WORLD TRADE ORGANIZATION

Making Globalization More Inclusive

Lessons from experience with adjustment policies

Edited by
Marc Bacchetta,
Emmanuel Milet and
José-Antonio Monteiro

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World Trade Organization

Design by Book Now Ltd
Cover image: murals on labour by Dean Cornwell (1955).
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ISBN: 978-92-870-5057-1 (print); 978-92-870-5058-8 (pdf)

WTO publications can be obtained through major booksellers or from:

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World Trade Organization
154 rue de Lausanne
CH-1211 Geneva 21
Switzerland
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Email: publications@wto.org
Web site: www.wto.org
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Printed by WTO Secretariat, Switzerland, 2019.

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Acknowledgements

This report was made possible thanks to the funding of the Swedish Government.

The editors would like to thank all the contributors without whom this volume would not exist. Thanks also go to Henning Envall, Counsellor, Permanent Mission of Sweden to the WTO, for his support; Eléonore D'Achon, David Cheong, Cornelius Gregg, Michael Mwasikakata, Lee Sangbok, Olga Strietska-Ilina and Bolormaa Tumurchudur-Klok from the International Labour Organization for their help in the early stages of the project; Jennifer Rouse, who copy-edited the report; Anthony Martin, Head of WTO Publications, and Edmundo Murray, WTO Publications Officer, who were responsible for the production of the report; and Anusha Goyal, WTO, who provided editorial assistance.

The preparation of the publication was carried out under the guidance of Robert Koopman, Director of the Economic Research and Statistics Division, WTO.

Introduction

Marc Bacchetta and Emmanuel Milet

Over the last 50 years, the remarkable opening and integration of the world economy, in combination with the rapid pace of technological change, has contributed to raise the living standards of billions of people around the world, including some of the poorest. But this process of globalization has necessarily been accompanied by economic change, churn and displacement as labour, together with other factors of production shifted from declining industries to expanding ones.

Developing countries have become increasingly integrated into the world economy. Large-scale trade liberalization (e.g. by India or Brazil in the 1980s and 1990s) and accession to the World Trade Organization (WTO) (e.g. China in 2001) have boosted their share of world trade to stand now at more than 40 per cent (WTO, 2018). Increased participation in international trade is in part responsible for the strong poverty reduction observed in countries such as India (Topalova, 2010) or for the growth in income per capita in urban China, for instance (Chen and Ravallion, 2004). In developed countries, however, international trade has increasingly been perceived as a major force behind the loss of manufacturing jobs. At the same time, research work by Autor et al. (2013) and Pierce and Schott (2016) has shown that regions in the United States that had seen more imports coming from China after 2000 had also experienced relatively more manufacturing job losses. Even if more recent research has since shown that trade has not been a significant contributor to declines in manufacturing jobs in advanced economies, it has also shown that the effects of trade can vary considerably across regions and individuals with different skill levels (Bacchetta and Stolzenburg, 2019). Public attention and concerns are now turning more and more towards technological change, and in particular Artificial Intelligence and robots, which are increasingly seen as a bigger threat to jobs than trade.[1] This is in line with the findings of research which suggest that the effects of trade compound regional disparities and labour market polarization driven by other factors such as automation.

Indeed, trade and technological progress are important drivers of economic advances, but they are also major drivers of change, as economic advances do not come without change. Economic theory has long recognized that in each country

there are both winners and losers from trade as a result of the reallocation of economic activity, but it also emphasizes that each country can ultimately derive overall gains from international trade. For the gains to materialize at the country level, however, factors of production, including labour and capital, need to be mobile within a country. When sectors or firms expand or contract as a result of trade integration or technological progress, for instance, workers and capital must adjust to a new economic environment and would need to transition from the declining firms or sectors experiencing stronger import competition to those that are expanding. In reality, labour turns out to be much less mobile than capital both within and across countries. Many frictions to mobility in the labour market prevent the reallocation process from taking place or slow it down. Such frictions result from the presence of several types of costs and obstacles, such as search costs for job opportunities and candidates, barriers to geographical mobility, hiring/firing costs, and mismatches between skills offered and skills needed in the workplace. The presence of such frictions creates adjustment costs, which can be substantial (Artuç et al., 2010). Well-functioning labour markets are therefore essential to ensure that these adjustment costs are minimized.

Overall, the impact of trade opening or technological change on labour markets, including workers' job opportunities and earnings, depends on the worker's place of residence, sector of employment, firm, or even occupation. Individual characteristics, including skills, are also important as older workers are traditionally less mobile than younger workers, for instance. Globalization greatly contributes to the changing nature of jobs that are demanded by firms. Large and productive firms, relatively more exposed to technological change and international trade, tend to demand relatively more white-collar workers, and managerial-type occupations, in which workers are required to execute abstract and non-routine tasks (Autor et al., 2003). This change in the nature of tasks (a job being a collection of tasks) has been observed in many developed and developing countries (Muendler, 2017; Pavcnik, 2017).

There is a growing sense among policy-makers around the world that globalization needs to be made more inclusive and that adjustment policies have an important role to play in this context. Labour market adjustment policies refer to measures taken to reduce the costs associated with the reallocation of workers across sectors and firms following a major shock. Adjustment policies are usually intended to promote an efficient allocation of the production factors in the economy, assist those adversely affected by economic change and maintain political support for technological innovation or trade openness. They may be general – for example, labour market, education and social policies are designed to help workers adjust to economic change, no matter what its initial cause may have been – or specific, as with trade adjustment programmes that focus on workers and firms adversely affected by international trade. Adjustment policies may involve active or passive

labour market policies. Active labour market policies aim to increase the likelihood of unemployed workers finding new jobs through training or job-search assistance, for example. Passive labour market policies, on the other hand, traditionally provide financial support to unemployed persons. There are sometimes limits to what these adjustment policies alone can achieve in promoting inclusive trade. Complementary policies may be essential, including those related to access to education, digital technologies, transport infrastructure and financial resources.

While the empirical literature analysing adjustment policies in developed countries is relatively important, studies reviewing experiences with adjustment policies in developing countries are scarce (IMF et al., 2017; WTO, 2017). Based on experiences in industrial countries, the economic literature offers some suggestions on how to make adjustment programmes work more effectively. It suggests, for example, that general adjustment programmes can deal with a wider range of economic changes but that trade-targeted programmes can be cheaper than those that cover all types of shocks. It also suggests that programmes tailored to worker and country characteristics appear to perform better. In particular, the specific balance to be struck between active labour market policies, employment protection, and provision of compensation to those who lose out varies by country and circumstances. This need for a mix of approaches may also broadly apply to developing countries, but one needs to take into account the larger share of workers in the informal, agricultural and state-owned-enterprise sectors of those economies. Self-employment, as well as the informal labour market, can play a larger role for workers displaced from formal employment. In addition, economic shocks are likely to have a larger effect on workers in the agricultural and state-owned-enterprise sectors in developing countries, given that a greater share of the labour force is employed in these sectors.

Overall, however, the existing literature leaves unanswered many questions regarding the effectiveness of the broad range of adjustment policies and more research is needed to better understand what works and what does not, in both developing and developed countries.

The papers in this volume examine various examples of adjustment policies adopted to address globalization-related shocks in developed and developing economies with a view to making globalization more inclusive.

These studies contribute to the policy debate in several ways. First, they help us understand how governments can ensure that the benefits from trade are shared more broadly within countries and that globalization does not leave anyone behind. Second, by showing how the design of appropriate adjustment policies can make globalization more inclusive, they respond to those who expressed concerns regarding the effects of trade on labour markets. Third, they provide useful insight

in understanding how to respond to technological change, which may well be an even more important source of changes in the labour market than trade and which is raising increasing public concern.

The volume starts with a review of the economic literature on adjustment policies. This review is followed by seven chapters, each of which presents a different country case study. Each case study examines one or more adjustment policy measures used in a specific country, which have been found to be (at least partially) successful. Each of the studies provides a description of the labour market of the relevant country, describes the adjustment policy measures of interest and the broader policy context, and examines how these policy measures have helped reduce adjustment costs and facilitate adjustment following a globalization-related shock.

The seven case studies have been selected according to four main criteria: (i) availability of a researcher with specific expertise in the economics of trade and labour markets; (ii) identification of a specific policy that has been implemented to facilitate labour market adjustment to globalization-related shocks; (iii) availability of data for econometric analysis of the effectiveness of the measure and/or detailed descriptive statistics; and (iv) country coverage in terms of both regions and level of development.

In the first chapter following this introduction, **Emmanuel Milet** reviews the literature on labour market policies used to facilitate trade-induced adjustment. Such policies are adopted by governments for three main reasons: (i) enhancing economic efficiency; (ii) assisting those adversely affected; and (iii) avoiding erosion of political support in favour of trade (knowing that those adversely affected by trade will be assisted may help avoid protectionist backlashes).

Available evidence and experience suggest that there is no one-size-fits-all approach for either active or passive labour market policies. The design, implementation and effectiveness of these policies is highly country specific and typically depends on the country's size, industrial structure and openness to trade, as well as its institutions, including labour market institutions, and social norms. Despite strong country specificities, what seems to work is "to protect workers rather than jobs". The problem with protecting jobs instead of workers is that it may involve going against economic efficiency by keeping unproductive firms active in a market and postponing useful adjustments, resulting in artificially higher prices and less product variety for consumers.

Available evidence and experience further suggest that general purpose adjustment policies may be preferable to specific trade adjustment programmes,

for two reasons. First, they have the advantage that, in the presence of fragmented production processes and internationally dispersed tasks and activities, known as global value chains, they can also support workers in firms that are indirectly affected but do not qualify for specific adjustment assistance due to size thresholds or to the difficulty of establishing a clear chain of causality. Second, general adjustment policies also support workers adversely affected by technological change and other shocks that induce adjustment processes that are difficult to disentangle from, and similar to and easy to confuse with those induced by trade.

Across-the-board support to workers who lose their job, regardless of the sector they worked in, regardless of their occupation and regardless of the reason why they lost their job, seems a promising way to go to achieve all three objectives assigned to adjustment policies (i.e. economic efficiency, fairness and political support).

An important point is also to make sure that such policies are designed and implemented in such a way that may make their evaluation possible in the future (design, data collection, etc.). This is very important as it allows one to sort out which policy actually works and which does not.

In the second chapter, **Anders Humlum and Jakob Munch** discuss the linkages between globalization, welfare state model/labour market institutions and adult vocational training in Denmark. They find that the combination of flexibility and security, known as "flexicurity" in the Danish labour market, contributed to making globalization more inclusive and helped workers adjust to new technologies and to the changing environment in international markets.

Despite being a small, open economy, which is strongly exposed to globalization shocks as well as to technological change, Denmark has low unemployment and rather compressed wages. The authors argue that this is at least in part due to its flexicurity model: a combination of flexible hiring and firing rules, a generous social safety net and an extensive system of active labour market policies, including off-the-job training courses for *employed* workers.

This rather unique mix provides firms with relatively flexible management of their labour force, unemployed workers with wage insurance assistance to find a new job, and employed workers with training courses to acquire new skills while still on the job. According to the Danish Ministry of Education (2018), one objective of the flexicurity model is to "solve labour market restructuring and adaptation problems in accordance with the needs on the labour market in a short- and a long-term perspective".

The authors take a close look at training offered to adults. Denmark spends as much on adult training (0.75 per cent of GDP in 2012) as it does on ordinary

post-secondary education. They find that both workers and firms participate actively in these programmes. However, workers who lose their job because of globalization are not more likely to engage in training than other workers.

The majority of workers engage in vocational training and acquire skills that are strongly specific to some industries. Such training programmes increase both employment rates and earnings, while at the same time strengthening workers' attachment to their industry and occupation. This may be problematic if their industries and occupations are most likely to be hit by globalization shocks in the future. By contrast, while post-secondary training programmes also increase employment rates and earnings, they also increase mobility into new jobs. Younger workers in particular may find it beneficial to engage in more fundamental skill upgrading.

In the third chapter, **Vinicius Lima, Vladimir Ponczek and Gabriel Ulyssea** analyse how the enforcement of labour regulations shaped the response of the labour market to the episode of trade liberalization in the 1990s in Brazil, which saw a strong and unilateral reduction in import tariffs across most sectors. The authors find that labour market adjustment through informality can play an important role in regions where enforcement of labour laws is relatively weak.

The Brazilian economy is characterized by labour market regulations considered to be relatively costly and a high level of informality in all sectors of the economy. The episode of trade liberalization experienced by Brazil in the 1990s was unilateral in nature, meaning that it exposed Brazilian firms to international competition without reciprocal improvement in their access to foreign markets. The sudden increase in competition, coupled with cumbersome labour market regulations, led to an increase in informality as firms had incentives to avoid some labour costs by hiring workers informally.

The authors examine whether informality or unemployment increased as a result of trade liberalization in regions where enforcement of labour laws was stronger. They find that informality increased much more in the regions that had weak enforcement of labour regulations, while unemployment increased in regions with strong enforcement. The interpretation of these results is that informality acts as an adjustment margin for the labour market in Brazil. They also report that regions that had a weak enforcement capacity in the 1990s saw the creation of additional local labour offices.

The policy implications from the result that strong enforcement of labour regulations leads to greater unemployment while weak enforcement leads to greater informality is open for debate. One question is whether workers who enter the informal sector run the risk of falling into an "informality trap" where they

find it increasingly difficult to access better paid jobs in the formal labour market as a result of having worked informally for a long time. Another issue is whether it is preferable to transition through unemployment or informality from a public finance perspective. More informality means lower social contributions collected by firms, but also lesser amounts of social transfers to unemployed workers.

In the fourth chapter, **Antonia Reinecke and Hans-Jörg Schmerer** consider how a change in the German legislation on employment protection, which took place between 2003 and 2005, interacted with increased import competition from China. The authors find that a firm's choice between training existing employees and hiring new workers with the necessary skills hinges on the firm's size and the existing labour market institutions.

Prior to 2005, firms with more than five employees were subject to the Employment Protection Act. The change in regulation raised this threshold to 10 employees. The authors look at how imports from China affected hiring and firing at firms with more or less than 10 employees. In a second step they consider the probability of workers being offered training depending on whether firms are subject to the Employment Protection Act.

Their results show that imports from China contributed to lowering employment only in firms with fewer than 10 workers. They also find that firms that are subject to the employment protection legislation (those with more than 10 employees) are more likely to offer training to their workers than other firms. They interpret these results as evidence that, when constrained in their ability to adjust the number of workers, firms may opt for training and the development of new skills rather than hiring/firing workers with the necessary skills. The main recommendation that the authors draw from the study is that employment protection should be specific to firm size.

In the fifth chapter, **Young-Han Kim and Sungmin Park** examine how the Korean Trade Adjustment Assistance (TAA) programme has been used to facilitate free trade agreement (FTA)-induced adjustment and whether it helped firms and workers adjust to these trade shocks. The author finds that the impacts of the TAA programme appear to have been limited/mixed.

In 2011, 2012 and 2015, Korea signed major bilateral trade agreements respectively with the European Union, the United States and China. While these three FTAs are estimated to have resulted in overall net job creation, import-competing subsectors in agriculture and manufacturing have experienced some job losses.

As explained by the author, the Korean TAA programme was designed to facilitate adjustment to fiercer import competition, through a dual-track approach: (i) a

conventional TAA programme to assist selected firms and workers that proved harm due to increased import competition, and (ii) a programme specific to the agricultural sector aimed at compensating for some of the losses and also at improving the sector's competitiveness.

Kim's assessment shows that total government expenditure for the conventional TAA programmes has been kept relatively low, at only 0.2 per cent of that for the agricultural programme. Under the conventional programme, most financial assistance went to firms — through cheaper loans — whereas the support for displaced workers remained at about 1.5 per cent of the total amount allocated to this programme. Workers were provided with job-search assistance but not with financial support. TAA for workers is in fact a mere extension of the existing unemployment insurance benefits. The administrative procedure was found to be cumbersome, lengthy and not widely known. Moreover, only a small fraction of the budget devoted to TAA has actually been used.

The author argues that this absence of assistance for displaced workers has been further aggravating the existing divide in the country's labour market between: (i) regular workers who enjoy high wages and strong employment protection and receive generous social benefits; and (ii) non-regular workers with lower wages and little employment protection or social benefits. Evidence shows that an increase in imports has led to an increase in the share of non-regular workers.

The second track of TAA, which provides support to the agriculture and fishery sectors, is considerably larger in terms of public finances (accounting for 30 per cent of the total regular government budget for agricultural and rural policies). In fact, the budget is such that it can cover multiple times the expected adjustment costs of these two sectors. According to the author, this specific feature of the TAA programme had been designed to respond to the opposition expressed by some agricultural industries regarding the conclusion of free trade agreements with large trading partners. The author concludes that a TAA programme that focuses heavily on avoiding erosion of political support in favour of trade might fail to achieve economic efficiency.

Overall, the author concludes by noting that, although the impacts of the TAA programme appear to have been mixed, providing direct support to displaced workers through social safety nets and retraining programmes for their transition and re-employment could further mitigate the labour market adjustment costs.

In the sixth chapter, **Devaki Ghose** looks at how the Government of India reacted to the information technology (IT) boom that took place in the 1990s and

early 2000s. The author finds that targeted education policy can mitigate substantially the labour market adjustment costs.

The IT sector in India is strongly oriented towards exports (80 per cent of IT output is being exported) and, hence, is also sensitive to fluctuations in world demand for IT services. In 2015, the IT sector accounted for almost 10 per cent of GDP and was the fastest growing sector in India.

In 1998–1999, in "response to the growing scarcity of engineers", the Indian Government declared a state of "educational emergency" and decided to create public colleges as a response to the growing demand for workers with IT skills. While private colleges also flourished, they were essentially concentrated in areas where IT firms were already located. The government intervention then brought public IT colleges to less developed areas deemed less attractive to private colleges.

The author concludes that this had the consequences of: (i) further increasing the supply of workers with IT skills; (ii) providing educational opportunities to less-favoured communities, in particular women and minorities; and (iii) contributing to reducing inequalities by building colleges in poorer areas.

In the seventh chapter, **Haroon Bhorat, Kezia Lilenstein and Francois Steenkamp** analyse three labour market programmes that have been put in place by the South African Government to tackle the structurally high unemployment (which on an average, has remained above 20 percent since 1994) although they have not been designed as a response to a specific globalization-related shock. The authors find that the impact of the labour market adjustment policies hinges on their design and implementation.

The *public employment scheme*, adopted in 2004, provides temporary employment to unemployed persons through public expenditures (in the construction, environment and social sectors). The *job retraining scheme*, introduced in September 2009, aimed at training workers to acquire new skills over a period of three months. The *wage subsidy scheme*, established in 2014, is an ongoing programme for young people that provides tax incentives to firms hiring those aged less than 29 years, in order to address the high youth unemployment rate (about 30 per cent).

The authors find that the effectiveness of these programmes has been mixed. In some cases, only a limited number of workers applied and benefited from some of the programmes, because, along with cumbersome application and selection

proceedings, there were delays in the implementation and financial compensation was considered to be too low.

Conversely, preliminary evidence regarding the programme addressing youth unemployment suggests that small firms are benefiting from it much more than large firms, and that these small firms also experience greater growth than small firms that have not applied to the scheme. The authors conclude by highlighting the importance of transparency and information sharing to ensure firms and workers are aware of these programmes.

Finally, in the eighth chapter, **Saad Belghazi and Kawthar Berbich** analyse the labour market adjustment policies adopted by the Moroccan Government in response to the 2008 financial crisis in the textile, clothing, leather and footwear sector. They find that these measures were mostly aimed at protecting jobs rather than workers.

The textile, clothing, leather and footwear sector in Morocco is strongly export oriented and has been facing greater competition since the dismantlement of the Multifibre Arrangement in 2005. Under the auspices of the Strategic Watch Committee, the Moroccan Government implemented several measures aimed at maintaining employment in the sector. Under specific financial eligibility criteria, selected firms were offered the possibility of having six to 12 months of social contributions subsidized by the Government. In addition, a training scheme was put in place.

The authors note that some of the eligibility criteria excluded firms that were already experiencing financial difficulties. Ultimately, only a limited number of firms and workers benefited from the training scheme, which was mostly directed towards managers and white-collar workers. The authors conclude that these adjustment policies did not address important aspects such as the competition firms face from smuggling and informal firms, and the loss of attractiveness of the sector, especially among young workers.

Open questions

The contributions in this volume cover a broad range of policy measures taken by governments to help labour markets adjust to trade-related shocks. They provide valuable information and insights on those policies. In particular, the studies show how adjustment policies serve different purposes, political and economic, as discussed in the introductory literature review. Adjustment policies are not necessarily implemented with economic efficiency as their main objective.

The studies show how training programmes can help increase employment and earnings, while at the same time strengthening workers' attachment to their industry and occupation. They show how the level of enforcement of labour regulations can affect adjustment to trade in the presence of informal employment. They also show how employment protection can induce firms to reskill workers instead of firing them in reaction to increased international competition. They also illustrate how education policies can help reduce inequalities in a context where trade raises the demand for certain skills. They further show how important it is to make sure that adjustment measures can be properly evaluated with a view to improving them if necessary. Last, but not least, they show how governments may choose to protect jobs rather than workers.

At the same time, the studies in this volume raise many questions. For example, most studies illustrate the fact that the measures that can help with adjustment are not necessarily labelled as adjustment measures. The Korean programme is the only measure falling into the precise definition of a trade-related adjustment programme that is discussed in this volume (at least the only one labelled as such) and, as explained in the chapter, it is not focused on facilitating labour market adjustment. All the other measures covered in the volume, while they have the potential to help with adjustment difficulties, are not called adjustment measures because their main objective is typically not to help workers adjust to trade or other shocks. This raises the question of whether this situation is optimal or whether there is a need for proper adjustment policies. The fact that new technologies are likely to induce important adjustments on the labour markets in the future suggests that this question is likely to become more pressing. The risk with the existing approach is that too little attention may be paid to adjustment in the labour market.

One problem with the current "indirect" approach of adjustment is that the impact of policies on adjustment is typically not evaluated, which makes it difficult to learn from experience. In fact, information on trade- or technology-related labour market adjustments is very limited. In particular, identifying workers who lose their job because of globalization, including technological change, and tracking them to see whether and how they transition to a new job is a major challenge. Similarly, little is known about internal labour mobility and other frictions that contribute to adjustment costs. All these factors complicate the design of effective adjustment policies.

Another important question raised by the studies in this volume is in regard to the policy lessons that they provide. In order to draw policy lessons from experience, it is necessary to evaluate whether the measures have been successful or not. To do this, however, the first step is to decide from which perspective and against which criteria the policies should be evaluated. Should the policies be evaluated

according to how they achieve their objective(s)? Should they be evaluated in terms of their effects on welfare? Should their distributional effects be taken into account or only their efficiency effects?

In several cases (see, for example, the case studies of Germany and India), the authors examine how "adjustment" measures affect specific variables (firm-level employment, supply of IT workers, education opportunities by region), but they do not assess the effect of the measures on welfare. Nor do the studies typically assess the distributional effects of the measures. This makes it particularly difficult to derive policy recommendations from the policy assessments.

A related issue is that, even if the policy assessments suggested that a particular measure has raised welfare in the country where it has been introduced, it would not necessarily indicate that the same measure introduced in another country in different circumstances would have the same effect. Indeed, the success or failure of a given policy depends on many factors, some of which are specific to each country, such as the nature of the institutions, cultural preferences for specific policies, or the very nature of the shock that is being addressed by the policy.

A third issue is that, even if a given measure is found to help achieve a set objective or even if it is found to raise welfare, it does not mean that the same objective could not be achieved more efficiently with some other measure. As discussed in the Indian case study, for example, instead of creating public IT colleges in less developed areas, the Government could have helped students from these same regions access private colleges in regions where they flourished. Similarly, in the case of Germany, it is not clear whether the size threshold from which firms are subject to the Employment Protection Act should have been set at 10 or at some other level.

Along the same lines, several studies show that enforcement matters. In the case study of Brazil, the authors examine how the level of enforcement of labour market regulations affects the nature of the adjustment, i.e. entry into informality or entry into unemployment. They find that more enforcement translates into more workers entering unemployment, while less enforcement results in more workers entering the informal sector. However, the study does not tell us what the optimal level of enforcement would be.

All this suggests that, in a context where concerns regarding adjustment, in particular adjustment to technological change, are growing, the contributions in this volume are only scratching the surface of the adjustment policy question and that there is a need for much more research on this topic.

Endnote

1. See https://www.hiringlab.org/2019/01/10/automation-ai-fears-jobs/; https://www.pewresearch.org/global/2018/09/13/in-advanced-and-emerging-economies-alike-worries-about-job-automation/.

References

Artuc, E., Chaudhuri, S. and McLaren, J. (2010), "Trade shocks and labor adjustment: A structural empirical approach", *American Economic Review*, 100(3): 1008–1045.

Autor, D. H., Dorn, D. and Hanson, G. H. (2013), "The China syndrome: Local labor market effects of import competition in the United States", *American Economic Review,* 103(6): 2121–2168.

Autor, D. H., Levy, F. and Murnane, R. J. (2003), "The skill content of recent technological change: An empirical exploration", *Quarterly Journal of Economics,* 118(4): 1279–1333.

Bacchetta, M. and Stolzenburg, V. (2019) "Trade, value chains and labor markets in advanced economies", in Global Value Chain Development Report 2019, Technological innovation, supply chain trade, and workers in a globalized world, Geneva: WTO, IDE-JETRO, OECD, UIBE and World Bank.

Chen, S. and Ravallion, M. (2004), "Welfare impact of China's accession to the World Trade Organization", *World Bank Economic Review*, 18(1): 29–57.

Denmark, Ministry of Education (2018), "Adult vocational training", http://eng.uvm.dk/adult-education-and-continuing-training/adult-vocational-training (accessed 22 August 2018).

International Monetary Fund (IMF), World Bank and World Trade Organization (WTO) (2017), "Making Trade an Engine of Growth for All: The Case for Trade and for Policies to Facilitate Adjustment", IMF Policy Papers, Washington, D.C.: IMF, World Bank.

Muendler, M.-A. (2017), "Trade, Technology, and Prosperity: An Account of Evidence from a Labor-market Perspective", Staff Working Paper ERSD-2017–15, Geneva: World Trade Organization (WTO).

Pavcnik, N. (2017), "The Impact of Trade on Inequality in Developing Countries", NBER Working Paper No. 23878, Cambridge, MA: National Bureau of Economic Research.

Pierce J. R. and Schott, P. K. (2016), "The surprisingly swift decline of US manufacturing employment", *American Economic Review*, 106(7): 1632–1662.

Topalova, P. (2010), "Factor immobility and regional impacts of trade liberalization: Evidence on poverty from India", *American Economic Journal: Applied Economics,* 2(4): 1–41.

World Trade Organization (WTO) (2017), *World Trade Report 2017: Trade, Technology and Jobs*, Geneva: WTO.

World Trade Organization (WTO) (2018), *World Trade Statistical Review 2018*, Geneva: WTO.

1 Literature Review

Emmanuel Milet

Adjustment to international trade

Globalization is the integration of goods, services, financial and capital markets on a world scale. From the perspective of firms, this integration means having access to broader markets but also facing tougher competition. In order to remain competitive in global markets, firms have to adjust by engaging in innovation, developing new products and adopting new technologies. They must also adjust by adapting their workforce to the new competitive environment. Such adjustment is costly, however, and workers bear a large share of the cost of adjustment to globalization. In this context, what are the responses policy-makers can offer to mitigate those costs and make globalization more inclusive? This chapter reviews the literature on adjustment policies with a view to answering this question.

What do we mean by adjustment?

The need for adjustment occurs whenever an economy is hit by a shock that changes the setting in which it functions. Indeed, this change in the setting in which the economy functions will induce adjustments that correspond to a reallocation of resources to different uses. In an ideal world, adjustment can be immediate and seamless. Adjustment can also be costly, however, when this reallocation is not smooth and immediate. Whenever factors of production (consider labour and capital, for instance) are not freely mobile within a country, i.e. there are *mobility* costs, adjustment becomes costly (see Artuç et al., 2010, 2015).

It typically takes time to reallocate resources according to the new conditions (new prices for goods, services and factors), and the longer it takes, i.e. the higher mobility costs are, the larger the adjustment cost will be. One way of measuring adjustment costs is to look at production that is foregone during the transition period.

Technology and international trade are two examples of major economic shocks affecting today's economies. Both trade and technology increase overall welfare and standards of living. The benefits of technological change and international trade materialize through lower costs and higher productivity, lower prices, greater diversity

of products and overall higher wages. For these benefits to materialize, however, adjustments need to take place. The introduction of new technologies in the workplace inevitably affects the demand for labour (robotization is one example). As for international trade, it changes the price of tradable goods, which in turn affects the demand for labour used in the production of these products. These changes in labour demand mean that some workers are going to be displaced and will have to find jobs in new firms and/or sectors. In the presence of labour mobility cost, this generates adjustment costs. While governments have access to a variety of tools to smooth the adjustment process, the design of trade policy can also contribute to limiting the cost of adjustment.

Adjustment to trade shocks and to other shocks

Is there a difference between adjustments following a technology shock and those following a trade shock? Another way of restating this question is to ask whether trade and technology affect similar workers in similar ways. Our answer is that making such a distinction is at best hazardous, for several reasons.

First, history can help us shed light on this issue. During the industrial revolution many new technologies developed in industries (the weaving machine, for instance) were designed to be used by unskilled labour whose mass migration from rural to urban areas rendered some cities swollen with unskilled workers. Skilled workers were adversely affected by such technological development and this even led to a large rebellion of textile workers (known as the Luddites rebellion) in the United Kingdom between 1811 and 1816. A few decades later, the mechanization of agriculture and imports of cheap grain from the "New World" would lead to a strong opposition by low-skilled farmers to both new technologies and international trade in many European countries (O'Rourke, 1997). In the post-World War II era, technology and international trade have been mostly affecting unskilled workers. The development of computers and robotization has reduced the demand for low-skilled labour performing repetitive tasks, while the development of new information and telecommunication technologies has allowed more of those low-skilled tasks to be performed abroad. Technology has enabled a new kind of trade and the importance of global value chains cannot be overstated (WTO, 2019). Empirical evidence shows that both technological change and offshoring have contributed to a polarization of the labour markets in many OECD countries (Michaels et al., 2014; Goos et al., 2009). [1] At the same time, international trade has also caused firms to develop new technologies in order to remain competitive (Thoenig and Verdier, 2003).

In more recent years, the development of Big Data and artificial intelligence (AI) or machine learning, to mention just two prominent recent technologies, is likely

to lead to more complex, skill-intensive tasks being done remotely (Baldwin, 2019). The novelty in these developments is that workers who used to benefit from both international trade and technological change (skilled workers performing non-routine tasks) can now be potentially adversely affected by them. Workers who will benefit from these are those "at the very top with the skills and education to leverage the productivity advantages that AI affords", as has recently been argued (Foroohar, 2018). The fact that trade and technology can affect labour markets in similar ways suggests that the response to such shocks may not be so different.

Frictions, mobility costs and adjustment costs

All countries have a set of labour and competition laws to regulate what are deemed acceptable business practices. For instance, in most high-income countries, competing firms are not allowed to form a cartel or to collude in order to act as a monopolist and charge high prices to consumers. On the labour market side, examples include regulations on the minimum wage, maximum hours worked, hiring and firing procedures or unemployment insurance. Each country has a different mix of these policies and they result from long-term bargaining between various actors such as unions, civil society, governments and industry associations (Hall and Soskice, 2001; Thelen, 2012).[2]

Additional factors, traditionally referred to as "frictions", may limit the ability of workers to change jobs. The lack of information on job openings, the inability for workers to transfer part of their firm-specific skills to another company or, sometimes, unnecessarily cumbersome regulations regarding recruitment and dismissal can slow down worker mobility or make it costly. The importance of labour mobility for adjustment should not be underestimated. In a recent World Bank publication, Hollweg et al. (2014) summarize this as follows:

> When [labour mobility] costs are significant, workers may exhibit "sticky feet" by choosing to remain in their current sector or delay their transition rather than incur the costs of moving to better employment. Labour market frictions therefore shape the impact of international integration on employment outcomes by affecting how quickly workers transition to new jobs, and how wages adjust as a result.

A recent literature has estimated these mobility costs in both developed and developing countries and found that mobility costs are large, and that they differ strongly across countries. Artuç and McLaren (2015) find that the cost for United States workers to switch sectors or occupation is about four times the average annual wage. Dix-Carneiro (2014) finds that the average cost for Brazilian workers

moving to another sector is around two times the annual average wage. Artuç et al. (2015) estimate sector mobility costs for many developing countries and find that they represent between one and five times the average annual wage. Cruz et al. (2018) estimate mobility costs of changing sector and moving to another region in developing countries and find them to be of a similar magnitude. They also find that sectoral mobility costs are larger than regional mobility costs. This is important since economic activities are generally not uniformly spread within a country. If workers are not mobile across regions, a shock affecting a particular sector can have significant consequences on entire specific regions of a country. This in turn can create income inequalities between regions and jeopardize social cohesion (Topalova, 2010; Autor et al., 2013).

Should governments facilitate adjustment?

Governments are deeply concerned with facilitating adjustment, regardless of what is causing it (Akman et al., 2018). The mere existence of unemployment insurance is a striking example of this. In most OECD countries, governments force workers and firms to contribute to a fund that is then used to provide wage insurance to unemployed workers. Such a safety net is an important component of the modern welfare state, which was designed after 1945. It is worth quoting Ruggie (1982), who argues that, in fact, government intervention is necessary as a way to legitimize international economic integration:

> The essence of embedded liberalism, […] is to devise a form of multilateralism that is compatible with the requirements of domestic stability. Presumably, then, governments so committed would seek to encourage an international division of labour [that], while multilateral in form and reflecting some notion of comparative advantage (and therefore gains from trade), also promised to minimize socially disruptive domestic adjustment costs as well as any national economic and political vulnerabilities that might accrue from international functional differentiation.

There is no consensus, however, on whether government intervention should be *different* depending on whether the need for adjustment comes from international trade, technological change, migration flows or public health issues. Considering adjustment caused by international trade, arguments in favour of a specific type of government intervention fall into three categories: economic efficiency, fairness and political support.

The argument for economic efficiency states that, in the presence of mobility costs, governments should facilitate adjustment and speed up the transition

towards an efficient allocation of resources.[3] Note that this argument is not specific to adjustment made necessary by international trade. The argument for fairness is that, while all consumers gain from international trade through lower prices, the cost is borne by a small number of workers. If workers are displaced because of the government trade policy, it is only fair that they be compensated for it. However, other government policies can generate disruption in the labour market. For instance, rising health and safety standards on products will likely drive out of business firms that cannot adapt to these new regulations. The argument for political support states that governments should compensate those who are adversely affected by its own actions. For instance, if lowering tariffs generates job losses and governments do nothing about it, public support for further tariff reduction is likely to be low. Failing to provide some kind of compensation may weaken the credibility of commitments made by governments (Trebilcock, 2014).[4]

More generally, there is a growing concern that those left behind by globalization are pushing back against it. As mentioned in the previous section, history teaches us that such a backlash happened in the late 19th century across Europe (O'Rourke, 1997) and resulted in protectionist measures being adopted in many countries. As emphasized by Bernstein (2018), "it's no surprise that those on the wrong side of globalisation would push back against it. […] if we want to help globalisation, we'd better start helping those hurt by it".

Adjustment policies

Countries have a variety of tools at their disposal to facilitate adjustment. On the labour market side, passive and active labour market policies are widely used. Passive policies usually refer to unemployment benefit systems, which very often take the form of unemployment insurance in developed economies and unemployment insurance savings accounts in some developing countries (Box 3). It is important to note that, in the majority of countries, these policies cover formal workers only. Active labour market policies cover a wide range of policies, from job-search assistance to unemployed workers, to classroom training to help workers acquire new skills, to job and wage subsidies to public or private firms. While passive labour market policies help workers with temporary wage support, active labour market policies aim at helping workers find a job as quickly as possible.

Some countries have additional programmes specifically directed at workers who become unemployed because of international trade or globalization in general. These "trade assistance programmes" have often been implemented during or

after the signing of major free trade agreements (e.g. Canada–United States Free Trade Agreement (CUSFTA), North American Free Trade Agreement (NAFTA), United States–Republic of Korea Free Trade Agreement (KORUS), European Union–Republic of Korea Free Trade Agreement) or in more general recognition that globalization directly affects the labour market and requires a political response to ensure that trade liberalization is accepted by the general public. These programmes consist of both passive and active labour market policies that are usually very similar to those already in existence. Only workers who lost their jobs because of trade or globalization are eligible for these programmes.

What is the best strategy to help workers adversely affected by globalization? From a theoretical perspective, Davidson and Matusz (2000, 2006) provide some element of an answer. They compare a variety of labour market policies to determine the best way to compensate those adversely affected by a reduction in tariffs. They look into wage subsidies, employment subsidies, trade adjustment assistance (in the form of unemployment benefits) and training subsidies. Their study shows that wage subsidies are the best way to compensate workers who switch sectors. This approach is quite popular among economists for their incentive characteristics (Kletzer and Litan, 2001). Trade adjustment assistance (in the form of unemployment benefits) is found to increase the length of unemployment, which may also contribute to better matching between workers and firms. For workers who stay in the sector experiencing tariff cuts, employment subsidies in the form of a wage subsidy independent of a worker's previous wage appears to be the best answer. The authors propose to see jobs as assets, the price of which would be wages: workers may choose to invest in their jobs (through training) with the hope of higher wages in the future (higher price). But they also care about job tenure (maturity for assets), i.e. how long they can keep the job they are in. And workers also care about the ease with which they can obtain such a job (liquidity). Davidson and Matusz (2006) argue that applying the wrong policy can lead to overall negative net gains from trade.

In addition to labour market policies, countries can also facilitate adjustment with other complementary policies that have more of an indirect effect on the labour market. These include education policies, internal mobility of workers, better access to credit for firms and workers and place-based policies. We discuss these policies at the end of this chapter.

How can we assess the effectiveness of labour market policies?

Carefully assessing the effectiveness of labour market policies can be quite challenging. However, the literature on labour economics has moved significantly towards providing sound assessments of such policies (Heckman et al., 1999).

For example, consider a job-search assistance programme whereby workers are provided with additional help to look for a job. What we are interested in is the extent to which those workers do better than if they had not been provided this additional help. It is easy to know how well those workers do after having participated in the programme. We only need observational data. The problem is we do not know how well they would have done without this help since we *do not observe* this outcome. In order to overcome this, we need to find other workers who do not benefit from the job-search assistance, but who are very similar to those who do in every particular (measurable) relevant aspect (age, tenure, gender, occupation, etc.). They act as "clones" of the workers who receive the job-search assistance. The only relevant difference is that they do not benefit from that assistance. Finding such a group of workers (called the "control group") is really the challenging part of the endeavour.[5]

We may worry that workers who benefit from the job-search assistance programme share some (usually not observable) characteristics that make them different, and the effectiveness (or lack of effectiveness) of the programme may depend on these characteristics. The ideal setting consists of a random allocation of workers to the programme. Randomness ensures that workers enrolled in a programme do not differ in a systematic way from other workers. This (ideal) setting is difficult to implement and rarely manageable in practice. However, recent empirical evidence by Card et al. (2010, 2018), Escudero et al. (2018) and Vooren et al. (2019) suggests that "randomized experiments" do not systematically produce significantly different results from other types of analysis where a "perfect control group" is not available and has to be constructed from the data.[6]

It should be noted that (all) policies should be designed in such a way that makes their assessment possible. The evaluation framework needs to be embedded in the policy from the beginning if one wants to carefully gauge the success and/or failure of the policy. Sufficient resources also need to be allocated to the implementation of the policy and to its continuity. Escudero (2018) uses data on a sample of 31 developed countries and looks at the effectiveness of various active labour market policies. One of her findings is that the allocation of resources to programme administration has a significant impact in reducing unemployment and enhances the positive impact of training on the employment of low-skilled workers.

General programmes: Active and passive labour market policies

The aim of this chapter is to provide evidence on how labour market policies can help mitigate shocks in the labour market. The focus is more on active labour market policies since the majority of them are designed to help workers get back to work faster. However, passive labour market policies are a stepping stone towards

more active policies. We review briefly here how unemployment insurance (the most common passive labour market policy) is designed in OECD countries and in developing countries. Note that these policies are not directly linked to adjustment issues in a narrow sense. Rather, they provide unemployed workers with a safety net, regardless of the reason they lost their job.

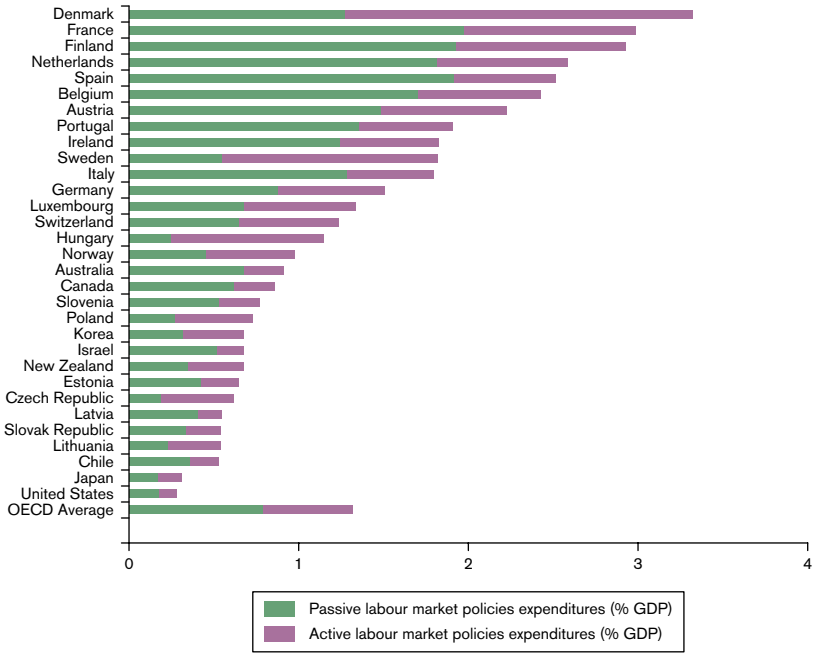
Unemployment insurance in OECD countries

The most common passive labour market policy is unemployment insurance, which provides workers with wage support when they become unemployed. Unemployment insurance comes in different shapes, however, even among the OECD countries. In a typical OECD country, when a worker is laid off, she receives a fraction of her previous wage for a limited period of time. This benefit comes from the contribution that worker (and very often her employer also) has made while working. Unemployment insurance found in most OECD countries is fundamentally redistributive in nature as individual contributions are not linked to the risk profile of the worker. In practice, we observe redistribution from high-wage workers towards low-wage workers who receive a minimum benefit (very often higher than what they would receive based on their individual contributions). The specifics of this system in terms of size of benefits (the fraction of the worker's previous wage), duration, phasing out, financing methods, etc. vary by country and reflect lengthy bargaining among unions, capital owners and governments (Rodrik, 1998). Differences in the types of policies in place reflect countries' social preferences on key issues.[7]

Using data from the OECD Employment Protection Database, Figure 1 shows that, in 2015, OECD countries spent about 0.8 per cent of GDP in passive labour market policies. This hides strong differences across countries, however. On one end of the spectrum we find the United States (0.18 per cent) and Japan (0.17 per cent) and on the other we find France (1.98 per cent) and Finland (1.93 per cent). We describe in more detail how unemployment insurance is managed in France and in the United States in Box 1.

What is the impact of unemployment insurance on wages and unemployment? There is a strong debate in the academic, political and public spheres as to whether unemployment insurance generates higher unemployment by making workers less willing to look for jobs. Reviewing the debate is beyond the scope of this report and we direct the reader to a recent review of the literature by Schmieder and von Wachter (2016). However, to illustrate the ambiguity of the impact of unemployment insurance, consider the following argument. Generous benefits provide disincentives for workers to look for jobs while at the same time giving them enough time to find a better job (better paid, in which they will stay longer). Empirical evidence supports both mechanisms, and net effect on welfare is therefore ambiguous (Tatsiramos, 2009).

Figure 1 Expenditures on passive and active labour market policies in selected countries, 2015



Source: OECD Employment Protection Database.

Box 1: Unemployment insurance in France and Japan

	France	Japan
Contribution method	Contributions paid on earnings (employers + employees)	Contributions paid on earnings (employers + employees)
Benefits	(EUR 29.06; 75 per cent previous wage) Capped at EUR 13.244 per month	(50–80 per cent) previous wage
Duration of benefits [min; max]	(122; 1094) days	(90; 330) days
Eligibility	Involuntarily unemployed, registered as jobseeker and actively seeking employment	Involuntarily unemployed, worked no less than 20h per week for no less than 31 days

Source: France: https://www.cleiss.fr/docs/regimes/regime_france/an_5.html (accessed 28 January 2019); Japan: https://www.jetro.go.jp/en/invest/setting_up/section4/page9.html (accessed 28 January 2019).

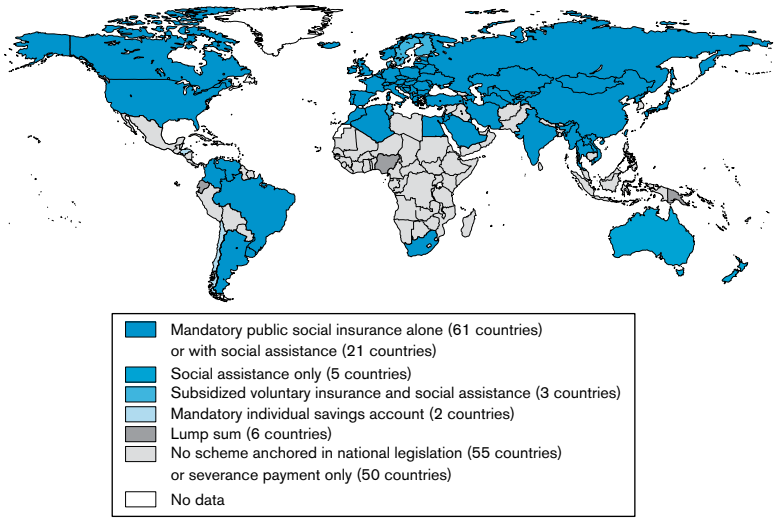
Unemployment insurance in developing countries

The vast majority of developing countries do not offer the full basket of labour market policies high-income countries do. Francois et al. (2011) report that unemployment insurance systems exist in 50 per cent of middle-income countries but only 10 per cent of low-income countries. The *World Social Protection Report* (ILO, 2017) provides a list of the types of unemployment benefit systems over a wide range of countries, including many developing countries. In Box 2 we use data from this report and describe the varieties of schemes in developing countries.

Few developing countries have an unemployment insurance system. Among developing countries, the most common scheme currently in use is an unemployment individual savings account (UISA). This scheme is particularly popular in Latin American and Caribbean countries. A UISA essentially works in the same manner as the unemployment insurance system in OECD countries, except that the benefits workers receive depend entirely on their own contribution, and not on that of others.[8] In most UISAs, workers can access their savings on becoming unemployed and can keep the unused contributions when they find a new job. This system is particularly attractive in economies with a large proportion of informal workers (Robalino et al., 2009). The challenge for policy-makers is therefore to choose a system that provides workers with incentives to go back to work, subsidizes those who do not contribute enough, finances the subsidies, and minimizes fraud and abuse of the system (Robalino, 2014). As in OECD countries, the specifics and effectiveness of a UISA (level of benefits, criteria to access the fund, etc.) depend on the country. Severance payments are also widely used, sometimes combined with a UISA. In Peru, for instance, severance payments for arbitrary dismissal can amount to up to a full annual salary (Box 2).

We know very little about the impact of UISAs or severance payments on labour market outcomes in developing countries. In a UISA, incentives to go back to work are stronger than in traditional unemployment insurance systems but, if poorly designed, a UISA can provide incentives to workers to quit their current job to access some of this insurance money (especially those workers who do not have good access to credit). Evidence for Brazil seems to point in this direction (Ribe et al., 2012). The effectiveness of a UISA also depends on the performance and credibility of the financial institution managing the fund (Ferrer and Riddell, 2011). Introducing an OECD-type system may not be the immediate solution in most developing countries, where there is a high level of informality and where the public administration generally lacks the capacity to efficiently administer such a programme, which requires data on a worker's job history, the worker's and employer's contribution, etc. (Robalino et al., 2009). Regarding severance payments in Latin American countries, Heckman et al. (2000) found that they affect the

Box 2: Unemployment insurance in developing countries



	Africa	Latin America	Asia	Europe
No scheme	Benin Congo Ghana Kenya Senegal	Cuba Jamaica Nicaragua Paraguay	Afghanistan The Maldives Singapore Tonga	
Severance payment only	Angola Côte d'Ivoire Gabon Tanzania Uganda	Belize Bolivia Mexico Peru	Bangladesh Cambodia Indonesia Malaysia Pakistan	Armenia Georgia
Social insurance	Cabo Verde Mauritius South Africa	Argentina Brazil Colombia	Japan New Zealand Thailand Viet Nam	Austria Finland Italy Poland Tajikistan Turkey

Source: *World Social Protection Report* (ILO, 2017).

distribution of employment by benefiting those with a job at the expense of young people and other marginal groups. However, they also find that severance payments have a weak impact on the unemployment rate.

Box 3: Unemployment Insurance Savings Account in Brazil

Upon dismissal without just cause (*justa causa*), workers are entitled to some unemployment benefits:

Unemployment insurance	
Eligibility	Workers who contributed for at least six months over the past three years
Benefits	Between 100% and 187% of the minimum wage
Duration	3–5 months
Time-in-Service Guarantee Fund (only if employer contributes to the Fund) (UISA)	8 per cent of employee's salary deposited in an account at the Caixa Ecônomica Federal
In addition:	
Aviso de Previo	+ 1 month after the decision to fire the worker is taken (either worked or paid)
13th monthly salary	
INSS contributions	In the case the dismissed employee acquires any illness or situation that prevents him/her from working (such as a broken leg or severe tendinitis), he/she has the right to seek assistance from the INSS
Paid vacations	1 month + 1/3 of this amount

Source: Neves de Holanda Barbosa et al. (2017), Gerard and Naritomi (2019).

In what follows we describe various active labour market policies that have been implemented in both developed and developing countries. Different policies address different failures of the labour market. Some may work to increase the employment rate of young and older workers, be directed towards helping minorities, provide additional skills to better fit labour demand and increase wages, reduce unemployment spells or facilitate job-to-job transition. Most policies target several of these objectives together. We conclude by looking at labour market policies that specifically target workers adversely affected by international trade or globalization in general.

Active labour market policies in developed countries

In OECD countries passive labour market policies are very often complemented with active policies that aim at bringing unemployed workers back to work. Such policies either affect the supply of labour through vocational or classroom training, the demand for labour through subsidized employment and wages, or

the match between workers and firms with job-search assistance, for instance. Passive and active policies can also be linked. Unemployed workers may need to enrol in training or show proof of job searching in order to receive unemployment benefits.

Figure 1 shows the expenditures on active labour market policies in OECD countries as a share of GDP. On average, OECD countries spend about 0.5 per cent of GDP on active labour market policies, but this average figure hides strong heterogeneity, as for passive labour market policies. Denmark is the OECD country that spends the most on active labour market policies – about 2 per cent of GDP. Active labour market policies are a key component of Denmark's "flexicurity" approach (see Humlum and Munch in this volume).[9] At the other end of the spectrum we find the United States, which spends about 0.10 per cent of GDP on active labour market policies. Note that comparing countries based on this figure alone makes little sense. Institutions and regulations, labour laws, the role of unions, etc. are very different in Denmark from those in the United States. Furthermore, the United States has an historically low unemployment level compared with European countries.

The literature on labour market policy evaluation in developed countries is vast. This is due to not only the large number of programmes implemented in these countries but also the availability of data necessary to assess them. What follows draws on meta-analytical studies, which summarize the results of a wide range of country-specific studies.[10]

Training programmes in the United States

Greenberg et al. (2003) look at 31 training programmes in the United States over the period 1964–1998. The aim of the programmes was to provide workers with new skills to help them find jobs with better pay. The authors find that most government-sponsored training programmes have a significant positive impact on earnings. They find that the impact of those programmes on earnings is larger for women, modest for men and negligible for young people.

Programmes in Europe

In a comprehensive meta-analysis, Kluve (2010) considers 137 programmes in European countries. He finds that the type of programme a worker is enrolled in is a more important determinant of its effectiveness than the state of the economy over the business cycle (high versus low unemployment) or other labour market institutions (labour regulations). Kluve finds that direct employment programmes in the public sector have a negative effect on the probability of finding a job, a result common to a wide range of studies. Private sector incentive programmes and job-search assistance are effective in increasing the probability of finding a job. Training programmes show modest positive effects, however, unless unemployment is quite high to start with.

Programmes in OECD countries

Card et al. (2018) conduct a meta-analysis of the impact of active labour market policies on labour market outcomes in OECD countries, and in Latin American and Caribbean countries (which we cover in a subsequent section). Their analysis draws on 526 programmes evaluated in 207 studies between 1980 and 2012. The majority of their studies include an evaluation of the programme both one year and two years after its completion. They mostly consider three types of programmes: classroom or on-the-job training; job-search assistance; and subsidized sector employment (either public or private).

They find that European countries with close cultural backgrounds tend to implement the same types of programmes. They identify a "Germanic" group made up of Austria, Germany and Switzerland, a "Nordic" group made up of Denmark, Finland, Norway and Sweden, and an "Anglo-Saxon" group made up of Australia, Canada, New Zealand, the United Kingdom and the United States. The Germanic group is more keen than others on implementing "classroom or work experience training" programmes (about two thirds of the programmes), while such programmes are only implemented 26 per cent of the time in the Nordic countries and 35 per cent of the time in the Anglo-Saxon countries. Anglo-Saxon countries are much more likely than others to use job-search assistance programmes (30 per cent of the programmes, compared with less than 10 per cent in Germanic and Nordic countries). The Nordic countries, however, tend to favour subsidized private sector employment (20 per cent of the programmes compared with 3 per cent in Germanic and 10 per cent in Anglo-Saxon countries). Another key difference among these three groups of countries is the people targeted by the programmes. In the Germanic group, almost all programmes (94 per cent) target unemployed workers (registered as such). In the Anglo-Saxon countries, this figure is only 15 per cent, and they prefer to target other disadvantaged groups such as the long-term disadvantaged who voluntarily enrol through community outreach programmes. The Nordic countries lie between these two groups. These differences in the types of programmes implemented highlight the differences in preferences countries have when it comes to labour market policies. Another interpretation is that countries belonging to the same group share some similarities in terms of labour regulations and institutions and, in the eyes of policy-makers, these programmes constitute the best response to the labour market frictions they identify.

The studies usually consider one (or more) of the following labour market outcomes: the probability of employment at a future date; a future wage; and a spell of unemployment. They find that short-term impacts appear to be relatively unfavourable in the Germanic group but relatively favourable in the Anglo-Saxon countries. This is not very surprising considering Germanic countries are more

likely to use training programmes, the benefits of which may take more time to materialize, and Anglo-Saxon countries are more likely to use job-search assistance programmes, which have more short-term effects. The results from Card et al. (2018) are summarized in Box 4.

Box 4: Summary of results from Card et al. (2018)

- **Timing matters** when assessing the effectiveness of programmes: most programmes show no effect (or even negative effect) after one year, and positive effects after two or three years.
- **Training programmes** are associated with *positive medium-term impacts (after two years)*, although in the short term they often appear ineffective. The aim of these programmes is to provide workers with additional skills rather than bring them back to work right away. In the year following completion of a programme (i.e. short term), workers on the programme are 1–3 per cent more likely to have found a job than otherwise equivalent workers who were not on the programme. The medium-term (1–2 years) impact is around 3–5 per cent and the long-term impact is 5–12 per cent. They compare these figures to the average employment rate of high-school dropouts and workers with 1–2 years of community college in the United States, which is about 10 per cent. The long-term impact they estimate, 5–12 per cent, is therefore economically significant.
- **Job-search assistance** has positive impacts in the short- and long-term.
- **Private sector employment incentives** have significant effects in the medium- and long-term.
- **Subsidized public employment** programmes are generally not successful, with very small positive or even negative impacts over all time horizons.
- Programmes targeting **young people** are less likely to produce positive impacts than untargeted programmes, and effects tend to be larger for **women** and **long-term-unemployed** workers.[11]
- **The business cycle matters**: the effects of programmes tend to be greater in periods of slow growth and high unemployment.
- Estimates derived from **randomized experiments** are not systematically different from non-experimental estimates.

Finally, another policy, called "short-time work", is used in most OECD countries, and has been applied particularly during the Great Recession. This policy consists in preserving jobs by reducing the number of hours worked in firms facing a *temporary* drop in revenues, for instance. The burden of adjustment is shifted from layoffs to reduced working time. Using detailed data on French firms during the crisis, Cahuc et al. (2018) show that this measure helped firms that were the most severely hit by the crisis. They also show that the programme is relatively less costly than other employment policies.[12] It is important to stress that a key ingredient for the success of short-time work programmes is their temporary nature.

Active labour market policies in developing countries

Active labour market policies are less common in developing countries. One exception is Latin American and Caribbean countries, which have been implementing such programmes since the mid-1990s. We first review the evidence on the effectiveness of active labour market programmes in these countries, and then draw on a survey by McKenzie (2017) to present evidence for other developing countries. It is important to bear in mind that institutions and labour markets in general are different in developing countries (where there is a high level of informality and little or no unemployment insurance) from those in developed countries. The success or failure of labour market policies (or any other type of policy) is contingent upon the relevant institutions and labour market characteristics. Hence, any direct comparison between the two groups of countries regarding the effectiveness of active labour market policies is hazardous.

Programmes in Latin America and the Caribbean

We draw on a recently published study by Escudero et al. (2018).[13] It is a meta-analysis of the impact of 53 active labour market programmes on several labour market outcomes (employment, wages, hours worked and formality) over the period 1990–2012. The authors consider training programmes, labour market intermediation services (such as job-search assistance) and private sector incentives.[14] Their results are summarized in Box 5.

Box 5: Summary of results from Escudero et al. (2018)

- Programmes have a stronger impact on the **probability of being (formally or not) employed** than on the number of hours worked or on wages, and their effects do not differ between the short term and medium term (contrary to what Card et al. (2018) find for OECD countries).

- Programmes have stronger effects on **women** and **young people**, especially in the medium term.
- **Training programmes** also increase earnings, and effects on earnings and employment are larger for poorer workers.
- Estimates derived from **randomized experiments** are not systematically different from non-experimental estimates.

Programmes in other developing countries

This section draws upon the work of McKenzie (2017) at the World Bank. Countries surveyed in this study (Argentina, India, Jordan, Kenya, Malawi, the Philippines, Turkey) are quite diverse in terms of their economic development, institutions and geographic location. Labour market programmes surveyed fall into three categories: vocational training programmes (12 studies),[15] wage subsidies (3 studies) and job-search and matching assistance (9 studies). We report here the main findings of the studies as well as their cost-effectiveness.

Vocational training programmes

Over the period 2002–2012, the World Bank invested around US$1 billion each year in training programmes. The reason for such investment is that some workers do not find jobs because they lack the necessary skills firms demand, and those skills can be learned in a relatively short period of time. Most studies evaluated the impact of the programme 12–18 months after it ended.

Of the nine studies looking at the employment impact of the programme, only three found a positive impact (Colombia, India and Kenya).[16] Studies looking at the probability of finding a *formal* job found a positive and significant effect of training (Argentina, Colombia and Peru). It is important to ask to what extent these training programmes work. Two possible answers are given by McKenzie. First, one could compare the return to a training programme to the return to schooling. According to Montenegro and Patrinos (2014), the average proportion of school graduates who return for an additional year of schooling is around 10 per cent. McKenzie finds that the effects on wages of training programmes are in line with this figure. However, these programmes are very expensive (about 50 times the average income) and largely fail to pass a simple cost-benefit analysis.

Job-search and matching assistance programmes

Job search and matching assistance consists of helping workers and firms find each other and achieve a good match. These programmes are usually quite

cheap to implement (McKenzie reports an average cost of US$25 per person). However, of the 9 studies surveyed, only one shows a positive impact of job-search assistance on employment. Improved matching may only benefit workers with higher education. McKenzie points out that "Being able to signal your skills can be good if you have high skill levels, but disadvantageous if your skill levels are below those of other jobs-seekers". Several studies argue that the *quality* of the match is enhanced, with workers moving from self-employment to permanent employment. Whether this constitutes an improvement for workers remains an open question, as some of them may have chosen willingly to be self-employed and informally employed. In addition, other channels may operate in the informal sector through which firms and workers match up. Sending CVs and cover letters may matter much less in the informal sector, where social networks and connections among workers and family members possibly play a much more important role.

So how can governments help workers transition to a new job? Most studies have found that many workers actually quit after a few months in the new job. There seems to be a very strong mismatch between what the jobseekers are being offered through these programmes and what they are actually looking for. On the firm's side, McKenzie reports that "Simple queries of firms often find firms saying that they find it hard to find the right workers. But one also sees firms being reluctant to raise wages or spend more money in getting better matches." In many developing countries, laws regulating hiring and firing costs are quite strict. One way to help workers get jobs would perhaps be to help firms comply with onerous regulations that prevent firms from hiring.

Another important labour market failure occurs across space. Mobility across regions may be made difficult by the lack of adequate transport infrastructures, among other things. What passes for skills mismatch or difficulty for firms in finding the right workers may actually be due to the limited geographic mobility of workers, especially in rural areas or between urban and rural areas. McKenzie argues that "employment opportunities for the same skills [are very different] depending on where individuals are located". In this particular context, subsidizing bus tickets, for instance, could help workers look for jobs in other parts of the cities or other regions. Empirical evidence suggests that such a (cheap) programme can have substantial effects (Bryan et al., 2014).

Finally, McKenzie concludes by pointing out that the lack of significant results in the few studies surveyed may actually be seen as a good news: "One reason for this lack of effectiveness is a positive one: labour markets (at least [those in]

urban areas) in developing countries actually appear to work a lot better than is sometimes thought." Other factors may prevent firms from expanding, such as hiring and firing regulations or access to credit. The solution to these issues lies outside the realm of active labour market policies, however.

Special programmes

The labour market policies described in the previous sections are for all workers, regardless of the sector they were employed in or the reason they lost their job. Some programmes – so-called "special programmes" – have been specifically designed to help workers adversely affected by international trade or globalization to go back to work. In this section we review two special programmes: the Trade Adjustment Assistance programme in the United States and the European Globalization Fund.

Trade Adjustment Assistance in the United States[17]

The Trade Adjustment Assistance (TAA) programme in the United States provides support to workers displaced or threatened with displacement because of international trade (Box 6). TAA was initially designed in 1962 to compensate workers for tariff cuts being negotiated under the Kennedy Round of multilateral negotiations.[18] Successive revisions since 1962 have broadened its scope and improved its efficiency. It is an important component of United States foreign trade policy.[19] Up until the turn of the 20th century, TAA was essentially a training programme for workers. When TAA was created, there was little debate about the impact of trade on workers.[20] To be eligible for TAA, the main criterion, according to the United States Department of Labour was that "workers have been totally or partially laid off and that sales or productions have declined, and that increased imports have contributed importantly to worker layoffs". While this criterion still applies, the range of workers covered has substantially changed since 1962. Currently, TAA comprises four programmes targeting, respectively, workers, firms, farmers and fishers, and communities. TAA for workers is by far the largest. The bulk of the programme is a wage support system and it has been augmented over the years with case management and training programmes.

Obtaining TAA benefits is a two-stage process. First, a worker or group of workers must petition the Department of Labour to assess whether their jobs have been lost due to increased foreign competition. Workers are eligible when they have been totally or *partially* separated from their job.[21] Petitions may be filed by workers themselves or by their representative, such as their union, or by the firm itself.

Box 6: Trade Adjustment Assistance in the United States

Eligibility criteria:

- **Increase in imports**: Sales of the petitioning firm have been significantly reduced at the same time as imports have been increasing.
- **Offshoring**: The petitioning firm has moved the job of the worker overseas, or has offshored some activities that are now competing with the worker's job.
- **Secondary workers**: The petitioning firm is a downstream or upstream producer for a TAA-certified firm and either (i) the sales of the TAA-certified firm accounted for at least 20 per cent of its sales/purchases, or (ii) loss of business with a TAA-certified firm contributed importantly to the workers' job losses.
- **United States International Trade Commission (USITC) workers**: Workers separated from firms that have been identified by the USITC as hit by market disruptions or other negative actions.
- Data from Rosen (2008) show that, in 2007, around 1,000 petitions were filed, covering 93,000 workers. Of these, 46 per cent had lost their jobs because of an increase in imports, 9 per cent were secondary workers and 44 per cent had lost their jobs due to production moving overseas.

Once eligible, workers are entitled to the following assistance:

- Case management and employment services: A full assessment of the worker's skills and competences, job-search assistance and a relocation allowance.
- Training programmes: In 2015, the majority (88 per cent) of TAA training participants followed occupational skills training (in classrooms, and on specific occupations).
- Income support (Trade Readjustment Allowance): Weekly income support for workers who have exhausted their unemployment compensation benefits and are enrolled in training.
- Health Coverage Tax Credit: Covers 72.5 per cent of the health insurance premium while a worker is unemployed.
- Re-employment Trade Adjustment Assistance (RTAA): Wage compensation for workers over 50 years old who find a job at a lower wage than their previous job.

- **TAA for farmers and fishers**: Established in 2002, this is an income support mechanism. For farmers, it targets specific crops, as well as technical assistance aimed at improving crop yield or promoting diversification. Unlike the other programmes, this is long-term assistance to farmers and fishers.[22]

Overall, empirical evidence about the effectiveness of TAA is mixed, and directly comparing the results across studies is hazardous because TAA eligibility criteria have changed substantially over time. As emphasized in an article in *The Economist* (2017), the TAA programme can be "confusing and administratively complex" and was "set up without any proper system to gauge its effectiveness". The most recent and most rigorous evaluation of the programme is proposed by Hyman (2018). Analysing data on about 300,000 workers over the period 1990–2011 he, like others before him, finds initial large positive impacts of TAA on worker earnings. Workers who take up training through TAA lose about US$10,000 right away (as they are in training and not working) but, 10 years later, they have cumulative earnings US$50,000 higher than those of similar workers who did not take up training. Hyman interprets this as a premium to the newly acquired human capital. He also finds that the annual incomes of TAA and non-TAA trainees have fully converged after 10 years. This suggests that TAA works as a short-term cushion for workers by providing them with the necessary skills they need to find jobs quicker. However, many of these training programmes are vocational training, and this suggests that the skills trainees learn may become obsolete or be less in demand 10 years later, which shows up in the aforementioned convergence of incomes. Another, more comprehensive analysis is provided by D'Amico and Schochet (2012), although it spans a shorter period of time (focusing on what happens to workers up to four years after joining the programme). Their study assesses the 2002 version of TAA and uses data collected between 2004 and 2011. They compare TAA workers with workers who are not eligible for TAA but are covered by unemployment insurance.[23] They find that, after four years, both categories of workers were similar in terms of employment (number of weeks) and earned about the same wage. However, younger workers do better than older ones, and workers receiving training (especially those entering the programme soon after losing their job) do better than those receiving only income support. Their results suggest that TAA is not necessarily a very effective programme. In their most optimistic results, TAA workers do just as well as other workers.

The European Globalization Fund

The European Globalization Adjustment Fund (EGF) was launched in 2007 by the European Union (EU) to help support workers made redundant by

international trade (Box 7). Trade policy is an exclusive competence of the EU and one can see the creation of the EGF as a way for the EU to address the adverse effect its policy can have on its citizens and to "show solidarity towards workers affected by redundancies resulting from changes in world trade patterns" (European Parliament and Council of the European Union, 2006). The EGF is a short-term instrument aimed at dealing with unexpected circumstances. The current annual budget of the Fund is €150 million. In comparison, the other major EU programme that deals with long-term labour adjustment, the European Social Fund (ESF), has an annual budget of €12 billion, about 10 per cent of the entire EU budget.[24]

The Fund provides member States with additional funding to carry out active labour market policies in situations where "major structural changes in world trade patterns lead to a serious economic disruption, notably a substantial increase of imports into the EU, or a rapid decline of the EU market share in a given sector or a delocalisation to third countries" (European Parliament and Council of the European Union, 2006). The Fund does not finance labour market programmes directly, nor does it provide direct assistance to workers. Such programmes remain a national competency of each EU member State. Currently, the EGF can cover up to 60 per cent of a programme's cost. Box 4 describes the eligibility criteria and the type of programme the EGF can help finance. To be eligible for EGF financing, workers must show they have been made redundant as a result of "the global financial and economic crisis". The EGF covers all types of workers, including self-employed and temporary workers, workers displaced by international trade in services and workers from the service sector. It is planned to extend the eligibility criteria to workers who lose their jobs for reasons such as automation or digitalization. The new programme would also lower the eligibility threshold to 250 displaced workers.[25]

Box 7: European Globalization Fund

Eligibility criteria:

- At least 500 workers made redundant in a single firm in a member State over a period of four months.
- At least 500 workers made redundant, particularly from small and medium-sized businesses (SMEs), or self-employed persons' activity ceasing, over a period of nine months, all operating in the same economic sector and located in one region or two contiguous regions.

- In small labour markets where the previous points do not apply, the redundancies must have a serious impact on employment and on the local, regional or national economy.

Once eligible, workers are entitled to the following assistance:

- Tailor-made training and retraining, job-search assistance, occupational guidance, entrepreneurship promotion, aid for self-employment, business start-ups. The cost of self-employment, business start-up or employee takeover may not exceed €15,000.
- Special time-limited measures, such as job-search allowances, employers' recruitment incentives, mobility allowances, subsistence or training allowances. These measures may not exceed 35 per cent of the total cost of the package.
- Measures to stimulate disadvantaged, older and young unemployed persons in particular to remain in or return to the labour market.

Source: European Parliament and Council of the European Union (2013).

The rather high threshold for redundancies suggests that "political visibility, though not a stated objective, is an obvious goal of the EGF" (Claeys and Sapir, 2018). Financial contributions from the EGF are primarily directed at active labour market measures aimed at rapidly reintegrating beneficiaries into sustainable employment. It is clearly stated in its statutes that the EGF "shall not substitute passive social protection measures". The EGF provides financial support for "coordinated packages of personalized services" and strongly favours programmes targeting "disadvantaged, older and young unemployed persons" (European Parliament and Council of the European Union, 2013).

As the EGF is a new programme, empirical evidence about its impact is rather scarce. One key limitation is the lack of data to assess its impact on workers' employment and earnings. It is not currently possible to determine whether those who benefited from EGF financing did better than those who did not. Claeys and Sapir (2018) argue that some aspects of the effectiveness of the EGF can nonetheless be assessed, including (i) its political visibility, and (ii) the proportion of affected workers made redundant who were actually helped by the EGF. Using information from the European Restructuring Monitor, which provides data on the media coverage of large restructuring events, they find that all cases submitted to the EGF were covered, suggesting it has high media visibility. Regarding the

proportion of workers affected by globalization who were actually helped by the EGF, they estimate that the EGF helped about 4 per cent of workers adversely affected by globalization between 2007 and 2016. The question is, then, why such a low proportion of workers have benefited from the EGF. Puccio (2017) provides some elements of an answer. First, the eligibility criteria may be too strict. The threshold of 500 workers may be too high for countries with few very large firms. Second, intra-EU competition or offshoring is not an eligibility criterion, which may reduce the scope of the potential candidate pool. Third, the administrative process can take up to 12 months between application and approval of funds. Finally, the way co-financing works could be improved. The co-financing rate of 60 per cent may be too low for some countries, especially Eastern European countries that mostly rely on the more generous ESF to finance labour market policies.

Other adjustment programmes

Canada

In 1965, Canada introduced a special programme directed at workers from the automobile industry after signing the Auto Pact with the United States. Between 1971 and 1982, another programme was introduced that primarily targeted textile and apparel workers. These two programmes were providing workers with additional unemployment benefits. They both ceased in 1988 (Lysenko et al., 2017).

Australia

Australia launched a Special Adjustment Assistance (SAA) programme in 1974, following a unilateral reduction in import tariffs by 25 per cent. Assistance for workers came in the form of wage insurance over a period of six months. Eligible firms were granted financial support, technical assistance and loan guarantees. Both programmes were suspended permanently in 1977 (Stein, 1982).

Mexico

Anticipating the impact of NAFTA on its agricultural sector, in 1993, the Mexican Government launched a programme of income support to farmers (PROCAMPO). The programme funding was significantly reduced in the wake of the peso crisis two years later. Two additional programmes complemented it: Alianza para el Campo, aiming at improving agricultural productivity, and Produce Capitaliza, aiming at providing assistance in infrastructure and extension-type projects (Villareal, 2010).

Republic of Korea

Korea's Trade Adjustment Assistance (TAA) programme was created in 2007 when the country was signing trade agreements with the United States and the

European Union (see Kim and Park in this volume). The Korean TAA is mostly directed towards firms in the form of financial support as technical assistance and loans at a discounted rate. Firms are eligible if their production or sales have been reduced by 25 per cent due to an increase in imports over a period of six months from countries with which Korea has a free trade agreement (Cheong and Cho, 2011).

Are special programmes necessary?

A question that naturally arises is whether special programmes are necessary to help workers adversely affected by globalization. The TAA in the United States is mostly an income support system, and the EGF is used to co-finance national active labour market policies. It is clear that the *design* of these programmes is not specific to workers made redundant by globalization.

As mentioned in the first part of this chapter, such programmes can be justified on the ground that workers adversely affected by globalization are different from other displaced workers. However, empirical evidence for the United States compiled by Kletzer (2001) suggests that trade-displaced workers are not different from other manufacturing workers who lose their jobs. Kletzer finds no difference in terms of age, education or job tenure between the two categories of workers laid off because of import competition and workers laid off because of automation, for instance. The only difference is that international trade displaces women disproportionately because it hits sectors that employ them in relatively higher proportions than men. Kletzer finds that differences arise when looking at the re-employment probability and at earning losses. The data show that about two thirds of the trade-displaced workers were not re-employed when surveyed, a much larger proportion than the rest of manufacturing workers. Earning losses are also larger for trade-displaced workers than for other workers. The average loss is 13 per cent for trade-displaced workers but less than 4 per cent for non-trade-displaced workers. Furthermore, the 13 per cent average hides strong heterogeneity: one third of workers reported earning more or less the same as in their previous job, while one quarter reported earning losses of up to 30 per cent and more. The message from Kletzer's paper and the rest of the literature is that what matters is the type of job you lose and the type you get, rather than the reason why you lost your job in the first place or the industry in which you were employed (Kletzer, 2004). Remaining in the same sector strongly reduces the earning loss. [26] Kletzer further emphasizes that "mobility across sectors is not constrained, but without training a new job in a new sector will pay less than the old job".

In addition, providing help to workers made redundant by globalization can be seen as an unfair practice. Baicker and Rehavi (2004) argue that "[I]t is not clear why a program should single out workers adversely affected by international trade,

rather than providing retraining and income support to all workers in shrinking sectors or even all unemployed workers". If governments are concerned with helping workers in times of unemployment or transition, providing such assistance only to workers displaced by trade is a rather unfair practice. It singles out a category of workers based on their industry of employment, the list or definition of which could be quite subjective.

Finally, the multiplicity of programmes can sometimes make it complicated for workers to know exactly which programme they should apply to. This has been a recurrent result in the literature reviewing the effectiveness of special or targeted programmes. Many workers either do not know about the programmes they are entitled to or do not bother applying to them because of administrative delays.

Other policies

Beyond active and passive labour market policies, governments have other tools at their disposal to facilitate the movement of workers between sectors and regions. In this section we briefly discuss the role of education policies, geographic mobility, place-based policies and credit market policies.

Providing high quality education to its citizens is a key priority of most governments, and the benefits are both economic and social. There is a vast literature estimating the impact of a return to schooling on earnings and other non-market outcomes in both developed and developing countries (Heckman et al., 2018; Peet et al., 2015). Besides a return to schooling having a positive impact on earnings, there is also evidence that people with a high quality education are more likely to adopt and adapt to new technologies. Greater exposure to globalization very often puts pressure on firms to adopt new technologies in order to create new products or simply to remain competitive. While active labour market policies providing workers with additional training and skills surely help them cope with the adoption of new technologies, general education is a crucial component of the success of such programmes. Providing high quality education can help workers adjust faster to shocks related to globalization.

Governments may also facilitate the mobility of workers across regions within a country. Worker mobility is an important component of a well-functioning labour market and facilitating internal migration through better transport infrastructures can help workers get to where jobs are. Another aspect of geographic mobility is having access to information about jobs located in different parts of the country. Development of the Internet has strongly contributed to making this kind of information available nationwide at very low (if any) cost in high-income countries. According to the World Bank Indicator, around 80 per cent of the population in

high-income countries were using the Internet in 2017, 42 per cent in middle-income countries and just 15 per cent in low-income countries. This provides an interesting context to the finding of Artuç et al. (2015) that labour mobility costs are higher in poorer developing countries.

Another type of policy that governments use to stimulate the creation of jobs in particular places are so-called "place-based" policies. Such policies typically provide incentives for firms to move to (or set up in) a particular location. When targeted firms belong to similar sectors (or have strong buyer/supplier links), we observe the emergence of "industrial clusters". Empirical evidence for France (Martin et al., 2017) shows that firms located in industrial clusters tend to remain in the market longer than other firms. However, the authors do not find any evidence that such firms were more resilient during the 2008–2009 crisis.[27]

Conclusion

To conclude, we want to reiterate that the design of labour market policies (passive and active) are specific to each country, which has its own institutions, regulations, social preferences and history. There is no one-size-fits-all policy that will miraculously bring about full employment, no matter where or when it is applied. Nevertheless, systematic steps should be taken by policy-makers when designing policies aiming at helping workers adversely affected by globalization, or any other type of shock (such as technological).

We believe the first necessary step is to identify the existing frictions in the labour market that prevent firms and workers meeting one another. These might include, for example, labour regulations (hiring/firing regulations, administrative procedures), skills mismatches (demand for certain skills that are in short supply), information asymmetries (workers not knowing about job openings and firms not knowing where to find workers), geographic mobility issues (workers may not be able to move easily if offered a job somewhere outside their residential area). This exercise of identifying the existing labour market frictions is necessary for any type of policy aiming at maximizing employment.

A second crucial step is to identify the reason for policy intervention. Careful identification of the particular shock the policy should address is of utmost importance. Is the shock affecting all workers in a given sector? Does it mostly affect a certain "type" of worker (young/older, male/female, with particular skills, task or job and job tenure) across many sectors? Is the shock geographically concentrated? Is it transitory or likely to be permanent?

Given the existing frictions and the nature of the shock, a policy in accordance with existing institutions and social preferences can be designed. Critically, the policy should be implemented in such a way that an ex-post evaluation can be carefully performed to assess its effectiveness.

Endnotes

1. In an attempt to distinguish the contributions of technological changes and offshoring, Goos et al. (2014) find that new technologies have contributed more to the polarization of the labour market in OECD countries than has offshoring.

2. In the words of Polanyi (1944) labour market institutions represent an important part of the "compromise of embedded liberalism" of the post-World War II era.

3. Governments should compensate workers who have to relocate by offering them compensation in the form of a moving subsidy or training subsidy, for instance. However, as emphasized by Kaplow (1986), compensation can potentially create inefficient investment incentives.

4. The way reforms are carried out is also important and may help mitigate their adverse effects. For instance, when negotiating tariff reductions, countries can agree upon gradual phasing of their tariff schedule, thus providing governments with time to help workers in the sectors facing tariff reduction (Bacchetta and Jansen (eds), 2011). Trade agreements can also include safeguard measures whereby temporary tariffs can be implemented in order to give domestic producers time to adjust to the new competition.

5. To be more precise, as long as the differences between workers who receive job-search assistance and those who do not are not systematically correlated with the probability of receiving job-search assistance, the control group is deemed suitable.

6. Card et al. (2011) propose a very interesting "practitioner's guide" to the evaluation of active labour market programmes. See also Fitzsimons and Vera-Hernández (2009) for a general presentation of various evaluation techniques.

7. Differences in institutions and policies across rich countries are also referred to as different "varieties of capitalism" (Hall and Soskice, 2001).

8. The major difference between unemployment insurance in the OECD and a UISA is that the former delinks the amount of benefits from contributions while the latter has a one-to-one link between the two. Individuals in a UISA cannot receive more benefits than they have contributed – they cannot have a deficit in their account; however, such a deficit is always a feature of unemployment insurance, through redistribution (low-wage workers receive more than their contribution).

9. Estevez-Abe et al. (2001) argue that the generosity of social protection can influence the types of skills workers acquire. Providing workers with generous employment or wage insurance gives them greater incentives to invest in firm- or sector-specific skills. They argue that, in the case of the United States or United Kingdom, where insurances are low, workers have greater

incentives to invest in transferable skills. This in turn shapes the comparative advantage structure of the economy.

10. A meta-analysis is a study that reports the main result of a large number of studies and aims at uncovering broad patterns. While most labour market studies focus on a single country, meta-analyses cover a broad range of countries and try to explain differences found in the results of the various studies.

11. In their 2010 study they find no difference between men and women.

12. The literature on short-time work is limited, due to the scarcity of appropriate data to assess its effectiveness. Early contributions include Van Audenrode (1994) and Cahuc and Carcillo (2011); more recent is Giupponi and Landais (2018).

13. A general discussion on active and passive labour market policies in Latin American and Caribbean countries can be found in a study by the ILO (2016).

14. Card et al. (2018) also include estimates from training programmes in Latin American and Caribbean countries. All these programmes target disadvantaged workers. However, Card et al. do not provide any general result specific to this group of countries.

15. Studies cover Argentina, Colombia, the Dominican Republic, India, Kenya, Malawi, Peru and Turkey.

16. See McKenzie's paper for corresponding references.

17. This section draws strongly on the work of Hornbeck (2013), Rosen (2002, 2008), Baicker and Rehavi (2004), Guth and Lee (2017) and Collins (2016).

18. President J. F. Kennedy famously argued that "[t]hose injured by trade competition should not be required to bear the full brunt of the impact. Rather, the burden of economic adjustment should be borne in part by the federal government. . . [T]here is an obligation to render assistance to those who suffer as a result of national trade policy" (Kennedy, 1962).

19. Rosen (2002) describes how TAA is used politically to allow for trade liberalization bills to be passed: "From the outset, the primary motivation behind a special program to assist workers who lose their jobs associated with increased imports was based on political considerations. TAA was a part of a package to win AFL-CIO support for the Trade Expansion Act of 1962. It was also believed that TAA would make it easier for members of Congress to support efforts at trade liberalization."

20. At that time, imports into the United States were low (less than 5 per cent of GDP) and the country was running a trade surplus.

21. Partial separation is when working hours and wages have been reduced by more than 20 per cent.

22. The annual amount spent on the TAA for farmers and fishers programme is small – in 2006, it was less than 0.1 per cent of total United States farm income support. In comparison, the European Union devotes 10 per cent of the common agricultural policy (CAP) budget to positive adjustment in farming and fishing.

23. Hyman (2018) uses as a control group workers who have been denied TAA benefits. He uses random allocation of the petitioners to TAA advisers with different acceptance rates.

Some advisers systematically report below or above average rejection rates. Hyman argues that part of the final decision is random and strongly influenced by the leniency of the adviser. The key point is that some workers who have been denied TAA benefits would have benefited from them had they been assigned a more lenient adviser.

24. The initial annual budget for the EGF was €500 million in the 2007–2013 budgetary cycle. It was reduced to €150 million for the 2014–2020 framework since expenditures never went above this amount. It is planned to increase this cap to €200 million for the 2021–2027 budget cycle.

25. European Commission (http://ec.europa.eu/social/main.jsp?langId=en&catId=326&newsId=9114&furtherNews=yes&furtherNews=yes) (accessed 11 July 2018).

26. There can be many factors explaining this, such as more efficient job searching, better matches with the employer, better transferability of specific human capital, etc.

27. See Harrison and Rodríguez-Clare (2010) and Neumark and Simpson (2015) for further discussion about cluster and place-based policies respectively.

References

Akman, S., Brandi, C., Dadush, U., Draper, P., Freytag, A., Kautz, M., Rashish, P., Schwarzer, J. and Vos, R. (2018), "Trade, investment and tax cooperation: Mitigating the adjustment costs of international trade", Trade, Investment and Tax Cooperation Task Force Brief, T20 Argentina.

Artuç, E., Chaudhuri, S. and McLaren, J. (2010), "Trade shocks and labor adjustment: A structural empirical approach", *American Economic Review*, 100(3): 1008–1045.

Artuç, E., Lederman, D. and Porto, G. (2015), "A mapping of labour mobility costs in the developing world", *Journal of International Economics,* 95(1): 28–41.

Artuç, E. and McLaren, J. (2015), "Trade policy and wage inequality: A structural analysis with occupational and sectoral mobility", *Journal of International Economics*, 97(2): 278–294.

Autor, D. H., Dorn, D. and Hanson, G. H. (2013), "The China syndrome: Local labor market effects of import competition in the United States", *American Economic Review,* 103(6): 2121–2168.

Bacchetta, M. and Jansen, M. (eds), (2011), *Making Globalization Socially Sustainable*, Geneva: International Labour Organization (ILO), World Trade Organization (WTO).

Baicker, K. and Rehavi, M. M. (2004), "Policy watch: Trade Adjustment Assistance", *Journal of Economic Perspectives,* 18(2): 239–255.

Baldwin, R. (2019), *The Globotics Upheaval: Globalization, Robotics, and the Future of Work*, Oxford: Oxford University Press.

Bernstein, J. (2018), "What governments can do for the losers from free trade", *The Economist*, 22 May.

Bryan, G., Chowdhury, S. and Mobarak, A. M. (2014), "Underinvestment in a profitable technology: The case of seasonal migration in Bangladesh", *Econometrica*, 82(5): 1671–1748.

Cahuc, P. and Carcillo, S. (2011), "Is short-time work a good method to keep unemployment down?", *Nordic Economic Policy Review,* 1(1): 133–165.

Cahuc, P., Kramarz, F. and Nevoux, S. (2018), "When Short-Time Work Works", CEPR Discussion Paper No. 13041, London: Centre for Economic Policy Research (CEPR).

Card, D., Ibarrarán, P. and Villa, J. M. (2011), "Building in an Evaluation Component for Active Labour Market Programs: A Practitioner's Guide", Discussion Paper No. 6085, Bonn: Institute for the Study of Labor (IZA).

Card, D., Kluve, J. and Weber, A. (2010), "Active labour market policy evaluations: A meta-analysis", *Economic Journal,* 120: 452–477.

Card, D., Kluve, J. and Weber, A. (2018), "What works? A meta analysis of recent active labour market program evaluations", *Journal of the European Economic Association,* 16(3): 894–931.

Cheong, I. and Cho, J. (2011), "Reforms of Korea's Trade Adjustment Assistance Program for its bilateral free trade agreements with the European Union and the United States", *Asian Economic Papers,* 10(1): 32–55.

Claeys, G. and Sapir, A. (2018), "The European Globalisation Adjustment Fund: Easing the pain from trade?", Breugel Policy Contribution No. 5, Brussels: Breugel.

Collins, B. (2016), *Trade Adjustment Assistance for Workers and the TAA Reauthorization Act of 2015*, Washington, D.C.: Congressional Research Service.

Cruz, M., Milet, E. and Olarreaga, M. (2018), "Labor adjustment costs across sectors and regions", Policy Research Paper No. 8233, Washington, D.C.: World Bank.

D'Amico, R. and Schochet, P. Z. (2012), *The Evaluation of the Trade Adjustment Assistance Program: A Synthesis of Major Findings: Final Report Prepared as Part of the Evaluation of the Trade Adjustment Assistance Program*, Oakland (CA): Social Policy Research Associates, Mathematica Policy Research.

Davidson, C. and Matusz, S. J. (2000), "Globalization and labour-market adjustment: How fast and at what cost?", *Oxford Review of Economic Policy*, 16(3): 42–56.

Davidson, C. and Matusz, S. J. (2006), "Trade liberalization and compensation", *International Economic Review*, 47(3): 723–747.

Dix-Carneiro, R. (2014), "Trade liberalization and labour market dynamics", *Econometrica,* 82(3): 825–885.

Dix-Carneiro, R. and Kovak, B. K. (2017), "Trade liberalization and regional dynamics", *American Economic Review*, 107(10): 2908–2946.

Escudero, V. (2018), "Are active labour market policies effective in activating and integrating low-skilled individuals? An international comparison*", IZA Journal of Labor Policy*, 7(1): 1–26.

Escudero, V., Kluve, J., López Mourelo, E. and Pignatti, C. (2018), "Active labour market programmes in Latin America and the Caribbean: Evidence from a meta-analysis", *Journal of Development Studies*, DOI: 10.1080/00220388.2018.1546843.

Estevez-Abe, M., Iversen, T. and Soskice, D. (2001), "Social Protection and the Formation of Skills: A Reinterpretation of the Welfare State", in *Varieties of Capitalism: The Institutional Foundations of Comparative Advantage*, Hall, P. A. and Soskice, D. (eds.), Oxford: Oxford University Press.

European Parliament and Council of the European Union (2006). Regulation (EC) No 1927/2006 of The European Parliament and of the Council of 20 December 2006 on Establishing the European Globalisation Adjustment Fund, *Official Journal of the European Union*, 20 December 2013, L.406: 1–6.

European Parliament and Council of the European Union (2013). Regulation (EU) No 1309/2013 of the European Parliament and of the Council of 17 December 2013 on the European Globalisation Adjustment Fund (2014–2020) and repealing Regulation (EC) No 1927/2006. *Official Journal of the European Union*, 20 December 2013, L.347: 855–864.

Ferrer, A. M. and Riddell, W. C. (2011), "Unemployment Insurance Savings Account in Latin America: Overview and Assessment", Discussion Paper 5577, Bonn: Institute for the Study of Labor (IZA).

Fitzsimons, E. and Vera-Hernández, M. (2009), "A Practitioner's Guide to Evaluating the Impact of Labour Market Programs", World Bank Employment Policy Primer No. 12, Washington, D.C.: World Bank.

Foroohar, R. (2018), "Why workers need a 'digital New Deal' to protect against AI", *Financial Times*, 19 Feb.

Francois, J., Jansen, M. and Peters, R. (2011), "Trade, Adjustment Costs and Assistance: The Labour Market Dynamics", in Jansen, M., Peters, R. and Salazar-Xirinachs, J. M. (eds.), *Trade and Employment: From Myths to Facts,* Geneva: International Labour Office (ILO).

Gerard, F. and Naritomi, J. (2019), "Job Displacement Insurance and (the Lack of) Consumption-Smoothing", NBER Working Paper 25749

Giupponi, G. and Landais, C. (2018), "Subsidizing Labor Hoarding in Recessions: The Employment & Welfare Effects of Short-Time Work Programs", CEPR Discussion Paper No. 13310, London: Centre for Economic Policy Research (CEPR).

Goos, M., Manning, A. and Salomons, A. (2009), "Job polarization in Europe", *American Economic Review*, 99(2): 58–63.

Goos, M., Manning, A. and Salomons, A. (2014), "Explaining job polarization: Routine-biased technological change and offshoring", *American Economic Review*, 104(8): 2509–2526.

Greenberg, D. H., Michalopoulos, C. and Robins, P. K. (2003), "A meta-analysis of government-sponsored training programs", *Industrial and Labor Relations Review,* 57(1): 31–53.

Guth, J. and Lee, J. (2017), "A Brief History of the U.S. Trade Adjustment Assistance Program for Workers", USITC Executive Briefings on Trade, Washington, D.C.: United States International Trade Commission (USITC).

Hall, P. A. and Soskice, D. (eds.) (2001) *Varieties of Capitalism: The Institutional Foundations of Comparative Advantage*, Oxford: Oxford University Press.

Harrison, A. and Rodríguez-Clare, A. (2010), "Trade, Foreign Investment, and Industrial Policy for Developing Countries", in Rodrik, D. and Rosenzweig, M. R. (eds.), *Handbook of Development Economics*, Vol. 5, Amsterdam: Elsevier.

Heckman, J. J., Humphries, J. E. and Veramendi, G. (2018), "Returns to education: The causal effects of education on earnings, health, and smoking", *Journal of Political Economy*, 126(S1): 197–246.

Heckman, J. J., Lalonde, R. J. and Smith, J. A. (1999), "The Economics and Econometrics of Active Labor Market Programs", in Ashenfelter, O. C. and Card, D. (eds.), *Handbook of Labour Economics*, Vol. 3, Amsterdam: Elsevier.

Heckman, J., Pagés-Serra, C., Edwards, A. C. and Guidotti, P. (2000), "The cost of job security regulation: Evidence from Latin American labor markets", *Economía,* 1(1): 109–154.

Hollweg, C. H., Lederman, D., Rojas, D. and Bulmer, E. R. (2014), *Sticky Feet: How Labor Market Frictions Shape the Impact of International Trade on Jobs and Wages*, Washington, D.C.: World Bank.

Hornbeck, J. (2013), *Trade Adjustment Assistance (TAA) and its Role in U.S. Trade Policy*, Washington, D.C.: Congressional Research Service.

Hyman, B. (2018), "Can Displaced Labour be Retrained? Evidence from Quasi-random Assignment to Trade Adjustment Assistance", Philadelphia: The Wharton School, University of Pennsylvania.

International Labour Office (ILO) (2016), "What Works: Active Labour Market Policies in Latin America and the Caribbean", Geneva: ILO.

International Labour Office (ILO) (2017), *World Social Protection Report 2017–19: Universal Social Protection to Achieve the Sustainable Development Goals*, Geneva: ILO.

Kaplow, L. (1986), "An economic analysis of legal transitions", *Harvard Law Review*, 99(3): 509–617.

Kennedy, J. (1962), "Special Message to the Congress on Foreign Trade Policy" 25 January, *Public Papers of the Presidents of the United States: John F. Kennedy, 1962*. Washington, D.C.: Government Printing Office.

Kletzer, L. G. (2001), *Job Loss from Imports: Measuring the Costs*, New York: Columbia University Press.

Kletzer, L. G. (2004), "Trade-related job loss and wage insurance: A synthetic review", *Review of International Economics*, 12(5): 724–748.

Kletzer, L. G. and Litan, R. E. (2001), "A Prescription to Relieve Worker Anxiety", Policy Brief No. 73, Washington, D.C.: Brookings Institute.

Kluve, J. (2010), "The effectiveness of European active labor market programs", *Labour Economics,* 17(6): 904–918.

Kluve, J. (2016), "A Review of the Effectiveness of Active Labour Market Programmes with a Focus on Latin America and the Caribbean", Research Department Working Paper No. 9, Geneva: International Labour Office (ILO).

Lysenko, D., Mills, L. and Schwartz, S. (2017), "Does Canada need trade adjustment assistance?", *International Journal*, 72(1): 91–110.

Martin, P., Mayer, T. and Mayneris, F. (2017), "Are Clusters More Resilient in Crises? Evidence from French Exporters in 2008–2009" in Fontagné, L. and Harrison, A. (eds.) *The Factory-Free Economy: Outsourcing, Servitization, and the Future of Industry*, Oxford: Oxford University Press, 2017.

McKenzie, D. J. (2017), "How Effective are Active Labor Market Policies in Developing Countries? A Critical Review of Recent Evidence", *World Bank Research Observer*, 32(2): 127–154.

Michaels, G., Natraj, A. and Reenen, J. V. (2014), "Has ICT polarized skill demand? Evidence from eleven countries over twenty-five years", *Review of Economics and Statistics,* 96(1): 60–77.

Montenegro, C. and Patrinos, H. (2014), "Comparable Estimates of Returns to Schooling Around the World", World Bank Policy Research Paper No. 7020, Washington, D.C.: World Bank.

Neumark, D. and H. Simpson (2015), "Place Based Policies", in Duranton, G., Henderson, V. and Strange, W. (eds)*, Handbook of Regional and Urban Economics*, Vol. 5, Amsterdam: Elsevier.

Neves de Holanda Barbosa, A.L., Foguel, M.N., and Bilo, C., 2017. "The Brazilian Government Severance Indemnity Fund for Employees (FGTS) and unemployment insurance savings accounts in other countries: a comparative analysis of their effects on the labour market," Working Papers 164, International Policy Centre for Inclusive Growth.

O'Rourke, K. H. O. (1997), "The European Grain Invasion, 1870–1913", *Journal of Economic History*, 57(4): 775–801.

Peet, E. D., Fink, G. and Fawzi, W. (2015), "Returns to education in developing countries: Evidence from the living standards and measurement study surveys", *Economics of Education Review*, 49(C): 69–90.

Polanyi, K. (1944), *The Great Transformation: The Political and Economic Origins of Our Time,* New York: Farrar & Rinehart.

Puccio, L. (2017), "Policy Measures to Respond to Trade Adjustment Costs", Briefing, Brussels: European Parliamentary Research Service, European Union.

Ribe, H., Robalino, D. A. and Walker, I. (2012), *From Right to Reality: Incentives, Labor Markets, and the Challenge of Universal Social Protection in Latin America and the Caribbean*, Washington, D.C.: World Bank.

Robalino, D. (2014), "Designing unemployment benefits in developing countries", *IZA World of Labor*, 15.

Robalino, D., Vodopivec, M. and Bodor, A. (2009), "Savings for Unemployment in Good or Bad Times: Options for Developing Countries", Discussion Paper No. 4516, Bonn: Institute for the Study of Labor (IZA).

Rodrik, D. (1998), "Why do more open economies have bigger governments?", *Journal of Political Economy,* 106(5): 997–1032.

Rosen, H. F. (2002), "Reforming Trade Adjustment Assistance: Keeping a 40-Year Promise", presented at the Peterson Institute for International Economics conference Trade Policy in 2002, Washington, D.C., 26 February.

Rosen, H. F. (2008), "Strengthening Trade Adjustment Assistance", Policy Brief PB08-2, Washington, D.C.: Peterson Institute for International Economics.

Ruggie, J. G. (1982), "International regimes, transactions, and change: Embedded liberalism in the postwar economic order", *International Organization,* 36(2): 379–415.

Schmieder, J. F. and von Wachter, T. (2016), "Effects of unemployment insurance: New evidence and interpretation", *Annual Review of Economics*, 8: 547–581.

Stein, L. (1982), "Trade Adjustment Assistance as a means of achieving improved resource allocation through freer trade: An analysis of policies for aiding the import-injured in the U.S., Canada and Australia", *American Journal of Economics and Sociology*, 41(3): 243–255.

Tatsiramos, K. (2009), "Unemployment insurance in Europe: Unemployment duration and subsequent employment stability", *Journal of the European Economic Association*, 7(6): 1225–1260.

The Economist (2017), "America's programme to help trade's losers needs fixing", 29 June.

Thelen, K. (2012), "Varieties of capitalism: Trajectories of liberalization and the new politics of social solidarity", *Annual Review of Political Science,* 15: 137–159.

Thoenig, M. and Verdier, T. (2003), "A theory of defensive skill-biased innovation and globalisation", *American Economic Review,* 93(3): 709–728.

Topalova, P. (2010), "Factor immobility and regional impacts of trade liberalization: Evidence on poverty from India", *American Economic Journal: Applied Economics,* 2(4): 1–41.

Trebilcock, M. J. (2014), *Dealing with Losers: The Political Economy of Policy Transition*, Oxford: Oxford University Press.

Van Audenrode, M. A. (1994), "Short-time compensation, job security, and employment contracts: Evidence from selected OECD countries", *Journal of Political Economy*, 102(1): 76–102.

Villareal, M. (2010), *NAFTA and the Mexican Economy*, Washington, D.C.: Congressional Research Service.

Vooren, M., Haelermans, C., Groot, W. and Maassen van den Brink, H. (2019), "The effectiveness of active labor market policies: A meta-analysis", *Journal of Economic Surveys*, 33(1): 125–149.

World Trade Organization (WTO) (2017), *World Trade Report 2017: Trade, Technology and Jobs*, Geneva: WTO.

World Trade Organization (WTO) (2019), *Global Value Chain Development Report 2019: Technical Innovation, Supply Chain Trade, and Workers in a Globalized World*, Geneva: WTO.

2 Globalization, Flexicurity and Adult Vocational Training in Denmark

Anders Humlum and Jakob R. Munch

Introduction

For more than 20 years, the performance of the Danish labour market has attracted attention, with its relatively low unemployment rates and high but rather compressed wages. While Denmark was hit hard by the global financial crisis a decade ago, the unemployment rate did not exceed 8 per cent and it remained below the OECD average. Denmark is a small, open economy, and the Danish labour market has been exposed to globalization shocks and technological change over the same period of time. Offshoring, rising Chinese import competition, automation and immigration have forced many Danish firms and workers to adjust, but the labour market appears to have coped well with the adjustment process. This chapter discusses whether Danish labour market policies have been particularly effective in times of structural change.

The Danish labour market is known for its "flexicurity" model: a combination of flexible hiring and firing rules with a generous social safety net and an extensive system of active labour market policies and subsidized off-the-job training courses for employed workers. As a consequence, Danish firms may adjust employment with relative ease, workers suffer less in terms of earnings losses during unemployment and retraining is readily available for workers with obsolete skills. This has led many to conclude that the flexicurity model is particularly attractive when an economy is faced with challenges arising from globalization and technological change.

Previous research has shown that workers exposed to offshoring and import competition shocks suffer larger earnings losses than unexposed workers in the Danish labour market (Hummels et al., 2013; Hummels et al., 2014; Ashournia et al., 2014), and Humlum (2018) shows that adoption of industrial robots in Danish firms leads to earnings losses, particularly for low-skilled workers. These findings suggest that exposed workers have skills that are less in demand in the domestic labour market as their former tasks have been moved abroad or robotized. As a result, their skills tend to be obsolete and so they are likely to benefit more from retraining than are other workers in the labour market.

Denmark has historically provided generous subsidies for off-the-job training of employed workers. The adult vocational training programme offers numerous courses targeting low- and medium-skilled workers to keep their skillsets up to speed with globalization and new technologies. A stated goal of the programme is to "solve labour market restructuring and adaptation problems in accordance with the needs on the labour market in a short-and a long-term perspective" (Denmark, Ministry of Education, 2018). Another aim of the programme is to upgrade competences to secure a highly qualified labour force that meets the labour demand of firms.

In this chapter we describe the main features of the Danish labour market, and we devote particular attention to the role played by subsidized off-the-job training for employed workers in easing workers through adjustment processes. We provide details of the institutional framework and then we address three questions. First, do workers and firms respond to incentives offered in the institutional setting? This question is examined by tracking the behaviour of firms and workers around a policy change in 2011, when the Danish Government cut the subsidies for adult training significantly. Second, we ask if workers more exposed to globalization or technology shocks are more likely to take up training than the average worker. This would be expected given the goal of the training programme stated above. We address this question by reporting results from a recent descriptive analysis of training in Denmark. Third, we ask whether the training courses actually deliver on the objective to solve restructuring and adaptation problems in the labour market, by summarizing the existing evidence in terms of labour market performance of trained workers exposed to globalization events.

It is found that workers and firms respond strongly to changes in the incentives offered in the training programme, but it is not clear that workers exposed to structural change triggered by globalization enrol at higher rates than other workers. In addition, vocational training, by far the most widely used training type, increases employment rates and earnings, but participants tend to have their attachment to initial industries and occupations reinforced. Post-secondary training also improves labour market outcomes, and many of these courses allow workers to move to better jobs in new occupations.

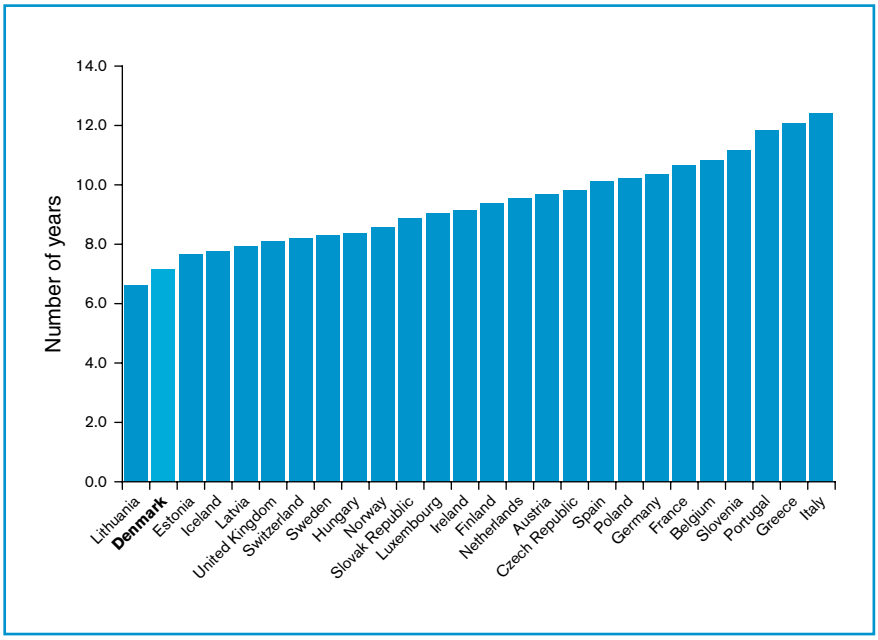
"Flexicurity" and the Danish labour market

This section briefly outlines the main characteristics of the Danish labour market, including the so-called flexicurity model, the wage structure, the extent of active labour market policies (ALMPs) and adult training programmes.

The flexicurity model is organized around three main pillars. First, there is a relatively low level of employment protection as Danish firms (together with United States, Canadian and United Kingdom firms) have the lowest level of difficulty among OECD countries dismissing permanent workers, and statutory severance payments are relatively low (OECD, 2016). As a result, average job tenure, i.e. time spent in the job, is among the lowest in Europe and lower than average job tenure in the United Kingdom (Figure 1). However, working against this are relatively long notification periods, where firms must consult with trade unions during larger layoff events (OECD, 2016). One aim of these negotiations is to agree on measures to retrain workers such that adjustment into new jobs is eased. With relatively lax employment protection, employment was hit hard during the global financial crisis, but high job turnover rates ensured that unemployed workers were able to find employment relatively easily and unemployment spells were short. This also implies that Denmark has relatively low levels of youth and long-term unemployment (Andersen, 2017).

The second pillar in the Danish flexicurity model is relatively generous unemployment insurance benefits and social assistance for displaced workers. The majority of workers are members of unemployment insurance funds, which

Figure 1 Average job tenure in European countries, 2017

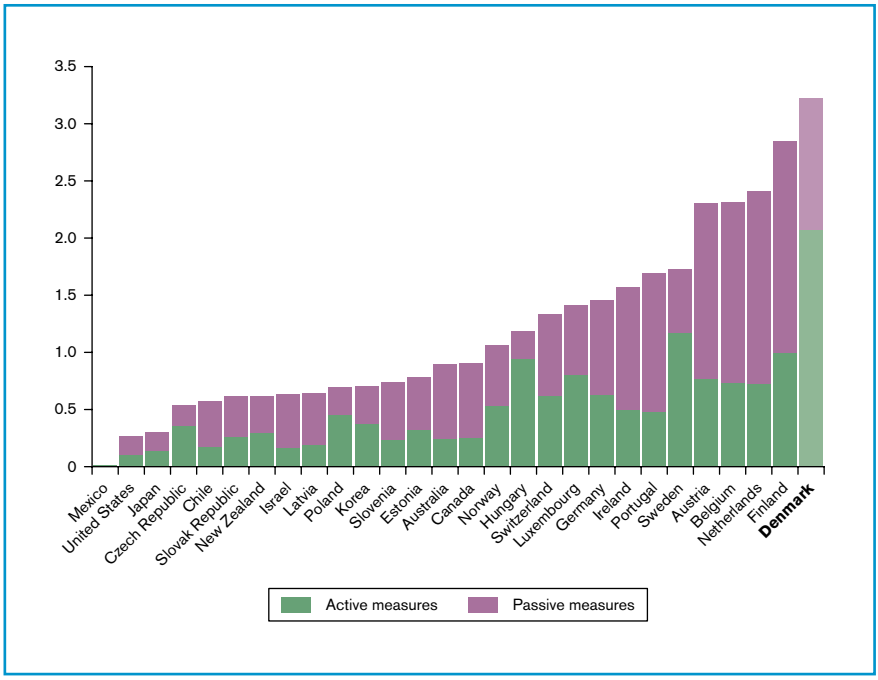


Source: OECD Employment Database.

allows them to receive unemployment insurance benefits. These benefits amount to an average replacement rate of 74 per cent of their previous wage, considerably above the OECD average of 57 per cent. The benefits are capped such that low-income workers have a replacement rate of 90 per cent, but then it falls as the workers' previous wages rise. Unemployed workers may receive unemployment insurance benefits for up to two years during a three-year period, which is also among the longest durations among OECD countries (OECD, 2016). Unemployed workers not eligible for unemployment benefits may receive means-tested social assistance, disability benefits or early retirement benefits that depend on age, health status and household wealth.

The third main ingredient in the flexicurity model is a heavy reliance on ALMPs intended to strengthen job-search efforts and upgrade skills. To receive income

Figure 2 Expenditures on labour market programmes (percentage of GDP) in OECD countries, 2016



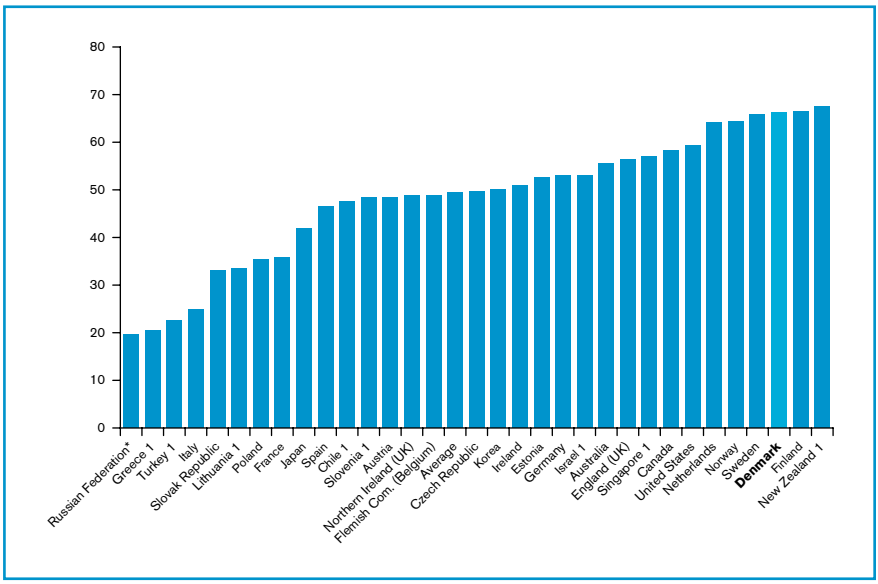
Source: OECD Employment Database.

Note: Active measures include expenditure on public employment service, training, employment incentives, sheltered and supported employment, direct job creation and start-up incentives. Passive measures include expenditure on out-of-work income maintenance and support and early retirement.

support during unemployment, workers must participate in activation measures such as private or public job training or enrolment in classroom training. The strong focus on ALMPs puts Denmark at the top among OECD countries in terms of public expenditure on unemployed workers as a percentage of GDP per capita (Figure 2): in 2016, 2.1 per cent of GDP was allocated to these active labour market measures. While the share of resources devoted to classroom training among all activation measures has declined, it still accounted for slightly more than one third of total expenses in 2013 (OECD, 2016).

Discussions of the Danish flexicurity model have emphasized the role of ALMPs for unemployed workers, but employed workers may also participate in subsidized off-the-job training courses. As stated above, the goal of the job training programme for employed workers is to ease restructuring and adjustment needs in a labour market exposed to globalization and technological change. Again, Denmark is among the countries spending the most resources on adult education and training, and the share of the Danish working-age population that participates in adult

Figure 3 Adult training participation in OECD countries, 2012 or 2015, per cent



Source: OECD (2017).

Note: The figure shows participation rates in formal and/or non-formal education from the Survey of Adult Skills. Reference year is 2015 for all countries marked "1"; for all other countries and economies the reference year is 2012. * The sample for the Russian Federation does not include the population of the Moscow municipal area.

education and training during a year is among the highest in the OECD (Figure 3). The main purpose of this chapter is to examine the extent to which these training courses meet their objective, and we provide a more detailed description of the adult training system in Denmark in the next section.

Another feature of the Danish labour market, which is not usually mentioned in connection with the flexicurity model, is the wage formation process, but changes in the wage bargaining framework have happened at roughly the same time as more emphasis was placed on ALMPs in the 1990s. Wages were negotiated exclusively at the sector level for most workers in the 1980s, but in the 1990s many bargaining segments of the labour market were decentralized such that firm-level bargaining is now playing a more prominent role. Wages are still relatively compressed in Denmark, but this decentralization process implied that wages are now more in line with individual-worker-level productivity and local-firm-level conditions (Dahl et al., 2013). These changes to wage formation may also have contributed to the overall performance of the Danish labour market since the 1990s.

Adult vocational training in Denmark

Denmark has a long tradition of continued training and education of its adult workforce. In a flexible labour market like the Danish one, where it is easy to fire workers whose skills have been made obsolete by globalization or new technology, it is crucial for workers to be able to continuously upgrade and retool their skillset throughout the working life cycle. As Figure 3 shows, Denmark ranks among the top OECD countries in terms of share of working-age people who participate in adult education and training.

The high degree of training participation in Denmark is supported by generous training subsidies from the Government. In 2012, the Danish Government spent about 0.75 per cent of GDP on publicly subsidized education for adults, on a par with its spending on ordinary post-secondary education.

Table 1 breaks down the subsidized training activity into basic, vocational and post-secondary courses. The data is obtained from the Course Participant Register, a comprehensive register of individual participation in adult and continuing education courses organized by public providers. The Danish training subsidies are heavily tilted towards vocational training courses in terms of number of participants. In 2010, more than 420,000 workers (14.9 per cent of the total Danish workforce and 21.8 per cent of the low-to-mid-skilled workforce) participated in adult vocational training courses. However, the vocational training

Table 1 Subsidized adult training in 2010 by course type

	Participants (distinct individuals)	Duration (days)	Share of total training activity (%)
Basic courses	140,153	30	36.3
Vocational courses	421,994	7	26.3
Post-secondary courses	80,018	54	37.4

Source: Authors' calculations based on the Course Participant Register.

courses are fairly short, and the total training activity is evenly distributed among basic, vocational and post-secondary courses.

The strong focus on vocational training dates back to the 1960s when the adult vocational training programme (in Danish, "Arbejdsmarkedsuddannelser") was first rolled out. The programme was originally targeted at the many unskilled workers who had found employment in skilled trades, such as in the wood, clothing or plastic industries, but lacked the formal vocational training needed to carry out their actual job (Denmark, Ministry of Education, 2010).

The adult vocational training programme consists of more than 3,000 short courses, which are often tailored to a specific occupation, industry or firm, such as "management and cooperation at the assembly line" or "CNC machine start-up and operation".[1] Training takes place during work hours at dedicated facilities and is organized in classrooms or as open workshops. A typical course lasts three days, but as many participants follow sequences of complementary classes, the average yearly training duration is seven days (Table 1). The adult vocational training programme is unique in an international setting in that Denmark is the only country in the OECD that provides and finances vocational training of employed workers at off-the-job training sites.

The courses are open to all adults, but the content is tailored to low-to-mid-skilled workers and the subsidy structure heavily favours the participation of employed workers. In 2010, around 70 per cent of the participants were employed, and a typical participant was a 40-year-old male with a mid-to-low-skilled educational background (Table 2). Workers employed in manual assembly or technical installation jobs used the programme intensively, while take-up was virtually zero among workers in finance, information and communications technology (ICT) and legal services (Table 3).

Table 4 breaks down the vocational training activity in 2010 into certificate courses, industry-specific courses, general courses and basic courses. The table shows

Table 2 Adult vocational training participants, 2010

Participants (distinct individuals)	421,994
Duration (days)	7
Age	40
Gender (share in percentage)	64.5
Skill (educational attainment, shares in percentage)	
– Low	33
– Medium	56
– High	11
Labour market status (shares in percentage)	
– Employee	67
– Self-employed	4
– Unemployed	24
– Out of labour force or unknown	5

Source: Authors' calculations based on administrative registers at Statistics Denmark.

Note: Skill is defined as: Low – "High School or Less"; Medium – "Vocational Education"; "High – Higher Education". The summary statistics for age, gender, skill and labour market status are weighted by vocational training activity.

Table 3 Training intensity for employed workers by industry and occupation

Rank	Industry	Training intensity	Occupation	Training intensity
1	Manufacture of other transport equipment	3.43	Metal and machinery workers	1.15
2	Manufacture of tobacco products	1.58	Assemblers	1.01
3	Office administration and support	0.95	Skilled agricultural workers	0.96
⋮				
N-2	Programming and broadcasting activities	0.05	Teaching professionals	0.09
N-1	Finance and insurance, aux. activities	0.04	Legal and social professionals	0.05
N	Legal and accounting activities	0.04	ICT professionals	0.05

Source: Authors' calculations based on administrative registers at Statistics Denmark.

Note: Training intensity is calculated as the share of total hours of work in the industry (column 3) or occupation (column 5) dedicated to government-subsidized adult vocational training. Industries are two-digit NACE codes. Occupations are two-digit ISCO codes.

that vocational training of employed workers is heavily skewed towards industry-specific courses, while unemployed workers participate in more certificate courses.

Table 5 zooms in on employed workers and shows that there is a strong correlation between a worker's current occupation and his or her uptake of

Table 4 Adult vocational training by course category

	Employed workers	Unemployed workers
Certificate courses	21.5	39.6
Industry-specific courses	55.5	37.3
General courses	18.2	18.8
Basic courses	4.8	4.2

Source: Authors' calculations based on administrative registers at Statistics Denmark.

training coursework. For example, of the total training activity undertaken by opticians and optometrists in 2010, 44.4 per cent was concentrated on a single course, "Contact lenses". Taken together, Table 4 and Table 5 suggest that employed workers use the training subsidies to upgrade skills within existing jobs rather than as a way to reskill towards a new job. Unemployed workers, on the other hand, participate in more certificate courses, which may serve as gateways for transitions into new occupations.

Government subsidies for adult vocational training depend on the labour market status of the course participant. For employed workers, the Government covers around 85 per cent of the course expenses so that course tuition only costs a token amount, on average €16 per course per day, which is usually paid by the firm. Furthermore, firms can receive generous wage subsidies, historically around 60–80 per cent per day an employee spends at the training facilities (in Danish, "VEU-godtgørelse"). The decision to enrol in vocational training is usually taken jointly by the employer and employee, and most workers continue to receive their regular wage while participating in adult vocational training. The wage subsidies were cut significantly in 2011; the next section examines how the change in training

Table 5 Top course share in training activity by occupation (employed workers)

Occupation	Course	Course share in occupation training (percent)
Optician	Contact lenses	44.4
Aircraft mechanic	Aircraft maintenance licence	39.7
Postal worker	Customer relationship for operators	31.1
Kitchen assistant	General food hygiene (certificate)	26.3
Cashier	Personal sale	22.9

Source: Authors' calculations based on administrative registers at Statistics Denmark.

Note: Occupations are 4-digit ISCO codes.

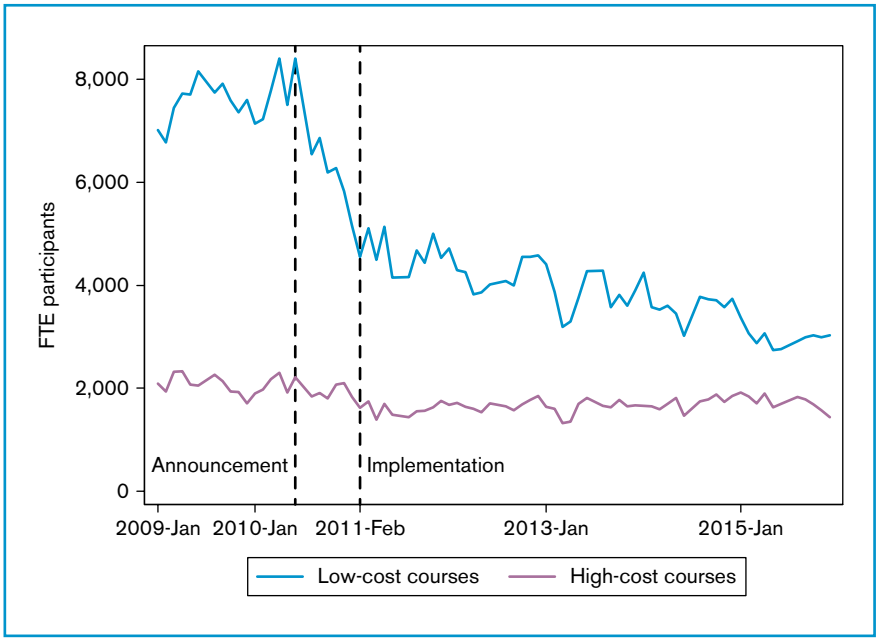
incentives in 2011 affected the decisions of firms and workers to participate in adult vocational training.

The second component of the training subsidies is directed towards unemployed workers with membership of unemployment insurance funds. These workers may participate in six weeks of vocational training free of charge while receiving unemployment insurance benefits (in Danish, "6-ugers selvvalgt").

The training subsidy reform in 2011

On 7 February 2011, the Danish Government cut the wage subsidies for adult vocational training by 20 per cent. The subsidy cuts were passed as part of a larger fiscal recovery package (in Danish, "Genopretningspakken") announced in June 2010.[2] The tuition subsidies, which typically represent 85 per cent of course costs, were, on the other hand, not altered by the reform. This section examines how the

Figure 4 Training activity of employees for low- and high-cost vocational training courses



Source: Authors' calculations based on administrative registers at Statistics Denmark.

Note: Training costs are listed in the government budget (see also the "price catalogues" published by the Ministry of Education). Low-cost courses are defined as courses with a weekly public cost (column Z in the 2011 price catalogue) below DKK3,500.

change in training incentives affected the decisions of employed workers to participate in adult vocational training.

Figure 4 shows the training activity for employed workers for low- and high-cost vocational training courses. The two vertical lines indicate the dates of reform announcement (June 2010) and reform implementation (February 2011). Figure 4 suggests that workers and firms reacted strongly to the change in training incentives. The total training activity took a steep drop of 35 per cent around the date of reform implementation.

As vocational training courses differ markedly in cost, ranging from €69 per week per participant ("Administrative planning and management tools") to €1,284 per week per participant ("Operation of hydraulic excavators"), the fixed wage subsidy cut represented a much larger reduction in subsidy rates (total course subsidy as a fraction of course costs) for the group of low-cost courses. Interestingly, Figure 4 shows that the drop in activity was concentrated exactly on the low-cost courses that experienced the largest subsidy rate cuts. This finding suggests that subsidy rates are key determinants in firms' decision to send their workers to vocational training, and that the reductions in subsidy rates in February 2011 were indeed the driving force behind the fall in training activity. Table 6 lists the three most popular courses (before the subsidy reform) in the groups of low- and high-cost training courses.

Training and globalization

In this section we ask whether workers exposed to increased globalization and technological change are more likely to take up training than other workers, and we

Table 6 Most popular courses (top 3) by course cost (before reform)

Course title	Price per week (€)	Share in total training activity (%)
Low-cost courses		
General food hygiene (certificate)	387	2.6
Personal development for work and education	306	1.9
Communication in teams	306	1.4
High-cost courses		
Forklift certificate	524	4.0
Truck driver licence	770	2.3
Bus driver licence	713	1.1

Source: Authors' calculations based on administrative registers at Statistics Denmark.

review the existing evidence for the effects of training on labour market outcomes, with a particular focus on whether globalization matters.

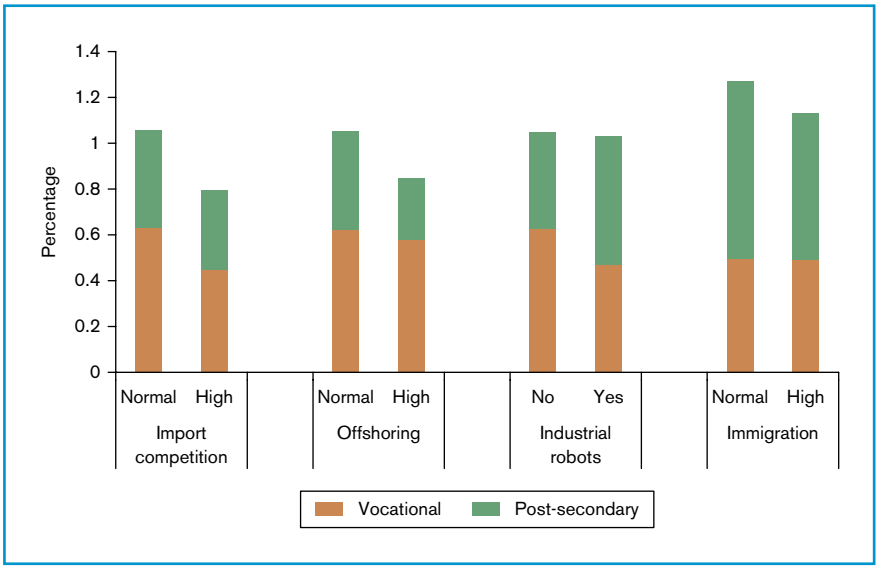
Training take-up and globalization

As mentioned in the introduction, the aim of the adult vocational training programme in Denmark is twofold. First, the programme should ensure that workers' skills are up to date and that the labour force holds the competences in demand by firms. Second, it should help "solve labour market restructuring and adaptation problems". In light of the second purpose, one would expect that workers in firms hit by globalization shocks are more likely to enrol in training than other workers because their skills are more likely to be obsolete. A recent report by Whitta-Jacobsen et al. (2019) examines whether this is the case across four different dimensions of globalization. First, they measure the extent to which Danish firms have been exposed to import competition from the People's Republic of China. Second, they investigate firms that offshore tasks (offshoring is defined as firm-level imports of intermediate inputs and is a measure for tasks that previously were done in-house). Third, they ask whether or not the firm imported an industrial robot. Finally, they distinguish between firms that hired few or many immigrants. These globalization dimensions are typically found to induce profound earnings losses for affected workers (see, e.g. Ashournia et al., 2014; Humlum 2018; Hummels et al., 2014), which suggests that they may be associated with economy-wide reductions in demand for specific tasks. It may then be argued that reattaching to the workforce after globalization shocks may require a more fundamental retraining of exposed workers.

Somewhat surprisingly, Whitta-Jacobsen et al. (2019) find that workers generally do not take up training at higher rates in firms exposed to any of these four globalization changes (Figure 5). In fact, if anything, enrolment rates in vocational training are lower if firms are exposed to import competition from China, if offshoring rises or if the firm adopted an industrial robot. This suggests that the training programme is mostly tailored towards the needs of firms (ensuring that workers hold competences in demand by firms) and not so much towards preparing exposed workers for transitions into new jobs.

Hummels et al. (2012) zoom in on Danish firms that go through mass layoff events in combination with one particular dimension of globalization, offshoring. They examine how offshoring interacts with training take-up rates and worker transitions. They distinguish between firms that increase offshoring and firms that do not increase offshoring substantially and find that workers displaced from firms with increasing offshoring enrol in vocational training before and during the mass layoff event at higher rates than displaced workers in other firms. This appears to be at

Figure 5 Globalization exposure and training, 2001–2015



Source: Whitta-Jacobsen et al. (2019).

Note: Shows the average participation in training for employed workers depending on globalization exposure. Training participation is measured as the number of days in training as a percentage of full-time work. Globalization is measured in four different ways: (i) firm-level exposure to Chinese import penetration; (ii) firm-level offshoring; (iii) firm-level importation of industrial robots; and (iv) firm-level exposure to immigration.

odds with Figure 5, but a potential explanation is that mass layoff firms have to enter negotiations with labour unions about retraining of laid-off workers (see above), and such negotiations may clarify that training is particularly useful for workers in firms that are increasing offshoring.

Hummels et al. (2012) also examine training take-up rates for workers who stay at firms with mass layoff events. Stayers in firms with increasing offshoring also increase their vocational training enrolment rates significantly during and after the mass layoff event. By contrast, vocational training take-up rates for stayers in other firms remain stable around the mass layoff event. This may be taken as evidence that, when firms offshore parts of their production to other countries, they reorganize work within the firm. In a process with reshuffling of task assignments, vocational training may help workers learn their new tasks.

Hummels et al. (2014) found that offshoring increases wage rates and earnings of workers with post-secondary education. In this light, when firms are hit by offshoring shocks, enrolment in post-secondary training may seem particularly attractive to workers. However, Hummels et al. (2012) find that, irrespective of firm

type (increasing offshoring or not), displaced workers are not more likely to enrol in post-secondary training courses than other workers.

Employment and earnings effects of training in Denmark

Most evaluation studies of training programmes focus on programme effectiveness for unemployed workers, while less research exists to document whether adult training is helpful in easing workers through adjustment processes. Even fewer studies document whether training effects depend on the extent to which workers are exposed to globalization or technology pressures. McCall et al. (2016) emphasize that "… more evidence on causal impacts is needed for participants in training who are not unemployed or not at immediate risk of becoming unemployed, especially if programs have the objective of alleviating poverty or managing structural change". In this section, we first review the findings from a recent comprehensive evaluation of the Danish training programmes that encompasses both unemployed and employed workers. Next, we summarize two studies that link training for employed workers to risks of offshoring in their firms.

Bolvig et al. (2017) use rich administrative register data to examine the impact of training on labour market outcomes for all persons enrolling in adult training courses in the third quarter of 2011. Employed as well as unemployed workers are included in the analysis, and they are tracked for three and a half years, i.e. until the first quarter of 2015. The results are divided into categories depending on employment status at enrolment and the type of training. The authors distinguish among three types of training: basic education, vocational training and post-secondary training programmes, and assess the impact on outcomes such as employment, earnings, job mobility and enrolment in ordinary education. In addition, they perform a simple cost-benefit analysis and compare benefits with direct costs of the programmes.

For initially employed workers, Bolvig et al. (2017) find that, while enrolment in basic education programmes leads to reduced employment and earnings, enrolment rates in the ordinary education system or further training programmes rise. This is not surprising given that many of the basic education courses have as their aim to prepare participants for further studies. As a result, with the relatively short time span included in the evaluation and because workers remain in school rather than going back to work, basic education comes out with a deficit in the cost-benefit analysis.

Employed workers enrolling in vocational training is the largest subgroup, and the results generally show positive employment and earnings effects. The share of workers employed rises by about two percentage points on average and the

monthly earnings rise by around €80. There are clear differences across course types, with industry-specific training and cross-industry courses (e.g. courses in management, cooperation or information technology) showing positive effects on employment and earnings, while certificate courses and more basic general training courses do not show any such effects. Interestingly, vocational training does not have any effect on the mobility of workers across employers, and no type of vocational training increases mobility across industries. In fact, participants in industry-specific training have their cross-industry mobility rates reduced. In addition, many vocational courses tend to reduce occupational mobility. In other words, vocational training tends to reinforce the participants' attachment to their initial industry and occupation. This is consistent with Table 5, which suggests that employed workers use vocational training to upgrade their skills within existing jobs rather than to adjust to new jobs.

Post-secondary training programmes are typically of longer duration, and they are found to have positive effects on employment and earnings, on average. Employment rates rise by 3–4 percentage points shortly after enrolment, and earnings rise after some time, depending on the type of post-secondary training. Post-secondary training has clear positive effects on occupational mobility rates. For example, diploma programmes and academic professional degrees strongly increase the likelihood that participants move up the job ladder (i.e. to a higher occupational level). Diploma programmes also lead to horizontal job mobility in the sense that participants are more likely to switch occupation within the same occupational level.

These results are interesting in light of the stated purpose of adult training in Denmark, which is to solve labour market restructuring and adaptation problems. The dominant type of training, vocational training, shows positive employment effects, but participants see their attachment to initial industries and occupations strengthened. In other words, vocational training may help participants to secure their jobs in the short or medium term, but their job tasks tend to remain unchanged. By contrast, post-secondary training, which is a much less widespread training programme type, allows participants to move up the job ladder.

Similar findings are reached by Hummels et al. (2012). They examine labour market transitions of displaced workers one and three years after mass layoff and determine the types of employment workers transition into, depending on whether they leave firms that increased offshoring or not and whether they enrolled in vocational training prior to displacement. They find that workers from firms with increasing offshoring are more likely to be without employment in the first year after displacement than workers from other firms. Again, this suggests that offshoring affects the availability of certain tasks throughout the labour market,

such that workers laid off from these firms find it harder to re-employ with the same skills in a new firm.

Moreover, trained workers laid off from firms with increasing offshoring are much more likely to be unemployed or out of the labour force than trained workers displaced from other firms. However, three years after displacement, this picture has changed, such that trained workers from other firms have higher non-employment rates than trained workers from firms with increasing offshoring. This seems to suggest that vocational training allows displaced workers from firms with increasing offshoring to better cope with unemployment shocks than trained workers from other firms. However, another finding is that trained workers from firms with increasing offshoring are more likely to re-employ in manufacturing and less likely to work in the service sector. As in Bolvig et al. (2017), this may suggest that vocational training tends to strengthen workers' attachment to certain occupations and manufacturing industries.

Ultimately, training should help shield workers from suffering large earnings losses in the wake of increased globalization. Nigatu (2018) examines how earnings evolve for displaced workers exposed to offshoring shocks, depending on whether or not they enrolled in vocational training before the shock. Nigatu uses the same empirical approach as Hummels et al. (2012) by comparing trained workers with non-trained workers in firms with increasing offshoring and other firms before and after a mass layoff event. A main result is that the earnings differential between trained and non-trained workers after layoff is larger for workers displaced from firms that are increasing offshoring. That is, trained workers in these firms have more favourable earnings paths than non-trained workers after displacement, while non-trained workers exhibit higher earnings than trained workers after being displaced from other firms. In other words, vocational training appears to help workers sustain their income if they are displaced when the firm moves production processes abroad. In other displacement events not involving offshoring, vocational training actually tends to reduce earnings relative to non-trained workers. Nigatu (2018) does not analyse the extent to which these results can be attributed to changed job mobility patterns or whether the earnings effects are due to lower wages in new jobs.

To summarize, the Danish programme of adult vocational training appears not to induce globalization-hit workers to enrol in training at higher rates than other workers. Training generally tends to improve labour market outcomes, but vocational training does so by reinforcing attachment to initial occupations and industries whereas post-secondary training increases mobility into new jobs. This may be problematic if vocational training strengthens workers' attachment to certain manufacturing jobs that are most likely to be hit by globalization shocks in

the future. Younger workers in particular may find it beneficial to engage in more fundamental skill upgrading.

Conclusion

In this chapter we have described the Danish flexicurity labour market model. We argue that the components of this model, i.e. a combination of relatively lax hiring and firing rules for firms and generous unemployment benefits and retraining available to unemployed and employed workers on a large scale and at subsidized rates, in principle should allow workers and firms to better cope with adjustment processes arising from globalization and technology shocks.

We pay particular attention to the system of adult training programmes in Denmark. This is of interest because these programmes have as a stated aim to solve labour market restructuring and adaptation problems, and because Denmark is one of the OECD countries spending most resources on adult training programmes. The training programmes have a heavy emphasis on shorter vocational courses, some of which are industry specific in their content. Post-secondary courses are of longer duration, but only a few workers enrol in these programmes.

We have addressed three main questions. First, we have examined whether firms and workers respond to incentives offered in the system for adult training. We find clear evidence that this is the case, as workers and firms reacted strongly to a policy reform in 2011 that substantially reduced subsidies. The total training activity took a steep drop of 35 per cent around the date of reform implementation, and the drop in activity was concentrated on the low-cost courses for which the wage subsidy cut represented a larger reduction in course subsidy rate. Thus, the subsidy rate appears to be a key determinant in firms' and workers' decisions to participate in training. This is important because policy-makers will be in a position to adjust the incentives and better target the courses towards the firms and workers deemed most in need.

Second, we addressed the question of whether workers more at risk of globalization shocks are more likely to enrol in training. This would be expected, since a goal of the training programme is to help workers adjust to new jobs when hit by structural change. However, overall, we find that this is not the case. If anything, workers in firms more exposed to globalization are less likely to enrol in vocational training. The picture is different in firms that actually lay off a substantial proportion of their workforce due to offshoring of production processes. Workers who lose their jobs in these firms enrol in vocational training at higher rates before and during the layoff event, and workers remaining in the firms also take up

vocational training at higher rates during and after the mass layoff. This likely reflects that workers may have to update their skillset to find new jobs outside the firms or to do new tasks within the firm. However, more fundamental skill upgrading in post-secondary training courses is not increasingly popular for these workers.

Finally, we have examined whether training participation helps solve restructuring and adaptation problems in the labour market by reviewing the findings from a small number of studies of the effects of training on workers' employment and earnings. Vocational training is found to increase employment rates and earnings, but vocational training participants tend to have their attachment to initial industries and occupations reinforced. This is mirrored in a study of how training interacts with increased offshoring. Vocationally trained workers from firms with increasing offshoring are more likely to re-employ in manufacturing and less likely to work in the service sector. Post-secondary training also increases employment and earnings, and many of these courses allow workers to move to better jobs in new occupations. However, these courses are not increasingly used by workers exposed to offshoring.

These findings suggest that the adult training programme in Denmark can be tailored more towards workers in need of retraining as a consequence of globalization. Further, the composition of courses offered may be adjusted towards courses that ease transitions into new jobs (post-secondary training) and less towards courses that strengthen attachment to initial occupations and industries where globalization shocks are likely to hit again in future. The reform of the adult training programme in 2011 showed that firms and workers respond to changes in incentives, so adjusting subsidy rates should be an effective tool to obtain a training programme better equipped to combat challenges from globalization.

Endnotes

1. A recent initiative aims to reduce the number of courses offered.

2. A labour market agreement in 2017 rolled back the wage subsidies to their pre-2011 level.

References

Andersen, T. M. (2017), "The Danish labor market, 2000–2016", *IZA World of Labor*, 404.

Ashournia, D., Munch, J. and Nguyen, D. (2014), "The Impact of Chinese Import Penetration on Danish Firms and Workers", Discussion Paper No. 8166, Bonn: Institute for the Study of Labor (IZA).

Bolvig, I., Kristensen, N. and Skipper, L. (2017), ”Effektevaluering af voksen- og efteruddannelsesindsatsen”, Copenhagen: Det Nationale Institut for Kommuners og Regioners Analyse og Forskning (KORA) (in Danish).

Dahl, C. M., le Maire, D. and Munch, J. R. (2013), “Wage dispersion and decentralization of wage bargaining”, *Journal of Labor Economics*, 31(3): 501–533.

Denmark, Ministry of Education (2010), “AMU 50 år”, *Jubilæumsavis*.

Denmark, Ministry of Education (2018), “Adult vocational training”, http://eng.uvm.dk/adult-education-and-continuing-training/adult-vocational-training (accessed 22 August 2018).

Humlum, A. (2018), “Robotization and Work: Evidence at the Worker–Firm Level”, unpublished manuscript.

Hummels, D., Jørgensen, R., Munch, J. and Xiang, C. (2014), “The wage effects of offshoring: Evidence from Danish matched worker–firm data”, American Economic Review, 104(6): 1597–1629.

Hummels, D., Munch, J. and Xiang, C. (2013), “Education and labor market policies in an offshoring global economy”, Nordic Economic Policy Review, 1: 75–98.

Hummels, D., Munch, J. R., Skipper, L. and Xiang, C. (2012), “Offshoring, transition and training: Evidence from Danish matched worker–firm data”, American Economic Review, 102(3): 424–428.

McCall, B., Smith, J. and Wunsch, C. (2016), “Government-Sponsored Vocational Education for Adults”, in Handbook of the Economics of Education, Hanushek, E. A., Machin, S. and Woessmann, L. (eds.), Amsterdam: Elsevier, Vol. 5.

Nigatu, S. N. (2018), “Is Re-training More Beneficial for Workers Displaced from Offshoring Firms than for Others? Evidence from Danish Matched Employer Employee Data”, Working Paper, Lund: Lund University.

Organisation for Economic Co-operation and Development (OECD) (2016), Back to Work: Denmark: Improving the Re-employment Prospects of Displaced Workers, Paris: OECD.

Organisation for Economic Co-operation and Development (OECD) (2017), Education at a Glance 2017: OECD Indicators, Paris: OECD.

Whitta-Jacobsen, H. J., Søndergaard, J., Mogensen, P., Hauch, J. and Munch, J. R. (2019), ”Small Great Nation – De Højthængende Frugter”, Copenhagen: Kraka-Deloitte (in Danish).

3 Enforcement of Labour Regulation and the Labour Market Effects of Trade: Evidence from Brazil[1]

Vinicius Lima, Vladimir Ponczek and Gabriel Ulyssea

Introduction

This chapter examines how enforcement of labour regulation shapes the labour market effects of trade. To do so, we focus on the early 1990s Brazilian trade liberalization episode, which was a unilateral and extensive tariff reduction process.

We draw on the methodology and some of the results documented in Ponczek and Ulyssea (2018), who take a local labour markets approach to identify the heterogeneous labour market effects of trade on informality and unemployment across regions with different levels of capacity to enforce labour regulations, where enforcement capacity is approximated by distance to the nearest labour office (as in Almeida and Carneiro, 2012). In a nutshell, the empirical approach consists of exploring regional variation in the intensity of the trade liberalization shock (e.g. Kovak, 2013) and in enforcement capacity, to assess the extent to which enforcement of labour regulations shapes the labour market effects of trade. Moreover, we also investigate whether the Brazilian Government responded to these labour market effects of trade by intensifying or relaxing the intensity of labour regulation enforcement in regions more or less affected by the trade shock. We do so by investigating whether the Federal Government created new labour offices in most-affected regions after the trade reform was implemented.

We begin by describing the 1990s Brazilian trade liberalization episode and the institutional background of labour regulation and enforcement in the country. Next, we discuss our methodology and empirical strategy. We then show how the degree of enforcement of labour laws mitigated or aggravated the impacts of the trade liberalization, and, finally, we discuss the government response to the trade shocks.

The trade liberalization episode in Brazil

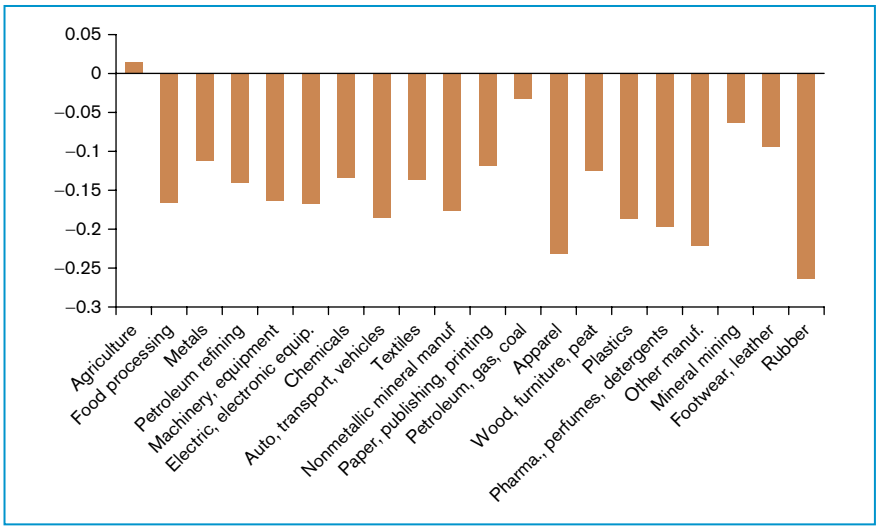
Until 1990, Brazil was characterized by a complex system of protection against foreign competition that included both tariff and non-tariff barriers (Kume et al., 2003). Hence, nominal tariffs did not represent the de facto level of protection

faced by industries in the country. During the period 1988–1989, however, there was a first move towards reforming the structure of protection, which reduced tariff redundancy and special regimes, among other measures. Additionally, in March 1990, the newly elected president unexpectedly eliminated non-tariff barriers, typically replacing them with higher import tariffs in a process known as "tariffication". This implied that, starting in 1990, tariffs became the main trade policy instrument and therefore also more accurately reflected the actual level of protection faced by Brazilian products.

During this period, from 1990 until 1995, Brazil implemented a major unilateral reduction in trade tariffs. The overall level of protection fell and became more uniform across industries.[2] Figure 1 shows the tariff variation between 1990 and 1995, while Figure 2 shows the evolution of tariff levels for the main industries within the tradable sector.

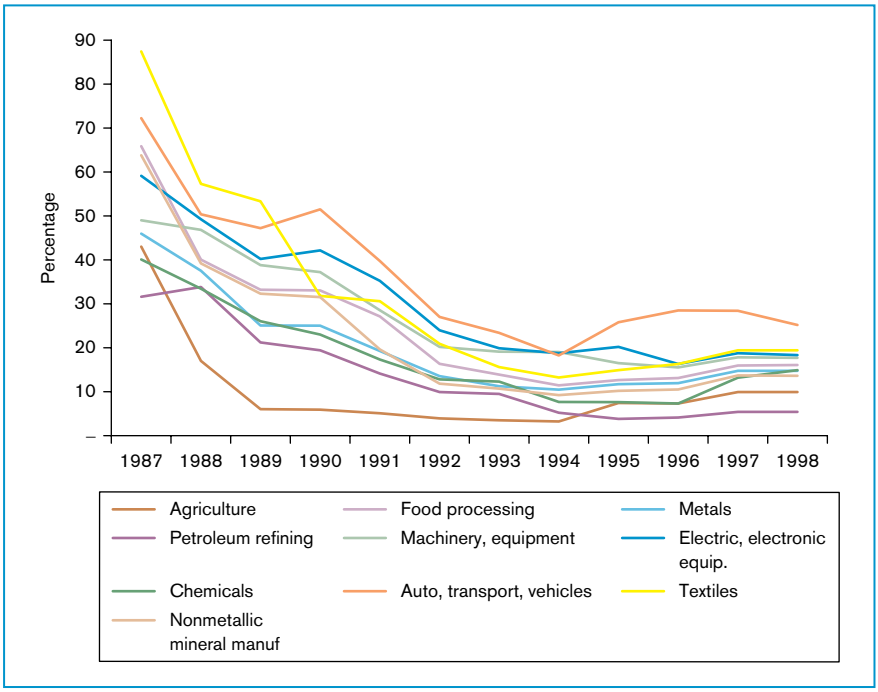
This trade liberalization episode was a non-reciprocal process, in which the country substantially increased its exposure to foreign competition without any gains in market access abroad. Thus, from the perspective of home markets, this trade reform potentially represented a substantial negative labour demand shock in regions that had a larger fraction of their labour force employed in industries that

Figure 1 Changes in log(1+tariff) by industry, 1990–1995



Source: Dix-Carneiro and Kovak (2017).

Figure 2 Evolution of trade tariffs by industry



Source: Dix-Carneiro and Kovak (2017).

observed larger tariff reductions, relative to regions that had a larger fraction of their employment in industries less affected.[3]

Labour regulations and enforcement

In Brazil, the permissible types of labour contracts, their conditions and terms for termination are completely regulated by the *Consolidação das Leis Trabalhistas* (CLT), a labour code that dates back to 1943. As part of the labour regulations in Brazil, all formal workers are required to hold a work booklet issued by the Ministry of Labour. This booklet (*Carteira de Trabalho*) must be signed by the employer and contains a worker's entire formal labour history. Having this formal labour contract, in principle, entitles workers to a series of benefits, such as the 13th monthly salary, unemployment insurance, severance payment, one-month's paid vacation and at least 50 per cent premium for overtime hours.

In 1988, the new Federal Constitution was enacted and substantially extended the range of labour regulations and workers' benefits. In particular, it increased severance payments fourfold, reduced the regular work week to 44 hours and increased maternity leave to four months. These requirements along with the 1943 labour code left almost no room for bilateral negotiations between employers and employees (in a scenario where there are no restrictions, negotiations could involve wages, other compensations, hours or even employment). In addition to that, the changes introduced in 1988 by the Constitution substantially increased the costs associated with hiring formal workers but, in particular, the costs of firing workers (de Barros and Corseuil, 2004). According to the employment laws index in Botero et al. (2004), the cost of labour regulation in Brazil was almost 20 per cent above the mean and the median of 85 countries considered from all around the world. Compared with the United States, the cost in Brazil was 2.6 times higher.[4] As for labour taxes, not only are they high in Brazil but there are also substantial compliance costs involved, such as the red tape and bureaucracy costs associated with tax payments.

Given how cumbersome and costly the labour regulation is, both firms and workers have incentives to either partially comply with it, or to avoid it entirely via informal labour contracts. On the workers' side, informality implies that they do not pay income taxes, nor the mandatory social security contributions. At the same time, all citizens have full access to the public health system and low-income workers are entitled to a monthly pension of one minimum wage at the age 65, regardless of whether or not they have contributed during their working life. However, workers without a formal contract are not entitled to unemployment insurance, paid vacations and other benefits and, in addition, cannot provide proof of employment to gain access to formal credit lines, for example.

On the firms' side, informality implies avoiding both taxes and labour regulation costs, which are sizable. However, informal firms cannot access formal credit lines, issue invoices or participate in contracts with the federal government. Moreover, informality naturally limits how much a firm can grow, as the larger the firm, the more visible to the government it becomes. Therefore, the incentives for small firms to be informal are substantial (see Ulyssea, 2018).

Thus, in such an environment, in which incentives to formalization are arguably weak, enforcement plays a substantial role in determining labour market outcomes and, in particular, the level of informality. The Ministry of Labour is directly responsible for enforcing labour regulations, but it only inspects registered firms and therefore does not tackle informal labour in informal firms. Enforcement is implemented in a very decentralized way, both at the state level (with a labour office called the *Delegacia do Trabalho*) and within states through local labour offices

(called *subdelegacia*).The state-level office is always located in the state's capital and the local offices are spread throughout the state in different municipalities. The number of local offices is a function of the state's size and economic relevance (Almeida and Carneiro, 2012).

Inspectors are allocated to a specific *subdelegacia*, which implies that they are physically located there. Thus, to inspect any given firm they must travel by car. Most inspections are triggered by anonymous reports, and inspectors are expected to assess compliance with all the relevant dimensions of the labour code (e.g. hours of work), not just whether the worker is formally registered or not. Even though the Ministry of Labour aims to apply a uniform criterion for labour market enforcement throughout the country, there is substantial regional variation in enforcement intensity (Almeida and Carneiro, 2012). In particular, one of the factors that determines regional variation in enforcement is the presence of local labour offices across regions, which in turn determines the average travel distance that inspectors face in order to carry out inspections.

Empirical analysis

The aim of our empirical exercise is twofold. First, we investigate the effects of the trade-opening process on informality and employment. We do so by contrasting these outcomes in regions more and less affected by the trade liberalization. Second, we ask how the intensity of enforcement of labour regulations affects these labour market effects of trade. Put differently, for two given regions equally affected by the trade liberalization but with different levels of enforcement, how did the region with a lower level of enforcement fare in comparison with a high enforcement region?

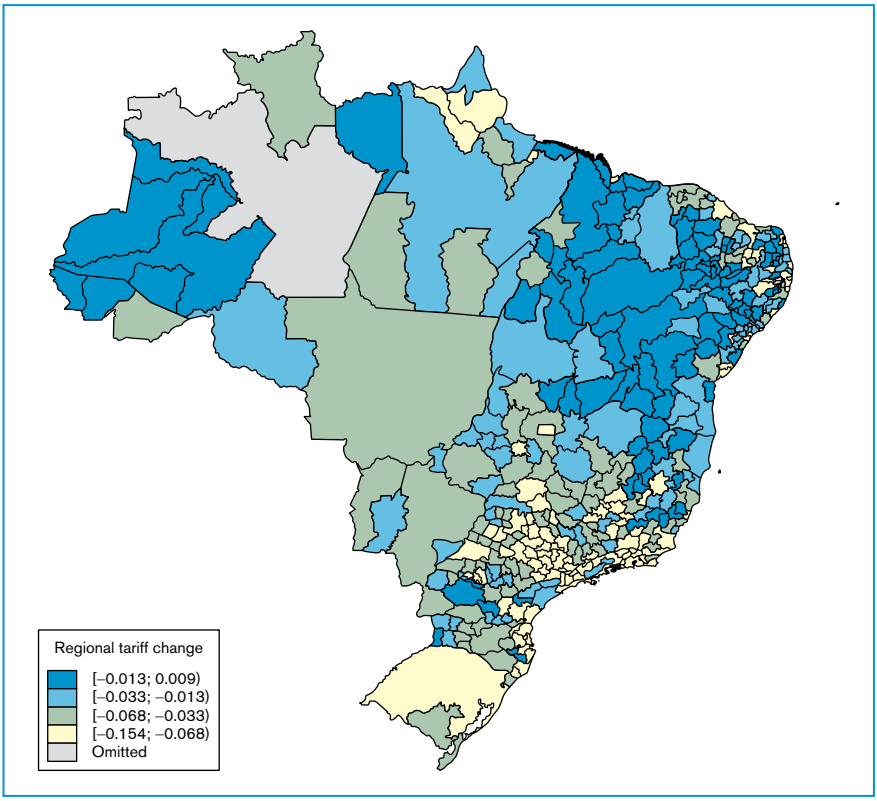
Data

To get to these questions, we need a measure of local trade shock exposure. We thus follow Kovak (2013) to construct a measure of local trade shocks that exploits the fact that regions that were more specialized in industries that experienced larger tariff reductions were more likely to have been more adversely affected by the trade-opening episode. We use tariff data from Kume et al. (2003) to construct the "regional tariff change" (RTC) as proposed by Kovak (2013).[5] Three additional data sets are used in the empirical analysis. The labour market variables are constructed from the Decennial Population Census, which provides information on workers' informality status as well as their socioeconomic characteristics. Informal workers are defined as those employees who do not hold a formal contract, which is characterized by holding the *Carteira de Trabalho* (see above).

Workers who report being employees are asked directly whether they have a formal contract, which information is used to define whether an employee is formal or not. The measure of informality therefore excludes self-employed workers, who are treated separately. This is done because the mechanisms that we focus on here – and, in particular, our measure of enforcement – refer to employees only.

The unit of analysis is the micro-region, which is a collection of contiguous municipalities that are economically integrated (Figure 3). The micro-regions are defined by the National Bureau of Statistics (IBGE) and closely reproduce the idea of local economies that has been extensively used in the recent literature (e.g. Costa et al., 2016; David et al., 2013; Dix-Carneiro and Kovak, 2017; Kovak, 2013) and is equivalent to the Commuting Zones used in the literature using United States data.

Figure 3 Regional tariff changes at the micro-region level



Source: Ponczek and Ulyssea (2018).

We define low-skilled workers as those with an education level lower than completed high school, and high-skilled workers as those with at least a high school diploma. Non-employment is defined as those persons actively looking for jobs (unemployed) and those out of the labour force. We use this measure (instead of unemployment) to reduce measurement error, as people often transit between unemployment and being out of the labour force.

Descriptive data show that informality (i.e. the share of informal employees) increased 12.3 percentage points between 1991 and 2000, while non-employment increased 15.9 percentage points in the same period (Table 1). This was observed among low- and high-skill workers, but non-employment among low-skill workers increased 14.4 percentage points while for high-skill workers it increased only 8.1 percentage points. In contrast, wages increased during this period, and particularly so among low-skill workers (+12.5 percentage points) while it remained stable for high-skill workers. The data also show that, on average, micro-regions have suffered a negative trade shock, i.e. greater exposure to foreign competition (Figure 3).

The second data set used contains administrative data from the Ministry of Labour related to enforcement activity. This dataset contains yearly information on the number of firms inspected by municipality from 1995 to 2013, the number of inspectors responsible for the auditing process in each state of the country and the location of all labour offices. We add to this administrative data set a piece of

Table 1 Descriptive statistics

	Mean	SD	Min.	Max.
Δ Informality	0.123	0.08	–0.173	0.369
Δ Non-employment	0.159	0.036	0.023	0.259
Δ Low-skill informality	0.136	0.086	–0.183	0.389
Δ Low-skill non-employment	0.144	0.04	–0.006	0.257
Δ High-skill informality	0.119	0.117	–0.388	0.583
Δ High-skill non-employment	0.081	0.043	–0.112	0.439
Δ Wages	0.03	0.125	–0.406	0.388
Δ Low-skill wages	0.125	0.136	–0.355	0.62
Δ High-skill wages	0.004	0.166	–0.449	0.654
Distance L.O. (per 100km)	1.36	1.07	0.05	6.87
Inspections per 100 firms	7.43	8.13	0	67.4

Notes: The Δ variables indicate the variation between 1991 and 2000. Distance L.O. is the maximum driving distance to the nearest labour office created up to 1990. Inspections per 100 firms is the total number of inspections conducted by the Ministry of Labour in the period 1995–1999 divided by the number of firms multiplied by 100. Skilled workers are defined as those who have at least completed high school. SD = standard deviation.

information crucial to our empirical strategy, namely, the date of creation of each local labour office (*subdelegacia*).[6] Of the 121 offices, 92 were created prior to 1990 (the first year of the trade-opening process), 19 were created between 1990 and 2000 and 10 were created after 2000. Finally, we use the data on the driving distance to the nearest labour office in each municipality compiled by Almeida and Carneiro (2012).

In a given year, we divide the total number of inspections carried out in a micro-region by the number of firms in that region. We retrieve this information from Almeida and Carneiro (2012) and focus on the period 1995–1999. As for the distance, we use the maximum distance to the nearest labour office within a micro-region. Given our discussion above about how enforcement is carried out in Brazil (i.e. inspectors must drive to the firms to conduct inspections), the greater the distance to the closest labour office, the weaker the enforcement in a given micro-region.[7] Figure 3 depicts regional variation in enforcement intensity, as well as the location of all 92 local labour offices created prior to 1990 in Brazil.

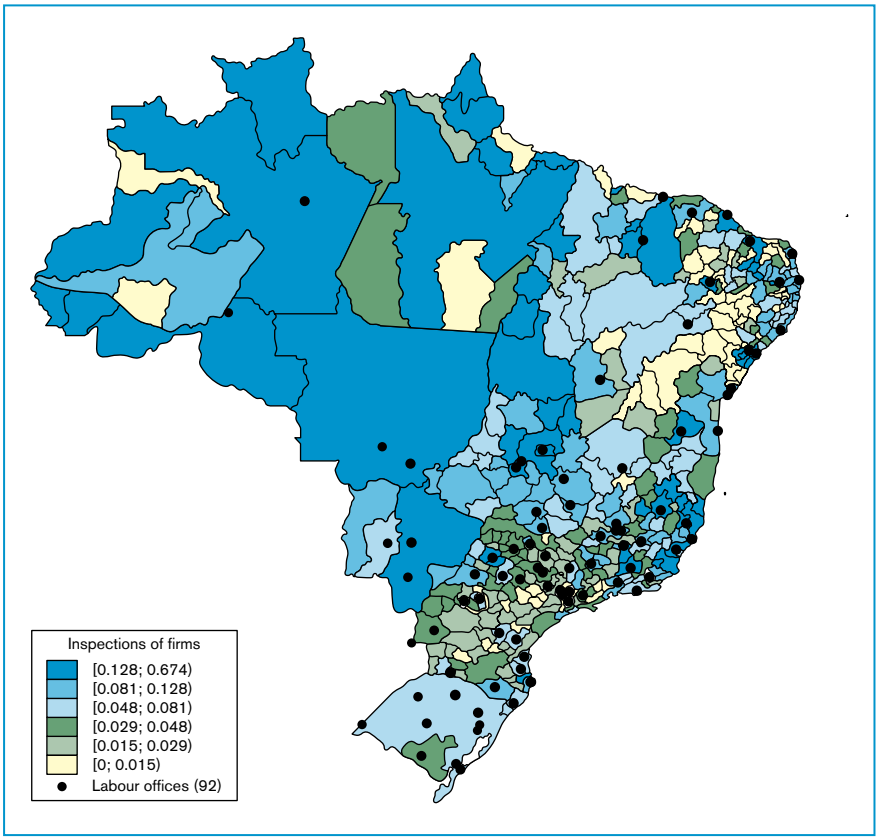
As Figure 4 shows, there is a lot of variation in the intensity of enforcement and in the density of local labour offices across micro-regions. Indeed, on average, there were around 7.5 inspections per 100 firms in a given micro-region in the period 1995–1999, but the most inspected region experienced almost 68 inspections per 100 firms. The average maximum distance between a municipality in a micro-region and the nearest labour office is 136 km, with a minimum of 5 km and maximum of 687 km.

Finally, a simple analysis shows a strong negative correlation between distance of a micro-region to the nearest labour office and enforcement level there (Ponczek and Ulyssea, 2018). Micro-regions located further away from the nearest labour office present lower levels of enforcement.

Empirical strategy

The empirical strategy consists of two steps. In the first step, we estimate the variation from 1991 to 2000 in informality and non-employment at the micro-region level. We do so by removing the influence of changes in socio-demographic characteristics, so these do not influence our results. As discussed above, the informality variable considers only those persons who work as employees in the private sector and we define as informal those who do not hold a formal contract (registered in the *Carteira de Trabalho*). Thus, we are effectively measuring the share of informal employees and excluding the self-employed. In order to assess the heterogeneous effects across skill groups, the above measures are also

Figure 4 Average number of inspections by firm, 1995–1999



Source: Ponczek and Ulyssea (2018).

calculated separately for low- and high-skilled workers. In the second step, we analyse whether the trade liberalization affected the changes in informality and non-employment over the 1991–2000 period. We do so by contrasting regions more and less affected by the trade-opening process using the local trade shock measure (RTC) discussed above.

The first set of results revisits the overall labour market impacts of the local trade shock and provides new evidence on the heterogeneity across skill levels. As the main goal of this chapter is to investigate how enforcement of labour regulations interacts with the trade shock in shaping the local labour market's response to trade liberalization, we also analyse the heterogeneous effects of trade, contrasting regions with lower and higher levels of enforcement. We do so by interacting the measure of enforcement with the measure of local trade shock.

Results

Overall effects on informality and non-employment

Our results are in line with previous studies (Dix-Carneiro and Kovak, 2017; Dix-Carneiro et al., 2018; Ponczek and Ulyssea, 2018) and show that, between 1991 and 2000, a micro-region very affected by the trade-opening shock experienced an increase of 2.9 and 3.2 percentage points in informality and non-employment rates, respectively.[8] The novel results refer to the heterogeneity of these effects across skill levels: strikingly, our results show that these effects come entirely from low-skill workers. In a micro-region very affected by the trade-opening shock, these workers experienced an increase of 3.3 and 3.4 percentage points in informality and non-employment rates, respectively.

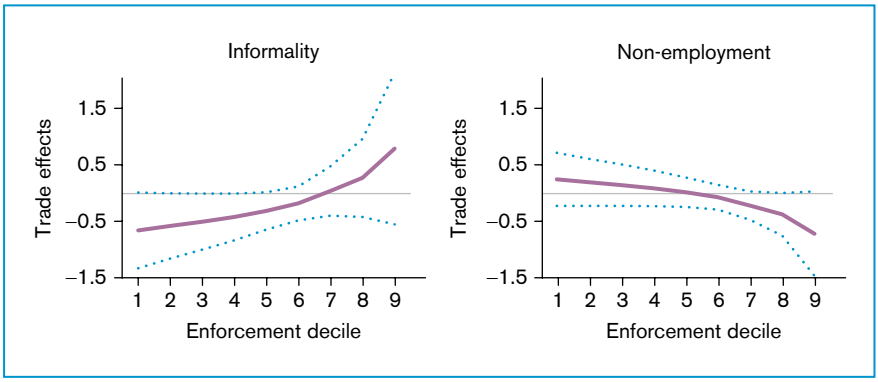
Heterogeneous effects across enforcement levels

Here the focus lies on how the labour demand shock affects informality and non-employment in regions with different levels of enforcement.[9] The analysis reveals that more enforcement tends to weaken the informality effects and reinforces the non-employment effects. Both results are entirely driven by the effects coming from low-skill workers. These results make intuitive sense, as labour regulations are likely to be more binding for low-skill workers (e.g. due to minimum wage laws) and therefore greater enforcement of labour regulations would have a greater impact on these workers. Moreover, the results from the previous section already show that low-skill workers seem to be the ones bearing the adjustment costs from trade opening. Therefore, one could expect that more or less flexibility via informal employment is most important for low-skill workers.

Figure 5 shows a plot of the trade effects on non-employment and informality (vertical axis) for different deciles of enforcement intensity (horizontal axis), going from the lowest levels of enforcement (first decile) to the highest levels of enforcement (10th decile). The figure shows a clear pattern: regions with low levels of enforcement experience strong informality effects of trade but no non-employment effects; in contrast, regions with high levels of enforcement do not observe any increase in informality but have strong non-employment effects.

In order to assess the magnitude of these heterogeneous effects, we consider the average intensity of the trade shock.[10] A region that has a very low enforcement intensity (0.33 inspections per 100 firms) would experience an increase of 4.6 percentage points in informality but no effect on employment. A region with high enforcement (26.3 inspections per 100 firms) would experience no informality effects but an increase of 6.5 percentage points in non-employment rates.

Figure 5 Trade effects by level of enforcement of labour regulation



Notes: Solid lines denote the trade effects for each enforcement decile, the dashed lines indicate the 95 percent confidence intervals.

Considering the overall effects, on average, the regional trade shock is associated with an increase of 1.2 and 1.4 percentage points in informality and non-employment, respectively.[11] Therefore, the lack or strength of enforcement can lead to labour market responses in either informality or non-employment that are four times as large as the effects observed on average (without accounting for heterogeneity).

Intuitively, in regions where there is greater enforcement capacity, firms are more likely to be detected by the Government and therefore the expected cost of informality is higher. Hence, firms are less likely to respond to an adverse shock by hiring a greater share of their workers informally. We therefore interpret these strong heterogeneous effects as evidence that informality was an important margin of adjustment for firms.

Did the Government respond by creating new labour offices?

If enforcement of labour regulation has significant consequences for both informality and non-employment, there may be scope for policies towards institutional strengthening. We thus analyse whether that was the case after the trade-opening episode in Brazil. The exercise consists of examining the correlation between labour office creation after 1995 and the trade shock measure. The results show that a greater regional trade shock between 1990 and 1995 leads to an increased probability of observing a new labour office after 1995 (see Appendix, Table A.2). The observed effect is driven entirely by the effect from regions where

low-skilled workers were more exposed to a negative trade shock. Thus, it seems that there is indeed some reaction from the Government towards strengthening enforcement of labour regulation in regions where increased informality would be expected according to the previous results.

Discussion

The results discussed above suggest that informality acts as an employment buffer when the economy is hit with an adverse shock. On average, regions more adversely affected by the trade shock (greater local tariff reduction) experienced substantial increases in both informality and non-employment. However, these effects were very unevenly distributed. Regions with stricter enforcement experienced lower informality effects but greater disemployment effects; symmetrically, regions with lower levels of enforcement experience larger increases in informality but lower disemployment effects.

This heterogeneity, however, is only observed among low-skilled workers, while high-skill workers do not seem to be affected at all by the trade shock. This result is consistent with the fact that low-skill workers are more likely to hold an informal contract and are typically employed in firms with lower productivity and smaller formal firms. In that sense, a higher informality response could be expected. Moreover, the minimum wage is likely to be binding for these workers and therefore there might be substantial downward wage rigidity for low-skill workers.

The policy implication from these results regarding enforcement is unclear, as there are two main forces at play. On the one hand, greater enforcement exacerbates the short-run unemployment effects from greater trade opening. On the other hand, if there is some form of "informality trap", whereby workers who experience longer informal spells have a harder time finding formal jobs during the subsequent recovery period, then lower enforcement might be detrimental. This might be particularly true for low-skill workers, whose human capital accumulation depends on job training and experience. These considerations also point to the importance of the existence of a social protection net, so that the most affected local labour markets can cope with rising unemployment, without having to resort to informality.

The main results of the paper show that, in the aftermath of trade opening, regions with stricter enforcement observed no informality effects but had large disemployment effects. Symmetrically, regions with weaker enforcement had nearly no employment losses but observed a substantial increase in

informal employment. All of these effects were concentrated on low-skill workers, while high-skill workers were largely unaffected. Thus, our results suggest that, indeed, informality provides greater de facto labour market flexibility, which may allow both firms and workers to cope better with the adverse local labour market shocks brought about by trade opening. However, in an environment with informality traps, long spells in the less-productive informal sector may lead to long-run detrimental consequences in human capital formation and growth. Besides, there is evidence that the Brazilian Government responded by strengthening labour enforcement in regions where low-skill workers were more exposed to a negative labour demand shock.

Endnotes

1. The authors thank the R4D initiative on Employment and Labour Market Outcomes, funded by the Swiss National Science Foundation and the Swiss Development Cooperation.

2. The average tariff fell from 30.5 per cent to 12.8 per cent and the standard deviation (i.e. the degree of dispersion) fell from 14.9 per cent to 7.4 per cent.

3. It is worth highlighting that, since input tariffs were also reduced, this could generate a positive effect on firms' growth and therefore overall employment. The net effect of these forces is ultimately an empirical question, which we address below.

4. The employment laws index measures the protection of labour and employment laws as the average of: (i) cost of alternatives to standard employment contracts; (ii) cost of increasing hours worked; (iii) cost of firing workers; and (iv) index of dismissal procedures (Botero et al. (2004), Table 1). Indexes: Brazil, 0.5676; United States, 0.2176; mean, 0.4876; median, 0.4749.

5. Ponczek and Ulyssea (2018) use alternative measures of local trade shocks, such as import ratios and import penetration coefficient, and show that the results remain unchanged.

6. It was necessary to directly call each of the 121 labour offices in Brazil to collect this information.

7. See Ponczek and Ulyssea (2018) for a more in-depth discussion of the production function of enforcement in Brazil using these data.

8. "Very affected" means moving a micro-region from the 90th to the 10th percentile of the distribution of the measure of trade shock (RTC).

9. Since levels of enforcement may be endogenous, the estimates take into account sources of exogenous variation in enforcement, represented by distance to the labour offices and number of inspectors at the state level.

10. Which means a regional tariff reduction of approximately 4.3 per cent.

11. See Appendix, Table A.1.

References

Almeida, R. and Carneiro, P. (2012), "Enforcement of labor regulation and informality", *American Economic Journal: Applied Economics*, 4(3): 64–89.

Botero, J. C., Djankov, S., La Porta, R., Lopez-de-Silanes, F. and Shleifer, A. (2004), "The regulation of labor", *Quarterly Journal of Economics*, 119(4): 1339–1382.

Costa, F., Garred, J. and Pessoa, J. P. (2016), "Winners and losers from a commodities-for-manufactures trade boom", *Journal of International Economics*, 102: 50–69.

David, H., Dorn, D. and Hanson, G. H. (2013), "The China syndrome: Local labor market effects of import competition in the United States", *American Economic Review*, 103(6): 2121–2168.

De Barros, R. P. and Corseuil, C. H. (2004), "The Impact of Regulations on Brazilian Labor Market Performance", in Heckman, J. J. and Pagés, C. (eds.), *Law and Employment: Lessons from Latin America and the Caribbean,* Chicago: University of Chicago Press.

Dix-Carneiro, R. and Kovak, B. K. (2017), "Trade liberalization and regional dynamics", *American Economic Review*, 107(10): 2908–2946.

Dix-Carneiro, R., Soares, R. R. and Ulyssea, G. (2018), "Economic shocks and crime: Evidence from the Brazilian trade liberalization", *American Economic Journal: Applied Economics*, 10(4): 158–195.

Kovak, B. K. (2013), "Regional effects of trade reform: What is the correct measure of liberalization?", *American Economic Review*, 103(5): 1960–1976.

Kume, H., Piani, G. and de Souza, C. F. B. (2003), "A política brasileira de importação no período 1987–1998: Descrição e avaliação", in Corseuil, C. H. and Kume, H. (eds.), *A Abertura Comercial Brasileira Nos Anos 1990: Impacto Sobre Emprego e Salário*, Brasília: Instituto de Pesquisa Econômica Aplicada (IPEA) (in Portugese).

Ponczek, V. and Ulyssea, G. (2018), "Enforcement of Labor Regulation and the Labor Market Effects of Trade: Evidence from Brazil", Discussion Paper No. 11783, Bonn: Institute of Labor Economics (IZA).

Ulyssea, G. (2018), "Firms, informality, and development: Theory and evidence from Brazil", *American Economic Review*, 108(8): 2015–2047.

Appendix

Table A.1 Overall effects

	All		Low-skill		High-skill	
	Informal	Non-Employed	Informal	Non-Employed	Informal	Non-Employed
RTC	–0.289***	–0.317***				
	(0.080)	(0.043)				
RTC – Unskilled			–0.335***	–0.340***		
			(0.095)	(0.047)		
RTC – Skilled					0.134	–0.097
					(0.172)	(0.063)
Observations	413	413	413	413	413	413
R^2	0.364	0.368	0.379	0.377	0.306	0.317

Notes: Standard errors clustered at the mesoregion level. The regressions include state dummies. RTC = regional tariff change.* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

Table A.2 Labour office creation after 1995

	RTC	RTC – Unskilled	RTC – Skilled
RTC	–0.651*	–0.682*	–0.264
	(0.349)	(0.347)	(0.253)
Observations	413	413	413
R^2	0.087	0.088	0.075

Notes: Standard errors clustered at the mesoregion level. The regressions include state dummies. RTC = regional tariff change. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

4 German Employment Legislation and its Impact on the Trade and Labour Market Nexus

Antonia Reinecke and Hans-Jörg Schmerer

"The sick man of the euro"

Motivated by Germany's economic weakness and high labour market inflexibility, *The Economist* (1999) once described the country as "the sick man of the euro". The public debate surrounding this statement considered Germany as one of the major threats to the euro, due to its persistently high rates of unemployment since the mid-1970s. The rather low levels of job creation were presumed to be caused by labour market institutions, including restrictive employment protection, a high level of union coverage and a generous welfare system. The German Government started to transform the labour market legislation at the beginning of the 21st century, by giving particular enterprises more flexibility in hiring and firing their employees as part of an in-depth labour market reform programme. Other adjustments included lower unemployment benefits and various active labour market policies. Consequently, unemployment rates in Germany were plummeting shortly after the enforcement of the reforms. Today, Germany's rate of unemployment is at a record low level of 3.4 per cent,[1] which is the second-lowest rate in the European Union (EU). To some extent, this success is an achievement that can be attributed to the rigorous labour market reforms.

However, these reforms were not the only source of labour market turmoil in recent decades. Declining transportation costs due to technological progress, accession of the People's Republic of China (hereafter, China) to the World Trade Organization (WTO), and the EU's enlargement strategy, extending potential membership to Eastern European countries in 2004 and 2007, led to soaring volumes of both imports and exports. Firms' international activities were on the increase through an increasing number of exporting firms and higher trade volumes for already exporting firms. The rise of emerging economies, such as China, magnified the pressure perceived by incumbent firms in more labour-intensive industries. Consumers worldwide benefited from lower world market prices of less-complex goods but incumbent firms were confronted with lower profit margins. On the one hand, this reduction in profit margins may be associated with a reduced labour demand, which would be consistently reflected in lower hiring and potentially higher firing rates among firms. On the other hand,

the composition of labour demand may be affected by intensified international relations associated with international outsourcing of production processes (offshoring). It can be assumed that less complex tasks in particular are offshored. Hence, it can be expected that labour demand becomes more skill intensive. To adjust labour demand within a firm, this phenomenon may be reflected by increased advanced training of already hired workers financed by the firm – especially if hiring and firing costs are high.

The focus of this study is the long-run interaction effect of firm-specific employment protection and globalization on hiring and firing decisions, as well as educational measures taken by firms: does employment protection provide the basis for a smoother adjustment process for firms exposed to Chinese import competition? Put differently, does employment protection legislation (EPL) have an effect on hiring, firing and educational measures taken by firms that were highly exposed to Chinese import competition between the 1990s and early 2000s?

The following section presents a short descriptive overview of the development of international trade relations between China and Germany. The focus of the third section lies on a broader description of the labour market reforms established between 2003 and 2005. Theoretical mechanisms through which trade and employment protection affect the domestic job market will be identified in the fourth section. These theoretical considerations motivate an empirical application of employment protection using German plant-level data. The results are presented in the fifth section and some policy recommendations are provided in the last section.

Stylized facts on the pattern of imports from China

A first glimpse at the data confirms China's rising importance on the German market in both low- and high-skill-intensive[2] product imports. Germany's total import volume from China since 1991 has increased by more than 15 times (Table 1).

Since 1991, imports from China of low-skill-intensive products increased at high three-digit growth rates. Imports of textile fabrics increased by a factor of 875. Imports of photographic and transportation goods grew by factors of 186 and 422, respectively. This development attests to increasing import competition in certain product groups, induced by China's opening-up strategy.

Another phenomenon associated with soaring imports from China is offshoring. Offshoring describes the relocation of entrepreneurial tasks or whole parts of the production process abroad. The share of Chinese manufacturing firms in the

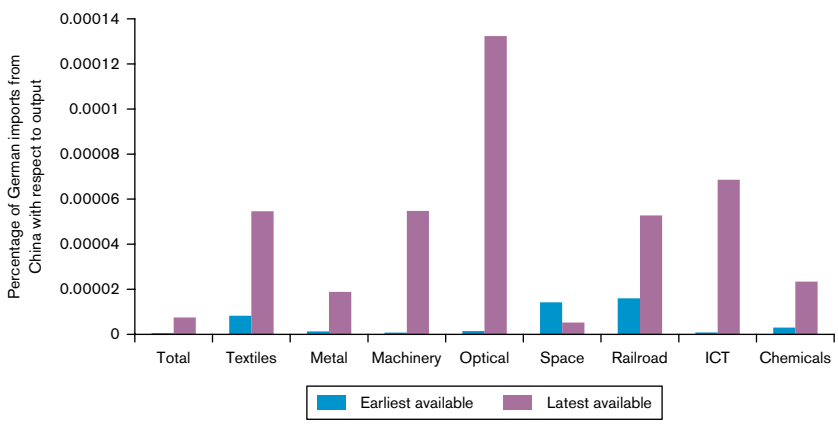
Table 1 Top five German import products from China by growth factor, selected years 1995–2017

	Growth factor (base year 1991)					
	1995	2000	2005	2010	2015	2017
Textile fabrics (HS 59)	5.766	24.034	208.352	611.556	816.029	875.350
Railroad goods (HS 86)	8.547	24.271	18.119	291.649	406.661	422.427
Tanning or dyeing extracts (HS 32)	5.112	22.253	39.866	77.537	229.465	264.331
Photographic goods (HS 37)	17.486	22.529	184.04	98.089	173.951	185.708
Nuclear reactors, boilers, etc. (HS 84)	5.155	11.429	59.666	115.035	124.078	137.414

Source: Authors' calculations based on COMTRADE data.

global supply chains of German manufacturers increased significantly over time. Figure 1 highlights this evolution by approximating offshoring with the share of German imports of intermediate goods from China on total German output. The share of intermediate goods import from China on German output has increased significantly between 1991 and 2011.[3]

Figure 1 Import of Chinese intermediate goods relative to the respective industry's output



Source: Authors' calculations based on OECD data.

Did Germany manage to overcome the potential job market distortions that stem from soaring competition in a highly protected and inflexible labour market? Likely, the reforms sketched above and discussed in detail below help explain the low levels of unemployment today.

The German labour market reform

The so-called "Hartz reforms", named after Peter Hartz, who headed a government commission to reform the labour market, were announced in March 2003 as part of "Agenda 2010". The Hartz concept describes various strategies on how to reform the welfare system in particular and labour market institutions in general. The new regulations were implemented in stages between 2003 and 2005 with the objective of increasing the flexibility of the German labour market. The reform initiative itself was triggered by a public employment agency scandal. The agency has been blamed for serious manipulation of the placement statistics, as approximately one third of the reported job placements were unjustified or at least lacked a reliable record. The objective of the subsequent Hartz reforms was both to reorganize the Federal Employment Agency and halve the number of unemployed from four million to two million jobless workers. One key element of the reforms included more flexible dismissal protection legislation.[4] Advocates of the reforms claim that the plummeting rates of unemployment in more recent years are a direct consequence of the reform programme,[5] while opponents believe that that success is built upon the cost of less attractive working conditions for active workers.

The German Federation of Trade Unions (DGB), which includes all member trade unions[6] was strictly against the Hartz reforms. It argued that the reforms were too focused on the reduction of employees' rights and would have little positive impact on the labour market. The DGB predicted a negative effect of loosened employment protection legislation on the duration of employment and, therefore, a reduction in incentives for firms to invest in training and development by means of advanced (in-house or external) training encouraged by the firm to adjust labour supply at the intra-firm level.

Employment protection reforms

The focus of this analysis is the long-run impact of dismissal protection on the trade and labour market nexus.[7] Before the Hartz reforms, an increase in the workforce from five to six employees immediately led to the full application of the Employment Protection Act. The modification of the law formulates a higher threshold, granting

more room for adjustments in smaller establishments. On that account, the reform increased the threshold for EPL from five to 10 employees.

Thus, employment protection in Germany is firm specific as smaller firms are excluded. Note that Germany is not the only country with firm-specific thresholds for EPL. Other countries apply similar thresholds determined by the number of employees.[8]

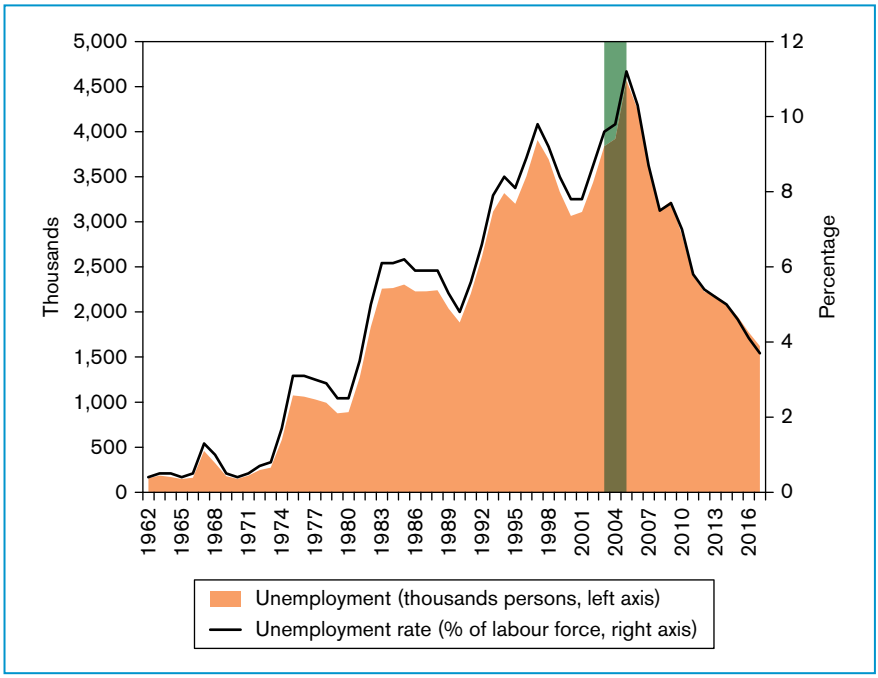
But why are smaller firms excluded from the protection legislation? Smaller firms are less productive, have lower revenues and have fewer options to deal with economic fluctuations and competition. Employment protection is an additional cost factor for firms that has a more pronounced impact on smaller firms with less scope to adjust to negative shocks. Employment protection may reduce their ability to adjust to short-run fluctuations coupled to a higher risk of bankruptcy. Thus, restricting employment protection to more productive firms should allow less profitable firms to cope with competition from abroad.

Does more flexible dismissal protection help to overcome negative employment shocks?

Existing research for Germany suggests that the Hartz reforms achieved their objectives to a certain degree: unemployment rates fell by around 67 per cent between 2005 and 2017, from 11.2 per cent to 3.7 per cent (Figure 2). In Figure 2, the left axis identifies the number of unemployed persons in thousands, while the right axis represents the unemployment rate in percentage points. The green bar highlights the period when the reforms were implemented. From Figure 2 it appears that the unemployment rate increased stepwise in the period between 1962 and 2005, from 0.4 per cent to 11.2 per cent. The number in 2005 represents the peak of unemployment in Germany, followed by a steady decline shortly after 2005. In 2017, 15 years after the introduction of the Hartz reforms, the unemployment rate amounted to approximately 3.7 per cent, the lowest rate in Germany since 1982.

Overall, the academic literature gives a positive evaluation of the reform outcomes. The reforms raised the probability of workers' job acceptance as well as job market entry, due to lower and shorter transfer payments of unemployment compensation to unemployed persons (e.g. Kettner and Rebien, 2009; Klinger and Rothe, 2010; Walwei, 2014). However, these results must be interpreted with caution as other labour market determinants were changing simultaneously: in the 1990s, German establishments improved their competitiveness through investments in emerging economies. Offshoring domestic jobs to more flexible low-wage countries, such as those in Asia and Eastern Europe, contributed to the rise in competitiveness of

Figure 2 Unemployment development in Germany, 1962–2017



Source: Authors' illustration based on OECD data.

German plants. The economic boom between 2005 and 2008 combined with stable labour costs further improved Germany's economic development (Walwei, 2014).

The particular consequences of the changes in the employment protection threshold on the labour market have been the subject of several studies. Empirical evidence using establishment-level data suggests that the greater employment protection flexibility provided by the reform had a positive effect on the hiring behaviour of small firms, but no impact on the number of dismissals (Bauernschuster, 2009, 2013). A substitution effect from temporary to permanent contracts has also been identified, suggesting higher job stability for workers employed in small firms after the reform. This substitution effect appears to be more pronounced in plants operating in the trade and construction sector. Consistently, the overall effects of the reforms can be evaluated as positive and the research findings cannot approve the expected negative consequences so far.

However, the studies mentioned above were focusing on the direct labour market effects of employment protection without taking into consideration potential interaction effects with globalization.

Theoretical considerations on the trade and employment protection nexus

There are several opposing effects of trade on the labour market and it may be important to distinguish between final and intermediate goods.

Final goods import

More competition, with foreign firms selling similar final goods at lower prices in the domestic market, affects all firms irrespective of the individual firms' engagement in foreign markets. Purely domestic firms and exporting firms are equally affected by such a shock. The heightened competition puts pressure on incumbent firms, pushing the less competitive ones out of the market, which is associated with job losses.

Intermediate goods import

Import of intermediate goods, which is treated as a proxy for domestic firms' offshoring activities, can have ambiguous effects on labour market outcomes. There are direct effects on the workforce composition within the offshoring firm. More routine tasks of the production chain can be performed in countries producing at lower labour cost. Domestic workers who were handling those jobs become redundant due to offshoring. Offshorable routine tasks were usually executed by less-skilled workers. Offshoring therefore had a much more pronounced effect on relatively less-skilled workers, whereas more abstract tasks were protected due to their lower offshorability. By the same token, offshoring enables firms to specialize their production in more sophisticated tasks. Consequently, this channel has the power to shift firms' labour demand to more highly skilled workers in order to reallocate resources to more abstract tasks, as discussed by Grossman and Rossi-Hansberg (2008). This mechanism may raise firms' productivity, potentially imposing positive employment effects.

Total effect of imports

Higher import competition increases pressure on incumbent final goods producers, which may be forced to exit the market. Offshoring is expected to destroy jobs in the incumbent domestic firms, but it could have a positive employment effect due to higher firm productivity. Whether the first or the latter effect dominates depends on several determinants, such as import composition and labour market structure or institutions. The two opposing effects may cancel each other out. Moreover, the negative effects of import competition can be thwarted through soaring exports to foreign markets. Several academic studies have been able to identify a positive

effect on job creation and level of employment caused by firms' international export relations (Biscourp and Kramarz, 2007; Dutt et al., 2009; Rutkowski, 2003; Wagner, 2002).

The effect of employment protection

Employment protection likely hampers the labour market effects of both imports and exports. On the one hand, employment protection may lower the job creation effect of exports by disposing firms to react more moderately to business cycle movements. Indeed, fewer workers are discharged in economic downturns but firms also hesitate to hire new workers in times of economic upswing, due to potential future severance payments when negative employment adjustments become necessary (Messina and Vallanti, 2007; Micco and Pagés, 2006; Millán et al., 2013; Rutkowski, 2003). This idea can be transferred to the positive effects of higher foreign demand for domestic goods on the respective domestic producers' labour demand.

On the other hand, employment protection may increase job stability by preventing firms dismissing workers. Employment protection may motivate firms to invest in training and development of their workforce if firing workers is costly. Potential job losses due to trade liberalization can be prevented when the costs of recruiting new high-skilled workers exceed the costs of training the existing low-skilled workers in certain abilities that enable them also to execute more abstract tasks. Firms can train their workers in very specific skills that cannot be offshored abroad. All things being equal, the higher the costs associated with the recruitment of more skilled workers, the higher the incentive to invest in on-the-job training.[9]

Empirical analysis

Using plant-level data for German manufacturers, the link between import competition from China and Eastern Europe, plants' hiring and firing behaviour and the interaction with employment protection is studied empirically in this section. In the second part of the empirical application, the role of employment protection in firms' training decisions is studied using matching econometrics.

Empirical strategy

The empirical analysis is based upon the Federal Employment Agency's Institute for Employment Research (IAB) establishment panel, which contains information on German manufacturers collected in a representative panel data survey from 1993 to 2014. The interaction effects of employment protection and import

competition are studied in a cross-sectional regression. Averages of the three most recent years in the data (2012–2014) are confronted with past changes in the exposure to import and export on the industry-region level. This procedure attenuates the impact of outliers on the empirical analysis. The import/export shock measures applied in the analysis cover the years 1995 to 2012. These periods were selected in order to identify the long-run interaction effect between employment protection and imports on firms' hiring and firing behaviour. The magnitude of the shock must be significant for such an analysis and this is the case for the period 1995–2012, which covers the main period of globalization as well as China's accession to the WTO. Furthermore, the EU's enlargement to include Eastern European countries, in 2004 and 2007, were implemented in the same period. To take potential endogeneity issues into consideration, the changes in the past are regressed upon present outcomes. All plant-level variables, as well as the data used for calculating the weights of the import shock, stem from the survey data. The import shock itself is taken from Dauth et al. (2014), who use COMTRADE data on imports and exports from China and Eastern Europe to Germany. The information is collected on a very precise three-digit level.

One may argue that the time span covered by the outcome variables is too short to capture hiring and firing associated with trade liberalization, which may have happened shortly after China's accession to the WTO in 2001. Thus, the study is replicated for averages over the years 2003 to 2014. The findings are in line with the benchmark regression results.

In a first step, the effects of imports from China and Eastern Europe (*IMP*) on firms' hiring, firing and vacancy rates are tested in a linear regression model. This exercise tries to assess whether firms in sectors more exposed to import competition report significantly different hiring and firing rates, based upon the following benchmark regression model:

$$y_i = \gamma + \alpha_1 \, IMP\_shock_{qr} + \alpha_2 CV_i + u_i. \qquad (1)$$

The variable y_i represents the hiring, firing or vacancy rate of plant *i*. In the data, hiring, firing and vacancies are reported as total number of employees hired or fired in a respective period. Similarly, vacancies are reported as total number of open positions offered by the firm in period *t*. In the analysis, the dependent variables are defined as rates: the hiring rate is defined as the ratio between the number of new recruitments relative to the total number of workers in the respective plant. Similarly, the firing rate is specified as the number of dismissals relative to the total number of individuals employed by the respective firm. The vacancy rate describes the fraction of job openings on total employment in plant *i*. The focus of the analysis is the effect of the Chinese import shock denoted by IMP_shock_{qr} in industry *q* and

region r on a firm's hiring and firing behaviour. The plant-level outcomes constructed for the most recent periods in the data set are regressed upon the import shock constructed as:

$$IMP\_shock_{qr} = E\,\Delta IMP_{qs}, \tag{2}$$

where ΔIMP_{qs} is the change in imports from China (or Eastern Europe in the robustness check) in industry q over the period s, which is defined as the change over the years 1995 to 2012. In line with Autor et al. (2013), imports are weighted by the average share of regional employment in industry q on total employment in industry q between 1995 and 2014: $E = \frac{E_{rq}}{E_q}$. These weights account for the different regional dependency levels of firms across space and industries. A region is defined as a town or district. The higher the local employment share in the respective region-industry cell, the more exposed the firms in this cell to the import shock. The matrix CV_i contains various averaged control variables over the time period 2012–2014 at the plant level.[10] The error term u_i collects the residuals from the regressions.

After analysing the effect of the import shock between 1995 and 2012 on the current employment policy of a firm, the effect of EPL on the relationship between imports and a firm's employment policy is identified using interaction terms between an employment protection identifier and the import shock variable. Employment protection is coded using a dummy variable that takes the value one when employment protection is binding in the firm $(D_{EPL_i} = 1)$ and zero if the plant is not exempted from providing employment protection $(D_{EPL_i} = 0)$. Employment protection is mandatory if the employment level of a firm exceeds 10 employees. As in the previous analysis, reference is the average employment level between 2012 and 2014. The regression with interaction term reads:

$$y_i = \gamma + \alpha_1 \Delta IMP_{qs} + \alpha_2 D_{EPL_i} + \alpha_3 \left(\Delta IMP_{qs} \times D_{EPL_i}\right) + \alpha_4 CV_i + u_i\,. \tag{3}$$

Due to the fact that the employment protection dummy is determined by the size of the plant, all regressions are replicated using an interaction term between the size of the firm in logs and the import shock measure instead of the employment protection dummy as the robustness check.

Treatment effect analysis

The benchmark results can be interpreted as causal because lagged changes in the plants' exposure to trade are regressed upon current outcome values at the firm level. Plant-level hiring, firing and vacancy rates in the years 2012 to 2014 cannot be determinants of the import shock in the years 1995 to 2012.

However, the results obtained from the linear regression approach sketched above may still be plagued by an omitted variable bias. Therefore, further robustness checks are elaborated using matching econometrics that allow estimation of causal relations. The focus of this empirical exercise is to assess the role of employment protection on the likelihood of providing training to the workers. It is possible to estimate the average treatment effect of a particular policy measure on an outcome variable, which is the training indicator of the firm in our analysis. The plants in the sample are separated into two groups. Plants with employment $E_i \leq 10$ are excluded from employment protection and belong to the control group. Plants with an employment level $E_i > 10$ are obligated to provide employment protection and belong to the treatment group. Again, the reference employment level that separates the treated from the untreated is the average employment between 2012 and 2014. All plants that switch treatment and control groups during the period of interest (2012–2014) are dropped from the sample. The average effect of employment protection (average treatment effect on the treated – ATET) is computed based upon systematic differences between plants belonging to the treatment group and plants belonging to the control group. The matching algorithm identifies "statistical twins" (matches) by pairing similar plants that differ with respect to the status of treatment. Treated and untreated plants with similar characteristics are compared to each other.[11] The computed plant-level differences are averaged over all plants in the sample.

The treatment dummy is denoted by T_i:

$$T_i = \begin{cases} 1 & if \quad E_i > 10 \\ 0 & if \quad E_i \leq 10 \end{cases} \tag{4}$$

Given this definition of treatment, the outcome equation reads:

$$y_i = \delta_1 \left(T_i\right) + \delta_2 \left(CV_i\right) + \varepsilon_i, \tag{5}$$

where y_i specifies the various training dummies. The survey data at hand provides information about the general offer of advanced training encouraged by the firm. "Encouraged by the firm" means that the participating employee is exempted from work or the training is financed by the firm. If this question is affirmed, information about in-house and external training is prompted to specify the kind of educational training offered by the firm. Hence, this analysis is able to investigate the effect of employment protection on the provision of advanced training in general, as well as on a more specific offer of educational measures, by distinguishing between internal and external training. All questions concerning advanced training could be answered by the firm with "yes" or "no"; hence, the share of employees taking up advanced educational training provided by the firm cannot be identified.

To ensure comparability of the firms with respect to size, all firms with number of employees $E_i > 50$ are excluded from the analysis. Additional robustness checks exclude firms satisfying $E_i > 20$. Note that the treatment is constructed using size. Thus, the size variable cannot be used as a matching variable. The dummy variables are matched exactly.[12] To avoid biased estimates due to the matching of more than two continuous covariates, the correction term by Abadie and Imbens (2011) finds application in our treatment analysis. The standard errors computed based on the model are robust to heteroscedasticity.

Empirical results

Table 2 presents the results of the benchmark regression set-up, including import measures in levels weighted by sectoral employment shares. The reported standard errors are clustered at the industry-region level and the dependent variables are hiring, firing and vacancy rates at the plant level.

The coefficients of the Chinese import shock measure in the first column of Table 2 do not support any of the hypothesized labour market effects. The results suggest that the Chinese import shock can be associated with lower hiring rates today. However, the coefficient is significant only on the 10 per cent level. The coefficients in columns 2 and 3 are insignificant. Hence, there is no evidence that the import shock in the last decades led to significantly higher firing rates today and only little evidence that firms in industries more exposed to imports from China report significantly lower hiring rates. At first glance, the magnitude of the effect seems to be very large. But the marginal effect can be translated using information on the standard deviation of the variable of interest, which is associated with a 0.138 percentage point lower hiring rate. Thus, the magnitude of the effect is very small. Economically, the effect is insignificant.

Interestingly, the export shock measure is negative and significant. Plants operating in industry-region cells with high export exposure report higher persistency through lower hiring, firing and vacancy rates. Firms in export-oriented regions are larger, with systematically lower job turnover. Again, the effect can be interpreted using an increase in the variable of interest by one standard deviation, which is associated with a 0.238 percentage point lower hiring rate. The effect is stronger compared with the outcome obtained for the import shock measure, but it is still rather small.

The estimated model in panels 2 and 3 includes the interaction term between the EPL dummy and the import shock, as well as the interaction between the EPL dummy and the export shock. Instead of reporting the coefficients of the interaction term between the import/export shock and employment protection, panels 2 and 3 report directly the marginal effects of imports and exports on diverse employment

outcome variables conditional on the employment protection status. Doing so, the magnitude of the results can be interpreted directly. The respective marginal effects are reported in columns (4) to (9) of Table 2. Columns (4) to (6) report the marginal effect conditional on $D_{EPL_i} = 1$, while columns (7) to (9) show the marginal effects conditional on $D_{EPL_i} = 0$. The results indicate that EPL tends to smooth employment fluctuations: the effects are less pronounced in the regime of plants with employment protection as indicated by the smaller coefficients in columns (4) to (6) compared with columns (7) to (9).

Table 3 reports marginal effects obtained from regressions based upon a longer period, covering the years 2003 to 2014. This robustness check addresses the concern that the adjustments to globalization were implemented earlier than 2010. The year 2003 is shortly after China's accession to the WTO and precisely the year when the labour market reforms were implemented.

Unprotected firms react to higher import competition with lower hiring rates. The effects of import competition on firing and vacancy posting are insignificant at the 1 per cent level. Compared with the benchmark results, the magnitude of the effects becomes even bigger.

In summary, the regressions do not reveal convincing interaction effects between trade liberalization and employment protection, which is in line with the labour market literature on the effects of employment protection and its causal effects on German firms' labour demand.

Surprisingly, the import shock turns out to have a significant impact only on the plants' hiring rates. The effect of the export shock is significant and negative for all outcome variables based on the more recent period (Table 2) but insignificant when earlier periods are included (Table 3). The benchmark regressions are also estimated based upon a sample including plants with a maximum of 50 employees as a robustness check, presented in Table A.1 (see Appendix). These estimates confirm the results reported in Table 2. Are the results really driven by employment protection or are they exclusively about a size effect that takes place independently of the 10-employees threshold? To take care of this concern, all regressions are estimated again using the interaction between plant size and the import/export shock. This analysis allows determination of the marginal effect at different size clusters. Table 4 presents the coefficients for the relevant variables.

The results change from those analysed in Table 2: imports from China are associated with a significantly lower hiring rate but higher vacancy rate. The latter effect is significant only on the 10 per cent level. In contrast, the export shock to China tends to be associated with significantly negative effects on hiring, firing and

Table 2 Benchmark results including firm averages, 2010–2014

	All firms			$D_{EPL} = 1$			$D_{EPL} = 0$		
	Hiring rate (1)	Firing rate (2)	Vacancy rate (3)	Hiring rate (4)	Firing rate (5)	Vacancy rate (6)	Hiring rate (7)	Firing rate (8)	Vacancy rate (9)
Chinese import shock (industry)	−0.372*	−0.062	−0.115	−0.185**	−0.038	−0.049	−6.853***	−0.320	−1.062
	(0.202)	(0.117)	(0.078)	(0.793)	(0.077)	(0.046)	(1.824)	(2.966)	(1.528)
Chinese export shock (industry)	−6.275*	−4.885**	−3.093*	−2.850	−3.154*	−2.156**	−25.343**	−15.484**	−12.442*
	(3.506)	(2.121)	(1.672)	(2.517)	(1.903)	(1.000)	(10.993)	(7.041)	(6.846)
Observation	4,210	4,215	4,212	4,151	4,156	4,153	4,151	4,156	4,153

Note: Standard errors in brackets are clustered at the 3-digit industry/state level. Significance levels are reported at the 10 per cent (* $p<0.10$), 5 per cent (** $p<0.05$) or 1 per cent (*** $p<0.01$) level. Columns (1) to (3) represent the estimates including exclusively the effect of the import and export shock. Columns (4) to (9) include the marginal effects of the import and export shock under consideration of the interaction terms *Chinese import shock* × *EPL* and *Chinese export shock* × *EPL* Columns (4) to (6) include marginal effects with $D_{EPL} = 1$ and in columns (7) to (8) with $D_{EPL} = 0$. The import measure is constructed using COMTRADE data for changes in imports from China to Germany between 1995 and 2012. The import measures are weighted by the employment share within each respective industry and province. The weights are constructed using data of the IAB establishment panel. All firm outcome variables are collapsed over the most recent period, 2012–2014. Control variables not represented here are the west dummy (which takes a value of one if a firm is located in western Germany) and the council dummy (which specifies firms with councils). Dummy variables of firms switching their status in the three years are recoded according to the median threshold. The dummy is recoded as 1 if the average is equal or above the median, otherwise it is 0. Additional controls are female, part-time and short-term contract share (i.e. a firm's share of female, part-time and short-term employees, respectively) and the export share of a firm. We are using the total employment in one region and industry over the years 1993 to 2014 and relate this measure to the total number of workers in this industry. All regressions include a constant.

Table 3 Robustness check including incumbent firms active 2003–2014

	All firms			D_{EPL} = 1			D_{EPL} = 0		
	Hiring rate (1)	Firing rate (2)	Vacancy rate (3)	Hiring rate (4)	Firing rate (5)	Vacancy rate (6)	Hiring rate (7)	Firing rate (8)	Vacancy rate (9)
Chinese import shock (industry)	−3.313**	2.476	−0.222	−0.314	3.337*	1.024	−9.587***	−1.213	−3.199*
	(1.633)	(2.087)	(0.853)	(1.185)	(1.892)	(0.877)	(3.658)	(4.913)	(1.865)
Chinese export shock (industry)	−9.927	−6.324	4.566	−4.026	−2.330	−0.973	−26.667	−30.105**	22.295
	(6.304)	(7.053)	(7.966)	(5.923)	(7.772)	(4.159)	(22.960)	(14.332)	(39.842)
Observation	3,611	3,611	3,611	3,411	3,411	3,411	3,411	3,411	3,411

Note: Standard errors in brackets are clustered at the 3-digit industry/state level. Significance levels are reported at the 10 per cent (* p<0.10), 5 per cent (** p<0.05) or 1 per cent (*** p<0.01) level. Columns (1) to (3) represent the estimates including exclusively the effect of the import and export shock. Columns (4) to (9) include the marginal effects of the import and export shock under consideration of the interaction terms *Chinese import shock* × *EPL* and *Chinese export shock* × *EPL* . Columns (4) to (6) include marginal effects with D_{EPL} = 1 and in columns (7) to (8) with D_{EPL} = 0. The import measure is constructed using COMTRADE data for changes in imports from China to Germany between 1995 and 2003. The import measures are weighted by the employment share within each respective industry and province. The weights are constructed using data of the IAB establishment panel. Firm outcome variables are collapsed over the period 2003–2014. Firms that are not observed in the first period are dropped from the sample. Control variables included are the west dummy (which takes a value of 1 if a firm is located in western Germany) and the council dummy (which specifies firms with councils). Dummy variables of firms switching their status in the three years are recoded to the median threshold. The dummy is recoded as 1 if the average is equal or above the median, otherwise it is 0. Additional controls are female, part-time and short-term contract share (a firm's share of female, part-time and short-term employees, respectively) and the export share of a firm. We are using the total employment in one region and industry over the years 1993–2014 and relate this measure to the total number of workers in this industry. All regressions include a constant and year dummies, the coefficients of which are not reported in the table.

Table 4 Results including interaction with firm size

	Hiring rate (1)	Firing rate (2)	Vacancy rate (3)
Chinese import shock (industry)	−2.836***	−0.037	0.915*
	(0.867)	(1.282)	(0.555)
Chinese export shock (industry)	−24.763**	−13.140**	−16.993***
	(10.629)	(6.506)	(5.498)
Ln(labour)	−0.896***	−0.757***	−0.757***
	(0.221)	(0.179)	(0.134)
Ln(labour) × Chinese import shock	0.881***	−0.001	0.294
	(0.263)	(0.426)	(0.179)
Ln(labour) × Chinese export shock	4.752**	2.151	3.600***
	(2.053)	(1.439)	(1.138)
Observation	4,210	4,215	4,212

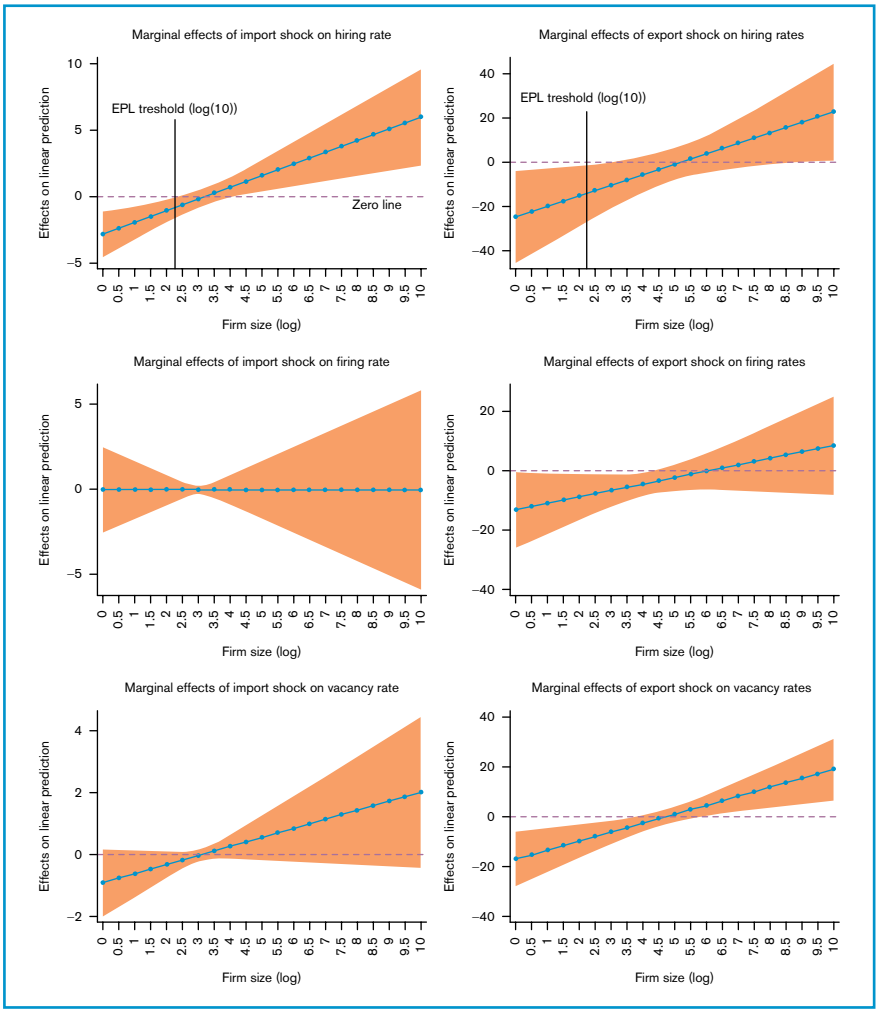
Note: Standard errors in brackets are clustered at the 3-digit industry/state level. Significance levels are reported at the 10 per cent (* $p<0.10$), 5 per cent (** $p<0.05$) or 1 per cent (*** $p<0.01$) level. The import measure is constructed using COMTRADE data for changes in imports from China to Germany between 1995 and 2012. The import measures are weighted by the employment share within each respective industry and province. The weights are constructed using data of the IAB establishment panel. Control variables not reported in the table are the west dummy (which takes a value of 1 if a firm is located in western Germany) and the council dummy (which specifies firms with councils). Dummy variables of firms switching their status in the three years are recoded to the median threshold. The dummy is recoded as 1 if the average is equal or above the median, otherwise it is 0. Additional controls are female, part-time and short-term contract share (a firm's share of female, part-time and short-term employees, respectively) and the export share of a firm. We are using the total employment in one region and industry over the years 1993–2014 and relate this measure to the total number of workers in this industry. All regressions include a constant and year dummies, the coefficients of which are not reported in the table.

vacancy rates, which support the benchmark results in Table 2: firms operating in an industry highly exposed to export are characterized by higher job stability.

However, the marginal effects must be computed conditional on plant size. This can be done using appropriate graphs. Predictions of the marginal effects of imports and exports are plotted for the log of plant size, varying from 0 to a rather high level of 10 (Figure 3). The first row plots the marginal effects for column (1) of Table 4, the second row of plots illustrates the coefficients in column (2) of Table 4 and the third row of plots corresponds to column (3) of Table 4. The left plots are for imports, whereas the right plots illustrate marginal effects of exports.

The results show that the marginal effect of import and export shock on hiring rates is significant up to the vertical "EPL threshold" line. Plants to the left of this vertical line are not subject to employment protection. The marginal effect of the import shock is negative and significant for those plants, which is in line with the results reported for the benchmark regression set-up. The effect becomes insignificant for plants between the employment protection threshold and log firm size around 4.3, which corresponds to a firm size of approximately 74 employees. The effect turns

Figure 3 Interaction effects between trade and firm size on hiring, firing and vacancy posting



Note: The grey area represents the confidence interval. The marginal effect is insignificant if the grey area includes the zero line (red dashed line).

positive and significant for the very large plants. These results are confirmed by the export shock regressions. Again, the effect on the firing rate is insignificant for both imports and exports. The marginal effects for the import shock on vacancy rates are insignificant. For exports we find a negative and significant effect when plants are small. However, the effect turns insignificant for plants with a size larger than the log of 3, which corresponds to 20 employees and is thereby far above the

employment protection threshold. This analysis therefore raises serious doubts about a causal effect of employment protection on the marginal effect of import and export exposure on the hiring, firing and vacancy posting behaviour of plants.

Table A.2 (see Appendix) reports the results using import/export shock measures from Eastern Europe. Plants operating in industries more exposed to imports from Eastern Europe report higher vacancy rates. This result is in line with the hypothesis that offshoring may stimulate firms to search for new workers who are able to perform more abstract tasks. However, the import shock is not associated with higher rates of hiring, which indicates that firms may have difficulty hiring new workers. This finding supports the hypothesis that firms with stronger international relations may have an incentive to train existing workers instead of recruiting new workers. One may argue that more skilled workers are more difficult to recruit, which gives an incentive to provide on-the-job training for workers.

Table 5 contains the results of the treatment effect estimation using nearest neighbour matching – hence the effect of employment protection in firms obligated to provide employment protection on the three training measures provided in the data (advanced training in general as well as results differentiating between in-house and external training). Moreover, the analysis is done for most recent averages (left panel of Table 5 and Table A.3 – see Appendix) and the observations

Table 5 Treatment effect analysis results

	Averages over the period 2012–2014 Firm Size<50			Cross section of firms in the year 2014 Firm Size<50		
	Advanced training (1)	External training (2)	In-company training (3)	Advanced training (4)	External training (5)	In-company training (6)
ATET	0.264***	0.288***	0.158***	0.217***	0.219***	0.158***
	(0.039)	(0.040)	(0.040)	(0.038)	(0.037)	(0.040)
Treated Obs.	1,209	1,209	1,209	956	956	956
Control Obs.	1,269	1,269	1,269	988	988	988
Observation	2,478	2,478	2,478	1,944	1,944	1,944

Note: Robust standard errors in brackets. Significance levels are reported at the 10 per cent (* p<0.10), 5 per cent (** p<0.05) or 1 per cent (*** p<0.01) level. The effect of EPL on firms' advanced training behaviour (general training measures, in-company training, external training) as well on hiring, firing and vacancy rates are analysed. A firm is defined as treated if it is subject to the obligation of employment protection, hence, if it has more than 10 full-time employees. The analysis is based upon firm-level averages constructed for the most recent three years in the sample (2012–2014). Control variables are share of female workers, part-time and short-term contract workers (a firm's share of female, part-time and short-term employees, respectively) and the export share of a firm. West and council dummies are included. To avoid biased estimates, the correction term provided by Abadie and Imbens (2011) finds application.

of the most recent year (right panel of Table 5 and Table A.3) in our data set. Table A.3 replicates the analysis for even smaller firms up to a size equal to 20.

The results suggest a significantly higher propensity of providing training in firms that are obliged to have employment protection. Firms with very similar characteristics that only differ with respect to their employment protection status are more likely to train their workers compared with their statistical twins without employment protection. This result holds for advanced training in general as well as for the more distinguished measures of internal (in-house) and external training. Thus, employment protection encourages firms to train their workers, which is a potential channel through which the reform helped mitigate the negative employment effects of offshoring. Specific non-routine skills protect the jobs of less-skilled workers in a firm that decides to offshore the more routine slices of the production chain. These results can also explain why firms with employment protection report lower job turnover.

Summary of results and policy recommendations

This study argues that employment protection is an additional cost factor for firms, which may attenuate the negative and positive effects associated with globalization. Foreign firms may sell their products at lower prices in domestic markets, which stirs up competition with domestic incumbent firms. More productive exporting firms may gain additional market share in both the domestic and the foreign market. Less productive firms operating at the margin of profitability are more likely to exit the market, whereas more productive exporters expand by hiring additional workers. A discriminating employment protection policy reduces the pressure on less productive firms without eliminating the positive effects on job security in stronger firms that must provide employment protection. Thus, a higher threshold size is sensible if the policy objective is protection of domestic jobs in smaller firms. However, these theoretical considerations translate into little to no net effects on total employment. Neither the existing empirical research nor the plant-level regressions reported in this study find robust evidence for negative employment effects through import competition and/or employment protection. At best, results indicate that there is less fluctuation and job market turnover, which is, nevertheless, an important objective of employment protection. Surprisingly, the increase in job stability tends to be more pronounced in industries more exposed to export. This result supports the hypothesis that employment protection leads to firms' less cyclical behaviour concerning their employment strategy. One potential reason for the higher job stability is given in this study, which shows employment protection has a causal and positive effect on training. There is no systematic effect on

firms' recruitment strategy but there is one on the propensity of providing training. This finding is in line with the fact that larger plants are obliged to pay severance payments to their workers in the case of dismissal. Firms may save the cost of severance payments and additional recruitment costs through training workers in-house. Import competition may motivate the firms' efforts to upskill employees, enabling them to perform non-offshorable tasks when recruitment of high-skilled workers is costly. Firms can use advanced training measures in addition to offshoring to adjust their workforce from low- to high-skill-oriented production processes without dismissing workers.

The major recommendation that can be drawn from the considerations presented in this study is that employment protection specific to firm size seems to be more effective. Smaller (less competitive) plants could be excluded from the protection to make those less competitive plants more flexible in reacting to short-run globalization shocks. Higher competition can be absorbed more easily by firms that are less restricted. However, maintaining employment protection for larger firms is also sensible. This study shows that employment protection is associated with a higher probability of providing training. Employment protection induces higher job stability through stimulating firms to upskill their workers. This latter effect attenuates the negative labour market effects of offshoring through the education of less-skilled workers.

Endnotes

1. As of August 2018.

2. Skill levels are defined by ISCED (International Standard Classification of Education) following the OECD definition: low-skilled is defined as below upper secondary education (ISCED 0–2), medium-skilled as between upper secondary and post-secondary education (ISCED 3–4) and high-skilled as tertiary education (ISCED 5–6). Skill-intensive industries are mainly associated with a high level of technology as well as innovation, and thereby with high research and development expenditures. Examples are the aerospace, computers and pharmaceuticals industries. In contrast, low-skill-intensive industries are characterized by a high level of standardization, such as the textile fabrics industry.

3. The earliest available data is 1991, except for the industries "air and space" and "railroads", which begin in 2000. The latest available observation for textiles, optical, space and railroad products is 2009. Data for metal, machinery and chemical products is available until 2010. The data for total intermediaries and information and communications technology (ICT) intermediaries are reported until 2011.

4. Further elements of the reform were a truncated subscription period of unemployment benefits and changes in the regulations of temporary employment agencies, with the objective to

design a more flexible environment for entrepreneurs. Furthermore, the rules for applying sanctions to unemployed workers turning down a job offer were tightened and the level of unemployment benefits was lowered.

5. For example, *Spiegel Online* (2006); Burda and Seele (2017); Walwei (2014).

6. The DGB comprised eight trade unions and covered 63.5 per cent of all trade union members (11,599,000 employees) in 2003.

7. Measures concerning the use of fixed short-term contracts and severance payments, as well as the harmonization of legal proceedings, were also implemented during the reform programme. Furthermore, the welfare system was reorganized, with a focus on the duration and amount of transfer payments.

8. For example, Austria and the Republic of Korea apply a threshold of five employees, while, as in Germany, a threshold of 10 employees holds in France, Morocco, Portugal and Venezuela. Other countries employ higher thresholds, such as Australia (15 employees), Denmark (20 employees) and the United States (50 employees).

9. Note that studies on the effects of employment protection on the propensity for job training associated with the labour market reform in Italy do not find any causal effects of the change in threshold based upon a regression discontinuity design. See Bolli and Kemper (2017) for recent evidence on Italy and Finland. However, this does not mean that employment protection itself has no effect. It may very well be that smaller firms are not affected. Thus, we are analysing the effects of the EPL status without taking the changes into consideration.

10. It is controlled for firm location, including a west dummy that takes a value of one, if the firm is located in the former western part of Germany. Additionally, we control for another kind of employment protection, namely, the existence of a worker council. If the firm has a worker council, the council dummy takes a value of one. Furthermore, it is controlled for employment composition at diverse perspectives. The share of female workers in total staff is included. Additionally, part-time employees relative to all employees is included and the share of short-term contracts on all issued labour contracts within the firm is included.

11. In this analysis, the following characteristics are matched: (i) firm location including a West dummy that takes a value of one, if the firm is located in the former western part of Germany; (ii) the existence of a worker council; if the firm has a worker council, the council dummy takes a value of one; (iii) the share of female workers in total staff is included; (iv) part-time employees relative to all employees is included; (v) the share of short-term contracts on all issued labour contracts within the firm is included. In the following analysis, these characteristics are summarized in a vector CV_i.

12. In this analysis, two of the control variables are dummy variables: the west dummy and the council dummy. Exact matching means that a firm subject to employment protection with a worker council can only be matched with a firm not subject to employment protection but also having a worker council. The same holds for the west dummy: a statistical twin of an employment protection firm in western Germany can only be matched with a non-employment protection firm in western Germany.

References

Abadie, A., and Imbens, G. W. (2011), "Bias-corrected matching estimators for average treatment effects", *Journal of Business and Economic Statistics,* 29(1): 1–11.

Autor, D. H., Dorn, D. and Hanson, G. H. (2013), "The China syndrome: Local labor market effects of import competition in the United States", *American Economic Review,* 103(6): 2121–2163.

Bauernschuster, S. (2009), "Relaxed Dismissal Protection: Effects on the Hiring and Firing Behaviour of Small Firms", Jena Economic Research Papers No. 2009–015, Jena: Friedrich-Schiller Universität.

Bauernschuster, S. (2013), "Dismissal protection and small firms' hirings: Evidence from a policy reform", *Small Business Economics,* 40(2): 293–307.

Biscourp, P. and Kramarz, F. (2007), "Employment, skill structure and international trade: Firm-level evidence for France", *Journal of International Economics,* 72(1): 22–51.

Bolli, T. and Kemper, J. (2017), "Evaluating the Impact of Employment Protection on Firm-provided Training in an RDD Framework", KOF Working Papers No. 433, Zurich: KOF Swiss Economic Institute.

Burda, M. C. and Seele, S. (2017), "Das deutsche Arbeitsmarktwunder: Eine bilanz", *Perspektiven der Wirtschaftspolitik,* 18(3): 179–204 (in German).

Dauth, W., Findeisen, S. and Suedekum, J. (2014), "The rise of the East and the Far East: German labor markets and trade", *Journal of the European Economic Association,* 12(6): 1643–1675.

Dutt, P., Mitra, D. and Ranjan, P. (2009), "International trade and unemployment: Theory and cross-national evidence", *Journal of International Economics,* 78(1): 32–44.

Grossman, G. M. and Rossi-Hansberg, E. (2008), "Trading tasks: A simple theory of offshoring", *American Economic Review*, 98(5): 1978–1997.

Kettner, A. and Rebien, M. (2009), "Job Safety first? Zur Veränderung der Konzessionsbereitschaft von Arbeitslosen Bewerbern und Beschäftigten aus Betrieblicher Perspektive", Discurs 2009–7, Ordungspolitische Diskurse (in German).

Klinger, S. and Rothe, T. (2010), "The Impact of Labour Market Reforms and Economic Performance on the Matching of Short-term and Long-term Unemployed", IAB Discussion Paper No. 13/2010, Nuremberg: Institute for Employment Research (IAB).

Messina, J. and Vallanti, G. (2007), "Job flow dynamics and firing restrictions: Evidence from Europe", *The Economic Journal,* 117(521): 279–301.

Micco, A. and Pagés, C. (2006), "The Economic Effects of Employment Protection: Evidence from International Industry-Level Data", Discussion Paper No. 2433, Bonn: Institute for the Study of Labor (IZA).

Millán, A., Millán, J. M., Román, C. and A. van Stel (2013), "How does employment protection legislation inlfuence hiring and firing decisions by the smallest firms? ", *Economics Letters,* 121(3): 444–448.

Rutkowski, J. (2003), "Does Strict Employment Protection Discourage Job Creation? Evidence from Croatia", Policy Research Working Paper No. 3104, Washington, D.C.: World Bank.

Spiegel Online (2006), "Arbeitslosenzahlen im Rekord-Tempo gefallen", 31 May.

The Economist, (1999), "The sick man of the euro", 3 June.

Wagner, J. (2002), "The causal effects of exports on firm size and labor productivity: First evidence from a matching approach", *Economic Letters,* 77(2): 287–292.

Walwei, U. (2014), "Curing the Sick Man: The German Labor Market on the Way to Good Health? ", Current Reports, Bonn: Institute for Employment Research (IAB).

Appendix

Table A.1 Benchmark results including firms <50 employees

	$D_{EPL} = 1$			$D_{EPL} = 0$		
	Hiring rate (1)	Firing rate (2)	Vacancy rate (3)	Hiring rate (4)	Firing rate (5)	Vacancy rate (6)
Chinese import shock (industry)	−0.140*	−0.055	−0.041	−6.566***	−0.297	−0.960
	(0.082)	(0.079)	(0.052)	(1.885)	(2.961)	(1.534)
Chinese export shock (industry)	−3.279	−1.390	−3.327**	−24.843**	−15.913**	−12.506*
	(3.480)	(2.536)	(1.575)	(11.012)	(7.212)	(6.829)
Observation	2,477	2,478	2,475	2,477	2,478	2,475

Note: Standard errors in brackets are clustered at the 3-digit industry/state level. The table represents the marginal effects of the import and export shock under consideration of the interaction terms *Chinese import shock* × *EPL* and *Chinese export shock* × *EPL*. Columns (1) to (3) include marginal effects with $D_{EPL} = 1$ and in columns (4) to (6) with $D_{EPL} = 0$. The import measure is constructed using COMTRADE data for imports from China to Germany within the respective year. The import measures are weighted by the employment share within each respective industry and province. The weights are constructed using data of the IAB establishment panel. Control variables not represented here are the west dummy (which takes a value of 1 if a firm is located in western Germany), the council dummy (which specifies firms with councils), female, part-time and short-term contract share (a firm's share of female, part-time and short-term employees, respectively) and the export share of a firm. We are using the total employment in one region and industry over the years 1993–2014 and relate this measure to the total number of workers in this industry. All regressions include a constant and year dummies, the coefficients of which are not reported in the table.

Table A.2 Eastern European trade shock

	All firms			$D_{EPL} = 1$			$D_{EPL} = 0$		
	Hiring rate (1)	Firing rate (2)	Vacancy rate (3)	Hiring rate (4)	Firing rate (5)	Vacancy rate (6)	Hiring rate (7)	Firing rate (8)	Vacancy rate (9)
Eastern European import shock (industry)	−0.003 (0.006)	0.012 (0.015)	0.055*** (0.005)	−0.006 (0.007)	0.015 (0.015)	0.056*** (0.006)	18.310 (15.533)	−7.361 (10.306)	1.429 (9.516)
Eastern European export shock (industry)	−0.897* (0.473)	−0. 170 (0.413)	−0.586* (0.301)	−0.831** (0.351)	−0.152 (0.351)	−0.517* (0.280)	−11.602 (12.843)	5.891 (9.305)	−2.067 (7.025)
Observation	4,210	4,215	4,212	4,151	4,156	4,153	4,151	4,156	4,153

Note: Standard errors in brackets are clustered at the 3-digit industry/state level. Columns (1) to (3) represent the estimates including exclusively the effect of the import and export shock. Columns (4) to (9) include the marginal effects of the import and export shock under consideration of the interaction terms *Chinese import shock* × *EPL* and *Chinese export shock* × *EPL*.Columns (4) to (6) include marginal effects with $D_{EPL} = 1$ and in columns (7) to (8) with $D_{EPL} = 0$. The import measure is constructed using COMTRADE data for imports from China to Germany within the respective year. The import measures are weighted by the employment share within each respective industry and province. The weights are constructed using data of the IAB establishment panel. Control variables not represented here are the west dummy (which takes a value of 1 if a firm is located in western Germany), the council dummy (which specifies firms with councils), female, part-time and short-term contract share (a firm's share of female, part-time and short-term employees, respectively) and the export share of a firm. We are using the total employment in one region and industry over the years 1993–2014 and relate this measure to the total number of workers in this industry. All regressions include a constant and year dummies, the coefficients of which are not reported in the table.

Table A.3 Robustness checks on training and employment protection

	Averages over the period 2012–2014 Firm Size <20			Cross Section of firms in the year 2014 Firm Size <20		
	Advanced training (1)	External training (2)	In-company training (3)	Advanced training (4)	External training (5)	In-company training (6)
ATET	0.184***	0.164***	0.104***	0.108***	0.129***	0.097***
	(0.041)	(0.039)	(0.035)	(0.045)	(0.044)	(0.040)
Treated obs.	392	392	392	321	321	321
Control obs.	1,269	1,269	1,269	988	988	988
Observation	1,661	1,661	1,661	1,309	1,309	1,309

Note: Robust standard errors in brackets. Significance levels are reported at the 10 percent (* $p<0.10$), 5 percent (** $p<0.05$) or 1 percent (*** $p<0.01$) level. The effect of EPL on firms' advanced training behaviour (general training measures, in-company training, external training) are analysed using matching econometrics. A firm is defined as treated if it is subject to the obligation of employment protection, hence if it has more than 10 full-time employees. To ensure comparability of firms the sample was restricted to firms with number of employees not greater than 20. The analysis is based upon observations for averages over the years 2010 to 2014 (left panel) and the most recent year 2014 (right panel). Control variables are firm-level export share, share of female workers, part-time and short-term contract worker share. West- and Council-dummies are included. To avoid biased estimates the correction term provided by Abadie and Imbens (2011) finds application.

5 The Republic of Korea's Trade Adjustment Policies and their Effects on Labour Market Adjustment[1]

Young-Han Kim and Sungmin Park

Introduction

The Republic of Korea (hereafter Korea) has been actively opening its markets since the early 1990s, making its first bilateral trade agreement with Chile effective from 3 April 2004. It has since arranged such agreements with 52 countries that now cover more than 77 per cent of the world's GDP. Given the little progress made in multilateral negotiations under the Doha Development Agenda (DDA), much of the progress in market liberalization has taken the form of regional trade agreements (RTAs). It has been through an extensive network of these arrangements, with partners such as the EU, the US and the People's Republic of China (hereafter China), that the Korean Government has been pursuing sustained growth.

This study is motivated by the observation that, despite Korea's overall success in wide trade liberalization, the adverse effects may have been severe for selected agriculture and manufacturing industries that had to face increasing competition from abroad. To address these concerns, the Government had adopted the so-called Trade Adjustment Assistance (TAA) programme—named after that of the US—aimed to absorb the negative shocks on firms and workers in import-competing sectors. However, while sharing the same name, the programmes of Korea and the US differ fundamentally, in that the Korean programme's main beneficiaries have been firms rather than workers.

The findings show that Korea's TAA programme does not benefit workers much: the main type of aid is subsidized loans to firms, while direct aid to affected workers comprises less than 1.5 per cent of total aid. For continued market liberalization to be a sustainable policy option for Korea, the country should adopt more robust TAA programmes to provide organized support that targets displaced workers directly.

The structural features of Korea's labour market

Labour market dualism in Korea

An important structural feature of Korea's labour market is its dualism. While other countries roughly divide workers into full time and part time, Korea is special in that it divides workers into *regular* and *non-regular*.[2] A crucial factor distinguishing the two groups is the degree of legal protection and related stability they have. On the one hand, there are full-time workers who receive a high level of protection by law and have customary work hours and a predictable pay schedule – these are the regular workers. The remainder – who do not enjoy those benefits whether they are working full time or part time – fall into the category of non-regular workers.

Non-regular workers can be further divided according to their type of contract and part-time status. Korea's Ministry of Employment and Labour makes the following official classification: (i) temporary workers, (ii) part-time workers, and (iii) atypical workers. Among temporary workers, *fixed-term* workers are those who are hired by a contract for a predetermined period without renewal, while *open-ended contract* workers can be rehired by renewal of the contract. *Part-time* workers are those who work fewer than 30 hours in a week. *Atypical* workers are defined as those who are paid by their performance without a fixed salary, fixed working hours or a fixed working location. They are, for instance, salespersons of insurance products, tutors hired by private educational institutes and delivery service persons. Among these, *dispatched* workers are those hired and managed by an agency that sends the workers to firms. In total, non-regular workers constitute about one third of all wage-earning workers, as can be seen in Table 1. The share of part-time employment has increased in recent years, from 7 per cent in 2003 to 11 per cent in 2014.

There exists a big wage gap between regular and non-regular workers. From Table 1 one can see that, in 2017, the average hourly wage for non-regular workers (32.9 per cent of total workers) stands at only at 66.3 per cent of that earned by regular workers with well-protected labour rights. The degree of inequality due to labour market duality is also found in the low *pay incidence rate,* i.e. the proportion of workers who earn less than two thirds of the gross median earnings of all full-time workers: Korea is at 23.7 per cent, while the OECD average is 16.2 per cent. It is also estimated that 17.6 per cent of overall inequality among workers can be explained by the inequality between regular and temporary workers in 2014.[3]

The fundamental reason behind this dualism and the wage gap is the differing degree of legal protection. Regular workers are full-time, tenured employees who

Table 1 Employment and wages of non-regular workers, 2007–2017

Worker type	Employment (1,000 persons)		Hourly wage (%)	
	2007	2017	2007	2017
All	15,882	19,883	–	–
Regular	10,179	13,341	100	100
Non-regular	5,703	6,542	56.5	66.3
Temporary				
Fixed-term	2,531	2,925	64.4	66.0
Open-ended contract	1,015	785	58.0	49.2
Part-time	1,203	2,663	47.1	61.9
Atypical				
Dispatched	177	183	46.9	n.a.
Other	2,036	1,910	52.2	n.a.

Source: ROK, Ministry of Employment and Labour; ROK, Statistics Korea.

Notes: The sum of the categories of non-regular workers exceeds 100 per cent due to double counting. Open-ended workers' employment contract term is not fixed but their employment can continue through repeated renewals of the contract, or is not expected to continue for non-voluntary reasons.

are strongly protected by law as long as they do not commit serious crimes and who have greater social insurance and employee benefits. The national pension service is provided to 98.2 per cent of regular workers but only 56.7 per cent of non-regular workers. Wage hikes agreed between employers and labour unions are legally binding only for the union members, who are mostly regular workers. They also get a steep schedule of mandatory severance payments. Most critically, the regular workers in Korea are under one of the strictest dismissal laws among OECD countries, which allow dismissals only for serious financial or managerial reasons. For a financial reason, firms must prove that they have actively tried to avoid dismissal and have exhausted all other means.[4] For a managerial reason, they must prove an "urgent managerial necessity", the vague legal definition of which enables dismissed workers to turn to courts and eventually win in many cases.[5]

Because of the heavy protection for regular full-time workers, only those who must work part-time or must forgo employee benefits to be competitive in the market work as non-regular workers – that is, many women, the young and old[6] and the less educated – at a wage discount. First, a significant proportion of the non-regular workers are women. While women represent less than 40 per cent of regular workers, they account for 55 per cent of temporary workers and 70 per cent of workers on part-time contracts. While 76.3 per cent of Korean men have a job, only 56.9 per cent of women do. Some of the main reasons are that Korea still

lacks a proper childcare system, and that mothers face high re-entry barriers in the labour market.[7] Consequently, women's annual income is 61 per cent lower than men's, marking the highest gender income gap in the OECD. Similarly, young people and the elderly earn around 23 per cent of what regular workers earn while accounting for 43 per cent of all non-permanent and 56 per cent of all part-time jobs. Lastly, there is a big education gap between regular and non-regular workers: 67 per cent of temporary workers have high school education or less, while that is the case for only 34 per cent of regular workers. Consequently, women, young people, the elderly and the less educated account for a disproportionally large share of non-regular workers.

Regular workers not only enjoy legal protection, benefits and higher wages but are also determined to keep them. By doing so, they contribute to preserving the existing dualism. Korean labour unions, especially those in large-scale firms in manufacturing and heavy industries, are widely known for their militant strikes. In some ways it is understandable; one of the stated reasons for their support of strict dismissal laws, as a prominent example, is that Korea lacks the necessary social safety net to support laid-off workers.

Regular workers demand heavy legal protection that preserves the systematic dualism because, if they were fired, they would be on their own and it is difficult to get a new regular job position. Therefore, a proper TAA system – a form of safety net in response to trade liberalization – can help lessen labour dualism. The absence of one would worsen the existing duality, especially if trade liberalization has been impairing domestic employment.

Labour market policies and labour market dualism in Korea

Among Korea's passive labour market policies – a form of social safety net supporting unemployed workers in their job search – the most representative is the unemployment insurance programme. Korea's system of unemployment insurance is integrated with active labour policies under the country's Employment Insurance System (EIS), in place since 1995, which includes employment promotion policies and job training programmes as well as unemployment allowances.

Unemployment benefits are covered by insurance schemes for which the premium is jointly paid by workers and employers. A worker and his or her employer each pays 0.65 per cent of the wage. In terms of benefits, the most important component is the Job Seeking Allowance, which covers 50 per cent of the eligible recipient's average daily wage for the three months prior to the former job ending. The ceiling for the allowance is 66,000 Korean Won (roughly US$58) per day. To be eligible, the worker should: (i) have paid the insurance premium for a minimum of six

months; (ii) have become unemployed involuntarily; and (iii) actively seek a new job as well as participate in job training programmes.[8] The duration of the Job Seeking Allowance depends on the length of the worker's job experience, i.e. the period he or she contributed to the insurance. If the contribution period is less than one year, Job Seeking Allowance is provided for 90 days, and if the contribution period is longer than 10 years and the worker aged over 50, the allowance can be provided for a maximum of 240 days.

Active labour market policies designed by the Korean Government to reduce unemployment and promote re-employment can be categorized into two groups: employment stabilization programmes and vocational skills development programmes.[9]

Employment stabilization programmes consist of the following sub-programmes: (i) job creation programme, which provides financial support for jobs newly created by firms through work shifts, job sharing and reduction of working hours; (ii) employment adjustment programme, which provides subsidies to firms that retain workers during a temporary shutdown, and (iii) employment promotion programme, which provides subsidies for the employment of disadvantaged workers.

Vocational skills development programmes aim to provide opportunities for continuing education to enable workers to remain competitive and employed in the evolving labour market. To this end, the Government conducts various programmes that encourage both employers and employees to enhance workers' competitiveness and employability, mainly by reimbursing the costs of training. The assistance is provided to three groups of people: employers, workers and the unemployed, depending on the programme type.

Despite the growing number of available labour policy options, their role in absorbing negative shocks in the labour market remains limited, showing little improvement in reducing labour market dualism. The passive labour market policy – the unemployment allowance programme – provides only a limited amount of support and only for a short period, below the minimum cost of living and only up to eight months.[10] Active labour market policies have reportedly been effective mostly in the form of short-term cash subsidies to SMEs for retaining additional employees, resulting in no sustained impact.[11]

Notwithstanding the generally limited effectiveness of the passive and active labour market policies, they are faring much better than their counterparts in TAA programmes. The labour market policies are widely known among workers, with almost all eligible applicants filing for unemployment allowances. In contrast, TAA programmes – specifically designed to support firms and workers damaged by

FTAs – are mainly accessed by firms for cheap loans while being almost unknown to and rarely accessed by workers. Without well-functioning active labour market policies to absorb negative shocks, labour market dualism is likely to worsen as SMEs become marginalized and workers face intensified competition as a result of FTAs.

The effects of market liberalization via bilateral trade agreements on the labour market in Korea

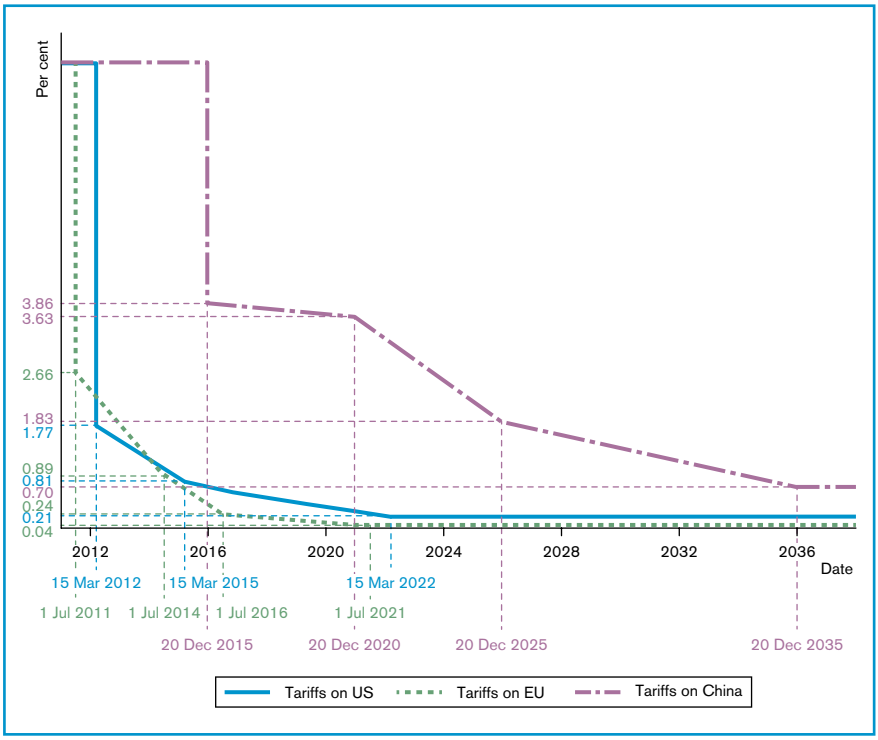
Major features of bilateral free trade agreements with the European Union, United States and China

Korea had arranged bilateral FTAs with 16 partners by the end of 2018. Among them, that with China is the biggest, followed by that with the EU and that with the US. Negotiation with the US began in 2006 and agreement was reached within a year, in April 2007. However, the FTA took five years to be ratified by Korea's National Assembly due to strong objection by the agricultural sector. The agreement on the FTA with the EU was reached in 2010 and went into effect more quickly, in 2011, since the political objection against FTAs became less intense. The FTA with China was agreed in June 2015 and went into effect in December 2015 with much less controversy, mainly because the deal contained limited market opening in agriculture.

The coverage and depth of the FTAs with the US and the EU were similar, as the former served as the benchmark for the latter. The US–Republic of Korea (KORUS) FTA covered almost all tradable sectors, including service/investment/financial, investor-state dispute (ISD) settlement system, labour-environment transparency, telecommunication and online commerce, and government procurement. In terms of tariff reduction in tradable goods, it was agreed to remove 99.9 per cent of all tariffs over the course of 15 years.

While the KORUS and EU FTAs are similar in content, as noted above, the KORUS FTA took much longer to be ratified than that with the EU. Besides the fact that its negotiations had started earlier, the FTA with the US was much more politicized as it involved complex domestic conflict between conservatives, whose support was based on Korea's long-time military alliance with the US, and liberals, who criticized it as an infringement of Korea's sovereignty. On the contrary, the FTA with China was ratified without any serious socio-political debate, because the Korean Government made almost no concessions on opening the agricultural sector while China allowed no significant market opening in the manufacturing sector.[12]

Figure 1 Average Korean import tariff schedule imposed on FTA partners



Source: Authors' construction based on ROK, Ministry of Trade, Industry and Energy (2015, 2017, 2018).

Since the trade structures between Korea and these three FTA partners have been relatively complementary – unlike that with Japan, for example – concerns about possible negative impacts of their preferential tariff reductions have been concentrated on politically sensitive issues rather than economic, industrial or corporate-sector-related issues.[13] For example, throughout negotiations for all three FTAs, the protection and promotion of the domestic agricultural sector has been the predominant imperative, for which the Korean Government faced hard domestic political constraints that left little room for flexibility (Figure 1).

On the whole, the majority of enterprises in the manufacturing sector have been considered to be the possible beneficiaries of the FTAs. Some exceptions include SMEs in the labour-intensive manufacturing sector. In such a context, the corporate sector in general has been supportive of FTAs while key agricultural sector interest groups have militantly opposed them, and increasingly so during negotiations. As a

Table 2 Trade liberalization through three FTAs

	FTA partner		
	European Union	United States	China
Major features	Comprehensive coverage with deep market opening	Comprehensive coverage with deep market opening	Limited coverage with moderate market opening
Import tariffs removed	100 per cent of total imports over 10 years	99.9 per cent of total imports over 10 years	77.1 per cent of total imports over 10 years (most tariffs for agricultural products were not removed)
Coverage	Includes significant actions requiring domestic change of laws (such as cross-border trade in services, telecommunication, competition and government procurement)	Includes significant actions requiring domestic change of laws (such as cross-border trade in services, telecommunication, competition and government procurement)	Limited actions with minimum changes in domestic laws (nominal coverages were similar to the KORUS FTA, but in a much more limited way, especially on Chinese demands)
Sensitive issues	Possible damage to: i) Korea's manufacturing sectors in technology-intensive parts and components and dairy products; ii) Korea's service sectors that might be affected by cross-border trade in services	Possible violation of Korean sovereignty via: i) Investor-state dispute (ISD) issue; ii) Relaxing of the Korean safety regulations to embrace greater beef imports from the US	Korea's concerns about imminent damage to the Korean agricultural and labour-intensive manufacturing sectors; China's concerns about possible damage to China's manufacturing sectors; hence, limited liberalization in agricultural and manufacturing sectors on both sides

result, in all three FTAs discussed here, there were no concessions on market opening in rice and other staple agricultural products.

The effects of market liberalization via bilateral trade agreements on the labour market

We now examine the impact of trade liberalization on the Korean labour market by estimating the effects of the import tariff reduction on products from the US, EU and China on overall employment and wage rates, as well as those of non-regular workers in Korean industries (Table 2). The key variables, therefore, are each industry's import tariff rates, overall employment and wages, and regular/non-regular employment and wages. Tariff rates and imports/exports data are accessed from the World Bank, through the World Integrated Trade Solution for each 4-digit industrial classification code called the International Standard Industrial Classification of All Economic Activities (ISIC) (United Nations, 2002).

Weighted rather than simple average tariff rates within industries are used to capture the actual scale of preferential tariff reductions.[14] For each industry, the degree of import competition is defined as the size of net imports divided by total trade (the sum of imports and exports), to be included as a possible control variable. The employment data for each industry are from Statistics Korea through the Census on Establishments. The average monthly wages data for each industry are from Statistics Korea through the Local Area Labour Force Survey. The employment and wages data for regular and non-regular workers within each industry are obtained from the same sources. The data for production by industry are from the Bank of Korea's Economic Statistics System. The whole dataset covers the period 2008–2017, for which the employment and wage data are available.

With this dataset, the estimated models take the following form:

$$\ln y_{it} = \beta_1 \ln tariff_{it} + \boldsymbol{\beta}\ controls_{it} + \delta_i + \lambda_t + \epsilon_{it}, \quad (1)$$

where y_{it} is the labour market variable of interest, i.e. employment or monthly wages of all workers or non-regular workers for the industry *i* and year *t*. The variable $tariff_{it}$ represents Korea's (weighted) import tariff rate in industry *i* and year *t*. The vector of controls $controls_{it}$ includes industry- and/or year-specific controls, such as each industry's gross production and degree of import competition. The additional variables δ_i and λ_t represent industry fixed effects and year effects, respectively. The industry fixed effects are included at wider, 2-digit categories rather than the full 4-digit ones in order to make use of cross-industrial variation in tariff reductions. On the one hand, the reason for not using the full 4-digit industry fixed effects is that the import tariff data contain insufficient variation through time, rendering estimates from such regressions unreliable. On the other hand, controlling for each industry is nevertheless important because it may be that tariffs and labour market characteristics of the industry are systematically related. Therefore, a suitable compromise has been taken to have fixed effects in 2-digit industries. An important identifying assumption, then, is that the variation in the tariff reductions across specific industries within the 2-digit categories is exogenous. Lastly, ϵ_{it} are the error terms. We are interested in the coefficient β_1 which represents the partial effect of tariff reductions on employment and wages.

Based on pooled data of the Korean tariff reduction on imports from the US, the EU and China, and employment and wage rates of the corresponding industries with the tariff reduction, it is estimated that industrial employment decreases by 0.19 per cent if the tariff is reduced by 1 per cent, as seen from the tariff rate coefficient in column (1) of Table A.1 (see Appendix). The result implies that the increased competition from imported goods after the tariff reduction causes the reduction of

employment in those industries. Meanwhile, market opening is not estimated to have a significant impact on average monthly wages in the relevant industries. In column (2), the coefficient is not only estimated to be small but is also statistically indistinguishable from zero.

While there is some evidence of the negative impact of import tariff reductions on overall employment in each industry, that on the non-regular workers in each industry is much weaker. Column (3) shows the result of a regression with the share of non-regular workers in employment as the dependent variable. The estimated coefficient on import tariff is –0.007 and non-significant, suggesting that tariffs did not have any significant impact on the share of non-regular workers. As for wages of non-regular workers, there is scant statistical evidence of impact by tariff reductions. The estimated coefficient on import tariffs, in column (4), where the dependent variable is the average monthly wages of non-regular workers relative to regular workers, is both small and statistically insignificant.

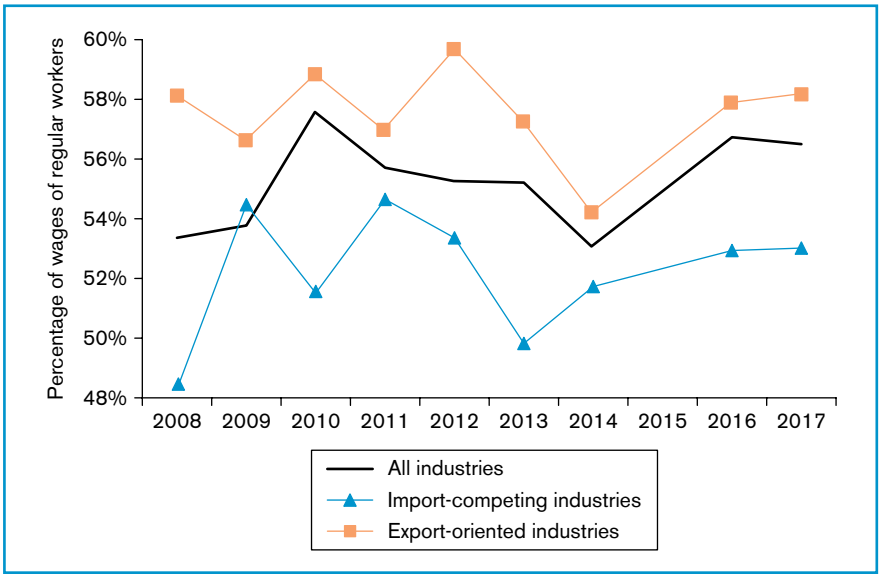
An additional regression in Table A.2 (see Appendix) with the level of imports for each industry as an independent variable provides a slightly more significant result. The coefficient on the log of imports is 0.0012 in column (1), meaning that a 1 per cent increase in the level of imports causes a 0.0012 percentage point rise in the share of non-regular workers. Although this estimate may at first glance seem economically small, it is sizable if one considers the realized growth of imports in certain industries. Take soft drinks and mineral waters manufacturing (ISIC Code 1554) as a prominent example: imports from China grew by the factor of 2.12 each year on average from 2011 to 2016 after the China–Korea FTA. It is implied from this estimate that the increased imports must have caused about a 0.09 ($\approx \log(2.12) \cdot 0.0012 \cdot 100$) percentage point rise each year in the industry's share of non-regular employees during this period, equivalent to a total rise of 0.45 percentage points over the period of five years. Since the share had stood at about 14 per cent in 2011, this rise amounts to more than a 3 per cent increase in this industry's share of non-regular employees over this period. Therefore, while statistically significant only at the level of 10 per cent, this result may be interpreted to mean that firms retain a greater share of non-regular workers in order to remain competitive when facing increasing import competition from free trade.

In column (2) we use the relative wage of non-regular workers as the dependent variable. The point estimate is not statistically significant, meaning that changes in imports do not appear to be correlated with changes in the relative wage of non-regular workers. Figure 2 provides further evidence of this; it shows the wages of non-regular workers as a ratio of the wages of regular workers, for export-oriented industries (defined as the top 30 industries whose net imports have increased *the least* from the period 2006–2010 to the period

2011–2015) and import-competing industries (defined as the top 30 industries whose net imports increased *the most* from the period 2006–2010 to the period 2011–2015). Although it shows no clear upward or downward trend, it shows that export-oriented industries have a smaller wage discount for non-regular workers than do import-competing industries. Thus, while we may not have conclusive evidence that trade opening has a negative effect on the wages of non-regular workers, the data show that market opening does not help non-regular workers in import-competing sectors who are already suffering a big wage discount relative to regular workers in the same sectors.

Combined with observations about Korea's labour market dualism (see above), the analysis so far in this section provides arguments in favour of a strong TAA programme in Korea. Evidence of the negative impact of import tariff reductions on employment suggests that trade liberalization pushes a significant proportion of people out of jobs in import-competing industries. These people, once out of the workplace, find it difficult – due to Korea's especially severe labour market

Figure 2 Wages of non-regular workers



Source: Authors' estimation based on data provided by Korea Statistical Information Service (http://kosis.kr/index/index.do).

Note: Shows the relative wages of non-regular workers in all industries, import-competing industries, and export-oriented industries. The relative wage of non-regular workers is the ratio of the average monthly wage of non-regular workers relative to the average monthly wage of regular workers in each industry. Import-competing industries are the top 30 industries whose net imports have increased *the most* from the period 2006–2010 to the period 2011–2015. Export-oriented industries are the top 30 industries whose net imports have increased *the least* from the period 2006–2010 to the period 2011–2015.

dualism – to find new jobs of the same quality in the same industries. This observation is further substantiated by the weakly significant result that the share of non-regular workers rises in industries with increasing imports from trade liberalization. Therefore, even if a regular worker were to quickly find a new job in the same industry after being laid off, in import-competing industries it is more likely than it was prior to an FTA that he or she would have to settle for a non-regular position. Moreover, even as a previously regular worker settles for a non-regular position, he or she must face an even greater wage discount in import-competing industries than in other industries. As trade liberalization continues – i.e. as the import tariffs against Chinese products phase out gradually through 2036 – the problems for these workers may worsen further.[15] For these reasons, Korea needs reliable unemployment aid and re-employment training measures that specifically target workers in import-competing sectors: that is, a mature programme of worker-focused trade adjustment assistance.

Trade adjustment policies adopted after bilateral FTAs

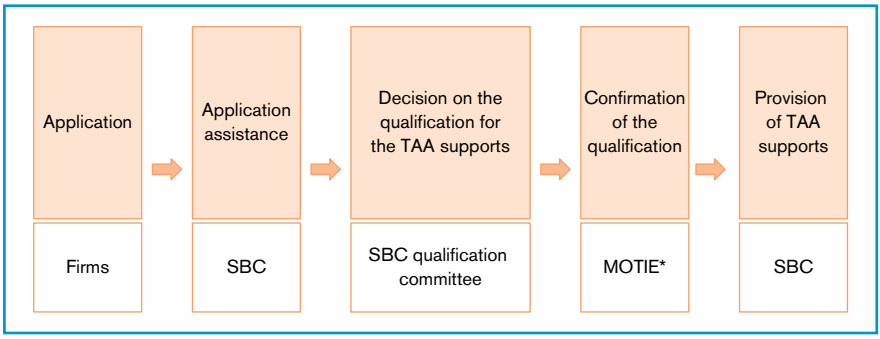
Structural features of Korean trade adjustment assistance policies

In Korea's dual-track system of trade adjustment assistance, the first track is a bottom-up system – a conventional TAA. The programme was first established by the 2006 Act on Trade Adjustment Assistance Following Free Trade Agreements (TAA Act), mainly to support SMEs that are negatively affected by FTAs, selected based on their applications.[16]

The programme is intended to help both firms and workers. By law, it consists of five possible types of assistance: (i) provision of information necessary for trade adjustment (Article 7); (ii) assistance in counselling for stabilizing management and securing competitiveness (Article 8); (iii) loan support for stabilizing management during the short term and securing competitiveness (Article 9); (iv) investment in a private equity fund for corporate restructuring (Article 10); and (v) supportive measures for employees in need of assistance (Articles 11–13). Assistance is provided to firms and workers only after they are judged to be eligible.

In practical terms, there is a lengthy and tenuous process to go through to receive TAA (Figure 3). The qualification process starts with firms' application filed to the Small and Medium Business Corporation (SBC), a government-commissioned corporation that mainly supports SMEs.[17] Then the SBC's TAA Qualification Committee determines which of the applicant firms qualify for assistance.

Figure 3 The Korean Trade Adjustment Assistance Programme



Source: Koh et al. (2017).

Note: MOTIE = Ministry of Trade, Industry and Energy.

Thereafter, the SBC manages all the details of the programme. The conditions for eligibility are: (i) firms more than two years old that have suffered a revenue or production decrease by 10 per cent or more for six months (or one year if deemed a special case) due to increased imports following FTAs; and (ii) firms more than two years old that are expected to suffer a revenue or production decrease by 10 per cent or more within one year for the same reason.

The process is improving, however. When the TAA programme was introduced in 2006, for example, the eligibility criteria were difficult to comply with, as firms' revenue had to have decreased by more than 25 per cent; the bar was lowered to 10 per cent by 2012. Nonetheless, the barriers for SMEs to apply for support are high since SMEs bear all the burden of proof of their losses in revenue. Moreover, from the workers' point of view, although the TAA Act states that workers displaced from firms are eligible to seek information and consultancy services as well as loan support, no concrete measures are detailed.[18]

The TAA programme in its present form does not deliver much additional value in supporting displaced workers when compared with the general unemployment benefit policies under Korea's passive and active labour market policies. Benefits are provided to involuntarily displaced workers who have been on unemployment insurance for over six months, at 50 per cent of their salary before displacement. How long this support continues varies depending on the worker's experience and age. The maximum length is eight months for workers with more than 10 years' experience and aged over 50, while the minimum length is three months for those with less than one year's experience.

Besides providing monetary benefits, the unemployment insurance policy provides various other forms of support for displaced workers to help them find new

employment. For example, the costs of job skills retraining are covered by the Government to an annual maximum of 2 million Korean Won (approximately US$1,755). The very low take-up rate of TAA programmes by displaced workers can be explained by the fact that the current TAA programme provides no additional benefits to the general unemployment benefit, as explained above. Specifically, Article 13(1) of the TAA Act – a main section specifying the possible means of support for workers – merely mentions that measures as prescribed by Korea's employment insurance may be utilized by eligible workers.[19]

Structural features of Korea's domestic support policies following free trade agreements

The second track of Korea's trade adjustment assistance system, domestic support policies – a literal translation of the Korean term guknae bowan daechaek – has a unique history. After Korea's first FTA, with Chile, entered into force in 2004, a major market opening for agricultural products, the 2004 Special Act on Assistance to Farmers, Fishers, etc. Following the Conclusion of Free Trade Agreements was enacted to mitigate the strong opposition from the agricultural sector. Subsequently, the amount of financial support under the law has increased sharply as Korea arranged FTAs with partners with even larger agricultural influence, such as the US and the EU.

Currently, eight bilateral FTAs – with Australia, Canada, Chile, China, the EU, New Zealand, the US and Viet Nam– are covered by the domestic support policies, the accumulated budget of which has reached 40 trillion Korean Won (approximately US$35.1 billion). The mechanism for the assistance takes the form of a top-down system designed by the Government to: (i) improve the competitiveness of the agricultural sector; (ii) support structural reforms in agriculture; and (iii) provide compensation for the direct losses, including farm closures, caused by increased import competition through FTAs.

The effectiveness of the Korean TAA programme

Performance of the TAA programme and evaluation of its effectiveness

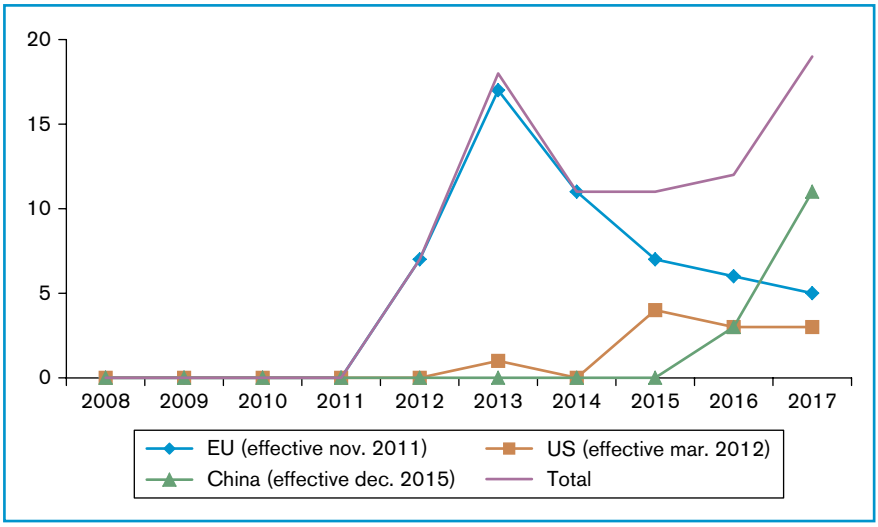
Overall, the TAA programme is not doing as much to protect firms and workers as was initially advertised. Because the programme is based on firms' and workers' applications, and because these applications are subject to a lengthy process of government administrative review under strict criteria, it may be too costly to consider applying in the first place. The result is that few import-competing firms

and marginalized workers end up receiving the support, although the numbers have been rising recently.

The performance of the TAA programme so far has not been impressive, at least in terms of the actual number of beneficiaries. A total of 78 firms had qualified for support by the end of 2017. Of the three FTAs under discussion, the Korea–EU FTA had the greatest impact, with 53 firms receiving TAA support following its coming into force, while just 14 firms received support following the Korea-China FTA and only 11 received support following the KORUS FTA.

The profile of firms threatened by FTAs and subsequently supported by the TAA programme differs by trading partners. Following the Korea–EU FTA, European exporters emerged as a threat to Korea's SMEs, especially in livestock and dairy products but also in chemical and cosmetics products.[20] In the case of the Korea–China FTA, put into effect in December 2015, the number of firms applying for TAA support increased sharply in 2017 and 2018, mainly due to the sharp competition between Korean SMEs and major Chinese exporting firms in labour-intensive sectors. Even though the TAA programme was introduced as early as 2006, no application was submitted until 2011. But since the Korea–EU FTA went into effect that year, applications started flowing, rising to 104 applications by 2017.[21]

Figure 4 Number of firms supported by the Korean TAA programme



Source: Small and Medium Business Corporation database.

Another important observation is that the programme has been mostly centred on helping firms; more specifically, most measures have been providing firms with loans at special rates below market rates. Consultancy services have been provided only on a limited scale because there has not been much demand for them. Whereas the ideal role of trade adjustment assistance is to smooth negative shocks to the import-competing firms and to improve the readjustment process for workers in damaged sectors, the actual role played by the TAA programme in Korea has been to provide cheaper loans to affected firms, with little direct help for workers' re-employment.[22]

On the whole, the total number of beneficiary firms remains low. Many firms still do not know about the TAA programme. For SMEs, proving that revenues have decreased by more than 10 per cent imposes a significant administrative burden. Consequently, the number of applications for the TAA programme has remained fairly low, even after the first TAA support was provided in 2012 (Figure 4).

Among the beneficiaries of the TAA programme, the food industry has benefited the most. The food industry was the most active in applying for and obtaining support from the programme, mainly due to the sizable food market opening via the Korea–EU FTA, followed by the chemical and cosmetics industry. It is expected that the number of applications will rise due to SMEs being negatively affected by the FTA with China in the future (Table 3).

In terms of firm size, SMEs have benefited the most. Nearly 90 per cent of all firms that have received TAA assistance have fewer than 50 employees.

Table 3 Number of firms supported by the Korean TAA as at 2016

FTA partner	Textiles and garments	Food	Chemical and cosmetics products	Electric and electronic products	Machinery	Metals	Other	Total
EU (effective Nov. 2011)	4	18	11	2	4	5	4	48
US (effective Mar. 2012)	–	2	3	1	2	–	–	8
China (effective Dec. 2015)	–	–	–	2	–	1	–	3
Total	4	20	14	5	6	6	4	59

Table 4 Size of firms supported by the Korean TAA programme

Number of employees	Number of supported firms
Fewer than 5	20
6–10	29
11–20	19
21–30	12
31–50	14
51–100	9
More than 101	1
Total	104[23]

Source: Koh et al. (2017).

Among the 104 firms with more than 100 employees, only one receives TAA support (Table 4). One could thus interpret Korea's TAA as being mainly for SMEs facing threat from globalization.

In terms of the kind of support received, all support has been by way of loans. TAA-supported firms have received loan services amounting to 380.5 million Korean Won (approximately US$330,000) on average, while only 27 of the 106 firms supported (25.4 per cent) have been assisted with counselling services, in the amount of 17.1 million Korean Won (US$14,986) on average. These patterns show that firms have mainly benefited from the TAA's financial support while they have received only limited technical support.

In contrast to the clearly visible support for firms under the TAA programme, that for workers remains unclear. Among the various elements of the TAA programme, assistance for workers displaced by FTAs has remained fairly inactive in terms of the number of applications and the actual provision of support. A TAA survey, which garnered 68 responses, showed that only one worker who had made an application had received assistance, while 63 firms were assisted with loan services and four firms were supported with management consulting services.[24] To be qualified to receive TAA support, workers must prove to have been employed by a firm designated to receive TAA support, or one that supplies products to such a firm. This requirement creates an extra barrier for workers considering applying. Moreover, even when workers do pass the application process and are selected for support, the kind of support they typically receive are counselling services to help them find new jobs, not financial support. Thus, the TAA programme for workers is less attractive than the existing benefits provided by Korea's unemployment benefits.

The performance of domestic support policies following FTAs and evaluation of their effectiveness

The second track of Korea's trade adjustment assistance system, domestic support policies following FTAs, has been somewhat more effective than the TAA programme itself, but its success is also still limited. Through its domestic support policies, the Korean Government has provided direct support for the agricultural and fishery sector, which had organized the strongest opposition to FTAs. The overall budget under these programmes reached 40 trillion Won (US$35.1 billion) (Table 5), 30 per cent of the total regular government budget for agricultural and rural policies.

Although direct damage to the agriculture and fishery sector is estimated to amount to 12.6 trillion Won (US$11.1 billion) over the 15 years following the KORUS FTA, the government budget to support this sector amounts to 27.9 trillion Won (US$24.5 billion) over the 11 years since 2008. This massive government budget and policy action to support the agricultural sector followed the strong opposition to the KORUS FTA raised just after the agreement was signed in 2007.

It is estimated that the Korea–EU FTA will reduce agricultural production by 2.17 trillion Won (US$1.91 billion) over the 15 years 2011–2025 (ROK MOTIE, 2010).

Table 5 Domestic support policies for agricultural sector following FTAs, billion Won

	FTA with		
	United States	EU	China
Expected reduction in agricultural production	12,667 over 15 years (2012–2026)	2,172 over 15 years (2011–2025)	869 over 20 years (2016–2035)
Planned budget for domestic support policies	24,095 over 10 years (2008–2017)	10,803 over 10 years (2011–2020)	4,380 over 10 years (2016–2025)
Actual budget for domestic support policies (to 2018)	27,992	8,805	1,410
Actual expenditure on domestic support policies (to 2017)	24,810	6,664	882
Actual reduction in agricultural production	1,096 over 5 years (2012–2016)	365 over 5 years (2011–2015)	–

Source: ROK, Ministry of Trade, Industry and Energy (2017, 2018).

Note: Numbers in parentheses indicate the years during which the figures in the table are realized. For example, the expected amount of reduction in agricultural production as a result of the KORUS FTA is estimated to be 12,667 billion Won in total for the period 2012–2026.

However, the government budget to support the agricultural sector damaged by the Korea-EU FTA amounted to 10.8 trillion Won (US$9.51 billion) for the 10 years since 2011.[25] It is estimated that the Korea-China FTA will cause a reduction in agricultural production of 869 billion Won (US$0.76 billion) over the 20 years from 2016. With respect to this damage, the government budget to support the agricultural sector amounted to 4.38 trillion Won (US$3.86 billion).

Across all three FTAs, the scale of government action to address the possible negative shock to the agricultural sector through domestic support policies supersedes the scale of expected damage on the agricultural sector due to FTAs. The likely grounds for these massive government expenditures have been: (i) the strong and organized opposition against FTAs by the agricultural sector; and (ii) the Korean Government's strategy of using FTAs to seek its long-cherished policy objective of making the Korean agricultural sector more competitive.[26]

On the surface, the domestic support policies may appear to be a success when the production and household income increases in agriculture are considered. Korean agricultural exports have increased by 118 per cent for the period and agricultural imports have increased by 46 per cent. Overall, the trade deficit has increased by 30.6 per cent. Agricultural production has increased by 11.2 per cent and agricultural household income has increased by 25.3 per cent.

However, looking at other figures in comparison with those within agriculture may not suggest such a definitive success. First, for the period since the policies were implemented, the agricultural household nominal income increase (25.3 per cent) has been smaller than the average Korean household income increase (32.1 per cent). Still, when compared with the production growth rates of the advanced economies such as Japan (–1.7 per cent), the US (1.5 per cent), France (–2.3 per cent) and Germany (–6.2 per cent), the moderate production growth of the Korean agricultural sector (3.0 per cent) does not seem dismal. [27] Nonetheless, given that the agricultural population is falling and rural areas in Korea are increasingly hollowing out, the domestic support policies should aim to make the agricultural sector more competitive in the global market.

Concluding remarks and policy implications

In response to the increasing necessity to introduce policy schemes to absorb the social and economic shocks caused by FTAs, two approaches have been adopted, i.e., the "domestic support policies" focusing the agricultural sector and

conventional trade adjustment assistance (TAA) program in Korea. Since the agricultural sector raised the most organized and militant objection to FTAs from the early stage – even before the regular TAA programme was introduced – a special act was passed to support the agricultural sector. This support has been realized by compensating the agricultural sector for losses suffered as a result of FTAs, but also by making it more competitive – a long-term policy objective in 2004. The policy design and management of these "domestic support policies" has been made jointly by two government ministries (Ministry of Trade, Industry and Energy and Ministry of Agriculture, Food and Rural Affairs) in a top-down fashion.

The other, more conventional TAA programme, which provides support for the firms and workers adversely affected by FTA-related import competition, was introduced by the TAA Act in 2006. The expenditure for this programme was 41.2 billion Won (US$36.31 million) during the period 2008–2016, only 0.2 per cent of that for the domestic support policies for the agricultural sector, of 24.8 trillion Won (US$21.9 billion). These figure suggest that policy-makers have made relatively little effort to support non-agricultural firms and workers facing threats from free trade. This may be interpreted as evidence that an important objective of the Korean trade adjustment assistance programs may have been to mitigate the opposition against FTAs, a top policy priority since the early 2000's.[28]

Labour market dualism, which arose as firms faced expensive regular workers organized through militant labour unions, has been further aggravated as FTAs have marginalized workers in SMEs, which have faced increased competition and other negative shocks. Yet the TAA programme has done little to mitigate the problem. Moreover, even the general-purpose labour market policies – both passive and active – are not considered to have meaningfully contributed to reducing the market divide, despite being equipped with numerous policy tools.. The resultant increasing social concern about labour market dualism therefore demands more active and general measures than just specific TAA policies.

Our analysis suggests various policy options available to the Korean Government to help improve adjustment policies. First, it is recommended that the TAA programme be improved and strengthened to provide direct support for displaced workers to relocate to new jobs, such as an effective job retraining programme in connection with the social safety net system. More specifically, it is important to link the support provided to dislocated workers by the TAA programme with the existing unemployment benefits to provide them with a diverse job-retraining programme and help them with job searching. Second, the paperwork and administrative requirement for workers to be qualified for TAA support need to be reduced. Third, TAA support for firms should be focused on helping them restructure to become more competitive in the global market.

Through restructuring, firms can be assisted to retrain workers with new skills, which would in turn make them more productive. Fourth, existing active labour market policies need to focus on reducing labour market dualism by providing technology-intensive job training and assisting employment in high-quality, regular jobs as opposed to the low-quality, non-regular jobs that are the current norm; the TAA programme can then be tweaked to work in harmony with the improved general labour market policies. Adopting these measures would allow Korea's TAA to be truer to its spirit – a policy that not only persuades the opponents of free trade of the benefits of FTAs but also makes firms more competitive, workers more competent and the economy more secure.

Endnotes

1. The views expressed in this paper are those of the authors and do not necessarily reflect the official views of the Bank of Korea.

2. See Schauer (2018) for a detailed discussion of labour market dualism in the Republic of Korea. In addition to the wage gap, a large productivity gap between large firms with more regular workers and small and medium-sized enterprises (SMEs) with more non-regular workers is also cited as a feature of labour market dualism.

3. See Schauer (2018) pp. 8–10 for detailed discussions on the impact of labour market duality on income inequality and details on the composition of non-regular workers in Korea.

4. See OECD (2013) for detailed description of the Korean labour protection legislation.

5. Theoretically, the vague definition of "urgent managerial necessity" might work to the benefit of firms. However, mainly due to the strong labour unions' militant approaches, the vague definition has actually made it more difficult to dismiss regular worker for managerial reasons.

6. Young and elderly workers are defined as workers 15–29 years old and 55–64 years old, respectively. See Gruber et al. (2009) and OECD (2018a) for the detailed definitions.

7. Korea's conservative social norms in the past may have hindered women's labour participation, since the early stages of industrialization from the 1960s until they reversed only recently, starting from the late 1980s and early 1990s. For an anecdotal example, the most preferred female marriage candidates used to be full-time housewives but now they are women with regular jobs. However, whereas norms have changed quickly, institutions such as the social safety net and childcare systems have not caught up with them. See OECD (2018a) and OECD (2018b), pp. 271–272.

8. The latest details of unemployment benefits in Korea are provided on the official website of the employment insurance scheme: https://www.ei.go.kr/ei/eih/eg/pb/pbPersonBnef/retrievePb0202Info.do

9. Details of Korea's active labour market policies can be found in the database and on the labour policy information page of the Department of Employment and Labour website: www.moel.go.kr/policy/policyinfo/support/list1.do

10. The Ministry of Health and Welfare estimates that the minimum cost of living is 4,613,536 Korean Won (roughly US$4,054) for a four-person family in 2019. The current upper limit for the unemployment allowance is 1,988,000 Korean Won (US$1,747), which is 43 per cent of the minimum cost of living. (www.mohw.go.kr/react/al/sal0301vw.jsp?PAR_MENU_ID=04&MENU_ID=0403&CONT_SEQ=347381&page=1).

11. See http://biz.chosun.com/site/data/html_dir/2016/04/27/2016042700983.html.

12. As noted in Table 2, the removal of import tariffs through the China–Korea FTA was fairly limited in that only tariffs over 77.1 per cent of total imports were to be removed over 10 years, while the entire 100 per cent of the tariffs were agreed to be removed over 10 years in the FTAs with the US and the EU. For details of the tariff concession schedule of the China–Korea FTA, see www.fta.go.kr/webmodule/_PSD_FTA/cn/doc/1_description.pdf.

13. The trade structure between Korea and these three FTA partners can be described as relatively complementary, considering that the biggest barrier to an FTA with Japan has been concerns about the highly competitive trade structure between the two countries and the possible damage to competing Korean firms.

14. Results from using simple average tariffs are not qualitatively different, although both the size and statistical significance of the coefficients are reduced.

15. Detailed discussions on the negative impact of trade liberalization on labour markets, especially those of underprivileged workers such as non-regular workers, are provided in the Korea Labour Institute's policy report (www.kli.re.kr/_FILE/NEW_PUBLICATIONS/9b8c8fa1025cdbbb2eefc0d7608d051b.pdf) and news articles (www.hani.co.kr/arti/society/society_general/194924.html).

16. Legally, assistance for workers displaced by trade liberalization is included in the Korean TAA programme. However, the actual provision of assistance for displaced workers is limited.

17. The TAA programme is designed to support SMEs to absorb shocks caused by FTAs. As a result, there is no precedent of a TAA application being filed by a large firm.

18. Article 11(1) of the TAA Act states:

The representative of employees or the owner of an enterprise who engages in a type of business eligible for assistance in trade adjustment and has sustained any loss or damage may file an application with the Minister of Employment and Labour for designation of any employee who meets the requirements specified in paragraph (2) as an employee eligible for assistance in trade adjustment pursuant to Articles 12 and 13.

19. The political background at the time that the TAA programme was designed and implemented did not demand highly deliberated measures. As previously discussed, the major motivation behind the programme in 2006 was to moderate increasing social criticism and resistance against FTAs rather than to introduce genuine shock-absorbing mechanisms and institutions. For detailed discussion, see www.hani.co.kr/arti/economy/economy_general/520560.html.

20. See KIEP (2016) for detailed discussion of the effects of the Korea-EU FTA.

21. For most SMEs, the administrative burden to prove a decrease in revenue due to increased imports from FTA partner countries works as a barrier against application, in addition to the limited information about the TAA programme available to most SMEs in Korea.

22. Although support for displaced workers to relocate to other jobs is explicitly stated among policy objectives in the 2006 TAA Act, the application and provision of support for workers have remained very low, mainly due to the administrative burden of applying and the relatively unattractive support in comparison with the existing unemployment benefits.

23. The total number differs from that in Table 3 as it includes firms supported by the TAA programme in respect of all FTAs, not just those with the EU, the US and China.

24. Details of the survey are given in Koh et al. (2017).

25. The government budget to support the agricultural sector far surpassed the expected losses from FTAs, mainly due to the urgent political need to persuade the agricultural sector, which had mounted such strong opposition. In addition, the Korean Government claimed that the domestic support programme aimed to upgrade the competitiveness of the Korean agricultural sector by taking advantage of the challenges posed by the FTAs.

26. *Korean Agriculture Daily* reported that "the agricultural sectors have maximized the organized pressures on the Korean government to provide effective and significant domestic support policies for agricultural sectors"(www.agrinet.co.kr/news/articleView.html?idxno=141769, 1 Dec. 2015). Korean Broadcasting Services (KBS), a public TV network, broadcast that "the government arranged significant scale of the domestic support policies after the increased pressures from the agricultural sectors" (http://mn.kbs.co.kr/news/view.do?ncd=2964177, 10 Nov. 2014). Moreover, KREI (2014) reports that "domestic support policies following FTAs" target improving the competitiveness of the Korean agricultural sector facing increased import competition via FTAs, as has been confirmed by the statement made by the Deputy Prime Minister, Jaewan Park, that "domestic support policies target to improve the competitiveness of agricultural sectors taking advantage of the increased competition" (www.asiae.co.kr/news/print.htm?idxno=2011112218455775458&udt=1 (22 Nov. 2011).

27. See KREI (2018) for detailed discussion.

28. The government objective to mitigate the opposition against FTAs through TTA programs is thought to have been met with relative success, since there has been no serious objection raised by SMEs. In addition, even though there has been rather serious opposition raised by the agricultural sector, the government has succeeded in addressing them with Domestic Support Programs, eventually arranging FTAs with major trading partners.

References

Gruber, J., Milligan, K. and Wise, A. D. (2009), "Social Security Programs and Retirement around the World: The Relationship to Youth Employment: Introduction and Summary", NBER Working Paper No. 14647, Cambridge, MA: National Bureau of Economic Research.

Koh, J., Yoon, J. and Kim, Y. (2017), *How to Promote Korean Trade Adjustment Assistance Programs*, Sejong-Si: Korea Institute for Industrial Economics and Trade (in Korean).

Korea Institute for International Economic Policy (KIEP) (2016), *The Effects of Korea-EU FTA and Policy Implications*, Sejong-Si: KIEP (in Korean).

Korea Rural Economic Institute (KREI) (2014), *The Purpose and the Effectiveness of "Domestic Support Policies after FTA"*, Jeollanam-do: KREI (in Korean).

Korea Rural Economic Institute (KREI) (2018), *The Evaluation of Domestic Support Policies for Agricultural Sector after FTAs*, Jeollanam-do: KREI (in Korean).

Organisation for Economic Co-operation and Development (OECD) (2013), *Strengthening Social Cohesion in Korea*, Paris: OECD.

Organisation for Economic Co-operation and Development (OECD) (2018a), *OECD Economic Surveys: Korea 2018*, Paris: OECD.

Organisation for Economic Co-operation and Development (OECD (2018b), *OECD Employment Outlook 2018*, Paris: OECD.

Republic of Korea (ROK), Ministry of Trade, Industry and Energy (MOTIE) (2010), *The Domestic Industrial Support Policies after Korea-EU FTA*, Seoul: MOTIE (in Korean).

Republic of Korea (ROK), Ministry of Trade, Industry and Energy (MOTIE) (2015), *The Details of Korea-China FTA*, Seoul: MOTIE (in Korean).

Republic of Korea (ROK), Ministry of Trade, Industry and Energy (MOTIE) (2017), *The Evaluation Report on Korea-EU FTA*, Seoul: MOTIE (in Korean).

Republic of Korea (ROK), Ministry of Trade, Industry and Energy (MOTIE) (2018), *The Evaluation Report on Korea-US FTA*, Seoul: MOTIE (in Korean).

Schauer, J. (2018), "Labor Market Duality in Korea", IMF Working Paper No. 18/126, Washington, D.C.: International Monetary Fund.

United Nations (2002), "International Standard Industrial Classification of All Economic Activities (ISIC), Rev. 3.1", United Nations Statistical Papers, Series M, No. 4, rev. 3.1, New York: United Nations.

Appendix

Table A.1 Impact of tariffs on the labour market

	Dependent variable			
	Employment	Monthly wage	Non-regular share in employment	Non-regular monthly wage relative to regular
Variables	(1)	(2)	(3)	(4)
Tariff rate	0.193***	0.002	–0.007	–0.006
	(0.075)	(0.008)	(0.005)	(0.005)
Import competition	0.103	–0.039	–0.003	0.005
	(0.226)	(0.035)	(0.029)	(0.021)
Tariff rate x import competition	0.044	–0.011	–0.0004	–0.0002
	(0.070)	(0.010)	(0.008)	(0.006)
Production by industry	1.418***	–0.229***	0.135***	0.099
	(0.533)	(0.066)	(0.044)	(0.066)
Industry fixed effects	Yes	Yes	Yes	Yes
Year effects	Yes	Yes	Yes	Yes
Observations	1,943	1,546	878	878
Adjusted R^2	0.339	0.674	0.557	0.195

Note: Numbers indicate the model coefficients estimated using ordinary least squares. Numbers in parentheses are robust standard errors clustered in each industry. Employment is the number of persons employed in a given industry. Monthly wage is the average monthly wage of workers in a given industry. Non-regular share in employment is the share of non-regular workers out of all workers in a given industry. Non-regular monthly wage relative to regular is the ratio of the monthly wage of non-regular workers to that of regular workers in a given industry. Tariff rate, production by industry, employment, and monthly wage are in logarithms. Industry fixed effects are included at 2-digit levels under International Standard Industrial Classification (ISIC). $^{*}p<0.1$; $^{**}p<0.05$; $^{***}p<0.01$.

Table A.2 Impact of imports on labour market dualism

	Dependent variable	
	Non-regular share in employment	Non-regular monthly wage relative to regular
Variable	(1)	(2)
Log (imports)	0.0012*	–0.0012
	(0.0007)	(0.0011)
Industry fixed effects	Yes	Yes
Year effects	Yes	Yes
Observations	1,017	1,017
Adjusted R^2	0.853	0.492

Note: Numbers indicate the model coefficients estimated using ordinary least squares. Numbers in parentheses are robust standard errors clustered in each industry. Non-regular share in employment is the share of non-regular workers out of all workers in a given industry. Non-regular monthly wage relative to regular is the ratio of the monthly wage of non-regular workers to that of regular workers in a given industry. Imports are a given industry's sum of imports into Korea from abroad. Only those industries with positive imports are included in the data. Industry fixed effects are included at 4-digit levels under International Standard Industrial Classification (ISIC). $^{*}p<0.1$; $^{**}p<0.05$; $^{***}p<0.01$.

6 Higher Education Response to India's IT Boom: Did State Governments Play a Role?

Devaki Ghose

Introduction

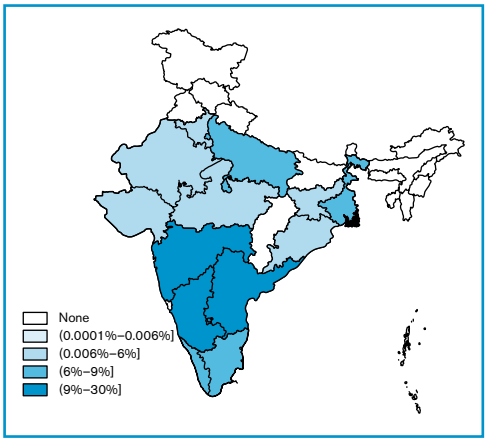
The contribution of information technology (IT) to India's GDP increased from 1.2 per cent in 1997 to 9.3 per cent in 2015.[1] A notable characteristic of this phenomenon is that the majority of the growth in this sector is driven by exports. Currently, more than 80 per cent of IT output is exported.[2] This sector is thus very vulnerable to demand shocks in the world economy. Also, unlike the export of most goods, the export of IT services relies exclusively on the Internet, the expansion of which in the 1990s is a relatively recent phenomenon. The combination of worldwide rapid Internet growth along with rising demand for computing skills created an unprecedented demand for Indian IT services: from 1998, IT exports and employment doubled in a span of just two years.[3]

The development of this knowledge-intensive industry demanded a new set of technical skills such as programming, debugging and data analysis that are relevant for software development. A state of "educational emergency" was declared by the Indian Government in 1998 and 1999 in response to the growing scarcity of engineers as demand for them mushroomed, fuelled by the global rise in demand for IT offshoring from India. Firms faced rising wages, growing labour shortages and employee attrition (Arora and Gambardella (eds), 2005).

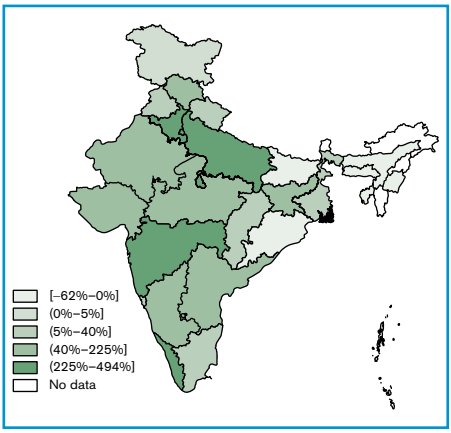
Labour shortages stem from the fact that the IT industry requires people with programming and other technical skills, typically attained through pursuing certain types of college education that takes time: a graduate degree in engineering takes a minimum of four years. A striking characteristic of the growth in IT employment in India is inequality: in 1998, 81 per cent of IT employment was concentrated in 0.09 per cent of districts that had any IT employment. In 2005, the corresponding figure is just 0.05 per cent. Figure 1 shows geographically the distribution of initial software exports in 1995, the growth in IT employment as a proportion of total employment in the following decade, and the subsequent growth in engineering enrolment as a proportion of total enrolment from 2001 to 2011.[4]

Apart from the fact that the distributions of exports, employment and enrolment are highly unequal, there is another key fact evident from these maps – regions that initially had a higher level of software exports witnessed higher growth in IT employment relative to total employment and higher growth in enrolment in engineering degrees relative to total college enrolment. This trend is reflected in the response of private engineering colleges, which, although more dispersed

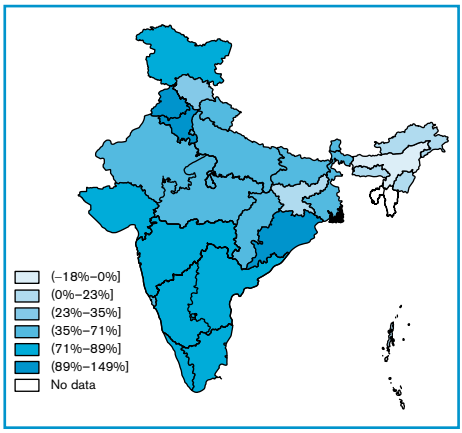
Figure 1 State-level maps of software exports, growth in IT employment and engineering enrolment in India



(a) District-wise percentage of software exports in 1995



(b) Percentage change in IT employment as a proportion of total employment



(c) Percentage change in engineering degrees as a proportion of total degrees

Source: Author's calculations based on data from NASSCOM, employment data from Economic Census, enrolment data from Census.

than is the growth of IT jobs, are concentrated in regions that had higher IT employment. The connection between IT employment and engineering colleges is that more than 50 per cent of workers employed in the IT sector are engineers.[5] Based on existing and new research, this paper analyses the response of the public sector to this large and sudden increase in demand for IT services. In particular, did government initiatives make engineering education accessible to larger sections of the population and larger geographic regions, thereby mitigating inequality?

The following section discusses the different factors responsible for IT growth, focusing on the IT boom of the late 1990s. The third section reviews the literature on the effect of the IT boom on the Indian labour market and discusses the need for government intervention. The fourth section presents new evidence on how regional governments in India responded to labour market changes. The paper concludes with a discussion of what we can learn from the Indian experience.

The IT boom

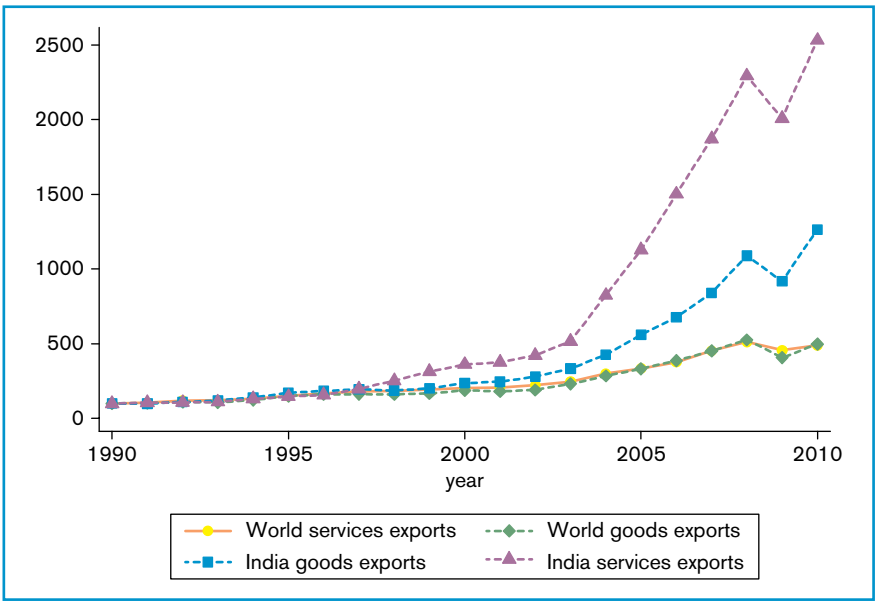
While the last two decades have witnessed a worldwide expansion of IT and consequent increase in demand for computing skills, this expansion has been disproportionately larger for India than for any other country in the world. Figure 2 shows the growth of goods and services in India compared with all other countries.

The important characteristic of Indian services exports is that more than half of all revenue from services exports comes from a single sector: IT and IT-enabled services (Srinivasan and Krueger, 2005). Figure 3 shows the share of IT in total business services exports, compared with other developing countries in the BRICS group (comprising Brazil, the Russian Federation, India, China and South Africa).[6]

The proportion of IT in total business services has been consistently higher for India compared with any other developing country, a subset of which are the BRICS countries shown in Figure 3.

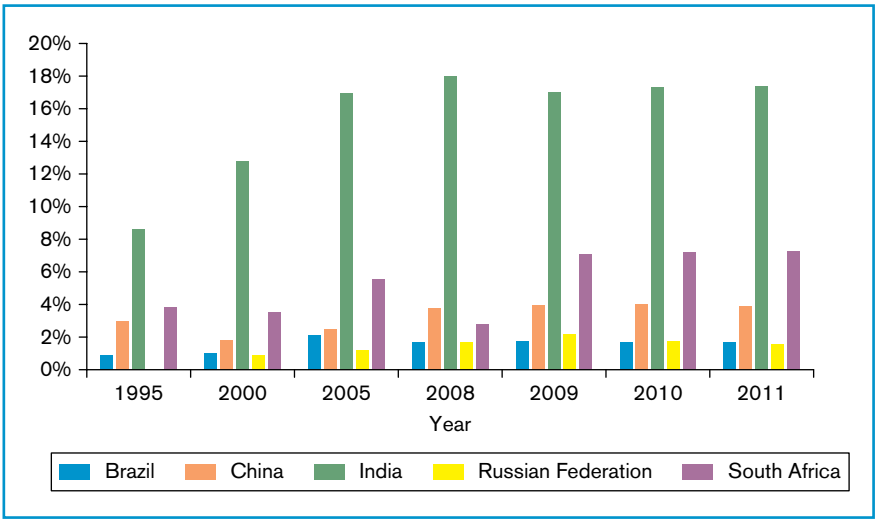
The birth of the Indian IT software industry can be traced back to 1967 with the establishment of Tata Consultancy Services in Mumbai. Even though the first software export zone was set up in Mumbai in 1973, before the 1980s, software development was ignored and the major thrust of the Government was achieving self-reliance in hardware (Khanna and Morales, 2017). A major setback for fledgling software firms was the exit of IBM in protest against the 1973 Foreign Exchange Regulation Act (FERA). Under FERA, the country placed a cap on foreign equity participation at 40 per cent, which made it difficult for foreign firms to

Figure 2 Trend in world exports and Indian exports of goods and services in current United States dollars (index = 100 in 1990)



Source: Eichengreen and Gupta (2013)

Figure 3 Percentage of IT in total business services exports, BRICS countries



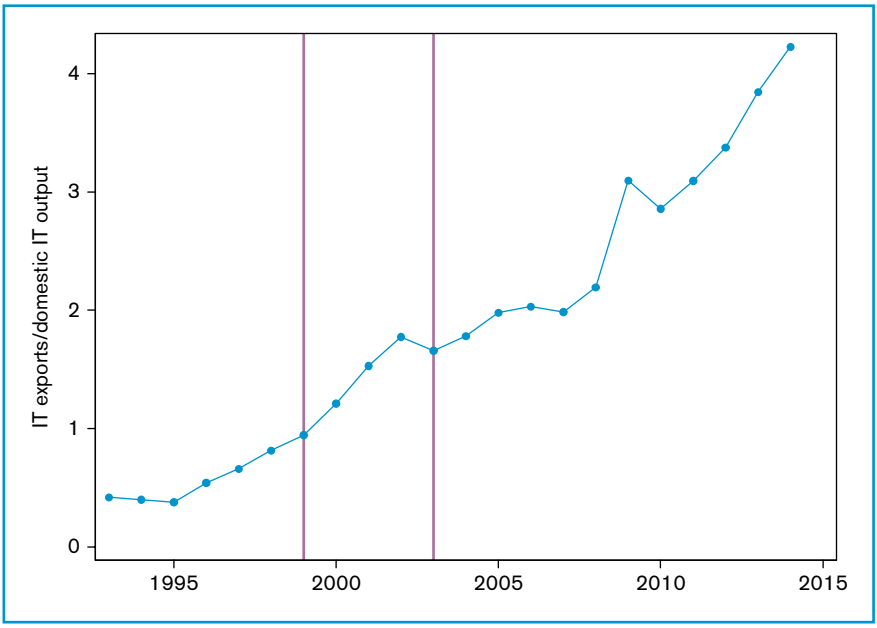
Source: International Trade Centre (2017).

operate in India (Panchal, 2014). From the mid-1980s, the worldwide crash in hardware prices and deregulation of import licensing policy in India coincided with an acceleration in global demand for software programmers, especially for low-cost workers from India (Athreye, 2005).

However, as Khanna and Morales (2017) note, the absence of worldwide Internet during the 1980s meant that on-site work ("body-shopping") dominated, because, otherwise, software had to be transported on tapes, which faced heavy import duties. But, in 1992, satellite links were set up in software technology parks (STPs) in India, negating the need for some kinds of on-site work, and this boosted the offshoring of work to India. In 1993, the shift in the United States from B-1 to H-1 visas further reduced the incentives to hire Indian engineers for on-site work, as they were to be paid the prevailing market wage. Then the late 1990s and early 2000s saw the so-called "Y2K" problem and the dotcom boom and bust. In order to solve Y2K-related computer problems, commonly known as the "Y2K bug", IT firms started offshoring large parts of their work to developing countries such as India.[7] The dotcom boom was an historic economic bubble and period of excessive speculation that occurred roughly from 1995 to 2000, a period of extreme growth in the use and adaptation of the Internet. The dotcom bust caused many firms in the United States (two thirds of India's market) and elsewhere to slash their IT budgets, prompting more outsourcing to India (*The Economist*, 2006).

While global events such as the Y2K shock, the dotcom boom and bust and changes in the United States Government's H-1B visa policies provided big external stimuli to the growth of the Indian IT sector, there are certain factors inherent to India that are responsible for this exceptional rise of IT in the country. It is generally agreed that the availability of low-cost, high-skilled human resources has given India a comparative advantage in the IT sector over its competitor nations (Kapur, 2002). Moreover, over 60 per cent of the population is aged under 25 and India has one of the largest pools of technical graduates in the world. India also has a large English-speaking population, due to its British legacy, and this is considered one of the key ingredients in the success of the IT sector. Shastry (2012) showed that IT firms in India are more likely to locate in regions with a larger English-speaking population than other regions. A natural advantage enjoyed by India is its time difference relative to the United States, one of the biggest customers of IT services, which allows India to offer services to the United States overnight, effectively creating round-the-clock working hours for outsourcing firms (Carmel and Tjia, 2005). Also, unlike the role of the government in the manufacturing sector, where strict labour regulations have stifled growth, both the regional and central governments have implemented policies that are conducive to the growth of the IT sector. In a subsequent section, the role of the government is discussed more broadly, focusing on policies targeted towards the higher

Figure 4 Proportion of IT exports relative to domestic IT output, 1993–2013



Source: Heeks (n.d.), Indian IT Sector Statistics.

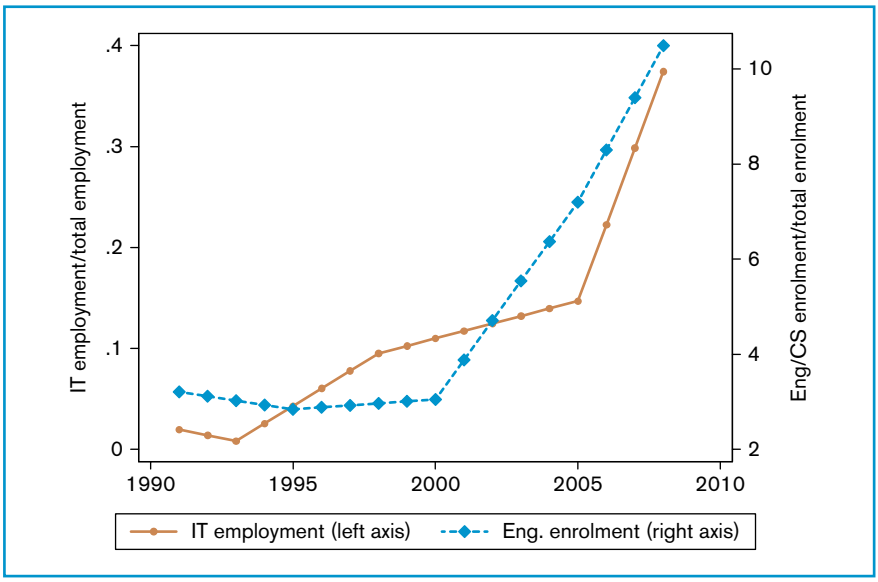
education sector. In summary, the literature has pointed to a number of factors that are responsible for the growth of the IT sector in India, with specific events or factors catapulting this growth at certain times. Figure 4 shows the ratio of exports to domestic IT production in the period 1993–2013.

The first big expansion of IT exports occurred during the late 1990s and early 2000s. The rise in IT exports during the period 1998–2005 is used as a measure of India's exposure to multiple demand shocks from abroad. An important characteristic of the effect of global demand shocks on the Indian IT sector is that they are almost always transmitted through the expansion of the Internet and thus can only be studied in conjunction with technological progress.[8]

The Indian labour market

As demand for Indian IT expanded, catapulted by technological progress and demand shocks in the late 1990s, wages and employment rose in the IT sector. If the growth of the late 1990s were expected to be transitory, we would expect wages and employment to peak, and then level off, and enrolment in engineering

Figure 5 Proportion of IT in total employment and proportion of engineering enrolment in total college enrolment, per cent

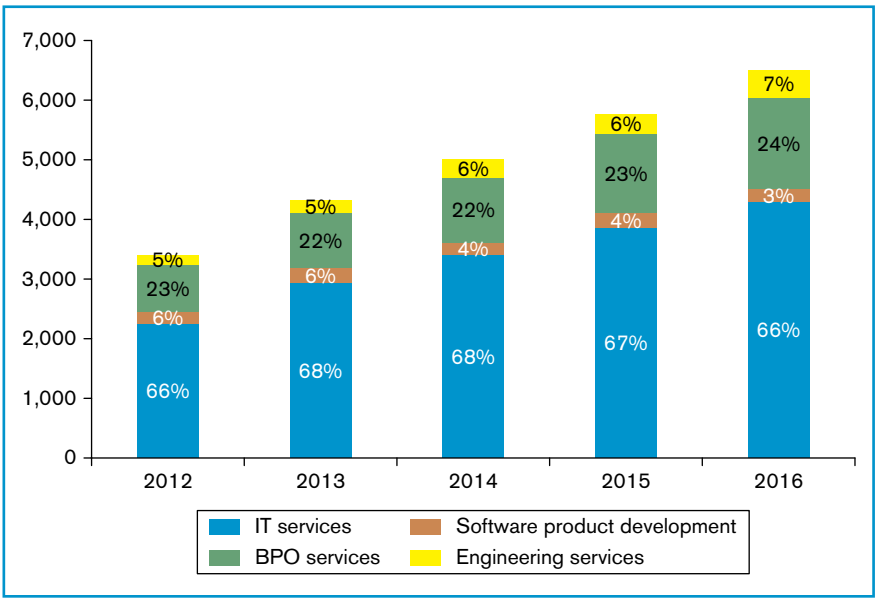


Source: Author's calculations based on data from Economic Census, National Sample Survey, Census.

degrees would not respond to IT employment opportunities. In the long run, the IT labour market would not change. However, the growth of Indian IT is far from the story of a single transitory demand shock temporarily catapulting the sector. With the expansion in Indian IT exports, Indian IT employment kept on increasing. Wages peaked during the sudden expansion of the late 1990s and early 2000s. Responding to rising IT employment opportunities, engineering enrolment started responding after 2000, as is shown in Figure 5.

Shastry (2012) showed that increased schooling in response to opportunities driven by globalization reduced the pressure on wages. She showed that, from 1987 to 1999, skilled wage premiums rose less in districts where schooling responded more to opportunities driven by globalization. A common perception is that India typically provides low-value-added IT services, with a large proportion of back-door call centre work that may not necessarily require an engineering degree. However, business process outsourcing (BPO), which typically includes the bulk of call centre services, did not take off until 2002 when the diffusion of fibre optics infrastructure made speedy voice call transmission over the Internet possible. Figure 6 shows the composition of India's software exports in the period 2012–2016.

Figure 6 Composition of India's software exports, 2012–2016, billion Rupees



Source: Reserve Bank of India.

Even after BPO started to be part of outsourced services from India, more than 65 per cent of Indian software exports consisted of IT services, while less than one quarter of service exports came from BPO. The IT sector turned out to be the most demanding sector in terms of skills: more than 75 per cent of people employed in the IT sector have a college degree, compared with less than 8 per cent in manufacturing.[9] Rising IT wages led to increasing demand for an engineering education. Supplying engineering education became profitable as rising IT wages increased students' willingness to pay for private education. The question is: why do we need government intervention in the presence of free market forces that can induce the private sector to invest in colleges offering courses in IT and computer science?

The objective of the private sector is profit maximization. Therefore, private colleges were more likely to be built in already-booming areas with decent infrastructure. Various studies have shown that state-to-state or even district-to-district labour mobility in India is very low (Hnatkovska et al., 2012; Kone et al., 2018; Topalova, 2010). The implication of low mobility coupled with limited geographic coverage by private colleges is that young people in less developed areas, unable to get a necessary college education, are unemployable in the skill-intensive IT sector.

One rationale for government intervention is to create access to higher education for people in less developed regions. Ghose (2019) shows that the IT boom led to aggregate improvement in welfare in India, but there were large inequalities in welfare depending on where a person was born, the regional availability of education, location of IT jobs and costs of migration. Creating access to higher education in less developed regions reduces the inequality in welfare induced by the IT boom. People with a college degree have higher mobility than those without (Kone et al., 2018). Given that IT jobs are highly concentrated, improving mobility through higher education is an important channel through which people born in less developed regions can participate in the IT boom (Ghose, 2019).

The role of the Government

One common argument put forward for the success of IT, or services more broadly, compared with manufacturing in India is the lack of labour market regulation by the State in the services sector:

> The service sector does not face the same heavy labour market regulation as the industrial sector, such as the measures included in Chapter VB of the Industrial Disputes Act which makes necessary for firms employing more than 100 workers to obtain the permission of state governments in order to retrench or lay off workers in industries, which is often difficult to get. Services are also not subject to the Factories Act, which regulates the working conditions of employees in the industrial sector; instead firms producing services are governed by the Shops and Establishment Act, with its less stringent conditions (Eichengreen and Gupta, 2013).

Kapur (2002) writes: "Although the Indian state's role in the IT sector has certainly been different, it would be wrong to conclude that the state has played no role in the development of this sector". There are various ways in which state and central governments have facilitated growth of the Indian IT sector.

Types of government intervention

The most important initiative by the central Government was the establishment of Software Technology Parks of India (STPI), a society for the promotion of software exports, in 1991. STPI acts as a single window in providing services to software exporters, including statutory services, data communications services, incubation facilities, and training and value-added services. In addition, various tax benefits, such as duty-free imports and exports exempt from corporate income tax, are

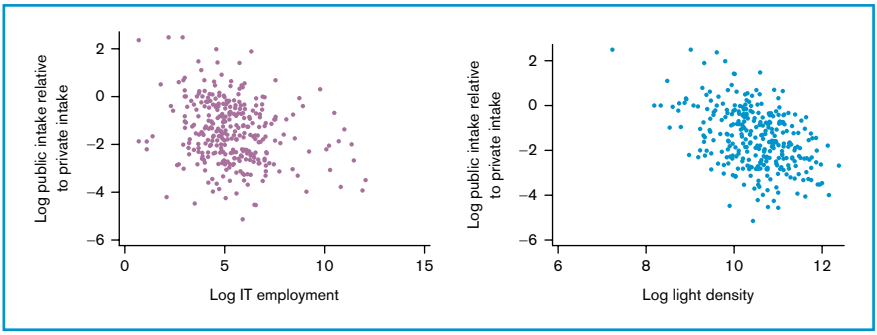
offered for companies setting up in STPs.[10] Government involvement in the Indian IT industry through various export development and export marketing support programmes, broadly construed as export promotion policies, have been studied in the literature (Kumar and Joseph, 2005; Mathur, 2006). Export marketing programmes operate by providing firms with marketing support through promotional events such as trade fairs, exporter training, technical assistance, information on trade finance, and assistance with logistics, customs requirements, packaging and pricing (Aggarwal, 2008).

While all the above policies focus on easing IT firms' access to foreign market demand, the crucial question is: how do these firms obtain skilled labour that can produce the knowledge-intensive export good? Long-run supply-side government policies that promote skill development and technical training have the potential to complement demand-side policies of export promotion. There could be multiple forms of government intervention. One would be to build colleges directly in poor regions that have few private colleges. Another would be to provide subsidies to students from less developed districts to study in private colleges outside their district. In India, there have been many instances of the first form of intervention but no records of the second form of intervention.

The role of public engineering colleges

This section studies whether public engineering colleges provided skill-intensive training to communities in less developed areas and sections of the population with historically lower rates of college attendance, such as minorities and women, by analysing the location patterns of public and private colleges.

Figure 7 Relationship between IT employment, night-light density and approved intake capacity of public colleges relative to private colleges



Approved intake is the government-mandated maximum number of students admissible per college.[11] Scatter plot (a) in Figure 7 shows the relationship between IT employment and intake capacity of public colleges relative to private colleges. The intake capacity of public colleges relative to private colleges is given by the following expression:

$$\frac{\log(\textit{intake of public colleges})}{\log(\textit{intake of private colleges})}. \tag{1}$$

Scatter plot (b) in Figure 7 shows the corresponding relationship between night light density and intake capacity of public colleges relative to private colleges. Night light density has been widely used as a proxy for GDP in the absence of reliable income data in developing countries as it has the advantage of high resolution and objective measurement over a 20-year period. A 1 per cent fall in night light density is associated with a 0.31 per cent fall in GDP measured across a number of countries (Henderson et al., 2011). As reported later in this paper, the current project uses night light density as a proxy for GDP. Both of these plots point to differences in locations of public and private colleges: compared with private colleges, public colleges are more likely than private colleges to be located in areas that are poor as measured by low night light density and have fewer IT employment opportunities. The results of regression analysis outlined below is in line with the evidence borne in Figure 7:

$$\begin{aligned} log(Pub_{dt}) = \alpha + \beta \log(Dev_{dt}) + \delta \log(IT_{dt}) + \gamma \log(IT_{dt}) * \log(IT_{dt}) + \\ \kappa \log(Pvd_{dt}) + \chi \log(Other\ Industry_{dt}) + E_{dt}, \end{aligned} \tag{2}$$

where Pub_{dt} is the number of public colleges in district d at time t, Dev_{dt} is a measure of district-level development proxied by the presence of night light, IT_{dt} is the number of people employed in the IT sector, Pvd_{dt} is the number of private colleges, $Other\ Industry_{dt}$ is the number of people employed in other industries and E_{dt} is the error term. Since the majority of the IT output is exported, the level of employment in the IT sector is mostly driven by the exposure to outside demand for IT.[12] The results show that public colleges respond positively to both IT employment opportunities and the level of development of a region, but the effects are heterogeneous: for every percentage increase in IT employment in a region, the number of public colleges increases more in poorer areas than in others. The results show that, for every 1 per cent increase in IT employment opportunities, the number of public colleges increases by 0.87 per cent in the poorest district. In richer districts, the additional effect of a 1 per cent growth in IT employment opportunities is lower, with the richest districts getting no additional public colleges. On the other hand, private colleges show the opposite trend. As IT employment opportunities increase, more private colleges locate in the richer districts than in the poorer districts.[13] Given that

the median district saw a 114 per cent increase in IT employment between 1998 and 2005 and a 214 per cent increase between 2005 and 2013, this translates, respectively, into a 100 per cent and a 187 per cent increase in the number of public colleges. To put things in perspective, an average public college has an intake capacity of 291 students in computer science and related engineering courses, across all levels (diploma, undergraduate, postgraduate) and, on average, 78 per cent of the seats offered are filled. Thus, the average state college enrols about 227 students across all levels of a programme. On average, fewer than two public engineering colleges are located in each district. A 100 per cent increase in the number of public colleges translates into an increment in intake capacity of 291–582 students and an additional enrolment of 172–344 students.

While the findings above relate to enrolment in higher education (more specifically, engineering colleges), Shastry (2012) showed that growth in IT employment opportunities increases enrolment in primary and secondary schools, implying that districts with higher employment in the IT sector also witness higher increases in primary and secondary schooling. She finds that IT jobs can roughly explain about 45 per cent of the increase in school enrolment in India between 1993 and 2002. Most of these IT jobs require a college education: the median IT professional was 27.5 years old and 81 per cent had a bachelor's degree (NASSCOM, 2004). Thus, given the rise in school enrolment created by IT job opportunities, it is also important that enough colleges are built to cater to this college-eligible population. Also important is the result that, conditional on districts having the same level of IT employment, state colleges are more likely to be built in economically deprived districts than in richer districts (in contrast to private colleges). This is suggestive evidence that public colleges were built in areas where private colleges were unwilling to enter, even if there was demand. This may be due in part to a higher cost of building colleges in areas with poor infrastructure and connectivity. However, the fact that public colleges were being built in poorer districts is by itself not enough evidence that education is reaching the intended beneficiaries. What if public colleges in poorer areas have no student enrolment? In the following discussion, evidence to the contrary is presented: on average, in poorer areas, public colleges utilized their capacity better than did private colleges. Also analysed is heterogeneity in the performance of public colleges in terms of student enrolment across the states of India and type of college, such as all-women, mixed gender and minority.

Heterogeneity in utilization of public engineering colleges

To measure how successful colleges are in attracting students, a district-level variable called capacity under-utilization (CUd,t), defined below, is used as a metric:

$$CU_{dt} = \frac{(Intake_{dt} - enrolment_{dt})}{Intake_{dt}}, \quad (3)$$

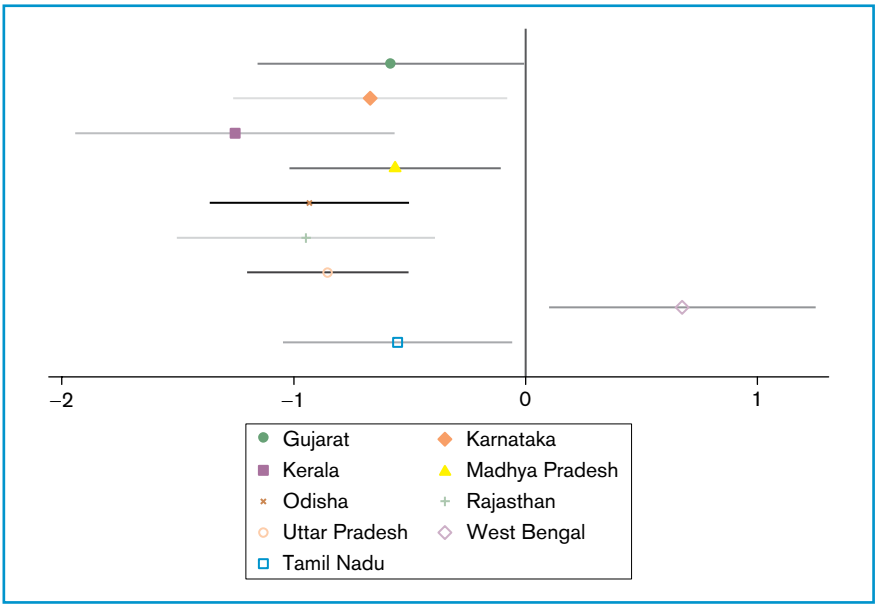
where $Intake_{dt}$ is the district-level sum of government-approved maximum intake of students per college and $enrolment_{dt}$ is the sum of actual number of students enrolled in each college in the district *d*. The difference between these two numbers is the number of under-utilized seats in colleges. To understand how successful public colleges are in utilizing capacity in poorer areas across different states, the following descriptive regression is used:

$$CU_{dt} = \alpha Dev_{dt} + \beta_s + \gamma_t + E_{dt}. \quad (4)$$

The measures of capacity under-utilization and development are at the district level. β_s and γ_t respectively denote state and time fixed effects and E_{dt} is the error term. The results indicate that, in poorer districts, the capacity of public colleges was also utilized better than that of private colleges, indicating that these new public colleges were instrumental in fulfilling unmet demand for college education in more deprived communities. In particular, for a 1 per cent decline in GDP in a district, the percentage of seats utilized in public colleges relative to private colleges rises by 1.75 per cent.[14] The problem with looking at a single average measure is that it masks substantial heterogeneity in terms of capacity utilization in public colleges across states. This heterogeneity is important to capture since the decision to open a state public college and where to locate it is at the individual discretion of each state. For a more systematic comparison, Figure 8 plots the confidence intervals obtained from regressing log proportion of capacity utilized in public colleges relative to private colleges on log light density, a proxy for economic development. A confidence interval that falls entirely on the negative axis implies that, in less developed districts, as measured by the presence of night light, the intake capacity of public colleges is utilized better compared with the intake capacity of private colleges.

At one extreme, West Bengal seems to be lagging behind any other state in terms of capacity utilization of public colleges in poorer districts: for a 1 per cent decline in GDP in a district, the percentage of seats utilized in public colleges relative to private colleges falls by 2.16 per cent in West Bengal. This result is surprising as the cost of studying in government colleges is less than half the cost of studying in private colleges.[15] West Bengal is the only state that is an outlier in terms of failing to utilize its capacity in public colleges relative to private colleges in poorer areas. Satyajit Chakrabarty, Director of Salt Lake Institute of Engineering and Management in Kolkata, believes that industrialization will remain unattainable if the state does not increase the number of engineers produced every year: "It's a known fact that many companies such as Tata Consultancy Services (TCS) and Cognizant Technologies have set up offices in Calcutta because of the presence

Figure 8 Confidence intervals plotted from regressing log proportion of capacity utilized in public colleges relative to private colleges on log light density



of engineering colleges in areas like Sector V, Salt Lake. And 95 per cent of the workers in such companies are from Bengal since a company is more likely to go for people who are rooted in one place." Since Bangalore will always have a larger pool of engineering graduates on offer, "there will be a greater number of IT companies operating in a city like Bangalore" (*Telegraph*, 2009).

At the other end of the spectrum is Kerala, where every 1 per cent decline in GDP in a district is associated with 4.03 per cent of seats being utilized in public colleges relative to private colleges. Rajasthan, Odisha and Karnataka are not far behind, where the proportions are 3.06 per cent, 3 per cent and 2.61 per cent respectively.[16]

These findings of how states perform in terms of providing public engineering education in poorer districts is consistent with other broadly known facts about heterogeneity in states' performance with regards to public goods provision. For example, Kerala has been consistently featured as one of the top performers in terms of state provision of education and health. Among the states where public colleges had better capacity utilization in poorer areas compared with

private colleges are three of the four BIMARU states: Madhya Pradesh, Rajasthan and Uttar Pradesh. These are states that are characterized by poor economic conditions and have not been successful in attracting IT industry compared with some of the southern states, such as Tamil Nadu, Andhra Pradesh, Kerala and Karnataka.

In India, the IT sector has turned out to employ more women relative to other traditional sectors. The male to female ratio among the entire working population was 4:1, but around 3.35:1 in software firms and 0.53:1 in business processing firms (NASSCOM, 2004). However, enrolment of women in engineering courses has historically been low. In 2014–2015, less than 30 per cent of students enrolled at bachelor level in engineering were female, compared with 47.6 per cent in other science streams (Government of India, 2016). In developing countries such as India, societal norms often prevent women from attending the same colleges as men. Women also face greater challenges than men when they have to travel long distances for education. Many studies in the development literature have shown that the distance to college, sanitation facilities and type of college (all women or mixed gender) have proven to be deciding factors in whether women pursue education at all. The role of state colleges can be very important in creating the necessary environment for women to pursue higher studies. For example, providing education to women in poor districts may be less viable for private firms.

Again on average, state colleges have been more successful in utilizing capacity at all-women and minority colleges in poorer districts, compared with private colleges. The capacity under-utilization measure referred to here is created in exactly the same way as that described above, but by looking at the intake capacity in colleges that are exclusively for women and minority communities. For every 1 per cent decline in GDP, the proportion of capacity utilized in all-women and minority public colleges rises by 2 per cent relative to private all-women and minority colleges. The state that stands out here is Karnataka: for every 1 per cent decline in GDP, the proportion of capacity utilized in all-women and minority public colleges rises by 3.64 per cent relative to private colleges. This indicates that the state of Karnataka puts greater emphasis than do other states on placing all-women and minority public colleges in relatively more deprived areas.[17]

However, only looking at capacity utilization without corresponding data on placement will give an incomplete picture; e.g. women and minority students could be enrolling at higher rates in public colleges but could also be dropping out before campus placement. Campus placement refers to the arrangement by which different companies visit college campuses to recruit graduating students.

Campus placement and quality of colleges

Newly compiled placement data from AICTE show that, on average, only 30 per cent of students enrolled in colleges find campus placement. While this number is very low, it differs neither according to the management of the college (public or private) nor according to the type of college (separate or mixed gender, or minority). Public, private, separate and mixed-gender colleges seem to have similar performance when it comes to student placement, and this conclusion survives even when we condition on the level of development or IT job opportunities in a district.

The dimension that matters is quality: controlling for the type of college, overall development, and IT job opportunities in a district, there is a strong correlation between the faculty to student ratio – a measure of quality of an institution – and the job placement ratio. A survey of top engineering institutions in India, the National Institutes of Technology (NITs), shows that the average placement numbers are much higher than the national average. For example, at NIT Hamirpur, the placement percentage was 83 per cent in 2017. Software companies accounted for about two thirds of the job offers. The proportion of enrolled students placed is also strongly related to IT employment opportunities in a district – for every 1 per cent increase in IT employment in a district, the proportion of enrolled students placed increases by 0.16 per cent. This is not surprising: there is a lot of anecdotal evidence about tie-ups, campus visits and informal internships, which help match students to jobs. Firms such as Infosys have started contract programmes to supply tried and tested modules to universities and colleges. Eighty-five per cent of universities are interested in collaborating with the IT industry (Nayar, 2008). HCL Technologies entered into a tie-up with Madras University. Subrat Chakravarty, Human Resources Head of Business Services at HCL Technologies, said of the experience:

> Last year, we hired close to 1,800 students. This was the first batch that we got on board after our tie-up with Madras University. The best experience from this tie-up is that we have not seen any drastic surprises. In the past, students would suddenly decide to leave the training period. Now, we have 100 per cent retention, as students are aware of what they are getting into. (*Business Standard*, 2012).

While, overall, the success in placing students does not differ by type of college, and public colleges have a bigger presence than private colleges in deprived districts, there is still a big discrepancy between the intake capacity of each college as approved by the AICTE and the number of enrolled students. On average, from 2012–2017, 75 per cent of sanctioned intake capacity in public colleges was filled, compared with only 51 per cent in unaided private colleges. This indicates

that these public colleges have the potential for further student intake, but either there is not enough demand or there is a lack of supply of basic requirements such as qualified teachers or computers. Although we cannot distinguish between these two hypotheses, in either case a crucial question remains: what is the right balance between opening new public colleges and investing in fewer colleges with the right facilities? A government survey of the top 100 colleges, which includes the Indian Institutes of Technology (IITs), shows that these colleges always fill their approved intake, often enrolling more students that their approved intake capacity. A possible constraint on the demand for higher education is the lack of primary and secondary education, which is essential for college enrolment. While more than 95 per cent of children attend primary school, just 40 per cent of Indian adolescents attend secondary school (Grades 9–12) (World Bank, 2011). To this end, introducing short vocational courses that provide hands-on IT training, rather than full-time degree courses, could be more useful.

A notable policy undertaken by the Karnataka State Government is the opening of over 300 computer training centres, managed by the Karnataka State Electronics Development Corporation Limited (KEONICS). These centres provide short-duration courses in specific types of computer programming, as well as professional courses in hardware and networking, data management, and services, ranging from between one month and one year. Establishment of these training centres is a unique policy initiative of the Karnataka State Government. Using the estimates of the effects of IT training centres in India from Oster and Steinberg (2013), each of these computer training centres caused a 5 per cent increase in the number of children enrolled in primary school, and this effect is localized to within a few kilometres from the centre. An analysis of the locations of these centres suggests that they were spread across rural and urban areas. This additional initiative by the Karnataka State Government increased enrolment in primary school, potentially translating into a larger population being eligible to attend college. This policy supplemented state and even private initiatives in opening colleges, by creating incentives for primary education, which is a necessary prerequisite for college education.

In summary, the analysis suggests that, on average, state governments did respond to the IT shock in the late 1990s and built more colleges in more underprivileged areas than did the private sector. Although, on average, public colleges fared better than private colleges in fulfilling their capacity in poorer districts, states differed vastly in the amount of capacity utilized in the public colleges built in poorer areas. There are also vast differences across state governments in the nature and implementation of higher education policies. Karnataka is the state with the highest value of IT exports among all Indian states, and throughout the analysis, the higher education policies pursued by Karnataka stood out in the following ways.

First, the opening of over 300 KEONICS training centres across the state is the unique policy initiative of the Karnataka State Government. Second, to a greater extent in Karnataka than any other state, public colleges targeting women and minority students were more successful in utilizing capacity than private colleges, in economically deprived districts. Karnataka was, notably, one of the first states to recognize the importance of empowering women by explicitly announcing the goal of utilizing IT in eradicating poverty and empowering women.[18] While the Karnataka State Government took many reactive steps, such as opening IT training centres and public colleges, in response to the IT boom of the late 1990s, it was also the most proactive state in terms of wooing the IT industry well before the turn of the 20th century. It was the first state to announce an IT policy, in 1997. Although most public engineering colleges were set up after 2000, Visvesvaraya Technological University, the central university for engineering education in the state, was established in 1998, under the Visvesvaraya Technological University Act, 1994.

Conclusion

This article provides an overview of how different states responded to the IT boom in India in the late 1990s and early 2000s by investing in public colleges offering specific types of education. The Indian IT sector is a classic example of a country's initial advantage in engineering education contributing to the growth of the IT sector, which, in turn, led to a strengthening of its prior comparative advantage in engineering education. The public sector played a key role in bridging the gap between the demand for and supply of computing skills brought on by the IT boom of the late 1990s by building engineering colleges geared towards communities with limited resources, such as women and minorities. The study finds differences in the relative success of states in providing access to education to more economically deprived communities and districts that typically find it harder to pay for private education. An analysis of the education policies undertaken by some of the most successful states, particularly Karnataka, the leading IT exporter, suggests that they followed a multipronged approach: establishing colleges for economically deprived areas and communities, and enabling those communities to acquire the skills necessary to attend colleges by expanding IT training centres.

There are several reasons why these policies had some success in building engineering education in India. First, due to inadequate infrastructure and a lack of spending ability in poor communities, private colleges have not entered certain districts and markets. Public colleges were successful in spreading education in such districts. Second, at 27 per cent, female labour force participation in India is one of the lowest among developing countries. One of the major impediments to female labour force participation is a lack of education: often women are not able to

continue education, owing to social taboos related to studying in mixed-gender colleges and travelling long distances to attend college. To this end, the public sector has been successful in enrolling women in colleges especially suited to their needs. Since female labour force participation is so low, there is huge untapped potential in educating and eventually employing women in India's fastest growing service sector.

There are limitations in this study that we should bear in mind. A concern in recent years is the poor quality of education imparted in many engineering colleges, which puts the employability of engineering graduates in question. A recent report found that only one quarter of India's engineers are employable (NASSCOM, n.d.). A 2014 study by Aspiring Minds puts the number at 7 per cent. While there is some controversy about the actual number, a number of studies and available placement data indeed point to very low placements for engineering graduates. Most big IT companies have set up retraining centres in their offices: US$1 billion of the nearly US$60 billion revenue of the outsourcing industry is spent on retraining fresh graduates (NASSCOM, 2011). On the need for these kinds of training programmes, M. P. Ravindra, Adviser, Infosys, Education and Research, commented: "The need to create multiple skills in engineers to keep ahead of competition is an artificial means, and hurts our business by taking away the focus from our core business. We're doing it as we are helpless" (Nayar, 2008).

Sometimes colleges in remote areas have difficulty attracting qualified faculty and building tie-ups with industry, a very important factor in student placement. While building public colleges in remote areas can be justified on grounds of low labour mobility, and the unwillingness of families to send their children, especially women, to a different region, there are still many artificial barriers to mobility created by regional policies. One such policy barrier is the existence of state quotas, which can sometimes be as high as 80 per cent, which implies that only 20 per cent of seats are available for out-of-state students.[19] In the premier NITs, 50 per cent of seats are reserved for in-state students. Also, 20 per cent of government colleges do not have hostel facilities, which makes it difficult for non-locals to study there.[20]

Reducing state quotas and building hostel facilities have the potential to better allocate students across colleges in India. Such measures will help streamline resources to fewer colleges, ensuring better quality and increasing access to education across broader regions and communities. The evidence does enable us to conclude that state governments responded to the IT demand shock by building new colleges. A larger proportion of these new public colleges were placed in economically deprived locations, compared with the proportion of new private colleges placed in economically deprived locations. It is important, however, to analyse alternative policy measures, such as reducing in-state quotas, weeding out dysfunctional colleges and directing resources to improving quality.

Endnotes

1. National Association of Software and Service Companies (NASSCOM).

2. NASSCOM.

3. Economic Census and NASSCOM.

4. The enrolment data are from the Indian Census. Since the Census is conducted at 10-year intervals and it takes time for education to show visible outcomes, 2001–2011 is a more relevant time period to look at than 1991–2001.

5. NSSO.

6. The SIC code 73 is business services, which includes advertising, mailing, consumer credit rating agency, personnel supply, etc. Category 737 in business services is computer programming, data processing and other computer-related activities.

7. Before 2000, all computers stored dates in a format that used only the last two digits of a year. The Y2K (year 2000) problem refers to the problem that could occur in computer systems as the year 1900 becomes indistinguishable from 2000. The majority of programs with Y2K problems were business applications written in a 40-year-old language called COBOL (Sanders, 1999). While COBOL programming was already obsolete in United States universities, in India it was still a part of the regular course curriculum (Mathur, 2006).

8. To isolate the effects of a demand shock from abroad from regional supply-side factors leading to geographically unequal growth of the Internet, I control for numerous confounding factors, such as domestic expansion of IT and observable changes in the speed of Internet services accessible by firms. For a more formal exposition of identification of the demand shock, see Ghose (2019).

9. Author's calculation based on National Sample Survey data.

10. See: https://www.meity.gov.in/content/stpi

11. All India Council for Technical Education (AICTE), part of the Ministry of Education, sets these limits based on certain parameters such as infrastructure, number of teachers, etc., of each college.

12. In alternative specifications, I measure the presence of IT in each district by the value of IT exported by that district, thus giving a direct measure of the international exposure of that district to outside demand. γ measures the interaction of IT employment with the level of development in a district in order to capture any heterogeneous effect of IT employment.

13. The econometric technique uses instrumental variable technique. The number of public colleges in a district is regressed on IT employment in a district, where IT employment is instrumented by a Bartik-type instrument: the proportion of current IT employment that is explained by historical IT employment/software exports. Numerous controls, such as employment in other industries and proportion of college-eligible population, are taken as controls.

14. The log proportion of capacity utilized in public engineering colleges relative to private engineering colleges is regressed on log light density, with state and time fixed effects. For this

analysis, the year 2013 is used since this is the only year for which enrolment, intake, IT employment and night light data are available.

15. Author's calculation from education data compiled by Career360, a private education survey firm.

16. I exclude states that had fewer than 50 observations from this discussion. Also excluded are states where the confidence interval includes zero. Only the coefficients of West Bengal and Kerala are statistically different from all other states.

17. The statewise comparison is very noisy here since very few states have enough colleges catering to minorities and women. The southern states of Karnataka, Kerala and Tamil Nadu perform better in general. However, for Kerala, the confidence interval includes zero due to high standard errors.

18. Karnataka, Chief Minister's Taskforce on IT (2000), "Mahithi: The Karnataka Millennium IT Policy: IT for the Common Man".

19. See, for example, "85% quota for State Board students in medical admissions", *Indian Express*, 25 June 2017; "Domicile rule gets Maharashtra state board students 83% medical seats", *Hindustan Times*, 28 September 2017.

20. Author's calculation from education data compiled by Career360, a private education survey firm.

References

Aggarwal, A. (2008), "Assessment of the STPI Scheme", unpublished manuscript, Government of India, Department of Information Technology.

Arora, A. and Gambardella, A. (eds) (2005), *From Underdogs to Tigers: The Rise and Growth of the Software Industry in Brazil, China, India, Ireland, and Israel*, Oxford: Oxford University Press.

Aspiring Minds (2014), *National Employability Report: Engineers: Annual Report 2014*.

Athreye, S. S. (2005), "The Indian software industry and its evolving service capability", *Industrial and Corporate Change*, 14(3): 393–418.

Business Standard (2012), "IT-ITeS forms tie up with institutes to create employable graduates," 30 Aug.

Carmel, E. and Tjia, P. (2005), *Offshoring Information Technology: Sourcing and Outsourcing to a Global Workforce,* Cambridge, UK: Cambridge University Press.

Eichengreen, B. and Gupta, P. (2013), "Exports of services: Indian experience in perspective", *Indian Growth and Development Review*, 6(1): 35–60.

Ghose, Devaki (2019), "Trade, Internal Migration and Human Capital: Who Gains from India's IT Boom?", Job Market Paper, University of Virginia.

Government of India, Ministry of Human Resource Development, Department of Higher Education (2016), *All India Survey on Higher Education 2014–2016*, New Delhi.

Heeks, R. (n.d.), "Indian IT Sector Statistics", Centre for Development Informatics, University of Manchester. Available at https://ict4dblog.files.wordpress.com/2010/01/indian-it-stats-1980-2009.pdf.

Henderson, V., Storeygard, A. and Weil, D. N. (2011), "A bright idea for measuring economic growth", *American Economic Review*, 101(3): 194–199.

Hnatkovska, V., Lahiri, A. and Paul, S. (2012), "Castes and labor mobility", *American Economic Journal: Applied Economics*, 4(2): 274–307.

International Trade Centre (ITC) (2017), *BRICS Countries: Emerging Players in Global Services Trade*, Geneva: ITC.

Kapur, D. (2002), "The causes and consequences of India's IT boom", *India Review*, 1(2): 91–110.

Khanna, G. and Morales, N. (2017), "The IT Boom and Other Unintended Consequences of Chasing the American Dream", Working Paper No. 460, Washington, D.C.: Center for Global Development.

Kone, Z. L., Liu, M. Y., Mattoo, A., Ozden, C. and Sharma, S. (2018), "Internal borders and migration in India", *Journal of Economic Geography*, 18(4): 729–759.

Kumar, N. and Joseph, K. J. (2005), "Export of software and business process outsourcing from developing countries: Lessons from the Indian experience", *Asia-Pacific Trade and Investment Review*, 1(1): 91–110.

Mathur, S. K. (2006), "Indian information technology industry: Past, present and future & a tool for national development", *Journal of Theoretical and Applied Information Technology*, 2(2): 50–79.

National Association of Software and Service Companies (NASSCOM) (n.d.), *Perspective 2020: Transform Business: Transform India*, New Delhi: NASSCOM [Powerpoint].

National Association of Software and Service Companies (NASSCOM) (2004), *Strategic Review 2004*, New Delhi: NASSCOM.

National Association of Software and Service Companies (NASSCOM) (2011), Annual Report 2010–11, New Delhi: NASSCOM.

Nayar, L. (2008), "That latent synergy in the offing", *Outlook*, 30 June.

Oster, E. and Steinberg, B. M. (2013), "Do IT service centers promote school enrollment? Evidence from India", *Journal of Development Economics*, 104: 123–135.

Panchal, S. (2014), "Economic milestone: Exit of the MNCs (1977)", *Forbes India*, 14 Aug.

Sanders, R. (1999), "UC Berkeley computer scientists attack Y2K bug with new program to find millennium glitches in C applications", news release, Berkeley, CA: University of California Berkeley, 8 Feb.

Shastry, G. K. (2012), "Human capital response to globalization: Education and information technology in India", *Journal of Human Resources*, 47(2): 287–330.

Srinivasan, T. N. and Krueger, A. (2005), "Information-technology-enabled services and India's growth prospects", *Brookings Trade Forum*: 241–277.

The Economist (2006), "Virtual champions: India's IT stars are still rising fast", 3 June.

The Telegraph (2009), "The engineering college debate: Is more less", 25 June.

Topalova, P. (2010), "Factor immobility and regional impacts of trade liberalization: Evidence on poverty from India", *American Economic Journal: Applied Economics,* 2(4): 1–41.

World Bank (2011), "Education in India", 20 Sept.

7 Labour Market Policy Responses Amid Globalization: The Case of South Africa

Haroon Bhorat, Kezia Lilenstein and Francois Steenkamp

Introduction

The South African economy is one mired in a long-run, low-level growth trap, which has entrenched high levels of structural unemployment. Further, and as is the case with many middle-income economies, it has struggled with the domestic consequences emanating from a variety of exogenous economic shocks. Nowhere is this more apparent than in the case of contagion effects from the 2008 global crisis and trade-induced shocks – within a world economy that is increasingly defined by its interconnectedness. For South Africa, the real economic impact has been most powerfully felt in the labour market, with current and future employment threatened through these shocks. Thus, the combination of high levels of structural unemployment and the adverse labour market effects associated with exposure to global shocks has necessitated the design of appropriate and effective labour market responses.

In the post-apartheid period in South Africa, policy-makers have employed three major active labour market policies (ALMPs) to tackle both the long-term structural malady and the adverse effects of exogenous global shocks: (i) a job retraining scheme; (ii) a public employment scheme; and (iii) a firm-based wage subsidy intervention.[1] This chapter evaluates each scheme in terms of the jobs it created or supported and its challenges and successes, and makes a comparison of the costs associated with each scheme.

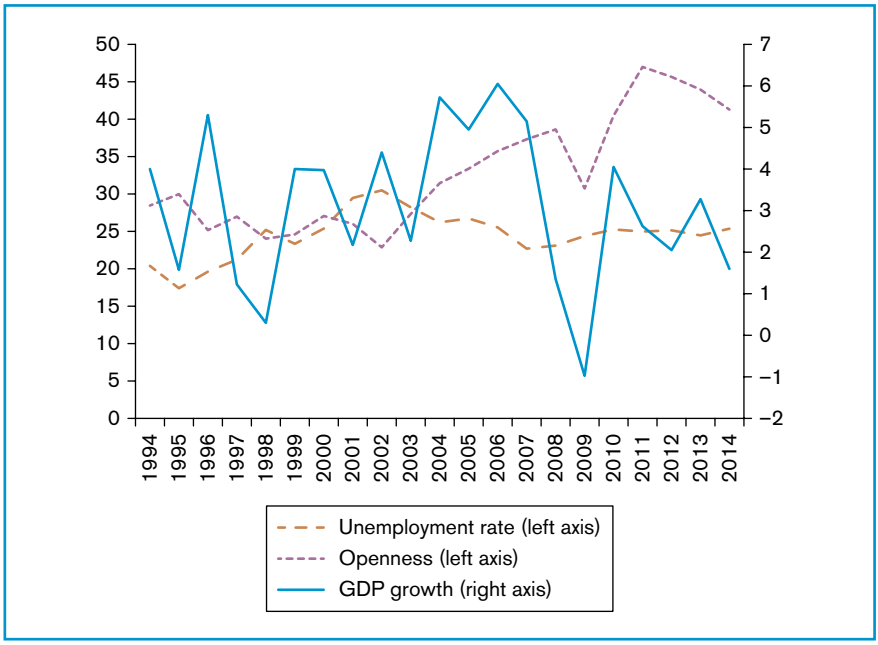
Globalization, growth and the South African labour market

It is well documented that the key economic challenge facing South Africa is its high level of unemployment (Bhorat, 2004; Banerjee et al., 2008). Unemployment averaged 26 per cent annually in the 2000s, and in the third quarter of 2018 it stood at 27.5 per cent (RSA, Statistics South Africa, 2018a). Furthermore, it is well accepted that South Africa has one of the highest unemployment rates in

the world, and certainly the highest of a sample of comparable economies.[2] Bhorat et al. (2014) contend that South Africa may be suffering from the effects of a long-run, low-level economic growth trap, which adversely impacts on the economy's ability to generate jobs. Averaging 2.8 per cent per annum, economic growth in the post-apartheid period, while positive, has been low (Figure 1).[3]

This is happening in an economy that has become increasingly open and has reintegrated itself into the global economy. South Africa's increased trade openness has been achieved through the liberalization of its tariff structure (Edwards, 2005) and its having entered a number of trade agreements, such as the Trade Development and Cooperation Agreement (TDCA) with the European Union (EU), implemented in 2000, and the Southern African Development Community (SADC) Free Trade Protocol, implemented in 2000. The upshot for the newly liberalized economy, of course, is that such integration into the global economy renders it prone to external shocks.

Figure 1 Unemployment rate, GDP growth and openness, 1994–2014, per cent



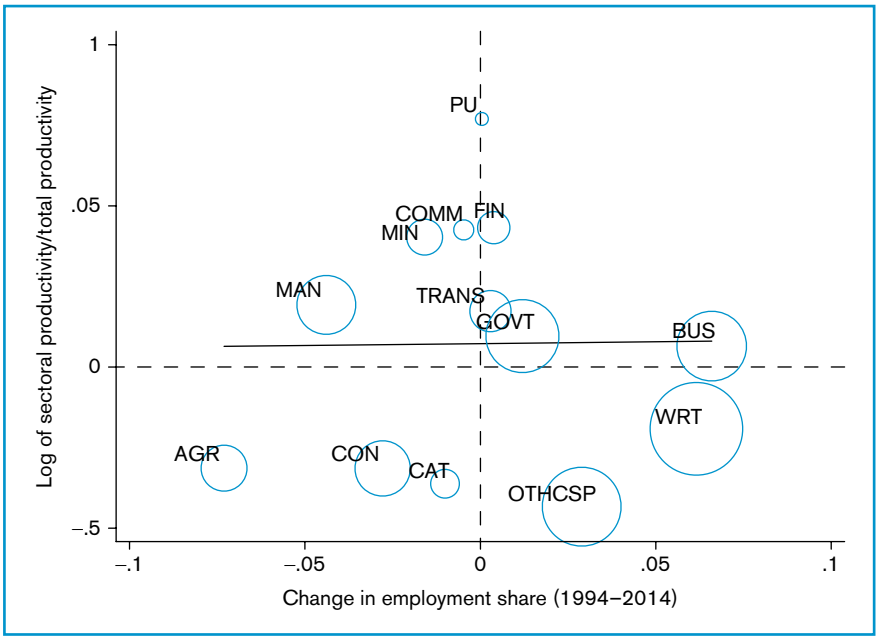
Source: Authors' calculations using export and import data from Penn World Table 9.0 (Feenstra et al., 2015), GDP data from World Bank, World Development Indicators (2018) and labour market data from Kerr et al. (2017).

Notes: Openness measure uses real GDP at current PPP. Annual percentage growth rate of GDP at market prices based on constant local currency.

However, South Africa's unemployment problem is not so much a function of its integration into the global economy and the resultant exposure to shocks as it is a structural issue. Banerjee et al. (2008) posit that the inability of the structurally unemployed to enter the labour force is a function of high search costs, high labour turnover and high reservation wages. South Africa's evolving sectoral composition, and resultant pattern of structural transformation, provides further insight into its low-level growth trajectory in the post-apartheid period. This is depicted in Figure 2, which shows the correlation between the natural log of relative labour productivity and the change in total employment by industry.[4]

Drawing on Bhorat et al. (2018), a number of points emerge from Figure 2. First, there is no evidence of growth-inducing structural transformation in the

Figure 2 Correlation between sectoral productivity and change in employment shares in South Africa, 1994–2014



Source: Authors' calculations based on Quantec (2016).

Notes: Size of circles represents employment shares in 2014. Coefficient of fitted is 0.11 (t-stat 0.04, p-value 0.97). AGR = agriculture; MIN = mining; MAN = manufacturing; PU = utilities; CON = construction; CAT = catering and accommodation; WRT = wholesale and retail trade; TRANS = transport and storage; COMM = communication; FIN = finance and insurance; BUS = business services; OTHCSP = other community, social and personal services; GOV = government services.

Total productivity is defined as GDP divided by total employment (formal plus informal). Sectoral productivity is defined as sectoral contribution to GDP divided by sectoral employment.

post-1994 South African economy, thus reinforcing the notion of the economy being stuck in a long-run, low-level-growth trap. Second, there is evidence of a shift in employment towards high-productivity, skill-intensive services industries, such as financial services. Third, there has been a large shift towards low-productivity services industries, such as wholesale and retail trade (in which many jobs are informal) and workers in the public-sector-dominated community, social and personal services. Finally, employment shifted significantly away from high-productivity tradable industries, such as mining and manufacturing. This resultant deindustrialization is one of the key factors explaining the economy's subdued economic growth and concomitantly inadequate levels of employment generation.

While unemployment is primarily a structural problem, South Africa's integration into the global marketplace has exposed it to global shocks, which have had temporary effects on the labour market. The notably large recession that ensued from the 2009 global crisis accounted for just over 1 million job losses. These job losses translated into a sharp rise in the national unemployment levels, with the narrow unemployment rate rising 4 percentage points, from 21 to 25 per cent.[5] Workers most at risk of job loss during the recession are those considered vulnerable in the South African labour market. These people are young, lack a complete secondary education and tend to work in unskilled or semi-skilled occupations. Therefore, the shocks that South Africa is increasingly exposed to have an impact on and interact with the long-run structural challenges of growth, in this case rising youth unemployment. As such, ALMPs – in particular, the wage subsidy scheme – have targeted young people.

Two key points emerge from the above. First, the process of deindustrialization, and the inability of the South African economy to experience growth-inducing structural transformation, has constrained longer term economic and thus employment growth.[6] To address this long-term structural constraint, policy-makers have responded in part with domestic labour adjustment policies in the form of ALMPs. Second, the South African economy rapidly reintegrated into the global economy following the demise of apartheid and has thus readily exposed itself to global exogenous shocks, such as the 2008 global crisis. The immediate crisis emerging from this global shock led policy-makers to introduce the job retraining scheme. Thus, ALMPs have been introduced to address both long-term structural problems and the economy's more immediate crises. We note though, that, given the excessively high unemployment rates in South Africa, there is a limit to what ALMPs can do in the face of such high levels of unemployment. These ALMPs are examined in detail in the next section.

Labour market responses

This section provides an overview of South Africa's demand-side labour market responses to high structural unemployment, exacerbated by the 2008 global crisis. We evaluate three prominent ALMPs: a job retraining scheme, a public employment scheme and a wage subsidy scheme. The job retraining scheme was designed as a short-run policy response specifically to counteract unemployment driven by the 2008 global crisis. The public employment and wage subsidy programmes are long-term policy responses to unemployment as a structural constraint in an economy unable to generate sufficient levels of sustainable employment. All three programmes actively aim to expand (or retain) employment for marginalized groups, including low-paid and low-skilled people, young people, women and those with disabilities.[7]

The job retraining scheme

In September 2009, a job retraining scheme, officially termed the Training Layoff Scheme, was launched as a direct, short-run, demand-side policy response to the 2008 global crisis. While the primary objective of the scheme was to reduce job losses arising out of the global crisis, the programme also aimed to retrain workers as an investment in human capital, to be utilized once the economy had recovered.[8] An initial US$170 million[9] was earmarked for this programme. The job retraining scheme aims to alleviate the wage bill of a firm by removing workers for a period of training, while keeping the worker's employment contract in place. For the training layoff period – up to three months with a possible three-month extension – employees forgo their wages and are instead given a training allowance set at 50 per cent of their basic salary. The job retraining scheme was initially aimed at employers in distress as a direct result of the financial downturn, and who were considering retrenchments because of it.

There is very little data available on this scheme, and certainly no recent verifiable data.[10] One data source from September 2009 to November 2010 indicates that 28 cases were taken up by the job retraining scheme, affecting a total of 7,142 workers (Roskam and Howard, 2010). It should be noted that there is no real indication on the overall number of jobs saved (as opposed to workers trained) under the scheme. As of 2012/13, only US$8.5 million of the initial US$170 million fund allocated to the training allowances had been spent. Including the cost of training, the total expenditure of the scheme was US$11.1 million (RSA, Department of Higher Education and Training, 2013).

The efficiency and sustainability of the retraining scheme in combating retrenchment must be assessed in relation to the overall goals of the scheme

and the other demand-side policy options for job retainment. The key challenges of the job retraining scheme include:

1. *Low numbers of workers benefiting from the scheme:* The number of workers trained was small when compared with the number of job losses arising out of the 2008 global crisis.
2. *Complex multi-party design of the scheme:* This resulted in significant delays and bureaucratic hurdles for the employers wishing to utilize the scheme. Poor communication between the implementing partners led to inconsistent information being disseminated to those wishing to take up the scheme and an overall lack of effective monitoring and evaluation.
3. *Inadequate capacity of the training agency to effectively implement the scheme:* There have been substantial delays in coordination and implementation of training requirements by the training authority.
4. *Lack of understanding of the scheme by potential users:* Low uptake of the scheme has been linked to a lack of understanding of how the scheme operates, despite an active policy campaign. This is particularly true of small businesses.
5. *Risk to the worker:* Workers participating in the job retraining scheme are asked to sacrifice 50 per cent of their earnings, a substantial portion considering that these workers already tend to be low skilled and positioned in low-paid jobs.

Overall, Roskam and Howard (2010) find that the job retraining scheme suffered from serious problems in terms of both design and implementation. However, they stress that, as the scheme was the first of its type to exist in South Africa, important lessons can be drawn from both its successes and failures. The fact that the job retraining scheme is designed to keep the employment contract in place is highly innovative, given that there was no precedent for this type of scheme in South Africa. Even the fact that it was able to come into existence in a relatively short time frame is impressive. In addition, and despite the various delays and backlogs, multiple partners collaborated successfully such that the scheme was operational, even with the lack of any legislation governing it. Looking ahead, any future scheme of this nature should lean heavily on the lessons learned from the implementation of the job retraining scheme.

The public employment scheme

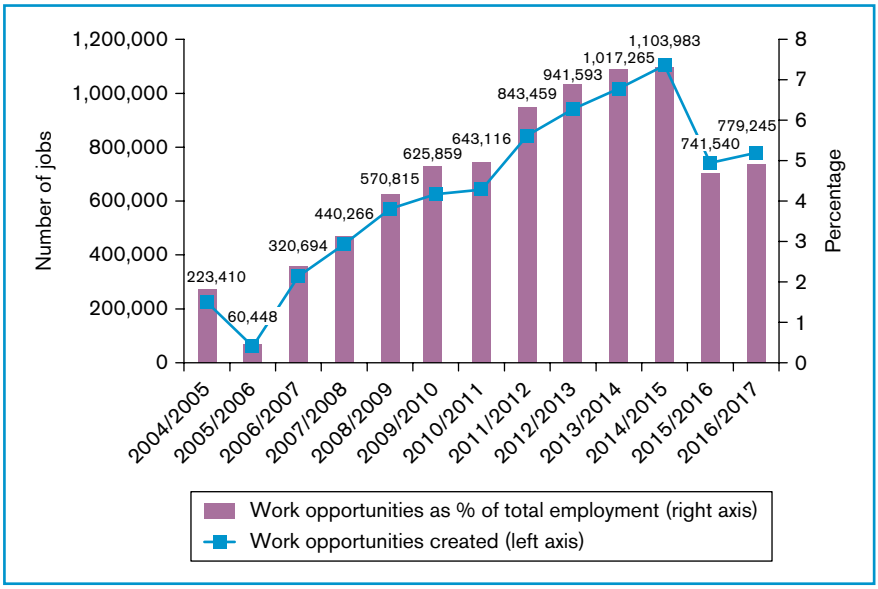
Launched in 2004, the public employment scheme – officially termed the Expanded Public Works Programme (EPWP) – is a labour-intensive public employment scheme with the aim of providing income and therefore poverty relief through temporary work placement for the unemployed. Still in operation today, the public

employment scheme is a nationwide programme that utilizes public expenditure on goods and services to create work opportunities in the infrastructure, environment and culture, social and non-state sectors.[11] While the primary aim is to provide temporary employment, a secondary aim is to provide work experience and training that may facilitate future absorption into employment.[12]

The public employment scheme has generated substantial work opportunities, as indicated in Figure 3. In 2004/05, around 220,000 work opportunities were created, equivalent to 1.8 per cent of total employment in that year. The number of work opportunities created dipped in 2005/06, but then rose steadily until 2014/15, peaking at just over 1 million jobs in that year, or 7.3 per cent of total employment. In 2015/16 and 2016/17, these numbers dropped to around 750,000, or about 5 per cent of total employment. Despite the recent decrease in numbers, it is evident that the public employment scheme has been successful in creating a substantial number of work opportunities since its inception.

Total expenditure on the public employment scheme between 2004 and 2016 was $15 billion (SACN, 2017; RSA, Department of Public Works, 2009). This translates into an average of 1.8 per cent of government expenditure over

Figure 3 Work opportunities created under the public employment scheme



Source: Quarterly Labour Force Survey and PALMS (Kerr, Lam and Wittenberg, 2017). Data for the third quarter was used.

the period. Expenditure increased steadily between 2004 and 2010, peaking at US$2 billion in the recession and post-recession years (2008–2010). This is equivalent to 1 per cent of GDP and 3.5 per cent of government spending in 2010.

The public employment scheme, while successful in creating a meaningful number of job opportunities for the marginalized and unemployed, has faced a number of challenges:

1. *Balancing trade-offs between goals:* Inevitably, trade-offs must be made between job creation and skills enhancement in order to maximize the development impact of the programme. The importance of each of these goals will differ depending on the nature of the subprogramme in question.
2. *Inability to convert work opportunities into employment:* The public employment scheme offers one-off, short-term employment opportunities that are not in line with the country's primary challenge of structural unemployment. While short-term employment opportunities provide wages and experience to those employed, they do not necessarily assist in lifting the unemployed permanently out of that state.
3. *Concerns about corruption:* There has been some irregular expenditure in the public employment scheme, leading to concerns around corruption and the misuse of funds. This activity undermines the validity of the public employment scheme.
4. *Poor monitoring and evaluation (M&E):* The overall M&E of the public employment scheme has been poor. An early report (Hemson, 2007) cites understaffing as a key issue limiting the capacity for M&E. In addition, the quality of data collected has been poor.

Despite this, the public employment scheme has been largely successful in terms of both scale and the level of innovative achievements. Over the 14-year lifespan of the public employment scheme, 8.3 million work opportunities have been created, equivalent to half of total employment in 2018 (RSA, Statistics South Africa, 2018a). The scheme has also been successful in its goals of targeting young people and women for work opportunities. These achievements have led to considerable international interest in this labour market policy. Therefore, strengthening the M&E component of the programme will allow other countries to benefit more fully from the lessons learned from the public employment scheme.

The wage subsidy scheme

Background

As discussed above, unemployment remains one of South Africa's key policy challenges. Of particular concern is unemployment among young people. In 2018,

the unemployment rate for those aged between 15 and 34 was 39 per cent (RSA, Statistics South Africa, 2018b), 11 percentage points higher than the national average. Therefore, young people are disproportionately disadvantaged in their labour market outcomes.

The wage subsidy scheme, launched formally as the Employment Tax Incentive, was introduced as a demand-side labour market policy to address the social and economic problem of youth unemployment. The incentive aims to stimulate the employment of 18- to 29-year-olds in the formal sector by reducing the perceived risks and costs associated with hiring younger workers. The policy takes the form of a tax incentive, with the tax burden owed to the South African Revenue Service (SARS) decreasing for every new qualifying employee hired by a firm. The programme has been in existence since 2014, and it has recently been proposed that it be extended by an additional 10 years, to 2029. The wage subsidy can be claimed for two years, after which it is hoped that the young person would have acquired the necessary skills and experience to find non-subsidized employment. To discourage the creation of low-paid jobs, or the subsidizing of highly paid jobs, the subsidy can be claimed for young people earning between US$142 and US$426 per month,[13] with the proviso that the job created must be associated with a wage equal to or higher than the prevailing minimum wage in the sector. While the amount of the incentive is on a sliding scale depending on the young person's monthly wage, the maximum that can be claimed is US$71 per month in the first year and US$36 per month in the second year.

An analysis of the wage subsidy scheme is made possible through use of anonymized individual and company-level administrative tax data from SARS. In evaluating the impact of the wage subsidy scheme, the key outcome of interest is the change in youth employment in firms taking up the incentive. We interrogate this using a difference-in-differences (DID) approach. We start by presenting some descriptive statistics, which provides insight into the uptake of the subsidy and types of firms that engage in the programme.

Descriptive results

Table 1 describes the size of the panel as well as the number of persons and firms taking up the wage subsidy by year. Take-up of the wage subsidy is lowest in 2013/14, which is intuitive given that it was only available for two months of the tax year. In 2013/14, there were 25,517 firms claiming the wage subsidy, equivalent to 10.8 per cent of all firms in the sample. This increased to 35,105 firms in 2014/15 (14.6 per cent of firms) before dropping to 31,141 firms in 2015/16 (13.7 per cent of firms). However, the 2015/16 data may reveal increased numbers of wage subsidy claims as the data is updated due to late filing of tax returns and resubmissions. In terms of how many jobs the wage subsidy scheme supports, this

Table 1 Wage subsidy uptake by year, 2013–2016

	2013/14	2014/15	2015/16	% change 2014–2016
Number of firms in sample	236,211	241,255	226,598	–4.1
Number of firms claiming subsidy	25,517	35,105	31,141	22.0
Number of subsidized jobs	147,200	878,020	1,100,659	647.7
Subsidised jobs as % of total jobs	1.4	8.2	10.6	657.1
Proportion of claimant firms	10.8	14.6	13.7	26.9
Total claims (US$ million)	3.4	160.5	284.4	8,322.7

Source: RSA, National Treasury (2016) and authors' calculations using SARS tax data 2014–2016.

increased from 1.4 per cent of total jobs in 2013/14 to 10.6 per cent in 2015/16. In 2014/15, the wage subsidy scheme supported 15 per cent of all youth jobs (RSA, National Treasury, 2016). Note here that the number of jobs is not equivalent to the number of individuals, as individuals may work multiple jobs per year.[14] The total amount that firms claimed under the wage subsidy scheme increased exponentially between 2014 and 2016 – from US$3.4 million in 2013/14 to US$284 million in 2015/16. This translated to US$23 claimed per job supported in 2013/14, US$183 per job supported in 2014/15 and US$258 per job supported in 2015/16.

Uptake of the wage subsidy differs substantially by firm size, with larger firms more likely to use the subsidy than smaller firms. For example, in 2015/16, less than 10 per cent of firms with 10 or fewer employees claimed the wage subsidy, compared with 68.5 per cent of firms with more than 500 employees. This may be because of lower average costs associated with applying for the incentive for larger firms (RSA, National Treasury, 2016) or because of greater visibility of the incentive for larger firms. It is also worth noting that uptake is highest among firms in the finance (28 per cent), manufacturing (23.8 per cent) and wholesale and retail trade (17.7 per cent) sectors.

Econometric results

In evaluating the impact of the wage subsidy scheme, the key outcome of interest is the number of youth jobs created through the scheme by firms taking up the subsidy. It is worth noting that here we are assessing the first stage of the programme and not the long-term effects. To do this, a difference-in-differences (DID) estimation technique is employed.[15] The DID equation is defined as follows:

$$Y_{it} = \alpha + \beta(T_t * D_i) + \theta_1 D_i + \theta_2 T_t + X_{it} + \mu_{it}, \quad (1)$$

where Y_{it} represents the outcome of interest, which is defined as either the employment level (e.g. the number of young people employed) or the employment growth rate in firm *i* in period *t*. T_t is a dummy taking the value 0 in the pre-wage-subsidy-scheme period, and 1 in the post-wage-subsidy-scheme period. D_i is a dummy taking the value 1 for firms that take up the subsidy, and 0 otherwise.[16] X_{it} represents a vector of firm characteristics, and μ_{it} is the error term. The DID method compares changes over time in firms affected by the policy intervention to changes over time in firms unaffected by the policy intervention, and attributes the "difference-in-differences" to the effect of the policy. This is captured by the coefficient β on the interaction term ($T_t * D_i$).

In order to assess the potential negative effects of the subsidy, we evaluate employment growth for the group of workers most likely to be displaced by the incentive. As the incentive covers low-wage workers aged 29 years or younger, we evaluate employment growth of workers aged 30–35 earning less than R6,500 per month.[17] If the incentive is likely to result in substitution with other workers, it is most likely to happen with workers in the age bracket just above those who are eligible for the incentive.

Table 2 displays the results from the DID estimation for three outcome groups in 2015 and 2016: young people eligible for the subsidy, employees at risk of displacement, and all employees. Evaluating first the number of jobs in firms claiming the wage subsidy versus those in firms that did not claim the subsidy, the coefficients indicate no significant difference for overall employment, youth employment, or the employment of those aged 30–35. However, the change in employment growth rates is positive and significant across all three outcomes. This indicates that firms claiming the subsidy saw an increase in the year-on-year

Table 2 Impact of the wage subsidy scheme on job creation: Difference-in-differences estimates

Group of workers	Number of employees		Employment growth rate	
	2015	2016	2015	2016
Subsidy-eligible youth	2.717	3.584	1.055***	0.757***
	(1.899)	(4.068)	(0.0590)	(0.0617)
Employees aged 30–35 earning <R6,500	0.310	0.368	0.314***	0.213***
	(0.206)	(0.615)	(0.0507)	(0.0537)
	13.76	23.52	0.151***	0.114***
All employees	(16.04)	(17.97)	(0.0124)	(0.0136)

Source: Authors' calculations using SARS tax data 2014–2016.

Notes: Standard errors in parentheses. ***p<0.01, **p<0.05, *p<0.1.

change in employment growth rates for young people, all employees, and "at-risk" employees aged 30–35, when compared with firms that did not claim the subsidy.

Given the difference in uptake between small and large firms, the DID regression is also run by firm size category, as the aggregate regression may be obscuring the estimates for small firms. Results from this estimation, presented in Table 3, show that firms with 1–50 employees show positive and significant increases in the number of young people employed. While the change in the youth employment growth rate is positive and significant for firms in all size categories, the coefficient is largest in the smallest firms. These results indicate that there are positive youth employment effects of the subsidy, but that these are largest in the smallest firms, which are also the least likely to take up the subsidy.

This suggests that, in order to improve the policy, there is a need for a systematic programme aimed at disseminating information about the wage subsidy, with the specific goal of targeting small firms, since the employment effects are greatest for these firms. Indeed, SMMEs have been identified as a key component to advancing inclusive growth and development, both in South Africa and globally. South Africa's National Development Plan highlights the importance of SMMEs for job creation, innovation and competitiveness, with the goal that 90 per cent of new

Table 3 Impact of the wage subsidy scheme on job creation by firm size: Difference-in-differences estimates

Subsidy-eligible youth	Number of employees		Employment growth rate	
	2015	2016	2015	2016
1–3 employees	0.439***	0.464***	3.206***	2.937***
	(0.0437)	(0.0445)	(0.318)	(0.330)
4–10 employees	0.479***	0.547***	1.912***	1.414***
	(0.0596)	(0.0632)	(0.168)	(0.175)
11–50 employees	0.511***	0.644***	0.858***	0.470***
	(0.141)	(0.151)	(0.0821)	(0.0887)
51–100 employees	1.209*	1.056	0.517***	0.238*
	(0.630)	(0.686)	(0.114)	(0.130)
101–500 employees	1.675	3.479	0.518***	0.412***
	(2.015)	(2.234)	(0.122)	(0.120)
500+ employees	–46.89	–26.16	1.807***	0.627*
	(199.2)	(143.7)	(0.640)	(0.365)

Source: Authors' calculations using SARS tax data 2014–2016.

Notes: Standard errors in parentheses. ***p<0.01, **p<0.05, *p<0.1.

jobs will be created by SMMEs in South Africa by 2030 (RSA, National Planning Commission, 2012).

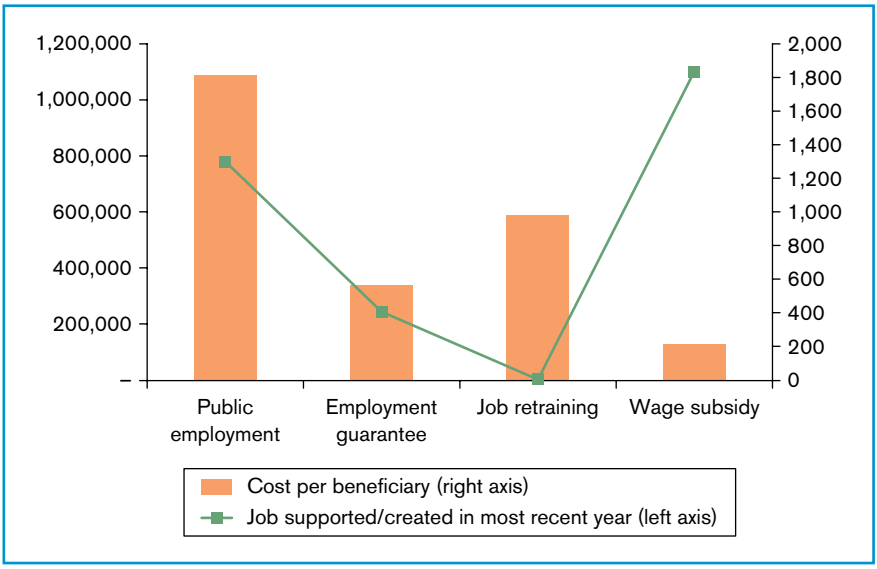
Given the short lifespan of the scheme thus far, there is little clarity on what its long-run effects will be. As subsequent years of data become available, it will be possible to analyse the trajectory of young people into the labour market after they have exited firms claiming the wage subsidy. As one of the goals of the wage subsidy is to expose young people to the workplace in order to enhance their future employability, this will be a key marker of the scheme's success.

The cost of ALMPs in South Africa: A brief comparison

Figure 4 indicates that the public employment scheme has by far the highest cost per beneficiary, at an average of US$1,810 per work opportunity created. The public employment scheme also creates a large number of work opportunities, around 780,000 in 2016/17. The job retraining scheme appears to be the least successful of the ALMPs evaluated, at a relatively high cost per beneficiary (US$980) and very few workers retrained under the scheme. This is likely due to the short time span in which the scheme was implemented. The most successful of the schemes appears to be the wage subsidy scheme, which has thus far had the highest number of beneficiaries at the lowest cost per beneficiary. This scheme supported more than 1 million workers in 2015/16, at a cost per beneficiary of US$211, far lower than under the public employment scheme. Kluve (2016) reviews the effectiveness of ALMPs in Latin America and finds that wage subsidy schemes are generally associated with high government costs and (at worst) negative or (at best) small positive results for the target group, and high displacement effects for the non-target group. While this is in no way a comprehensive cost-benefit analysis, the relatively low cost of the wage benefit scheme and the small positive results found, as well as the lack of evidence for job displacement, indicates that this scheme would pass a cost-benefit analysis and can be deemed a success. This is especially true given that, while the costs associated with the programme are contemporaneous, the benefits, such as access to the labour market, experience gains and income received, are likely to be spread over time.

The relatively high cost of the public employment scheme is unsurprising given the breadth of the scheme, which includes a multitude of subprogrammes, each with its own administrative processes. It is also far costlier to create work opportunities than to subsidize workers hired by firms. Therefore, while the wage subsidy scheme covered the highest number of beneficiaries and had the lowest cost per beneficiary, it is important to develop the M&E processes needed to establish the

Figure 4 Cost per beneficiary and jobs created by ALMPs in South Africa



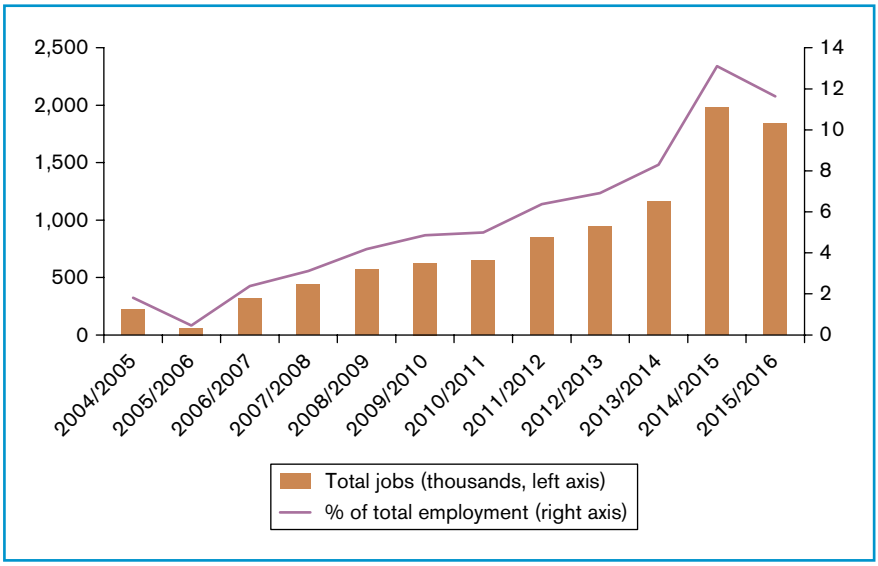
Source: RSA, Department of Higher Education and Training (2013); RSA, Department of Public Works (2009); RSA, National Treasury (2016); SACN (2017).

number of jobs created under this scheme, in order to more accurately compare the outcomes of South Africa's prominent ALMPs.

Figure 5 assesses the total number of jobs created, supported or retrained by South Africa's ALMPs between 2004/05 and 2015/16. South Africa created, supported or retrained for a total of 9.1 million jobs over this 12-year period. This equates to an average of 800,000 jobs per year over the period. The total number of beneficiaries of South Africa's ALMPs has grown steadily since the inception of the public employment scheme in 2004, from 223,000 in 2004/05 to 1.8 million in 2015/16. There is a large increase in beneficiaries between 2013/14 and 2015/16, driven by the implementation of the wage subsidy scheme in 2014. The dip in beneficiaries between 2014/15 and 2015/16 is driven by a decrease in the number of work opportunities created under the public employment programme, which dropped from 1.1 million in 2014/15 to just under 750,000 in 2015/16.

The number of beneficiaries as a proportion of employment and the labour force reveals a similar pattern. In 2004/05, the 223,000 beneficiaries supported under South Africa's ALMPs equated to 1.3 per cent of the total labour force and 1.8 per cent of total employment in that year. This has grown in 2015/16 to 8.7 per cent of the labour force and 11.6 per cent of total employment. While the size of the labour force and employment in South Africa is relatively low in

Figure 5 Total jobs created, supported or retrained for under ALMPs



Source: Authors' calculations using SARS tax data; RSA, Department of Higher Education and Training (2013); RSA, Department of Public Works (2009); SACN (2017).

comparison with other developing countries, this nevertheless represents a sizable cohort of workers moving through ALMPs in South Africa.

In the 12 years between 2004/05 and 2015/16, South Africa spent a total of US$14.2 billion on the three ALMPs covered in this study. This constitutes an average annualized spend of US$1.2 billion. Expenditure on ALMPs peaked in the recession and post-recession periods, despite the fact that the wage subsidy scheme had not yet been implemented. This was driven entirely by increases in expenditure on the public employment scheme in this period.

It is worth noting that South Africa's expenditure on ALMPs is high in relation to other developing countries, specifically a sample of nine Latin American countries (LACs).[18] In 2010, South Africa's expenditure on ALMPs, amounting to US$2.2 billion, was only superseded by that of Brazil (US$2.9 billion).[19] Expenditure on ALMPs was substantially higher than in the other LACs, and more than four times higher than the LAC with the next highest expenditure, Chile (US$531 million). Further, as a share of GDP, South Africa's expenditure on ALMPs (1.2 per cent) far exceeded this expenditure share in the LACs, the next highest being Brazil (0.6 per cent).

Overall, the use of ALMPs in South Africa has grown substantially in the last decade. An initial analysis indicates a substantial number of beneficiaries reached under the three ALMPs evaluated. Expenditure on ALMPs is also

increasing, indicating renewed focus on demand-side interventions for the unemployment problem in South Africa. This provides motivation for thorough and effective M&E of these programmes, as the data required to systematically compare these schemes are not currently available. In addition, the means to evaluate each of South Africa's ALMPs in terms of different outcomes – and especially job creation – needs to be built into the implementation process for each of these schemes.

Conclusion

The rapid and extensive integration of post-apartheid South Africa into the global economy has increasingly subjected South Africa to global shocks. This is in the context of an economy mired in a long-run, low-level growth trap that has entrenched high levels of structural unemployment. The 2008 global crisis, in particular, has exacerbated an already pervasive level of unemployment – our data illustrate, for example, that more than 1 million jobs were lost during the recession resulting from this crisis.

In the post-apartheid period, policy-makers have employed three major ALMPs to tackle both the long-term structural malady as well as the adverse effects of exogenous global shocks. Overall, South Africa's ALMPs have enjoyed relative success in terms of the number of beneficiaries reached. This increased substantially over the 12 years between 2004/5 and 2015/16. In total, there were 9.1 million jobs created, supported or retrained for during this period, averaging around 800,000 per year. In 2015/16, the 1.8 million beneficiaries equated to 11.6 per cent of total employment. The most successful of the schemes appears to be the wage subsidy scheme, which has had the highest number of beneficiaries at the lowest cost per beneficiary.

The analysis from this paper, however, indicates that poor M&E, government capacity, fiscal leakages, difficulty in balancing trade-offs and an inability to convert the support offered under the scheme to long-term employment have hampered the success of these schemes thus far. Of utmost importance is the implementation of a rigorous M&E programme for each of the ALMPs. With a thorough understanding of the impact, strengths and weaknesses of ALMPs, it will be possible to evaluate their versatility to be used as responses to future shocks affecting the South African labour market.

Uptake of ALMPs, certainly in the case of the wage subsidy and job retraining schemes, is constrained by a lack of awareness of such programmes and bureaucratic hurdles. These challenges are more acute in the case of smaller firms.

For example, having fewer administrative resources constrains the ability of small firms to access and utilize these schemes. However, it seems, certainly in the case of the wage subsidy, that favourable employment effects are likely to occur in small firms. Thus, greater targeting of smaller firms should become a key element of policy implementation in the years ahead.

In times of adjustment, governments should have in place a toolkit of labour market policies designed to assist workers who have experienced job losses to source full-time regular employment. Finding the correct balance in programmes, ensuring that outcomes are optimal and also carefully measured, and ensuring that innovation in programmes is considered are critical for the long-run success of ALMPs in a developing country setting such as that of South Africa.

Endnotes

1. The job retraining scheme is called the Training Layoff Scheme. The public employment scheme is called the Expanded Public Works Programme. The wage subsidy scheme is called the Employment Tax Incentive.

2. Taking an average of the narrow unemployment rate for the years 2015–2017, only Cape Verde (36.5 per cent), Kosovo (30.2 per cent), and West Bank and Gaza (26.7 per cent) have higher unemployment rates than South Africa (26.3 per cent) (World Bank, 2018). Note that the reference to Kosovo should be understood to be in the context of the United Nations Security Council resolution 1244 (1999).

3. It is worth noting that, in comparison with its emerging market peers, South Africa underperforms. For the period 1994–2017, average annual GDP per capita growth for South Africa was 1.39 per cent, while those for the Philippines, Turkey, Indonesia, Malaysia, India and the People's Republic of China were 2.95, 3.11, 3.19, 3.22, 5.35 and 8.67 per cent, respectively.

4. Drawing on McMillian et al. (2014), this figure shows the correlation between relative sectoral productivity and changes in employment shares. The market size for each industry represents the industry's share of total employment in 2014. The linear regression line indicates whether structural transformation has been growth inducing (positively sloped) or not (negatively sloped). Given that structural transformation is the shift of resources from low-productivity activities towards high-productivity activities, one would ideally want to see declining employment shares in low-productivity industries (bottom left quadrant) and rising employment shares in high-productivity industries (top right quadrant).

5. Following Verick (2012), we define the recessionary period as running from quarter 4 of 2008 to quarter 3 of 2010.

6. Rodrik (2016) posits that increased exposure to trade and globalization is a key contributor to the deindustrialization process that many developing countries have undergone or are currently undergoing. This certainly aligns with the South African experience as it opened its economy in the early 1990s.

7. Due to a lack of data, we provide only a descriptive overview of the public employment scheme and the job retraining scheme, which is based on the available reports.

8. The menu of training options is wide and may include apprenticeships, learnerships and skills programmes of short duration. It is preferable that these are credit-bearing training programmes. The choice depends upon the nature of the business, the position of the employee and the envisioned future economic opportunities for the employer. Training may also include generic workplace skills, such as an adult basic education and training course, training on a basic ICT package, and other generic skills that may further personal development.

9. An exchange rate of USD 0.071 to 1 South African Rand was used throughout this paper, accurate as of 5 November 2018.

10. Verbal communication from former staff of the implementing agency indicate that there has been almost no activity through the scheme in recent years.

11. Infrastructure projects include the construction and maintenance of roads, pipelines, sidewalks and stormwater drains. Non-state-sector projects include learnership programmes, small, medium and micro-enterprises (SMME) development programmes, and cooperative development programmes. Environment and culture projects include programmes for removal of alien vegetation, coastal rehabilitation and maintenance, and fire management. Social projects include early childhood development programmes, community home-based care programmes, and community safety programmes.

12. While the public employment scheme is made up of numerous programmes, the employment guarantee scheme – officially termed the Community Works Programme, implemented in 2009 – is of particular interest. A job created under the employment guarantee scheme should provide a minimum level of predictable work for the poor, unemployed and underemployed. Work under the employment guarantee scheme is part time and is guaranteed for 100 days per annum per person. The worker receives a small income and gains work experience, which promotes the social inclusion of marginalized persons.

13. For those young people working fewer than 160 hours per month, remuneration is grossed up to the full-time equivalent, the value of the wage subsidy is calculated, and this value is then grossed down in the same ratio.

14. A "job" is calculated as the number of unique individual–firm combinations per year. In other words, an individual working twice for the same firm in the same year is calculated to have worked one job in that year. On the other hand, an individual working for two different firms in the same year is calculated to have worked two jobs in that year.

15. See Bhorat, Lilenstein and Steenkamp (forthcoming) for a full description of the data and methodology used.

16. To generate a suitable comparison group that is similar to the treated group we use propensity score matching. In doing so, we attempt to address the concern that the DID estimator may be biased if firms using the subsidy have different characteristics to firms that do not use the subsidy, where these differences affect employment outcomes over time. The firm characteristics used in the matching exercise include assets, size, turnover, industry, age, trade status, average employee wage, average employee age, the lag of the employment growth rate, the lag of the youth employment growth rate, and the lag of the employment growth rate of 30–35-year-olds (potentially displaced workers).

17. We choose to look at those earning less than R6,500, rather than the R6,000 cut-off for the wage subsidy, due to the potential for measurement error in the way monthly wages are calculated in the data. Monthly wages are not given and must be calculated based on the wage a person earns for a specified period of time worked. There is no data on the number of days a person worked in that period. Therefore, monthly wages may be underestimated if persons were not working every day within the specified period worked.

18. Data on ALMP expenditure in LACs is drawn from Cerutti et al. (2014).

19. This is expenditure only on the three ALMPs discussed here.

References

Banerjee, A., Galiani, S., Levinsohn, J., McLaren, Z. and Woolard, I. (2008), "Why has unemployment risen in the new South Africa?", *Economics of Transition*, 16(4): 715–740.

Bhorat, H. (2004), "Labour market challenges in the post-apartheid South Africa", *South African Journal of Economics*, 72(5): 940–977.

Bhorat, H., Cassim, A. and Hirsch, A. (2014), "Policy Co-ordination and Growth Traps in a Middle-income Country Setting: The Case of South Africa", WIDER Working Paper No. 2014/155, Helsinki: United Nations University UNU-WIDER.

Bhorat, H., Lilenstein, K. and Steenkamp, F. (forthcoming), "A Review of Active Labour Market Policies in South Africa", Development Policy Research Unit Working Paper, Cape Town: University of Cape Town.

Cerutti, P., Fruttero, A., Grosh, M., Kostenbaum, S., Oliveri, M. L., Rodriguez-Alas, C. and Strokova, V. (2014), "Social Assistance and Labor Market Programs in Latin America: Methodology and Key Findings from the Social Protection Database", Social Protection and Labor Discussion Paper No. 1401, Washington, D.C.: World Bank.

Edwards, L. (2005), "Has South Africa liberalised its trade?", *South African Journal of Economics*, *73*(4): 754–775.

Feenstra, R. C., Inklaar, R. and Timmer, M. P. (2015). "The next generation of the Penn World Table", *American Economic Review*, 105(10): 3150–3182.

Hemson, D. (2007), *Mid-Term Review of the Expanded Public Works Programme: Synthesis Report*, Pretoria: Human Sciences Research Council.

Kerr, A., Lam, D. and Wittenberg, M. (2017), Post-Apartheid Labour Market Series (PALMS) [dataset], version 3.2, Cape Town: DataFirst.

McMillan, M., Rodrik, D. and Verduzco-Gallo, I. (2014), "Globalization, structural change, and productivity growth, with an update on Africa", *World Development*, 63: 11–32.

Quantec [standardized industry database], South Africa. Available at https://www.quantec.co.za/easydata/

Republic of South Africa (RSA), Department of Higher Education and Training (2013), "National Skills Fund Training Layoff Scheme: NSA meeting with SETAs", 09 April 2013 [Powerpoint].

Republic of South Africa (RSA), Department of the Presidency, National Planning Commission (2012), *Our Future, Make It Work: National Development Plan 2030*, Cape Town.

Republic of South Africa (RSA), Department of Public Works (2009), *Expanded Public Works Programme: Five-Year Report 2004/05–2008/09: Reaching the One Million Target*, Pretoria.

Republic of South Africa (RSA), Statistics South Africa (2018a), Quarterly Labour Force Survey: Quarter 3, 2018. Available at www.statssa.gov.za/publications/P0211/P02113rdQuarter2018.pdf.

Republic of South Africa (RSA), Statistics South Africa (2018b), Quarterly Labour Force Survey: Quarter 2, 2018. Available at www.statssa.gov.za/publications/P0211/P02112ndQuarter2018.pdf.

Rodrik, D. (2016), "Premature deindustrialization", *Journal of Economic Growth*, 21(1): 1–33.

Roskam, A. and Howard, N. (2010), "Review of the Training Layoff Scheme", University of Cape Town, Development Policy Research Unit, Employment Promotion Programme (unpublished).

South African Cities Network (SACN) (2017), *The State of the Expanded Public Works Programme in South African Cities 2016/17: A Report of the Expanded Public Works Programme Reference Group*, Johannesburg: SACN.

Verick, S. (2012), "Giving up job search during a recession: The impact of the global financial crisis on the South African labour market", *Journal of African Economies,* 21(3): 373–408.

World Bank (2018), World Development Indicators. Available at http://data.worldbank.org/data-catalog/world-development-indicators.

8 The Policy to Mitigate the Effects of the 2008 Global Crisis on Textile, Clothing, Leather and Footwear Jobs in Morocco

Saad Belghazi and Kawthar Berbich

Introduction

This chapter aims to analyse the short episode of labour market adjustment policy in Morocco, adopted as a response to the global crisis of 2008 by the Moroccan Government. It focuses on the rationale, implementation and effects of this policy on the resilience of firms, employment and workers in the textile, clothing, leather and footwear (TCLF) sector.

Aware of the possible but inevitable drawbacks of the global economic recession observed in 2008 on Morocco's main trade partners, particularly France and Spain, the Moroccan Government decided to take preventive measures and set up a Strategic Watch Committee (SWC) in 2009.[1] With the Minister of Economy and Finance as its chair, the SWC included members of the government and representatives of the monetary and financial sector and professional associations.[2] Trade unions were not invited to participate in the SWC.

The main actions decided by the SWC were focused on three objectives: protecting and promoting employment in the TCLF and automotive equipment sectors' exporting companies; preserving tourism; and maintaining fund transfers from Moroccans living abroad. The agreed measures were implemented from February 2009 onward.

During the 1990s, the TCLF sector accounted for more than half of manufacturing employment. In 2009, this share had dropped to 40 per cent as a result of a loss of protection due to the dismantlement of the Multifibre Arrangement (MFA) quotas under the World Trade Organization Agreement on Textiles and Clothing (ATC) in 2005. The result was a loss of competitiveness both domestically and internationally for firms in the TCLF sector.

The global crisis of 2008 was expected to amplify the decrease in TCLF exports, and to accelerate the downturn of the outsourcing system that was launched at the end of the ATC in 2005, to hamper its upgrading to a more competitive model and, finally, to impair the development of other industrial branches, mainly in the automotive industry.

The package of measures introduced by the SWC came as an additional and temporary support to the existing sectoral and employment policies. The measures adopted in 2009 by the SWC were superimposed on the Enterprise Upgrading Scheme that had been launched in the late 1990s to help firms prepare for trade liberalization, and the Industrial Emergence Plan, launched in 2005. In this sense, the SWC measures aimed not only to mitigate the 2008 crisis shocks but also to serve as transitional support to ensure the long-term objectives of the Government's industrial policy.[3]

The SWC measures package included the reimbursement of employers' social security contribution for six months, which was renewable to 12 months, the funding of workers' training and marketing actions, as well as financial warranties. The stated objective underlying the wage subsidy measure was to limit job losses, and its implicit goal was to improve the competitiveness of the most resilient firms. Application for the SWC measures was opened to companies in the TCLF and automotive equipment sectors. Companies' applications focused on the employers' social contribution subsidy, which has a direct effect on reducing wage costs. The request for training schemes funding and other measures attracted little active interest. Only companies that were up to date with the payment of their social security contribution and taxes were eligible. TCLF companies accounted for more than four fifths of the beneficiaries.

The effects of the SWC measures on companies' resilience are difficult to quantify, as it is difficult to isolate the impact of the 2008 global crisis on their performance from that of the other measures taken by the Government to mitigate its effects. Individual data to build a counterfactual sample are not available and we have resorted to a qualitative approach based on interviews with the companies' management teams, workers, trade unions, and the government and professional bodies that were in charge of the implementation of the SWC measures. Data collected through the interviews are not exhaustive, of course, but they allow for a deep understanding of how the measures were received by those to whom they were directed.

Overall, most interviewees stated that these measures have helped their companies through a difficult period. A small number consider that the measures helped them transition from a dominant outsourcing model to a more favourable mode of integration into globalized value chains, integrating design, input procurement and product marketing. For many entrepreneurs, the realism and relevance of the SWC's choices are questionable. Actions targeting the internal market to counter the negative effects of smuggling and unfair competition from the informal sector, as well as measures to support firms in difficulty, would have been more advantageous in the long-term to support the transition of the sector

from full outsourcing contracts to co-contracting and/or finished product production. Similarly, passive labour market programmes and greater worker protection would have paved the way to a more advantageous contractual regime that promotes risk-taking in terms of investment and employment strategies.

Interviews were conducted with the Moroccan Association of the Textile and Apparel Industries (AMITH), Interprofessional Council of Assistance Textile and Leather (GIAC T-C), 12 entrepreneurs in the textile and apparel sector, and trade unions. Additional data came from the High Commission of Planning (HCP)'s National Employment Survey and National Accounting Directorate, the National Social Security Fund (CNSS) and the Foreign Exchange Office, and enabled the assessment of changes in employment and the performance of firms in the TCLF sector.

In the second section, we describe the labour market in Morocco, characteristics of firms and jobs in the TCLF sector and the change in the sector's competitive advantages. The third section describes the impact of the global crisis on the TCLF firms and workers. The fourth section presents the mitigation measures adopted by the SWC and the fifth section discusses the effectiveness of these measures for the workers and for the firms. Concluding remarks are made in the last section.

The labour market and competitiveness of the TCLF sector

The 2008 global crisis and the subsequent measures undertaken by the SWC in 2009 intervened in a context marked by:

- A significant improvement in the labour force education level;
- An important number of entrepreneurs and workers involved in diversified formal and informal production units;

The exhaustion of the competitive advantage based on a low-paid workforce.

Education improvement and decreasing participation in the labour market

At the end of 2014, the Moroccan population exceeded 33.8 million. The share of people aged from 15 to 59 years rose from 62 per cent in 2004 to 64.3 per cent in 2014. Education is progressing, and the impact of its improvement on the labour force structure became significant. Between 2004 and 2014, the share of the population without a school qualification dropped from 67.5 per cent to

58.2 per cent, the share of the population holding a medium/average qualification[4] grew from 2.2 per cent to 26.6 per cent and the share of those with a higher qualification[5] increased from 7.8 per cent to 10.7 per cent.

The participation rate in the labour market is in a bearish trend (56.1 per cent in 2004 and 49.6 per cent in 2017), and the female participation rate fell from 30.5 per cent in 2004 to 23 per cent in 2017. The overall employment rate in Morocco declined from 46.9 per cent in 2004 to 40.1 per cent in 2016. Job losses hit employees without a diploma first and foremost, as well as those with a medium/average qualification.

With the improvement of the educational profile of the active population, the requirement for stability and security in employment becomes higher. The most sought-after categories of worker are therefore attracted by the sectors that can offer them security and are fleeing those that do not fulfil their requirements, among which is the TCLF sector.

A portrait of the TCLF sector: Employment and company size in 2009

According to the National Employment Survey,[6] the TCLF sector provided more than 500,000 jobs in 2009. About 76.5 per cent of the employees worked in 19,800 factories or workshops, while the remainder consisted of home workers,[7] who are predominantly women. The main employing branch of the TCLF sector was garment manufacturing, which accounted for 65 per cent of jobs. The textile industry (spinning, weaving, textiles and carpets) accounted for 24 per cent of jobs, while the leather and footwear industry accounted for 11.2 per cent.

According to the data reported to the CNSS,[8] there were 3,450 formal textile firms in 2009. More than half of these units had fewer than 10 employees. Data provided by the Foreign Exchange Office revealed that, in 2010, 1,033 TCLF companies had carried out export operations.[9]

While home workers and workshops, which mostly supply the domestic markets, are spread throughout the rural and urban areas, the bulk of TCLF exporting companies are located in major cities such as Casablanca, Rabat-Salé, Tangier, Fez and Meknès, where access to primary and secondary education is easier. The availability of a large and low-paid female labour force was the main driver of investments in the garment sector (Belghazi, 2005).

In fact, higher quality standards requirements in the TCLF sector's global value chains have led the Moroccan TCLF exporting firms to adjust their recruitment

strategies in order to hire a more educated workforce. Mrs Maria Belgnaoui (Human Resources Director of Paris-Texas, a large clothing manufacturing group based in Casablanca) stated during interview that "most of the workers in the company come from slums and their surroundings, as their families migrated from rural to urban areas. They usually have a low secondary school level [of education]". She added that "the requirement of traceability [audits] is pushing companies to increasingly favour the recruitment of literate workers".

In addition, the demand for pay rises increased among women workers in the clothing sector during the 2000s. Their claims were (and still are) limited to their request to benefit from the rights guaranteed by the labour legislation, such as minimum wage, social security and overtime payment, which are ignored by many employers.

Changes in the Moroccan TCLF sector's competitive advantages

During the 1960s and 1970s, Morocco's industrial policy relied on public and national private investors to build a modern integrated TCLF sector. From the 1980s and 1990s, exports were driven by outsourcing supply based on the importation of inputs, which entered the country duty free. The adoption of the outsourcing model in order to adapt to changes in the European TCLF sector has wiped out the integration project. For hundreds of young entrepreneurs, the opportunity offered by an abundant and cheap labour force made it more advantageous to focus on acquiring workshops and machines, without integrating activities such as design and input supply. Pressures from their clients include not only low cost but also high quality, short delivery delay, and responsiveness to changes in orders and flexibility. The availability of local inputs helped exporters better comply with the lean production and just-in-time delivery criteria (Plank et al., 2010).

A new model of integration into the globalized value chain is emerging. It introduces new functions into clothing firms' production processes, which, in the full outsourcing model, are taken in charge by the client: product design, input procurement, quality control and marketing. This more complex production process in clothing requires the availability of a more skilled workforce and a more diversified supply of inputs in the local market.

Stagnation and recovery of Moroccan TCLF exports

Bilateral quotas under the MFA, which were eliminated in 2005, limited imports of textile products (mainly from the People's Republic of China) quantitatively. As of January 2005, China's share of the European Union (EU)'s clothing imports,

which were no longer subject to quotas, increased significantly (from 30.4 per cent in 2004 to 46.6 per cent in 2008). This growth resulted in a sharp decline in Morocco's share of all EU clothing imports (from 7.3 per cent in 2004 to 5.6 per cent in 2008).

Total Moroccan exports of TCLF products amounted to US$3.5 billion in 2009, of which 73.5 per cent were sent to France and Spain. Morocco's TCLF exports increased at the beginning of the 2000s and even accelerated after 2005, to reach nearly US$4 billion in 2007, before they fell significantly in 2009 (to US$3.5 billion), at the height of the 2008 global crisis. From 2010 to 2017, TCLF exports recovered steadily, reaching US$3.8 billion in 2012 and US$3.9 billion in 2017.

The most remarkable observation is that the recovery of exports after 2012 is concomitant with the almost continuous downward trend in the share of clothing exports manufactured with inputs imported under temporary admission. This share, which was at 82 per cent in 1999, fell to almost 70 per cent in 2017. This trend means that the Moroccan exporters began to buy a larger share of their inputs, mainly denim fabrics, on the domestic market.

Strong import penetration

The domestic market has benefited from excessive tariff and non-tariff protection. This protection has strongly discouraged legal imports and stimulated smuggling (Belghazi, 2005).

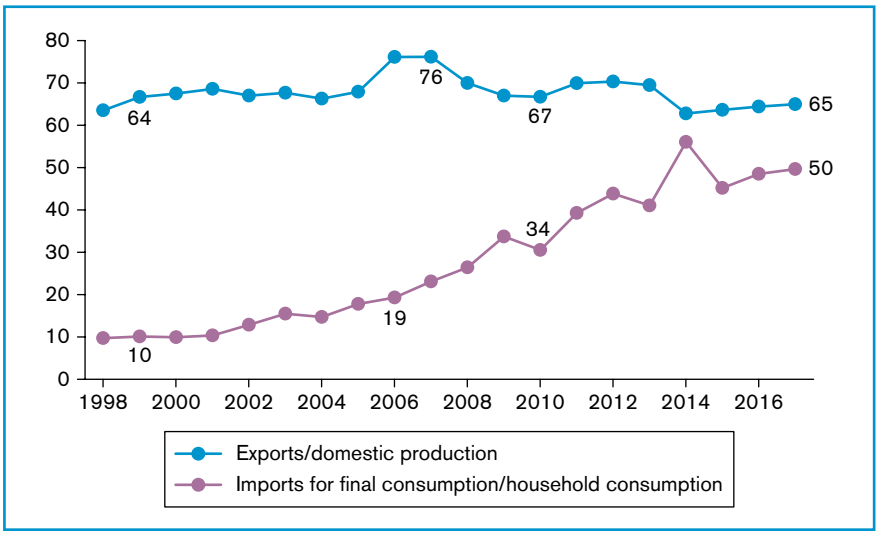
Morocco has signed a series of trade agreements and reformed the basic customs tariff.[10] As a result, the average tariff protection rate fell from 18 per cent in 2005 to less than 6 per cent after 2009. It is important to emphasize that tariff protection only gives an incomplete picture of the Moroccan economy's openness, as there is a significant smuggling network that is denounced by local producers.

In the period 1998–2017, the share of TCLF production exported hovered around 70 per cent. However, the share of imported products in household final consumption increased greatly over the same period, from 10 per cent to 50 per cent (Figure 1).

A new emerging export model to face the loss of competitiveness

As a result, Moroccan TCLF exporting companies had to deal with the ensuing loss of competitiveness, in addition to the difficult conditions in their foreign export markets, which were substantially hit by the 2008 crisis. Their main challenge was to preserve their market share on the export markets, and to develop alternative

Figure 1 Exported domestic production and imported household consumption of TCLF products, 1998–2017, per cent



Source: Annual input–output tables, National Accounting Directorate, High Commission on Planning (www.hcp.ma).

Note: The value of exports includes the value of the imported inputs and the locally added value. Domestic production is valued at the producer prices. These data do not include the trade and transport margins, nor the taxes. The imports for final consumption are valued at the CIF price. They do not include the products used for exports as inputs entering the national territory under the customs regime of temporary admission. Household consumption is valued at the consumer price including the trade and transport margins and taxes.

strategies in order to survive. One of the solutions considered was to address the domestic market. The effect of the loss of protection in the export markets resulting from the elimination of all remaining bilateral MFA quotas at the expiry of the ATC in 2005, and in the domestic market, which was weakened by unfair competition and smuggling activities, was stagnation of the volume of exports and higher import penetration.

In early 2000, the success of mass retailing in the major European markets revealed that the maintenance of Morocco's garment sector would require the development of a new exporting model based on co-contracting and finished product production and the availability of an abundant and diversified local supply of yarns and fabrics. The Moroccan Association of the Textile and Apparel Industries (AMITH) proposed a strategy aimed at shifting the value chain structure from full outsourcing contracts to co-contracting and/or finished product production (see next section). This strategy would be based on local entrepreneurs entering into partnership with the Government, with government support in the

form of labour force training, tax and customs facilitation and the development of industrial zones and transport infrastructure.

Impact of the 2008 crisis on the TCLF sector

The economic crisis of 2008 exacerbated the financial vulnerability of locally owned small and medium-sized TCLF firms. The International Labour Organization (ILO) estimated that around 8,000 textile, clothing and footwear production units were closed worldwide after 2008 (ILO, 2014). This resulted in the loss of approximately 11 million full-time jobs and 3 million short-time work contracts.

Employment in the TCLF sector is high in Morocco, albeit declining. According to the National Employment Survey, between 2000 and 2014, the number of workers in this sector declined from approximately 580,000 to 440,000.

For the Moroccan TCLF sector, the global crisis was perceived as presenting a risk of a significant drop in external demand addressed to Moroccan producers. This shock was expected to enhance the drawback effects of the loss of tariff protection in the domestic market and in the main export markets. This shock came in the context of a downward trend in the importance of the TCLF sector in the country's economy, observed since the end of the 1990s, which coincided with an increasing opening of the sector to imports.

Impact of the crisis as experienced by TCLF companies

The global crisis resulted in a 15 per cent decline in the global demand directed towards the TCLF sector between 2008 and 2009, followed by strong fluctuations.[11] By reducing the volume of orders, client firms are in a strong position that allows them to put pressure on their subcontractors by imposing higher quality standards and faster delivery times, or by applying more severe rebates or penalties on defects. This pressure often leads to a reduction in profit margins for subcontractors.

The impact of the decline in orders addressed to Moroccan producers differs from firm to firm, depending on its integration and its position in the value chain. In clothing, four models of participation in the value chain have been observed:

- **Processing**: Concept, pattern and materials are provided by the client. The subcontracting company only processes the inputs, assembles the parts, and controls and dispatches the product.
- **Co-contracting**: The creative department of the client is responsible for the design/creation and selection of the fabric. The Moroccan supplier handles

operations (from patronage to manufacturing) and bears the financial risk on inputs and on finished products (such as defects).

- **Finished product selection**: Collections are entirely prepared and presented by the Moroccan company to the clients, who choose the models they are interested in. Before the final validation of the order, these models are scrupulously inspected (re finish, fabrics) by the clients, who often have recourse to analytical laboratories.
- **Platforms**: These are companies that centralize orders and redistribute them to second-tier subcontractors. In general, they work under a co-contracting mode or manufacture finished products.

The most common model of insertion into the value chain is through processing. This often involves small companies that have little or no direct contact with the contractors. These companies bear the brunt of lower orders or pressure on profit margins. Fluctuations in orders and price pressure often result in capital losses. As explained by Mrs Maria Belgnaoui (Paris-Texas), "some subcontractors, in a context of increased pressure on prices, prefer to work at a loss rather than put all their activity at a standstill".

On the other hand, the relationship with subcontractors is key to a company's resilience, as the fierce international competition resulted in drastic reduction in delivery times and requests for higher quality. Mr Said Ben Abdeljalil (founder of Blue Bird), opted for a platform business model, where "the company's workshops only produce samples while the series are ordered from subcontractors". He asserts that "the company is struggling to establish a balanced and trustful relationship with its subcontractors in order to guarantee and respect customers' delivery time and quality requirements". He thinks that "other larger companies manage to achieve this balance" and recognizes that "the difficulty of stabilizing the subcontractors' network entails significant costs for the company".

The pressure from clients also materializes through restricted visibility on subcontractors' order books, "which is now of six days, against six months before the crisis. Many companies have failed to manage their business in such a context and have been forced to file for bankruptcy", according to Ms Siham Fellaoui, Chargée de Mission Junior, Cluster des Textiles Techniques Marocains (CT2M).

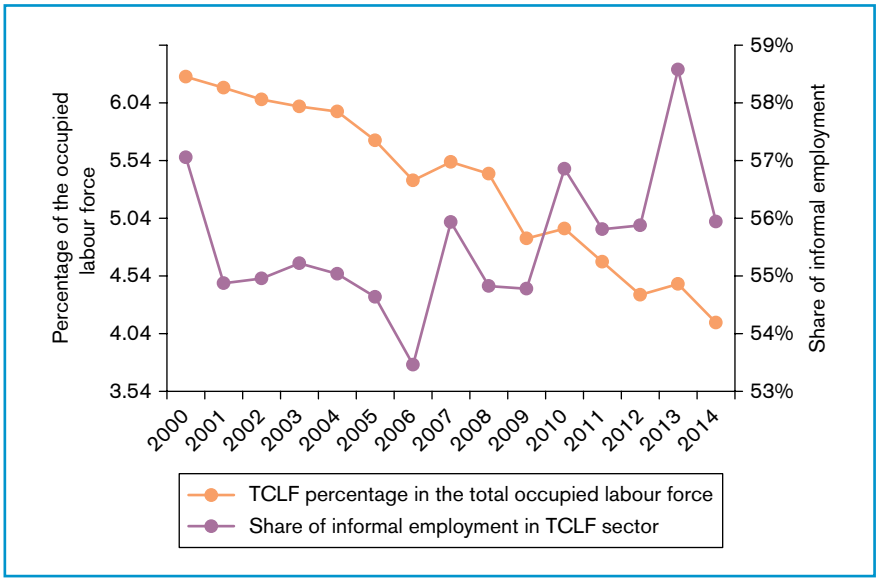
The impact of the crisis was also felt differently in various cities. As highlighted by Karim Tazi, founder of Folly Fashion and President of AMITH, "In the Rabat-Salé region, many companies that used to work for clients from the United Kingdom have been rolled by the devaluation of the Pound Sterling and suffered more from the crisis than companies located in other areas". In the Rabat-Salé and Témara industrial zones, many companies exporting to the British market have been forced

to cut down on work schedules or employed staff, or even close down. "For instance, Cristal Martin, an exporter of knitting products, faced a 40 per cent drop in sales in 2008 and reduced its staff from 1,300 to 750 people" (Belouas, 2009).

As Figures 2 and 3 show, the total number of employees in the formal TCLF sector was slightly above 250,000 in 2000 (Figure 3). In 2014, this number had fallen to 193,681, which corresponds to an average annual decline of 1.8 per cent over the 2000–2014 period. The sharpest decrease was observed in 2009, as the total number of TCLF formal employees fell by 9.8 per cent compared with 2008. The informality rate in the TCLF sector declined between 2000 and 2008, only to rise again after the crisis, reaching almost 59 per cent in 2013, compared with 53.5 per cent before the crisis, in 2006 (Figure 2). Between 2008 and 2014, the number of companies and workers in the TCLF formal sector decreased by 12.6 per cent, with a marked drop between 2008 and 2009.

The most resilient firms were those that combined export and domestic sales, as well as those that managed to rely on their own distribution network to offset the decline in external demand. Mr Said Ben Abdeljalil (Blue Bird) stated that "the company's distribution policy (owned stores) as well as the integration of the

Figure 2 Share of the TCLF sector in total employment and rise of informal employment, 2000–2014



Source: National Employment Survey, 2000–2014; CNSS data, 2000–2014.

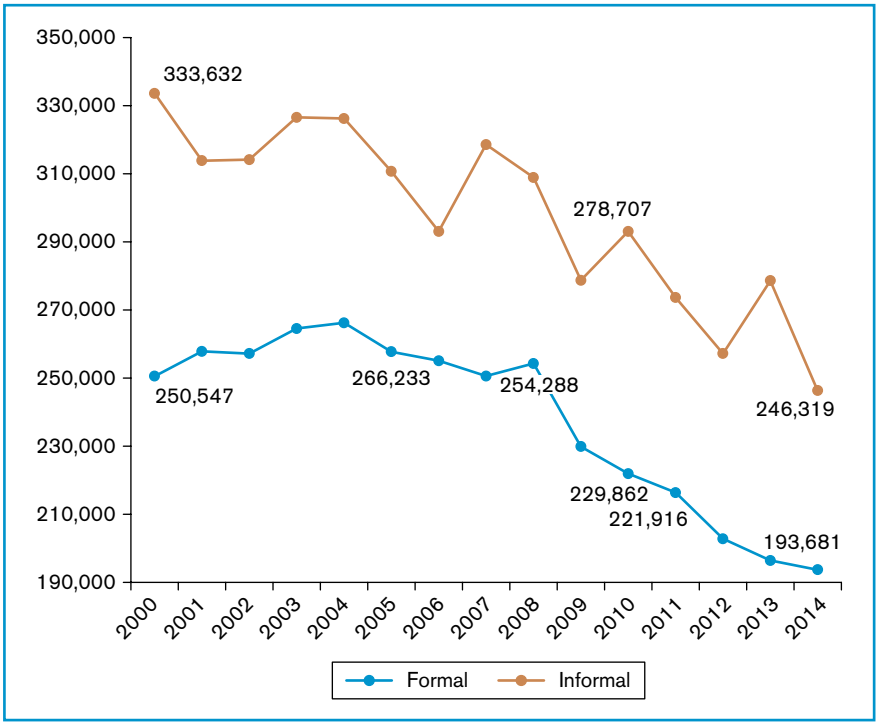
design activities favoured the renewal of its collections and allowed it to maintain the utilization rate of its production capacities at the right level".

However, the companies interviewed consider that the mitigation of the external shock through the use of the internal market is thwarted by contraband and unfair competition. "Unfair competition from the informal sector and smuggling hinders business development in the local market. Companies are thus deprived of an outlet that could enable them to offset the impact of the export markets' slack periods", according to Mr Mohamed Alaoui, Deputy CEO of SEFITA. He added that "the State does nothing against this unfair competition, and because of smuggling and under-invoicing, the company is not competitive in the dynamic local market".

Impact of the crisis on the quality of jobs and on wages

To measure the real impact of the crisis on workers, we should consider not only the net loss of jobs, but also the seasonality effect on job stability.[12]

Figure 3 Number of formal and informal jobs in the TCLF sector, 2000–2014



Source: National Employment Survey, 2000–2014; CNSS data, 2000–2014.

The effects of changes on the general level and the seasonality of orders are passed on in different ways to workers, depending on their position in the company. Seasonality has different impacts on high-skilled workers, such as managers and skilled production workers, most of whom are permanent, than on operational workers. The latter bear most of the adjustment costs and are hired or fired following variations in client demand. To illustrate, in 2009, of all firms, 23 per cent of staff worked between four and nine months and only 58 per cent worked more than 10 months.

Job loss is translated not only into unemployment but also into a reduction in participation in the labour market, which affects female workers in particular. According to the National Employment Survey, the total number of TCLF workers dropped from 622,000 in 2007 to 550,000 in 2009. Of the 72,200 jobs lost in the course of two years, 78 per cent were held by females. Nearly 64 per cent of the female job losers left the labour market, while very few male job losers resigned from jobseeking.

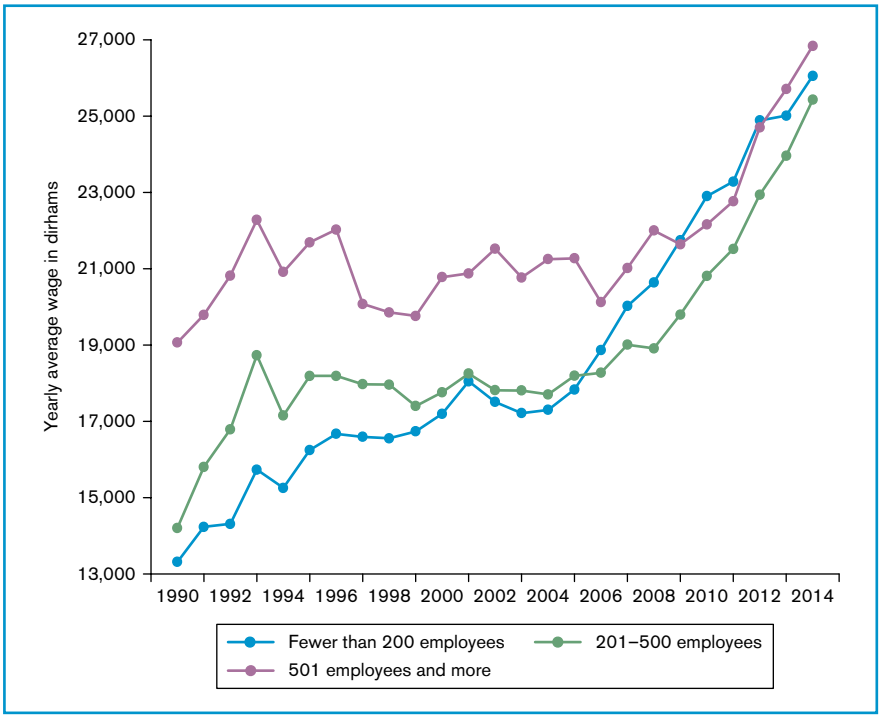
For Mr Larbi Harmouk, leader of the Textile Federation of the Moroccan Workers Union (UMT), the effects of the crisis on workers were "terrible. The crisis in the outsourcing sector has aggravated the precariousness of the workers' situation. Some companies, to survive, have had to cut wages. Most often, the difficulties have resulted in late payments on the contributions to the CNSS. The situation of the workers is all the more difficult as, in the situation of unemployment, they must [pay] transport expenses precisely to look for a job. However, there is no support system in this sense." He explained that unfair competition in the sector brings down prices. This translates into strong pressure on workers. "In order to keep their jobs, the workers may accept wages at 8 dirhams per hour,[13] which is only equivalent to two thirds of the minimum wage, and [may accept] working hours up to 12 hours a day."

While 54 per cent of jobseekers in the TCLF sector search for job opportunities by contacting employers directly, and 40 per cent by relying on their network (mainly friends or family), only 1.8 per cent use the services of agencies specialized in employment intermediation.

Regarding salaries, average reported wages for different company sizes were highly dispersed during the 1990s (Figure 4). This dispersion shrank in the 2000s, and there was a clear trend towards wage convergence, starting from 2007. The gender wage gap also declined, from 46 per cent in 2001 to 33 per cent in 2014.

Table 1 shows that the proportion of women working in the TCLF sector decreased from 65.3 per cent to 63.6 per cent between 2009 and 2014.

Figure 4 Evolution of the average wage in the TCLF sector by firm size



Note: Authors' calculations, based on the CNSS database 1990–2014.

Table 1 Share of female and male workers by wage category in the TCLF sector (per cent)

Gender	Wage level	2009	2010	2011	2012	2013	2014
Female	Less than the minimum wage	74.8	73.4	72.4	72.3	72.3	71.0
	100%–150% of minimum wage	62.7	65.8	57.6	59.3	61.8	62.2
	150%–400% of minimum wage	31.0	32.2	28.5	27.8	28.2	28.6
	More than 4 x minimum wage	26.8	26.4	25.6	26.5	26.3	26.6
	Total	65.3	64.7	64.1	64.1	63.9	63.6
Male	Less than the minimum wage	25.2	26.6	27.6	27.7	27.7	29.0
	100%–150% of minimum wage	37.3	34.2	42.4	40.7	38.2	37.8
	150%–400% of minimum wage	69.0	67.8	71.5	72.2	71.8	71.4
	More than 4 x minimum wage	73.2	73.6	74.4	73.5	73.7	73.4
	Total	34.7	35.3	35.9	35.9	36.1	36.4

Source: CNSS.

The share of female workers declined within the category of employees who earn between 1.5 and 4 times the guaranteed minimum wage, which corresponds to the middle management occupations. The same observation is true of employees whose wage is below the minimum legal level.

Thus, while the wage gap between men and women tends to shrink in the formal sector at the global level, it is important to take into account the female crowding-out effect in the middle management spheres.

In summary, the 2008 crisis was concomitant with 11 per cent job losses in the TCLF sector between 2007 and 2009, with a drop of 16.2 per cent in jobs held by females and 5.8 per cent in jobs held by males. There was no public support system for workers to mitigate the effects of job loss on workers' incomes. The labour market intermediation system, which is likely to support employees in their job-search process or promote employability, has targeted and benefited the fraction of jobseekers with a higher-diploma-level education (equivalent to 12 years' schooling or more).[14]

Government policies prior to 2009 and measures adopted by the Strategic Watch Committee (SWC)

The legal framework for the measures adopted by the SWC has been established by agreements signed between the Government and the interested parties.[15] This section briefly outlines the existing policies that the SWC's actions are intended to enhance by addressing their weaknesses, and describes the content of the measures, their implementation outcomes and their scope.

The framework of public policies prior to the measures adopted by the SWC

Sectoral policies have addressed structural changes with the aim of accelerating the sector's modernization process but omitted the introduction of measures to mitigate the consequences of any business closures and job losses. Employment policies focused on: (i) active programmes targeting jobseekers' insertion into the labour market or skills improvement for graduates entering the labour market; or (ii) labour-intensive programmes for low-skilled workers. Passive labour market policies were non-existent.[16]

Industrial policy

To improve firms' competitiveness, Morocco has put in place targeted sectoral strategies. These are firmly oriented towards consolidating Morocco's attractiveness

as a "credible and competitive" industrial place (MICIEN, 2014). The sectors targeted by the SWC measures, especially the TCLF and automotive equipment industries, were already benefiting from supporting measures through the Industrial Emergence Plan, launched in 2005, and the subsequent National Pact for Industrial Emergence, which concluded in 2009.

Several business support schemes aiming to promote the competitiveness of enterprises were put in place by the Ministry of Industry, Trade and Digital Economy (MICIEN) and its executive agency Maroc SME (see CGEM, 2015). The scheme called "Imtiaz" ("advantageous" in Arabic) consists of a non-refundable investment bonus of 20 per cent of the overall cost of investments, up to a limit of US$1.25 million. The scheme called "Moussanada" ("support" in Arabic) aims to improve the productivity and competitiveness of SMEs by offering a wide range of services. It is also worth mentioning the "Synergia" programme, an export consortia support scheme that consists of technical assistance and financing of promotional activities.

For training support, MICIEN has set up Industrial Technical Centres, including the Technical Centre for Textiles and Clothing, attached to AMITH. In addition, the GIAC Support Group was created to encourage the expression of demand for on-the-job training and to foster collaboration between companies in order to support employees' access to this training.

Employment and labour force policies

The vocational training system is characterized by the predominance of initial training over continuous training. The financing of vocational training in Morocco is fed by the deduction of 1.6 per cent of gross wages reported to the CNSS, paid to the Office of Vocational Training and Labour Promotion. Only 30 per cent of the proceeds of this tax are allocated to continuing education. However, because of complex administrative procedures, a very small proportion of firms is enabled to obtain reimbursement for workers' training expenses. The system did not enable workers losing their jobs to benefit from subsidized training.

Active employment programmes were mainly focused on graduate jobseekers. The main programme, "Idmaj" ("insertion" in Arabic), affords fiscal exoneration (wage tax exemption aimed at reducing the wage cost of new recruits) and social contribution subsidies to encourage access to the first job. The "Taehil" programme ("qualification" in Arabic) funds complementary training for graduate jobseekers.

The Moroccan Labour Code frames the terms and conditions for hiring and firing employees. A permanent contract is regarded as a basic rule and entitlement. The individual layoff of workers requires severance payment.[17] Collective layoffs require approval from the territorial authority. The only passive labour market measure

effective in 2009 was compensation for layoffs, at the expense of the employer. The job loss compensation had been included in the Labour Code articles defining the indemnities of dismissed employees but was not implemented until 2014.[18]

Measures adopted by the SWC in 2009

The schemes put in place by the SWC were intended to enable, over a limited period:

- Wage costs reduction;
- Workers training;
- Mobilization of funding and hedging of exporters' financial risk;
- Support for market diversification.

TCLF companies were the main beneficiaries of these measures. Support was provided to companies that were up to date with their tax obligations and payments to the National Social Security Fund (CNSS).

The main measure was the repayment by the Government of "100 per cent of the employers' contribution to the National Social Security Fund (CNSS) paid by companies in the Textile, Leather and Automotive Equipment sectors in respect of the monthly wages declared to the CNSS".[19] This measure probably helped most recipient companies to support the payment of wage costs in a situation where the level of activity was declining. This cash contribution seems all the more useful given that, according to the testimony of employers, the banks had refused to grant credit for the maintenance of wages. In doing so, this measure partially compensated for the lack of a formal mechanism to safeguard the purchasing power of workers.

The second measure was the funding by the Government of firms' staff training programmes, as presented by eligible companies in the TCLF and automotive equipment sectors. Training programmes in the textile and leather sector were deemed to support companies' transition from subcontracting to producing finished products. Workers targeted by this measure were mostly managers, supervisors and operators.[20] The financial support for the continuous training of workers, carried out through GIAC T–C, has made it possible to circumvent the slowness of the current system of financing workers' continuing education, managed by the national vocational training organization (OFPPT). This provision, however, only partially mitigates the lack of a continuing training mechanism available on the initiative of workers wishing to improve their skills or retrain.

The third measure concerns the guarantees provided by the Government to banks in order to maintain the financing of companies' working capital requirements

(Damane exploitation).[21] In addition, a moratorium on medium and long-term loan repayment (Moratorium 2009) has been granted to firms facing financial difficulty.

The fourth and final measure concerns support for market diversification. The Government paid for prospecting fees and granted eligible companies preferential conditions for export insurance. For that purpose, a convention was concluded on 17 February 2010 with the Moroccan Export Insurance Society (SMAEX). The agreement enabled SMAEX to double the export risk guarantee ceiling.

Eligibility and implementation of the measures

In order to be eligible for these measures, TCLF companies had to fulfil the following requirements:

- Achieve at least 20 per cent of total turnover in export activities in 2008;
- Maintain their workforce, with any reduction in the numbers of workers not to exceed 5 per cent of the total workforce reported to the CNSS in January 2009 (adjusted for retirements, resignations, dismissals for serious misconduct and departures following inconclusive trial periods);
- Be in order vis-à-vis the Tax Administration and the CNSS;
- Not be subject to reorganization or liquidation proceedings.

In a context marked by the absence of passive employment policies (aimed at protection of job losers' livelihoods and support for jobseeking and/or employability improvement), the enterprise-based eligibility mechanism meant that workers in non-eligible enterprises would not benefit from the mitigation of the job loss risk, nor from any assistance to recover a job.

Effectiveness of the measures undertaken by the SWC

Effectiveness of the SWC measures on TCLF firms' competitiveness

Our review of the impact of the SWC supporting measures on firms' competitiveness gave rise to four sets of questions:

- What share of the targeted business population has applied for SWC measures? Which factors explain companies' adherence to the various measures? What significance should be given to employers' preference for the wage subsidy measure over the training grant and the trade measures?
- What does the reimbursement of employers' social charges mean for companies in terms of value added and what is its impact on their competitiveness?

- How do we interpret the eligibility criteria adopted by the SWC?
- Has financial support helped to put companies on a reform trend?

Implementation of the measures adopted by the SWC[22]

Thirty-five per cent of the 1,033 TCLF exporting firms present at the beginning of 2010, and 12 per cent of all companies that reported their activity to the CNSS, benefited to the tune of US$63.1 million from the social contribution reimbursement. Only 180 TCLF firms applied for the training measure, of which 163 received an eligibility certificate. The total budget allocated to this component was US$7 million, of which US$5.6 million was for the clothing branch, US$0.85 million for the textile branch and US$0.31 million for the leather branch.

Regarding the guarantees to the banking sector to facilitate access to credit and to maintain companies' financing, 131 applications were submitted to the Central Guarantee Fund, and the amount of approved credits reached US$90.6 million. The repayments made in 2009 and 2010 under the commercial promotion measure amounted to US$3.5 million and benefited 131 TCLF companies. Regarding the coverage of export risk, 1,056 insurance premium applications were lodged with SMAEX.

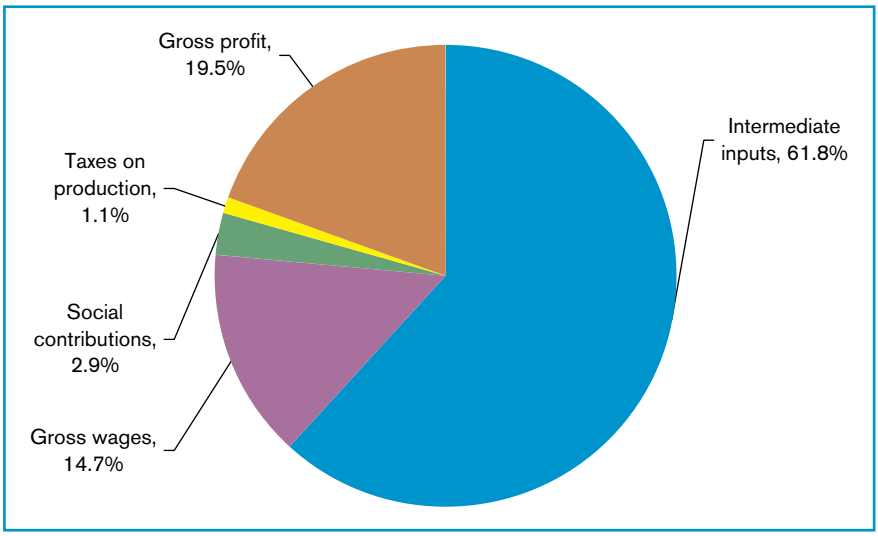
Scope of the wage subsidy

We estimate the employers' contribution to social security as a proportion of the salary cost, referring to salary cost as a multiple of the legal minimum wage, in the price structure for the entire TCLF sector, as given by the 2009 input-output table (National Accounting Directorate), and in the price structure of a few key products directly or indirectly exported by the Moroccan TCLF sector (Table 2).

With regard to the five flagship TCLF products that directly or indirectly make up the largest share of textile and apparel exports, employers' social contributions may represent a share ranging from 4.4 per cent (cotton yarn) to 7.9 per cent (trousers) of the value added (Table 3). Given clients' bargaining practices, having such room for manoeuvre is a decisive asset in terms of companies' competitiveness, which can undoubtedly allow them to safeguard, if not increase, their market share.

For monthly wages up to two times the minimum wage, the burden of employers' social security contributions with reference to the statutory minimum wage amounts to 14.2 per cent of staff costs.[23] According to the HCP National Accounting Directorate data, the employers' social contribution in the TCLF sector amounted to 2.9 per cent of production value in 2009 (Figure 5). On these figures, the employers' contribution to social schemes represented nearly 16.5 per cent of the overall staff costs. This amount is somewhat higher than the 14.2 per cent we estimated in Table 2.

Figure 5 Price structure of the textile clothing and leather sector in 2009 (percentage of production value)



Source: HCP, National Accounting Directorate, 2009.

Table 2 Contribution of social charges and income tax to wage cost formation, Dec 2009, dirham/month

	MW	2 × MW	5 × MW
Monthly staff costs	2,657.96	5,315.91	12,854.14
Monthly gross salary	2,213.12	4,426.24	11,065.60
Employer contributions	444.84	889.67	1,788.54
Work injury insurance	66.39	132.79	331.97
CNSS contributions/benefits			
Family benefits	141.64	283.28	708.20
Short-term social benefits (/ <= 6000 DH)	14.83	29.66	40.20
Long-term social benefits (/ <= 6000 DH)	175.50	351.00	475.80
Compulsory health insurance (AMO)	77.46	154.92	387.30
Vocational training tax	35.41	70.82	177.05
Social charges on the employee	139.21	278.41	377.40
Taxable wages	1,631.29	3,262.58	8,188.20
Income tax	0	76.26	1,350.63
Monthly net salary	2,073.91	4,071.57	9,337.58
Employer payment due to the CNSS/salary cost	14.2%	14.2%	11.3%

Source: Authors' calculations based on regulatory data on the minimum wage, income tax and social contributions.

Notes: MW = minimum wage in industrial and services sectors; Exchange rate: USD 1 = 8 MAD (Moroccan dirham).

Table 3 Employers' social contribution share in value added: Estimates for five flagship TCLF products in 2009

	Product				
	Cotton yarn	Acrylic yarn	Polyester and wool fabrics	Trousers	5-pocket jeans
HS Code	5205230010	5509310099	5515139095	6203420020	6203420020
Unit	kilogram	kilogram	metre	unit	unit
Factory output price (US$)	3.75	5.49	8.05	15.14	18.5
Factory output price (DH)	30	43.88	64.4	121.17	148.11
Value added (DH)	11.71	17.58	16.1	28.27	39.0
Value added (%)	39.0	40.1	25.0	23.3	26.3
Wage cost/value added (%)	31.6	47.5	36.0	56.6	41.2
Employers' social contribution to value added (%)	4.4	6.6	5.0	7.9	5.8

Note: The structure of the product costs derives from a 2007 impact assessment of the tariff reform, conducted by the MICIEN.

However, the support afforded by the SWC was purely transitory in nature and should be considered as episodic financial assistance, not as a sustainable way of improving competitiveness.

Reform of the continuous vocational training system is required

As stated in the previous section, the very low number of firms benefiting from the public financial support for their staff training expenses is explained by the cumbersome administrative controls. The scheme put in place by the SWC has demonstrated the possibility of simplifying the administrative procedures. As stated by Chadili Rachid of AMITH, "The implication of structures such as GIAC T-C, which has close ties with the sector's companies and a good knowledge of their needs, and consulting the industry's associations and federations, are factors conducive to the responsiveness and effectiveness of training actions".

Urgent need for a new business model and the importance of training

The most essential measures now required are: (i) the improvement of labour productivity in production units; (ii) better organization of value chains, allowing for better availability of inputs and lowering of supply costs; (iii) leading companies

taking an active role in reorganizing and integrating local value chains; and (iv) stabilizing export flows. These leading companies have the potential and financial resources to lead research and development projects and are of sufficient size to ensure economies of scale.

According to Mr Hicham Mghirbi (Manager, Filmod), the Moroccan TCLF sector depends on foreign leading companies. He advocates for a new partnership model among Moroccan TCLF firms. In accordance with the strategic approach of the current Government industrial strategy (the Industrial Acceleration Plan 2014–2020), he considers that "the sector should first create an ecosystem where leading companies play the essential role of interface between the contractors and all the subcontractors of the ecosystem". This partnership between and among firms would not only enable the transition from full outsourcing to co-contracting and to the finished product model, but it also encourages the adoption of the best technical practices and promotes social and environmental responsibility among all involved parties.

To cope with the shortage of human resources, several entrepreneurs recommend the development of industrial zones in rural areas with a high labour density, to bring plants closer to the available workers and their families. They also consider that territorial development planning could be the right tool to solve the labour shortage crisis. Mrs Maria Belgnaoui (Paris-Texas), stated that "one of the group's production units, located in Ain Sbâa, is very affected by the implementation of the Zenata project and the dismantling of the slums surrounding it. Workers who end up on the street don't come to work because they have to solve their housing problem, and some of them end up quitting their job. The number of absent workers can reach 12 per cent to 16 per cent of the workforce in the hardest times".

For many entrepreneurs, the unavailability of skilled labour, especially at middle management level, is a problem. In addition, the negative image of the sector, tainted by a fragile reputation and the attribution of low wages, diverts the skills of upper-school-level jobseekers to other industries. This image has led young people to turn their backs on studies and even employment in the sector. According to Mrs Maria Belgnaoui, "specialized schools in the TCLF sector and the available courses are not much sought after by students. This is partly explained by their parents' refusal, as they consider TCLF schools as a stepping stone to other, more attractive sectors".

Beyond the negative image of the sector, the difficulty of paying higher wages is a discouraging factor. A contractor specializing in high-end ready-made clothing (who wishes to remain anonymous) underlined that "the majority of SMEs in the sector do not have the means to offer qualified workers a salary that reflects their

true value". He observes that "the high level of payroll taxes is likely to discourage the hiring of more skilled labour".

For low- and medium-skilled labour, the solutions remain subject to the mobility of apprentices. To face this problem, some companies have created an internal apprenticeship training centre, but they do not always succeed in retaining their apprentices. As Mr Hicham Mghirbi (Filmod) confided that "These centres are an alternative to existing training devices. Literacy programmes are proposed in order to enable female workers and apprentices to acquire a minimum educational background and thus consider an interesting career development within companies. However, there is no protection against the risk that the students will not integrate into these companies at the end of the training. In our case, 40 per cent of the students left the company after the first year of the programme."

Criticism of eligibility criteria: Exclusion of firms facing financial difficulties

Most of the entrepreneurs interviewed regret the exclusion of companies that were experiencing financial difficulties and failed to regularize the payment of their taxes and social security contributions. They outlined their preference for a measure that would have included SMEs in difficulty. Mr Azzelarab El Alaoui (former Manager, Groupe Omar Chaoui) is convinced that "more jobs could have been saved had the access to the SWC measures not been subject to exclusive conditions".

Some interviewees claim that more voluntary support of companies in the transition process to new business models could also have helped many of them to survive the crisis while ensuring the sustainability of their activity. In fact, Mr Azzelarab El Alaoui thinks that "the skimming process after the crisis has been conditioned more by the ability of companies to anticipate changes in the sector and their propensity for investment than by their financial strength".

In this regard, Mr Mohamed Alaoui (Deputy CEO, SEFITA) highlighted that "some of the companies that benefited from employer costs measures have closed. Most of the companies that claimed and received grants were undercapitalized and fragile. The funds received have not been invested in such a way as to ensure the sustainability and development of their activities".

Some entrepreneurs suggested that these measures are not sufficient to ensure the competitiveness and sustainability of companies, but all of them recognized that they make sense in a context in which companies from certain competing countries benefit from regular governmental support, and in which conditions for accessing finance and safeguarding sales levels are difficult for SMEs to secure.

Moreover, some interviewees, such as Mr Khalid Boujida (Manager, MADNESS) are of the opinion that "the public authorities should learn from the lessons of the 2008–2009 crisis and take inspiration from the measures proposed by the SWC in order to introduce and develop a long-term supporting approach". He added that, "for exporting companies, it would be appropriate to apply the rules regarding the payment of social security contributions in a progressive manner. Social security charges to the CNSS could be partially paid by the government in order to preserve employment. It is about supporting companies that are stuck in a dilemma, confronted by the difficult choice between filing for bankruptcy or surviving by deferring the payment of their social security contributions. It is necessary to put in place a social protection system adapted to the seasonality facing the exporting sectors."

Effectiveness of the SWC measures for TCLF workers

Taking into account the protection of employment and the human capital of labour, this section addresses three sets of questions:

- Did job losses decrease after the wage subsidy implementation by the SWC?
- How did workers adapt to the TCLF crisis? Have they benefited from accompanying measures following their loss of employment? How did the SWC measures help them find jobs and re-establish employment?
- Was the protection of workers an objective of the SWC? Why did the SWC not adopt any passive labour measure?

Effects of the SWC's measures on job loss mitigation and workers' adaptation

In the difficult economic context prevailing in 2008 and 2009, marked by the decline in orders and activity in the TCLF sector and the reluctance of banks to extend operating credit to the sector, companies had to cut down the number of their employees to deal with cash constraints.

The receipt of the wage subsidy probably mitigated this job reduction. This is certain for companies in a critical cash situation. Those in good financial health have benefited from a windfall effect. Whatever the efficiency of the beneficiary company selection system, the SWC wage subsidy scheme has had a positive mitigating effect on job losses. The commitment of companies not to downsize their workforce beyond 5 per cent has reduced the possibility of using this cash facility as severance pay.

The firms that benefited from the employers' social contribution reimbursement apparently respected their commitment to limit job losses to less than 5 per cent in

Table 4 Variation in employment in the formal and informal TCLF sector, per cent

	2008–2009	2009–2010	2010–2011	2011–2012	2012–2013	2013–2014
Total jobs	–9.7	1.3	–4.9	–6.1	3.3	–7.4
Formal jobs	–9.6	–3.5	–2.5	–6.3	–3.1	–1.4
Informal jobs	–9.8	5.2	–6.6	–6.0	8.3	–11.6

Source: HCP, National Employment Survey; CNSS database 2008–2014.

2009. According to CNSS data, the measures benefited a group of companies employing between 80,000 and 90,000 workers, which represented 39 per cent of the 229,862 (formal) workers declared to the CNSS in 2009. The highest level of formal job losses was observed in 2008–2009, with 24,426 jobs lost, representing an employment decrease of –9.6 per cent overall. Job losses in the formal sector decreased, and continued to decrease, while the pace of reduction slowed after 2012.

An analysis conducted by the CNSS found that job losses at companies that did not benefit from the employers' social contribution reimbursement exceeded 13 per cent (MEF, 2011). However, in the TCLF formal sector, which includes, in particular, the firms benefiting from the SWC measures, job losses continued, albeit at fluctuating levels, for five years after their implementation. Looking at the pace of decline in the formal and informal sectors, we can assume than the measures introduced by the SWC helped to mitigate job losses, as the informal sector, which did not benefit from the supporting actions, experienced a sharper decline with stronger fluctuations (Table 4).

Three main effects should be underlined:

- In the TCLF sector, informal employment has been on an increasing trend since 2006 (Figure 2), while total employment has been decreasing (Figure 3). Some workers who have lost their jobs have converted to other TCLF branches, including traditional clothing.
- A large proportion of women workers have ceased to be active in the labour market. The drop in the female labour force participation rate was observed in cities with a high concentration of female employment in the TCLF sector at the beginning of the 2010s (National Employment Survey).
- The youngest and new entrants to the labour market began to flee the TCLF sector and seek jobs in other sectors, as mentioned by most interviewees.

The decline in labour force supply

At the end of the 2000s, the TCLF exporting firms began to face a decline in the supply of labour. Textile and clothing companies denounced the degradation of the reputation and image of the sector. In fact, evolution of the labour market in large cities offered better opportunities to those jobseekers who turned to other sectors offering more interesting working conditions.

With the economic and social changes of the 2000s, the instability of employment in the TCLF sector led many workers to turn away from it. Some women workers have preferred to move into prestigious sectors where employment is more stable, such as supermarkets and autoelectrical, according to Mr Sidi Mohammed El Jaouhari, delegated administrator at Jaouhari Group. Some workers who lost their jobs in the context of the crisis became micro-entrepreneurs. Mr Said Ben Abdeljalil (Blue Bird) added that, "following the decline in demand, some workers in the sector have capitalized on their technical skills to move towards traditional clothing, a segment that is much more resilient to the crisis".

Job-losers' training needs

Workers looking for a job who are wanting to improve their employability have no support. Mr Mohamed Alaoui, leading official of the Moroccan Workers' Union (UMT), pointed out that the SWC did not consider this aspect: "The job loser should benefit from training support to help them to find a new job". But even if the training scheme managed by GIAC T–C and supported by the SWC is positive in itself, only workers already employed have benefited from the training through the GIAC T–C, which is carried out on the initiative of the company.

The lack of passive employment policies

Workers did not benefit from accompanying measures following their job loss, nor from any support for job search or retraining. According to Mr Mohamed El Hansali, a leading official of the General Union of Moroccan Workers (UGTM), "the SWC measures served economic interests and not social interests".

It is worth noting that the SWC did not decide on any passive labour programme. The loss-of-job allowance (IPE) began to be negotiated in 2000. In 2013, the relative contribution rates of low-paid workers and their employers, with poor benefits, were agreed on the condition of their revision after two years' implementation.[24]

The measures taken by the SWC do not seem to have considered the preservation of workers' interests as an objective. This may be related to the fact that the trade unions were not invited to participate in the SWC.[25]

According to Mr Mohamed Alaoui of the UMT, "the SWC was more focused on companies, and did not think about employees. In the context of the 2009 crisis, there was no job safety for the workers. In our opinion, the Committee's thinking should have been much more comprehensive. If the care had been focused on workers, the support would have been granted to them directly. The scheme that the Union would have recommended would be, in the case of a loss of employment, the payment of an allowance during the job-search period, for instance, up to 50 per cent of the previous wage. The scheme would also cover social security contributions to enable the workers who lost their job to have access to social benefits. Finally, these jobseekers could have been accompanied in their job-search process and have access to training on their own initiative."

Conclusion

The main objective behind the government taking over employers' social security contributions and offering training support measures was the maintenance of jobs and skills and the strengthening of TCLF companies' positioning at the international level. These two measures aimed at giving them financial room and enabling them to succeed in marking the transition to a more integrated export model while relying on a better skilled staff.

Business demand for the measures has been focused on the reimbursement of the employers' social contribution, while the training, financial and marketing facilities were solicited less by TCLF firms. The main concern for companies was not, as it should have been, to offset the loss of low wage benefits with new sources of competitive advantage. The Moroccan Association of Textile and Garment Industries (AMITH) cleverly recommended initiating their transition from outsourcing to a new model based on co-contracting, or even to production of finished products.

The SWC's implicit preference was to support a small number of leading companies that can grow the sector and embody the new model. Public decision-makers, in doing so, have not opted directly for the preservation of jobs but, rather, have opted for the safeguarding and restructuring of the capital of leading companies in the sector. It can be said that this policy has been driven by a pragmatic reading driven by the constraints of competition: there are no job opportunities without competitiveness and, without job opportunities, workers' security cannot be guaranteed.

For many entrepreneurs, actions targeting the internal market to counter the negative effects of smuggling and unfair competition, as well as measures to

support firms in difficulty, would have been more advantageous in the long-term to support the transition to a functioning model of the sector. Similarly, passive labour market programmes and greater worker protection, in addition to the job-loss compensation scheme, would have opened the way to a more advantageous contractual regime that would have encouraged companies to invest in their future growth and, by doing so, create better job and career opportunities to attract skilled workers.

Trade unions emphasized that active labour market measures focused on job losers and passive employment programmes would have carried important social benefits and prevented the deterioration of the image of the sector and improved its attractiveness for workers. Undoubtedly, the wage subsidies helped to reduce job losses in the TCLF sector and the other measures had positive effects, which are, however, difficult to quantify without relevant data.

Since the 1980s, the Moroccan Government has adopted preventive measures and compensation for the employment effects of drought and climatic disasters. Similarly, job losses and cross-sectoral and spatial job reallocations caused by changing technologies or trade shocks deserved specific policies, more to prevent their effects than to mitigate their effects on workers.

It is worth noting that the recent National Employment Strategy, set up in 2015, recommended the establishment of schemes facilitating the reintegration of workers who have lost their jobs: "In order to meet this requirement, it is crucial to redeploy the continuous training system in order to reinforce the skills of adaptation and professional reintegration of workers threatened with redundancy and workers who have lost their jobs" (MAES, 2015).

Endnotes

1. The SWC held its first meeting on 4 February 2009.

2. The other members of the Committee are the Governor (Wali) of Bank Al Maghrib, the Minister of Agriculture and Maritime Fisheries, Minister of Tourism and Crafts, Minister of Trade and Industry and New Technologies, Minister of Economic and General Affairs, and Secretary of State to the Minister of the Interior, as well as the Presidents of the Professional Group of Banks of Morocco (GPBM), General Confederation of Enterprises of Morocco (CGEM), Moroccan Association of Textile-Apparel Industries (AMITH), Federation of Leather Industry Development (FEDIC), Moroccan Association of Automotive Construction Industry (AMICA) and Federation of Tourism.

3. The Industrial Emergence Plan, unlike the Enterprise Upgrading Scheme, adopted a proactive approach to promote new sectors, through investment agreements, and densify segments of the global value chains of the TCLF sector on the national territory. The programme is continued by

the Industrial Acceleration Plan (2014–2020), which evolved into the voluntary development of nine industrial ecosystems, including the TCLF sector (MICIEN, 2014).

4. The average level of education corresponds to the first cycle of basic education, i.e. nearly nine years of primary and secondary education.

5. Baccalaureate level or above.

6. This survey is conducted quarterly by the High Commission of Planning (HCP). It covers the whole country (since 1998), with a large representative sample.

7. Over the decade 2000–2009, the number of home workers, mainly traditional female artisans, fell at a rate of –4.5 per cent per year, which represents 63,200 job losses over the period.

8. Formal jobs are those that have been declared to the CNSS. The only criterion used to consider jobs as informal is that they are not reported to the CNSS.

9. The Foreign Exchange Office enables direct access to Morocco's foreign trade data at www.oc.gov.ma.

10. These free trade agreements (FTAs) were signed with the European Union (1996, implemented from March 2000), European Association for Free Trade (1997, implemented from 1 March 2000), United States (2004, implemented from 1 January 2006), Turkey (2004, implemented from 1 January 2006) and several Arab countries. The Arab Free Trade Area Agreement was signed on 27 February 1981 and entered into force on 1 January 1998. A new agreement with the Arab Mediterranean countries (Egypt, Jordan, Tunisia) was signed on 25 February 2004 and entered into force on 27 March 2007.

11. UN COMTRADE database.

12. Export activity has very high seasonal variations. There are four peaks in the year: February and March; July; October; and December. The seasons are of unequal length: two seasons are long – five months from April to September and three months from January to April; two seasons are short – two months from September to November and two months from November to January (Belghazi, 2005).

13. In 2009, 8 dirhams was equivalent to US$1.

14. Among this fraction, 5.2 per cent are jobseekers with secondary-level education and 15.9 per cent have university-level education (HCP, 2009).

15. In order to support the sectors that were deemed vulnerable to the effects of the international crisis, the SWC drew up a framework agreement that was signed by the Government, the CGEM and the GPBM, and nine implementation agreements signed between the Government and the institutions concerned, such as the SMAEX and the Central Guarantee Fund (CCG), which provided guarantees for access to credit, Maroc Export, which supported commercial promotion, GIAC for educational purposes, and two professional associations, AMICA and AMITH.

16. The system is designed in contravention of Morocco's international commitments. "Morocco does not apply the provisions of the 102 ILO Convention [concerning minimum standards of social security] and 202 ILO Recommendation on Employment Social Protection" (CESE, 2018, p. 63).

17. Some of the Labour Code provisions, e.g. relating to the seniority bonus and severance pay, encourage employers to keep their employees in a situation in which they cannot claim or apply for a permanent contract. Keeping a large proportion of work groups in a precarious situation exempts employers from the payment of seniority bonuses and any severance pay.

18. Articles 53 and 59, Law No. 65–99 on the Labour Code, Official Gazette No. 5210 of Thursday, May 6, 2004.

19. "Employment support agreement for exporting firms in the textile, leather, and automotive equipment sectors". The reimbursement of the employer's contribution to the CNSS is stated in Article 1 of this agreement as a proportion of the gross wage bill. As the Government's aim was to support only the jobs related to the export activity, taking into account that exporting firms were also selling their products on the domestic market, the SWC decided to limit the reimbursement to the exported proportion of 2008 turnover. The employer's social security contribution covers the employer's expenses relating to family benefits (6.4 per cent of gross salary), short-term and long-term social benefits (8.6 per cent of gross salary with a ceiling of 6000 dirhams), compulsory health insurance (3.5 per cent of gross salary) and vocational training tax (1.6 per cent of gross salary).

20. For executives, the workforce to be trained by the company could reach 100 per cent of the total number of executives declared to the CNSS as of January 2009, within the limit of 5 per cent of the total workforce declared to the CNSS on the same date. For supervisors and operators, the number of employees to be trained per company could not exceed 20 per cent of the total number of employees declared to the CNSS in January 2009.

21. Damane exploitation is a guarantee mechanism for operating loans in excess of MDH 1 (US$1.2 million) intended to finance the operating needs of companies.

22. Data in this section is from the Ministry of Economy and Finance (MEF), "Economic and Financial Reports" and accompanying document on the financial laws for the years 2010, 2011 and 2012.

23. Table 2 shows that the share of the employer's social contribution in the wage bill decreases for monthly wages higher than 6,000 dirhams. The contribution calculation base for short-term and long-term benefits is capped at 6,000 dirhams.

24. The loss-of-job allowance (IPE) began to be implemented in 2014. It is the first measure of a passive public employment policy to be implemented in Morocco. It targets workers who have lost their jobs involuntarily. The IPE is financed by applying a 0.57 per cent rate to the declared salary. The employer finances up to 0.38 per cent of the salary, capped at 6,000 DH, while the employee contributes the remaining 0.19 per cent. Severance pay is equal to 70 per cent of the average monthly salary declared during the 36 months preceding the date of employment loss. However, this amount cannot exceed the legal minimum wage. On average, 55 per cent of job losers' applications were rejected, mainly on the basis of having an insufficient number of declared workdays (780 days during the three years preceding the date of work cessation) or being submitted out of time.

25. The unions did not submit a formal demand for participation in the SWC. As Mr Mohamed Alaoui of the UMT commented, "We had other priorities: the context of trade union action dominated by demands for respect for trade union rights and human rights has set other priorities."

References

Belghazi, S. (2005), « Mise à Niveau et Compétitivité du Secteur Textile-Habillement : L'importance d'une Approche Durable Fondée sur le Travail Décent et l'Efficacité Économique », Geneva : Organisation Internationale du Travail.

Belouas, A. (2009), « Le textile plonge : Les exportations en chute de 12% à fin février », *La Vie Économique*, 6 avril.

Conseil Economique, Social et Environnemental (CESE) (2018), « La protection sociale au Maroc : Revue, bilan et renforcement des systèmes de sécurité et d'assistance sociales », Auto-Saisine n° 34/2018, Rabat : CESE.

Fédération du Commerce et Services (CGEM) (2015), « Guide des programmes de financement et d'accompagnement des entreprises au Maroc ».

Groupement Interprofessionnel d'Aide au Conseil (GIAC) Textile et Cuir (2012), « Rapport de synthèse de l'enquête de satisfaction relative à la mesure de formation », Casablanca: GIAC.

International Labour Organization (ILO) (2014), "Wages and Working Hours in the Textiles, Clothing, Leather and Footwear Industries: Issues Paper for Discussion at the Global Dialogue Forum on Wages and Working Hours in the Textiles, Clothing, Leather and Footwear Industries", 23–25 September 2014, Geneva.

Plank, L., Rossi, A. and Staritz, C. (2012) "Workers and Social Upgrading in 'Fast Fashion': The Case of the Apparel Industry in Morocco and Romania", Working Paper No. 33, Vienna: Austrian Research Foundation for International Development (ÖFSE).

Royaume du Maroc, Haut Commissariat au Plan (HCP), « Activité, emploi et chômage : Résultats détaillés» (National Employment Survey). Available at https://www.hcp.ma/downloads/Activite-emploi-et-chomage-resultats-detailles_t13039.html.

Royaume du Maroc, Ministère de l'Economie et des Finances (MEF) (2010), « Rapport économique et financier », document d'appui au projet de la loi de finances 2010.

Royaume du Maroc, Ministère de l'Economie et des Finances (MEF) (2011), « Rapport économique et financier », document d'appui au projet de la loi de finances 2011.

Royaume du Maroc, Ministère de l'Economie et des Finances (2012), « Rapport économique et financier », document d'appui au projet de la loi de finances 2012.

Royaume du Maroc, Ministère de l'Emploi et des Affaire Sociales, (MAES) (2015), « Projet de Stratégie Nationale de l'Emploi 2015–2025 », Comité de Pilotage du 24 février 2015.

Royaume du Maroc, Ministère de l'Industrie, du Commerce et de l'Economie Numérique (MICIEN) (2014), « Plan d'accélération industrielle 2014–2020 ».

World Trade Organization (WTO) (2017), *World Trade Report 2017: Trade, Technology and Jobs*, Geneva: WTO.

Appendix

List of interviewees

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Fatima-Zahra ALAOUI (Interview 15)
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Mohamed ALAOUI (Interview 2)
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Mohamed ALAOUI (Interview 14)
Représentant de l'UMT au Conseil Economique, Social et de l'Environnement
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Abderrahmane ATFI (Interview 8)
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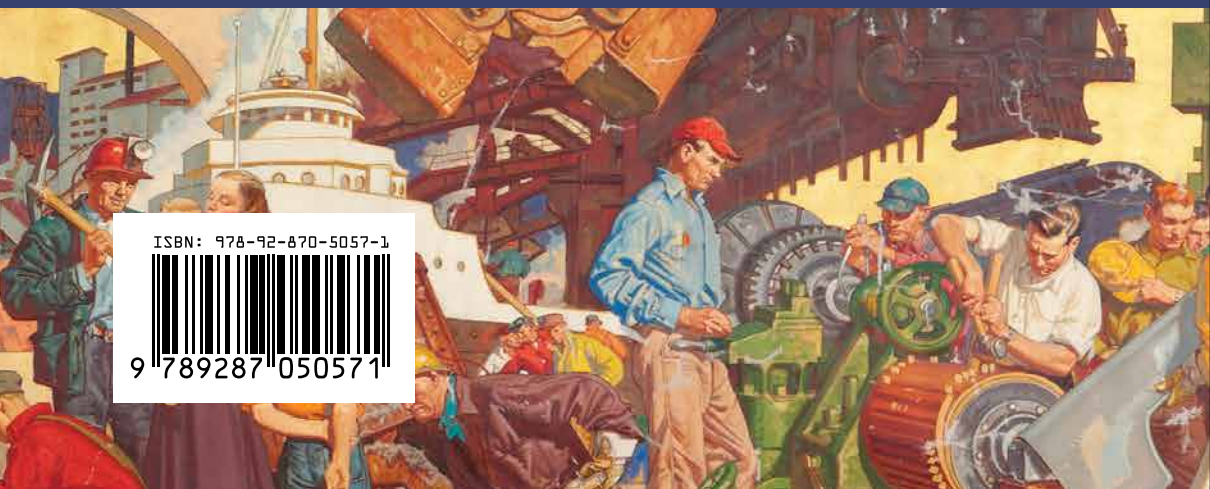
Making Globalization More Inclusive
Lessons from experience with adjustment policies

Recent research shows that although trade and technological advances yield important benefits for economies overall, some workers and regions can be negatively affected. Policies aimed at helping workers adjust to the impact of trade or technological changes can provide a helping hand to the workforce and increase the benefits of open trade and new technologies. This publication contributes to the discussion on how governments can help make international trade more inclusive and ensure that the benefits of open trade are spread more widely. It responds to the growing demand from policy-makers for further research on adjustment policies, building on previous WTO work on the labour market effects of trade.

The publication includes an extensive review of the literature on this topic and provides case studies on adjustment policies written by experts from seven countries across four continents. The contributions cover a broad range of policy measures taken by governments to help labour markets adjust to the impact of globalization, including trade openness, using a variety of approaches. They provide valuable insights into those policies and useful information for all those interested in the social dimensions of globalization and technological change.



ISBN: 978-92-870-5057-1
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