

## Chapter 4

# Labour market impact of immigration

*This chapter first provides a general overview of research on the labour market impact of immigration in the ten partner countries of the project Assessing the Economic Contribution of Labour Migration in Developing Countries as Countries of Destination. It describes selected labour market outcomes affecting the native-born populations. To analyse the effects of foreign-born workers on native-born workers' wages and labour market outcomes, the chapter looks at the simple relationship between shares of foreign-born workers and employment-to-population ratios of native-born workers. This is followed by a more detailed analysis which controls for differences between workers in terms of education, experience and time. Finally, the chapter suggests policy implications and future research.*

**H**ow does the presence of foreign-born workers affect the employment opportunities and other labour market outcomes of native-born workers? This question has been and continues to be the subject of much policy and academic discussion. As seen in Chapter 3, foreign-born workers have different labour market outcomes than the native-born. At the national level, foreign-born workers are often more active in the labour market and are employed more often than native-born workers. They are also more prevalent in wage employment though frequently in low-skill occupations.

There exist considerable studies on impacts of labour immigration in high-income economies. These studies report both positive and negative effects on the employment and wages of native-born workers (Borjas, 2003; Card, 2001; Friedberg and Hunt, 1995; Hanson, 2008; Kerr and Kerr, 2011). Where these effects do exist, whether positive or negative, they are usually small. However, it is often found that impacts of immigration on labour market outcomes are not distributed evenly across all workers and tend to be strongest in those areas, occupations and sectors where native- and foreign-born workers are most similar. Research on impacts in low- and middle-income countries is relatively scarce, though it does suggest similar, and even smaller, effects (Böhme and Kups, 2017).

To explore immigration's impact on local workers in low- and middle-income countries, this chapter combines and compares findings from analyses performed for each of the ten partner countries. They are Argentina, Costa Rica, Côte d'Ivoire, the Dominican Republic, Ghana, Kyrgyzstan, Nepal, Rwanda, South Africa and Thailand. The chapter intends to identify whether the presence of foreign-born workers on labour markets has adverse impacts on native-born workers with similar characteristics (see Becker, 1975; Mincer, 1974).

Evidence across most of the ten partner countries suggests that foreign-born workers have a limited impact on the labour market outcomes of the native-born. As with research in high-income economies, where impacts exist, they are diverse and highly contextual. At the national level, the presence of foreign-born workers can reduce employment-to-population ratios of native-born workers, but this effect remains small. Effects at the regional level tend to be slightly more positive, implying that regions within a country experience considerably more or considerably less labour immigration.

Native-born women seem to be particularly affected by the presence of foreign-born women. This could suggest that many women in the ten partner countries occupy the same kinds of jobs as foreign-born workers, with whom they compete for those jobs.

Finally, impacts of the most recently arrived foreign-born workers tend to be much greater than those of all foreign-born workers. This implies that there are significant short-term effects which might indeed dissipate over time, as these workers integrate into the labour market.

## Employment and wage gaps in partner countries

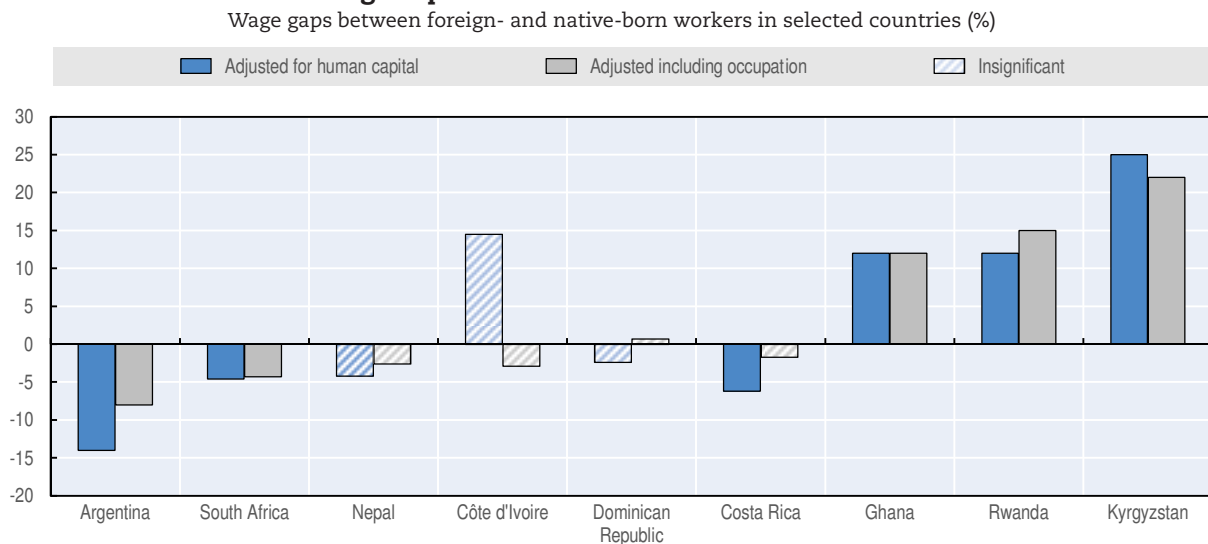
Native-born and foreign-born workers can differ greatly in terms of their labour market outcomes and integration. Six of the ten partner countries foreign-born workers exhibit higher participation rates and employment-to-population ratios. However, in Argentina, Kyrgyzstan, Nepal and Rwanda the reverse is true, as illustrated in Chapter 3 (Figure 3.1). Foreign-born workers also tend to be overrepresented in wage employment compared to their native-born counterparts.

### Human capital differences only partially explain immigrant wage gaps

Wage or labour income differences<sup>1</sup> between native-born and foreign-born workers vary significantly between countries.<sup>2</sup> While average wages of foreign-born workers are lower than those of native-born workers in Argentina and South Africa, this is not the case in other countries (Figure 4.1). In fact, in Ghana, Kyrgyzstan and Rwanda, average wages are higher for foreign-born workers than for native-born workers.

It is possible that foreign-born workers are overrepresented in particular occupational groups, meaning that the observed wage differences might be due to differences in average occupational wages. Estimates adjusted to account for occupations indeed reduce wage gaps in most countries, but not enough to make them disappear entirely. The only exception is Costa Rica, where the 5% wage gap between foreign- and native-born workers disappears when accounting for occupation. This suggests that wage differences there are to some extent the result of differences in occupational distributions of the two groups. However, in Côte d'Ivoire, the Dominican Republic and Nepal wages do not differ significantly between native- and foreign-born workers even when not accounting for occupations.

Figure 4.1. **Considerable wage gaps between foreign- and native-born workers remain after controlling for personal and labour market characteristics**



Note: "Adjusted for human capital" refers to wage estimates controlling for age, education, time and area effects (Kyrgyzstan does not include area effects). A positive wage gap indicates the percentage by which the wages of foreign-born workers exceed those of the native-born. Insignificant differences are indicated by a broken pattern. Argentina, Kyrgyzstan and South Africa reported total income instead of wages. Thai sources report neither wages nor income.

Source: Authors' own work based on population census and household survey data from the Minnesota Population Center (2017) or national statistical offices.

StatLink <http://dx.doi.org/10.1787/888933649069>

Although wage differences between foreign-born and native-born workers persist even after controlling for a number of personal characteristics, they tend to be small in comparison with differences due to, for instance, educational achievement. For most partner countries, completing secondary and tertiary education levels can double or even triple wages respectively, when compared to not having completed primary education.

Language skills have been shown to be an important determinant of wages. In Rwanda, a foreign-born worker who speaks English earns the same average wages as a native-born worker with a similar level of skill, while one who does not speak English earns significantly less than a comparable native-born worker who does not speak English. Similarly, Russian language skills might well explain some of the wage gaps between foreign-born and native-born workers in Kyrgyzstan.<sup>3</sup> In Argentina, on the other hand, where most foreign-born workers come from other Spanish-speaking countries, it is likely that a lack of formal language skills do not have as strong an impact on wage differences as in other countries.

Wage gaps that remain after accounting for personal and labour market characteristics may be due to other unobserved personal characteristics or some form of discrimination. Knowledge of local markets and opportunities might differ between native- and foreign-born workers and have an impact on wage gaps. Foreign-born workers may receive lower wages due to some form of discrimination or because destination countries do not recognise foreign qualifications. Finally, wage differences might result from foreign-born workers' willingness to accept jobs for lower wages if the jobs provide them with other benefits.

### ***Educational achievement and work experience are used to approximate an individual's skills***

Employment impacts of immigration interest policymakers due to the potential effects on the well-being of the resident population and on social protection systems. The employment impacts of immigration refers to the extent to which the presence of foreign-born workers in the labour market affects the chances of native-born workers to find jobs or lose ones they have. Immigrants are often blamed for lowering wages, affecting local employment and negatively affecting the skills distribution of the local labour force (the sub-group of skilled immigrants, on the other hand, receive credit for spurring innovation and the growth of certain sectors) (Hanson, 2008). Further, immigrant impacts on the labour market, particularly on unemployment rates, could have potential fiscal consequences at regional and national levels, aside from affecting individuals (Kerr and Kerr, 2011). This could be of particular concern in developing countries.

One of the biggest issues for foreign-born workers themselves with regard to social protection systems in countries of destination is the lack of inclusion and portability across borders. If foreign-born workers have an impact on native-born employment outcomes this might further strain an already weak social protection systems in developing countries. It is therefore important to examine labour market impacts beyond purely wage effects.

Using the **skill cell approach**, these impacts are examined by grouping a country's working-age population according to comparable levels of skills (Annex 4.A1). These skill levels are not measurable directly. Rather, the working-age population of each country is divided into groups based on 4 levels of educational achievement and 8 levels of years of experience for a total of 32 individual skill groups (Table 4.1). Labour market outcomes and foreign-born shares of the labour force are compared within each skill group, based on the assumption that foreign-born and native-born workers in the same skill group are similar and hence compete in the labour market mostly with one another (and not with workers in another skill group).

Table 4.1. **Illustration of national-level skill cells**

Experience	No education or some primary education	Primary or some secondary education	Secondary education	Tertiary or higher education
0-5 years				
6-10 years				
11-15 years				
16-20 years				
21-25 years				
26-30 years				
31-35 years				
36-40 years				

Note: Dividing the employed population by level of education and years of work experience results in 32 separate groups of workers with relatively comparable skills according to human capital theory.

### **Labour market outcomes of native-born workers vary most among the lowest educated workers**

Overall employment-to-population ratios of native-born workers range between 36.0% in South Africa to 73.6% in Thailand (see Chapter 3, Figure 3.1). Here, employment-to-population ratios are further divided by education and experience levels to provide a more nuanced view of employment across the skill spectrum.

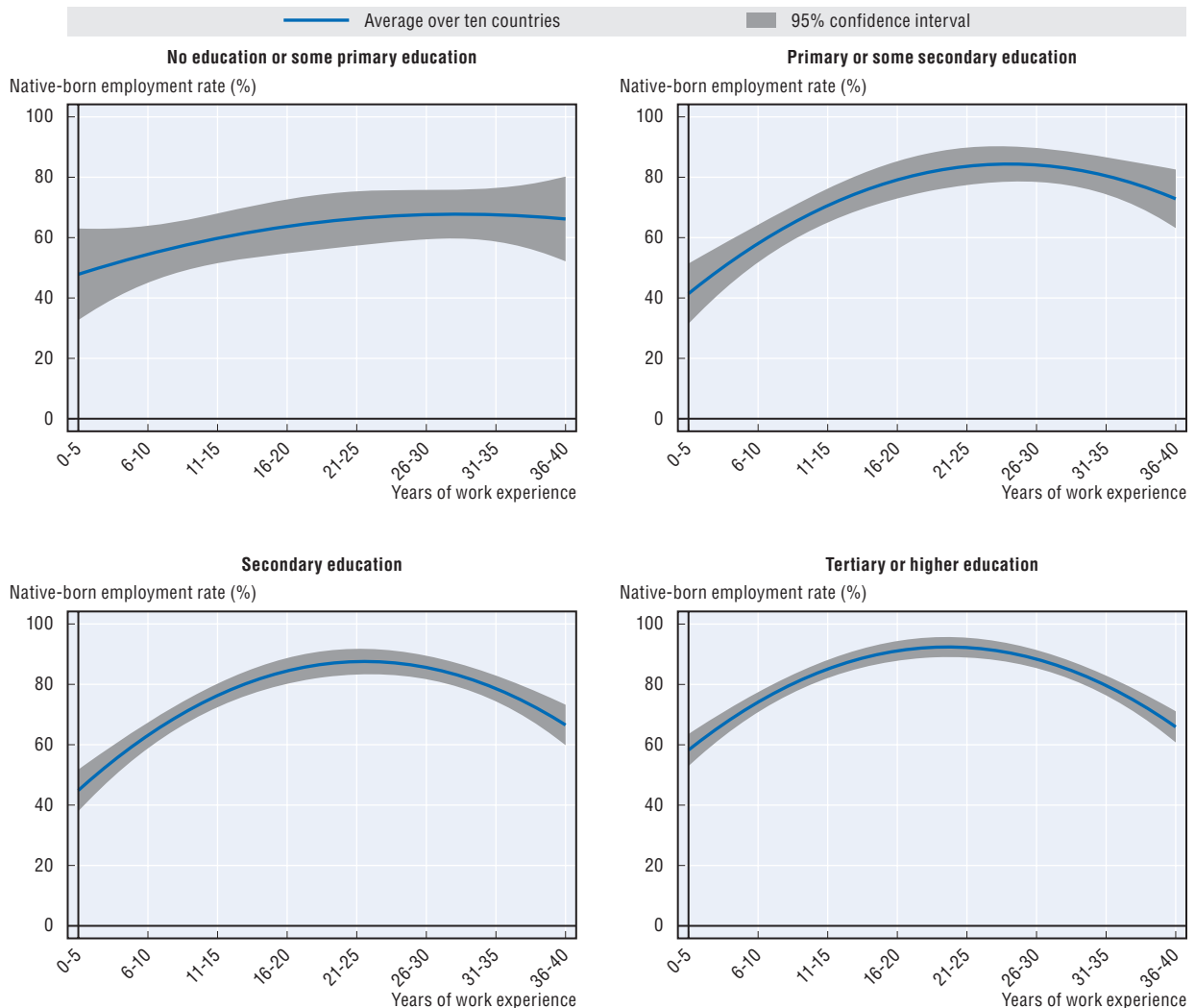
In most partner countries, employment-to-population ratios of native-born workers tend to rise with educational level, while they decline at the extremes of the experience range. Workers with few or many years of experience tend to be less frequently employed than workers in the middle of the range (Figure 4.2). This is likely for two reasons. First, workers early in their careers may be cyclically unemployed as they look for the right job or continue their education, particularly in the higher education categories. Second, more experienced workers may start retiring, in some cases before they leave the working-age population (particularly those with higher levels of education).

Employment-to-population ratios of workers with tertiary or higher levels of education tend to be more similar across experience levels, while the spread is much wider at lower levels of education. This illustrates both differing levels of educational achievement between countries and reliance on employment of low-skilled workers. Workers in Costa Rica and South Africa with less than a primary level of education experience particularly low employment-to-population ratios.<sup>4</sup>

Unemployment rates of native-born workers vary much more than employment-to-population rates between the partner countries, from 1.6% in Nepal to 41.1% in South Africa (Chapter 3, Figure 3.3). In South Africa, the difference in unemployment rates between skill levels is particularly large, ranging from over 80% for a worker with no education or experience to around 4% for a tertiary educated, prime-age worker. In almost all partner countries unemployment rates differ slightly according to level of education. However, they most often fall with levels of experience (Figure 4.3), as is the case in Costa Rica, Côte d'Ivoire, the Dominican Republic, South Africa and to a lesser extent Argentina. This suggests, particularly for those workers with secondary and lower levels of education, that employers in those countries value on-the-job training and experience. This is notable given the potential downgrading of foreign-born workers' skills by employers who value those workers' origin country experience less than destination country experience.

Figure 4.2. **Employment-to-population ratios among native-born workers converge across countries at higher levels of education**

Estimated average native-born employment-to-population ratios by experience and education levels in ten partner countries



Note: Thailand reports rates as a share of the working-age population.

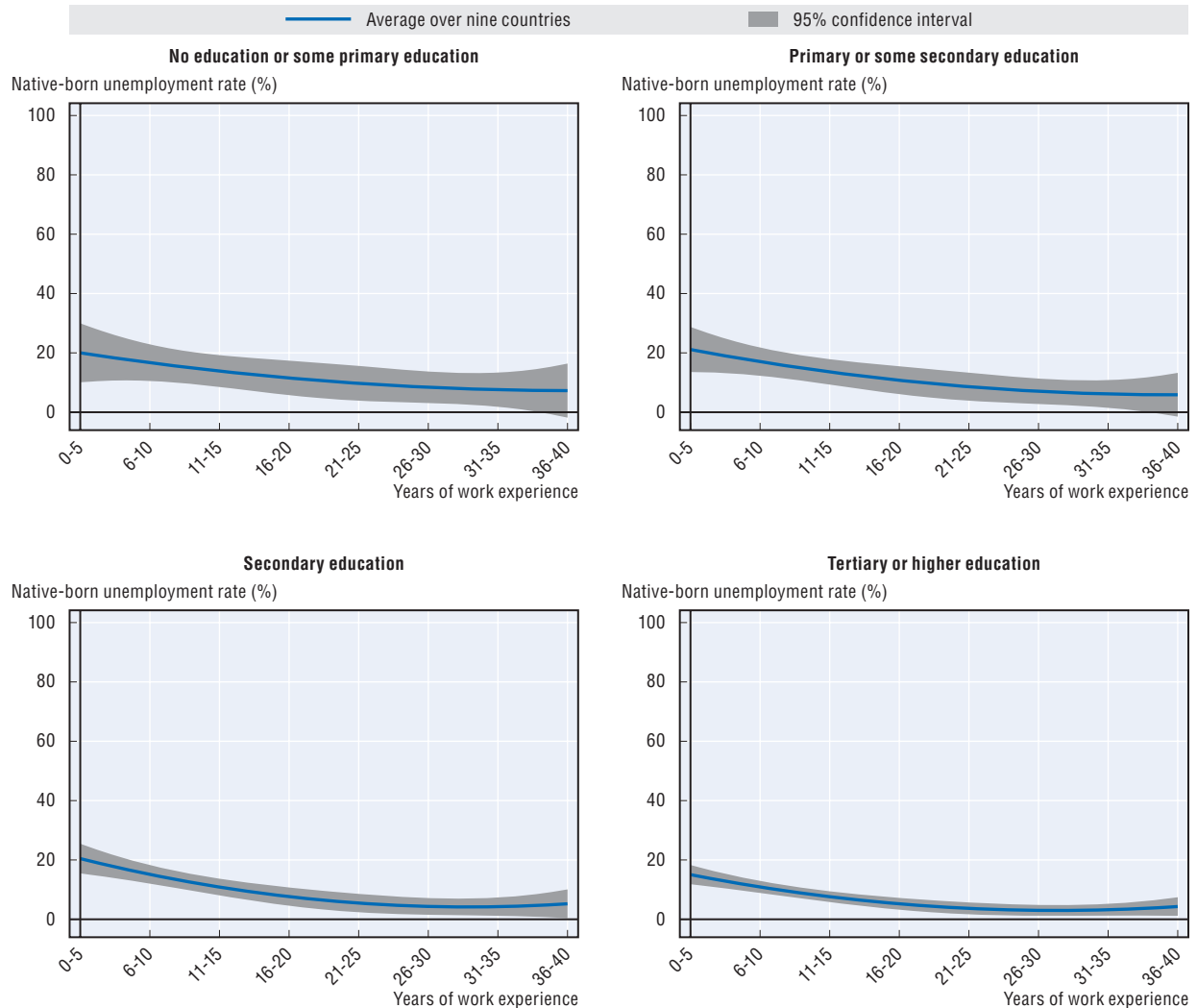
Source: Authors' own work based on population census data from the Minnesota Population Center (2017) or national statistical offices.  
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Shares of foreign-born workers in the labour force of the partner countries also differ, both on average and across the skill spectrum. Shares vary from 1.6% in Ghana to 12.5% in Costa Rica. Foreign-born workers are most numerous among workers with less than a primary level of education (Figure 4.4). This is particularly the case in Costa Rica, Côte d'Ivoire, the Dominican Republic and Thailand, while Costa Rica and Rwanda have large shares of foreign-born workers with tertiary levels of education as well. In almost all other countries, shares of foreign-born workers increase slightly among workers with the most years of work experience, possibly reflecting the relatively large presence of older cohorts of foreign-born workers. Costa Rica, the Dominican Republic, Thailand and to a lesser extent Kyrgyzstan have a large share of foreign-born workers with no education but with

10-30 years of experience. This suggests that foreign-born workers are more likely to find low-skilled employment in these countries.

Figure 4.3. **Unemployment rates among native-born workers are highest for workers with little work experience**

Native-born unemployment rate by experience and education levels per country



Note: Thailand does not report unemployment rates in the most recent census wave.

Source: Authors' own work based on population census data from the Minnesota Population Center (2017) or national statistical offices.

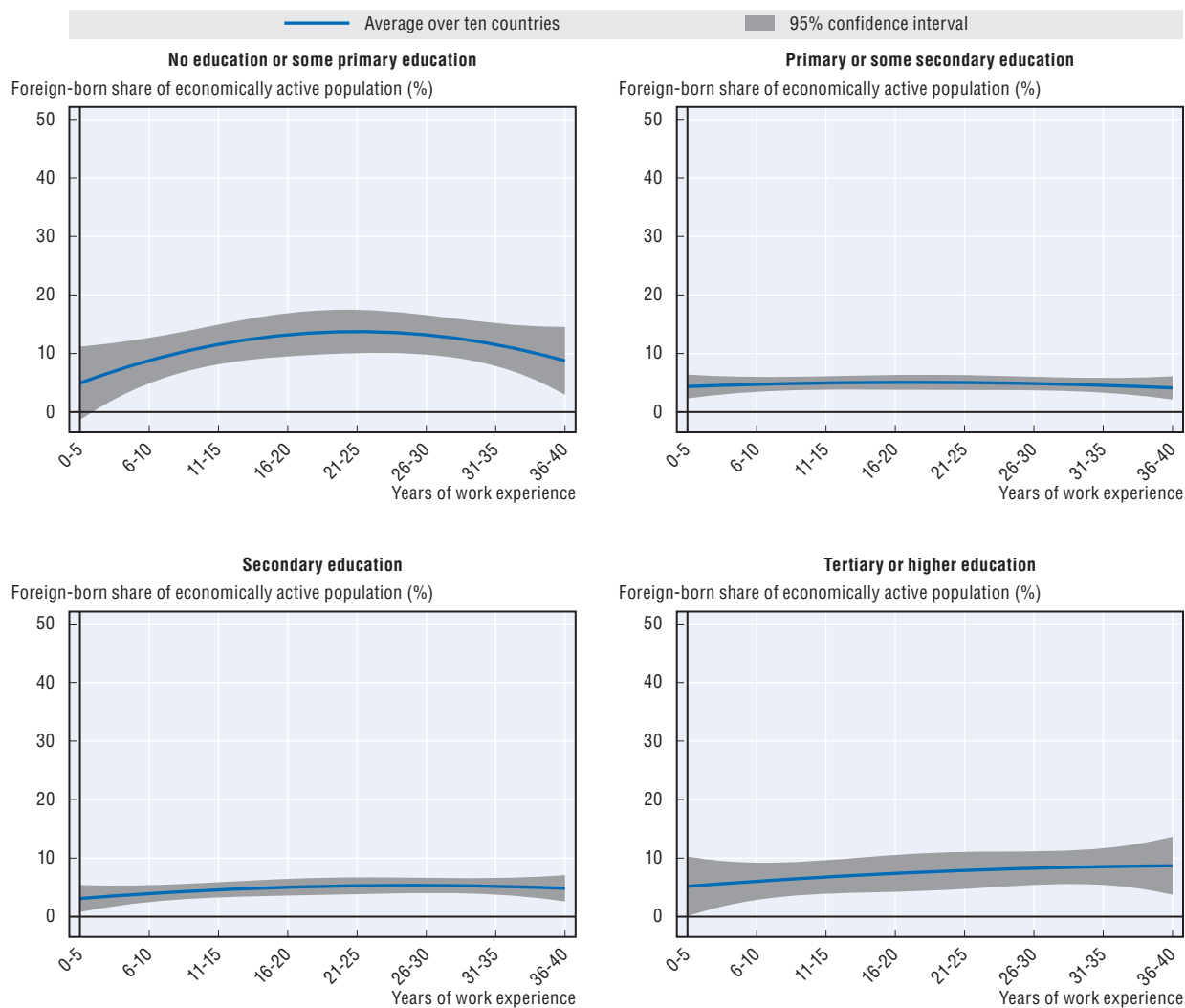
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Foreign-born workers might differ from native-born workers in unobservable ways that influence wages and other labour market outcomes. These include having skills which are more highly remunerated than local workers, facing barriers due to lacking language skills, having certifications or skills which are not recognised in the country of destination, or simply being more motivated to find work or at the workplace (given that they were motivated enough to migrate in the first place) than similarly skilled native-born workers. Foreign-born workers might also have different opportunities or preferences for finding work than native-born workers, which may be difficult to adequately measure. It is equally difficult to

determine the extent to which the factors which influence wages and other labour market outcomes of foreign-born workers also influence those of native-born workers. To this end, the relationship between the share of foreign-born workers in a skill cell and a particular labour market outcome is explored here.


Figure 4.4. **Foreign-born workers tend to be most prevalent among low-educated workers**

Foreign-born share of economically active workers by experience and education levels per country



Note: Thailand reports rates as a share of the working-age population.

Source: Authors' own work based on population census data from the Minnesota Population Center (2017) or national statistical offices.

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## The labour market impacts of immigration

### **Effects of immigration on native-born labour market outcomes at the national level tend to be weak**

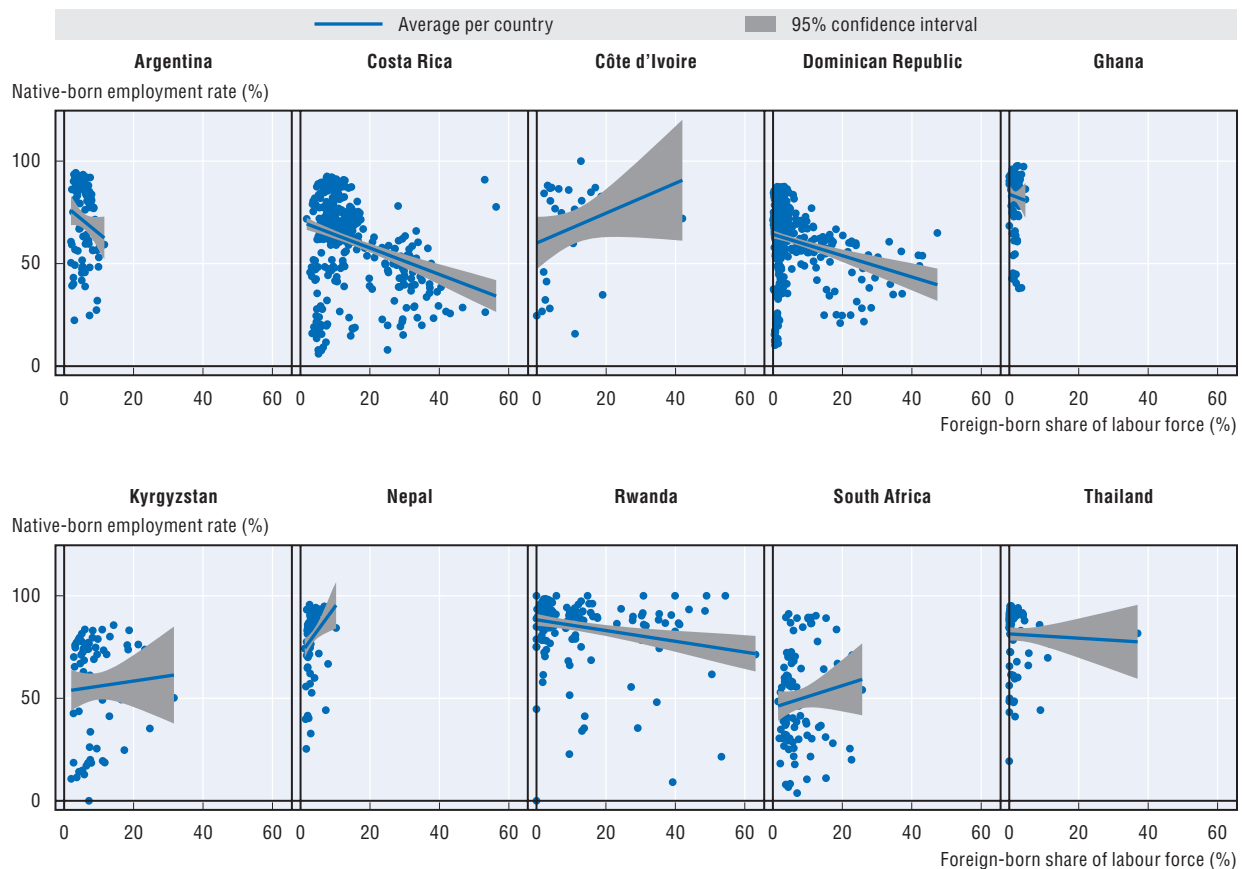
The relationships between the shares of foreign-born workers and employment-to-population ratios of native-born workers vary greatly between countries. But where statistically significant correlations exist, the differences are relatively weak. In Costa Rica,



the Dominican Republic and Rwanda, there is a significant inverse relationship – as the share of foreign-born workers rises, the employment-to-population ratios of the share of native-born workers falls. While in Côte d'Ivoire, in the presence of foreign-born workers, that employment-to-population ratio rises (Figure 4.5).

**Figure 4.5. The correlation between foreign-born shares and native-born employment rates differs strongly between countries**

Change in foreign-born worker concentration and native-born employment rate per country, all available years of data



Note: Thailand reports rates as a share of the working-age population.  $R^2$  values: Argentina, 0.175; Costa Rica, 0.109; Côte d'Ivoire, 0.175; Dominican Republic, 0.069; Ghana, 0.096; Kyrgyzstan, 0.004; Nepal, 0.136; Rwanda, 0.097; South Africa, 0.056; Thailand, 0.015.

Source: Authors' own work based on population census data from the Minnesota Population Center (2017) or national statistical offices.

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Nonetheless, when controlling for differences over time, the share of foreign-born workers in a skill cell explains between 0.5% and 17.5% of the variance in employment-to-population ratios of native-born workers at the national level.<sup>5</sup> To account for differences due to educational achievement, work experience and changes over time, regression analyses were done for each country. The results are presented in Tables 4.2-4.4.

In many partner countries, the foreign-born share and native-born labour market outcomes do not seem to be strongly related at the national level. In Costa Rica, the Dominican Republic, Ghana and Rwanda, a higher share of foreign-born workers in a skill cell is associated with a statistically significant reduction in the employment-to-population ratio of native-born workers in that cell (Table 4.2).<sup>6</sup> Only in the Dominican Republic is

this effect on employment-to-population ratios accompanied by a decrease in native-born unemployment rates.

In Nepal and Thailand, the presence of more foreign-born workers leads to shifts in the distribution of employment status. In Nepal, native-born workers seem to move out of paid employment<sup>7</sup> and into vulnerable employment<sup>8</sup> in the presence of immigrants. This could be due to the large outflows of skilled Nepal-born workers, lowering the overall skills of native-born workers left in the country, and who tend to be more susceptible to vulnerable employment, particularly in the face of (often) more qualified foreign-born workers. This is particularly the case in the manufacturing and trade sectors (OECD/ILO, forthcoming c). The reverse takes place in Thailand, where Thai-born workers move out of vulnerable employment and into paid employment in the presence of more foreign-born workers.

**Table 4.2. National-level labour market impacts of immigration differ greatly between countries**

Summary of national level regression results of native-born workers' labour market outcomes and foreign-born share per country

Labour market outcomes	Argentina	Costa Rica	Côte d'Ivoire	Dominican Republic	Ghana	Kyrgyzstan	Nepal	Rwanda	South Africa	Thailand
Employment-to-population ratio of native-born workers	0	-	0	-	-	0	0	-	0	0
Unemployment rate of native-born workers	0	0	0	-	0	0	0	0	0	
Paid employment rate of native-born workers					0	0	-	0	0	+
Vulnerable employment rate of native-born workers		0		0	0	0	+	0	0	-
Wages of native-born workers	0	0	0	0	0	0		+	0	

Note: The table reports the sign of the immigrants' share variables from regressions where the dependent variable is the mean native-born labour market outcome for an education\*experience group at a particular point in time. 0 = no significant effect; + = a significant positive effect; - = a significant negative effect.

Source: Authors' own work based on population census data from the Minnesota Population Center (2017) or national statistical offices. See Annex 4.A1.

Finally, only in Rwanda are wages of native-born workers significantly higher in the presence of foreign-born workers. This might result from two factors. First, foreign-born workers are strongly overrepresented in non-vulnerable, highly remunerated occupations. Second, possibly by policy design, they largely complement native-born workers in those occupations.

### **The impact of immigration on native-born labour market outcomes varies by geographic location**

Previous research has shown that immigration effects at regional levels may be biased. Some biases may result (i) from native-born workers' endogenous choice to relocate to a different region in the face of possible competition from foreign-born workers and (ii) from immigrants' preferences for specific (i.e. economically stronger) locations (Hatton, 2014). Both biases can lead to reduced estimates of effect sizes, in turn leading to an underestimation of immigration's true impact on labour market outcomes of native-born workers (Annex 4.A1, and Bodvarsson and van den Berg, 2013). Nonetheless, large regional differences make it necessary to explore potential regional level effects next to national ones. This is particularly the case in developing countries where most foreign-born workers and most decent jobs are concentrated in one or a few urban agglomerations.

Results produced from the skill cell approach depend heavily on the specifications of the sample and model. This is evidenced by the fact that findings in partner countries at the regional level do not lend themselves easily to a single interpretation (especially not one in line with national level results; see Annex 4.A1). For instance, in Rwanda, contrary to national level results, a higher share of foreign-born workers at the regional level appears to reduce the unemployment rates of the native-born but also to reduce their wages. The wage effect might be expected given the substantial rate of urbanisation in Rwanda in recent years and the concentration of foreign-born workers in a few urban centres. In Nepal and Kyrgyzstan, on the other hand, large numbers of native-born workers are emigrating, and foreign-born workers seem to be effectively filling the positions left vacant.<sup>9</sup>

However, regional results in Kyrgyzstan, Nepal and Thailand suggest an overall positive impact of foreign-born workers on the employment-to-population ratio of native-born workers. In Nepal, this is paired with an increase in paid employment and a decrease in vulnerable employment for native-born workers. In Thailand, on the other hand, the effect on paid employment disappears when including regions, suggesting that paid employment varies by region, but within regions does not differ between native-born and foreign-born workers.

There are also instances where disaggregating effects by region uncover negative trends. In South Africa the impact on employment at regional level becomes significant and negative, suggesting that there are certain regions in which the presence of foreign-born workers does go hand in hand with lower employment rates of native-born workers, despite such an effect not existing at the national level. It is likely the case that regions bordering neighbouring countries are more strongly affected by the presence of migrants than regions further away from the border. A higher share of immigrants per region in Argentina and Ghana is associated with an increase in the wages of native-born workers while in Costa Rica the reverse is true. In Argentina and Ghana, most migrants concentrate in economic and urban centres of the country, where their presence might compliment that of native workers leading to higher native-born wages, while in Costa Rica, many immigrants likely substitute native-born workers in the seasonal harvests along the northern border (OECD/ILO, forthcoming a, b and c).

**Table 4.3. Regional-level labour market impacts of immigration vary significantly between countries**

Summary of regional level regression results of native-born workers' labour market outcomes and foreign-born share per country

Labour market outcomes	Argentina	Costa Rica	Dominican Republic	Ghana	Kyrgyzstan	Nepal	Rwanda	South Africa	Thailand
Employment rate of native-born workers	0	-	-	0	+	+	0	-	+
Unemployment rate of native-born workers	0	0	0	0	0	-	-	0	
Paid employment rate of native-born workers				0	0	+	0	0	0
Vulnerable employment rate of native-born workers		0	0		0	-	0	0	0
Wages of native-born workers	+	0	0	+	0		-	0	

Note: The table reports the sign of the immigrants' share variables from regressions where the dependent variable is the mean native-born labour market outcome for an education\*experience group at a particular point in time. 0 = no significant effect; + = a significant positive effect; - = a significant negative effect. Regressions could not be run at the regional level for Côte d'Ivoire.

Source: Authors' own work based on population census data from the Minnesota Population Center (2017) or national statistical offices. See Annex 4.A1.

Regional effects, if any, tend to be slightly less negative than national effects (Table 4.3).<sup>10</sup> This is in line with other studies based on regional analyses (Borjas, Freeman and Katz, 1996). However, native-born workers in many partner countries might be less likely to relocate in

response to the presence of foreign-born workers than in most developed countries (Fields, 2010). Given that developing countries generally have few economic centres, native-born workers also might not have much choice in where to find the most stable and productive employment. Nonetheless, without a strong instrumental variable with which to test the validity of this assumption, regional results must be interpreted cautiously.

### ***Impacts of foreign-born workers depend on gender and on time of arrival in destination countries***

While geographical differences can account for some of the labour market effects of immigration found using the skill cell approach, effects can also change over time. The skill cell approach does control for changes over time, but it cannot differentiate clearly between short- and long-term effects. Nor can it distinguish more diverse labour market responses to a change in the share of foreign-born workers, such as native-born workers temporarily leaving the labour market only to return later, or the integration of foreign-born workers into local communities and labour markets, which will only gradually, over time, disappear from the data.

A simple approach to distinguishing between short- and longer-term labour market impacts is to look at the effects of newly arrived foreign-born workers as a distinct group from other foreign-born workers. Studies from the European Union and the United States find that, as immigrants spend more time in the destination country, their wage gaps decrease and their labour market integration improves (see Kerr and Kerr, 2011, for a discussion on immigrants' earnings and labour market assimilation; see Dustmann and van Soest, 2002, and Chiswick and Miller, 2002, on local language skills determining labour market integration).

Aside from affecting native-born workers in the same skill cell, foreign-born workers can also increase the labour supply of those in other skill cells. This can happen when, for instance, native-born employees hire foreign-born workers to perform activities they previously did themselves, such as many domestic and childcare tasks. Researchers have for instance found that women enter the labour market more frequently in the presence of low-skilled foreign-born workers (Barone and Mocetti, 2011).

Regressions run separately for men and women might therefore show more positive effects on the employment-to-population ratios of native-born women than those of native-born men. However, results largely show the opposite trend (Annex Table 4.A3.4). The presence of foreign-born women tends to lower the employment rates of similarly skilled native-born women, while this is not the case for men (Annex Table 4.A3.4). This could be due to the fact that women are overrepresented in low-quality and/or temporary jobs, and hence compete more often with low-skilled foreign-born workers. Notable exceptions are Costa Rica, Nepal and South Africa. In Costa Rica, native-born men's unemployment rates increase in the presence of foreign-born men. In Nepal, native-born women's participation in paid employment increases in the presence of foreign-born women. In South Africa, native-born women's wages are considerably higher in the presence of foreign-born women.

The country study of Argentina looks further at the issue of women's employment. It finds that low-skilled women in particular find more employment in the presence of more foreign-born women from origin countries with high care-occupation concentrations among women workers. This suggests that foreign-born women who work in the care sector provide Argentine women the opportunity to look for better work opportunities themselves (OECD/ILO, forthcoming a).

In most partner countries, recently arrived foreign-born workers are more likely to be active in the labour market. The average age of foreign-born workers who arrived in the country within the past ten years is lower than that of all foreign-born economically

active workers. The impact of those recently arrived foreign-born workers on labour market outcomes of native-born workers (Table 4.4) is generally stronger than that of all foreign-born workers.

**Table 4.4. Impacts of newly-arrived foreign-born workers tend to be slightly stronger than those of all foreign-born workers**

Summary of regression results of resident workers' labour market outcomes and new foreign-born workers share per country

Labour market outcomes	Argentina	Ghana	Nepal	Rwanda	South Africa	Thailand
Employment rate of native-born workers	0	0	-	-	+	0
Unemployment rate of native-born workers	0	0	0	+	-	
Paid employment rate of native-born workers		-	0	0	0	+
Vulnerable employment rate of native-born workers			0	0	-	-
Wages of native-born workers	0	0		0	+	

Note: The table reports the sign of the immigrants' share variables from regressions where the dependent variable is the mean native-born labour market outcome for an education\*experience group at a particular point in time. 0 = no significant effect; + = a significant positive effect; - = a significant negative effect.

Source: Authors' own work based on population census data from the Minnesota Population Center (2017) or national statistical offices. See Annex 4.A1.

An increase in the share of recently arrived foreign-born workers is associated with a significant decrease in employment-to-population ratios in Nepal and Rwanda. In Rwanda, this negative effect on employment is paired with a rise in unemployment. Specifically, an increase in the share of more recent foreign-born workers not only reduces the number of Rwandan-born workers finding a job, it also increases the share of unemployed Rwandan-born workers.

Due to their relative inexperience and lack of integration into the labour market, newly arrived immigrants may be more likely to find jobs with unfavourable working conditions until their skills improve compared to native-born workers and to more settled foreign-born workers. In South Africa, where no effects were found at the national level when considering all workers, a decidedly different picture emerges when looking at only the most recently arrived immigrants. The presence of these workers not only increases employment and decreases unemployment, it also reduces vulnerable employment and raises wages of native-born workers. Similarly, in Thailand, the effect of new foreign-born workers on the paid employment rate of native-born workers is much stronger than the effect of all foreign-born workers taken together. In Ghana, recently arrived foreign-born workers reduce the share of paid employment among native-born workers.

In Nepal and Rwanda, foreign-born workers tend to be relatively well-educated, particularly among the most recently arrived, suggesting that they might indeed be more successful than native-born workers. There also seem to be considerable shifts in employment status in the presence of more recently arrived immigrants. This illustrates once again that the most important impacts of foreign-born workers entering labour markets are likely to affect employment status and quality of employment more than employment numbers in destination countries.

Taken together, these results suggest that, particularly over a ten-year period, the labour market impact of foreign-born workers will diminish over time. Hence, immigrants' long-term integration and growth effects, as will be discussed in Chapter 5, could easily overshadow the short-term labour and wage impacts described here. That chapter looks in more detail at capturing the economic effects of immigration in a broader sense, including some dynamic effects.

## Conclusions and policy implications

The economic impact of immigration is an evolving field of research that is highly relevant for policy choices. Existing empirical studies on impacts of immigration in developing countries are rare and can be difficult to implement cross-nationally given the scarcity of comparable, sufficiently-detailed and nationally-representative data (Ratha and Shaw, 2007). This report represents one of the first attempts to understand these impacts in developing countries in a comparative framework. Drawing conclusions and discussing policy consequences based on the findings in this chapter require caution, as appropriate policy responses depend heavily on local contexts and circumstances.

The impact of immigration on native-born labour market outcomes is diverse and highly contextual. Effects on employment at the national level, where they exist, are negative, meaning that in those countries, as the share of foreign-born workers increases, the employment rate of native-born workers decreases. However, those effects are not universal, moreover, they are not necessarily unfavourable when taken together with other impacts, just as a positive impact is not always unequivocally good. For instance, in Rwanda, a negative impact of immigration on employment-to-population ratios of native-born workers is likely the result of labour migration policies and long-term development planning. This suggests that it is not the share of foreign-born which reduces employment ratios of native-born workers, but rather the other way around. The policies and planning were designed to attract foreign-born, highly-skilled workers to sectors and positions which lack sufficiently qualified native-born workers. Conversely, in Thailand, the statistically positive impact of immigration on paid employment rates could reflect the relatively unfavourable working conditions for foreign-born workers, providing native-born workers the chance to find better (paid) employment.

With the exception of South Africa, labour market impacts of immigration are less negative and, where they exist, are slightly more positive in the regional level analysis than the national. However, regional studies risk producing biased effects due to the possible relocation of native-born workers outside their region (Annex 4.A1). The divergence between the results may be due to the potentially large differences in the geographic distribution of foreign-born workers and of economic development within many developing countries. Indeed, the skill cell approach assumes that the labour market exists at a national level and that workers are perfectly mobile within a country.

The impacts of immigration might in fact benefit labour market outcomes of native-born workers in those regions with more economically active immigrants. In countries where most productive activity occurs in a single or a few large urban areas and prevalent poverty levels limit internal mobility, native-born workers might not have much opportunity to relocate in the presence of increasing numbers of foreign-born workers.<sup>11</sup> Hence, the regional results presented here might be less sensitive to the methodological bias that plagues results from more industrialised countries.

Time spent in the host country can affect the way immigrants integrate into the labour market. People who arrived in earlier waves of immigration might be better integrated than those who arrived later, because of improved language skills or other labour market competencies specific to the local context. Given this potential integration over time, it is likely that newly arrived foreign-born workers have a different labour market impact than all foreign-born workers taken together.

The analysis of newly arrived foreign-born workers (see Table 4.3) therefore attempts to estimate shorter-term labour market impacts of immigration. This approach in no way replaces a model including more dynamic effects, such as adjustments in wages and/or investment behaviour in the long-run. Nonetheless, recently arrived foreign-born workers tend to have stronger labour market impacts than more established foreign-born workers, suggesting that labour migration policies should encourage labour market integration, particularly for the most recently arrived immigrants.

Future research should look into more explicit indicators of quality of work. This is especially pertinent given the relative homogeneity of labour market indicators across national educational and experience spectrums, for example low and unvarying unemployment. The indicators should include shifts in employment status and other forms of non-standard employment. As illustrated in Chapter 3, existing labour market indicators might not be sufficient to identify the specific vulnerabilities to which foreign-born workers are exposed. Consequently, these same indicators might also not provide the variation in data required to isolate potential labour market impacts of immigration. Improving the reliability of impact assessments hinges on more detailed and regular data collection.

Future research on impacts of immigration in developing countries could also benefit from simultaneously accounting for possible effects of emigration. In Kyrgyzstan and Nepal, for instance, emigration rates are large enough to have considerable impacts on the workers who remain in the country. It is important in those cases to explore how emigration flows relate to immigration flows and to labour market outcomes of non-emigrant native-born workers. Research could look specifically at whether immigrants tend to move into the sectors and occupations left open by departing workers, or whether they occupy entirely different positions.

## Notes

1. For certain countries, total (South Africa) or labour income (Argentina, Costa Rica and Kyrgyzstan) data are analysed instead of wage data.
2. For all countries, wage gaps were estimated using a simple earnings function in which the natural logarithm of wages is regressed on place of birth, controlling for age, education, time and region. The Mincer equation is arguably the most widely used earnings function, based on the work of Jacob Mincer (1974). Mincer modelled the natural logarithm of earnings as a function of years of education and years of potential labour market experience. Using a Mincer-type earnings function, log wages are modelled here as the sum of a linear function of educational achievement and a quadratic function of years of potential experience:

$$\log(W) = \log(w_0) + \tau M + \beta_1 E + \beta_2 X + \beta_3 X^2,$$

where  $W$  is the real wage ( $w_0$  is the wage of a native-born individual with no education and no experience),  $M$  is a dummy identifying foreign-born workers,  $E$  is a dummy for educational achievement and  $X$  is years of potential labour market experience (see also Lemieux, 2003). In Kyrgyzstan, region is not controlled for in the estimation of wage gaps.

3. Sample sizes in existing data are too small to test the effect of language skills on wage gaps empirically in Kyrgyzstan.
4. The low employment rates of workers with no schooling in Kyrgyzstan likely reflect high educational achievement rates. There are almost no workers in the country with less than a primary level of education.
5. The analysis in this chapter is correlational, describing a relationship between variables at given time points, and does not make any empirical claims about the causal link between immigrant shares and labour market outcomes of native-born workers.

6. Most effect sizes are relatively small in absolute terms. However, the effect size in Ghana is uncharacteristically large (see Annex Table 4.A3.1). This is likely a result of very small variation in both the employment rate and the immigrant share across skill cells, as evidenced by consistently large standard errors in other model specifications. Similarly large standard errors can also be seen in Argentina, Nepal and to some extent Thailand, where the variations in immigrant shares across skill cells are limited.
7. Paid employment is those jobs where the workers hold explicit or implicit employment contracts that give them a basic remuneration that does not directly depend on the revenue of the unit for which they work. Paid employment tends to be associated with decent work, and as such a high proportion of waged and/or salaried workers in a country can signify advanced economic development (ILO, 2016).
8. Whereas waged and salaried workers are strongly associated with decent work, own-account workers and contributing family workers have a lower likelihood of benefiting from formal working arrangements. Own-account workers are workers in self-employment jobs, where remuneration directly depends on the profits derived from the goods and services produced. Contributing family workers are workers who hold “self-employment jobs” as own-account workers in an establishment operated by a related person living in the same household. Given their lack of formal arrangements, both are more likely to lack decent working conditions, such as access to social security or certain forms of political representation. These two work statuses combined constitute what can be classified as “vulnerable employment” (ILO, 2015).
9. Some authors have argued that any emerging negative effects of immigration in the context of large emigration flows might not be significant (e.g. Facchini, Mayda and Mendola, 2013).
10. Data limitations can have an impact on interpretations of regional level effects. Effect sizes at the regional level tend to be larger than national level regressions. This might result from increased regional variation in the immigrant share variable. Significance levels are also higher, likely as a result of more statistical power due to a larger sample size (more skill cells) per country. However, in some countries, observations of foreign-born workers are so few that regional disaggregation by skill cell would become unreliable. In the case of Rwanda, for instance, only four skill cells could be used in the regional disaggregation.
11. Moreover, in some low-income countries, the same characteristics attracting foreign-born workers might equally attract native-born workers. Hence, rural-to-urban migration pressures might in some countries be as strong as or stronger than a potential bias from native-born workers relocating in the presence of immigrants.

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## ANNEX 4.A1

### *Estimating the impact of labour immigration: Conventional methods and empirical evidence*

Effects of immigration on the economies of destination countries are widely studied yet often poorly understood. Hypothesised effects based on traditional labour market models are difficult to isolate in empirical analyses. As a result, a vast and diverse array of empirical literature has developed to explain and estimate impacts of migration, mostly in high-income countries. This annex explains a few of the most popular and influential methods, following Bodvarsson and van den Berg (2013).

One of the most common methods used is the spatial correlation approach. It links the share of immigrants in the population in a geographical area (region or city) to the employment and wage outcomes of native-born individuals (e.g. Altonji and Card, 1991; Pischke and Velling, 1997). Effects found using this method tend to be weak or insignificant. Steinhardt (2009) hypothesised and Borjas (2006) showed that this approach does not adequately account for various endogeneity problems with respect to labour market adjustment processes and (re-)location decisions of native workers. Depending on the level of internal mobility in a country, effects of immigration might therefore be easier to detect at the national rather than regional level.

One method which examines effects at the national level is the production function approach. Here a production function is specified with foreign- and native-born workers as separate inputs. Coefficient estimates are used to calculate factor price elasticities of native versus foreign-born labour (e.g. Grossman, 1982). With this approach, effects on labour market outcomes of native-born workers are sometimes positive, but almost always modest at best. This approach tends to find that substitutability between foreign- and native-born workers is low, likely due to differing skills (Bodvarsson and van den Berg, 2013). Differences in skills and returns on skills between workers are needed to estimate substitution elasticities and direct effects of immigration on labour market outcomes of native-born workers.

Accounting for these skill differences and local shifts led researchers to a third commonly used method known as the skill cell approach. In this approach, workers of comparable levels of skill are grouped into cells, typically based on two dimensions: education and experience. As noted by Borjas (2003), both dimensions have been emphasised by human capital theory (Becker, 1975; Mincer, 1974). As an individual's allocation to a skill cell cannot be easily changed, the endogeneity of native relocation is not present here, leading to a less biased test of immigration's impact. This approach has three underlying assumptions: the labour market functions at a national level, workers are perfectly mobile within the country, and foreign- and native-born workers only compete with each other at the same level of skill.

The skill cell approach is seen by many researchers as one of the most reliable methods to study empirically the effects of immigration on labour markets. Borjas (2003) pioneered this methodology using United States census data. He found a significant negative effect on native-born men's earnings and time worked. He also noted that a 10% rise in the share of immigrants reduces native-born workers' weekly earnings by 4.0% and hours worked by 3.7%.

A number of biases, some of which were openly acknowledged, remain challenging. For instance, the "downgrading" of immigrants on arrival might lead to measurement errors in their education, experience or both (Dustmann, Schönberg and Stuhler, 2016). Further, workers within cells must be perfectly substitutable, an assumption which can be tested by calculating within-cell elasticities.

Ottaviano and Peri (2012) found, using the same data as Borjas, that foreign- and native-born workers are imperfect substitutes even within cells. They concluded that immigration has a positive impact on wages of native-born workers, particularly among those with at least a secondary education. This suggests that models assuming perfect substitutability within cells tend to overstate adverse effects (or understate benefits) of immigration to native-born labour market outcomes.

Finally, none of these methods distinguishes between short- and long-term impacts as markets adjust over time. Also, they ignore or only implicitly account for other responses to immigration which might also affect labour market outcomes of native-born workers. These include changes in labour demand, adjustments to investments, changes in production technologies, or labour supply responses by native-born workers. Despite these shortcomings, the skill cell approach remains the most popular method of studying immigration impacts, due to its immunity to biases resulting from shifts in regional migration by native-born workers.

As with all regression analyses, estimates based on the skill cell approach show the correlation, or the strength of the linear association, between two variables. In other words, as one rises or falls, the other rises or falls as well. The skill cell approach, however, does not address the source, or cause, of this association. Causal inferences can rarely be made with simple observational designs such as that employed in this chapter, and the chapter should be read with this caveat in mind.

The term "impact" as it is used in the skill cell approach and in this chapter, refers to the correlation between the concentration of economically active foreign-born workers and a labour market outcome of native-born workers in each skill cell. The term does not imply that there is by definition a causal relationship between the two.

## ANNEX 4.A2

*Methodology and data*

This chapter used the so-called skill cell approach to determine the impact of immigration on labour market outcomes for native-born workers as described in Annex 4.A1. Skill level is estimated by dividing the working-age population of each country into cells based on four levels of educational achievement and eight levels of years of experience, dimensions which have long been emphasized as determinants of skills in human capital theory (Becker, 1975; Mincer, 1974). The educational qualifications are no education or less than a primary education, primary or some secondary education, secondary education, and tertiary or higher education.

Work experience is estimated by subtracting a worker's expected age at the end of education from his or her current age. The ages are 15 years for less than a primary education, 17 for a primary education, 21 for a secondary education and 23 for a tertiary education. Work experience is divided into eight 5-year bands, up to a maximum of 40 years of experience (see Figure 4.2).

The sample is restricted to individuals aged 15-64 who actively participate in the labour market (i.e. are employed or unemployed). Native-born men and women are included in a pooled sample separately. Women's work experience is adjusted downwards by four years given that it is more likely affected by possible time outside the labour market due to childrearing or other domestic tasks (see, for example, Blau and Kahn, 2013).<sup>1</sup>

Variations in the proportion of foreign-born workers across skill cells are used to assess the impact of immigration on various labour market outcomes. The labour market outcomes include in the analysis are the employment-to-population ratio, the unemployment, paid employment and vulnerable employment rates, and the natural log of real wages of native-born workers.

Accounting for interactions between education and experience and for changes in these variables over time, the main equation to be estimated becomes:

$$Y_{ijt} = \beta m_{ijt} + e_i + w_j + c_t + (e_i * w_j) + (e_i * c_t) + (w_j * c_t) + u_{ijt} \quad (1)$$

where  $Y_{ijt}$  is the labour market outcome for a native-born worker with education  $i$  ( $i = 1...4$ ) and work experience  $j$  ( $j = 1...8$ ) for year  $t$ . Furthermore:

$$m_{ijt} = M_{ijt} / (M_{ijt} + N_{ijt}) \quad (2)$$

where  $M_{ijt}$  is the number of foreign-born workers with education  $i$  and work experience  $j$  at time  $t$  and  $N_{ijt}$  is the number of native-born workers with education  $i$  and work experience  $j$  at time  $t$ . The other explanatory variables are a set of fixed effects that aim to take into

account the education level ( $e_i$ ), work experience ( $w_j$ ), time period ( $c_t$ ) and their two-way interactions.

Contrary to previous research (see Borjas, 2003; Facchini, Mayda and Mendola, 2013), the data includes both men and women. Borjas (2003) argues that work experience cannot be adequately estimated for both men and women in the case of the United States, due to lower female labour force participation rates, particularly among older cohorts. While in the United States, differences in the male and female labour force participation rates between 1960 and 2000 might have a strong cultural component, there is no obvious reason for this to be the case in partner countries.

The analysis can also be adjusted to take into account the regional distribution of foreign-born workers along with their skill distribution (see Facchini, Mayda and Mendola, 2013). The equation to be estimated becomes:

$$Y_{ijt} = \beta m_{ijt} + d_k + e_i + w_j + c_t + (e_i * w_j) + (e_i * c_t) + (w_j * c_t) + (e_i * d_k) + (d_k * c_t) + (w_j * c_t) + u_{ijt} \quad (3)$$

where  $d$  is a fixed effect taking into account regional divisions in a country (provinces, districts, etc.)  $k$  ( $k = 1 \dots K$ ). Two-way interactions with other fixed effects are also included.

Data is aggregated at the level of individual cells per year, and regressions are weighted by the size of the economically active population per skill\*year cell. Therefore, the analysis is repeated limiting the “immigrant” population to only those foreign-born workers residing in the region for less than ten years.

Population census and labour force survey data used in the analysis were collected from the Minnesota Population Center (2017) or Country studies. Labour force data for Thailand are based on employment only.

### Note

1. Adjusting women’s work experience downwards by four years is a crude measure, but the lack of sufficient data limits the applicability of other approaches in most countries examined. Preferable would be a measure which takes into account differences in labour market experience due to age and cohort, such as weights constructed on the basis of yearly age-specific fertility rates which cumulatively build up a predetermined gap between the ages of 15 and 49 (e.g. De Brauw and Russell, 2014). In the case of Argentina, it was possible to construct an even more precise measure based on microdata which translates shares of men and women with a particular age and schooling who are working in a given year into years of work experience.

## ANNEX 4.A3

## Regression results

Table 4.A3.1. Coefficients of regressions of native-born workers' labour market outcomes on foreign-born workers' share per country, national level

Labour market outcomes	Argentina	Costa Rica	Côte d'Ivoire	Dominican Republic	Ghana	Kyrgyzstan	Nepal	Rwanda	South Africa	Thailand
Employment-to-population ratio of native-born workers	-0.442 (0.984)	-0.303** (0.131)	-0.676 (0.415)	-0.259** (0.011)	-1.59* (0.836)	-1.597 (1.327)	1.828 (1.103)	-0.436** (0.203)	0.440 (0.469)	0.424 (0.592)
Unemployment rate of native-born workers	-0.717 (0.921)	-0.066 (0.039)	0.335 (0.301)	-0.132* (0.068)	0.141 (0.163)	0.0933 (1.044)	-0.262 (0.325)	-0.006 (0.138)	-0.257 (0.295)	
Paid employment rate of native-born workers					0.016 (0.641)	0.165 (1.526)	-1.099** (0.547)	-0.092 (0.191)	-0.301 (0.280)	0.389* (0.234)
Vulnerable employment rate of native-born workers		0.026 (0.080)		0.132 (0.137)	0.172 (0.571)	0.310 (1.669)	1.033* (0.611)	-0.128 (0.259)	-0.082 (0.400)	-0.503* (0.276)
Wages of native-born workers	-0.619 (0.877)	-1.059 (0.775)	84.371 (171.639)	0.170 (0.221)	1.533 (3.142)	-3.039 (1.968)		3.402*** (1.178)	2.055 (1.604)	
Observations	96	604	55	637	128	224	96	191	96	96

Note: The table reports the coefficient of the foreign-born workers' share variables from regressions where the dependent variable is the mean labour market outcome for a native-born education\*experience group at a particular point in time. Asterisks indicate significance levels (\*\*\*  $p < 0.01$ , \*\*  $p < 0.05$ , \*  $p < 0.1$ ). Robust standard errors are reported in parentheses. All regressions are based on the same 32 observations per year and are weighted by the sample size of the education\*experience\*year cell, except in Côte d'Ivoire, where data was limited to ten-year experience intervals. All regression models include education, experience and period fixed effects. They also include interactions between education and experience fixed effects, education and period fixed effects, and experience and period fixed effects. Wage regressions are done using the natural logarithm of average wages per education\*experience group, except for Côte d'Ivoire, where absolute wages are used.

Source: Authors' own work based on population census data from the Minnesota Population Center (2017) or national statistical offices.

**Table 4.A3.2. Coefficients of regressions of native-born workers' labour market outcomes on foreign-born workers' share per country, regional level**

Labour market outcomes	Argentina	Costa Rica	Dominican Republic	Ghana	Kyrgyzstan	Nepal	Rwanda	South Africa	Thailand
Employment-to-population ratio of native-born workers	-0.0525 (0.133)	-0.251*** (0.037)	-0.200*** (0.025)	-0.050 (0.525)	0.244*** (0.0845)	2.468*** (0.528)	-0.057 (0.138)	-0.203** (0.080)	0.327** (0.161)
Unemployment rate of native-born workers	-0.0956 (0.0589)	0.002 (0.017)	-0.015 (0.017)	-0.050 (0.061)	-0.0319 (0.164)	-0.336*** (0.086)	-0.078** (0.035)	0.102 (0.076)	
Paid employment rate of native-born workers				-0.074 (0.136)	0.318 (0.210)	0.604*** (0.217)	-0.009 (0.171)	0.071 (0.085)	-0.175 (0.143)
Vulnerable employment rate of native-born workers		0.015 (0.031)	-0.057 (0.038)	-0.088 (0.132)	-0.242 (0.182)	-0.577*** (0.220)	0.128 (0.161)	-0.123 (0.079)	0.093 (0.140)
Wages of native-born workers	0.137** (0.0694)	-0.275* (0.154)	-0.105 (0.070)	2.345** (0.981)	-0.081 (0.384)		-7.172* (3.824)	0.281 (0.235)	
Observations	2 424	3 512	6 105	1 277	512	480	714	864	478

Note: The table reports the coefficient of the foreign-born workers' share variables from regressions where the dependent variable is the mean labour market outcome for a native-born education\*experience\*experience group at a particular point in time. Asterisks indicate significance levels (\*\*\* p < 0.01, \*\* p < 0.05, \* p < 0.1). Robust standard errors are reported in parentheses. All regressions are based on the same 32 observations per region and year and are weighted by the sample size of the education\*experience\*region\*year cell, except in Côte d'Ivoire, where data was limited to ten-year experience intervals. All regression models include education, experience, region, and period fixed effects. They also include interactions between education and experience fixed effects, education and period fixed effects, and experience and period fixed effects. Wage regressions are done using the natural logarithm of average wages per education\*experience\*region group, except for Côte d'Ivoire, where absolute wages are used.

Source: Authors' own work based on population census data from the Minnesota Population Center (2017) or national statistical offices.

**Table 4.A3.3. Coefficients of regressions of resident workers' labour market outcomes and new foreign-born workers' share per country**

Labour market outcomes	Argentina	Ghana	Nepal	Rwanda	South Africa	Thailand
Employment-to-population ratio of native-born workers	5.292 (5.529)	0.512 (0.799)	-0.511*** (0.166)	-1.254*** (0.382)	0.978*** (0.360)	0.774 (1.373)
Unemployment rate of native-born workers	5.435 (4.105)	-0.171 (0.388)	0.049 (0.120)	0.683** (0.327)	-0.531* (0.275)	
Paid employment rate of native-born workers		-2.439** (1.025)	-0.183 (0.176)	0.404 (0.272)	0.117 (0.264)	0.91** (0.457)
Vulnerable employment rate of native-born workers		2.876*** (0.941)	0.267 (0.276)	-0.491 (0.344)	-0.926*** (0.351)	-1.171** (0.531)
Wages of native-born workers	-1.816 (4.593)	-5.780 (6.191)		1.294 (1.791)	3.905*** (0.905)	
Observations	96	96	96	160	96	96

Note: The table reports the coefficient of the foreign-born workers' share variables from regressions where the dependent variable is the mean labour market outcome for a native-born education\*experience group at a particular point in time. Asterisks indicate significance levels (\*\*\* p < 0.01, \*\* p < 0.05, \* p < 0.1). Robust standard errors are reported in parentheses. All regressions are based on the same 32 observations per year and are weighted by the sample size of the education\*experience\*year cell. All regression models include education, experience and period fixed effects. They also include interactions between education and experience fixed effects, education and period fixed effects, and experience and period fixed effects.

Source: Authors' own work based on population census data from the Minnesota Population Center (2017) or national statistical offices.

Table 4.A3.4. **Coefficients of regressions of native-born men and women's labour market outcomes on foreign-born men and women's shares per country, national level**

Labour market outcomes		Argentina	Costa Rica	Côte d'Ivoire	Dominican Republic	Ghana	Kyrgyzstan	Nepal	Rwanda	South Africa	Thailand
Employment-to-population ratio of native-born workers	Men	-0.340 (0.349)	-0.228*** (0.069)	-0.792** (0.342)	-0.267** (0.101)	-0.921 (0.873)	-1.508 (1.672)	1.173*** (0.418)	-0.618*** (0.169)	-0.064 (0.415)	0.220 (0.524)
	Women	-1.230 (0.730)	-0.199** (0.085)	0.707 (1.463)	-0.138 (0.115)	-1.280 (0.783)	-1.19	-0.280 (0.230)	0.043 (0.229)	0.485 (0.367)	0.333 (0.374)
Unemployment rate of native-born workers	Men	-0.846 (0.721)	0.053* (0.030)	0.0720 (0.175)	-0.084 (0.055)	0.014 (0.176)	-0.307 (0.536)	-0.276 (0.239)	-0.033 (0.074)	0.006 (0.221)	
	Women	-0.614 (1.187)	0.026 (0.058)	0.878 (1.519)	-0.181 (0.161)	0.358* (0.201)	-0.341	0.296 (0.228)	-0.026 (0.104)	-0.449 (0.385)	
Paid employment rate of native-born workers	Men					0.481 (0.540)	-0.347 (1.119)	-0.533 (0.485)	-0.335 (0.228)	-0.020 (0.250)	0.671* (0.349)
	Women					-1.893*** (0.648)	-0.135	0.744* (0.410)	0.063 (0.235)	-0.251 (0.408)	-0.093 (0.160)
Vulnerable employment rate of native-born workers	Men		-0.027 (0.074)		0.084 (0.106)	-0.474 (0.476)	-0.508 (1.290)	0.492 (0.564)	0.241 (0.251)	-0.020 (0.303)	-0.811* (0.428)
	Women		0.148 (0.099)		0.115 (0.118)	1.769*** (0.538)	1.183	-0.608 (0.390)	-0.155 (0.299)	-0.369 (0.432)	0.049 (0.158)
Wages of native-born workers	Men	0.413 (0.359)	-0.165 (0.242)	-110.148 (567.253)	-0.035 (0.207)	8.547 (6.222)	3.289** (1.410)		-2.539 (3.748)	0.464 (1.300)	
	Women	0.475 (0.371)	-0.943 (0.756)	-454.739 (471.771)	0.197 (0.323)	-4.298 (10.207)	2.154		0.950 (3.697)	4.729** (2.271)	
Observations		96	604	55	635	96	63	96	191	96	96

Note: The table reports the coefficient of the foreign-born workers' share variables from regressions where the dependent variable is the mean labour market outcome for a native-born education\*experience group at a particular point in time, for men and women separately. Asterisks indicate significance levels (\*\*\*  $p < 0.01$ , \*\*  $p < 0.05$ , \*  $p < 0.1$ ). Robust standard errors are reported in parentheses. All regressions are based on the same 32 observations per year and are weighted by the sample size of the education\*experience\*year cell, except in Côte d'Ivoire, where data was limited to ten-year experience intervals. All regression models include education, experience and period fixed effects. They also include interactions between education and experience fixed effects, education and period fixed effects, and experience and period fixed effects. Wage regressions are done using the natural logarithm of average wages per education\*experience group, except for Côte d'Ivoire, where absolute wages are used.

Source: Authors' own work based on population census data from the Minnesota Population Center (2017) or national statistical offices.





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