

Vandenberg, Paul

Working Paper

Can trade help achieve the employment targets of the sustainable development goals?

ADB Working Paper, No. 650

Provided in Cooperation with:

Asian Development Bank Institute (ADBI), Tokyo

Suggested Citation: Vandenberg, Paul (2017) : Can trade help achieve the employment targets of the sustainable development goals?, ADB Working Paper, No. 650, Asian Development Bank Institute (ADBI), Tokyo

This Version is available at:

<https://hdl.handle.net/10419/163149>

Standard-Nutzungsbedingungen:

Die Dokumente auf EconStor dürfen zu eigenen wissenschaftlichen Zwecken und zum Privatgebrauch gespeichert und kopiert werden.

Sie dürfen die Dokumente nicht für öffentliche oder kommerzielle Zwecke vervielfältigen, öffentlich ausstellen, öffentlich zugänglich machen, vertreiben oder anderweitig nutzen.

Sofern die Verfasser die Dokumente unter Open-Content-Lizenzen (insbesondere CC-Lizenzen) zur Verfügung gestellt haben sollten, gelten abweichend von diesen Nutzungsbedingungen die in der dort genannten Lizenz gewährten Nutzungsrechte.

Terms of use:

Documents in EconStor may be saved and copied for your personal and scholarly purposes.

You are not to copy documents for public or commercial purposes, to exhibit the documents publicly, to make them publicly available on the internet, or to distribute or otherwise use the documents in public.

If the documents have been made available under an Open Content Licence (especially Creative Commons Licences), you may exercise further usage rights as specified in the indicated licence.



<https://creativecommons.org/licenses/by-nc-nd/3.0/igo/>



ADB Working Paper Series

**CAN TRADE HELP ACHIEVE
THE EMPLOYMENT TARGETS
OF THE SUSTAINABLE
DEVELOPMENT GOALS?**

Paul Vandenberg

No. 650
January 2017

Asian Development Bank Institute

Paul Vandenberg is a senior economist at the Asian Development Bank currently on leave and serving as a visiting professor at Thammasat University in Bangkok, Thailand.

The views expressed in this paper are the views of the author and do not necessarily reflect the views or policies of ADBI, ADB, its Board of Directors, or the governments they represent. ADBI does not guarantee the accuracy of the data included in this paper and accepts no responsibility for any consequences of their use. Terminology used may not necessarily be consistent with ADB official terms.

Working papers are subject to formal revision and correction before they are finalized and considered published.

The Working Paper series is a continuation of the formerly named Discussion Paper series; the numbering of the papers continued without interruption or change. ADBI's working papers reflect initial ideas on a topic and are posted online for discussion. ADBI encourages readers to post their comments on the main page for each working paper (given in the citation below). Some working papers may develop into other forms of publication.

Suggested citation:

Vandenberg, P. 2017. Can Trade Help Achieve the Employment Targets of the Sustainable Development Goals? ADBI Working Paper 650. Tokyo: Asian Development Bank Institute. Available: <https://www.adb.org/publications/can-trade-help-achieve-employment-targets-of-sdg>

Please contact the author for information about this paper.

Email: paul@econ.tu.ac.th

Asian Development Bank Institute
Kasumigaseki Building, 8th Floor
3-2-5 Kasumigaseki, Chiyoda-ku
Tokyo 100-6008, Japan

Tel: +81-3-3593-5500

Fax: +81-3-3593-5571

URL: www.adbi.org

E-mail: info@adbi.org

© 2017 Asian Development Bank Institute

Abstract

The paper asks whether trade can help to achieve the employment targets of the Sustainable Development Goals. The focus is on Goal 8, which is to “promote sustained, inclusive and sustainable growth, full and productive employment, and decent work for all.” The theoretical and empirical links between trade and employment are examined to suggest whether trade has a positive or negative impact on the quantity and quality of employment. At the aggregate level, trade has a positive impact on welfare, which can lead to job creation. However, freer trade causes some sectors and firms to expand and others to shrink. This adjustment process creates both a demand for labor in some sectors and job losses in others. Government policies to cushion the impact of adjustment and facilitate the movement of labor from declining to rising sectors are discussed.

JEL Classification:F1, J0, O1

Contents

1.	INTRODUCTION	1
2.	EMPLOYMENT IN THE MDGS AND THE SDGS.....	2
2.1	Employment in the MDGs	2
2.2	Employment in the SDGs	4
3.	CONCEPTS AND TRENDS IN THE LINK BETWEEN TRADE AND EMPLOYMENT	6
3.1	Employment and the Gains from Trade.....	6
3.2	Adjusting to Comparative Advantage	8
3.3	Changes in Comparative Advantage.....	10
3.4	Global Production Shifts in Goods Manufacturing.....	11
3.5	Outsourcing Services	12
4.	EVIDENCE ON EMPLOYMENT AND JOB QUALITY UNDER LIBERALIZED TRADE	14
4.1	Employment Levels	15
4.2	Sector Shifts	17
4.3	Quality of Jobs, including Formal versus Informal Employment.....	18
5.	ROLE OF POLICY	19
5.1	Labor Market Policies.....	19
5.2	Trade Adjustment Assistance.....	19
5.3	Design and Implementation of Trade Agreements	21
5.4	Skills and Education to Enhance the Benefits from Trade	22
6.	CONCLUSION	23
	REFERENCES	25

1. INTRODUCTION

For more than 4 decades, globalization has been a major force shaping economies throughout the developed and developing worlds. It has offered new opportunities for economic growth but also greater competition, increased instability in some areas, and heightened pressures on countries and firms to adapt to technologies and market conditions. The debate about the benefits and drawbacks of increased integration has been a lively one and will no doubt continue. It will do so as new trade agreements are signed in some regions and as a new wave of protectionist sentiment may (potentially) stall liberalization or raise barriers in others.¹ In this context, prudent governments have sought the best ways to manage the process and harness the benefits of trade.

In this period of globalization, the international community agreed to a set of development goals to focus the attention and efforts of governments and international assistance agencies. The aim of the Millennium Development Goals (MDGs), agreed in 2000, was to improve the welfare of people in the developing world by setting goals that were specific and in most cases measurable. As the date for the achievement of the MDGs drew near, the international community took stock of what had been accomplished, and agreed in 2015 on a new set of goals, called the Sustainable Development Goals (SDGs).

As reflected in the fact that increased trade is not one of the SDGs and there is little mention of it in the SDG document, increasing trade is not a goal in itself. Trade, however, can be a powerful “enabler” supporting the achievement of the goals. The question is how to ensure that the process of global integration aids the achievement of the SDGs. Trade allows countries to specialize in what they are good at producing, and it can raise productivity, promote growth, and create jobs, but this is not automatic. We might thus expect trade to contribute to the achievement of the SDGs if it is sustained and if it is accompanied by appropriate adjustment policies.

This paper focuses on the employment aspects of the SDGs. The attention is therefore on Goal 8, which seeks to “promote sustained, inclusive and sustainable economic growth, full and productive employment and decent work for all.” Sectors often need to adjust to trade liberalization, and therefore the government may play a role in cushioning impacts and supporting employment transitions for workers. Thus, we are interested not only in the impact of trade on employment but also the policy measures that may be taken by government to reduce the negative aspects and support the positive aspects of increased trade on workers. Our analysis is guided therefore by the following questions: (i) Will increased trade support the employment objectives of the SDGs? (ii) What role might government play in facilitating employment transitions resulting from trade?

¹ Canada and the European Union (EU) signed the Comprehensive Economic and Trade Agreement in October 2016, eliminating 98% of tariffs. The Trans-Pacific Partnership Agreement (TPPA or TPP) was signed by 12 Pacific Rim countries in February 2016. These agreements suggest continued global trade liberalization. However, the incoming administration in the United States (US) (2017–2020) appears to be protectionist, which may affect ratification of the TPP and the conclusion of negotiations for the US-EU Transatlantic Trade and Investment Partnership (TTIP). The World Trade Organization recorded that an average of 15 trade-restrictive measures were introduced per month in the year ending mid-October 2015 (WTO 2016). The number of trade-liberalizing measures was 19 per month during the same period. However, there remains a large stockpile of restrictive measures (2,557) introduced since 2008.

The paper is organized as follows: Section 2 sets out the employment aspects of the MDGs and the SDGs. Section 3 considers the conceptual and theoretical links between trade and employment. Section 4 reviews the empirical literature on the links and seeks to tease out and differentiate the conditions and policies under which trade has improved employment outcomes from cases in which negative outcomes have resulted. Section 5 brings together the policy issues, and a brief final section concludes the paper.

2. EMPLOYMENT IN THE MDGS AND THE SDGS

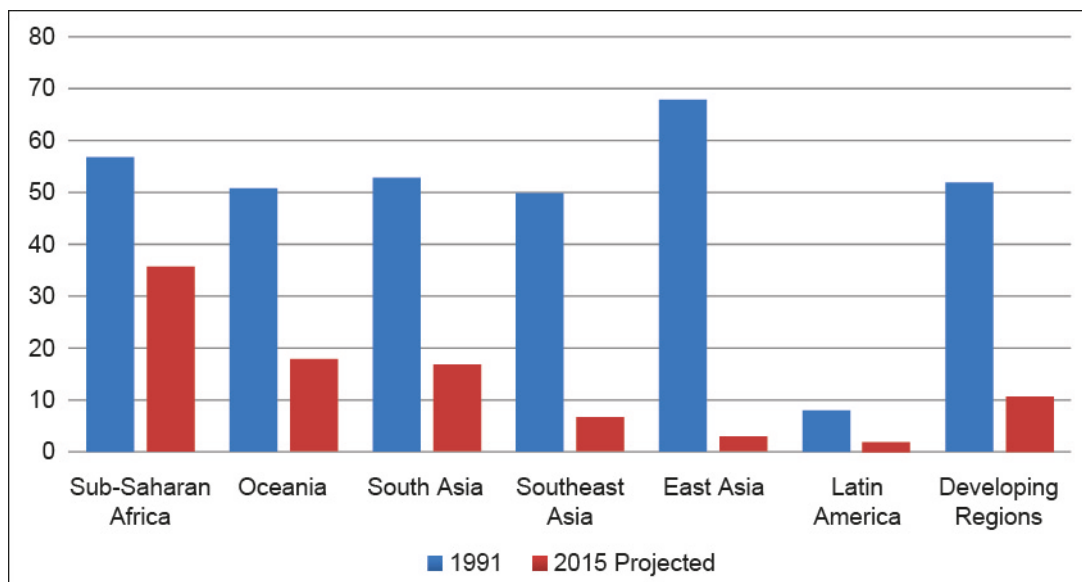
2.1 Employment in the MDGs

Employment was not part of the original MDGs set in 2000, but a target with specific indicators was added 8 years later. The target, under the first goal of reducing extreme poverty and hunger, called on countries to “achieve full and productive employment and decent work for all, including women and young people.” This target had four indicators: (i) the growth rate of labor productivity, (ii) the ratio of employment to population, (iii) the working poverty rate (share of employed persons living below the poverty line), and (iv) the vulnerable employment rate (share of own-account workers and contributing family workers in total employment). No specific quantitative targets were set (e.g., that the working poverty rate should be halved by 2015), and thus there could be no verification of whether the target was achieved.

For three of the four indicators, it is clear in which direction the indicator should move to improve employment; for the other indicator, it is not clear. Thus, it is clear that labor productivity should rise and that the working poverty rate and the level of vulnerable employment should fall. However, the employment-to-population ratio is problematic because positive and negative factors can move the ratio in the same direction. For example, when people stay in school longer (a good thing), it depresses the rate, but so does a higher unemployment rate (a bad thing). The rate can depend heavily on the female labor force participation (because they decide whether to engage in paid work or in unpaid household and family care) and can vary with a country’s level of economic development.

The evidence suggests that there were movements in the right direction during the coverage period of the MDGs (1991–2015). The working poverty rate moved in the right direction as the share of employed persons living on less than \$1.25 per day fell dramatically from 1991 (Figure 1). It did so in line with similar declines in the general poverty rate, which was probably the key target of the MDGs. In East Asia, the share of the working poor fell from 68% to 3% and in Southeast Asia from 50% to 17%. Progress was also made in reducing the share of workers in situations of vulnerable employment (own-account and unpaid family workers). The global share dropped from 55% to 45%, although the ratio remains high for Sub-Saharan Africa and South Asia where it is about 75%. The absolute number of vulnerable workers has risen during the MDGs’ period from 1.25 billion to 1.45 billion (United Nations 2015b). In summary, then, between 1991 and 2015, the world experienced a significant decline in the share of the working poor and a noticeable fall in the share of vulnerable employment, and this occurred during a period of rapid globalization, including increased trade and lower barriers to trade. However, we would need more detailed analysis to understand whether these improvements in employment were aided by globalization.

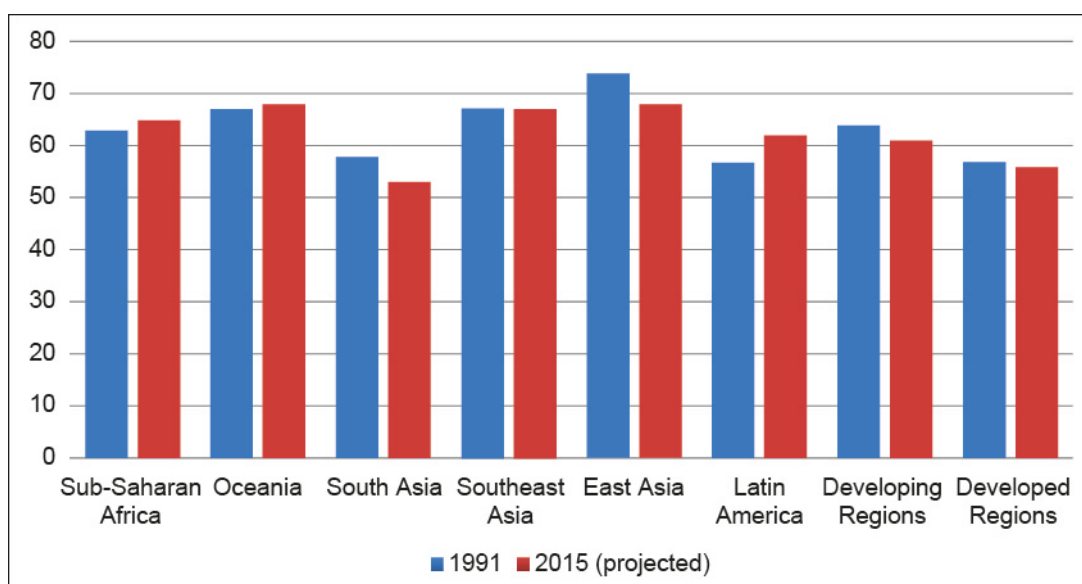
Figure 1: Share of Employed Persons Living on Less than \$1.25 per Day (%)



Source: United Nations (2015b).

As noted, the employment-to-population ratio is a more problematic indicator. The ratio varies considerably from 43% in North Africa to 68% in East Asia and Oceania (Figure 2). During the MDGs’ period from 1991 to 2015, it rose by 6 percentage points in East Asia and fell by 5 percentage points in Latin America and the Caribbean. Globally, the ratio fell in five regions, rose in three regions and stayed the same in one region in the same period. As noted, it is not clear whether increases or decreases are good or bad.

Figure 2: Employment-to-Population Ratio (%)



Source: United Nations (2015b).

None of the four MDG employment indicators were carried over to the SDGs; instead, they appear to have been replaced by indicators capturing similar aspects of employment. The employment-to-population ratio was replaced by the unemployment rate, a less ambiguous indicator, although still problematic in the case of poor countries that lack social security and where underemployment can be high. The unemployment rate can often reflect mostly the situation of the urban middle class that can afford to be unemployed. Vulnerable employment was replaced by informal employment in the SDGs. Informal employment has experienced both increases and decreases across countries in recent years, and in Asia it remains high in India, Pakistan, and the Philippines (Table 1). The working poverty rate and the labor productivity rates were not carried over, whereas the growth rate of real gross domestic product (GDP) per person employed was added; all three of these indicators relate, directly or indirectly, to workers' income.

**Table 1: Share of Persons Employed in the Informal Sector
in Total Non-agricultural Employment**

Country	Year	Share(%)	Country	Year	Share(%)
Armenia	2009	10.2	Malaysia	2012	11.1
	2012	9.9		2013	13.2
	2013	10.1	Nepal	1999	73.3
Georgia	1999	6.9	Pakistan	2002	70.0
India	2005	68.8		2004	70.0
	2010	67.5		2010	72.7
	2012	65.7	Philippines	2008	72.5
Indonesia	2009	64.8	Sri Lanka	2009	50.5
Kazakhstan	1995	11.7	Thailand	2013	32.2
Kyrgyz Republic	2003	24.2	Turkey	2013	21.7
	2009	59.2			

Source: ILO (2015b).

2.2 Employment in the SDGs

There are 17 SDGs. Each goal has several targets, and each target is associated with one or more measurable indicators. The latter allow for the tracking of progress over the 15-year period. The issue of employment is concentrated in Goal 8, which is to “promote inclusive and sustainable economic growth, employment and decent work for all.” The goal has 12 targets, of which 8 include a mention of employment; and those 8 targets are linked with a total of 11 indicators. The targets and indicators are provided in Table 2.

Table 2: Targets and Indicators for SDG 8

Goal 8: Promote sustained, inclusive and sustainable economic growth, full and productive employment and decent work for all.			
Targets		Indicators	
8.2	Achieve higher level of economic productivity through diversification, technological upgrading and innovation, including through a focus on higher value added and labour intensive sectors	8.2.1	Annual growth rate of real GDP per person employed
8.3	Promote development-oriented policies that support productive activities, decent job creation, entrepreneurship, creativity and innovation, and encourage the formalization and growth of micro, small and medium-sized enterprises including through access to financial services	8.3.1	Proportion of informal employment in non-agriculture employment, by sex
8.5	By 2030, achieve full and productive employment and decent work for all women and men, including for young people and persons with disabilities, and equal pay for work of equal value	8.5.1	Average hourly earnings for female and male employees, by occupation, age and persons with disabilities
		8.5.2	Unemployment rates, by sex, age and persons with disabilities
8.6	By 2020, substantially reduce the proportion of youth not in employment, education or training	8.6.1	Proportion of youth (age 14-24 years) not in education, employment or training
8.7	Take immediate and effective measures to eradicate forced labour, end modern slavery and human trafficking and secure the prohibition and elimination of the worst forms of child labour, including recruitment and use of child soldiers, and by 2025 end child labour in all its forms	8.7.1	Proportion and number of children age 5-17 years engaged in child labour, by sex and age
8.8	Promote labour rights and promote safe and secure working environments for all workers, including migrant workers, in particular, women migrants and those in precarious employment	8.8.1	Frequency rates of fatal and non-fatal occupational injuries, by sex and migrant status
		8.8.2	Increase in national compliance of labour rights (freedom of association and collective bargaining) based on International Labour Organization (ILO) textual sources and national legislation, by sex and migrant status
8.9	By 2030, devise and implement policies to promote sustainable tourism that creates jobs and promotes local culture and products	8.9.1	Tourism direct GDP as a proportion of total GDP and in growth rate
		8.9.2	Number of jobs in tourism industries as a proportion of total jobs and growth rate of jobs, by sex
8.b	By 2020, develop and operationalize a global strategy for youth employment and implement the Global Jobs Pact of the International Labour Organization	8.b.1	Total government spending in social protection and employment programmes as a proportion of the national budgets and GDP

GDP = gross domestic product.

Note: Only targets and indicators from Goal 8 related to employment are provided. Emphasis added in bold.

Sources: United Nations (2015, 2016a).

The coverage is broader than the MDGs, with an emphasis on the quality of employment and the identification of a number of specific groups within the labor force. Three targets focus on job creation (“full and productive employment,” “labor-intensive sectors,” and jobs in tourism) and in one of these there is a call for gender wage equality (“equal pay for work of equal value”). There is one specific target dedicated to youth and two other targets that mention young people. High levels of youth unemployment have been a major concern for the international community over the past decade and are perceived to contribute to social unrest. One of the targets calls for the promotion of labor rights and safe working conditions, and another focuses on formal employment instead of informal employment.

The dark side of employment practices is addressed in the SDGs, with targets for eradicating forced labor, child labor, modern slavery, and human trafficking. The sole indicator for this target is for child labor. And the final target in Goal 8 includes the call for the implementation of the Global Jobs Pact of the International Labour Organization (ILO). Indeed, the employment targets reflect rather closely the agenda of the ILO.

Employment issues are not limited to Goal 8 as there are numerous other references to work and jobs in the introductory sections of the United Nations document and in others goals and targets. Goal 4, on education, is related to employment, notably the target that governments should “by 2030, substantially increase the number of youth and adults who have relevant skills, including technical and vocational skills, for employment, decent jobs and entrepreneurship.” Goal 5, on gender equality, calls for countries to “recognize and value unpaid care and domestic work” and to provide supportive public services and social protection policies in that regard (target 5.4).

Furthermore, Goal 10, on inequality, encourages countries to implement “wage and social protection policies [to...] progressively achieve greater equality” (target 10.4). There is also a call for the promotion of “orderly, safe, regular and responsible” migration (target 10.7) that implicitly relates to employment, as a key aspect of inter-country people movements is labor migration. While there are few numerically defined targets in the SDGs, there is one for labor migration, which targets a reduction in the cost of sending remittances to less than 3% of the value of the money sent, and the elimination of remittance corridors where transmission costs are above 5% (target 10c). These targets are to be achieved by 2030.

3. CONCEPTS AND TRENDS IN THE LINK BETWEEN TRADE AND EMPLOYMENT

3.1 Employment and the Gains from Trade

Labor has been an integral part of trade theory since David Ricardo devised the theory of comparative advantage nearly 200 years ago. According to the theory, the gains from trade arise because of differences in labor productivity. The subsequent development of trade theory explained patterns of trade based on factor abundance, with labor, along with capital, a key factor in the discussion. The impact of trade on the returns to factors of production has provided the connection between trade and wages. Indeed, trade theory has focused more on the impact of trade on wages than on the level of employment. Much of trade theory assumes full employment before and after liberalization, despite shifts in deployment during the period of transition.

Trade brings into competition producers from different countries that vie for a share of an expanded market. This competition enables more efficient producers to wrest market share from less efficient ones and for countries to specialize. One of the oldest, most powerful, and non-obvious concepts in economics is that while there may be winners and losers following trade opening, the net benefit for each country is positive. This is Ricardo's theory of comparative advantage and it holds even in situations in which one country has higher productivity (i.e., absolute advantage) in producing the two goods that it trades with another country. Each country benefits from specializing in the good in which it has a comparative advantage. At the country level and for both (or all) countries, welfare is always increased as a result of trade.

Trade theorists have sought to build on this base concept by explaining what determines a country's comparative advantage. While Ricardo based his theory on (unexplained) differences in labor productivity, the Heckscher-Ohlin theorem, formulated in the 1920s and 1930s, is that a country will have a comparative advantage in and therefore export the goods that intensely use the country's abundant factor. Here we begin to see the connection between trade and employment, as labor is a key factor of production. Through expanded trade, the price of goods produced with the abundant factor will rise in the exporting country and will raise the returns to the abundant factor. Therefore, in a labor abundant country, trade will expand demand for labor and raise the wage. The labor abundant country will have had a lower wage to begin with, so the wage rises, while it will fall in the country where labor is relatively scarce.

The model of factor abundance initially did not fit well the actual patterns of trade, notably for the US, resulting in Leontief's famous paradox that the US should be exporting capital-intensive goods but was, in fact, exporting labor-intensive ones. Subsequent analysis weakened or eliminated the paradox; notably, labor was differentiated into skilled and unskilled labor (Krugman and Obstfeld 2009). Wood (1995) went further in proposing a three-way distinction between illiterate, literate but unskilled, and skilled labor, and argued that differences in workforce skills were the defining characteristic of traded goods. Capital was left out of the model because it, unlike labor, is internationally mobile.

Factor abundance also had a greater impact in determining trade between developed and developing countries than among developed countries. Low-income countries specialized in goods produced with low-cost, low-skilled labor, such as textiles and clothing, and assembly operations, ranging from plastic toys to electronics (Hanson 2012). The production and export of these goods by advanced countries have declined considerably, with these countries exporting complex goods with a high capital content, including human capital. Factor abundance may also explain some of the shift from manufacturing into primary exports for resource-rich countries in Latin America and elsewhere following trade liberalization. We return to the empirics below.

Whereas classical trade theory modeled inter-sectoral trade, a new stream of theory, developed in the late 1970s and early 1980s, sought to account for the large share of intra-sectoral trade in global trade, particularly between advanced countries (Krugman 1979). These models incorporated more realistic assumptions about production structure and consumer preferences, in particular by adding economies of scale and product differentiation based on monopolistic competition. The new trade theory was more focused on explaining the empirical reality of intra-sectoral trade than on shifts to post-liberalization changes and thus has probably no more and possibly less to say about employment than traditional trade theory.

In the early 2000s, a new stream of analysis developed that derived from new empirical findings on the considerable heterogeneity among firms and, in particular, productivity differences between exporting and non-exporting firms (Bernard and Jensen 1999). This “new-new” trade theory sought to explain the differences between firms producing the same or very similar goods in the same country (Melitz 2003). Opening to trade exposes these differences and results in the expansion of more productive firms and an increase in the overall level of industry productivity. This intra-industry expansion and contraction has implications for job creation and job destruction. As Jansen and Lee (2007) note, this may result in easier transition as job movements within the same industry tend to be easier than those between industries because skills may be similar and information about opportunities more available.

Thus, classical, new, and new-new trade theories have had relatively little to say about net employment. The theories assume full employment in pre- and post-liberalization periods and have recognized but not been concerned about the transition between the two. Transitions are assumed, implicitly or explicitly, to be immediate and frictionless.² Where theory has had much more to say is on wage levels. In a country with abundant low-skilled labor, the real wage of low-skilled workers should rise. This should benefit the many workers in developing countries that are attracted to the export industries. But at the same time, the real wage of high-skilled workers should fall. This may be problematic because countries in the developing world seek to produce and export higher value goods, which in turn requires a more skilled labor force. For industrialized countries, the process predicted by theory is somewhat less problematic but challenging nonetheless. These countries export goods with a higher capital and skills content that requires (and rewards) skilled workers. The downside is that this reduces demand and puts downward pressure on wages for less-skilled workers, a major policy concern in the US and similar countries. The challenge there is to upgrade the skills of low-skilled workers.

In terms of the SDGs, standard trade theory provides more direction on the quality of work (notably on wages) than on the quantity. In particular, theory may not provide much insight on whether increased trade will help countries achieve the goal of full employment or the target of low unemployment. In terms of the quality of employment, theory suggests that poor and unskilled workers in developing countries—the countries that are the focus on the SDGs—may gain, and those in developed countries may lose as a result of trade. Theory gives us relatively little direction, however, on other aspects of employment quality, such as decent working conditions, forced and child labor, women, youth, and workers with disabilities, and how these might be improved or eliminated through trade.

3.2 Adjusting to Comparative Advantage

That said, there are trade theorists who have sought to model the transition process in terms of how it affects employment. Since the late 1990s, a number of theories have been put forward on the effect of trade on unemployment by incorporating theories of job search, and worker/employer matching as part of labor market efficiency. However, this work is still in its infancy and has generated results that are sometimes ambiguous and tend to confirm employment outcomes that are already suggested by the standard theories of comparative advantage and factor abundance. Experts working in this area have themselves noted quite recently: “The role that globalization plays in enhancing or

² For example, Krugman (1979) assumes full employment, although he does discuss intra-country labor migration.

hampering the performance of the labor market is not well understood” (Davidson et al. 2012: 429).

Davidson, Martin, and Matusz (1999) develop a model of trade that includes unemployment generated from search costs and frictions (i.e., “search unemployment”). A key basis for comparative advantage is differences in search technologies and break up rates. The model assumes that a larger country has a more efficient labor market and therefore lower long-term rate of unemployment. The model indicates that when a large, capital-abundant country, like the US, trades with a small, labor-abundant country (i.e., in the developing world), unemployment in the former will increase.

Moore and Ranjan (2005) develop a similar model, but comparative advantage is tied directly to differences in factor endowments, notably differences in skilled and unskilled workers. The result is that trade opening results in reduced unemployment for skilled workers but increased unemployment for unskilled workers. The model is viewed from the perspective of a developed country, such as the US, and thus generates results similar to what would be expected for the theory of factor abundance.

Davidson et al. (2012) draws on new-new trade theory and the important differences between exporting and non-exporting firms to develop a model of labor transition. The authors assume an initial situation of “cross-skill matching” (CSM), a type of skills mismatch in which some high-skilled workers are employed in low-tech firms prior to trade opening, resulting in underemployment.³ As a result of trade, CSM may decline as an industry moves to a system of “ex-post segmentation” (EPS), in which the more productive exporting firms can pay higher wages and attract high-skilled workers away from low-tech firms. Low-tech firms lose out and their segment shrinks, reducing the bargaining power and wages of low-skilled workers. The model appears designed from an industrial country perspective as the assumption is that high-skilled, high-tech industries will benefit from trade. The results are in line with the Heckscher-Ohlin theory as it applies to an advanced country in that high-skilled workers will benefit and the low skilled will lose. It is possible that the system does not transition from CSM to EPS and skill mismatches persist. Furthermore, liberalization affects not only exporters but also import-competing firms and industries. Import competition can reduce the earnings gap between high- and low-tech firms and shift the labor market situation to CSM, if it was initially at EPS.

Dutt, Mitra, and Ranjan (2009) present a model that can account for whether trade is based on productivity differences, following Ricardo, or on differences in factor endowments, as suggested by Heckscher-Ohlin. Their model predicts that differences in factor endowments will result in a decrease in unemployment in a labor-abundant country and an increase in a labor-scarce country; results that would be expected from the underlining trade model. The higher unemployment is based on search friction and exists only in the short term. However, the authors show that trade based on differences in productivity will reduce unemployment unambiguously, that is for either a labor-scarce or labor-abundant country. The reason for the difference is that productivity differences will result in a more rapid reallocation of labor from low to high productivity firms through more aggressive job search efforts and more effective job posting. Their empirical evidence suggests productivity differences have a greater role in explaining trade than endowments, and thus overall unemployment is expected to decline with trade opening.

³ The model is actually based on a single high- or low-skilled manager for each firm, although the manager is said to be representative of high- and low-skilled workers in the firm.

Helpman, Itskhoki, and Redding (2010) develop a model with heterogeneity in firm productivity, following Melitz (2003), and labor market friction. As a result of trade opening, more productive firms will hire more skilled workers to whom they are willing to offer a higher wage. However, more intensive screening and higher wages will limit the extent of new hiring and will tend to raise overall unemployment. At the same time, net hiring will be affected by the tightness of the labor market and can either support an overall increase in unemployment or result in a decrease, thus leaving the results ambiguous. Helpman and Itskhoki (2010) develop a similar model that focuses on differences in labor market frictions between homogeneous and differentiated goods sectors.⁴ If labor market rigidities, which give rise to friction, are higher in the differentiated sector, the unemployment rate will rise as a result of trade opening. However, the unemployment rate will fall if friction is lower initially or decreases over time.

Much of the analysis has sought to figure out how easy or difficult it might be for workers to move from declining to rising industries. New jobs might require different skills and moving to a different location. Moving jobs means knowing where the new jobs might be found and requires adequate information flows. And finally, labor market institutions might have a role in shaping the types of transitions to be made. Generous unemployment and social benefits might dull the incentives for workers to transition quickly, as might a lack of wage flexibility.

Wood (1995) suggested that flexibility in the US might result in lower wages but little or no increase in unemployment for low-skilled workers. In contrast, in Europe, where social and labor market institutions were more developed and there is less flexibility, workers in declining industries were more likely to face a period of unemployment, instead of lower wages.

3.3 Changes in Comparative Advantage

Comparative advantage is not static but changes over time. This is true of both advanced countries, such as the US and those in Europe, and even more so for other countries in the process of developing and industrializing. Just as trade opening accentuates comparative advantage and causes shifts in demand for workers and their skills across sectors and firms, so too do changes in comparative advantage have an impact on labor. Indeed, improvement in the skill level of labor is one of the important sources, along with technology, of change in comparative advantage. As a result, the types of goods and services that countries export will change over the course of the 15-year coverage period of the SDGs and will do so even if there is no further liberalization of trade regimes.

In earlier work, Das (1998) noted significant changes in revealed comparative advantage (RCA) in Asia between 1980 and 1993, when considerable structural change was taking place. Across the four large ASEAN countries, the RCA was high but fell significantly in mineral intensive and agriculture intensive exports.⁵ Meanwhile, the RCA was lower but rose roughly fivefold in each of the categories of technology-intensive, capital-intensive, and human capital-intensive exports. For a more advanced economic group, the four newly-industrializing economies in East Asia, the RCA was low and remained so in agriculture and minerals but was higher and increased further

⁴ In the differentiated sector, firms are heterogeneous such that they have market power in the product market (monopolistic competition) and bargain with workers for wages in the labor market.

⁵ The four ASEAN countries are Indonesia, Malaysia, Philippines, and Thailand.

in technology-intensive and capital-intensive sectors.⁶ The most significant change in this group was in the labor-intensive sectors, where RCA fell by more than half. Clearly, the countries were moving up the value chain in goods production and altering their comparative advantage.

Using a significantly longer timeframe and focusing on workers' skills, Wolff (2003) found important changes in the content of US exports and imports. In the half-century from 1947 to 1996, US comparative advantage was in high cognitive and interactive skills and low in motor skills. And the gap in terms of the exports and imports that embody these skills widened over time. Furthermore, exports were high in the employment of knowledge and data workers, whereas the labor content of imports stressed goods workers. This gap, too, increased over time. Following the Leontief paradox, imports are more capital and machinery intensive than US exports; in this case, however, the gap fell over time. Somewhat surprisingly, the research and development content of imports surpassed that of exports during this 50-year period.

Conceptually and empirically, higher value goods are correlated to higher economic growth (Hausmann, Hwang, and Rodrik 2007). Thus, countries seeking to grow faster will try to alter their comparative advantage in the direction of higher value goods, commonly expressed as efforts in "moving up the value chain." There remains considerable debate, however, regarding the extent to which a country should conform to its existing comparative advantage or defy it and engineer a move to a more sophisticated level. Justin Lin, former chief economist at the World Bank, has taken the former position, whereas Ha-Joon Chang, an industrial policy advocate, has argued for the latter (Lin and Chang 2009).

3.4 Global Production Shifts in Goods Manufacturing

The distribution of goods manufacturing has seen a significant shift over the past 25 years. "Industrialized" countries are so named because of their industrial activity, including manufacturing. But an increasing proportion of manufacturing is taking place in the developing or "industrializing" world. The share of global manufacturing produced in developing countries doubled from 18% to 36% between 1990 and 2014 (UNIDO 2015). Much of that increase is due to the PRC, which by itself accounts for half of total manufacturing in developing countries, rising from 16% to 51% over the same time period (UNIDO 2015). These shifts have been facilitated by trade and have resulted in job creation in developing countries and a redistribution of global manufacturing employment.

The shifts are a result of the increased competitiveness of manufacturing in developing countries but are also caused by changes in the nature of global production. Firms from developed countries have moved production offshore to take advantage of lower production costs, including wages, and in some cases also to be closer to markets. Offshoring has been facilitated in no small measure by the expanded (geographic) coverage, use, and functionality of the internet, which has made the coordination of global value chains (GVCs) and production networks possible. For example, the Apple iPhone is designed in the US, its key components are produced in East Asia (the Republic of Korea, Japan, and other countries) and the final product is assembled in the south of the People's Republic of China. The phones are marketed and sold not only in those countries but also elsewhere.

⁶ The four newly industrializing economies are Hong Kong, China, the Republic of Korea, Singapore, and Taipei, China.

Increased foreign direct investment (FDI) flows to developing countries and the geographic fragmentation of production based on GVCs are likely to affect the gains from trade and employment in two ways. First, the shifts create manufacturing jobs in developing countries. This is good for those countries, although it will negatively affect jobs in developed countries. Second, the fracturing of production may result in an intensification of specialization and some change in its nature. Comparative advantage takes place “across tasks rather than industries,” according to recent thinking on how GVCs affect trade (Shingal 2015).⁷ Nonetheless, increased specialization can, according to standard trade theory, help to raise productivity, welfare, and economic growth, which in turn can have a positive effect on job creation.

Furthermore, because GVCs intensify comparative advantage, the same trade-adjusting effects apply but at a deeper level, of occupations instead of industries. Job losses and job creation will be experienced as globalization increases. The process can generate unemployment that can be alleviated with the adjustment of workers and their skills, just as in standard models. However, low-skilled workers may be affected most in both developed and developing countries (International Monetary Fund 2013).

The countries that will gain will be those that are effective in attracting investment that exploits the country’s competitive advantage. FDI will be attracted by industrial sites that are well serviced by utilities and infrastructure and provide access to a pool of workers with the requisite skills. However, because production is part of GVCs, equally important will be the capacity and the procedures to move goods quickly and efficiently into and out of the country. The People’s Republic of China’s export processing zones have provided these supporting arrangements and help to explain why the country has been so effective in attracting investment. This investment, in turn, has greatly expanded export-based manufacturing employment.

3.5 Outsourcing Services

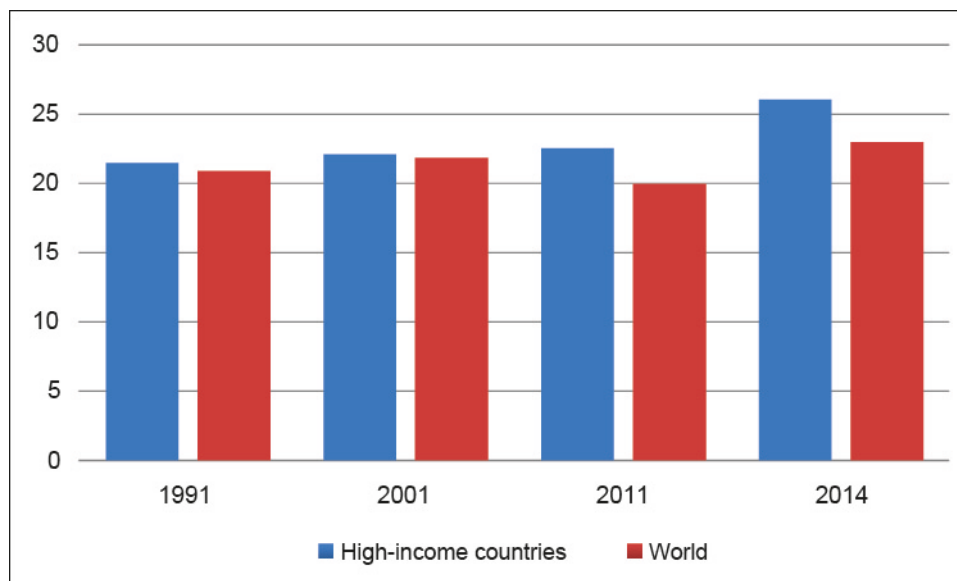
The services sector is the most significant of the three main sectors in nearly all countries. In addition, its importance, in terms of both output and employment, continues to grow. Globally services account for two-thirds of total value added, with a higher share in high-income countries. The share of the workforce employed in the services sector was 63% in developed countries in 1991 and is estimated to reach 75% in 2017. The share in developing countries is lower but still significant. Services share of global employment is estimated to surpass 50% for the first time in 2017 (ILO 2015b).

Services exports have also been rising. In 1991, 21% of exports both globally and for the high-income countries were service exports. By 2014, that figure had risen to 26% in high-income countries (a 21% increase) and 23% globally (Figure 3). In recent decades, services trade has been bolstered by the rapidly expanded use and functionality of the internet. Call centers offering support services to clients far away have expanded enormously since the 1990s, driven by significant wage differentials. Billing, client account management (e.g., credit cards), and medical transcription are other services traded that are not based on direct voice interaction. Some developing countries have excelled in services exports; the sector accounts for 31% of exports for the Philippines and 33% for India (World Bank 2016). Both countries have built

⁷ The implications for trade theory of a shift from industries to “tasks” may already be partly accounted for by the recent emphasis on modeling intra-sector trade and the even more recent emphasis on firm heterogeneity.

significant business process outsourcing (BPO) sectors in recent decades, although they also have large populations working overseas (Mode 4).

Figure 3: Services Sector Share of Total Exports (%)



Source: World Bank (2016).

Services are different from goods, and likewise, trade in services differs from goods trade. Goods are tangible objects that move physically across borders. Services are activities rendered by a supplier to a client, and therefore the supplier and the client often engage in direct interaction. Services are normally divided into four modes, depending on how, and indeed where, that interaction takes place. The four modes are: (i) the supplier creates the service in its country and sends it to a client abroad (e.g., engineering drawings); (ii) the client moves to another country to receive the service (e.g., tourism); (iii) the supplier sets up a presence in a foreign country (e.g., a foreign bank); and (iv) a person supplying the service moves to the country of the client (e.g., a migrant construction worker). All services are potentially tradable because the supplier or the client can move to provide or receive the service in another country.

Only in the first mode is the service itself moving across the border, and while it may move in physical form (e.g., a hard copy of engineering drawings), it often moves electronically in nonphysical form. In the other cases, there is a movement of people or investment. Given differences in the nature of goods versus services, the barriers to trade are also different. Goods can be controlled by tariffs and physical restrictions (quotas), along with nontariff barriers. Tariffs do not apply to services, except those sent in physical form, but instead services are controlled by limiting the movement of people and investments, and by regulations restricting the right of foreigners to conduct business.

Copeland and Mattoo (2008) argue that domestic regulation of services sectors plays a strong role in determining trade access, as opposed to tariffs as in the case of goods. However, they do find that standard approaches to modeling trade in goods can be useful for modeling services. This includes welfare gains and losses to different sectors as a result of trade opening and how factor endowments that give rise to comparative advantage can help explain the structure of a country's services trade.

The employment implications of services trade vary according to the mode. Mode 1 activity, in which the service moves across the border (i.e., without people needing to move), is similar to goods trade; liberalization should see specializations between trading countries and demand for labor (and wages) increasing in service subsectors with a comparative advantage and decreasing in less competitive subsectors. Whether this plays out in reality remains to be seen, however. India's penetration into the BPO services market has created jobs in India, but whether the US has been able to provide more high-end services to India requires empirical verification. The adjustment costs need to be considered, as in goods trade. "Bangalored" service workers may need assistance to retrain for new jobs.⁸

For other modes, the impact on employment may be more direct. In Mode 4, workers move across the border to provide services and form a source of worker migration, which is considerable in some countries, such as the Philippines and Tajikistan, where jobs are scarce. Mode 3 involves FDI services investment that will create local employment and has similar employment ramifications as FDI in the goods sectors. However, Mode 3 normally also involves the movement of some senior and professional staff to run the foreign affiliates. The two key employment adjustment issues are: (i) whether workers from a domestic firm are now shifting to foreign affiliates (in the same country) and (ii) whether services previously filled through Mode 1 now being filled through Mode 3 and thus causing a shift of jobs from the service firm's country of origin to the country of the new branch office.

Copeland and Mattoo (2008) consider the case of a lawyer moving to another country to provide legal services. As a one-way movement, there is an employment and welfare gain to the receiving country and a loss to the sending country, although if remittances are sent or carried back, the loss to the sending country may be minimized. Why the example is modeled as only one-way trade instead of two-way trade as in the case of goods examples is not clear, and a two-way trade model may alter the relative gains and losses.

Van der Marel (2011) develops and tests a model of comparative advantage in services trade. A basic premise of the model is that services are different from goods in terms of the factors that determine competitiveness. Services require high-skilled workers and information and communications-related capital and are also more dependent on quality regulatory and governance factors. Mid-skilled workers can also be a supporting factor for services trade. Part of the intuition is that trust, for contract enforcement and to meet more detailed consumer requirements, can play an important role but of course is hard to measure and therefore hard to test. Employment effects, aside from the importance of skill levels, are not provided in the model, nor are the transitional elements when a country opens up and liberalizes services trade with other countries.

4. EVIDENCE ON EMPLOYMENT AND JOB QUALITY UNDER LIBERALIZED TRADE

As trade openness has increased during recent decades, a look at the past can provide clues of how further openness may affect employment during the period of the SDGs. Empirical research in this regard can present major methodological challenges as it

⁸ The term "Bangalored" refers to job loss due to a service function being outsourced to a location in another country, such as Bangalore, a major hub for the Indian BPO industry.

involves isolating the effects of trade openness from other policy and environmental variables. As a result, some of the better examples are those in which a major new trade deal has been implemented and in which economists have attempted to measure the employment impacts.

The other challenge in assessing empirical evidence is to draw out the qualitative side to see what changes have occurred in wage levels and the relative demand for skilled and unskilled labor. As we saw, this impact is highlighted in trade theory more so than the quantitative impacts. In this section, we survey some of the evidence on both the quantitative and qualitative aspects of more open trade.

4.1 Employment Levels

Some researchers have analyzed data on a large cross section of countries to consider the relationship between openness (or protectionism) on the one hand and the unemployment rate on the other. Dutt, Mitra, and Rajan (2009) test the correlation between trade protectionism and the unemployment rate across 92 countries. They find a positive and significant correlation; that is, that countries with a less liberal trade regime have higher unemployment. Their results are robust across specifications, with and without instrumental variables.

Felbermayr, Prat, and Schmerer (2009) generate similar results using a similar approach for two samples of countries. They estimate a sample of 20 Organisation for Economic Co-operation and Development countries from 1980 to 2003 using 5-year averages, and then a larger set of 62 countries from 1990 to 2006, also using 5-year averages. They find that open countries have lower unemployment rates. They analyze the long-run effects by netting out the short-term effects of business cycles. They find that employment is affected through the effects on total factor productivity and that differences in labor market institutions do not appear to affect the impacts of trade openness on the labor market. This latter finding is interesting given that some commentators conclude that the difference in unemployment rates in Europe (higher) and the US (lower) are the result of more complex and restrictive labor market institutions in the former.

Along with studies examining a large group of countries, other studies have focused on single countries or pairs of countries for more specific effects. In particular, the lowering of trade barriers between developed and developing countries, along with a revolution in the use of information and communications technology to coordinate the fragmentation of production into GVCs, has allowed large enterprises to shift production to developing countries. This has allowed for increases in manufacturing employment in those countries and a decline in richer countries. Nowhere is this change more evident than in the PRC.

The PRC joined the World Trade Organization (WTO) in late 2001 and was given until late 2006 to fulfill its commitments. Data for the period that coincides with the latter part of the commitment period and extends afterwards shows a significant increase in manufacturing jobs. Employment in the sector rose by 20 million workers in only 4 years, from 56.7 million in 2004 to 77.3 million in 2008. While tracking jobs related to exports is difficult because an enterprise may produce for both the domestic and international markets, estimates suggest that employment in manufacturing related to exports rose from 15.0 million to 17.3 million over the same period (Cai and Du 2014). Export-oriented manufacturing has been more labor intensive than domestic manufacturing, and indeed, one of the factors attracting foreign firms to set up in the PRC is the ability to take advantage of low-cost labor. Dividing 30 manufacturing subsectors into quintiles from least to most export oriented, Cai and Du (2014) find that

the most export oriented quintile used 3.5 times more workers per unit of capital than the least export oriented. Wages have been rising rapidly, however, and as a result, the capital intensity across both exports and domestically oriented sectors increased between 2004 and 2008. The PRC has also been making efforts to rebalance somewhat from foreign to domestic demand, and as a result, the share of production designed for exports has declined over time.

The flip side of this is the negative employment impacts on manufacturing in the US and other developed economies. Autor et al. (2013) find a range of negative employment impacts on US workers in manufacturing subsectors that have faced a surge in competition from the PRC. Tracking workers between 1992 and 2007, they found that workers in these industries had lower earnings over time and were more likely to leave the labor force and accept social security than workers in industries not affected by Chinese competition. Workers in industries that faced Chinese competition were less likely to stay with the same employer and more likely to leave their manufacturing subsector or the manufacturing industry entirely. Low-wage workers were much more affected than high-wage workers. The latter were less likely to be laid off and those who did transition to other firms experienced only a minimal loss in earnings. The differences were substantial. A worker in a subsector at the 75th percentile of industry trade exposure had income that was 46% below that of a worker in a subsector at the 25th percentile of trade exposure to the PRC. Overall, the number of workers in US manufacturing has fallen dramatically over 2 decades, from 18.3 million in 1991 to 11.4 million in 2011 (Autor et al. 2013).

In 1990, the US and Mexico agreed to enter into a free trade agreement (FTA). As a result, the Canada-US Free Trade Agreement was expanded into the North American Free Trade Agreement (NAFTA) in 1994. The agreement was the subject of considerable debate, particularly as to whether it would threaten US jobs. Hinojosa-Ojeda et al. (2000) estimated employment effects suggesting job losses for the US amounting to 37,000 annually as a result of increased trade with Mexico, and 57,000 job losses annually as a result of trade with Canada for the period 1990–1997. These are considered small given that the US economy creates 200,000 jobs each month.⁹

In Mexico, the creation of NAFTA in 1994 resulted in a large increase in manufacturing employment in the maquiladora, an export oriented platform established in 1965 that benefitted from the new trade deal. An estimated 800,000 manufacturing jobs were created in the maquiladora between 1994 and 2000, at which point employment peaked. Thereafter employment fell but was still 550,000 higher in 2003 than before NAFTA. Non-maquiladora manufacturing jobs fell dramatically during the tequila (peso) crisis of 1994–1995 but recovered significantly and also peaked in 2000. They fell again thereafter, and by 2003, non-maquiladora employment was about 1.3 million, or about 100,000 less than before NAFTA.

⁹ Several years earlier, in 1989, the Canada-US FTA came into effect. Comparing the pre-FTA period of 1980–1986 to the FTA period of 1989–1996, Trefler (2004) focused on the impacts in Canada and found a 5% decline in overall Canadian manufacturing employment (about 100,000 jobs). However, he suggests that these losses were short term as there was no change in Canada's employment rate between 1988 and 2002 of 62%. Furthermore, manufacturing employment rose overall by 9.1% in Canada during the same period, whereas it fell in the US, Japan, and some other industrialized countries. The FTA also generated significant labor productivity gains of 14%–15% in most-impacted, import-competing, and export-oriented industries. In import-competing sectors, much of the gains were the result of the exit of low-productivity plants, as suggested by new-new trade theory. Overall welfare in Canada probably increased, according to the study.

4.2 Sector Shifts

There are also important trade induced effects on employment between the mainland and Hong Kong, China. Many of the latter's manufacturing firms in clothing and textiles, plastic toys, watches, and electronics moved to the mainland from the late 1970s to take advantage of lower wages and in response to the competition from emerging producers in the Republic of Korea, Taipei, China, and elsewhere. This shift was the result of competition but also the opening to trade and investment by the PRC, notably in neighboring Guangdong province. The share of manufacturing in GDP in Hong Kong, China fell from just under 25% in 1980 to only 1.3% by 2014. The fall in employment was even more dramatic, with the manufacturing sector employing 46% of the workforce in 1980 but dwindling to less than 4% by 2009.¹⁰

As is well known, Hong Kong, China shifted to become a service economy with services that supported its manufacturing firms on the mainland and other firms there, and also serviced the domestic economy, both in externally oriented services, such as finance, logistics, and tourism, as well as domestic services, such as the hospitality sector. Regarding trade, the decline in manufacturing has meant a decline in merchandise exports and an increase in imports to the point where nearly all locally consumed goods come from abroad. This merchandise deficit imbalance is more than offset by the increase in services exports, with their share in GDP more than doubling from 9.3% in 2000 to 19.9% in 2009 and tripling in real terms. With imports of goods and exports of services, the island is a net exporter overall, and net exports accounted for 7.2% of GDP in 2009 (Vere 2014).

The workforce has followed this structural change, with services accounting for 88% of total employment in 2009. Unemployment has generally been low during the long structural transformation over the past 3–4 decades, although it hit a high spell following the East Asian financial crisis. The jobless rate ranged between 5% and 8% from the crisis until the mid-2000s but has declined since then and has been below 3.5% since 2011 (World Bank 2016). The structural changes have been felt more in terms of wage levels than employment levels. Inflation in the latter part of the 2000s resulted in the decline in real wages of low-skilled workers, while high-skilled workers have done well. This has led to increased wage inequality over the entire workforce.

Whereas Hong Kong, China moved out of manufacturing, Indonesia was unable to attract increased investment in this area despite abundant low-wage labor (AswicaHyono et al. 2014).¹¹ Garments and textiles were key areas of export competitiveness and employment growth in Indonesia in the 1980s, and by 1990 accounted for 25% of total employment. Together with wood and furniture, these light industries accounted for just below 50% of total employment. Following the Asian crisis of 1997, the country was not able to maintain this momentum despite a large supply of unskilled and low-skilled labor available from the countryside. Investment and exports from these sectors were stifled by a weak investment climate, poor infrastructure, currency appreciation, and labor market regulations that reduced flexibility and pushed up costs. The country was less appealing to foreign investors, who focused elsewhere, including the PRC and Viet Nam. Export growth shifted to heavy and chemicals industries that were much less employment rich. By 2009, the share of employment in light manufacturing fell to 31% and in the textiles and garments subsector to 17%. Much of the employment has shifted to low-skilled services. The unemployment rate

¹⁰ The figures for 1980 for GDP and employment shares are from Tao and Wong (2001). The GDP share for 2014 is from the World Bank (2016), and the employment share for 2009 is from Vere (2014).

¹¹ This paragraph on Indonesia draws extensively on that source.

since the Asian crisis has been decidedly higher than in pre-crisis years, peaking at 11.2% in 2005 but falling gradually to 6.2% in 2014 (World Bank 2016). The figures mask considerable underemployment in a country without unemployment insurance or adequate social security. The Indonesian case illustrates how weak export performance and barriers to investment in labor-intensive export sectors can hurt employment outcomes.

Efforts have also been made to estimate the effects on employment of two significant trade and investment deals. Carrere, Grujovic, and Robert-Nicoud (2015) estimate the possible effects of increased liberalization under the Transatlantic Trade and Investment Partnership (TTIP) and the Trans-Pacific Partnership (TPP). They find that the TTIP will likely result in an increase in unemployment in the US by 1.1% from a base of 5.9% and a fall in most European countries, with the exceptions of Belgium, Italy, and the Netherlands. Those that will see an unemployment rise have sectors that have high frictions due to sector and firm adjustments. The deal should raise wages in all countries, according to the results. For the TPP, the unemployment rate is estimated to fall for all countries participating in the agreement and to rise slightly in countries that are not included. All participant countries would also see a rise in real wages, while in other countries the wages are expected to fall, but the change is likely to stay close to zero.

4.3 Quality of Jobs, including Formal versus Informal Employment

SDG 8 calls for countries to seek a decrease in informal employment in the non-agricultural sector. Theoretically, it is unclear what impact trade might have on informality. On the positive side, there may be factors that encourage formalization as firms are better organized and put on a stable footing to better labor conditions to compete against imports and to export. On the negative side, trade puts pressure on firms to cut costs and they do so by shifting work from their own or their suppliers' formal operations to informal enterprises. Research has found mixed evidence on the link between trade and informality.

Goldberg and Pavcnik (2003) examine the impact of trade opening in the 1980s and 1990s on informal employment in Colombia and Brazil. They find no relationship in the case of Brazil; trade opening neither increased nor decreased informality. For Colombia, they find weak evidence that informality increased, but this depends on labor market institutions, with the increase in informality occurring after reforms that increased labor market flexibility and prior to trade reform. The impact of trade openness may depend on each country's economic structure. However, differences have also been found in studies of the same country. Early work by Maloney (1989) indicated that trade opening in Mexico after 1990 resulted in a shift of workers from the formal to the informal economy. However, more recent work by Yahmed and Bombarda (2016) finds that formal employment increased relative to informal employment and self-employment in the tradable sector following the enactment of NAFTA.

The impact of trade on more egregious conditions of labor has been less studied, such as on child and forced labor, which are part of SDG 8. Edmonds and Pavcnik (2004) find a negative relationship between trade openness and child labor, suggesting that greater trade is associated with lower levels of child labor. This association is significant when country income level is not taken into account. When it is, the magnitude of the relationship falls substantially and the correlation becomes insignificant, suggesting that the level of child labor is determined by country income

level, not openness to trade. This latter result holds when estimating different country groups, considering trade between high and low income countries and focusing on the exports of low-skilled goods from low-income countries. The results may lend support to the idea that the welfare gains from trade, by raising country income, may contribute to reducing child labor.

SDG 8 also calls for the elimination of forced labor, modern slavery, and human trafficking. The ILO estimates that there are 21 million people in forced labor, of which 90% is in the private economy and 10% is under state control, for example in prisons under conditions that convene ILO standards or under military and rebel groups. Of the 90% of forced labor in the private economy, 22% comprises sexual exploitation, and the remaining 68% is found in various sectors, including agriculture, construction, domestic work, and manufacturing (ILO 2012).¹² The author is not aware of any studies that have sought to test the link between trade and forced labor.

5. ROLE OF POLICY

Greater trade openness will provide opportunities in many developing countries for greater productive specialization that should boost efficiency and support welfare. However, theory and evidence suggest that the benefits of trade will not accrue without important shifts in the sector composition of output and exports across individual countries. These shifts will raise employment demand in rising sectors and reduce demand in declining ones. A major role of policy is to support these transitions so that workers are aware of where the new jobs are and are given the opportunity to acquire the skills to secure those jobs.

5.1 Labor Market Policies

A country's labor market policies can support the trade adjustment process and ease the transition of workers from declining to rising sectors. Policies and regulations that create a flexible labor market are particularly important. These measures reduce the expense for employers of laying-off workers in declining sectors and ease the hiring process in expanding sectors. Workers, too, require transition mechanisms. These include labor market information systems—about contemporary vacancies and long-term labor and skills demands—that are best provided through an active and accessible public employment service. Knowing that new jobs are being created and where they can be found are important for workers who realize they need to shift jobs. In addition, information can be provided on opportunities to re-skill or up-skill and supported by career counseling. Finally, making employment benefits or entitlements, such as pensions, portable can reduce the risks for workers making a proactive decision to switch sectors. These general labor market policies can be enhanced by specific trade adjustment assistance.

5.2 Trade Adjustment Assistance

Governments can lower adjustment costs through programs that assist workers in transitioning from declining to expanding sectors or firms. Such support is justified on both efficiency and distributional grounds. The net gain from trade to the economy as a whole will be higher if the cost is reduced. At the same time, however, adjustment involves private costs that fall disproportionately on a relatively small number of

¹² The ILO estimate is derived from data for 2002 and 2011.

workers. Government interventions to reduce these costs will thus moderate the distributional effects.

There are multiple ways in which support can be provided. The most direct is to provide assistance to workers who lose their jobs (or otherwise suffer) from increased import competition. This is discussed further below. Other types of support target producers who face import competition, either enterprises, including small and medium-sized enterprises, or farmers. Here the support may be directed to increase competitiveness, if possible, or switch product lines, including alternative crops to grow or livestock to raise.¹³ Successful programs may move a firm or sector from competing against imports to exporting itself.

Assistance for workers can be provided in several ways: (i) income support, such as extended or supplemented unemployment benefits; (ii) assistance to retain access to health care or other social security programs; (iii) job search support to help workers find reemployment; and (iv) retraining to increase the employability of workers in other jobs or sectors. The first two are passive labor market policies, and the latter two are active labor market policies. In some cases, these worker-oriented programs are bundled together with enterprise assistance under the same legislation or umbrella program.

The two best-known programs in the developed world are respectively the US Trade Adjustment Assistance program and the EU's European Globalization Adjustment Fund (EGF). Programs also operate in Canada, Mexico, and Australia.

The US has a long history of supporting workers affected by liberalized trade. A program set up by President John Kennedy under the Trade Expansion Act of 1962 offered passive assistance to workers. Active assistance in the form of retraining was added under the Trade Act of 1974. Trade adjustment assistance has taken various forms and been included in other trade legislation and programs. The workers' component is called Trade Adjustment Assistance for Workers and supports job search, training, and income support. The program applies to those who have lost their jobs due to business closure from import competition or due to the offshoring of production. The income support component can support both the unemployed and those workers who experienced a reduction in wages or working hours. An annual average of over 85,000 workers were certified for assistance from 2012 to 2014 (DOL 2015).

In Europe, the EGF was established in 2007 and has been extended to operate until 2020. It focuses solely on workers and does not provide support to firms to stay in business or to restructure to meet import competition. Funds are available from the EGF and can be accessed for programs proposed and organized by member states. The EGF will fund up to 60% of the cost of a program, with the remaining 40% provided by national governments. In some cases, other EU funds may provide some of the additional funding. The focus is on mass layoffs as a result of a firm closure due to the offshoring of the operations to another country. A minimum of 500 workers needs to be laid off by a firm, a group of firms in a value chain, or in a sector or neighboring regions. It supports the costs of programs on job search, career counseling, coaching, (re)training, and education. It can also help unemployed workers set up small businesses. Funds can be used to provide training allowances, subsistence

¹³ Taipei, China provides an interesting case of agricultural adjustment. When the sugar cane industry declined, the government supported the development of an orchid industry, which has become the largest exporter in the world by volume. Rodrik (2004) describes some aspects of this shift and the support it was given by industrial policy.

allowances, and relocation allowances. However, they cannot be used to cofinance unemployment benefits (EU 2014).

In its first 7 years of operation (2007–2013), the EGF provided funding to support 50,264 laid off workers across the EU. Denmark received the most support, with assistance provided to 9,390 workers. Given the large size of the EU workforce spread across a large number of member countries (28), the assistance may seem small.¹⁴ However, countries may have their own trade adjustment programs that are not funded by the EGF.

5.3 Design and Implementation of Trade Agreements

Trade agreements can be designed in such a way as to cushion the impact on workers and businesses. One category of measures gives players time to adjustment to an impending liberalization. A second category involves the inclusion of labor safeguards in trade agreements to protect workers following implementation.

Agreements that provide for a gradual reduction in trade barriers allow time either for firms to upgrade to face the competition or for programs to kick in to assist workers to transition. Early announcement of the agreement, with implementation to follow later, also provides time for adjustment. These measures can cushion the impact of liberalization and can give players a head start in adjusting to the changes (Francois, Jensen, and Peters 2011).

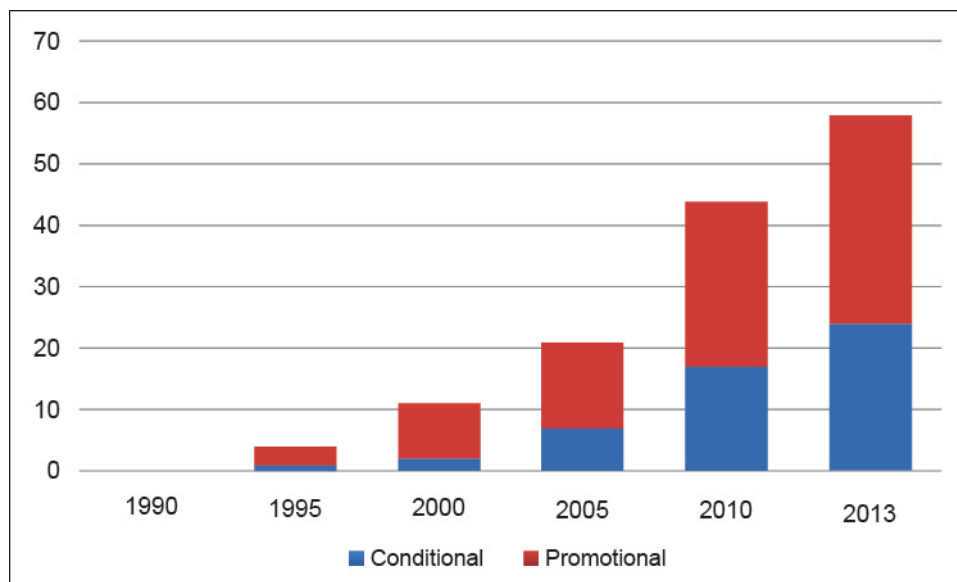
Trading partners are increasingly including labor provisions in trade agreements. The provisions are designed to protect the welfare of workers as countries open up to more intense trade interaction. They can help to prevent a “race to the bottom,” in which countries might seek to gain a competitive advantage through low labor costs based on low labor standards.

The inclusion of such provisions has grown rapidly over the past 2 decades (ILO 2015). In 1995, only four trade agreements globally included labor provisions—a decade later, that figure had jumped more than fivefold to 21, and further to 58 by mid-2013 (Figure 4). Of course, the number of trade agreements in place has also risen over the past 2 decades. Still, the 58 agreements represent just under a quarter of the 248 trade agreements that were in force and notified to the WTO. Out of 190 countries that are signatories to trade agreements, some 120 are party to at least one agreement that includes labor provisions. In addition, the number of agreements with labor provisions has accelerated in recent years. During 2011–2015, a total of 57% of new trade agreements contained labor provisions, which is nearly double the share (31%) in the previous 5-year period.¹⁵

¹⁴ Over a period of 7 years, 50,264 workers across 28 states means an average of 360 workers were assisted per country per year. Eight of the 28 states did not apply for assistance, including several countries that joined the EU near the end of the 7-year period. The EGF also supports workers affected by the global financial crisis of 2008–2009. An additional 55,942 workers were assisted in this regard (EU 2014).

¹⁵ This analysis is based on 77 new trade agreements signed during 2006–2010 and 54 agreements in 2011–2015 (ILO 2016).

Figure 4: Bilateral and Regional Trade Agreements with Labor Provisions
(number of agreements)



Source: ILO (2015a).

The majority of these provisions focus on cooperation and monitoring, or what the ILO calls “promotional” elements. Still, about 40% of agreements include compliance and enforcement mechanisms with specific economic measures that can be taken if a party is in breach of the provisions. NAFTA, of 1994, was the first agreement to include a compliance mechanism. The use of a dispute mechanism is rare and only one case, involving recourse to economic sanctions, has gone to arbitration. In other instances, matters may be discussed and resolved beforehand (ILO 2016).

It may be difficult to determine whether labor provisions are having an impact on labor market outcomes, given both the recent nature of many provisions and the difficulty in determining causality. A recent study by the ILO (2016) found that the provisions were linked to higher labor force participation, especially for women, but did not appear to impact other variables, including wages, the share of vulnerable employment, and the gender gap in these two variables. The study found that labor provision did not lead to a deterioration in labor standards and did not prompt trade diversion to countries with lower standards. Thus, labor provisions may be playing a role in preventing a race to the bottom and providing general support to SDG 8.

5.4 Skills and Education to Enhance the Benefits from Trade

The trade adjustment programs that some governments have put in place are generally reactive. They may include measures that are considered active labor market policy, but because they kick in when workers are already affected or about to be affected by trade-related sector adjustment, they are reacting to changes in labor demand. Governments can take a more proactive approach by both building comparative advantage and anticipating shifting skill demands.

Labor is an important aspect of building comparative advantage in trade. As labor markets tighten and as income and wages rise, less-developed countries, especially middle-income ones, need to secure new aspects of competitiveness in the global marketplace. A failure to do so may result in getting caught in the middle-income trap. That is, they may lose competitiveness in lower value (low wage) goods and yet not be

able to move to higher value activities in which higher productivity can compensate for rising wages. While the ability to raise product value and productivity is influenced by a myriad of factors at the enterprise level, human resources are one of the key elements.

Therefore, securing the benefits from trade, both as the level of aggregate welfare and in terms of generating positive labor market outcomes, may require an active and anticipatory approach to education and skills training. For middle-income countries and those striving to achieve middle-income status, this requires a broad-based improvement in the human capital of the workforce and those who will be entering the workforce in the future. For high-income countries, which are not particularly the focus of the SDGs but whose labor markets are affected by trade, nonetheless, this means greater anticipation of the skills needs of the future. In particular, developed countries are losing competitiveness in certain areas of manufacturing and need to transition their workforce skills profiles to higher value services, including those that are at either end of the product value chain. These ends of the value chain include research, development, design and prototyping in the product development stage and marketing, distribution, and service support at the post-production stage.

Countries that are more attuned to shifting skill requirements and that can be proactive instead of reactive are more likely to maximize the gains from trade and generate labor market outcomes that support the employment aspects of the SDGs.

6. CONCLUSION

In the transition from the MDGs to the SDGs, the international community expanded the agenda and the targets for governments and development partners to achieve over the next 15 years. Employment issues, which were a late addition to the MDGs, receive full treatment with more relevant indicators in the new goals. SDG 8 dedicates considerable attention to employment, not only in calling for the achievement of full employment but also in improving labor market conditions in terms of reducing informality and gender disparities, eliminating forced and child labor, and improving labor rights. It is a challenging agenda, albeit one that offers very few quantified targets.

At the same time, there is little mention of trade in the SDGs. This may be because the benefits of freer trade, as part of the broader process of globalization, are highly controversial in the public mind, especially in regions hard hit by import competition. It may also be that trade is considered a means rather than an end or goal. In any event, economists and policymakers have been convinced and have provided evidence that the gains from specialization are very real, even if unevenly distributed.

Labor is a particularly relevant aspect of the debate about freer trade because the process of specialization, as a result of trade, causes sectors to adjust and reduces the demand for labor in some firms and sectors and increases it in others. The net employment benefit is sometimes difficult to calculate. Indeed, concerns about the possible negative employment impacts are behind a rising tide of protectionist sentiment in societies around the globe. New trade deals continue to be signed, but other proposed agreements may be in jeopardy. Further global trade liberalization during the 15-year period of the SDGs is far from certain.

In this paper, we have reviewed part of the extensive literature on trade and employment. The purpose has been to see whether that literature, both theoretical and empirical, provides clues as to if and how increased trade could contribute to the achievement of the employment-related SDGs. What is clear is that the aggregate

welfare gains from trade are as relevant today as they were when Riccardo first formalized his theory 2 centuries ago. Since then, the discussion has been about the distribution of those gains in terms of skilled and unskilled labor and between countries that are more labor or more capital abundant. Mainstream trade theory typically assumed full employment and immediate reallocation and, therefore, had less to tell about employment and unemployment than about wages. However, more recent theory has taken a closer look at the process of reallocation and built models that suggest that the speed of the (re)matching of workers and employers is related to the labor institutions that encourage job movement and the information channels available about job opportunities.

The empirical evidence is vast and difficult to summarize. The effects on employment quantity are bedeviled by methodological issues, including how long to measure the effects from the start of a trade agreement, controlling for other factors that have an impact on employment, and the fact that most studies look at only one side (i.e., one country) of a bilateral or multilateral deal. Nonetheless, the cross-country evidence does suggest that greater trade openness is correlated with a lower rate of unemployment. Thus, trade can help to support the full employment target of the SDGs.

It is unclear from the evidence whether freer trade will increase, decrease, or have no effect on the level of informal employment. Domestic labor and enterprise policy may be important in addressing this concern. There is evidence that greater openness is correlated with a lower incidence of child labor, but the country income level appears to be a more significant factor in reducing child labor. Research does not appear to have been carried out on whether trade impacts the level of forced labor, another area of concern in the SDGs.

Governments have a number of policy instruments at their disposal to generate positive employment benefits from trade. These include trade adjustment programs that provide income support, job search assistance, and retraining for workers affected by import competition or offshoring; and efforts to anticipate skill demand and train school-leavers and workers for employment in emerging sectors. In addition, there has been a rapid increase in labor provisions in trade agreements in recent years. These are correlated with higher labor force participation and may help to maintain standards and avoid a race to the bottom.

REFERENCES

- Aswicahyono, H., D. Brooks, and C. Manning. 2014. Exports and Employment in Indonesia: The Decline in Labor-intensive Manufacturing and the Rise of Services. In *Trade and Employment in Asia*, edited by N. Khor and D. Mitra. Abingdon, United Kingdom, and New York: Asian Development Bank and Routledge, 176–203.
- Autor, D., D. Dorn, G. Hanson, and J. Song. 2013. Trade Adjustment: Worker Level Evidence. NBER Working Paper No. 19226. Cambridge, MA: National Bureau of Economic Research. <http://www.nber.org/papers/w19226> (accessed 30 December 2016).
- Bernard, A., and J. B. Jensen. 1999. Exceptional Exporter Performance: Cause, Effect or Both? *Journal of International Economics* 47: 1–25.
- Cai, F., and Du Yang. 2014. Exports and Employment in the People's Republic of China. In *Trade and Employment in Asia*, edited by N. Khor and D. Mitra. Abingdon, UK, and New York: Asian Development Bank and Routledge, 120–141.
- Carrere, C., A. Grujovic, and F. Robert-Nicould. 2015. Trade and Frictional Unemployment in the Global Economy. Spatial Economics Research Center, Discussion Paper 189. London: Spatial Economics Research Center.
- Copeland, B., and A. Mattoo. 2008. The Basic Economics of Services Trade. In *A Handbook of International Trade in Services*, edited by A. Mattoo, R. Stern, and G. Zanini. New York: Oxford University Press, 84–129.
- Das, D. K. 1998. Changing Comparative Advantage and the Changing Composition of Asian Exports. *The World Economy* 21(1): 121–140.
- Davidson, C, F. Heyman, S. Matusz, F. Sjöholm and S.C. Zhu. 2012 Liberalized Trade and Worker-Firm Matching. *American Economic Review*, 102(3) pp. 429–434
- Davidson, C., L. Martin, and S. Matusz. 1999. Trade and Search Generated Unemployment. *Journal of International Economics*. 48: 271–299.
- Department of Labor, United States (DOL). 2015. Trade Adjustment Assistance for Workers Program: Fiscal Year 2014. Report to the Committee on Finance of the Senate and the Committee on the Ways and Means of the House of Representatives. Washington, DC: DOL.
- Dutt, P., D. Mitra, and P. Ranjan. 2009. International Trade and Unemployment: Theory and Cross-National Evidence. *Journal of International Economics* 78: 32–44.
- Edmonds, E., and N. Pavcnik. 2004. International Trade and Child Labor: Cross-Country Evidence. NBER Working Paper No. 10317. Cambridge, MA: National Bureau of Economic Research.
- European Union (EU). 2014. European Globalisation Adjustment Fund: Solidarity in the Face of Change. Pamphlet.
- Felbermayr, G., J. Prat, and H. J. Schmerer. 2011. Trade and Unemployment: What Do the Data Say? *European Economic Review* 55(6): 741–758.
- Francois, J., M. Jensen, and R. Peters. 2011. Trade, Adjustment Costs and Assistance: The Labour Market Dynamics. Paris: OECD. <http://www.oecd.org/site/tadicite/48133815.pdf> (accessed 30 December 2016).

- Goldberg, P., and N. Pavcnik. 2003. The Response of the Informal Sector to Trade Liberalization. NBER Working Paper 9443. Cambridge, MA: National Bureau of Economic Research.
- Hanson, G. 2012. The Rise of Middle Kingdoms: Emerging Economies in Global Trade. *Journal of Economic Perspectives* 26(2): 41–64.
- Hausmann, R., J. Hwang, and D. Rodrik. What You Export Matters. *Journal of Economic Growth* 12: 1–25.
- Helpman, E., and O. Itzhak. 2010. Labor Market Rigidities, Trade and Unemployment. *Review of Economic Studies* 77(3): 1110–1137.
- Helpman, E., O. Itzhaki, and S. Redding. 2010. Inequality and Unemployment in a Global Economy. *Econometrica* 78(4): 1239–1283.
- Hinojosa-Ojeda, R., D. Runsten, F. De Paolis, and K. Nabil. 2000. The U.S. Employment Impacts of North American Integration after NAFTA: A Partial Equilibrium Approach. North American Integration and Development Center, Research Report No NAID-RR-010-00. Los Angeles: University of California at Los Angeles (UCLA).
- International Labour Organization (ILO). 2012. *ILO Global Estimate of Forced Labour: Results and Methodology*. Geneva: ILO.
- . 2015a. *Social Dimensions of Free Trade Agreements*. Geneva: ILO.
- . 2015b. *World Employment and Social Outlook, Trends 2015*, Supporting Data Sets. <http://www.ilo.org/global/research/global-reports/weso/2015/lang-en/index.htm> (accessed 30 December 2016).
- . 2016. *Assessment of Labour Provisions in Trade and Investment Arrangements*. Geneva: ILO
- International Monetary Fund. 2013. *Trade Interconnectedness: The World with Global Value Chains*. Washington, DC: International Monetary Fund. <https://www.imf.org/external/np/pp/eng/2013/082613.pdf> (accessed 30 December 2016).
- Jansen, M., and E. Lee. 2007. *Trade and Employment: Challenges for Policy Research*, Geneva: World Trade Organization and International Labour Organization.
- Krugman, P. 1979. Increasing Returns, Monopolistic Competition and International Trade. *Journal of International Economics* 9(4): 469–479.
- Krugman, P., and M. Obstfeld. 2009. *International Economics: Theory and Policy*. Delhi: Dorling Kindersley.
- Lin, J., and H.-J. Chang. 2009. Should Industrial Policy in Developing Countries Conform to Comparative Advantage or Defy it? A Debate Between Justin Lin and Ha-Joon Chang. *Development Policy Review* 27(5): 483–502.
- Maloney, W. 1998. The Structure of Labor Markets in Developing Countries: Time Series Evidence on Competing Views. World Bank Policy Research Working Paper 1940. Washington, DC: World Bank.
- Melitz, M. 2003. The Impact of Trade on Industry Reallocation and Aggregate Industry Productivity. *Econometrica* 71(6): 1695–1725.

- Moore, M., and P. Ranjan 2005. Globalization and Skill-biased Technological Change: Implications for Unemployment and Wage Inequality. *Economic Journal* 115: 341–422.
- Rodrik, D. 2004. Industrial Policy for the 21st Century. John F. Kennedy School of Government, Harvard University, mimeo.
- Shingal, A. 2015. Labour Market Effects of Integration into GVCs: Review of the Literature. Swiss Programme for Research on Global Issues for Development, R4D Working Paper 2015/10. <http://www.r4d-employment.com/wp-content/uploads/2014/09/GVC.pdf> (accessed 30 December 2016).
- Tao, Z., and R. Wong. 2001. Hong Kong: From an Industrialized City To A Center of Manufacturing-Related Services. Mimeo. Hong Kong, China: University of Hong Kong.
- Trefler, D. 2004. The Long and the Short of the Canada-U.S. Free Trade Agreement. *American Economic Review* 94(4): 870–895.
- United Nations Industrial Development Organization (UNIDO). 2015. *Industrial Development Report 2016: The Role of Technology and Innovation in Inclusive and Sustainable Industrial Development*. Vienna: UNIDO.
- United Nations. 2015a. *Transforming Our World: The 2030 Agenda for Sustainable Development*. Resolution adopted by the General Assembly on 25 September 2015, 70th session, 70/1. http://www.un.org/ga/search/view_doc.asp?symbol=A/RES/70/1&Lang=E (accessed 30 December 2016).
- . 2015b. *The Millennium Development Goals Report 2015*. New York: United Nations. [http://www.un.org/millenniumgoals/2015_MDG_Report/pdf/MDG%202015%20rev%20\(July%201\).pdf](http://www.un.org/millenniumgoals/2015_MDG_Report/pdf/MDG%202015%20rev%20(July%201).pdf) (accessed 30 December 2016).
- . 2016a. *Report of the Inter-Agency and Expert Group on Sustainable Development Goal Indicators*. Economic and Social Council. Statistical Commission 47th Session, 8–11 March. <http://unstats.un.org/unsd/statcom/47th-session/documents/2016-2-IAEG-SDGs-Rev1-E.pdf> (accessed 30 December 2016).
- . 2016b. Sustainable Development Goals: 17 Goals to Transform Our World. <http://www.un.org/sustainabledevelopment/economic-growth/> (accessed 1 July 2016).
- van der Marel, E. 2011. Determinants of Comparative Advantage in Services. Working paper, Group d'Economie Mondiale. LSE Research Online. Paris: LSE. [http://eprints.lse.ac.uk/38993/1/Determinants_of_comparative_advantage_in\(LSERO\).pdf](http://eprints.lse.ac.uk/38993/1/Determinants_of_comparative_advantage_in(LSERO).pdf)(accessed 30 December 2016).
- Vere, J. 2014. Trade and Employment in Hong Kong, China: Towards a Service Economy. In *Trade and Employment in Asia*, edited by N. Khor and D. Mitra. Abingdon, UK, and New York: Asian Development Bank and Routledge, 142–175.
- Wolff, E. 2003. Skills and Changing Comparative Advantage. *Review of Economics and Statistics* 85(1): 77–93.
- Wood, A. 1995. *North-South Trade, Employment and Inequality: Changing Fortunes in a Skill-Driven World*. Oxford: Oxford University Press.

World Bank. 2016. World Development Indicators (WDI) <http://databank.worldbank.org/data/reports.aspx?source=world-development-indicators> (accessed 15 September 2016).

World Trade Organization (WTO). *Annual Report 2016*. Geneva: WTO.

Yahmed, S. B., and P. Bombarda. 2016. Gender, Informal Employment and Trade Liberalization in Mexico. Mimeo. <https://afse2016.sciencesconf.org/99374/document> (accessed 1 July 2016).