov.
- Cazes, S.; Nesperova, A. 2007. *Flexicurity: A relevant approach in Central and Eastern Europe* (ILO).

Chapter 6: Trade adjustment costs and assistance: The labour market dynamics

- Cazes, S.; Verick, S.; Heuer, C. 2009. "Labour market policies in times of crisis", *Employment Working Paper* No. 35.
- Davidson, C.; Matusz, S.J. 2000. "Globalization and labour market adjustment: How fast and at what cost?", in *Oxford Review of Economic Policy*, Vol. 16, No. 3, pp. 42- 56.
- Davidson, C.; Matusz, S.J. 2004a. "An overlapping-generations model of escape clause protection", in *Review of International Economics*, Vol. 12, No. 5, pp. 749-68, Nov.
- Davidson, C.; Matusz, S.J. 2004b. "Should policy makers be concerned about adjustment costs?", in *The Political Economy of Trade, Aid and Foreign Investment* (Emerald Publishing).
- Davidson, C.; Matusz, S.J. 2006. "Trade liberalization and compensation", in *International Economic Review*, Vol. 47, No. 3, pp. 723-748.
- Davidson, C.; Matusz, S.J. 2010. *International trade with equilibrium unemployment* (Princeton University Press).
- Davidson, C.; Matusz, S.J.; Nelson, D.R. 2007. "Can compensation save free trade?", in *Journal of International Economics*, Vol. 71, No. 1, pp. 167-186.
- Davis, S.J.; Faberman, R.J.; Haltiwanger, J. 2006. "The flow approach to labor markets: New data sources and micro-macro links", in *Journal of Economic Perspectives*, Vol. 20, No. 3, pp. 3-26.
- Davis, D.R.; Harrigan, J. 2007. "Good jobs, bad jobs, and trade liberalization", *NBER Working Paper* No. 13139.
- Decker, P.; Corson, W. 1995 "International trade and worker displacement: Evaluation of the trade adjustment assistance program", in *Industrial and Labor Relations Review*, Vol. 48, No. 4, pp. 758-774.
- Development Solutions; CEPR; Manchester 1824. 2009. *EU-Andean trade sustainability impact assessment*. Final report for European Commission DG Trade, Oct.
- Dluhosch, B. 2000. *Industrial location and economic integration: Centrifugal and centripetal forces in the new Europe* (Edward Elgar).
- ECORYS. 2009a. *Trade sustainability impact assessment: EU-Central America FTA*, report prepared for the European Commission DG Trade.
- ECORYS. 2009b. *Trade sustainability impact assessment: EU-India FTA*, report prepared for the European Commission DG Trade.
- Ethier, W. 1982. "National and international returns to scale in the modern theory of international trade", in *American Economic Review*, Vol. 72, No. 3, pp. 389-405.
- Fernandez, R.; Rodrik, D. 1991. "Resistance to reform: Status quo bias in the presence of individual-specific uncertainty", in *The American Economic Review*, Vol. 81, No. 5, pp. 1146-1155, Dec.
- Francois, J.F. 2004. "Assessing the impact of trade policy on labour markets and production", in *Economie Internationale*, Vol. 3Q, pp. 27-47.
- Francois, J.F.; Nelson, D.R. 2001. "Victims of progress: Economic integration, specialization and wages for unskilled labour", *CEPR Discussion Paper* No. 2527.
- Francois, J.F.; Nelson, D.R. 2002. "A geometry of specialization", in *The Economic Journal*, Vol. 112, No. 481, pp. 649-678.
- Francois, J.F.; Grier, K.B.; Nelson, D.R. 2004. "Globalization, roundaboutness and relative wages", *Timbergen Institute Discussion Paper* No. 04-021/2.

Trade and Employment: From Myths to Facts

- Francois, J.F.; Grier, K.B.; Nelson, D.R. 2008. "Globalization, intermediate specialization, and relative wages", *Johannes Kepler University Working Paper*.
- Francois, J.F.; Reinert, K.A. 1997. *Applied methods for trade policy analysis: A handbook* (Cambridge University Press).
- Francois, J.; Rojas-Romagosa, H. 2010. "Household inequality, social welfare, and trade", *CEPR Discussion Paper* No. 7998.
- Gamberoni, E.; von Uexkull, E.; Weber, S. 2010. "The roles of openness and labour market institutions for employment dynamics during economic crises", *ILO Employment Working Paper* No. 68.
- Gaston, N.; Trefler, D. 1997. "The labour market consequences of the Canada-US free trade agreement", in *Canadian Journal of Economics*, Vol. 30, No. 1, pp. 18-41.
- Goldberg, P.K.; Pavcnik, N. 2003. "Trade, wages, and the political economy of trade protection: Evidence from the Colombian trade reforms", *CEPR discussion papers* No. 3877.
- Greenaway, D.; Hine, R.C.; Wright, P. 1999. "An empirical assessment of the impact of trade on employment in the United Kingdom", in *European Journal of Political Economy*, Vol. 15, No. 3, pp. 485-500, Sept.
- Greenaway, D.; Milner, C.R. 1986. *The economics of intra-industry trade* (Basil Blackwell).
- Harrison, A.; Revenga, A. 1995. "Factor markets and trade policy reform", mimeo (World Bank).
- Heckman, J.J.; Pages, C. 2000. "The cost of job security regulation: Evidence from Latin American labor markets", *NBER Working Paper* No. 7773.
- Heckman, J.J.; Lalonde, R.J.; Smith, J.A. 1999. "The economics and econometrics of active labor market programs", Chapter 31 in O.C. Ashenfelter; D. Card (eds): *Handbook of Labor Economics*, (Amsterdam), pp. 1865-2097.
- Hill, H.; Aswicahyono, H. 2004. "Survey of recent developments", in *Bulletin of Indonesian Economic Studies*, Vol. 40, No. 3, pp. 277-305, Dec.
- Hoekman, B.M.; Porto, G. 2011. *Trade adjustment costs in developing countries: Impacts, determinants and policy responses* (World Bank and CEPR).
- Hoekman, B.M.; Javorcik, B.S. 2004 "Policies facilitating firm adjustment to globalization", *World Bank Policy Research Working Paper* No. 3441.
- Hertel, T.W.; Ivanic, M.; Preckel, P.V.; Cranfield, J.A.L. 2004. "The earnings effects of multilateral trade liberalization: Implications for Poverty", in *World Bank Economic Review*, Vol. 18, No. 2, pp. 205-236.
- ILO. 2010. *World social security report 2010/11. Providing coverage in times of crisis and beyond* (Geneva).
- ILO; OECD; World Bank; WTO. 2010. *Seizing the benefits of trade for employment and growth* (OECD).
- Imbs, J.; Wacziarg, R. 2003. "Stages of diversification", in *American Economic Review*, Vol. 93, No. 1, pp. 63-86.
- Jacobson, L.S.; LaLonde, R.J.; Sullivan, D.G. 1993a. "Earnings losses of displaced workers", in *The American Economic Review*, Vol. 83, No. 4, pp. 685-709, Sep.
- Jacobson, L.S.; LaLonde, R.J.; Sullivan, D.G. 1993b. Long-term earnings losses of high-seniority displaced workers", in *Economic Perspectives*, Vol. 17, pp. 2-20, Nov.
- Jansen, M.; Lee, E. 2007. *Trade and employment: Challenges for policy research* (ILO/WTO).

Chapter 6: Trade adjustment costs and assistance: The labour market dynamics

- Jansen, M.; von Uexkull, E. 2010. *Trade and employment in the global crisis* (ILO).
- Kemp, M.C. 1964. *The pure theory of international trade*, Chapter 8 (Prentice-Hall)
- Krugman, P.; Venables, A.J. 1995. "Globalization and the inequality of nations", in *Quarterly Journal of Economics*; Vol. 110, No. 4, pp. 857-880.
- Laird, S.; de Córdoba, S.F. 2006. *Coping with trade reforms, A developing-country perspective on the WTO industrial tariff negotiations* (Palgrave MacMillan).
- Levy, S.; van Wijnbergen, S. 1995. "Transition problems in economic reform: Agriculture in the North American free trade agreement", in *American Economic Review*, Vol. 85, No. 4, pp. 738-754, Sep.
- Lovely, M.E.; Nelson, D.R. 2000. "Marginal intraindustry trade and labor adjustment", in *Review of International Economics*; Vol. 8, No. 3, pp. 436-447, Aug.
- Magee, C. 2001. "Administered protection for workers: An analysis of the trade adjustment assistance program", in *Journal of International Economics*, Vol. 53, No. 1, pp. 105-125, Feb.
- Magee, S.P. 1972. "The welfare effects of restriction on U.S. trade", *Brookings Papers on Economy Activity* No. 3, N. 1972-3, pp. 645-708.
- Marcal, L.E. 2001. "Does trade adjustment assistance help trade displaced workers?", in *Contemporary Economic Policy*, Vol. 19, No. 1, pp. 59-72.
- Markusen, J.R. 1988. "Production, trade, and migration with differentiated, skilled workers", in *Canadian Journal of Economics*; Vol. 21, No. 3, pp. 492-506, Aug.
- Markusen, J.R. 1990. "Micro-foundations of external economies", in *Canadian Journal of Economics*, Vol. 23, No. 3, pp. 495-508, Aug.
- Markusen, J.R.; Venables, A.J. 1997. "The role of multinational firms in the wage-gap debate", in *Review of International Economics*, Vol. 5, No. 4, pp. 435-451, Nov.
- Markusen, J.R.; Venables, A.J. 1999. "Multinational production, skilled labor and real wages", in R. Baldwin; F. Francois (eds): *Dynamic issues in commercial policy analysis* (Cambridge University Press).
- Martins, J.O.; Scarpetta, S.; Pilat, D. 1996. "Mark-up pricing, market structure and the business cycle", in *OECD Economic Studies*, No. 27, pp. 71-102.
- Matusz, S. 1997. "Adjusting to trade liberalization", mimeo (Michigan State University).
- Matusz, S.J. 2001. "Trade policy reform and labor market dynamics, issues and an agenda for future research", *Economic Study Area Working Paper* No. 24 (East-West Center).
- Matusz S.J.; Tarr, D.G. 1999. "Adjusting to trade policy reform", *World Bank Working Paper* No. 2142.
- McMillan, M.; Rodrik, R.; Horn Welch, K. 2002. "When economic reform goes wrong: Cashews in Mozambique", *NBER Working Paper* No. 9117.
- de Melo, J.; Roland-Holst, D. 1994. "Economywide costs of protection and labor market rigidities", in M. Connolly; J. de Melo (eds): *The effects of protectionism on a small country: The case of Uruguay* (World Bank).
- de Melo, J.; Tarr, D. 1990. "Welfare costs of U.S. quotas in textiles, steel and autos", in *Review of Economics and Statistics*, Vol. 72, No. 3, pp. 489-497.
- Menon, J.; Dixon, P.B. 1997. "Intra-industry versus inter-industry trade: Relevance for adjustment costs", in *Weltwirtschaftliches Archiv*, Vol. 133, No. 1, pp. 164-169.

Trade and Employment: From Myths to Facts

- Meyn, M.; Kennan, J. 2010. "Economic partnership agreements: Comparative analysis of the agriculture provisions (UNCTAD).
- Mills, B.F; Sahn, D.E. 1995. "Reducing the size of the public sector workforce: Institutional constraints and human consequences in Guinea", in *Journal of Development Studies*, Vol. 31, No. 4, pp. 505-528.
- Milner, C.; Wright, P. 1998. "Modelling labour market adjustment to trade liberalisation in an industrialising economy", in *The Economic Journal*, Vol. 108, No. 447, pp 509-528, Mar.
- Mussa, M. 1978. "Dynamic adjustment in the Heckscher-Ohlin-Samuelson Model", in *Journal of Political Economy*, Vol. 86, No. 5, pp. 775-791, Oct.
- Mussa, M. 1986. "The adjustment process and the timing of trade liberalization", in A.M. Choksi; D. Papageorgiou (eds): *Economic liberalization in developing countries* (Blackwell Publishing).
- Mutti, J. 1978. "Aspects of unilateral trade policy and facto adjustment costs", in *The Review of Economics and Statistics*, Vol. 6, No. 1, pp. 102-110, Feb.
- Neary, J.P. 1982. "Intersectoral capital mobility, Wage stickiness, and the case for adjustment assistance", in J.N. Bhagwati (ed.): *Import competition and response* (University of Chicago Press).
- OECD. 1993. *Employment Outlook 1993* (Paris).
- OECD. 2005a. *Employment Outlook 2005* (Paris).
- OECD. 2005b. *Trade and structural adjustment* (Paris).
- OECD. 2010. *OECD employment outlook 2010* (Paris).
- ODI; ECDPM; CaPRI; EU. 2009. *The CARIFORUM EU-Economic partnership agreement (EPA): The development component*. Report prepared for the European Parliament's Committee on Development.
- Papageorgiou, D.; Choksi, A.M.; Michaely, M. 1991. *Liberalizing foreign trade in developing countries: The lessons of experience* (World Bank).
- Pastor, J.M.; Pérez, F.; Quesada, J. 2000. "The opening of the Spanish banking system: 1985-98", in S. Claessens; M. Jansen (eds): *The internationalization of financial services: Issues and lessons for developing countries* (Kluwer Law International).
- Peters, R.; Vanzetti, D. 2004. "Shifting sands: Searching for a compromise in the WTO negotiations on agriculture", *Policy Issues in International Trade and Commodities Study Series* No. 23 (UNCTAD).
- Piermartini, R.; Teh, R. 2005. "Demystifying modelling methods for trade policy", *Discussion Paper* No. 10 (WTO).
- Rama, M. 1994. "The labour market and trade reform in manufacturing", in M.B. Connolly; J. de Melo (eds): *Effects of protectionism on a small country: The case of Uruguay* (World Bank).
- Rama, M. 1999. "Public sector downsizing: An introduction", in *World Bank Economic Review*, Vol. 13, No. 1, pp. 1-22, Jan.
- Rama, M. 2003. "Globalization and workers in developing countries", *Policy Research Working Paper Series* No. 2958 (World Bank).
- Richardson, D.J. 1982. "Trade adjustment assistance under the U.S. Trade Act of 1974: An analytical examination and worker survey", in J. Bhagwati (ed.): *Import competition and response* (University of Chicago Press).
- Rivera-Batiz, F.L.; Rivera-Batiz, L.A. 1991. "The effects of direct foreign investment in the presence of increasing returns due to specialization", in *Journal of Development Economics*, Vol. 34, No. 1-2, pp. 287-307, Nov.

Chapter 6: Trade adjustment costs and assistance: The labour market dynamics

- Rodrik, D. 2004. "Getting institutions right", *CESifo DICE Report* 2/2004.
- Saint-Paul, G. 2007. "Making sense of Bolkenstein-bashing: Trade liberalization under segmented labour markets", in *Journal of International Economics*, Vol. 73, No. 1, pp. 152-174.
- Sapir, A. 2006. "Globalization and the reform of European social models", in *Journal of Common Market Studies*, Vol. 44, No. 2, pp. 369-390.
- Scheve, K.F.; Slaughter, M.J. 2004. "Economic insecurity and the globalization of production", in *American Journal of Political Science*, Vol. 48, No. 4, pp. 662-674, Oct.
- Schott, P.K. 2004. "Across-product versus within-product specialization in international trade", in *Quarterly Journal of Economics*, Vol. 119, No. 2, pp. 647-678, Mar.
- Takacs, W.E.; Winters, L.A. 1991. "Labour adjustment costs and British footwear protection", *Oxford Economic Papers*, Vol. 43, No. 3, pp. 479-501, July.
- Trefler, D. 2004. "The long and short of the Canada-U.S. free trade agreement", in *American Economic Review*, Vol. 94, No. 4, pp. 870-895, Sep.
- Vives, X. 2000. "Lessons from European banking liberalization and integration", in S. Claessens; M. Jansen (eds): *The internationalization of financial services: Issues and lessons for developing countries* (Kluwer Law International).
- Vodopivec, M. 2009. "Introducing unemployment insurance to developing countries", *IZA Policy Paper* No. 6 (German Institute for the Study of Labour).
- Wood, A. 1997. "Openness and wage inequality in developing countries: The Latin American challenge to East Asian conventional wisdom", in *World Bank Economic Review*, Vol. 11, No. 1, pp. 33-57, Jan.
- World Bank. 1997. *Global economic prospects and the developing countries*.
- WTO. 2008. *World trade report 2008: Trade in a globalizing world*.
- Yeaple, S.R. 2005. "A simple model of firm heterogeneity, international trade, and wages", in *Journal of International Economics*, Vol. 65, No. 1, pp. 1-20, Jan.

ANNEX 6.A: MEASURING ADJUSTMENT IN OUTPUT AND CHANGES IN INEQUALITY LEVELS

6.A.1 Measuring adjustment in terms of output

The metrics presented in equations (1) to (4) in the main text to capture adjustment in labour markets can also be developed to capture adjustment in terms of output.

The starting point is again information on sectoral-level output generated, for example, with CGE simulations. We will refer to changes in sectoral output as \hat{q}_j where the subscript j represents sectors. Total change in output m_q resulting from trade reform in an economy with n sectors can then be computed using:

$$m_q = \sum_{j=1}^n \lambda_j \hat{q}_j \quad (Q1)$$

Where λ_j represents the weight of a sector j in the total economy. As in the case of the employment measure in equation (1), the measure m_q is only of limited use to reflect the extent of adjustment processes, as positive and negative output changes will cancel out. It is therefore preferable to use a variance-based measure of the type:

$$s_{q,across}^2 = \sum_{j=1}^n \lambda_j (\hat{q}_j - m_q)^2 \quad (Q2)$$

Taking the square root of $s_{q,across}^2$ provides a useful measure of variation across sectors. This measure can be calculated in a rather straightforward way with standard CGE models.

An important weakness of this measure is that it does not capture output shifts across firms within the same sector. For a given change of output within a sector, $Q2$ would signal the same extent of adjustment if that change entails proportional shifts in output across firms or if it entails company failures and creation of new companies. Yet, adjustment of the second type is likely to be more costly for an economy, in particular if growing and shrinking firms are located in different regions. The importance of firm-level adjustments has been emphasized in recent trade literature. A more appropriate measure would therefore take into account within-sector adjustment:

$$s_{q,within,j}^2 = \sum_{i=1}^{f_j} \theta_{ij} (\hat{q}_{ij} - m_{q,j})^2, \quad (Q3)$$

where $m_{q,j} = \sum_{i=1}^{f_j} \theta_{ij} \hat{q}_{ij}$ and θ_{ij} weight of firm i sector j

A measure for total adjustment, capturing all changes in output, those within and across sectors, would look as follows:

$$\begin{aligned} s_{q,Total}^2 &= \sum_{j=1}^n \sum_{i=1}^{f_j} \lambda_j \theta_{ij} (\hat{q}_{ij} - m_q)^2 \\ &= \sum_{j=1}^n \lambda_j s_{q,j;within}^2 + s_{q,across}^2 \end{aligned} \quad (Q4)$$

Given that establishment-level information is typically not available in CGE models, the within variation measure can most of the time not be measured, which leads to a probable underestimation of output adjustment.

6.A.2 *Changes in the distribution of income*

Changes in the distribution of income fall, in principle, outside of the definition of adjustment employed in this chapter. While this chapter is concerned with the short term, i.e. the period immediately following trade reform, changes in income distribution are typically discussed with respect to the long run. Yet the changes of income suffered by trade-displaced workers have often been used as an argument in favour of adjustment assistance, as discussed in the main text. Income changes are also typically regarded as an important determinant of trade policy behaviour (see Baldwin, 1989). We therefore propose in this annex a metric that can be used to measure income inequality in a CGE context, based on information on household income. We propose to use this type of measure to establish a social welfare metric. Such a metric would make it possible to evaluate changes in social welfare resulting from trade reform.

Starting with constant relative risk aversion (CRRA) preferences, it is possible to map the so-called Atkinson inequality index to social welfare. This in turn means we can, in theory, make inequality-related adjustments to measures of social welfare. To the extent that labour market adjustments are manifested in rising or falling inequality, this also gives us a vector for mapping long-term labour market adjustment to social welfare, this time through the income distribution channel. In formal terms, we first need to define the inequality index:

$$I = 1 - \left(\frac{1}{h} \sum_h \left(\frac{y^h}{\bar{y}} \right)^{1-\rho} \right)^{\frac{1}{1-\rho}} \quad (\text{D1})$$

In equation (D1), h indexes households, while the coefficient ρ measures the degree of relative risk aversion. From the macroeconomics literature, this coefficient is estimated to be less than (though close to) 1. The terms \bar{y} and y^h indicate household income and average income across households. From Francois and Rojas-Romagosa (2010), we can rewrite (D1) as follows.

$$I_A = 1 - \left\{ h^{-\rho} \sum_h \left[h^{-1} + \sum_z \beta_h (\omega_z^h - n^{-1}) \right]^{1-\rho} \right\}^{\frac{1}{1-\rho}} \quad (\text{D2})$$

In equation (D2), the term β_h measures the importance of income to primary factors indexed by z in total national income, while ω_z^h represents the household ownership share of this factor. From equation (D2), inequality depends on the unequal distribution of sources of factor income (the last set of terms in round brackets

in equation (D2)) combined with the importance of factors in total national income. Hence, for a given unequal distribution of land, for example, the greater the importance of land to total income, the greater the inequality index.

Working with CRRA preferences, the corresponding social welfare function is a Sen-type welfare function. This means we have separability between average income and its dispersion at the household level and can generate the following equation:

$$SW = \left[\left(\frac{\bar{y}}{p_c} \right) (1 - I_A) \right]^{1-\theta} \quad (D3)$$

The recent literature has employed household data to measure changes in inequality due to globalization trends. Equation (D3) offers a metric for using these CGE-based estimates to calculate welfare metrics for such changes, though to our knowledge this has not been done to date. While equation (D3) measures impacts on welfare, in a dynamic context (over a period of adjustment) it can also be used to translate inequality-related dynamics into dynamic social welfare-related adjustment costs following from transitional changes in inequality.