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**Preferential Trade Agreements and
the Labour Market**

Emanuel Ornelas

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Preface

The primary goal of the ILO is to contribute, with member States, to achieve full and productive employment and decent work for all, including women and young people, a goal embedded in the ILO Declaration 2008 on *Social Justice for a Fair Globalization*¹, and which has now been widely adopted by the international community.

In order to support member States and the social partners to reach the goal, the ILO pursues a Decent Work Agenda which comprises four interrelated areas: Respect for fundamental worker's rights and international labour standards, employment promotion, social protection and social dialogue. Explanations of this integrated approach and related challenges are contained in a number of key documents: in those explaining and elaborating the concept of decent work², in the Employment Policy Convention, 1964 (No. 122), and in the Global Employment Agenda.

The Global Employment Agenda was developed by the ILO through tripartite consensus of its Governing Body's Employment and Social Policy Committee. Since its adoption in 2003 it has been further articulated and made more operational and today it constitutes the basic framework through which the ILO pursues the objective of placing employment at the centre of economic and social policies³.

The Employment Sector is fully engaged in the implementation of the Global Employment Agenda, and is doing so through a large range of technical support and capacity building activities, advisory services and policy research. As part of its research and publications programme, the Employment Sector promotes knowledge-generation around key policy issues and topics conforming to the core elements of the Global Employment Agenda and the Decent Work Agenda. The Sector's publications consist of books, monographs, working papers, employment reports and policy briefs⁴.

The Employment Working Papers series is designed to disseminate the main findings of research initiatives undertaken by the various departments and programmes of the Sector. The working papers are intended to encourage exchange of ideas and to stimulate debate. The views expressed are the responsibility of the author(s) and do not necessarily represent those of the ILO.

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¹ See http://www.ilo.org/public/english/bureau/dgo/download/dg_announce_en.pdf

² See the successive Reports of the Director-General to the International Labour Conference: *Decent work* (1999); *Reducing the decent work deficit: A global challenge* (2001); *Working out of poverty* (2003).

³ See <http://www.ilo.org/gea>. And in particular: *Implementing the Global Employment Agenda: Employment strategies in support of decent work*, "Vision" document, ILO, 2006.

⁴ See <http://www.ilo.org/employment>.

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I. Introduction

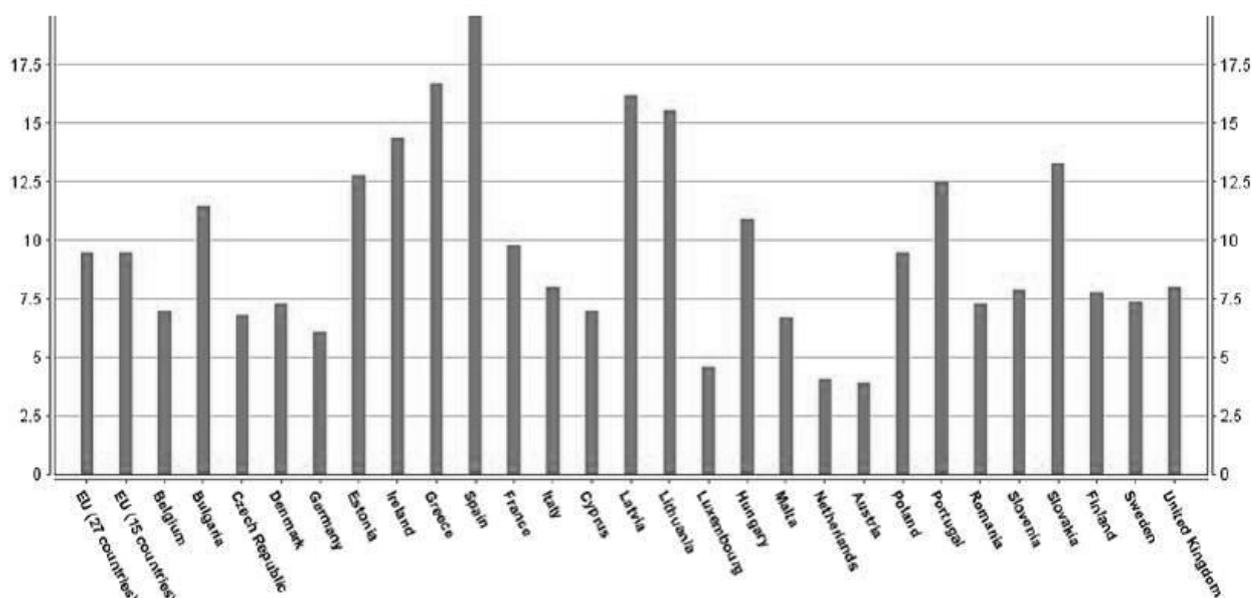
The labour market, and in particular employment/unemployment effects, is probably the main concern of most people when they hear about trade liberalization. Surely this is in part due to the actual labour market consequences of trade liberalization. But it also reflects hopes and concerns fomented by policymakers. Whenever they want to promote trade liberalization, it is argued that a more liberal trade regime will create jobs, and good jobs in particular. In turn, if a policymaker wishes to criticize a plan to liberalize trade, he/she will surely point toward the resulting loss of jobs, especially the good ones. While seemingly contradictory, both of these views are to some extent correct—and this is what allows the policymakers to vindicate themselves *ex post*. After all, subsequent to any process of trade liberalization we should expect some new jobs to be created, of which a share will be in high-paying occupations, and some old ones to be lost, of which a fraction will be high-paying too.

It is much trickier, on the other hand, to make clear predictions about the overall, economy-wide net impact of trade liberalization on employment and unemployment levels. For starters, to explain involuntary unemployment one needs to invoke some type of market friction or failure. There is no doubt that market frictions and failures are pervasive in many economies, but to pin down their relative importance in an economy, and therefore the precise labour market implications of trade liberalization there, is far more difficult. Moreover, trade policy is but one of the many factors and policies that affect the labour market of an economy. A good illustration of this point is provided in Figure 1, which shows the recent unemployment rates of the 27 members of the European Union. All of those countries follow an identical set of trade policies, which is defined at the level of the European Union and adopted by all members, and yet we observe a dramatic level of variation of unemployment rates among them.

Still, some conditional predictions can be made. This is indeed what the theoretical literature on trade and the labour market has attempted to do in the last ten to fifteen years, and in particular in the last five years, when the topic at last started to gain a long due special attention by theoretical trade economists. In this article I review the most salient points that this literature has raised to date.

Now, when we talk about trade liberalization, it is inevitable that we also discuss preferential trade agreements (PTAs). Liberalization through PTAs has become, by far, the preferred mode virtually everywhere in the world. Nowadays there are over 300 (or 400, depending on how one counts) PTAs in force. If we look at the current 154 members of the World Trade Organization (WTO), all of them but one (Mongolia) are currently members of at least one PTA. And several countries participate in many such arrangements—Chile, the PTA “world champion,” is currently a member of 26 agreements. Or looking from another angle, on average each WTO member is a PTA partner with around fifteen other countries (Freund and Ornelas 2010; World Trade Organization 2011).

Figure 1. Harmonized unemployment rate (%) of all European Union members, June 2011, (seasonally adjusted)



Source: Eurostat

By contrast, large initiatives of trade liberalization at the multilateral level have all but stalled after the last big push, from 1986 to 1994, when the Uruguay Round of multilateral negotiations was completed. Surely, 31 economies have joined the WTO since the conclusion of the Uruguay Round, and they often lower trade barriers when doing so. Still, the Doha Round has been under negotiation for over ten years now, and after many failed attempts the prospect of a successful conclusion seems grim. In fact, there are already suggestions for a “Doha-redux” – i.e., a change in the current proposals to a watered-down, much less ambitious Doha agreement, but one that at least can be concluded (see Baldwin and Evenett 2011 for a range of views on the future of the Doha Round).

Trade liberalization through PTAs and trade liberalization through the WTO are also fundamentally different, especially for developing countries. The reason is that WTO negotiations are about bound tariffs, not applied tariffs—that is, about the maximum duty a country can impose on the imports of a certain good. Of course, when applied and bound rates coincide, a decision to lower the latter implies a reduction in the former too. This is usually the case in developed countries. In emerging and less developed economies, on the other hand, there is usually significant “water in the tariff” (using WTO parlance), implying that an agreement to lower bound rates typically has no direct implication for the applied tariffs. For example, the WTO most-favoured-nation (MFN) average bound tariffs of Mercosur countries are currently slightly above 30 per cent for non-agricultural products, whereas the MFN applied average rate is below 15 per cent, according to the 2011 WTO Tariff Profiles. For the Central American Common Market, the bound average rate is around 40 per cent, whereas the average MFN applied rate is below 5 per cent. Naturally, tariff bounds matter too, as they bring more predictability to the policy arena, with effects for example for the investment decision of firms (see for example Maggi and Rodriguez-Clare 2007). Still, the nature of WTO-driven trade liberalization is quite different from the nature of liberalization in the context of PTAs, which is always about applied (preferential) tariffs.

Some countries also liberalize trade (i.e. their applied rates) unilaterally, but this has become less common than it used to be in the 1990s. Furthermore, many instances of

unilateral liberalization have been associated with previous involvement in PTAs. That is, some countries may have chosen to liberalize unilaterally, vis-à-vis all countries, *because* they were involved in PTAs. We discuss later the theoretical arguments behind this link, as well as empirical evidence for it (by Estevadeordal, Freund and Ornelas 2008 for Latin American countries during the 1990s; by Calvo-Pardo, Freund and Ornelas 2011 for ASEAN members over 15 years).

It seems clear, therefore, that trade liberalization these days happens, to a large extent, through PTAs. Does it matter? In many ways, it does, because a PTA necessarily implies trade preferences—for the PTA partners—and trade discrimination—against the PTA non-members. There is a large literature, whose main insights we review in this article, which examines in detail the differences between preferential and non-discriminatory trade liberalization. The key insight was put forward long ago by Viner (1950), who pointed out that preferential liberalization does not need to be efficiency-enhancing, as non-discriminatory liberalization is often expected to be. The reason is that the preferences can lead to trade diversion, where there is an increase in intra-bloc trade but from the shifting of resources from efficient external producers to inefficient producers within the bloc. Trade diversion is not mandatory, though. It may be that preferential liberalization will lead mostly to trade creation instead, where higher intra-bloc trade arises because resources are shifted from inefficient domestic suppliers to more efficient producers within the PTA. Much has been done after Viner (1950) to understand when trade creation or trade diversion are likely to prevail, as well as numerous other issues that are specific to preferential liberalization.

Intriguingly, there is virtually *nothing* written on the labour market consequences of trade liberalization under a PTA. Well, to be sure, there are numerous empirical studies that address the labour market implications of specific PTAs (most prominently NAFTA and the European Union), but virtually no attention has been paid in those empirical analyses to the discriminatory nature of the lower trade barriers. That is actually understandable, as there is not a single theoretical study (to my knowledge at least) that tries to address the implication of PTAs for the labour markets of the countries involved, taking into account explicitly the preferential nature, and all that it entails, of the liberalization that takes place in the context of PTAs. This gap needs to be filled. Here I propose a very first attempt in this direction. Relying on the insights from the literature on international trade and the labour market, on one hand, and on the literature on preferential liberalization, on the other hand, I discuss possible ways in which liberalization through PTAs can have consequences for the labour market that are qualitatively different from the consequences of lowering trade barriers in a non-discriminatory fashion.

The structure of this article is as follows. In section II I discuss the state of knowledge of the relationship between international trade and the labour market, with a focus on the recent contributions. In section III I summarize what we know about the effects of liberalization in the context of preferential trade agreements. In section IV I look for the insights one can reach on the implications of liberalization through PTAs for the labour market by taking into account the findings from the two distinct literatures. These insights naturally lead to policy implications, even if at a tentative level. Finally, I conclude in section V with a summary of my findings and with suggestions for future research.

II. Trade and the labour market

II.1. Traditional trade theories: frictionless labour markets

The workhorse trade models traditionally disregard the consequences of trade policies on employment. The running assumption is that the economy is always in full employment and workers are paid their marginal products. This is often justified by the view that the analysis takes a long-run perspective, and that in the long run employment is determined by macroeconomic policies and labour market institutions, not by trade policy. Moreover, in the long run all adjustments between equilibria have already occurred. In those models, therefore, international trade affects workers only through wage effects, as well as consumers.

In Ricardian-type models (e.g. Dornbusch, Fischer and Samuelson 1977, Eaton and Kortum 2002), there is a single factor of production, labour. As international trade is efficiency-enhancing, all workers benefit through higher real wages.

In the Heckscher-Ohlin model with two factors of production, say labour and capital, workers benefit from international trade in countries that are relatively abundant in labour, but otherwise are hurt from trade. The reason is that, under free(er) trade, an economy tends to specialize in the industries that are intensive in the factors that are abundant there, as the relative prices in those industries rise. This implies an increase in the demand for the abundant factor, and a decrease in the demand for the scarce factor. If developing countries are relatively abundant in labour, workers there are likely to benefit from expanded trade, while the opposite is true in developed economies. If we think of the two factors as skilled and unskilled labour, then trade tends to benefit unskilled workers in developing countries while hurting skilled workers there, with the opposite happening in developed countries.

The neoclassical way of considering short-run effects of trade is the Ricardo-Viner, “specific factors” model. That model takes the opposite extreme view of the factor proportions model: while one factor of production is perfectly mobile and adjusts instantaneously, the other factor of production is completely immobile and never adjusts. Furthermore, equilibrium unemployment remains absent, with all adjustments channelled through changes in factor prices.

Krugman (1979, 1980) introduced monopolistic competition and love of variety to international trade modelling. This innovation made possible to make sense of intra-industry trade and uncovered a by then ignored source of gains from trade, that of better access to different varieties of a same product. The assumption of frictionless labour markets and full employment were nevertheless maintained.

Models with oligopolistic competition improved further our understanding of intra-industry trade and focused on implications of trade policy that seem very relevant in actual policymaking but that are disregarded in the neoclassical models, such as profit-shifting, and linked trade policy to industrial policy. Still, despite the emphasis on policy, the labour market does not play any role in those models either (Brander 1995).

More recently, models with heterogeneous firms under monopolistic competition and love of variety, following Melitz (2003), came to dominate the field of international trade. The focus then shifted from industry differences to firm differences in productivity within an industry. Still, by and large, the labour market features in those models just as it does in neoclassical models, always clearing so that unemployment is never an issue.

II.2. International trade with labour market search frictions

Now, despite the long-held tradition in the theories of international trade of relegating many key elements of the labour market, there are of course exceptions. Fortunately, those exceptions are becoming more common, and we may be currently witnessing the inception of a long due body of research focusing on the labour market effects of international trade.

In labour economics, a common way to study involuntary unemployment is by modelling search frictions. Firms may want to hire and unemployed workers may want to work, but firms and workers do not “find” each other instantaneously. In other words, incomplete information about job opportunities, on one hand, and about worker availability, on the other hand, imply that unemployed factors need to incur in costly, time-consuming search activities to find each other. Search costs have a long tradition in labour economics, of course, but only relatively recently they started to feature more prominently in trade models.

The main exception is a series of studies by Carl Davidson, Steven Matusz and co-authors. They first introduced search frictions into a general equilibrium trade model in Davidson, Martin and Matusz (1988). There are two sectors and two factors, and they consider that one of the sectors displays search frictions. Their main goal is to study how search frictions affect the equilibrium of an otherwise standard, frictionless general equilibrium model, a la Jones (1965). They show that such frictions can indeed lead to a significant revision of the distributional effects of trade. Specifically, when the sector with search frictions is relatively small and is the importing sector, the relative supply curve can be downward sloping, in which case the Stolper-Samuelson relationship (i.e. the view that trade liberalization benefits the factor of production used intensively in the export sector) is reversed. Thus, a decrease of import tariffs in a relatively small sector that displays search frictions leads to an *increase* in the real wages in the protected sector. Unemployment can also increase, depending on the relative strength of two opposing forces—the two sectors become more asymmetric, implying more unemployment, but the search frictions-prone importing sector decreases in size, bringing less aggregate unemployment.

Davidson, Martin and Matusz (1999) build on their previous work to further study the extent to which search costs that generate equilibrium unemployment affect classic results from trade theory. Their key insight is that the determinants of Ricardian-type comparative advantage forces need to be expanded to include labour market characteristics, such as turnover rates. Intuitively, if job duration is higher or expected duration of unemployment is lower in a sector/country, wages in that sector/country will be lower because factors of production do not need to be induced so much to move into that sector.

Davidson et al. (1999) also show that there is an extended version of the Stolper-Samuelson theorem that applies to an environment with search frictions, describing how trade affects factors of production currently searching (considering their expected lifetime income). However, in such an environment the Stolper-Samuelson theorem does *not* apply directly for the employed factors. Instead, for employed factors there are both Stolper-Samuelson and Ricardo-Viner effects that operate simultaneously. In industries where turnover is low, returns to employed factors tend to have a high industry-specific component. But in industries where turnover is high, workers will be weakly attached to the industry and the Stolper-Samuelson effects dominate in explaining factor returns.

The effect of international trade on unemployment depends on the characteristics of the economy. For example, when a relatively capital-abundant large country starts to

trade with a small labour-abundant country, and the large country has comparative advantage in the sector with search costs—which expands with trade—unemployed workers in the large country suffer welfare losses and aggregate unemployment increases. Yet the opposite is true if the large country has comparative advantage in the sector that does not display search costs. In other words, in general unemployment can go either way after trade liberalization, and this effect tends to linger in the long run.

Hence, since labour market frictions vary both across countries and across sectors within countries, it is almost inevitable that international trade, by relocating resources across sectors within countries, will affect aggregate unemployment, both in the short and in the long run. For example, unemployment would increase if trade liberalization induced resources to shift from sectors with low labour market frictions to sectors with high labour market frictions. Unemployment would instead decrease after trade liberalization under the alternative scenario. Now, while their theoretical models cannot give a definitive answer to the question of how large the impact of international trade on unemployment is, Davidson and Matusz (2009) indicate that “it is likely to be quite small” (p. 5). This is in line, for example, with the results of Hasan, Mitra and Ranjan (2009), who study the relationship between unemployment rates and trade protection using data from the large trade liberalization episode in India during the 1990s. They find little effect on overall unemployment, although they find that unemployment declines with trade liberalization in states with more flexible labour markets, in urban areas, and in states where exporting industries are in the majority.

More recently, there have been several additional attempts to incorporate the labour market more fully into trade models. Most of the new analyses use a framework that follows the approach initiated by Melitz (2003), of modelling how firms that are heterogeneous in terms of their productivity decide whether to enter foreign markets. Under the assumption that exporting entails a sunk cost, this implies that exporters in an industry will generally be more productive than non-exporting firms. This self-selection of the best firms into exporting implies, in turn, that exporters pay higher wages for similar workers, provided that there is profit-sharing within the firm, or if there is selection on unobservables through distinct screening processes. The result that exporters pay higher wages is also in line with numerous empirical studies (see for example the surveys by Mayer and Ottaviano 2007 and by Bernard, Jensen, Redding and Schott 2007).

Most prominent among the recent analyses are the studies of Helpman and Itskhoki (2010) and of Helpman, Itskhoki and Redding (2010). In both papers the authors adopt and extend the insights from incorporating search frictions into trade models, like those by Davidson et al. (1988, 1999), to settings where firms are heterogeneous in their productivity levels.

Helpman and Itskhoki (2010) consider two sectors, one with homogeneous products, the other with differentiated products. As in Davidson et al. (1999), labour market frictions are a source of comparative advantage: the country with relatively low labour market frictions in the differentiated sector exports differentiated products on net and imports homogeneous goods. Consumers’ preferences are represented by a quasilinear utility function that is linear in the homogeneous good; thus all income effects are absorbed into that sector. Labour is the only factor of production, used in both sectors. The market for the homogeneous product is perfectly competitive, whereas the market for the differentiated product is monopolistically competitive. In that sector, as in all the literature spurred by Melitz (2003), firms incur fixed costs to exist, to produce for the domestic market, and to export.

There are search and matching frictions in both sectors. Firms post vacancies to attract workers. When a firm and a worker match, they bargain over the surplus from the relationship. In the homogeneous-product sector, every firm employs one worker. In the differentiated-product industry, firms have different productivity levels but face the same cost of hiring in the labour market. A firm that wants to stay in the industry chooses an employment level and whether to serve the foreign market. Since search costs make replacing a worker costly, the firm increases its employment level up to the point where the bargaining outcome yields a wage rate equal to the cost of replacing a worker. Since this hiring cost is common across all firms, in equilibrium all firms in a country pay identical wages. Workers, on the other hand, choose in which sector to look for jobs based on their expected wages and the likelihood of finding jobs. However, once committed to a sector, a worker cannot switch sectors—that is, there is perfect intersectoral mobility *ex ante* but no mobility *ex post*. In an equilibrium with employment in both sectors, the expected incomes in the two sectors have to be equal, so that workers are indifferent between the sectors. Moreover, the number of workers looking for jobs in the differentiated sector will be proportional to the total revenue in the country from domestic sales and exporting.

Assuming that labour market frictions are higher in the differentiated sector in both countries, lower trade barriers raise aggregate unemployment if the countries are symmetric. The reason is as follows. First, the size of trade costs does not affect the tightness of the labour market. But lower trade costs make exporting more profitable in the differentiated-product sector. This increases demand for labour in the differentiated sector and leads to reallocation of workers towards that sector, with more workers looking for jobs there. As a result, although the sectoral unemployment rates remain the same, the aggregate unemployment rate increases because the differentiated sector expands, and that sector displays higher labour frictions. This happens in both countries.

A related result arises when countries are asymmetric. Lower trade impediments increase the global size of the differentiated sector, which features increasing returns to scale and love of variety. As a result, the country with a more flexible labour market, which has a competitive edge in this sector, becomes more specialized in differentiated products. That is, the number of entering firms, the level of employment, and the number of job-seekers in the differentiated sector all increase in that country. This compositional shift leads to a higher rate of unemployment there, because the sectoral rate of unemployment is higher in the differentiated sector. In the country that has a comparative advantage in homogeneous goods, on the other hand, the reallocation of labour may shift in either direction, depending on how strong its comparative advantage is.

Helpman, Itskhoki and Redding (2010) adopt a framework similar to Helpman and Itskhoki (2010), but extend it in important directions. First, not only firms but also workers are heterogeneous. Second, worker ability is match-specific. Third, it is costly for a firm to observe worker ability when firms and workers are matched. Thus, firms need to undertake costly screening to obtain a (imprecise) signal of worker ability. Specifically, firms pay a screening cost to identify whether workers have an ability level below a certain threshold level. The screening cost is increasing in the ability threshold level, because more complex and costlier tests are required to identify higher ability cutoffs. By screening and not employing workers with abilities below the chosen cutoff, a firm affects its own output (and hence revenue and profits) in two different ways. On one hand, the firm reduces its output because it decreases the number of workers it hires; on the other hand, the firm raises its output because it increases the average worker ability in the firm.

In equilibrium, more productive firms choose to screen more workers and choose a higher ability threshold. The reason is that there are production complementarities

between a firm's productivity and the average ability of its workers. This complementarity implies a higher return to screening for more productive firms, whereas the costs of screening are the same for all firms. The choice of how many workers to screen is such that, despite the higher ability threshold, more productive firms hire more workers than less productive firms. Since firms choose employment levels to equalize wages and the replacement cost of a worker, more productive firms pay higher wages because their workers are of a higher average ability, and therefore are more costly to replace. Thus, there are differences in wages across firms, and these are driven by differences in workforce composition.

In this setting, there is ex post wage inequality even though workers are ex ante identical and have the same expected income. The reason is that firms with different productivities choose to hire workers with different abilities. Thus, workers receive different wages depending on the employer with whom they are matched. There is, first, a "wage-size" premium—more productive firms, which are larger, pay higher wages. Second, there is also a "wage-export" premium—firms that export pay higher wages for a given productivity. This helps to rationalize the empirical fact that more productive (and exporting) firms tend to pay higher wages for seemingly identical workers, provided that firms select workers in their screening processes based on unobservable characteristics of workers.

Workers can be unemployed for two reasons: they may not be matched with a firm, or their match-specific ability draw may be below the screening threshold of the firm with which they are matched. When a closed economy opens to trade, sectoral unemployment is affected through two distinct channels. First, trade affects firms' hiring rates. International trade yields an expansion in the revenue of the firms that become exporters, and a contraction in the revenue of non-exporters. As exporting firms are more productive—because only the most productive firms can afford the sunk costs to export—this changes industry composition towards more productive firms, which screen more intensively. As a result, the opening of trade reduces the hiring rate, which increases sectoral unemployment. Second, trade affects the tightness of the labour market (i.e., the fraction of workers sampled to workers searching for jobs), which is a function of workers' expected income. In the version of the model with a single sector, workers' expected income rises with trade, increasing the tightness of the labour market. In this case, trade has an ambiguous effect on aggregate employment. In the version of the model with two sectors, where the second sector produces a homogeneous good and displays no frictions, workers' income is tied to their wages in the homogeneous sector, and does not change with trade. Thus, the tightness of the labour market does not change and trade only affects the hiring rate. Accordingly, trade induces a higher unemployment rate.

Trade liberalization also affects sector inequality. Its net effect has an inverted-U shape: an increase in the fraction of exporting firms raises sectoral wage inequality when the fraction of exporting firms is sufficiently small but reduces sectoral wage inequality when the fraction of exporting firms is sufficiently large. The intuition is simple. When no firm exports, a small reduction in trade costs that induces some firms to start exporting raises sectoral wage inequality because of the higher wages paid by exporters. When all firms export, a small increase in trade costs that induces some firms to stop exporting raises sectoral wage inequality because of the lower wages paid by purely domestic firms. The crucial force behind these effects is that firms with different productivities choose different screening thresholds, with the most productive ones choosing higher thresholds, and thus paying higher wages.

II.3. Efficiency wages and job rents

An implication of the mechanism discussed above is that similar workers can earn different wages if they work for different firms. Such wage “rents” arise not only because of search frictions and screening technologies, as in Helpman et al. (2010). Another important source of such rents is that firms are usually unable to perfectly observe the level of effort that their workers put in, at least without incurring significant monitoring costs. This gives rise to “efficient wages”: firms have an incentive to pay wages above the level that clear the market. This generates rents for employed workers at the same time it generates involuntary unemployment in the economy, and this (i.e. the fear of becoming unemployed) is what induces employed workers to exert effort in their jobs.

Davis and Harrigan (2011) develop a model where firms differ in their productivities, a la Melitz (2003), but where they also differ in their monitoring costs: some firms can detect shirking of their workers more easily than others. This implies that wages vary across firms even if workers were identical, as in their model. Consequently, in equilibrium there are “good jobs” (which are offered by firms that have higher monitoring costs, and therefore need to incentivize more their workers) and “bad jobs” (offered by firms that have lower monitoring costs, which can induce effort by monitoring workers closely). Clearly, for workers the loss from being fired is higher when they hold a “good job.”

Trade liberalization, in the context of Davis and Harrigan’s (2011) model, affects the average level of wage distortion and, consequently, also the level of unemployment. The effect is, however, ambiguous, and relies on the joint distribution of the parameters driving firms’ productivities and monitoring abilities. Furthermore, in the authors’ calibration exercise, trade has minimal effects on the economy’s overall unemployment level.

On the other hand, trade liberalization has unambiguous and important implications for job turnover, including the distribution of “good” versus “bad” jobs. Keeping fixed the average wage distortion—and therefore aggregate employment—the opening of trade will induce exit of some firms, contraction of others, and expansion of the remaining (the ones heavily engaged in exporting). The group a firm belongs to depends on its marginal cost (the higher it is, the more likely it is that the firm will exit or contract). If a worker keeps his/her job, his nominal wage does not change. All workers in expanding firms are in that category. On the other hand, all workers in the exiting firms (obviously) lose their jobs, whereas those in contracting firms face a strictly positive probability of being fired.

The most instructive way of looking at those results is by fixing (i.e. controlling for) the productivity of the firm. For a given level of productivity, the firms that have higher marginal costs are those with higher monitoring costs. These are the firms that are likely to exit (or to contract) after trade liberalization. But these are precisely the firms offering the “good jobs,” since they need to pay high efficient wages to induce effort, given that they are relatively inefficient in monitoring. Conversely, for given productivity, the low-marginal cost firms that expand after trade liberalization are those with low monitoring costs, which offer relatively “bad” jobs. Hence, if one controls for productivity, trade liberalization yields only bad, relatively low-paying jobs, while eliminating the best jobs.

Now, while it is true that trade liberalization destroys the best jobs *conditional* on productivity, one must remember that the most productive firms are the ones that expand with trade, and it is possible that the economy’s average wage increases with trade. Moreover, trade brings more variety and a lower aggregate price level, increasing workers’ average real income. Furthermore, according to Davis and Harrigan’s model, the existence of “good jobs” stems from an inefficiency in the economy, which lowers

aggregate income. The underlying market failure in this framework is that workers cannot credibly commit to exert effort at a lower wage schedule than the equilibrium one; the inefficiency associated with this market failure is greater, the more firms with high monitoring costs there are.

In their benchmark simulations, Davis and Harrigan (2011) find that 15 per cent of “good jobs” and 19 per cent of “bad jobs” are lost when the economy moves from autarky to free trade. Together with a decrease in the price index, those changes imply a significant improvement in workers’ *average* welfare. However, there is also a very sizeable *distributional* effect, with substantial reallocation of job rents across workers.

The idea of job rents arises also in the analysis of Costinot (2009), although his focus is on optimal trade policy. Job rents exist because wages are defined through Nash bargaining between workers and firm owners. How much workers earn in a sector depends on the sector characteristics that define the magnitude of the search costs, as well as on those that define firms’ gross profits in the sector. In Costinot’s (2009) model, each worker has skills that are specific to an industry. By contrast, firms choose in which industry they want to operate. This equalizes firms’ expected net profits across industries. In a sense, the model reverses the standard convention in the Ricardo-Viner specific-factors model of referring to the specific factor as “capital” and the non-specific factor as “labour.” But the model also adds the assumption of free entry for the non-specific factor (firms) and introduces search frictions. Adopting a specific functional form for the matching function and the assumption that workers are always in the minority (relative to vacancies), Costinot obtains that the level of rents in a sector is not affected by trade taxes. On the other hand, trade taxes affect the *number* of workers receiving rents in the sector—in other words, there is an *extensive margin* of trade protection.

Costinot (2009) shows that the extensive margin of job rents is more affected in sectors that tend to have higher “structural” unemployment. These are the sectors that attract relatively few firms, which in Costinot’s setup implies that unemployed workers have a lower probability of finding a match there. Those sectors tend to display relatively low productivity, face relatively low world prices, have relatively high workers’ bargaining power, and experience relatively high job turnover. All those characteristics tend to lower firm entry. From a welfare perspective (and assuming other, more direct policy instruments are unavailable), import tariffs (in import-competing sectors) and export subsidies (in export-oriented sectors) applied on high-unemployment sectors can be beneficial. Such policies induce entry in those sectors, which in turn increases the probability that workers find jobs there. This can be socially beneficial because an increase in the probability of finding jobs has a bigger effect on the level of employment in sectors where the total number of unemployed workers is large. In other words, a policy that increases the number of beneficiaries of job rents by attracting firms to sectors with high structural unemployment can be welfare-improving.

II.4. Adjustment costs

Now, an important but rather neglected feature of labour markets is that interindustry gross flows of workers are significantly larger than the interindustry *net* flows of workers. In the available data for the United States, the former are about an order of magnitude larger than the latter. In other words, during any period of time, one is likely to observe a large numbers of workers moving in opposite directions between any two industries. This matters if one wants to study the cost associated with the adjustment period toward the new equilibrium after a trade shock. When adjustment costs are ever taken into account, they arise from merging search models of labour reallocation to a trade model, as in some of the papers discussed above. In all those models, reallocation after trade liberalization is gradual because it takes time for workers to find jobs in the expanding sectors. In those search-based models, however, net and gross flows of workers are identical, in contrast with observed data. Surprisingly, there are very few analyses of the labour adjustment costs after a trade shock that recognize this difference. The most prominent exceptions are the papers by John McLaren and co-authors, where the central element in the analysis is the recognition that net and gross labour flows differ significantly. As Artuç, Chaudhuri and McLaren (2010) point out (see also Artuç, Chaudhuri and McLaren 2008 and, for a more detailed description and analysis of their theoretical setup, Cameron, Chaudhuri and McLaren 2007), the main implication of the discrepancy between net and gross labour flows is that workers' idiosyncratic motives for changing industries must be large relative to their market-oriented motives. As a result, it is possible that workers' welfare and wages in a given industry will move in opposite directions after a trade shock.

The model used by Artuç et al. (2010) has full employment, so it is not aimed at explaining unemployment. Its main innovation is the introduction of time-varying moving costs for workers: in each period each worker can choose to move from his/her current industry to another one, but must pay a cost to do so. The cost has a common component and a time-varying idiosyncratic component. The former does not vary across time or workers, whereas the latter (which can be negative) does, reflecting workers' possible nonpecuniary motives for changing jobs. Artuç et al. (2010) simulate their model using US data and find that both the average and the standard deviation of workers' moving costs from one broadly aggregated sector of the economy to another are very large, consisting of a multiple of average annual wages. This implies that, although American workers change industry a great deal, those movements do not respond much to movements in intersectoral wage differentials; rather, they reflect mostly idiosyncratic shocks. This has two main implications for the impact of a trade shock on labour markets. First, the labour market adjusts slowly after a trade shock. In the simulations of Artuç et al. (2010), the economy may need almost a decade to reach its new steady state. Second, trade liberalization yields a large, permanent drop in wages in import-competing sectors, which persist even in the long run. Still, this does *not* imply that workers in the import-competing sectors lose with trade liberalization. Because of their high mobility (associated to the high idiosyncratic component of their moving costs), and since liberalization is accompanied with rising real wages in export-oriented sectors, the option value of workers originally in the import-competing sectors necessarily increases after trade liberalization, and this effect may prevail over the negative effect due to the lower wages in their original sectors. More generally, the main message from Artuç et al.'s (2010) analysis is that, for workers who face relatively low idiosyncratic moving costs, trade liberalization is likely to be a blessing. Conversely, for workers with relatively high idiosyncratic moving costs, trade liberalization will be beneficial only if they are in the "right" (that is, in export-oriented) sectors.

The analysis of Artuç et al. (2010) also highlights an important feature of how different types of trade liberalization can have different effects on the labour market. In

particular, they show that announcing trade liberalization in advance tends to reduce both the potential costs for workers in the import-competing industry and the gains for workers in the export industry. The reason is that the policy announcement will induce an anticipatory movement of workers out of the import-competing industry and into the export-oriented sector, pulling wages up in the former and down in the latter before the liberalization actually occurs.

Davidson and Matusz (2002) also model explicitly workers' adjustment costs. Theirs is a general equilibrium model of trade that features labour market turnover. Workers differ in ability and jobs require different types of skills. Workers sort themselves by choosing occupations in order to maximize their expected lifetime income. They cycle between periods of employment, unemployment and training, with the length of each state determined by the turnover rates in each sector. The key distinct feature of their framework is that they explicitly model the training and job acquisition processes, so that they can account for the costs associated with such an adjustment. The authors' goal is to obtain estimates of the size and scope of the adjustment costs associated with a trade reform. Somewhat contrarily to the conclusions of Artuç et al. (2010), they find that, even under conservative assumptions about the time and resources costs associated with retraining, short-run adjustment costs can be very significant, amounting to between 30 to 90 per cent of the long-run benefits from trade liberalization. Davidson and Matusz (2000) carry out a similar analysis. They show that economies with sluggish labour markets have the least to gain from trade liberalization, because the benefits from removing trade barriers in those economies are almost completely offset by the short-run adjustment costs. The economies that enjoy significant gains from trade liberalization are the ones that display very flexible labour market. In summary, how much an economy can gain from international trade depends to a large extent on the structure of its labour market.

A similar conclusion is obtained by Dix-Carneiro (2011). He develops a model that features several sectors and workers who are heterogeneous, who accumulate sector-specific experience, and for whom it is costly to switch sectors. In Dix-Carneiro's (2011) structural estimation using Brazilian data, he finds that the average costs of mobility are considerably high and are very dispersed across the population. Barriers to mobility are further enhanced by the fact that sector-specific experience is imperfectly transferable across sectors. The implications of his estimation are that labour market adjustments following trade liberalization tend to be large, but the transition to the new equilibrium may last several years, as in the analysis of Artuç et al. (2010). This low adjustment tends to mitigate significantly the aggregate welfare gains from the liberalization, as Davidson and Matusz (2002) indicate, but retraining workers initially employed in the import-competing sectors can increase aggregate welfare. This resembles also the analysis of Cosar (2010), who documents similarly large reallocation costs for displaced workers and suggests a targeted employment subsidy that rewards the acquisition of new skills to, in turn, facilitate sectoral mobility.

II.5. Assortative matching

One additional effect of international trade on labour markets, which has not been sufficiently researched but which is potentially very important, is on the *quality* of the matching between firms and workers. One of the few exceptions is the study by Davidson, Matusz and Shevchenko (2008). They consider an economy with high- and low-ability workers and with high-tech (more productive) and low-tech (less productive) firms. The production process in high-tech firms requires high-ability workers, while low-tech firms can produce using either type of worker. Naturally, high-ability workers are more productive than their low-ability workers, but in the economy analysed by Davidson et al. (2008) positive assortative matching is also optimal—that is, the economy's output is maximized when high-ability workers match with high-tech firms. A worker needs to engage in random search to find a job, and Nash bargaining between the worker and the employing firm determines his/her wage.

There are two types of equilibria in the model of Davidson et al. (2008). If high-ability workers are willing to accept low-tech jobs, then some high-ability workers become underemployed/mismatched in equilibrium. In this inefficient equilibrium, high-ability workers accept low-tech jobs when they match with low-tech firms first because low-tech firms can afford to pay a wage that is high enough to induce those workers to stop searching. This happens when the revenues earned by the two types of firms are sufficiently close to each other. In the other type of equilibrium, which is efficient, high-ability workers search until they find high-tech jobs. This equilibrium arises when the revenues earned by the two types of firms are sufficiently different, so that low-tech firms cannot afford to pay high-ability workers enough to induce them to stop searching.

If this economy opens to international trade, market shares are reallocated toward high-tech firms, with the most productive firms expanding at the expense of the least productive firms, as in any model with heterogeneous firms. In comparative advantage sectors, increasing openness makes it easier for all firms to sell their goods in world markets. Since high-tech firms have greater incentive to export than low-tech firms, and since they employ the most productive workers in the industry, openness increases the difference between the revenues earned by the two types of firms. As a result, as markets become more open, low-tech firms will find it more difficult to attract and retain high-skilled workers. If the economy were initially in an inefficient equilibrium, it can then shift to an efficient equilibrium (and if the economy remained in an inefficient equilibrium, the frequency of worker-firm mismatches would decline as the economy opens). Thus, in comparative-advantage industries, international trade induces a more efficient allocation of talent. By contrast, in comparative-disadvantage industries the impact of more openness is reversed. In those industries, more foreign competition implies lower revenues for all domestic firms, reducing the gap between the revenues of low-tech and high-tech firms. As a result, as markets become more open, low-tech firms will find it easier to retain highly-skilled workers. If the economy were initially in an efficient equilibrium, it can then shift to an inefficient equilibrium (and if the economy were already in an inefficient equilibrium, the frequency of worker-firm mismatches would rise as the economy opens). Thus, in comparative-disadvantage industries, international trade induces a less efficient allocation of talent.

Interestingly, using matched worker-firm data from Sweden, Davidson, Heyman, Matusz, Sjöholm and Zhu (2011) find robust evidence for the prediction from Davidson et al. (2008) on export-oriented industries but no evidence for the prediction on import-competing sectors. This suggests that globalization may improve the efficiency of matching in comparative-advantage industries without worsening the efficiency in comparative-disadvantage industries, thus yielding more efficiency in the economy-wide labour market.

II.6. A brief note on empirics

As the discussion above indicates, trade openness is likely to have an impact on labour markets through various channels. However, it is much less clear what the net effects are likely to be, because the mechanisms underlined in the theoretical literature often reveal antagonistic effects. This suggests that empirical assessments are critical for guiding policy, as well as our understanding of the effects of trade openness on labour markets.

The empirical evidence is reviewed in detail elsewhere in this book (see chapter 5), yet a safe general assessment of the empirical evidence on the effects of trade liberalization on employment is that it is overall inconclusive, even for short-run or transitional effects (see Goldberg and Pavcnik 2004 and Hoekman and Winters 2005). In particular, there is no evidence of large-scale reallocation of workers across sectors. Similarly, the magnitude of the observed effects of greater trade on wages and inequality are also rather small. In a way, this is unsurprising. First, as pointed out above, the available theoretical frameworks generally do not suggest large net labour market consequences from greater trade openness. Second, trade policy is endogenous, making it hard to infer causal relationships. Third, trade policy changes are often quite small. To some extent this is unavoidable these days, as tariff levels are already very low, and much lower when we compare for example with the early days of the General Agreement on Tariffs and Trade (GATT), especially in developed countries. Small tariff changes make reliable statistical inference difficult. More importantly, small tariff changes should, naturally, be indeed associated with relatively small effects for economic aggregates. Trade liberalization should, therefore, be considered neither a panacea nor be associated with catastrophic consequences, for the economy as a whole and for the labour market in particular. In that sense—and given also the regularly high labour market turnover rates observed in many countries—it is difficult to fully explain why labour market adjustments due to trade liberalization still tend to generate so much public concern.

Now, when the changes are large enough, as in the formation of sizeable trade agreements or in large unilateral trade liberalization reforms, they usually come bundled with several other significant changes in policies, which sometimes even include labour market reforms. As a result, disentangling the effects of more trade from the other policy changes becomes empirically demanding. This, of course, makes the role of policymaking especially challenging.

III. Preferential Trade Agreements⁵

As preferential trade agreements proliferate, the literature studying their causes and consequences has grown in tandem. Part of that research attempts to understand why governments seem so keen to engage in such arrangements, and “political economy” factors loom large among the likely reasons. That is, there is a broad consensus that several motives beyond just maximization of countries’ welfare are key to explain the creation and the design of PTAs. Surprisingly, despite the emphasis on political economy forces, the theoretical literature has been very narrow in modelling such motives. Typically, it is assumed that policymakers weight national welfare and campaign contributions (or bribes, or more general “political support”) from domestic industries, but attempts to go beyond that are rare. There is not, in particular, any explicit modelling of the labour market, even though it seems intuitive that employment targets, for example, can potentially be high on governments’ desire to engage in PTAs. On the other hand, one may want to reinterpret the quid pro quo between governments and some domestic industries through the formation of PTAs as resulting from industry-specific employment motives. Although by itself this does not permit a close look at the intricacies of the relationship between participation in PTAs and labour market outcomes, it is at least a valid interpretation for some of the contributions in the regionalism literature.

III.1. Trade creation and trade diversion

Now, the most important question raised by the proliferation of preferential trade agreements is probably whether they are making member countries better off. As indicated in the Introduction, Viner (1950) originated this debate by showing that the answer is not necessarily in the positive. The reason is that the preferential removal of tariffs may lead to trade diversion, where the source of some imports changes from the most efficient supplier to the country receiving preferential treatment. This generates inefficiency in world production, which is harmful to bloc non-members. But it can also hurt members, if the change in consumer prices, and therefore in consumer surplus, were too small to outweigh the costs from the inefficiency. In contrast, if the preferential trade agreement leads to greater imports from the efficient suppliers within the bloc, consumer gains will outweigh the costs from production inefficiency and the agreement will improve members’ welfare. This simple distinction highlights the broader point that removing a distortion is not necessarily welfare-enhancing when other distortions are present.

In general, one could design the tariff structure of a preferential bloc so that the agreement will necessarily be welfare-enhancing. Most prominently, Kemp and Wan (1976) show that if external tariffs are adjusted so that external trade remains constant, then the formation of a customs union will necessarily improve welfare. This result extends to free trade areas (Panagariya and Krishna 2002), to partial liberalization contexts (Neary 1998), and to imperfect competition (Mrazova 2009). In reality, however, one needs to be too optimistic to expect governments involved in PTAs to design the bloc’s tariff structure with such a goal in mind. External tariffs are subject to political constraints, and not set to hold trade with outsiders fixed. Those constraints define the degree of the changes in external tariffs following the formation of a PTA.

As mentioned above, the literature to date has largely ignored the labour market consequences of regional integration. In particular, the presumption of full employment is always maintained. Hence, there is no clear link between trade creation/trade diversion and labour market outcomes. One can, however, make a connection between trade

⁵ Part of this section is based on Freund and Ornelas (2010).

creation/trade diversion and sectoral employment (and possibly also with sectoral wages), as well as with national income and with the economy's wage bill (i.e. wages times employment). The analysis of Grossman and Helpman (1995), in particular, provides helpful guidance. Import-competing sectors that experience mostly trade creation after a PTA will contract, and the same should happen with employment there. By contrast, import-competing sectors facing mostly trade diversion will not be affected much, as trade diversion is associated with small (or no) changes in the domestic price. Export-oriented sectors, on the other hand, will tend to expand after a PTA. If the supply of the sector is small relative to the import demand in the same sector in the PTA partner country, trade diversion will prevail and the sector will expand relatively little in size but enjoy protectionist rents due to the preferential access. If instead the supply of the export sector is large relative to the import demand in the PTA partner country, prices will fall there, trade creation will dominate, the sector will expand more significantly but will not enjoy as high protectionist rents as a result of the preferences.

Hence, upon the formation of a PTA where trade creation dominates, there will be significant reallocation of resources from import-competing to export-oriented sectors. This will raise the overall efficiency of the economy and its national income, pushing up the economy-wide real wage. As a result, the PTA will boost the economy's wage bill. Conversely, when forming a PTA where trade diversion is rampant, the reallocation of resources from import-competing to export-oriented sectors will be limited, sector-specific protectionist rents will abound and the economy's efficiency will fall. Those rents, which are associated with the diversion of trade from outside the bloc, translate into higher profits in the sectors where this happens. Since the economy's efficiency falls, so will national income. Thus, even if workers in some of the sectors favoured by trade diversion are able to share the rents with producers, the economy-wide real wage, and the overall wage bill, would fall as well.

III.2. The political economy of trade bloc formation

Of course, if governments were simply concerned with national welfare in their countries, there would be no reason for concern: only trade-creating, welfare-improving PTAs would come into force. But governments obviously have other motivations. In particular, governments are influenced by special interest groups. Taking this into account, what kind of agreements should we expect to observe? Grossman and Helpman (1995) and Krishna (1998) provide the same answer to this question: governments influenced by special interest groups will seek primarily *trade-diverting* PTAs. Their reasoning is as follows.

Grossman and Helpman (1995) consider a model with perfect competition but where some factors are specific to their sectors. Two small economies evaluate a possible free trade area (FTA) between them, with each government considering the impact of the agreement on the average voter while being influenced by the domestic industry through campaign contributions. The more the government values campaign contributions, the greater the influence of producers in the FTA decision, and the greater the support for agreements that provide "enhanced protection." An FTA promotes enhanced protection when producers from the low-(external) tariff member can export all their output to the high-tariff member without affecting prices there. In that case, producers in the high-tariff country are not hurt while producers from the low-tariff country enjoy higher protection rents. If the FTA promotes enhanced protection in a "balanced" way, so that a significant share of producers in both countries benefit, then it will draw enough political support to be implemented. But notice that enhanced protection is tantamount to (welfare-reducing) trade diversion. Thus, according to Grossman and Helpman (1995), governments that are very susceptible to special interest groups will tend to seek precisely the most trade-diverting agreements.

Krishna (1998) develops his analysis in a different framework, considering an oligopolistic structure and segmented markets, where governments decide to form agreements based only on their impact on the profits of the domestic firms. In that setting, if the FTA does not generate trade diversion, firms from each member country obtain higher market shares (and profits) in the other member's market but lose domestic profits, implying little—or no—net profits for them. But if the FTA allows bloc firms to displace firms from the excluded countries in each other's markets, then the FTA surely enhances profits for all members' firms, at the expense of outsiders.

The message from the analyses of Grossman and Helpman (1995) and Krishna (1998) is therefore sombre. Despite different modelling assumptions for the structure of the economy, both find that free trade areas are likely to be politically viable exactly when they are socially *undesirable*.

III.3. Natural trading partners

A rejoinder to the concern that PTAs can promote large trade diversion and welfare losses is that most agreements are formed between nearby countries that trade heavily with each other, and these agreements are more likely to enhance welfare. As Wonnacott and Lutz (1989) argue, countries may have much to gain by forming a union with a major trade partner that is subject to low natural trade costs, where trade creation is likely to dominate. Krugman (1991) shows this in a model where countries are spread over many continents, which form natural trading regions. Variation in transport costs implies that some regions trade relatively more with each other in the absence of PTAs. Krugman shows that in such a setting, where blocs are formed by natural partners, trade diversion is limited and PTAs are likely to enhance welfare, since the gains from freeing intraregional trade are larger and the costs of reducing interregional trade are smaller. Zissimos (2011) argues that forming a PTA with a nearby country can also facilitate rent-shifting because of lower (rent-destructing) transportation costs.

This view has been challenged by Bhagwati and Panagariya (1996), who argue that the volume of trade and transport cost criteria are not sufficient to ensure that an arrangement will raise welfare, because volumes are not necessarily good predictors of diversion. Moreover, comparative advantage patterns can change over time.

Krishna (2003) addresses this point by using detailed US trade data to estimate the welfare effects from 24 hypothetical bilateral trade agreements in a general equilibrium framework, then correlating the estimated welfare changes with geographical variables and trade volumes. He finds that neither geography nor trade volume is significantly correlated with welfare gains, implying that they are not good indicators of the gains from trade, as the natural trade blocs approach would suggest. Still, Krishna (2003) finds that 80 per cent of the potential agreements he examines are welfare-improving. Given the predominance of trade creation, it is not clear that a correlation between distance or trade volume and welfare is necessary to indicate that blocs are formed naturally. To determine which agreements are most natural, costs of forming an agreement should be also included, and such costs are plausibly lower with a neighbour or with a large trade partner.

Proving that PTAs are natural or unnatural is daunting, as it requires an assessment of many potential agreements and their welfare consequences – and calculating trade diversion and creation in even one agreement is already rather difficult. Nevertheless, one can use standard trade theory to examine the countries' characteristics that tend to imply greater gains from preferential reciprocal liberalization. This is the approach Baier and Bergstrand (2004) follow. They develop a general equilibrium model to determine which country pairs would gain the most from forming PTAs, and then examine whether

these dyads were actually linked by a PTA. Their model suggests that the gains from forming a PTA are larger, the closer the two countries are to each other, the more remote they are from the rest of the world, the larger their GDPs, the smaller the difference between their GDPs, the larger their relative factor endowment difference, and the wider the (absolute) difference between theirs and the rest of the world's capital-labour ratios. Interestingly, they find that these factors are also strong predictors of a PTA link between two countries. A potential concern is that their sample is limited (53 countries) and they focus on a single year (1996). However, their study has been extended and updated by Bergstrand, Egger and Larch (2010) for more countries and in a longitudinal setting, where they show that the same variables that imply greater gains from a PTA link also strongly predict an *earlier* PTA link between two countries. Thus, there is rather solid empirical support for the more general premise of the natural trade bloc view, i.e. that trade blocs are formed by countries that have a lot to gain from freer trade among them.

III.4. Endogenous external tariffs and the type of PTA

Another potential problem with the presumption that PTAs can generate vast trade diversion is that this insight was developed under the assumption that all other policies were fixed. This was the case in the original analysis of Viner (1950) but also in the political economy analyses of Grossman and Helpman (1995) and Krishna (1998). That is a very strong assumption. At a minimum, one would expect governments to adjust the tariffs that remain unconstrained under the PTA. After all, if a government had previously set a tariff according to some objective – whatever it may be – a constraint on the rate applied on the imports from a subset of countries would likely affect the choice of the rates applied on the imports *of the same product* coming from other countries. And there are indeed numerous reasons suggesting that governments are likely to change their external tariffs upon the formation of a PTA.

Kennan and Riezman (1990) develop a general equilibrium economy where tariffs are set to maximize national welfare. They use this structure to study the effects of forming an FTA, where governments set trade policy unilaterally, and then of moving to a customs union (CU). The key difference between FTAs and CUs is that, under the former, members maintain independent trade policies vis-à-vis outsiders, whereas under the latter members need to agree on a common external tariff. Kennan and Riezman (1990) show that the equilibrium external tariffs are always higher under CUs. This happens, first, because the CU creates a larger market, which increases the countries' market power and therefore their incentives to tax imports. Furthermore, the coordination of policies among CU members allows them to internalize the externalities of their individual trade policies on each other.

The coordination effect of CUs has been studied extensively (see for example Yi 1996; Bagwell and Staiger 1999; Cadot et al. 1999; Freund 2000; Ornelas 2007). Whatever the structure of the economy, the joint determination of external policies provides an incentive to agree on higher external protection. Higher external tariffs imply higher preferential margins, which increase the partners' gains with the agreement. When negotiating external tariffs, CU members can internalize this effect, which leads to external tariffs that are higher than they would otherwise be.

Since governments set external trade policies independently under FTAs, neither the market power nor the coordination effects arise in that type of agreement, but other motivations to re-optimize tariffs emerge. Richardson (1993) notes that external tariffs tend to fall after the formation of an FTA. A preferential tariff induces a shift of imports from non-members; as the diverted imports lower welfare, governments have an incentive to lower external tariffs to shift some imports back to their original source. Thus, the mere potential for costly trade diversion induces governments to lower external

tariffs. Bagwell and Staiger (1999) dub the tendency toward lower external tariffs in FTAs the “tariff complementarity effect.” Several other authors have obtained similar results under a variety of settings (e.g. Cadot et al. 1999 in a political-economy specific-factors model; Freund 2000 and Yi 2000 in an oligopolistic structure, to which Ornelas 2005a add political-economy forces; Bond et al. 2004 and Saggi and Yildiz 2010 in endowment models; Ornelas 2008 in a political-economy model but in a setting where countries also cooperate at the multilateral level).

Ornelas (2005a) disentangles some of the additional forces leading to tariff complementarity. If markets are oligopolistic, there is a strategic effect that arises because FTAs make profit shifting more difficult. The elimination of the intra-bloc duty increases competition and lowers mark ups in the domestic market. As a result, any market share shifted from FTA outsiders to domestic firms by a higher external tariff generates less domestic profit under the agreement. Since the tariff was set optimally prior to the FTA, a reduction in the external tariff is necessary to re-equate its marginal benefit to the marginal distortion it imposes.

If governments have political-economy motivations, a likely scenario, other forces come into play. Consider that these motivations can be translated into a greater concern for producer welfare relative to consumer welfare, as for example in Grossman and Helpman’s (1994) “protection for sale” model. This creates a motive for setting relatively high tariffs. Yet participation in an FTA weakens this motivation for protection by making it more difficult to use tariffs for surplus redistribution. The reason is that the free access to the domestic market enjoyed by the partners’ exporters under the FTA lowers the market share of the domestic industry. As a result, the FTA makes any price increase generated by a higher tariff less valuable for the domestic industry. That is, the FTA creates *leakage* in the trade policy redistributive channel: now whenever the government attempts to redistribute surplus to the domestic producers through higher external tariffs, the partners’ producers absorb part of that surplus.

Hence, external tariffs tend to fall after the formation of an FTA both because the economic (marginal) cost of external protection rises and because the political-economy (marginal) gain from external protection falls. This last point implies also that the drop in external tariffs will be larger when political-economy motivations are *stronger*, indicating that the economic benefits from FTAs are likely to be greater precisely when protectionist forces loom large.

Now, Limao (2007) shows that a PTA can also induce higher tariffs against outsiders when the goal of the agreement is to induce cooperation among PTA partners in “non-trade” areas, such as fighting drugs production or harmonizing labour or environmental standards. Both the US and the EU offer preferences on a unilateral basis that fit this description well. Since lower external tariffs erode preferences and could induce the receiving countries to withdraw their non-trade concessions, the preference-granting government has an incentive to keep external tariffs high.

All this suggests that there is a variety of reasons why external tariffs are likely to change after the formation of a PTA. Moreover, those incentives depend on the type of the agreement, CUs or FTAs.

III.5. The empirics of PTAs and their external tariffs

A growing empirical literature suggests that PTAs have, indeed, by and large promoted external liberalization. But the changes are different in FTAs and CUs. In general, the incentives point to lower external tariffs in FTAs than in CUs.

Bohara, Gawande and Sanguinetti (2004) examine the influence of imports from Brazil on Argentina's external tariffs under Mercosur (which also includes Uruguay and Paraguay as members). Using a cross-industry dataset on Argentina in the early 1990s, they find that increased preferential imports vis-à-vis the value added of the domestic industry led to lower external tariffs in Argentina. Furthermore, the reduction was steeper precisely in the industries that experienced most trade diversion – just as Richardson's (1993) insight suggests. Bohara et al.'s (2004) results do not capture, however, the effect of Mercosur moving from being an FTA to becoming a CU in 1995.

Estevadeordal, Freund and Ornelas (2008) offer the first empirical assessment of the effect of preferential tariffs on external trade liberalization in a large group of developing countries. They study ten Latin American countries, where regionalism forces have been particularly strong, from 1990 to 2001. The PTAs they analyse display heterogeneity both across and within blocs. For example, in a typical PTA there are sectors where no preferences are granted, sectors where partial preferences are offered, and sectors where there is free intra-bloc trade. Preferences also vary significantly over time. Estevadeordal et al. ask whether industries with large preferences have been liberalized to the same extent as other sectors. They find strong evidence that preferences induce a faster decline in external tariffs in free trade areas. The magnitudes imply that, when a country offers free access to another in a sector where it applies a 10 per cent multilateral tariff, the country would tend to subsequently reduce that external tariff by over two percentage points.

Estevadeordal et al. (2008) are the only authors who study empirically differential effects in FTAs and CUs in terms of their external trade policies. This is possible in their dataset because it includes both Mercosur and the Andean Pact (formed by Bolivia, Colombia, Ecuador, Peru and Venezuela), which functioned as FTAs in the first part of the sample but switched to being CUs in 1995. The authors find that tariff complementarity is observed only in FTAs; in CUs internal liberalization is not associated with any statistically significant change in external tariffs. Estevadeordal et al. (2008) also assess whether there are differential effects in sectors where the potential for trade diversion is large. They find that the complementarity effect is indeed stronger in sectors where trade bloc partners are more important suppliers, where trade discrimination would be more disrupting. They find as well that the complementarity effect is restricted to sectors where the preferential margin is non-trivial. Intuitively, the reason is that complying with rules of origin is costly, so preferences matter only if the margins are sufficiently large.

Calvo-Pardo, Freund and Ornelas (2011) study instead the behaviour of ASEAN's ten-member FTA (whose members are Brunei Darussalam, Cambodia, Indonesia, Laos, Malaysia, Myanmar, the Philippines, Singapore, Thailand and Vietnam). The data are much more detailed, at the product level, and contain information on both applied and planned preferential rates, from 1993 to 2007. The actual reductions are correlated but different from the planned ones, especially in the later years in the sample. This allows the authors to use the planned internal liberalization as an instrument for the actual one. Their findings corroborate those of Estevadeordal et al. (2008) for FTAs: there is strong evidence that preferences have induced a deeper decline in external tariffs. The magnitudes are actually larger than those for Latin America: free intra-bloc trade in a

product where an ASEAN member applies a 10 per cent multilateral tariff would induce a reduction of about 3.5 percentage points in that tariff.

In contrast, studies by Limao (2006) and Karacaovali and Limao (2008) offer a very different message. They address a distinct but related question: whether preferential liberalization by the US and the EU hindered multilateral trade liberalization at the Uruguay Round. Specifically, they examine whether commitments to liberalize were different in goods that offered preferences from goods that did not. Both papers find that liberalization was shallower in products where preferences were utilized, especially when they were imported from all preferential partners and when they constituted larger shares of the preferential partners' exports, although they do not explore whether the size of the preferences mattered.

The findings of Limao (2006) and Karacaovali and Limao (2008), that the US and the EU liberalized less during the Uruguay Round in sectors where preferences were granted, contrast sharply with those of Bohara et al. (2004), Estevadeordal et al. (2008) and Calvo-Pardo et al. (2011), which imply that regionalism fosters external liberalization in developing countries. Part of the reason for the different results reflects the differences in the countries analysed. Since the multilateral system has not enforced much tariff reduction on developing countries, tariffs are relatively high there, creating a large potential for trade diversion. Lower external tariffs moderate that loss. The results of Bohara et al. (2004), Estevadeordal et al. (2008) and Calvo-Pardo et al. (2011) suggest that this force is important in explaining changes in the external tariffs of developing countries involved in FTAs. In contrast, Limao (2006) and Karacaovali and Limao (2008) focus on the major industrial countries. Tariffs were already quite low in the US and the EU at the onset of the Uruguay Round, which reduces the importance of this channel. Furthermore, the theoretical underpinnings developed by Limao (2007) to justify the importance of preferences in North-South agreements rely on RTAs being formed for non-economic reasons—preferential treatment given in exchange for, say, help in advancing a global political agenda. This is usually not the case in South-South RTAs, where the main goal is often to exchange market access and improve regional economic cooperation.

III.6. FTAs and rent destruction

Once one takes into account the endogeneity of external tariffs, one can also reassess the message from Grossman and Helpman (1995) and Krishna (1998) that governments tend to favour FTAs precisely when they breed trade diversion. In those models a key assumption is that both pre-FTA tariffs and post-FTA external tariffs are exogenously given and equal to each other. This is at odds with both the large theoretical literature and the empirical evidence on that topic. Moreover, the assumption is pivotal for their results.

Ornelas (2005b) shows this by developing a specific factors model similar to Grossman and Helpman's (although with large countries), but where tariffs are set endogenously, with the influence of special interest groups both before and after the FTA. Ornelas first considers that governments decide to form an FTA without direct influence of lobbies – although lobbies affect the decision indirectly by shaping tariffs under all trade regimes. Among other reasons, external tariffs fall because of the reduced incentives to internal redistribution due to the leakage of protection to partners under the FTA. The difficulty in redistributing surplus through trade policies under the FTA implies that lobbying activities decrease with the agreement. This in turn lowers the rents created in the political process. But if FTAs destroy protectionist rents, this cannot be a source of their political support. Thus, only those agreements that are sufficiently welfare-enhancing can become politically viable. Similarly, Ornelas (2005c) proposes an

oligopolistic model analogous to Krishna's (1998), but with endogenous tariffs. He obtains results equivalent to those in Ornelas (2005b): only welfare-*enhancing* FTAs can become politically viable once one accounts for endogenous changes in external tariffs.

When Ornelas (2005b) allows for lobbying also at the trade regime decision, this stark result is qualified. He finds that one cannot rule out the political viability of welfare-reducing FTAs. Still, such a possibility is restricted by the rent destruction effects of FTAs. Specifically, welfare-reducing FTAs can gain political support only when the role of "politics" in the governments' objective function is "moderate" – i.e., large enough to sufficiently disconnect the decision to adopt the FTA from a socially desirable criterion but low enough to avoid destruction of too much rents. The overall message is therefore that the rent-destruction effect does not prevent but imposes sharp limits on the political viability of welfare-reducing FTAs.

The results of Ornelas (2005b, c) seem broadly compatible with the empirical evidence. This evidence indicates that the free trade areas that have been implemented are, by and large, trade creating. And while cases of trade diversion have been identified in specific countries and sectors, they tend to be the exception, rather than the rule. For example, Baier and Bergstrand (2004) provide overwhelming support for the hypothesis that welfare-enhancing dyad characteristics are reliable predictors of PTA links. It is worth noting, however, that the results of Ornelas (2005b, c) apply to FTAs, and it is unclear whether they generalize to CUs. Since the (limited) empirical evidence suggests that external tariffs do not change in a statistically important way (Estevadeordal et al. 2008) and that export prices of outsiders fall (Chang and Winters 2002) after the formation of CUs, it may well be that trade-diverting CUs are more likely to be politically viable.

Another two issues that Ornelas (2005b, c) does not take into account are delays and exceptions in the design of the agreement. That is, in line with most of the regionalism literature, he considers that all sectors are liberalized within the bloc once it is formed. In reality, intra-bloc liberalization often takes several years to complete, and even after many years some sectors remain "outside" the agreement, displaying no intra-bloc liberalization. Theoretically, the only analysis of exceptions in FTAs is carried out by Grossman and Helpman (1995), who show that the possibility of excluding sectors in FTAs tends to make them more trade diverting. As discussed above, to pin down the distribution of gains and losses in FTAs one needs to account for the endogeneity of external tariffs, which Grossman and Helpman (1995) do not. Still, their argument that the possibility of excluding sectors can enhance the benefits of the agreement for special interest groups (at the expense of the population at large) remains valid also when external tariffs change endogenously.

III.7. The timing of PTAs

A distinct feature of PTAs, which is present in the large majority of existing trading blocs, is their gradual process of liberalization. The phase-out period of internal tariffs varies, but it often takes at least 5 years, and sometimes it can last by as many as 15 years. It is therefore surprising that trade economists have not paid much attention to the gradualism process embodied in PTAs. There are, of course, a few analyses of gradualism in trade agreements (e.g. Staiger 1995; Bond and Park 2002; Chisik 2003; Zissimos 2007; Maggi and Rodriguez-Clare 2007; Bagwell 2009), but by and large the role of labour markets is ignored in those analyses. To my knowledge, the only exception is the paper by Furusawa and Lai (1999). They study bilateral trade liberalization between two large countries. As trade is liberalized and the import-competing sector of each country starts to contract, labour is reallocated between sectors. As each moving worker needs to pay a fixed adjustment cost, a country has to bear a total adjustment cost that is linear in the amount of moving workers. Furusawa and Lai (1999) show that, in such a context, the optimal bilateral trade liberalization path is gradual. Moreover, the pace of the liberalization can accelerate if a trade adjustment assistance program that compensates workers for relocation out of the protected sector is adopted.

Another important study of the timing of regionalism is the analysis of McLaren (2002), who focuses on the role of anticipatory effects and of sector-specific sunk costs. McLaren argues that just the announcement of a trade agreement will already have real consequences. Specifically, an anticipated trading bloc will induce private agents in each member country to invest and specialize toward each other. The problem with this is that it can lower the ex post gains from multilateral free trade, because of the sunk nature of the investments. In this sense, expected regionalism creates its own demand. As a result, countries lose interest in (ex ante efficient) multilateral liberalization once they engage in (ex ante inefficient, but ex post efficient) regional initiatives.

IV. Preferential trade agreements and the labour market

How does regional trade liberalization affect the labour market of the liberalizing countries? As indicated in the outset, there is to date no proper analysis of this question. This is especially surprising given the large literature on regional trade agreements and the fast-growing research on the impact of international trade on unemployment, job rents and other aspects of the labour market. Here I provide some tentative thoughts on the relationship between preferential liberalization and labour market outcomes.

IV.1. Exports and “good jobs”

A growing empirical literature has established that exporting firms tend to pay higher wages than purely domestic firms for seemingly identical workers. As discussed above, the reason is often associated to wage bargaining or rent sharing within firms. Since exporting firms are generally more productive and more profitable than domestic ones, they pay higher wages. This raises a potential case for promoting firms to export, if that can be done at a sufficiently low cost, and provided that some purely domestic firms do not export because of a market failure that can be mitigated through export promotion policies.

A major consequence of trade reforms is natural selection among firms: less efficient firms in a sector have to either downsize, improve efficiency or exit, whereas more productive firms expand their market shares. As a consequence, total factor productivity increases more in industries that liberalize more, and especially in comparative advantage sectors (Bernard, Redding and Schott 2007). If there is rent sharing within firms, this implies also higher average wages in the economy, and in particular for those employed in exporting firms.

In fact, some authors have suggested that exporters tend to be “better” than non-exporters also because to-be exporters prepare themselves for the entry in foreign markets (Hallward-Driemeier, Iarossi and Sokoloff 2002; Iacovone and Javorcik 2010). That is, it is not just that more productive firms self-select into exporting; firms that explicitly target export markets also make different decisions regarding investment, training, technology adoption and the selection of inputs, all of which raise their productivity. Hence, the “exporter selection” process that is well documented empirically is driven not only by exogenous shocks, such as trade reforms, but reflects as well investments made by firms in anticipation of accessing foreign markets.

Recent analyses showing that firms tend to “experiment” when going to foreign markets can provide a rationale for forming PTAs to enhance the incentives of firms to engage in those activities and attempt to export. As Albornoz, Calvo-Pardo, Corcos and Ornelas (2011) argue, theoretically and empirically, export profit idiosyncratic uncertainty and the role of self-discovery are key ingredients to firms’ export dynamics. A firm discovers its profitability as an exporter only after exporting takes place. The firm then conditions the decision to serve other destinations on this information. Since breaking into new markets entails unrecoverable costs and export profitability is likely to have global scope, the firm has an incentive to enter foreign destinations sequentially. For example, neighbouring markets can serve as “testing grounds” for future expansions to larger or more distant markets. A related point is made by Morales, Sheu and Zahler (2011), who estimate firms’ fixed and sunk costs of accessing a foreign country after having sold in a different foreign country. Their analysis shows that there is a path-dependence in exporting at the level of the firm, which they refer to as “extended gravity” factors.

Preferential/regional liberalization can be helpful in this context because it tends to raise the number of firms willing to experiment with intra-regional exports. Essentially, the preferential access enjoyed in a PTA implies an increase in expected export profitability for the PTA firms, and this induces some purely domestic firms to venture abroad. Eventually, some of those firms – i.e. those that turn out to be more successful in exporting within the preferential bloc – choose to break into extra-regional markets as well. This lagged trade-creation effect towards *non*-members corresponds to an implication of regional trade agreements that has been overlooked by academics and policymakers alike, but which can be particularly useful in promoting exports, and therefore in increasing the supply of “good jobs” in an economy.

Two recent empirical papers find that PTAs are indeed conducive of sequential exporting. Borchert (2009) finds that the growth of Mexican exports to Latin America from 1993 – right before NAFTA came into force – to 1997 is higher, the greater the reduction in the preferential U.S. tariff under NAFTA for that product. The effect comes entirely from changes in the extensive margin. Similarly, using trade data for 36 countries at the 5-digit level and eleven PTAs over an 11-year window, Molina (2010) identifies a strong positive effect of PTAs in promoting exports of products first sold to preferential partners, as a result of intra-bloc liberalization, to countries outside the bloc. A related study by Molina, Bussolo and Iacovone (2010) on the extensive margin effects of the accession of the Dominican Republic to the Central American Free Trade Agreements is also in line with PTAs playing a decisive role in boosting firms’ incentives to experiment in foreign markets.

This sequentiality of export destinations, from PTA partners first to PTA outsiders later, relies on a positive relationship between the regional and the non-regional markets in terms of expected profitability for potential exporters, which may not be present in all arrangements. In fact, von Uexkull (2011) finds little evidence of such a relationship when studying the Economic Community of West African States (ECOWAS). He provides evidence that the sunk costs involved in “regional” (i.e. intra-ECOWAS) and “global” (outside ECOWAS) exports are both significant but also quite different in nature, leading to marked segmentation between regional and global exporters. This finding is consistent with the idea developed by Alborno et al. (2011) and the findings of Morales et al. (2011): there is path-dependence in exporting *if* the foreign markets in question are sufficiently similar, but not otherwise. Lawless (2011) makes a related point when studying exports to adjacent destinations (which she finds to be related) and to non-adjacent destinations (which she finds to be unrelated). In sum, PTAs can spur export experimentation that make some firms become global exporters, but only if the PTA markets are not too distinct from the targeted destinations outside the bloc.

An additional requirement is that the PTA tariff cuts must be permanent (or at least perceived as permanent by domestic agents). This is a dimension in which better market access through PTAs tends to be more effective in terms of affecting firms’ decisions to export than improved market access obtained through other means. For example, unilaterally granted preferences (which many developed countries offer to least developed countries) can be withdrawn easily. In fact, they tend to be withdrawn precisely when the exports from the country enjoying the preferences start to increase (Ozden and Reinhardt 2005). Previous reductions in MFN applied rates can be reversed as well, with no legal consequences and little political costs, provided that bound rates stay high. By contrast, tariff cuts in the context of PTAs tend to be somewhat better protected, even if they do not match the stability of MFN bound rate cuts. That requires, however, that PTA internal liberalization is indeed taken seriously. In many PTAs it is, but in several others the reality is far different, and official intentions regarding within-bloc liberalization hardly reach the countries’ customs. This may help to explain further von Uexkull’s (2011) finding that ECOWAS – a customs union where implementation

rates have been historically rather low – has not served as an effective “bridge” for firms aiming to become global exporters.

Preferential liberalization can be useful also to expand the number of recipients – i.e. the extensive margin – of job rents. As Costinot (2009) argues, the extensive margin of job rents tends to be more affected by trade taxes in sectors characterized by high structural unemployment, which results from technological or institutional factors that lead to too little entry. An implication is that tariffs in import-competing sectors and subsidies in export-oriented sectors that display high structural unemployment can be beneficial to the economy when more efficient domestic policy instruments are not available. Of course, import tariffs and export subsidies also bring about inefficiencies to the economy, which needs to be weighted against the benefits of more recipients of job rents. Still, as Costinot (2009) shows, a welfare maximizing government that does not have access to other instruments would want to use trade taxes in those sectors. Tariffs in import-competing sectors sharing such features can be unilaterally applied, provided that commitments in the WTO are not violated (and presumably the government would have accounted for that when negotiating its WTO bound tariffs). On the other hand, export subsidies are generally forbidden by the World Trade Organization, so they are not really an option for governments. An alternative, which would be WTO-consistent, is to form a PTA, provided that the structure of production of the PTA partner is compatible with the expansion of the export sectors that feature high structural unemployment. This idea is reminiscent of Levy (1999), who points out that, since export subsidies are not an option within the WTO, the best producers in export sectors in large countries can do is to push their governments to push for multilateral liberalization. This logic applies even more broadly for PTAs, where the governments of even relatively small countries can have influence on partners’ trade policies and more easily encompass labour market motivations as the one proposed by Costinot (2009).

IV.2. Labour market adjustments

A common conclusion among those studying the adjustment process following trade liberalization is that it often is very slow, taking several years until a new equilibrium is reached. And as Davidson and Matusz (2000, 2002) argue, adjustment costs tend to be particularly large when the labour market is inflexible. Such lethargic adjustment is likely to be especially painful for workers. Are such adjustment costs likely to be different when liberalization happens in the context of a PTA? Although to date no one has compared the speed of adjustment after unilateral trade liberalization and trade liberalization under a PTA, one could persuasively argue that the latter is likely to be faster than the former.

In countries that are relatively closed to international trade, unilateral trade liberalization will induce firms in import-competing sectors to contract relatively fast due to increased foreign competition, as some firms from the rest of the world, especially those with export experience, quickly take advantage of the profit opportunities in the liberalizing market. As a result, import-competing firms contract and lay off workers, yielding also lower wages in those sectors. On the other hand, firms in the export-oriented sectors hire and expand. However, firms in new exporting sectors tend to expand slowly, because the new profit opportunities may be difficult to identify. In fact, *firms* (not sectors) have to find the new profit opportunities abroad; as it is by now well known, in any sector, of any economy, only *some* firms’ export. But because of this underlying uncertainty, initially it will be unclear for the firms themselves whether they will succeed or not in foreign markets. As a result, the new exporters will start very small, expanding only slowly overtime, in case they succeed initially.

The asymmetry arises because the liberalizing country is closed relatively to the rest of the world. Hence, successful opportunities from the opening of the country have to be identified by the potential exporters, and this process can take a long time because it often requires experimentation, where “success” can be inferred only after significant time. On the other hand, foreign exporters, already established in world markets, are quick to enter in the market of the liberalizing country, since they have already recognized their strengths in other foreign markets. As a result, during the adjustment period unemployment tends to increase and remain high for a significant period of time.

By contrast, liberalization under a PTA can happen in a smaller scale and tends to affect more specific sectors. Furthermore, the pool of foreign entrants who are gaining preferential access is limited, so the impact on the import-competing sectors is likely to be smaller and to manifest more slowly. On the other hand, the export opportunities abroad – i.e., in the markets of the other PTA members – tend to be more clear-cut. Hence, under a PTA with partners of similar sizes and similar degrees of external opening, firms in export-oriented and import-competing sectors tend to adjust at more similar paces. Accordingly, the impact on the labour market – both in terms of unemployment and of wages – tends to be more moderate. Since PTAs permit exceptions and relatively long phase-in periods, governments could also consider letting sectors with low job mobility open up at a different, slower pace. Taking this into account, the specific characteristics of the labour market in the opening countries could thus help to refine the conclusions of Furusawa and Lai (1999) about the optimality of gradual bilateral liberalization, and possibly serve as a guide for the trade adjustment assistance program that they suggest as a way to compensate workers who need to relocate as a result of the liberalization.

Announcing participation in a PTA well before the agreement is put in force should help further to smooth the costs workers bear in the transition to the new equilibrium. As Artuç et al. (2010) point out, early announcements of trade liberalization are helpful as they induce anticipatory movements. This is likely to be even more effective in the context of a PTA, where the sectoral implications of the liberalization tend to be clearer, both in terms of identifying what sectors are likely to be more affected by increased import competition and what sectors are likely to expand by serving the partners’ markets.

In sum, liberalization through a PTA allows for a more moderate and targeted opening. Since identifying losing and winning sectors within a PTA is generally easier than under unilateral liberalization, entering in a PTA tends to be more informative for workers in terms of how they are likely to be affected, thereby allowing for a smoother adjustment process, especially if the agreement is announced sufficiently in advance and if sectors that display low job mobility are opened up at a slower pace. More generally, PTAs may be able to mitigate the potential adjustment costs of firms and workers because, compared with unilateral or multilateral liberalization, they provide more flexibility for partners in the choice of coverage, depth, and timing of liberalization, while also including policies that affect potential exporters (the group that is likely to gain with more trade) directly and not just through general equilibrium effects that can take a long time to manifest.

IV.3. Partners' choice

Signing preferential trade agreements facilitates a smoother transition to the new equilibrium because trade liberalization within a PTA can be more limited and is arguably less uncertain in terms of its economy-wide impact than unilateral liberalization. While this may be true for PTAs in general, it surely is “more true” for some types of arrangements than for others. Or put differently, the choice of partners(s) within a PTA surely matters for its implications, including its labour market consequences.

McLaren (2002) argues that a PTA with a “wrong” partner can be deleterious in the long run, because such a PTA will induce certain types of investment and specialization toward the partner that would be inefficient for the economy in case it engages in future, broader liberalization at the multilateral level. Stated differently, some types of PTAs can lead to a costly adjustment process that will not lead to significant trade gains and can hinder further liberalization that would bring those gains about. The regionalism literature suggests that the best alternative is to form agreements with “natural partners.” These tend to be countries that are geographically close and, especially, countries with which there is already significant bilateral trade before the PTA is implemented. In terms of fundamentals of the economy, the studies of Baier and Bergstrand (2004) and Bergstrand, Egger and Larch (2010) suggest that these are countries that are relatively remote from the rest of the world, similar in terms of their GDPs, but different in terms of their relative factor endowments vis-à-vis themselves and also relative to the rest of the world.

As Bhagwati and Panagariya (1996) point out, forming a PTA with a natural partner is no guarantee of welfare gains. Still, most of the regionalism literature, especially the empirical one, is generally optimistic about the consequences of such types of agreements (see Freund and Ornelas 2010 for further discussion of this debate). The literature has not, however, considered the labour market impact of PTAs with “natural” and “unnatural” partners. Intuitively, a PTA between two countries that are already important trade partners for each other is likely to lead to less disruption in the labour market, avoiding large sectoral reallocations that could be disruptive for workers. This is even more important if after the PTA the country liberalizes vis-à-vis other markets outside the bloc, as they usually do. If a country forms a PTA with a partner whose economic structure is “farther away” from the economic structure of the rest of the world than the country’s own structure, it would induce a costly transition to the “wrong” sectors. This would either imply that further liberalization would become infeasible, with the country forgoing gains from trade, or that further liberalization would entail greater adjustment costs to workers than it would without the PTA. In turn, a PTA with a partner whose economic structure is closer to the rest of the world’s would allow a smoother transition to the comparative advantage sectors of the economy, lowering overall search costs and the impact on employment. The case for PTAs among natural partners seems therefore only reinforced once one takes into account the impacts on the labour market. It must be recognized, however, that the concept of natural trading partners has not been studied in the context of labour market frictions, so such conclusions are necessarily preliminary.

Now, if one of the main goals with trade liberalization is to reduce unemployment, a PTA may, again, under some circumstances be a superior alternative to across-the-border unilateral liberalization. As the analyses of Davidson, Martin and Matusz (1999) and of Helpman and Itskhoki (2010) stress, the impact of trade liberalization depends on the characteristics of the sectors that expand and contract as a result of the lower trade barriers. If the country has comparative advantage in sectors characterized by low search costs, for example, then non-discriminatory, MFN trade liberalization would tend to

lower the economy's overall unemployment rate, but exactly the opposite would happen if the country's comparative advantage were in sectors that exhibit large search costs. In that case, however, a PTA with a country that has yet stronger comparative advantage in the high-search frictions sectors would yield a lower unemployment rate in the former country. The difficulty, of course, may be in finding such a country, where the government is willing to negotiate a PTA that would tend to cause higher unemployment. It may be possible, however, if unemployment were a less salient issue than the overall efficiency of the economy in the other country, and provided that the economy's aggregate efficiency could potentially be improved with that type of PTA.

Another concern is that the sectors characterized by high search costs are, as Helpman and Itzhoki (2010) point out, often those with more differentiated products, which tend to be the most dynamic in an economy. A PTA that induces a contraction of such sectors, while promoting sectors that display low sectoral unemployment but are also less dynamic and characterized by low productivity, could be useful to boost employment. However, it would come at a high cost in terms of productivity and of aggregate income and welfare.

Now, if an important reason why exporters pay higher wages is because they require tighter screening of workers, as Helpman, Itzhoki and Redding (2010) argue, then international trade, as it shifts resources to the more "picky" exporters, will tend to induce a higher unemployment rate. This is true both for general liberalization and for liberalization under a PTA. The impact on within-sector wage inequality, however, is likely to be different. As Helpman, Itzhoki and Redding (2010) show, within-sector wage inequality exhibits an inverted-U shape. For a country that is relatively close to international trade, therefore, a PTA that entails only a moderate level of liberalization will lead to an increase in unemployment that is not as large as, but to higher wage inequality, than a process of deep unilateral trade liberalization would. Whether the former is preferable to the latter will depend on the policymaker's priorities in the trade-off between unemployment and wage inequality. Theoretically, the policymaker could seek PTA partners that would yield the optimal mix of unemployment and within-sector wage inequality, but that would be possible also through unilateral liberalization.

IV.4. Trade creation and trade diversion

The regionalism literature has shown, both theoretically and empirically, that although in principle preferential trade agreements can be of either the "good"—trade creating—type or the "bad"—trade diverting—type, the free trade areas that are indeed formed tend to be, and have been, mostly of the good type. A key force is the rent-destructing effects of free trade areas (Ornelas 2005b, c), which induce their members to subsequently lower trade barriers also on imports coming from non-member countries. A direct implication of trade-creating, rent-destructing FTAs is that the economy as a whole tends to benefit with the agreement. This does not necessarily imply an expansion (or a reduction) of aggregate employment. However, as discussed above, as protectionist rents stemming from lobbying by producers are purged, the economy-wide real wage goes up, and so does the overall wage bill, resulting in a higher labour share of GDP.

Those effects are less clear for customs unions, though, since the coordination of external tariffs provides incentives for governments to keep external tariffs relatively high. This practice tends to be associated with more trade diversion, which imposes costs on the economy. Such trade-diverting coordination of external tariffs may allow, on the other hand, the preservation of job rents in sectors that offer relatively "good jobs." Trade diversion allows some relatively unproductive firms and sectors to expand. According to the analysis of Davis and Harrigan (2011), such sectors tend to have, for given levels of productivity, a high number of firms with relatively high monitoring

costs, vis-à-vis the rest of the world, and this implies that they pay relatively high wages. If those sectors expand as a result of a trade-diverting customs union, the economy will then tend to experience the creation of more “good,” high-paying jobs. To be sure, this could happen also under an FTA. In fact, in principle this may be easier to do in FTAs, where each government keeps independence in their formulation of trade policies vis-à-vis non-members. However, to do so the external tariffs in those sectors would need to be kept relatively high despite the regular economic and political-economy forces that tend to bring them down.

Two important observations need to be made, however. First, such trade diversion-induced good jobs stem from inefficiency in firms’ monitoring of workers, and therefore represent a cost for the economy. This must be weighted against the benefits of propping up the high-paying jobs. Second, it is plausible that this cost will be borne disproportionately by capitalists, who are the ones who need to incur in the monitoring costs to make sure workers exert effort. This provides a different perspective on the beneficiaries from trade diversion, usually associated to producers who are able to persuade governments to negotiate large preferential access for them in foreign markets, and not to workers in need to be incentivized to work.

V. Concluding remarks

Labour market consequences are at the forefront of any discussion related to liberalization of international trade. Preferential trade agreements, in turn, have become the primary form of trade liberalization in most countries. Yet to date there has not been, surprisingly, any attempt to study the labour market implications of liberalization in the context of preferential liberalization. In this article I endeavour to start to fill this gap.

After examining the so far entirely independent literatures on preferential trade agreements and on the links between non-discriminatory trade liberalization and the labour market, I reach the following main conclusions:

- PTAs can be useful to encourage new firms to export. Due to the nature of the export strategies of many firms, based on experimentation, a PTA can lead to more firms exporting also to non-member countries. This export boost tends to bring better-paying jobs to the economy.
- PTAs can help to smooth the adjustment costs of trade liberalization. Since it takes time (and some experimentation) for purely domestic firms to uncover their export potential (if any), this is especially true when the members are initially at a similar level of international trade opening. In that case, the time the new exporters from all countries within the bloc require to find export opportunities abroad will be relatively similar, ensuring that export-oriented sectors expand and import-competing sectors contract at similar paces.
- If export sectors are characterized by high structural unemployment, due to either technological or institutional reasons, and since export subsidies are generally banned by the WTO, PTAs can be a helpful policy instrument to promote those sectors and as a result the extensive margin of job rents recipients in the economy.
- Announcing a PTA well before its implementation helps to mitigate adjustment costs, as it allows workers to take anticipatory actions. Excluding sectors with low job mobility will similarly allow for an overall less costly adjustment process for workers.
- PTAs with “natural partners”—e.g. those among countries that already trade significantly with each other before the agreement—are likely to benefit the economy as a whole, and workers in particular.
- Choosing PTA partners carefully can also help to expand the number of workers who enjoy job rents and to moderate the impact of lower trade barriers on unemployment and on within-sector wage inequality. However, it is unlikely that all of these goals can be achieved simultaneously, suggesting trade-offs governments need to face.
- PTAs that are mostly trade diverting can preserve—and create—“good jobs” that yield rents to workers, but at a potentially high cost for the economy as a whole. In turn, PTAs that are eminently trade creating tend to improve efficiency and raise the economy-wide wage bill.

These conclusions, obviously, need further qualification and scrutiny by future research that looks at those issues at more depth. They provide, however, a starting point for the analysis, something that has been missing until now.

And surely there are other ways in which liberalization within preferential trade agreements affects the labour market implications. The numerous angles one can analyse

this relationship makes it inevitable that some important issues had to be left without a proper discussion in this article. Probably the most critical of those omissions is offshoring. There is, of course, an increasing concern about the effects of offshoring for the labour market—for a review of the theoretical literature on trade and offshoring, see Antràs and Rossi-Hansberg (2009); Feenstra and Hanson (2003) survey the literature on global production sharing and inequality. But offshoring, and in particular the activities related to the growth of production networks, is also becoming an important motivation for the formation of preferential trade agreements. Baldwin (2011) and the World Trade Organization (2011), for example, argue forcefully that the current spread of regionalism owes much to the intention of governments to facilitate the proliferation of such production networks. That incipient but essential line of research does not, however, address the labour market consequences of this trend. A related point can be made about export processing zones (EPZs). These are especially important in China, which is a country that has had little involvement in PTAs, suggesting that EPZs may function as an alternative to PTAs in some dimensions. On the other hand, the “maquiladoras” in Mexico seem to have been instrumental for Mexico’s effective use of preferences under NAFTA. Clearly, for cases like Mexico under NAFTA, as well as for Central America under the CAFTA-US reciprocal trade agreement, one has to take into consideration the role of EPZs when assessing the labour market impact of PTAs. These and other related important questions will hopefully be addressed by future research.

Another area that deserves more research attention is whether labour rights should, and if so how, be an integral part of trade agreements. Several recent PTAs have introduced labour provisions in their official texts, and this has been the case in particular with all PTAs formed by the United States since NAFTA in 1994. Implementation is very lax, however, as Elliott (2011) notes. Should labour provisions in PTAs be stimulated? And if they exist, how strict should their enforcement be? Surprisingly, there is very little theoretical support to guide such important decisions. There is some research directed at studying the desirability of introducing labour standards in the WTO. Bagwell and Staiger (2001), in particular, argue that the rules of the GATT are in fact capable of accommodating governments’ interests regarding labour standards even if those standards are not explicitly incorporated in the agreements. There is virtually no analysis, however, on whether, or under what circumstances, labour standards should be incorporated in preferential trade agreements. Since the non-discrimination rule of the GATT—which is obviously violated in PTAs—is central for the insights of Bagwell and Staiger (2001), it is not at all clear whether they extend to PTAs. Such lack of prior guidance makes the insights from the analysis in chapter 3 particularly welcome.

References

- Albornoz, Facundo, Hector Calvo-Pardo, Gregory Corcos and Emanuel Ornelas (2011). "Sequential Exporting," mimeo, London School of Economics.
- Antràs, Pol and Esteban Rossi-Hansberg (2009). "Organizations and Trade," *Annual Review of Economics* 1, 43-64.
- Artuç, Erhan, Shubham Chaudhuri and John McLaren (2008). "Delay and dynamics in labour market adjustment: Simulation results," *Journal of International Economics* 75, 1-13.
- Artuç, Erhan, Shubham Chaudhuri and John McLaren (2010). "Trade Shocks and Labour Adjustment: A Structural Empirical Approach," *American Economic Review* 100, 1008-1045.
- Bagwell, Kyle (2009). "Self-Enforcing Trade Agreements and Private Information," NBER Working Paper 14812.
- Bagwell, Kyle and Robert Staiger (1999). "Regionalism and Multilateral Tariff Cooperation," in J. Piggott and A. Woodland (eds.), *International Trade Policy and the Pacific Rim*, Macmillan.
- Bagwell, Kyle and Robert Staiger (2001). "Domestic Policies, National Sovereignty and International Economic Institutions." *Quarterly Journal of Economics* 116, 519-562.
- Baier, Scott L. and Jeffrey H. Bergstrand (2004). "Economic determinants of free trade agreements," *Journal of International Economics* 64, 29-63.
- Baldwin, Richard (2011). "21st Century Regionalism: Filling the gap between 21st century trade and 20th century trade rules," CEPR Policy Insight No. 56.
- Baldwin, Richard and Simon Evenett (eds.) (2011). *Why World Leaders Must Resist the False Promise of a Doha Delay*, <http://www.voxeu.org/reports/Doha.pdf>.
- Bergstrand, Jeffrey, Peter Egger and Mario Larch (2010). "Economic determinants of the timing of preferential trade agreement formations and enlargements," mimeo, University of Notre Dame.
- Bernard, Andrew, J. Bradford Jensen, Stephen Redding and Peter Schott (2007). "Firms in International Trade," *Journal of Economic Perspectives* 21, 105-130.
- Bernard, Andrew, Stephen Redding and Peter Schott (2007). "Comparative Advantage and Heterogeneous Firms," *Review of Economic Studies* 74, 31-66.
- Bhagwati, Jagdish and Arvind Panagariya (1996). "Preferential trading areas and multilateralism: Strangers, friends, or foes," in J. Bhagwati and A. Panagariya (eds.), *The Economics of Preferential Trade Agreements*, AEI Press.
- Bohara, Alok, Kishore Gawande and Pablo Sanguinetti (2004). "Trade Diversion and Declining Tariffs: Evidence from Mercosur," *Journal of International Economics* 64, 65-88.
- Bond, Eric and Jee-Hyeong Park (2002). "Gradualism in Trade Agreements with Asymmetric Countries," *Review of Economic Studies* 69, 379-406.
- Bond, Eric, Raymond Riezman and Constantinos Syropoulos (2004). "A Strategic and Welfare Theoretic Analysis of Free Trade Areas," *Journal of International Economics* 64, 1-27.
- Borchert, Ingo (2009), "On the Geographic Spread of Trade," mimeo, World Bank.
- Brander, James A. (1995). "Strategic trade policy," in G. M. Grossman & K. Rogoff (eds.), *Handbook of International Economics* 3, 1395-1455, Elsevier.

Cadot, Olivier, Jaime de Melo and Marcelo Olarreaga (1999). "Regional Integration and Lobbying for Tariffs against Non-Members," *International Economic Review* 40, 635-657.

Calvo-Pardo, Hector, Caroline Freund and Emanuel Ornelas (2011). "The ASEAN Free Trade Agreement: Impact of Intra-Bloc Liberalization on External Trade Flows and External Trade Barriers," in R. Barro and J. Lee (eds.), *Quantifying the Costs and Benefits of Regional Economic Integration in Asia*, 157-186, Oxford University Press.

Cameron, Stephen, Shubham Chaudhuri and John McLaren (2007). "Trade Shocks and Labour Adjustment: Theory," NBER Working Paper 13463.

Chang, Won and L. Alan Winters (2002). "How regional blocs affect excluded countries—the price effects of MERCOSUR," *American Economic Review* 92, 889-904.

Chisik, Richard (2003). "Export industry policy and reputational comparative advantage," *Journal of International Economics* 59, 423-451.

Cosar, A. Kerem (2010). "Adjusting to Trade Liberalization: Reallocation and Labour Market Policies," mimeo, University of Chicago Booth School of Business.

Costinot, Arnaud (2009). "Jobs, Jobs, Jobs: A "New" Perspective on Protectionism," *Journal of the European Economic Association* 7, 1011-1041.

Davidson, Carl and Steven Matusz (2000). "Globalization and labour market adjustment: How fast and at what cost?" *Oxford Review of Economic Policy* 16, 42-56

Davidson, Carl and Steven Matusz (2002). "Globalization, employment and income: Analyzing the adjustment process," in D. Greenaway, R. Upward and K. Wakeline (eds.), *Trade, Investment, Migration and Labour Market Adjustment*, 66-92, Palgrave Macmillan.

Davidson, Carl and Steven Matusz (2009). "Modeling, Measuring, and Compensating the Adjustment Costs Associated with Trade Reforms," mimeo, Michigan State University.

Davidson, Carl, Lawrence Martin and Steven Matusz (1988). "The Structure of Simple General Equilibrium Models with Frictional Unemployment," *Journal of Political Economy* 96, 1267-93.

Davidson, Carl, Lawrence Martin and Steven Matusz (1999). "Trade and search generated unemployment," *Journal of International Economics* 48, 271-299.

Davidson, Carl, Steven Matusz and Andrei Shevchenko (2008). "Globalization and firm level adjustment with imperfect labour markets," *Journal of International Economics* 75, 295-309.

Davidson, Carl, Fredrik Heyman, Steven Matusz, Fredrik Sjöholm and Susan Zhu (2011). "Globalization and Imperfect Labour Market Sorting," mimeo, Michigan State University.

Davis, Donald R. and James Harrigan, (2011). "Good jobs, bad jobs, and trade liberalization," *Journal of International Economics* 84, 26-36.

Dix-Carneiro, Rafael (2011). "Trade Liberalization and Labour Market Dynamics," mimeo, Princeton University.

Dornbusch, Rudiger, Stanley Fischer and Paul A. Samuelson (1977). "Comparative Advantage, Trade, and Payments in a Ricardian Model with a Continuum of Goods," *American Economic Review* 67, 823-39.

Eaton, Jonathan and Samuel Kortum (2002). "Technology, Geography, and Trade," *Econometrica* 70, 1741-1779.

- Elliott, Kimberly Ann (2011). "Labour Rights," in Jean-Pierre Chauffour and Jean Christophe Maur (eds.), *Preferential Trade Agreement Policies for Development: A Handbook*, World Bank.
- Estevadeordal, Antoni, Caroline Freund and Emanuel Ornelas (2008). "Does Regionalism Affect Trade Liberalization toward NonMembers?" *Quarterly Journal of Economics* 123, 1531-1575.
- Freund, Caroline (2000). "Multilateralism and the Endogenous Formation of Free Trade Agreements," *Journal of International Economics* 115, 1317-1341.
- Freund, Caroline and Emanuel Ornelas (2010). "Regional Trade Agreements," *Annual Review of Economics* 2, 139-166.
- Furusawa, Taiji and Edwin L. Lai (1999). "Adjustment costs and gradual trade liberalization," *Journal of International Economics* 49, 333-361.
- Goldberg, Pinelopi and Nina Pavcnik (2004). "Trade, Inequality, and Poverty: What Do We Know? Evidence from Recent Trade Liberalization Episodes in Developing Countries," *Brookings Trade Forum*, 223-269.
- Goldberg, Pinelopi and Nina Pavcnik (2005). "Trade, wages, and the political economy of trade protection: evidence from the Colombian trade reforms," *Journal of International Economics* 66, 75-105.
- Grossman, Gene and Elhanan Helpman (1994). "Protection for Sale," *American Economic Review* 84, 833-50.
- Grossman, Gene and Elhanan Helpman (1995). "The Politics of Free-Trade Agreements," *American Economic Review* 85, 667-90.
- Hallward-Driemeier, Mary, Giuseppe Iarossi and Kenneth L. Sokoloff (2002). "Exports and Manufacturing Productivity in East Asia: A Comparative Analysis with Firm-Level Data," NBER Working Papers 8894.
- Feenstra, Robert and Gordon Hanson (2003). "Global Production Sharing and Rising Inequality: A Survey of Trade and Wages," in E. Kwan Choi and James Harrigan (eds.), *Handbook of International Trade: Volume I*, chapter 6.
- Hason, Rana, Devashish Mitra and Priya Ranjan (2009). "Trade Liberalization and Unemployment: Evidence from Indian States," mimeo, Asian Development Bank.
- Helpman, Elhanan and Oleg Itskhoki (2010). "Labour Market Rigidities, Trade and Unemployment," *Review of Economic Studies* 77, 1100-1137.
- Helpman, Elhanan, Oleg Itskhoki and Stephen Redding (2010). "Inequality and Unemployment in a Global Economy," *Econometrica* 78, 1239-1283.
- Hoekman, Bernard and Alan L. Winters (2005). "Trade and Employment: Stylized Facts and Research Findings," Working Paper 7, United Nations Department of Economics and Social Affairs.
- Iacovone, Leonardo and Beata S. Javorcik (2010). "Multi-Product Exporters: Product Churning, Uncertainty and Export Discoveries," *Economic Journal* 120, 481-499.
- Jones, Ronald W. (1965). "The Structure of Simple General Equilibrium Models," *Journal of Political Economy* 73, 557-572.
- Karacaovali, Baybars and Nuno Limão (2008). "The clash of liberalizations: preferential vs. multilateral trade liberalization in the European Union," *Journal of International Economics* 74, 299-327.

- Kemp, Murray and Henry Wan (1976) "An Elementary Proposition Concerning the Formation of Customs Unions," *Journal of International Economics* 6, 95-97.
- Kennan, John and Raymond Riezman (1990). "Optimal Tariff Equilibria with Customs Unions," *Canadian Journal of Economics* 23, 70-83.
- Krishna, Pravin (2003). "Are Regional Trading Partners 'Natural'?" *Journal of Political Economy* 111, 202-26.
- Krishna, Pravin (1998). "Regionalism and Multilateralism: A Political Economy Approach," *Quarterly Journal of Economics* 113, 227-252.
- Krugman, Paul (1979). "Increasing returns, monopolistic competition, and international trade," *Journal of International Economics* 9, 469-479.
- Krugman, Paul (1980). "Scale Economies, Product Differentiation, and the Pattern of Trade," *American Economic Review* 70, 950-59.
- Krugman, Paul (1991). "Is bilateralism bad?," in E. Helpman and A. Razin (eds.), *International trade and trade policy*, MIT Press.
- Lawless, Martina (2011). "Marginal Distance: Does Export Experience Reduce Firm Trade Costs?" *Mimeo*, Central Bank of Ireland.
- Levy, Philip (1999). "Lobbying and international cooperation in tariff setting," *Journal of International Economics*, 47, 345-370.
- Limão, Nuno (2006). "Preferential Trade Agreements as Stumbling Blocks for Multilateral Trade Liberalization: Evidence for the U.S.," *American Economic Review* 96, 896-914.
- Limão, Nuno (2007). "Are preferential trade agreements with non-trade objectives a stumbling block for multilateral liberalization?" *Review of Economic Studies* 74, 821-55.
- Maggi, Giovanni and Andrés Rodríguez-Clare (2007). "A Political-Economy Theory of Trade Agreements," *American Economic Review* 97, 1374-1406.
- Mayer, Thierry and Ottaviano, Gianmarco I.P. (2007). "The Happy Few: The internationalisation of European firms. New facts based on firm-level evidence," *Bruegel blueprint series*, Volume 3.
- McLaren, John (2002). "A Theory of Insidious Regionalism," *Quarterly Journal of Economics* 117, 571-608.
- Melitz, Marc J. (2003). "The Impact of Trade on Intra-Industry Reallocations and Aggregate Industry Productivity," *Econometrica* 71, 1695-1725.
- Molina, Ana Cristina (2010), "Are Preferential Agreements Stepping Stones to Other Markets?" *Graduate Institute of International and Development Studies Working Paper* 13/2010.
- Molina Ana Cristina, Mauricio Bussolo and Leonardo Iacovone (2010), "The DR-CAFTA and the extensive margin: a firm-level analysis," *mimeo*, Graduate Institute of International and Development Studies.
- Morales, Eduardo, Gloria Sheu and Andrés Zahler (2011), "Gravity and Extended Gravity: Estimating a Structural Model of Export Entry," *mimeo*, Columbia University.
- Mrázová, Monika (2009). "Ohyama-Kemp-Wan Customs Union Formation under Imperfect Competition: The WTO Article XXIV Revisited," *mimeo*, London School of Economics.

- Neary, J Peter (1998). "Pitfalls in the Theory of International Trade Policy: Concertina Reforms of Tariffs, and Subsidies to High-Technology Industries," *Scandinavian Journal of Economics* 100, 187-206.
- Ornelas, Emanuel (2005a). "Trade Creating Free Trade Areas and the Undermining of Multilateralism," *European Economic Review* 49, 1717-1735.
- Ornelas, Emanuel. (2005b). "Rent Destruction and the Political Viability of Free Trade Agreements," *Quarterly Journal of Economics* 120, 1475-506.
- Ornelas, Emanuel (2005c). "Endogenous free trade agreements and the multilateral trading system," *Journal of International Economics* 67, 471-497.
- Ornelas, Emanuel (2007). "Exchanging Market Access at the Outsiders' Expense: The Case of Customs Unions," *Canadian Journal of Economics* 40, 207-24.
- Ornelas, Emanuel (2008). "Feasible multilateralism and the effects of regionalism," *Journal of International Economics* 74, 202-224.
- Ozden, Caglar and Eric Reinhardt (2005). "The perversity of preferences: GSP and developing country trade policies, 1976-2000," *Journal of Development Economics* 78, 1-21.
- Panagariya, Arvind and Pravin Krishna (2002). "On Necessarily Welfare-Enhancing Free Trade Areas," *Journal of International Economics* 57, 353-67.
- Richardson, Martin (1993). "Endogenous protection and trade diversion," *Journal of International Economics* 34, 309– 324.
- Saggi, Kamal & Halis M. Yildiz (2010). "Bilateralism, multilateralism, and the quest for global free trade," *Journal of International Economics* 81, 26-37.
- Staiger, Robert (1995) "A theory of gradual trade liberalization," in Levinsohn, J., A.V. Deardorff and R.M. Stern (eds.), *New Directions in Trade Theory*, University of Michigan Press.
- Viner, Jacob (1950). *The Customs Union Issue*, New York: Carnegie Endowment for International Peace.
- von Uexkull, Eric (2011). "Regional Trade and Employment in ECOWAS," mimeo, International Labour Organization.
- Wonnacott, Paul and Mark Lutz (1989). "Is there a Case for Free Trade Areas?," in Jeffrey Schott (ed.), *Free Trade Area and U.S. Trade Policy*, 59-84, Institute for International Economics.
- World Trade Organization (2011). "Preferential Trade Agreements and the WTO: from Co-existence to Coherence," *World Trade Report* 2011.
- Yi, Sang-Seung (1996). "Endogenous formation of customs unions under imperfect competition: open regionalism is good," *Journal of International Economics* 41, 153-177.
- Yi, Sang-Seung (2000). "Free-Trade Areas and Welfare: An Equilibrium Analysis," *Review of International Economics* 8, 336-47.
- Zissimos, Ben (2007). "The GATT and gradualism," *Journal of International Economics* 71, 410-433.
- Zissimos, Ben (2011). "Why are Trade Agreements Regional?" *Review of International Economics* 19, 32-45.