OECD Development Pathways

How Immigrants Contribute to Thailand's Economy

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Foreword

Immigration has gained importance in Thailand since the beginning of the 1990s, and migrant workers currently contribute significantly to the economy. Although the effects of immigration have been investigated in Thailand before, there is a need for more systematic empirical research into how immigrants contribute to the economy. Such research informs the debate on migration flows, which are increasing globally in particular outside the traditional high-income regions, while research also constitutes a basis to understand which policy responses should be instituted for the good of both immigrants and the destination countries.

The OECD Development Centre, the International Labour Organization and the European Commission have worked together to tackle these challenging questions. Working across different contexts, the goal is to help countries design effective policies for leveraging immigration for positive development outcomes. This has included providing advice on the governance of comprehensive immigration systems and linking development strategies for policy coherence within a country and across countries.

This report, How Immigrants Contribute to Thailand's Economy, *is another step forward. It builds upon comparable analyses for Thailand and nine other countries – Argentina, Costa Rica, Côte d'Ivoire, the Dominican Republic, Ghana, Kyrgyzstan, Nepal, Rwanda and South Africa – to present a greater understanding of immigration's economic impacts. The research team benefitted from close co-operation with governmental focal points as well as the Delegations of the European Union, the national ILO Offices and research partners in each country. The government's focal point in Thailand was the Ministry of Labour.*

The report examines how immigrants affect key segments of the labour market, workers' characteristics and human capital, and the contribution of immigration to sectoral and national value added. Different key components of the economy are explored through a combination of quantitative and qualitative methodologies. The report also analyses the political and historical context of immigration and suggests ways to maximise the impact of immigrants in different contexts through appropriate policy responses.

The report highlights the fact that the impact of immigration is not straightforward. It depends on the country context and economic conditions. However, any country can maximise the positive impact of immigration by improving policies to better manage and integrate immigrants so that they can invest and contribute to the economy where they work and live while staying safe and leading a fulfilling life. The report also provides a

basis for dialogue and policy guidance for development practitioners and policy makers who attempt to integrate immigrants into their economy and society for the benefit of both immigrants and native-born citizens.

Following the discussion on guidance for action with key stakeholders and policy makers to be held in Bangkok, the European Commission, the OECD Development Centre and the ILO look forward to continuing their co-operation with Thailand with a view to decent work for migrant workers and better economic and development outcomes.

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The rest of the project team provided significant contributions, including valuable comments, advice and feedback on previous versions of the report. Alexandra Le Cam, OECD Development Centre, and Hélène Lombard, ILO, provided administrative support for the project, including country missions and event organisation. Jill Gaston edited the report and the OECD Development Centre's publications team, led by Delphine Grandrieux and Henri-Bernard Solignac-Lecomte, turned the draft into a publication. The cover was designed by Aida Buendía.

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List of abbreviations

ARCM	Asian Research Centre for Migration
CGE	Computable general equilibrium
CLM	Cambodia, Lao People's Democratic Republic and Myanmar
ECLM	Assessing the Economic Contribution of Labour Migration in Developing Countries as Countries of Destination
EPR	Employment-to-population ratio
EU	European Union
FDI	Foreign direct investment
GDP	Gross domestic product
ILO	International Labour Organization
MOU	Memorandum of Understanding
NEET	Youth not in employment, education or training
NSO	National Statistical Office (Thailand)
OECD	Organisation for Economic Co-operation and Development
OSSC	One Stop Service Centre
THB	Thai baht
USD	United States dollar

Facts and figures of Thailand

(Numbers in parentheses refer to the OECD average)

The land, people and electoral cycle

Population (million)[f]	68.8	Official language	Thai
Under 15 (%)[f]	18 (18)	Form of government	Constitutional monarchy[ii]
Population density (per km^2)[f]	135 (37)	Last election	2011[iii]
Land area (thousand km^2) [f]	510.9[i]		

The economy

GDP, current prices (billion USD)[f]	406.8	Exports of goods and services (% of GDP)[e]	69.1 (28.5)
GDP growth[f]	3.2 (1.7)	Imports of goods and services (% of GDP)[e]	57.5 (28.0)
GDP per capita, PPP (thousands, current USD)[f]	5.9 (36.7)	GDP shares by sector (%)[e]	
Inflation rate[f]	0.2 (0.4)	Agriculture, forestry and fishing	8.7 (1.5)
General government total expenditure (% of GDP)[e]	22.3	Industry, including construction	36.4 (24.3)
General government revenue (% of GDP)[e]	22.4	Services	54.9 (74.2)

Well-being

Life satisfaction (average on 1-10 scale) [f]	6.1 (6.5)	Life expectancy[e]	75 (80)
Income inequality (Gini coefficient)[c]	38 (32)	Population with access to improved sanitation facilities (%)[e]	93 (98)
Gender inequality (SIGI index)[d]	0.10 (0.02)	Mean years of schooling[f]	8.3
Labour force participation (% of population ages 15+)[a]		Proportion of population under national minimum income standard (%)[d]	10.5
Total	75.7 (70.7)	Unemployment rate (%)[e]	0.2 (6.7)
Native-born	75.8	Youth unemployment rate (ages 15 to 24, %)[e]	1.0 (14.8)
Foreign-born	63.2	Satisfaction with the availability of affordable housing (% satisfied)[f]	88 (54)

Employment-to-population ratio (% of population ages 15+)[b]		Enrolment rates [d]	
Total	74.0 (55.2)	Primary (Net)	92 (96)
Native-born	73.6	Secondary (Net)	84 (89)
Foreign-born	83.0	Tertiary (Gross)	53 (70)

Notes: Data from a) 2000; b) 2010; c) 2013; d) 2014; e) 2015; f) 2016.
i) 513.1 if water surface is included. ii) Since 2014, Thailand has an interim military affiliated government. iii) General elections held in 2014 were declared invalid.

Sources: Central Intelligence Agency, The World Factbook 2017. Washington, DC *https://www.cia.gov/library/publications/the-world-factbook/index.html*; Gallup (2015), Gallup World Poll (database), Gallup Organisation; IMF, World Economic Outlook Database, International Monetary Fund, October 2017 edition, Washington DC; Minnesota Population Center. Integrated Public Use Microdata Series, International: Version 6.5. Minneapolis: University of Minnesota, 2017. *http://doi.org/10.18128/D020.V6.5*.; National Statistical Office, 2010 Population and Housing Census; OECD, SIGI Social Institutions and Gender index, *http://www.genderindex.org/*; UNESCO Institute for Statistics, Data Centre, *http://data.uis.unesco.org/*; World Bank, World Development Indicators (database), *http://data.worldbank.org/*, Washington DC.

Executive summary

Thailand has a long history of immigration and became a net immigration country in the early 1990s. Over the period from 2000 to 2010, the foreign-born population increased by a factor of ten from 263 000 to 2.5 million people. Consequently, debates about the costs and benefits of immigration have intensified, and various aspects of immigration have become the subject of research and policy discussions.

Thailand is one of the few middle-income countries which has an extensive literature on the impact of immigration. The current report contributes to this literature based on agreed methodologies that are applied across all ten partner countries. This report is also new in that nationally representative population census data are used to assess labour market impacts of immigrant work and the contribution of immigrant labour to GDP. The methodology was developed in the context of a joint OECD-ILO project, *Assessing the Economic Contribution of Labour Migration in Developing Countries as Countries of Destination*. The project was co-financed by the European Union's Thematic Programme on Migration and Asylum and implemented from August 2014 to January 2018. The project analysed several economic impacts – on the labour market, economic growth and public finance – of immigration in ten partner countries. The empirical evidence stems from a combination of quantitative analyses of primary and secondary data sources with qualitative analyses.

A national consultation seminar on 15 September 2015 launched the project's activities in Thailand. It was organised in collaboration with the Ministry of Labour, the Delegation of the European Union to Thailand, and the ILO Country Office for Thailand, Cambodia and Lao People's Democratic Republic.

The considerable contribution of immigration to Thailand's economy

The significant and increasing numbers of immigrants and registered immigrant workers suggest that immigration contributes greatly to the Thai economy. The analysis in this report focuses on two dimensions of their contribution: labour markets and economic growth. Notably, the foreign-born

labour force has raised the paid employment rate of the native-born population as well as their income per capita.

- **Labour market impact on native-born workers**:

  The analysis demonstrates that foreign-born and native-born workers have very different labour market outcomes. Immigrant workers are relatively young and active in many fast-growing occupations, which seems to confirm that immigration mostly responds to demand for labour. International immigration not only brings benefits in terms of employment opportunities for foreign-born individuals in Thailand, but it is also of importance to the Thai economy as it ensures a supply of young workers in the face of an ageing native-born population.

  It is important to consider whether the presence of foreign-born workers has benefited or harmed the employment opportunities of native-born Thai workers. In accordance with the literature on the labour market effects of immigration in Thailand, and in line with the findings in most partner counties, this report finds that foreign-born workers have no impact on national native-born employment levels. However, the presence of immigrants does affect the composition of employment, and in particular seems to increase the number of native-born workers in paid employment (i.e. the number of employees).

- **Concerns about immigrant work**:

  At the same time, concern exists about the effective protection of immigrant workers' rights. Many immigrants have elementary jobs, which accounted for almost 35% of employment (40% of paid employment) of immigrant workers in 2010. This percentage remains well below 30% in all other partner countries except Costa Rica and Kyrgyzstan. Such employment may have been induced by the poor economic situation in neighbouring countries, and some jobs may not have existed in the absence of a cheap immigrant labour supply, which is often vulnerable to exploitation.

- **Contribution to GDP and economic growth:**

  Immigrant workers are active in all sectors of the economy, and are particularly present in the industrial sectors. In 2010, one in every eight workers in manufacturing was an immigrant, and immigrant workers were also over-represented in construction as well as in some service sectors such as private household services.

  Given the sectoral distribution of workers and their productivity, the economic contribution of immigrant workers is estimated to range from 4.3% to 6.6% of gross domestic product in 2010, while they represented 4.7% of the employed population. In view of the relatively high employment rates of foreign-born workers, and their positive impact on native-born paid employment, it also seems likely that foreign-born workers have a positive effect on income per capita.

Policies to boost the economic contribution of immigration

Certain policies could help immigrants better integrate into and contribute to Thailand's economy. Thai authorities could reinforce the economic contribution of immigrants to the country by offering more accessible channels for regular immigration and developing integration mechanisms. Mainstreaming immigration into different sectoral policies, in particular labour market, education, investment and tax policies, could also enhance immigrants' contribution to Thailand's development. Mainstreaming would also contribute to the coherence of employment and immigration policies. Adequate representation of immigrant workers in trade unions could be instrumental in this context.

Monitoring of integration gaps is important, in particular with regard to the quality of employment. Such gaps may be reduced by policies aiming to diversify the employment of immigrants, for example skills recognition and skills development policies. These policies could also raise the economic contribution of immigrant workers if they would help strengthening the representation of immigrant workers in high productivity sectors such as business and financial services.

Raising awareness of immigrants' rights through information campaigns is important, together with the monitoring of labour standards in practice, as it may help reduce gaps between native-born and foreign-born workers, for example in terms of access to social benefits. Finally, sharing information on labour market needs with governments and recruitment agencies in countries of origin would allow for a more effective matching of supply and demand.

Policies should be based on regular and comprehensive data collection and analysis, which help better inform policy makers of the impact of immigration on the Thai economy. For example, there is a need to include data on nationality and place of birth in national surveys, and to regularly tabulate information accordingly.

Chapter 1

Immigrants' contribution to Thailand's economy: Overview and policy implications

This chapter provides an overview of the full report. It first describes the project on Assessing the Economic Contribution of Labour Migration in Developing Countries as Countries of Destination (ECLM). It then addresses the economic impacts of immigration on the country as assessed by the literature and the project. The chapter presents the report's key results regarding the foreign-born population in Thailand, such as its effects on the country's ageing population and how employment patterns of the foreign-born compare to those of the native-born. The impact of foreign-born workers on the labour market outcomes of native-born workers is also explored. The chapter ends with policy implications related to how immigrants affect Thailand's labour market and economy.

Thailand's sound economic growth and relatively high wages have attracted many migrant workers from its neighbouring countries since the 1990s. As immigration has been at the centre of many policy discussions, it is important to ask what happens when such migration takes place. Do foreign-born workers influence the labour market outcomes of the native-born? Do foreign-born workers displace and/or lower the wages of the native-born? What are the beneficial impacts of immigration?

This report aims to provide empirical evidence on the economic role of immigration in Thailand for the benefit of policy makers and the broader public. It was written in the context of a joint OECD Development Centre – International Labour Organization project on **Assessing the Economic Contribution of Labour Migration in Developing Countries as Countries of Destination (ECLM)** (Box 1.1).

The report comprises five chapters. This chapter offers an overview of the project in the context of which this report was prepared and presents the key results on the economic contribution of labour immigration in Thailand. Chapters 2 and 3 provide the policy context and descriptive analysis of immigration in Thailand. Chapters 4 and 5 empirically investigate the impacts of immigration on the labour market (Chapter 4) and economic growth (Chapter 5).

This national report can be read in conjunction with the project's comparative report. While the current report provides a more in-depth discussion of the economic contribution in Thailand, the comparative report presents an overview of the findings across the project's ten partner countries. It seeks to explain patterns in these outcomes based on the characteristics of the countries and their immigrant populations.

Box 1.1. **What is the added value of the project?**

In August 2014, the OECD Development Centre and the International Labour Organization (ILO) launched a project, co-funded by the EU Thematic Programme on Migration and Asylum, on **Assessing the Economic Contribution of Labour Migration in Developing Countries as Countries of Destination** (ECLM). This project, implemented from 2014 to 2018, aims to analyse the economic impact of immigration in developing countries across a variety of dimensions.

Box 1.1. **What is the added value of the project?** *(cont.)*

The OECD, ILO and EU launched the project in order to address a dual reality. Around 30% of international migrants (UN, 2016) and 25% of all working-age international migrant workers (ILO, 2015a) currently live in low- and middle-income countries, and yet little is known about how their economies are affected by these immigrant populations. This stands in stark contrast to the depth of literature on the economic impacts of immigration in high-income (usually OECD) countries (Kerr and Kerr, 2011; Bodvarsson and Van den Berg, 2013; and Böhme and Kups, 2017). This missing analysis would not be an issue if the existing research results on OECD countries applied equally to non-OECD countries, but they may be different due to a different context. A large number of immigrants in developing countries come from within their region while many OECD countries host immigrants from the entire globe. Moreover, the economic and policy context in which these immigrants integrate into the labour market is different. As an example, the share of informal employment[1] tends to be more elevated in lower than in higher income countries. Both of these factors likely contribute to impacts of immigration that differ between developed and developing countries. Understanding these differences could help low- and middle-income countries formulate immigration and integration policies that maximise the development potential of immigration.

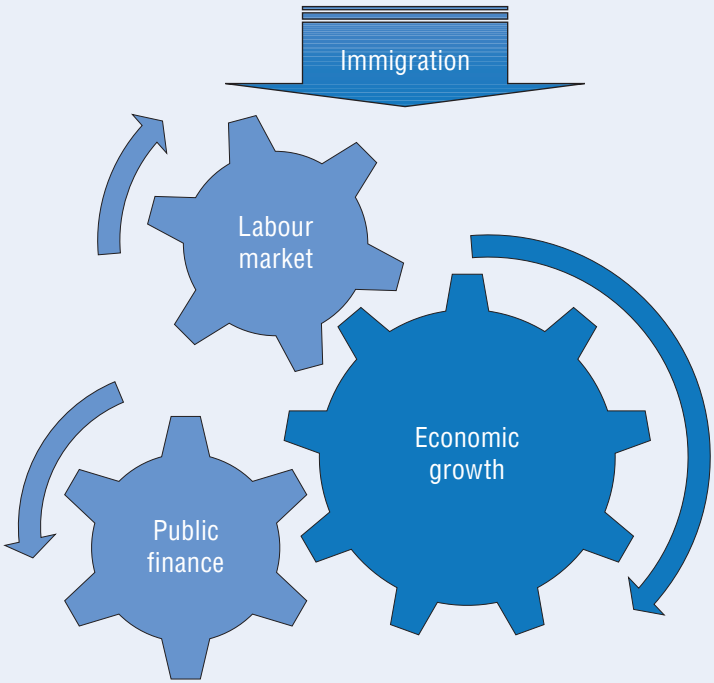
The project worked with ten partner countries: Argentina, Costa Rica, Côte d'Ivoire, the Dominican Republic, Ghana, Kyrgyzstan, Nepal, Rwanda, South Africa and Thailand. They were selected based on their interest in the project, a substantial (but varying) share of immigrants and a relatively low share of humanitarian immigrants. By working with a diverse group of countries in terms of their geographic location and economic and immigration history and characteristics, the project aims to provide an indication of the range of possible economic impacts of immigration in developing countries. It therefore addresses not only stakeholders in the ten partner countries, but equally policy makers and other interested parties in other low- and middle-income countries with mid-sized to large immigrant populations.

The key economic effects of immigration analysed in the project are the employment and wage outcomes of the native-born population, enterprises and gross domestic product (GDP) and the current fiscal contribution (Figure 1.1).

The methodologies to analyse these various impacts generally follow those used in other contexts and published in the academic literature. Leading migration researchers provided their perspectives on suitable methodologies at an international expert meeting that took place at the OECD in Paris on 24-25 February 2015.[2] Data constraints sometimes made it impossible to analyse all aspects in every partner country. In some countries, the relationship between immigration and a given economic outcome were analysed, but the results may be less robust than is the case in OECD countries. Each country report and the integrated report provide detailed descriptions of their methodologies.

Box 1.1. **What is the added value of the project?** *(cont.)*

Figure 1.1. **Economic contributions analysed in the project**



1. Informal employment encompasses the following situations: own-account workers and employers in their own informal sector enterprises, own-account workers producing solely for their household, contributing family workers, members of informal producers' cooperatives and employees holding informal jobs (that is, if their employment is not subject to for example national labour law) (Hussmanns, 2004).
2. *http://www.ilo.org/global/topics/labour-migration/events-training/WCMS_344708/lang--en/index.htm*

Impact of immigration assessed by prior literature and contribution of the project

Immigration has a long history in Thailand, driven by economic motives but also other factors including crises and conflicts in neighbouring countries. Thailand was transformed from a net emigration country in the 1970s and 1980s to a net labour immigration country by the early 1990s. Since the 1980s, Thailand has experienced long periods of rapid economic growth and declining rates of poverty. The most important engine of this growth has been the industrial sector, specifically manufacturing. Thailand became an upper-middle-income country in 2011, but in more recent years experienced lower growth rates suggesting the emergence of a middle-income trap.[1]

Due to the prospering of the economy in recent decades and the increase in income disparities between Thailand and most of the neighbouring countries, the country has become increasingly attractive as a destination for migrant workers. Pull factors such as a tight labour market, increasing wages and better living standards attracted a growing immigrant workforce particularly in the years leading up to the Asian financial crisis. Furthermore, improved infrastructure in the Mekong sub-region stimulated migration flows, as did the expanding industry and service sectors.

Even though much of the literature on the impact of immigration concerns high-income economies, Thailand is one of the few middle-income countries which have an extensive literature on this topic, and this section highlights some of the most relevant studies. In 1995, the impact of immigration on the Thai economy at the macroeconomic level was quantified through the application of a computable general equilibrium model (Sussangkarn, 1996). In that year, when 750 000 immigrants constituted 2.2% of the Thai labour force, it was estimated that immigrants increased Thai GDP by 0.5% (see Box 1.2 for the definition of an immigrant) (Sussangkam, 1996). Additionally, it was found that the removal of foreign labour would result in an increase of real wages for Thai workers with a primary education or less, while real wages for workers with more than a primary education would fall. These results suggest immigrants are substitutes for low-educated native-born workers. A more recent study indicates a contribution of immigrant workers averaging 2.3% of national income from 1995 to 2005 (Pholphirul and Rukumnuaykit, 2009). This study also argues that employing immigrant workers increases the country's competitiveness, with immigrant unit labour costs being lower at an equal level of productivity as Thai workers.

A later paper examined a range of economic effects of immigrant workers on the Thai economy, based on three methodologies: (1) simulation of a macroeconomic model; (2) a growth accounting method; and (3) an econometric method (Pholphirul and Kamlai, 2014). These authors found a positive effect of immigrant work on output (around 0.75-1 percentage point of real GDP growth) and employment. However, the effect on employment was negative in the agricultural sector, which was attributed to the substitution of Thai workers by immigrants. In other sectors, employment of unskilled immigrants resulted in more employment of skilled Thais (in turn leading to employment gains at the national level). The work also showed a negative impact of immigrant labour on native-born individuals' wages, although these effects were very small in services. Furthermore, it was found that an increase of the immigrant share in employment contributed to a reduction of labour productivity in the manufacturing and service sectors.

Various studies illustrate potential beneficial effects of immigrant work in terms of cost competitiveness. An example relates to the examination

of the shrimp production sector in which unskilled immigrant workers are concentrated in the shrimp-peeling jobs (Kura, Revenga and Hoshino, 2004). The study attributes the leading international position of Thailand in this sector partly to low wages, which is facilitated by the extensive use of immigrant workers. A further study examined the impact of immigrant workers from Myanmar on Thai clothing factories in Tak province (a major Thailand-Myanmar cross-border province) (Kohpaiboon, 2009). There are a number of Thai export-oriented small and medium-sized enterprises in the clothing industry, which have established factories near the border aiming to employ low-wage immigrant workers from Myanmar, contributing to cost competitiveness.

Pholphirul (2012) argues that even though Thai employers clearly receive short-term benefits from hiring low-skilled immigrant workers (in that their wage costs decrease and a pool of workers is easily maintained), this can discourage the industry to move up the value chain and achieve higher productivity. A study estimating the relationship between immigration and investment in innovation concluded that employing immigrants increases production levels of all firms (Pholphirul, Kamlai and Rukumnuaykit, 2010). Nevertheless, scepticism remains as low-wage employment of unskilled immigrants, especially in labour-intensive industries, inhibits investment in technology and slows productivity growth (Pholphirul, Kamlai and Rukumnuaykit, 2010). The study found that a 10% increase in the employment of unskilled immigrants reduces a firm's probability to invest in research and development by approximately 4%.

The current report contributes to the existing literature based on agreed methodologies that are applied across all ten partner countries. Although similar approaches have been used in Thailand before, this report is new in that nationally representative population census data are used to assess labour market impacts of immigrant work, and this information is used to assess the economic contribution of immigrant labour. Unfortunately, data constraints did not allow for an analysis of the impact of immigrant work on public finance or an analysis of potential effects of immigrant workers at the enterprise level (see Annex 1.A1 on the data used in this report).

Immigrations' significant economic contribution in Thailand

The findings of the report suggest that immigrant workers significantly contribute to the Thai economy (for a definition of immigrants, see Box 1.2). The impact of foreign-born individuals participating in the labour market on the paid employment rate of native-born workers is positive. Also, the overall impact on the income per capita of the native-born is likely to be positive. Concerns continue to exist with regard to the effective protection of immigrant workers' rights, in view of the high share of low-skill occupations among immigrant workers in comparison with other countries, including partner countries.

Box 1.2. **Definitions of immigrants**

Immigrant and foreigner status

No universal definition of an immigrant really exists. The most commonly cited definition accords with the 1998 Recommendations on Statistics of International Migration: "any person who changes his/her country of usual residence, [...] in which an individual normally spends his daily period of rest" (United Nations, 1998). An individual who enters the nation for up to three months is not considered as an immigrant, but rather a visitor. Beyond three months, the individual will be termed a short-term immigrant for the next nine months. Only after one year of legal residency in the country the immigrant will be termed a long-term migrant.

In line with this definition, the Population Division of the United Nations' Department of Economic and Social Affairs estimates international migrant stocks by using the country of birth as a reference (United Nations, 2016). This report adopts this definition, as it is widely used in analytical work and as data are available in all countries covered by the project. International immigrants are therefore individuals who were born in another country than the country in which they live. This definition does not take into account the citizenship of people.

Some people are born abroad but are not foreigners, while others are born in their country of residence but do not have its citizenship. This often relates to the national legislations in terms of citizenship and naturalisation. Four different scenarios in terms of country of birth and citizenship are illustrated in Table 1.1:

- In countries that favour *jus sanguini*, it is more difficult for the children of immigrants born in the country to get access to the citizenship of their country of birth (**native-born foreigners**).
- In countries where *jus soli* prevails, children of immigrants can become citizens of their country of birth more easily. They are therefore **native-born citizens**, but are often referred to as the second generation.
- In some countries, and depending on the naturalisation rules, individuals born abroad can become citizens of their country of residence after a certain number of years. They are **foreign-born citizens**.
- While most people born in their country of residence are also citizens of that country, in most cases the foreign-born are also foreigners (**foreign-born foreigners**). This is because i) they do not stay long enough to acquire citizenship, ii) the legislation in their country of origin does not allow for dual citizenship or iii) the rules in their host country are too strict.

Box 1.2. **Definitions of immigrants** *(cont.)*

Table 1.1. **Differences between immigrant and foreigner status**

		Country of birth	
		Born in the country of residence	Born in a foreign country (immigrants)
Citizenship	***Citizens of the country of residence***	Native-born citizens	**Foreign-born citizens**
	Citizens from another country (foreigners)	Native-born foreigners	**Foreign-born foreigners**

Labour immigrants

While labour immigration refers to immigration for employment in the destination country as the primary purpose, different ways to measure it exist. Strictly speaking, immigrants who have a work permit in the destination country are labour immigrants. A less strict definition would be those who immigrate for work or employment-related opportunities. Information on the reason for immigration is not always available, even in high-income countries (OECD/European Union, 2014). Yet, some partner countries (e.g. Argentina, Costa Rica, the Dominican Republic, and Thailand) have such information.

This report refers to labour immigration in a broad sense by taking from labour force surveys or population censuses those immigrants who are looking for work or are employed. Such a definition reflects the fact that labour immigration often drives other types of immigration flows, such as family immigration, and may be partly driven by those flows. Non-labour immigrants by a strict definition, for instance humanitarian immigrants and students, may also enter the labour market at some point and contribute to the destination country's economy in similar ways that labour immigrants do.

Citizenship is another criterion to define labour immigration. For example, the International Convention on the Protection of the Rights of All Migrant Workers and Members of Their Families defines the term migrant worker as "any person who is to be engaged, is engaged or has been engaged in a remunerated activity in a State of which he or she is not a national" (United Nations, 1990). The present report distinguishes between different definitions of labour immigrants as appropriate.

It is important to recognise the differences that may result from using different definitions. Further insights into such differences in Thailand are provided in a report by Habiyakare and Poonsab (2016). To define internationally agreed concepts and standards, an ILO working group on labour immigration statistics was established following the 19th International Conference of Labour Statisticians (ICLS) in 2013. The working group will report at the next ICLS meeting in 2018.

Box 1.2. **Definitions of immigrants** *(cont.)*

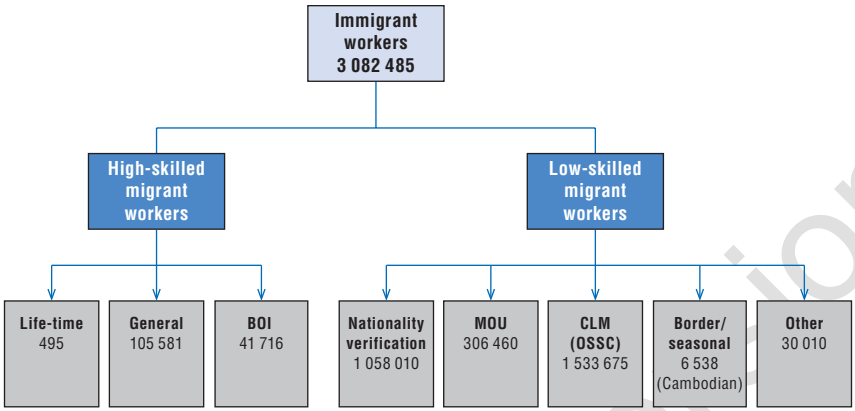
In this report, two main sources of data were used: administrative and census data. Administrative data capture persons registered in administrative processes, while the census data aim at achieving universal coverage of individuals present on the reference date. The data acquired through administrative procedures are used in Chapter 2, which provides insights into some of the common channels of immigration in Thailand as well as policies and procedures. Administrative data usually concern foreign citizens who are born abroad. The remaining chapters, on the other hand, are mostly based on the census data which allow for a comprehensive analysis of international immigrants and their characteristics.

The foreign-born population increased by a factor of ten over a decade

Over the period from 2000 to 2010, both the Thai-born and the foreign-born populations increased, but the latter did so by a factor of ten. According to population census data, while the native-born population increased from 60.6 million to 65.9 million, the foreign-born population increased from 263 000 to 2.5 million. More recent census or survey data on the foreign-born population are not available, although information on registered immigrants is regularly compiled by the government. Registered immigrant workers are likely to coincide to a certain extent with foreign-born workers, but exclude for example foreign-born workers who are Thai citizens.

Registered immigrant workers, who numbered just over 3 million in 2016,[2] can be categorised into eight groups. Three groups represent high-skilled immigrant workers, while the remaining five are low-skilled (Figure 1.2). High-skilled immigrant workers can use three types of work permits: permanent, temporary and temporary permits related to investment. Very few permanent permits are issued, but close to 106 000 general permits and almost 42 000 permits for high-skilled workers which are related to investment had been issued in 2016. Two countries, the People's Republic of China and Japan, account for over 50% of high-skilled immigrants in Thailand. Far more low-skilled immigrant workers enter the country through other channels: nationality verification, Memorandum of Understanding (MOU), One Stop Service Centre (OSSC), or as border/seasonal workers. The majority of low-skilled immigrants obtain regular status through the nationality verification and OSSC channels, jointly totalling approximately 2.6 million workers. These immigrant workers originate from Cambodia, the Lao People's Democratic Republic (Lao PDR) and Myanmar.

Figure 1.2. **Legislation allows for various permits**
Immigrant workers in Thailand by type of permit, March 2016



Note: BOI = under Board of Investment; MOU = Memorandum of Understanding; CLM = Cambodia, Lao PDR and Myanmar; OSSC = One Stop Service Centre.

Source: OFWA (2016), *Report on Foreign Workers in the Thai Kingdom*, *http://wp.doe.go.th/wp/index.php/en/*.

With the growth of immigration flows, labour immigration emerged as a major policy issue in the 1990s. Immigration policies in Thailand have been criticised for "lagging behind reality", and policy makers appear to be struggling to develop an adequate framework for the governance of migration flows. This is in part due to the diverging perceptions of immigration by employers and workers, while at the same time policy makers aim to govern migration flows in such a way that the economy benefits. In practice, policies seem rather ad hoc and piecemeal, and the need for better management and better protection of immigrant workers has often been emphasised.

Foreign-born workers can help mitigate the impact of population ageing

The employed population rose to 39.3 million in 2010 for the native-born, while increasing from 144 000 in 2000 to 1.9 million for the foreign-born. This allowed the employment-to-population ratio to increase dramatically for foreign-born workers, reaching a level of 83%, approximately ten percentage points higher than the rate of their native-born counterparts (Figure 1.3). In addition to the rapid increase of the foreign-born population, the age composition changed. Over the ten-year period, the average age of foreign-born workers decreased by 5.0 years, while that of native-born workers increased by 3.5 years. Furthermore, levels of income and educational disparities between native-born and foreign-born youth are such that native-born youth are in a better position to choose their employment, while foreign-born youth accept the jobs that remain. These factors in addition to the changing demographic structure of Thailand also suggest that the foreign-born youth are countering the ageing of the Thai workforce by filling some of the labour gaps that are emerging.

Figure 1.3. **Foreign-born employment has increased rapidly for both men and women**
Differences between Thai-born workers and foreign-born workers (percentage points), 2000 and 2010

Note: The figure shows the rate for Thai-born workers minus the rate for foreign-born workers for each of the following three indicators disaggregated by sex: LFPR = labour force participation rate; EPR = employment-to-population ratio; UNR = unemployment rate. For the LFPR and UNR, data for 2010 was not available.

Source: Authors' own work based on Minnesota Population Center (2015), *Integrated Public Use Microdata Series*, *http://doi.org/10.18128/D020.V6.5* and (National Statistical Office, undated), *Population and Housing Census 2010 Microdata*, *http://web.nso.go.th/en/survey/lfs/lfs_main.htm*.

Employment patterns of foreign-born and native-born workers have become increasingly different

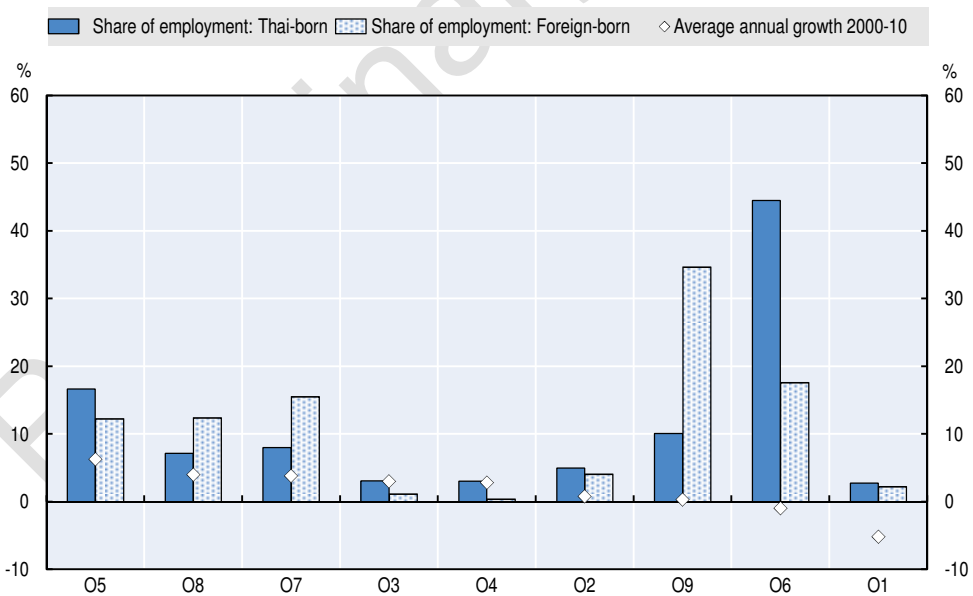
The sectoral compositions of foreign-born and native-born employment are different. From 2000 to 2010, a large decline in the foreign-born employment share was witnessed for agriculture, while an almost equal rise was seen in the industrial sector. This is in line with the standard development discourse, which suggests that with economic growth, a decline in own-account work in agriculture will give way to salaried employment in the industry and service sectors. In fact, in 2010, immigrant workers benefited from a higher share of wage employment, and were relatively concentrated in industrial sectors. The largest increase was witnessed in the manufacturing sector, which suggests that this sector is to an important extent fuelled by immigrant labour. In 2010, one in every eight workers in this sector was an immigrant. This is largely attributed to demand for labour in successful export-oriented industries, which have been important for Thailand's economic growth (Harima, 2012).

Divergence of sectoral employment patterns of foreign-born and native-born workers between 2000 and 2010 is evident in the increase in the dissimilarity index from 0.13 to 0.33. The rise in the index, which summarises differences in employment shares between foreign-born and native-born workers, was largely due to the increasing difference in the foreign-born employment share of the agricultural and manufacturing sectors.

Foreign-born workers are over-represented in some of the fastest growing occupational groups, such as plant operators and craft workers, which suggests that the demand for labour is an important factor explaining the role of immigrant workers in Thailand (Figure 1.4). Nevertheless, comparisons between new immigrants and young entrants demonstrate that this is not true for all immigrants (Figure 3.15). Furthermore, elementary occupations accounted for almost 40% of paid employment for immigrant workers in 2010, despite the fact that the share of such occupations in employment was stagnant. Such employment may have been induced by facilitating immigration and labour policies, and driven by the economic reality in neighbouring countries; some jobs would not have existed in the absence of a cheap immigrant labour supply, which is often vulnerable to exploitation.

Figure 1.4. **Foreign-born workers are over-represented in some of the fastest growing occupational groups**

Share of employment by major occupational group and origin, 2010 (%)



Note: Sectors are ordered according to the average annual growth between 2000 and 2010.

Source: Calculations Authors' own work based on Minnesota Population Center (2015), *Integrated Public Use Microdata Series*, *http://doi.org/10.18128/D020.V6.5* and (National Statistical Office, undated), *Population and Housing Census 2010 Microdata*, *http://web.nso.go.th/en/survey/lfs/lfs_main.htm*.

Differences in the occupational distribution of foreign-born and native-born workers also increased. The occupational dissimilarity index, which summarises differences in occupational employment shares between native-born and foreign-born workers, rose from 0.26 to 0.37 over the 10-year period from 2000 to 2010. This increase was largely driven by the diverging employment shares of the native- and foreign-born workforce in two groups of occupations: craft and related trades workers and elementary occupations.

Educational attainment of workers is rising, but less so for foreign-born workers

Trends in the Thai economy generally point to the need for workers with a secondary level of education. From 2000 to 2010, the shares of both foreign- and native-born workers with less than a primary education decreased, but the remaining levels rose. While the immigrant workers had a larger increase in primary education compared to native-born workers (35 and 20 percentage points, respectively), the opposite was witnessed when considering secondary and tertiary education. However, the overall share of foreign-born workers with a tertiary education remained above that of native-born workers by 3.4 percentage points. These increases in educational attainment may partly be driven by supply, while also being linked to a prospering economy and competition. Although both foreign-born and native-born workers have become better educated, the strong presence of immigrant workers with low levels of education is not in accordance with the high rate of growth in medium-skilled occupations.

Over-qualification is low in comparison with under-qualification

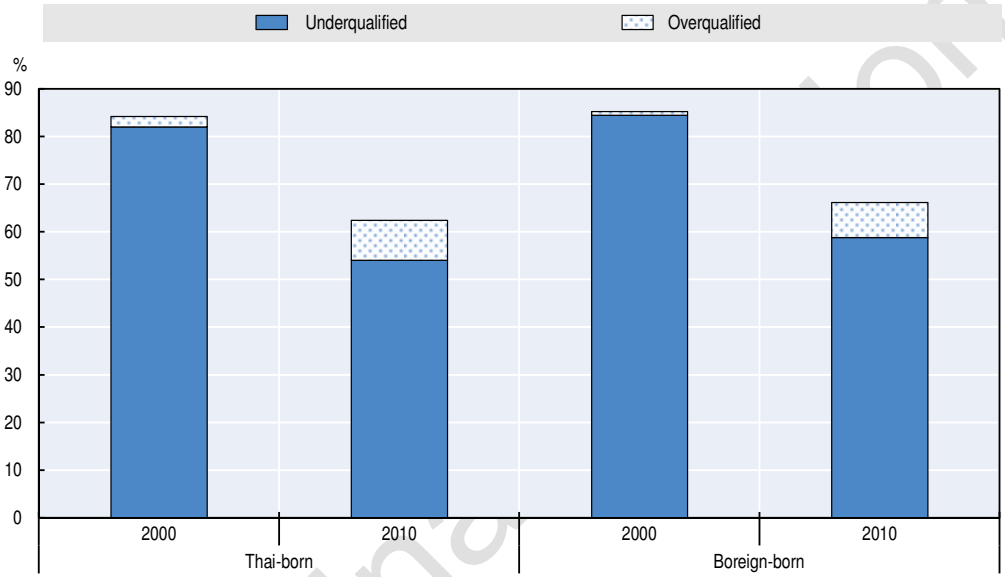
According to the normative measure of skills mismatch, which matches occupations and levels of education, levels of under-qualification were high, yet declining; while those of over-qualification were low and rising (Figure 1.5). In fact, though under-qualification declined for both native- and foreign-born workers, the decline was larger for the former, while absolute levels remained higher for the latter (58.8% compared to 54% in 2010). With regards to over-qualification, a similar conclusion is drawn: while the increase was larger for foreign-born workers, the absolute level was higher for the native-born employed (8.4% compared to 7.3% in 2010).

Although over-qualification is not higher for foreign-born workers in general, it may be an issue in particular occupations. For example, the incidence of over-qualification for clerks was 65.2% for foreign-born workers, compared with 49.9% for Thai-born workers. When juxtaposing the position of Thai-born workers to foreign-born workers, it can be observed that for many low- and medium-skilled occupations in which native-born workers are over-qualified,

the foreign-born exhibit higher rates of under-qualification. These findings seem consistent with a situation in which many foreign-born workers perform less attractive jobs.

Figure 1.5. **Under-qualification is widespread and slightly higher for foreign-born workers**

Skills mismatch by origin (%)



Source: Authors' own work based on Minnesota Population Center (2015), *Integrated Public Use Microdata Series*, *http://doi.org/10.18128/D020.V6.5* and (National Statistical Office, undated), *Population and Housing Census 2010 Microdata*, *http://web.nso.go.th/en/survey/lfs/lfs_main.htm*.

Labour market trends have been different for foreign-born workers

An important question is to what extent the presence of immigrant workers has been beneficial or detrimental to the employment opportunities of native-born workers, which is addressed in detail in Chapter 4 using a formal econometric approach. In contrast to many other low- and middle-income countries, various empirical studies have been undertaken on this topic in Thailand. Previous findings suggest that the impact of immigrants on the labour market is small. Several studies find a negative effect of immigration on wages, although no consensus is reached in regard to the magnitude of this effect. According to economic principles, the negative effect on the wages of the native-born would suggest a positive effect on employment; this is indeed suggested by some available studies.

The inflow of immigration can be considered as an increase in the supply of labour in the country of destination and can be analysed based on two

dimensions – education and experience – both of which are emphasised by human capital theory. When taken in combination, education and experience jointly determine so-called "skill cells", or groups of workers with similar human capital, which are at the centre of the empirical approach adopted in this chapter. As the working-age population can be sub-divided into 4 educational levels and 8 levels of years of experience, it was possible to identify 32 groups of workers. Subsequently, the impact of immigration on labour market outcomes, including the employment-to-population ratio and the proportion of those employed in paid employment, is measured by the variations that exist in the proportion of immigrants across groups of workers.

At the descriptive level, a rise in the employment rate of native-born individuals can be observed over time, especially for those with a primary education or less. For native-born workers that attained a secondary education or higher, a decline in the employment rate can be seen at the edges of the experience range due to cyclical unemployment at the start of careers and early-retirement towards the end. Immigrant workers on the other hand tend to have a relatively low level of education, as witnessed in Chapter 3, and do not experience the pattern of decline at very low and high levels of experience. Furthermore, when regionally disaggregating the immigrant share of the working-age population, the largest rise in shares was witnessed for those regions bordering Cambodia, Lao PDR and Myanmar. In contrast to total employment, a different trend was seen for paid employment of native-born workers. Even though the paid employment rate increases as their level of education rises, the proportion of workers in paid employment fell between 1990 and 2010. Furthermore, it was found that workers are less likely to remain in paid employment until retirement.

Immigration has a positive impact on native-born paid employment rates

In accordance with the literature on the labour market effects of immigration in Thailand, no negative impact of the presence of foreign-born workers on the employment levels of the native-born is found at the national level (Table 1.2). Furthermore, the labour market impact of immigration on paid employment of the native-born is significant and positive. Looking at men and women separately at the national level, results suggest that it is mostly native-born men who are affected positively by the presence of foreign-born workers, even when accounting for the presence of women on the labour market. Finally, the strength of the relationship between foreign-born shares and labour market outcomes of native-born workers increases considerably when looking at only the foreign-born who arrived in the last five years, suggesting that those most recently arrived tend to have the strongest impact on the employment of native-born workers.

Table 1.2. **Immigrants have an impact on the employment rates of the native-born**

Summary of the regression results on the relationship between native-born labour market outcomes and foreign-born shares

Variables	All workers National	All workers Regional	Men	Men (controlling for women)	Women	New immigrants
(1) Employment rate of Thai-born workers	o	+	o	o	o	o
(2) Paid employment rate of Thai-born workers	+	o	+	+	o	+

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

Source: Calculations for the years 1990 and 2000 based on population census data from the Minnesota Population Center Integrated Public Use Microdata Series (IPUMS) (2015); calculations for the year 2010 based on data from the 2010 Population and Housing Census (National Statistical Office, undated).

The contribution of immigrant work to GDP is significant

Assuming that the economic contribution of immigrant workers is broadly related to the number of workers, it is estimated that the current economic contribution of immigrant workers ranges from 4.3% to 6.6% of GDP, compared to a share in employment of 4.7% in 2010. Although foreign-born workers tend to have relatively low-skilled positions, depressing their direct contribution to the Thai economy, they are also less likely to be employed in agriculture, which on average raises their contribution. An econometric model is used to illustrate the strong connection of the immigrant workforce with production in the Thai economy, and therefore with levels of income.

Conclusions and policy implications

The analysis in this report confirms the significant economic contribution of immigrant workers in Thailand, in particular to GDP. An empirical assessment of the impact of foreign-born workers on income per capita cannot be made with certainty, but the high share of the employed in the foreign-born population, together with the positive impact of foreign-born workers on the Thai-born paid employment rate, suggests this impact is positive.

This contribution could be enhanced by accessible channels for regular immigration and adequate protection of immigrants, in accordance with the rights-based approach agreed by ILO's tripartite constituents in 2004 (ILO, 2014). The labour market and broader economy would also benefit from the integration of foreign-born workers in terms of the quality of work. Although foreign-born workers are well-integrated in terms of access to employment, they remain concentrated in low-skill occupations. This is true if a comparison is made with native-born workers, but also with foreign-born workers in other partner countries (OECD/ILO, forthcoming).

Given that immigrant workers are more vulnerable to violations of rights, raising awareness of immigrants' rights through information campaigns is important, and so is the monitoring of labour standards in practice. Such actions may, for example, help to reduce gaps between native-born and foreign-born workers in terms of access to social benefits.

Occupational diversification, facilitated by for example appropriate skills recognition and skills development policies, would enhance the economic contribution of foreign-born workers. In this regard, it is important to mainstream immigration into different sectoral policies, such as labour market, education, investment and tax policies. Immigration policies cannot be isolated from sectoral policies, and mainstreaming immigration policies helps to improve the coherence of employment and immigration policies.

One way to better match immigration with labour market needs in Thailand would be to undertake regular and comprehensive data collection and analysis to inform employment and immigration policies, and use the analysis to guide programmes related to skills training, employment services and immigration management. Such exercises would also constitute a basis to inform quotas and compile occupation shortage lists (ILO, 2015b). Information could be shared with governments and recruitment agencies in countries of origin, to allow for a more effective matching of supply and demand.

An important recommendation was made in the context of the on-going ASEAN TRIANGLE project, which established a regional database with information on labour immigration (ILO, 2015c). The recommendation concerned adding a question on nationality or citizenship to labour force surveys. Indeed, few sources in Thailand include such information, which is necessary for common definitions of immigrants. More information would facilitate continuous analysis of the economic contribution of immigrant work in Thailand.

Notes

1. The term 'middle income trap' is used to describe a situation in which rapidly growing middle-income economies at some point in time economically stagnate and fail to reach high-income status (Aiyar et al., 2013).
2. The number refers to all immigrant workers that are registered according to OFWA (2016), not only those registered in the year 2016.

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ANNEX 1.A1

Data used in the report

Much of the analysis of the impact of immigration in Thailand is based on population censuses and surveys conducted by the National Statistical Office (NSO). These are made available directly to users by the NSO or through the Minnesota Population Center Integrated Public Use Microdata Series (IPUMS). The population census contains information about the country of birth, age, sex, education and work status of an individual. However, there is no information on wages or income.

The use of information from household surveys for the analysis in this report is limited by the fact that they do not include information on country of birth. Nevertheless, some labour force survey information was used in Chapters 3 and 5.

The Ministry of Labour, Office of Foreign Workers Administration, Department of Employment and the Ministry of Interior, Department of Provincial Administration provided access to administrative information on immigrant workers. This information was used in Chapter 2, but was not appropriate for use in the empirical analysis in Chapters 3 and 4 given the lack of detail needed for this analysis.

In addition, the report relies on macro data from national and international sources, including from the United Nations Department of Economic and Social Affairs (on immigrants) and from the World Bank (Development Indicators).

Chapter 2

The immigration landscape in Thailand: Patterns, drivers and policies

This chapter presents the economic and policy context of labour immigration in Thailand. It starts with an overview of the macroeconomic environment and the rapid socioeconomic development the country has experienced, in particular during the 1980s and early 1990s. Subsequent sections provide the immigration context and consider the main groups of immigrants, together with a brief discussion on the perception of immigrants and the governance of immigration.

With the growth of immigration flows, labour immigration emerged as a major policy issue in Thailand only in the 1990s. Although the country experienced immigration flows for much of its history, the employment of greater numbers of immigrant workers sparked discussions about the costs and benefits of immigrant work, and more generally the economic effects and impact of immigrant workers on the Thai economy and society. As some groups of immigrant workers are vulnerable to violations of rights and exploitation, concerns have been raised about the conditions of work of immigrant workers. At the same time, policy makers have often struggled to develop an adequate governance framework particularly for low-skilled immigration.

This chapter uses information on immigrant workers registered as such in Thailand, alongside information derived from population censuses on the foreign-born population. Information on country of birth is used throughout this report as the main criterion to identify a person as an immigrant, and for this reason population census information is essential (later chapters mostly rely on the latter for the empirical analysis).

A weakening economic and social performance

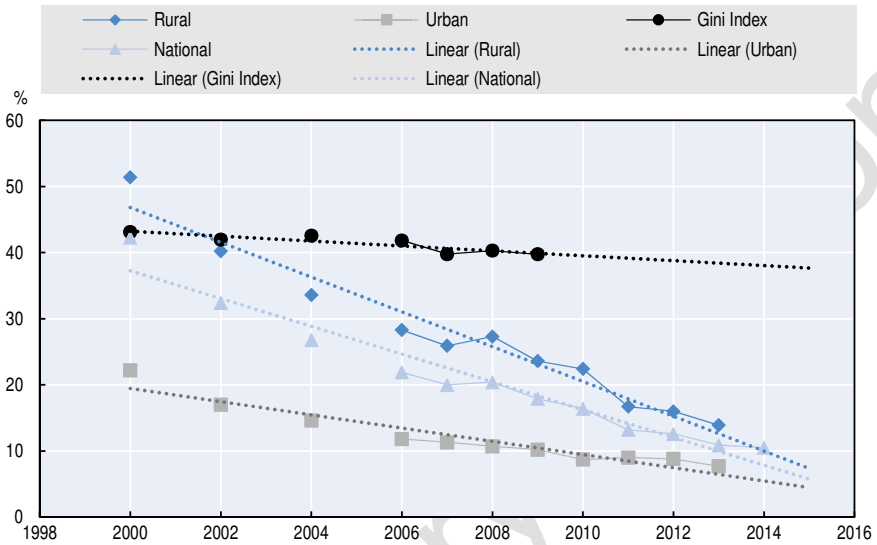
Thailand has experienced various periods of rapid growth in which the economy grew on average around 10% annually, especially in the late 1980s. In fact, during the period from 1970 to 1990, gross domestic product (GDP) quadrupled and per capita income tripled. Economic progress has had an impact on poverty, as the poverty headcount ratio stood at 42% in 2000 and has declined by over 30 percentage points since that time (Figure 2.1). In addition, the country made much progress in improving access to health and education services and expanded social safety nets. Thailand became an upper-middle-income country in 2011 with GDP amounting to USD 343 billion resulting in a GDP per capita of USD 5 138.[1] Even though the gap between rural and urban areas in terms of poverty diminished, poverty continues to be more prevalent in rural areas, where around 80% of the poor reside. The Gini Index, a measure of inequality, has not shown much change in the 2000s (Figure 2.1).

The most important engine of the economic success has been growth in industry, in particular the manufacturing sector. Growth of manufacturing was supported by the 1984 devaluation of the Thai baht that made exports more competitive and foreign direct investment into Thailand more attractive. Value added in industry increased from 18% of GDP in 1960 to 37% in 2014, while the relative contribution of agriculture declined and has accounted for no more

than around 10% of GDP in recent years; value added in services also increased somewhat (Figure 2.2).

Figure 2.1. **Poverty is declining, but inequality persists**

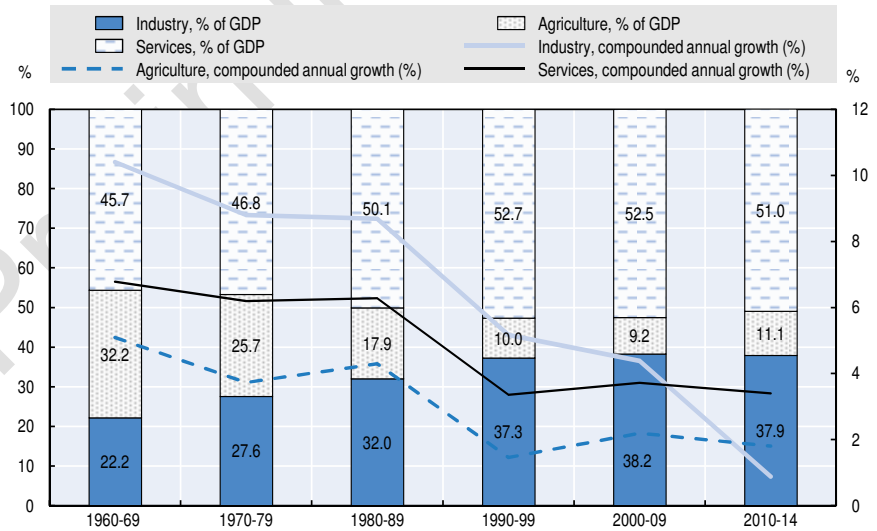
Poverty headcount ratio by area (%) and Gini Index (%)



Source: World Bank (2016a), *World Development Indicators*, *https://data.worldbank.org/data-catalog/world-development-indicators*.

Figure 2.2. **Growth rates in all sectors have declined**

Average ten-year value added by sector: Annual % growth (right axis) and % of GDP



Source: World Bank (2016a), *World Development Indicators*, *https://data.worldbank.org/data-catalog/world-development-indicators*.

Average growth across ten-year intervals decreased sharply for all three broad sectors, but mostly so for industry (Figure 2.2). Compared to both agriculture and industry, the service sector has been more stable, experiencing an average growth rate of 5.1% from 2010 to 2014 and accounting for 52.7% of GDP in 2014. While the role of agriculture in economic terms has diminished, the sector still employs over 40% of workers.

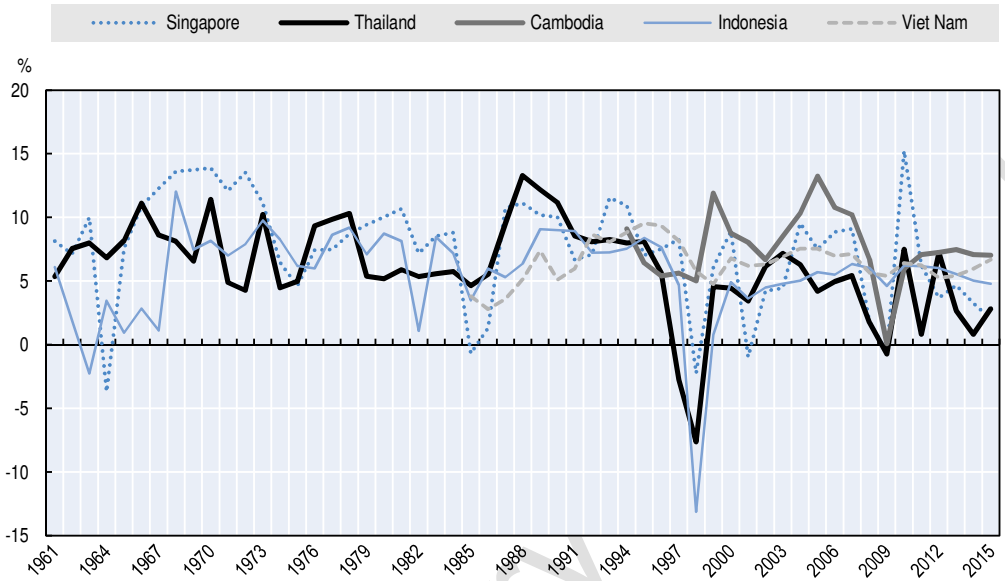
The Asian financial crisis in 1997 resulted in the rise of poverty in both rural and urban areas of Thailand, but more so in rural areas. Due to this crisis, Thailand experienced negative economic growth for the first time in decades: at -2.8% in 1997 and -7.6% in 1998. Furthermore, unemployment levels rose from 0.9% in 1997 to 3.4% in 1998. However, the economy managed to bounce back with an average growth of 5.2% over the period 1999 to 2005, allowing for renewed job creation and poverty reduction.

Nevertheless, Thailand has witnessed relatively low and volatile growth rates since the Asian crisis, particularly in more recent years (Figure 2.3). Political unrest, dependence on labour-intensive manufactured exports, and unmet labour market needs in terms of education and training have contributed to this sluggish growth performance (Greig, 2016). More than 70% of Thailand's GDP derives from exports (World Bank, 2016a), most of which are very labour intensive. The lower cost of goods, which is partly due to a large immigrant workforce, aids in increasing the competitiveness of Thailand's exports in global markets (Rukumnuaykit, 2009).

Given the weak economic performance in more recent years, concerns have been rising as to whether Thailand has become stuck in a middle-income trap (Jitsuchon, 2012). Escaping from the trap would require a deliberate move away from a model based on cheap labour and imported technologies. It would instead focus on improvement of the human and physical capital base, and incentives to promote investment in research, development, infrastructure as well as social protection systems (Jitsuchon, 2012). Additionally, Thailand could stimulate growth by promoting a more inclusive model, which includes the expansion of trade, the stimulation of domestic consumption as well as the improvement of public service quality (World Bank, 2016b). Based on this notion, Thailand approved the long-run Infrastructure Development Plan to improve competitiveness through the development and expansion of logistic networks and infrastructure. Policies to achieve the long-run economic goals laid out by the recent 20-year strategic plan, aiming to reach high-income status, include public infrastructure projects, reform of state-owned enterprises and tax reforms (World Bank, 2016b).

Figure 2.3. **Thailand's economic growth has been relatively low and volatile in recent years**

Annual GDP growth rate (%)



Source: World Bank (2016a), *World Development Indicators*, *https://data.worldbank.org/data-catalog/world-development-indicators*.

Immigration's long history and rapid increase since 2000

Thailand has long been a destination of migration flows from nearby countries. Cambodian, Chinese, Indian and Malay people have been working in the Thailand for centuries while, particularly during the 19th century, Europeans settled in Thailand both as local traders and as part of global commercial networks.[2]

In more recent times, war and civil conflicts throughout the region have forced large numbers of people to seek refuge in the relatively stable environment of Thailand. For example, many people from what is now Viet Nam came to Thailand during the 1950s and again in the 1970s.[3] During the latter period, significant numbers also entered Thailand from the Lao People's Democratic Republic (Lao PDR), while hundreds of thousands of persons fled from Cambodia to Thailand between the 1970s and the early 1990s. Starting in the 1980s and until the 2000s, increasing numbers of people also came to Thailand to escape the armed conflict in Myanmar (Huguet and Punpuing, 2005).

Thailand started to purposefully employ increasing numbers of immigrants from the late 1970s onward, when demand from the expanding industrial and service sectors could not be met by the local workforce because of limited expertise (Sciortino and Punpuing, 2009). Immigrants helped match the demand for highly skilled professional and executive workers mainly in foreign and national corporations concentrated in greater Bangkok (Sciortino and Punpuing,

2009). The primary countries of origin have been those with considerable investment in Thailand, which included not only the People's Republic of China (hereafter "China", including Chinese Taipei and Hong Kong) and Japan, but also the European Union (especially the United Kingdom and the United States (Sciortino and Punpuing, 2009).

Immigration has also been stimulated by the growing economy and relatively high incomes in Thailand (Paitoonpong and Chalamwong, 2012). In the course of the 1990s, Thailand increasingly became a destination of migration from neighbouring countries. In 2010, the majority of immigrants were from Myanmar (67% among Asian countries), followed by immigrants originating in Lao PDR (10%) and Cambodia (7%). The same conclusions can be drawn when disaggregating by gender, while the largest differentials are seen for India and Lao PDR. Lao women are largely employed as domestic workers and therefore represent the majority of migration out of Lao PDR (Anderson, 2016). Furthermore, immigration from China/Hong Kong and Japan decreased dramatically between 2000 and 2010. The drop equated to 18.1 percentage points in the former, while the latter exhibited a 5.7 percentage point drop.

Table 2.1. **The majority of immigrants originate from Myanmar, followed by Laos and Cambodia.**

Country of origin as a percent of total Asian immigration by sex, 2010 (%)

Countries	2010 (%)		
	Total	Men	Women
Myanmar	66.9	67.5	66.5
Lao People's Democratic Republic	9.8	7.0	13.1
Cambodia	6.9	7.0	6.8
China, including Hong Kong	4.4	4.9	3.8
Japan	4.0	4.5	3.5
India	2.6	3.2	1.9
Pakistan	0.7	0.8	0.5
Philippines	0.7	0.6	0.8
Nepal	0.5	0.6	0.4
Pacific	0.4	0.8	0.1
Bangladesh	0.3	0.5	0.2
Viet Nam	0.3	0.2	0.4
Chinese Taipei	0.3	0.2	0.3
Other Asian countries	2.1	1.9	1.6

Source: Authors' own work based on National Statistical Office (undated), *Population and Housing Census 2010 microdata*, *http://web.nso.go.th/en/survey/lfs/lfs_main.htm*.

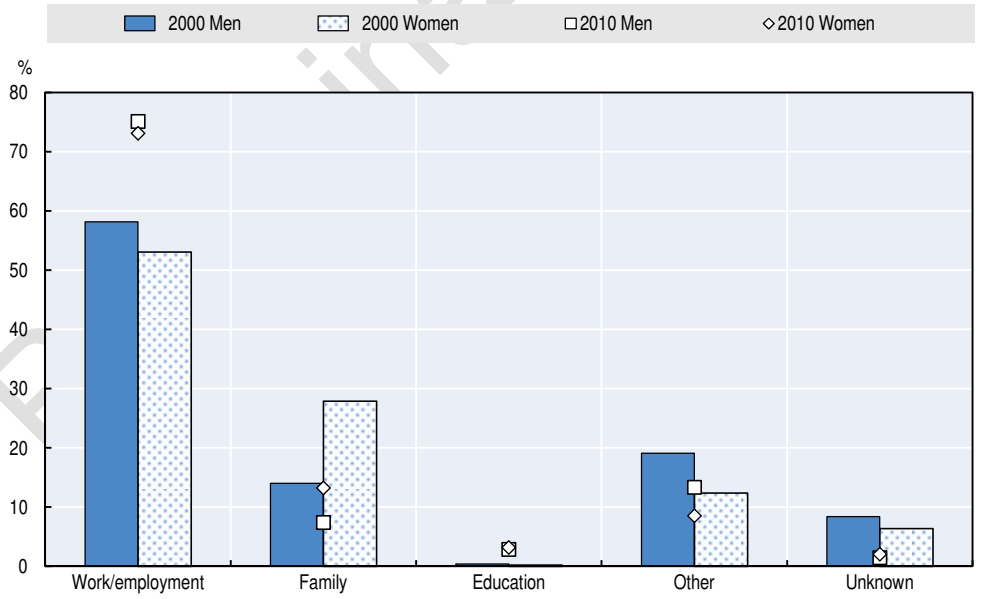
Before the Asian financial crisis, a tight labour market, increasing wages and better living standards proved major pull factors for low-skilled labour. The income disparity between Thailand and neighbouring countries continues to be an important explanatory factor of migration flows today. For example, while GDP per capita amounted to USD 1 095 in Cambodia, USD 1 794 in Lao

PDR, and USD 1 204 in Myanmar in 2015, it stood far higher in Thailand at USD 5 977 (World Bank, 2016a). Where available, wage data show the same picture. For example, average monthly wages in Lao PDR were USD 119 in 2012, compared to USD 357 in Thailand (ILO, 2014). In addition, the slowing growth of Thailand's workforce and improvements in infrastructure linking the Mekong sub-region are major drivers of cross-border movement of labour into Thailand (Huguet, Chamratrithirong and Richter, 2011). These pull factors are partly an explanation for the drastic change in the number of immigrants between 2000 and 2010. While the number was relatively low in 2000 at 262 642, it increased by a factor of 10 over the following decade, reaching 2 538 810 immigrants in 2010. Such a drastic increase suggests that the two immigrant populations could differ substantially in terms of human capital and labour market characteristics, which will be analysed further in Chapter 3.

Over the ten-year period, a change in the reason for immigration could also be seen. Work- or employment-related opportunities were the primary reason for immigration in both 2000 and 2010; immigration due to family-related issues declined over the same time period (Figure 2.4). Disaggregation by gender shows that men are more likely to come to Thailand for work-related reasons than their female counterparts.

Figure 2.4. **Migrant men and women primarily immigrate to Thailand for work-related opportunities**

Reason for immigration by sex, 2000 and 2010 (%)



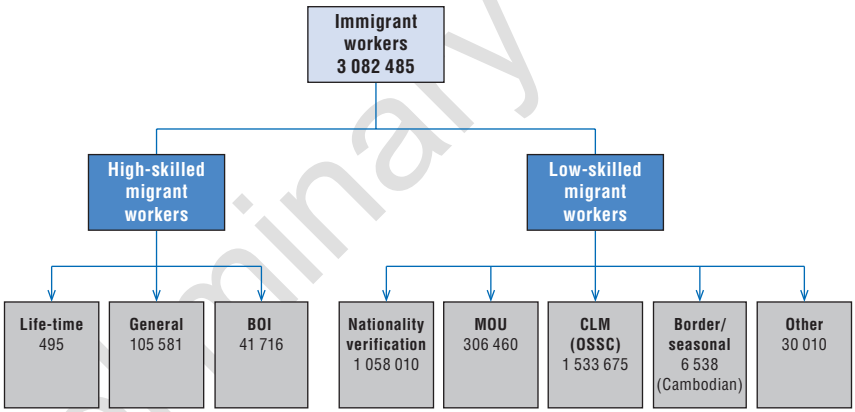
Source: Authors' own work based on Minnesota Population Center (2015), *Integrated Public Use Microdata Series*, *http://doi.org/10.18128/D020.V6.5* and (National Statistical Office, undated), *Population and Housing Census 2010 Microdata*, *http://web.nso.go.th/en/survey/lfs/lfs_main.htm*.

Labour immigration became a major policy issue in the 1990s

During 1990s, labour immigration increasingly became a major policy issue. This was partly due to the size of the immigrant workforce, but also because of divergent views on the economic need for immigrant workers and the impact that employing these workers had on the economy. Employers pointed to labour shortages for some types of work and in some areas of the country, while workers had concerns that competition between immigrant workers and Thai workers would drive down wages.

Thai legislation allows for various groups of immigrant workers. In accordance with the Immigration Act 1979 and Alien Employment Act (AEA) 2008 (or earlier legislation if immigrants arrived before 2008), immigrant workers can be broadly classified into eight groups (Figure 2.5).[4] Following the information provided by the Ministry of Labour, three of these groups consist of mostly high-skilled workers, and the remaining five groups consist of predominantly low-skilled workers (OFWA, 2016).

Figure 2.5. **Legislation allows for various permits**
Immigrant workers in Thailand by type of permit, March 2016



Note: BOI = under Board of Investment; MOU = Memorandum of Understanding; CLM = Cambodia, Lao PDR and Myanmar; OSSC = One Stop Service Centre.
Source: OFWA (2016), *Report on Foreign Workers in the Thai Kingdom*, *http://wp.doe.go.th/wp/index.php/en/*.

Among high-skilled workers, immigrants make up only a small number: 495 immigrant workers with permanent resident status, 106 000 with temporary work permits and another 42 000 on similar permits related to investment (as at March 2016). Immigrant workers on temporary permits work in occupations stipulated by regulations under Article 9 of the AEA 2008. These workers usually possess a high level of skill and/or occupy senior positions, and are often sent from enterprises investing in Thailand that have corporate headquarters outside the country, possibly in joint ventures with Thai companies. In recent

years, foreign firms promoted by Thailand's Board of Investment (BOI) have also been allowed to employ limited numbers of unskilled immigrant workers (BOI, 2015), and the same applies to foreign investors operating in Thailand's Special Economic Zones (Ratanapan, 2015).

The largest group of immigrant workers are registered at the One Stop Service Centres. These workers used to be registered centrally by the Ministry of Labour, but Service Centres have been established in almost every province of Thailand since 2014 in accordance with employers' need for a convenient and inexpensive registration system. These centres are under the responsibility of the Department of Provincial Administration, Ministry of Interior, and allow for the regularisation of immigrant workers. Around 1.5 million immigrants fall in this group. These workers are mostly from Cambodia, Lao PDR and Myanmar (CLM), with men constituting a slight majority over women (53% and 47%, respectively).

Another large group of immigrant workers fall under an international Memorandum of Understanding (MOU, also in accordance with Article 9 of the AEA 2008). This is the main legal channel for low-skilled labour immigration. An MOU was signed with Lao PDR in 2002 and with Cambodia and Myanmar in 2003, and new MOUs on labour co-operation were signed with Cambodia in 2015 and with Lao PDR and Myanmar in 2016 (Laws, Lautenschlager and Baruah, 2017).[5] As of March 2016, there were 306 460 CLM immigrants under MOUs, and 60% were male. Based on the MOUs, a process was also started in 2007 to regularise immigrants from these countries who had been registered before. As of March 2016, there were more than 1 million workers under this category of "nationality verification" (NV), and again male immigrants represented the majority (57%). In addition, workers are allowed from countries bordering Thailand to work on a temporary basis in the border area. As of March 2016, there were 6 500 border workers from Cambodia. The last group of immigrant workers consists of workers in the process of deportation or repatriation, and workers from ethnic minorities in Thailand who have not (yet) been provided with Thai citizenship. In March 2016, there were about 30 000 workers in this group.

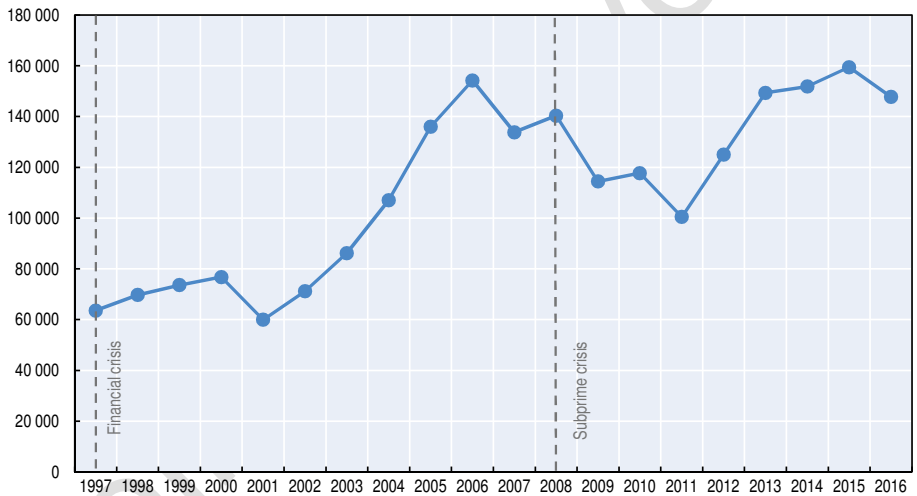
Apart from the more than 3 million documented workers, a significant number of immigrant workers are undocumented. This number was at least a million in 2007 (Huguet, Chamratrithirong and Richter, 2011). Thailand has tried to more closely control and regularise illegal immigration through the issuance of MOUs with its neighbouring countries, amnesty provided by the cabinet, nationality verification as well as One-Stop-Service Centres for registration. The majority of undocumented immigrants are known to take up low-skilled employment in occupations that are low paid and classified as "3D work" or work that is dirty, dangerous or difficult (Rukumnuaykit, 2009; Walsh and Ty, 2011).

Numbers of high-skilled immigrants are increasing and numbers of registered immigrants demonstrate large fluctuations

The number of high-skilled immigrant workers has shown an upward trend since the Asian financial crisis in the second half of the 1990s, although this trend was interrupted by the subprime crisis in the second half of the 2000s (Figure 2.6). High-skilled immigrants (consisting of the first three groups in Figure 2.5), are mainly from a limited number of countries (Figure 2.7). Immigrants from Japan, which is the largest foreign direct investor in Thailand, and to a lesser extent China dominate the number of immigrants over time. In 2015, more than 36 000 high-skilled immigrants from Japan and almost 19 000 from China together accounted for more than half of the number of high-skilled immigrants. A large share of these immigrant workers were in managerial or professional/technical positions, in particular in manufacturing (28%), education (17%) and trade (16%).

Figure 2.6. **The number of high-skilled immigrant workers is on an upward trend**

Number of high-skilled immigrant workers, 1997-2016

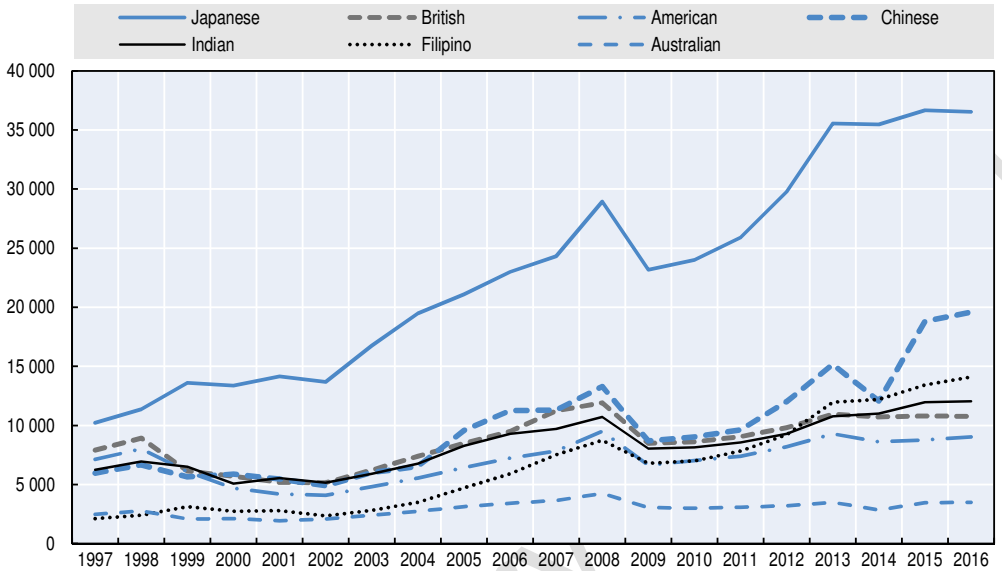


Source: Sciortino, R. and S. Punpuing (2009), *International Migration in Thailand* 2009 and OFWA (2016), *Report on Foreign Workers in the Thai Kingdom*, *http://wp.doe.go.th/wp/index.php/en/*.

Trends in the number of registered low-skilled immigrants demonstrate large changes over time (Figure 2.8). These changes reflect various factors, including registration and regularisation policies.[6] For example, policy changes in 2014 resulted in the mass registration of 1.6 million immigrant workers and the spike in 2016 (Figure 2.8).[7] The top three industries that absorbed most of the low-skilled immigrants registered by the Ministry of Labour in 2011 were farming and related activities, construction and related activities, and fisheries and related activities (Figure 2.9, Panel A). More recent data on immigrant workers falling under MOUs and NV demonstrate that these industries have remained important for immigrants from CLM countries (Figure 2.9, Panel B).[8]

Figure 2.7. **Workers from China and Japan constitute the largest share of high-skilled immigrants**

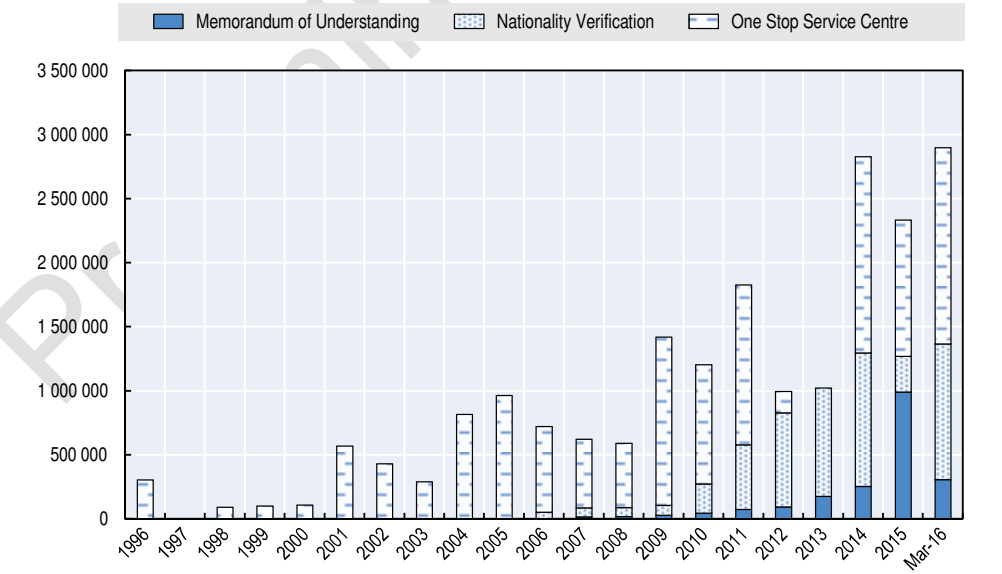
Trends in high-skilled immigrant workers by country, 1997-2016



Source: Sciortino, R. and S. Punpuing (2009), *International Migration in Thailand* 2009 and OFWA (2016), *Report on Foreign Workers in the Thai Kingdom*, *http://wp.doe.go.th/wp/index.php/en/*.

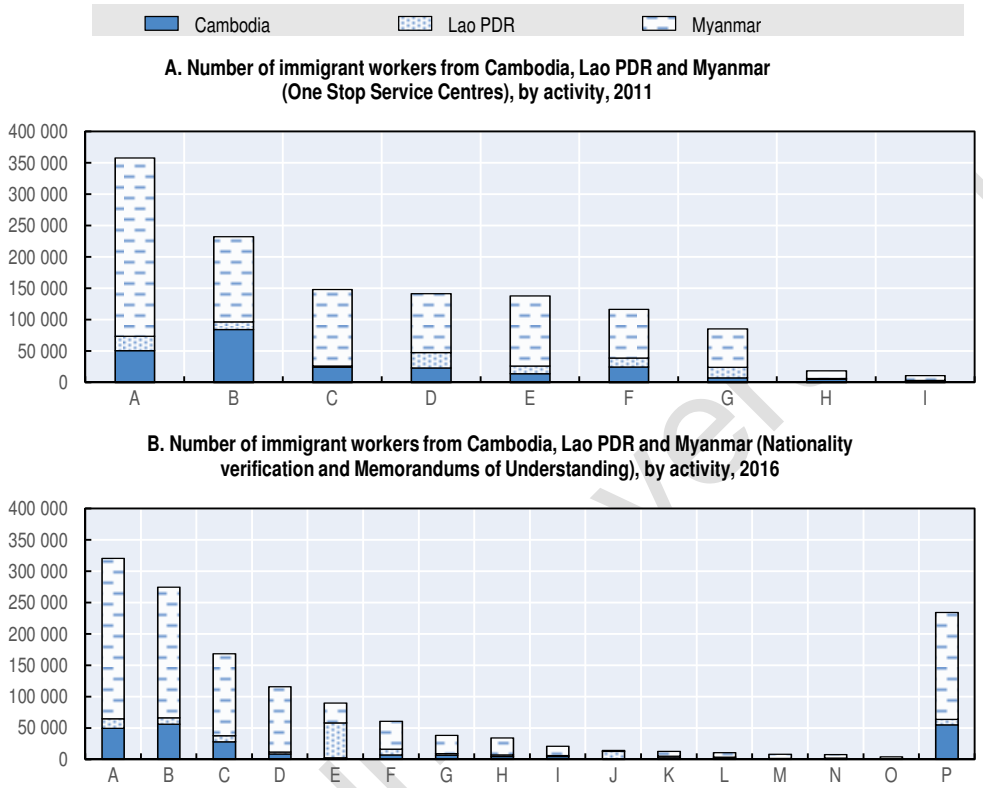
Figure 2.8. **Numbers of registered immigrants show large annual fluctuations**

Trends in immigrant workers from Cambodia, Lao PDR and Myanmar, 1996-2016



Source: Sciortino, R. and S. Punpuing (2009), *International Migration in Thailand* 2009 and OFWA (2016), *Report on Foreign Workers in the Thai Kingdom*, *http://wp.doe.go.th/wp/index.php/en/*.

Figure 2.9. **Farming, construction and fishery are important industries for immigrant workers**



Source: Panel A: OFWA (2012), *Prawat kwam penma kiewkap karn kuapkum karn tam ngan kong kon tang dao*. Panel B: OFWA (2016), *Report on Foreign Workers in the Thai Kingdom*, *http://wp.doe.go.th/wp/index.php/en/*.

Even though most low-skilled workers are from Cambodia, Lao PDR and Myanmar, some are from other countries which are not necessarily captured in the legal processes. For example, some workers from Viet Nam are employed in Thailand, including high-skilled workers with a temporary work permit, and low-skilled workers. Until recently, the latter could enter the country with a passport which allows them to stay in Thailand for up to 30 days (for arrival by air; and 15 days for arrival by land), although they also needed a work permit. Only in 2015, the Government of Thailand approved measures that allow for the registration of Vietnamese workers at the OSSCs,[9] while a Memorandum of Understanding between Thailand and Viet Nam was signed in the same year (IOM, 2016).

Perceptions regarding the economic contribution of immigration

The economic impact of immigration varies depending on how or to what extent immigrants are integrated into the economy. The contribution of highly skilled immigrants in Thailand should be seen in the context of the investment that is made by companies. For example, much immigration from Japan is linked to this country's foreign direct investment (FDI), which accounts for around a third of all FDI in Thailand.[10] FDI adds to national investment, creates employment for both foreign-born and native-born workers and contributes to the stock of knowledge and competitiveness of Thailand. The transfer of technology is also part of the arrangements of the Thai Board of Investment, where each year Thai workers go to Japan for skills training in the context of bilateral exchange programmes.

The economic context and impact of immigration from Cambodia, Lao PDR and Myanmar is different. Migration from these countries is not directly linked with investment, and immigrants are typically low-skilled. Nevertheless, immigrant labour from these countries contributes to the output of various industries (see also Chapter 5). It has been argued that immigrant workers in some cases have prolonged the life of Thai industries which had been under the threat of extinction because of high labour costs and/or labour shortages (Athukorala, Manning and Wickramsekara, 2000).

Industries absorbing most of the low-skilled immigrants, such as agriculture, fishery and construction, have also been among sectors in which employers have often highlighted the need for immigrant workers. For example, a study in 2000 by the Asian Research Centre for Migration (ARCM) of Chulalongkorn University found that the need for immigrant workers, according to a survey of employers, was mostly limited to these three sectors (cited in Martin, 2007). The same study also found that, again according to employers surveyed, Thai workers should be paid more than immigrant workers, and the same views were brought forward by policy makers, Thai workers and even immigrant workers themselves. At the same time, Martin (2007) notes that employers in some provinces complained that Thai workers did not work as "diligently" as immigrants.

The attitudes of employers in Thailand often reflected that immigrants did not deserve the same rights as Thai workers, leading to discrimination and exploitation (Pholphirul et al., 2010; Paitoonpong et al., 2012). In particular, most employers in domestic work, agriculture, fishing, fish processing, and manufacturing prefer young immigrant workers as they are "easier to control" or willing to work in "difficult, dangerous, low-paid and largely unprotected work" (Pearson et al., 2006). Such attitudes vary starkly from those towards Japanese immigrant workers in Thailand, in contrast to the attitude and perception on immigrants from CLM countries. Japanese companies, schools, hotels and restaurants are common, especially in Bangkok. Thai youth enjoy

and consume Japanese cultural products such as Japanese music, fashion, animated television and films, games and food (Toyoshima, 2011). A survey conducted by Pew Research Center shows that 81% of Thai people have favourable views of Japan, higher than for China, India, Pakistan and the US (Pew Research Center, 2014).

Foreign-born workers are likely to be paid lower wages than native-born workers

In line with popular belief, several studies have found that immigrants are paid less than native-born workers. For example, survey results from the ARCM at Chulalongkorn University indicate that immigrants are not treated equally in terms of wage compensation. According to the study, immigrants were being paid, on average, around 70% as much as Thai workers in 2000 (see Pholphirul et al, 2010). Similarly, a study by Chalamwong (2007) found that immigrant workers' wage rates were less than Thai workers' rates, while a more recent study of the fishing sector showed that the salary range for Cambodian and Myanmar fishers was less than half of the average for Thais in 2010 (ILO, 2013).

Undocumented immigrants are among those most vulnerable to rights violations and exploitation since their status often means that they are unable to report abuse (Archavanitkul and Hall, 2011). Undocumented immigrants may be subject to arrest and deportation, and unscrupulous employers may use threats in order to make them agree with sub-standard wages or conditions of work. A study of public attitudes towards immigrant workers found that in Thailand a distinction is often made between regular and irregular immigrants, who are seen as "deserving" and "undeserving", respectively (Tunon and Baruah, 2012). This study also revealed that the majority of respondents did not think that immigrant workers in a regular or documented situation and national workers should be treated equally. Undocumented immigrants may also face high wage penalties; one study found that undocumented immigrant workers from CLM were paid at least 50% less than the minimum wage (Paitoonpong et al., 2008).

Both documented and undocumented immigrants may be viewed with suspicion in terms of competition for jobs or resources. Such perceptions are more prevalent in urban areas, despite the fact that immigrants are more likely to be employed in 3D jobs which are shunned by most Thais (Sunpuwan and Niyomsilpa, 2012).

Governance of immigration: The search for an adequate immigration policy framework

During the 1990s, business groups often claimed that immigrant workers were needed to reduce skills shortages, and registration policies were introduced to accommodate low-skilled workers. However, such policies were criticised

as rather ad hoc and piecemeal, and analysts pointed to the need for better management as well as better protection of immigrant workers (Jitsuchon, 2012). The Asian economic crisis in the late 1990s resulted in stricter immigration policies, with a view to the creation of more employment opportunities for native-born workers who had lost their jobs in the crisis. But policies were soon relaxed again as employers argued that Thai workers were not available for jobs usually taken by immigrants. Concerns were also voiced that expelling immigrant workers when large numbers of Thai workers were emigrating might tarnish Thailand's international image. When the debate about economic benefits of immigrant labour started to gain momentum, policy makers continued struggling to develop an adequate immigration policy framework (Paitoonpong and Chalamwong, 2012; Sevilla and Chalamwong, 1996).

As part of the creation of such a framework, bilateral, regional and multilateral agreements on labour immigration were signed based on the skill level of immigrant workers. As indicated previously in this chapter, the MOUs are an important instrument to manage immigration, but it should also be noted that these instruments were developed to an important extent in response to the concerns of the National Security Council of Thailand. As such, the process is focused on the prevention of irregular immigration, with less attention on labour market needs and the protection of rights of immigrants. The procedures for recruitment and placement under the MOU agreements have been characterised as administratively heavy and complex, and many immigrants do not see the benefits of having legal status (Harkins et al., 2013; ILO, 2015 and 2017a). For high-skilled immigration, Thailand has concluded ASEAN Mutual Recognition Arrangements (MRAs) facilitating trade among the Association of Southeast Asian Nations (ASEAN) member states for professional individuals that are approved by the corresponding authorities. Each MRA is signed for a specific profession and in principle allows for the mobility of high-skilled workers within the ASEAN region (ILO, 2014).[11] In practice, there have been delays in carrying out the arrangements (ADB, 2017).

Thailand's 11th Economic and Social Development Plan (2012-16) highlighted the need to develop the workforce to have skills in accordance with the structure of an increasingly knowledge-based economy. The use of foreign labour including both high- and low-skilled workers should be adequately managed and regulated in this context; this includes the maintenance of a database of immigrant workers and the provision of social protection for immigrant workers (NESDB, 2011). While the 11th Plan was supposed to guide immigration policies, many studies have concluded that policy measures to promote orderly immigration of low-skilled immigrants and to stem irregular immigration have not been effective. It has also been argued that low-skilled labour immigration policies have lagged behind reality (IOM, 2011; Rukumnuaykit, 2009). Major policy issues in recent years continue to be the promotion of legal recruitment, the

regularisation of irregular or undocumented immigrants, and the prevention of irregular immigration.

In terms of legislation, the Alien Employment Act 2008 replaced the Alien Employment Act 1978 in order to create an improved basis for labour immigration management. Elements of the act include the definition of the categories of immigrants eligible for engaging in temporary employment and the establishment of a list of occupations that immigrant workers are allowed to engage in. The AEA 2008 also regulates the hiring of low-skilled and semi-skilled immigrant workers from CLM, and allows for the employment of cross-border contract workers in areas adjacent to the borders (IOM, 2011).

Progress has been made with regard to immigrant worker rights

In principle, the Labour Protection Act 1998 applies equally to native-born workers and immigrant workers, thus providing a legal basis for equal pay, minimum wages, occupational safety and health, hours of work, over-time, protection against dismissal, and so on. However, the Act has not always been enforced for both immigrant and Thai workers. Some sectors that are important for immigrant workers such as fishing and domestic work used to be excluded (IOM, 2011), but a ministerial regulation on the fishing industry was published in 2014,[12] while regulation of domestic work was approved in 2012. The latter extends some rights under the Labour Protection Act to domestic workers.[13] In contrast to the majority of countries recognizing the right to freedom of association for migrant workers (ILO, 2017b), immigrant workers in Thailand cannot join trade unions, and are also not allowed to found unions.

Although there are no special programmes supporting the integration of immigrants, changes have been made in regular programmes to accommodate immigrant workers in the areas of social security, education and health care. Thailand has ratified Convention No. 19 – Equality of Treatment (Accident Compensation), and four main social protection schemes exist: the Social Security Act (1990), the Workmen's Compensation Act (1994), the National Education Act (1999) as well as the Ministry of Public Health Announcement on Health Examinations and Insurance for Migrant Workers from Myanmar, Lao PDR, and Cambodia (2009). While all schemes extend, in principle, to the immigrant population (Table 2.2), immigrants are not always able to exercise their right to benefits due to various reasons including the lack of employer compliance to pay into funds, discrimination, as well as the choice to avoid wage deductions (IOM, 2014).[14] For documented immigrant workers that are registered in the Social Security System, benefits including unemployment and pension benefits can be gained through a monthly 5% salary deduction.[15] However, many immigrant workers are not registered in this system.[16] In other words, although progress has been made, considerable gaps with regards to benefit accessibility for immigrant workers remain.

Table 2.2. **Social protection schemes for immigrant workers exist, yet not all immigrants can exercise their right to benefits**

Social protection schemes for immigrant workers in Thailand

Legal status	Entitlements	Application
Migrant (Memorandum of Understanding) Migrant (completed Nationality Verification)	Social Security and Workmen's Compensation Funds*	Compulsory (registration and monthly worker/employer matching contributions of 5% required for Social Security Funds and registration and employer contribution of 0.2-1% for Workmen's Compensation Fund)
Registered migrant (through regularisation process)	Compulsory Migrant Health Insurance Scheme	Compulsory (enrolment fee of THB 2 800)
Irregular migrant		Optional (enrolment fee of THB 2 800)

Note: *Excludes immigrants that are employed in the informal sector regardless of their legal status (includes those working in fishing, agriculture, forestry, animal husbandry, domestic work and other sectors).

Source: IOM (2014), Thailand Migration Report 2014, *https://thailand.iom.int/thailand-migration-report-2014*.

With regard to education, in 2005, the Cabinet of Thailand took the decision to make primary and secondary education available to all individuals residing in Thailand, irrespective of their legal status. This decision was subsequently implemented by the Ministry of Education, giving immigrant children an equal opportunity with regards to educational attainment. In fact, the children of immigrants (both documented and undocumented) can continue their education up to the 12th grade in public schools, including vocational and specialised schools. Furthermore, in 2015, the Ministry of Public Health initiated a new health policy for immigrant workers, which ensured that those not part of the Social Security System could gain access to health insurance, non-emergency health care, public preventative health care as well as public emergency health care.

Conclusions

Thailand's economic history has been characterised by lower and more volatile economic growth since the Asian economic crisis. This and the fact that immigrant work has become an increasingly important feature of the country since around 2000 have contributed to debates about the costs and benefits of immigrant work.

This chapter shows that the country attracts both high-skilled and low-skilled immigrant workers, but debates have often focused on low-skilled immigrants from Cambodia, Lao PDR and Myanmar who constitute the largest group of registered immigrants. The overall number of registered immigrants seems mostly driven by immigration policies, in particular regularisation policies, while immigration is also stimulated by Thailand's relatively high income per capita in comparison with neighbouring countries. Although

progress has been made to improve migrant worker rights in Thai legislation, in practice gaps have remained and concerns continue to exist regarding the protection of rights of migrant workers.

Subsequent chapters provide an empirical investigation of the labour market outcomes and labour market impact of immigrant workers. These are important elements in the assessment of the economic contribution of immigrant workers.

Notes

1. Measured in constant 2010 USD (World Bank, 2016a).
2. For example, according to the Royal Chronicles, 10 000 Cambodian (Khmer) workers were recruited to work on a canal during the reign of King Rama I in 1783. The Chronicles provide various examples of the use of foreign labour in Thailand (OFWA, 2012).
3. Vietnamese immigrants were already present in Thailand during the reign of King Rama VI (1910-25); see *http://haab.catholic.or.th/history/history06/vietnam6/vietnam6.html* (accessed 24 June 2016).
4. Figure 2.5 and subsequent figures are based on numbers of registered workers (not annual additions).
5. A new MOU was also signed between Cambodia and Thailand in 2016 on the establishment of a centre for victims of trafficking (Laws, Lautenschlager and Baruah, 2017).
6. The Immigration Act provides the Minister of Interior with a certain discretion in exempting irregular or undocumented migrant workers from being deported, at least when they come forward for registration.
7. Many of these migrant workers registered in 2014 were allowed to stay and work until 31 March 2015 after which time they were required to go through a nationality verification process. Those who were verified were allowed to work until 31 March 2016. Those whose nationality was not verified had to report to the OSSC to receive a new identification card (*www.thairath.co.th/content/490320*; accessed 7 May 2016).
8. Due to the separate administrative processes and records, comparable data by industry for all CLM immigrants are not available for more recent years.
9. *http://prachatai.com/journal/2015/02/57872* (accessed 11 April 2016).
10. *www2.bot.or.th/statistics/BOTWEBSTAT.aspx?reportID=816&language=ENG* (accessed 28 June 2016).
11. The eight professions include the following according to the ASEAN Secretariat (2015): engineering services, nursing services, architectural services, surveying qualifications, medical practitioners, dental practitioners, accounting services and tourism professionals.
12. For the Ministerial Regulation concerning Labour Protection in Sea Fishery Work B.E.2557, see *www.labour.go.th/en/attachments/article/338/Ministerial_Regulation_Concerning_Labour_Protection_in_Sea_Fishery_Work_BE2557.pdf* (accessed 27 April 2017).
13. *www.ilo.ch/wcmsp5/groups/public/@ed_protect/@protrav/@travail/documents/publication/wcms_208703.pdf* (accessed 27 April 2017).
14. The Workmen's Compensation Act (1994) allows for protection of all workers, independent from the legal status of workers, if an appropriate order is issued (Article 50).

15. In addition to unemployment and pension benefits, benefits related to sickness or injury, invalidity, death, maternity and children can be gained.

16. As of July 2016, 465 563 migrant workers were enrolled under the Social Security Office; see *http://thailand.oim.info/sites/default/files/document/publications/MIN%20No.30_ENG_FINAL.pdf* (accessed 27 April 2017).

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Chapter 3

Immigrant integration in Thailand: Labour market outcomes

This chapter examines labour markets in Thailand based on a review of labour market indicators concerning immigrant workers in comparison with native-born workers. Following sections on the volume and nature of employment, the chapter addresses occupational change using a demographic decomposition method. Comparisons are made between the human capital of native-born and foreign-born workers, including with regard to skills mismatch.

The impact of immigrants on the economy depends to an important extent on their education, skills and labour market integration. It is not correct to assume that only immigrants with a higher educational attainment are beneficial to the economy of the country of destination, as the economic contribution of immigrants also depends on the skill composition of the native-born population. As discussed in the previous chapter, arrangements have been developed by Thailand to cater for needs at various levels of skills.

In this and following chapters an immigrant is defined as someone who was born abroad and is currently living in Thailand (see also Box 1.2 on definitions of immigrants). Although this definition is in accordance with much immigration research, including the work undertaken in the context of the project in other countries, this also implies that the analysis mostly depends on population census data in Thailand as other sources usually do not include information on country of birth.

Foreign-born employment has increased rapidly during the 2000s, and in comparison with the native-born workforce, it is found that the foreign-born are more likely to be younger and employed. Foreign-born workers can therefore help mitigate the impact of population ageing in Thailand. On the one hand, foreign-born workers are active in fast growing occupations, but on the other many immigrants perform elementary jobs. The latter is in line with the generally low level of educational attainment of immigrant workers, but appears less driven by economic imperatives.

Participation, employment and unemployment: An overview

The foreign-born population increased by a factor of approximately ten over ten years

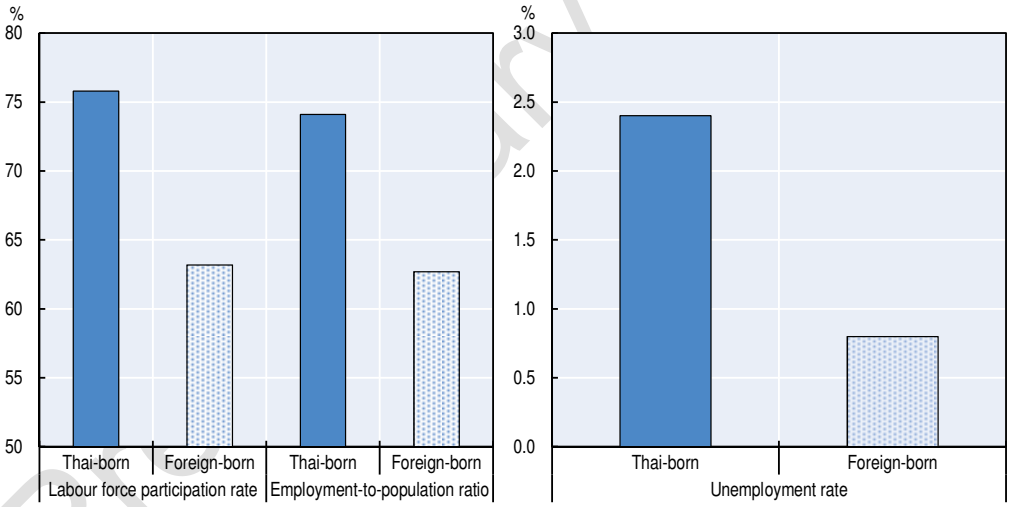
According to population census data, the total population of Thailand increased from 60.6 million in 2000 to 65.9 million in 2010. The working-age population increased from 46.0 million to 53.2 million over the same time period. The employed population of Thailand was 39.3 million in 2010 and the employment-to-population ratio was 74%, the same as in 2000 (see Annex Table 3.A1.2). As for the unemployed, 2.4% of the labour force was available and searching for a job in 2000, which corresponds to 844 000 persons out of 34.9 million.[1] Among the foreign-born population, the total population increased from 262 642 in 2000 to 2 538 810 in 2010, while the working-age population increased from 230 000 individuals in 2000 to 2.2 million in 2010. Within the

same time period, the foreign-born employed population increased from 144 000 individuals to 1.9 million: 0.4% and 4.7% of the employed population, respectively. The ten-fold increase suggests a dramatic change in the role of the immigrant population, which will be reflected in the analysis of this chapter as well as those to come.

The labour force participation rate and the employment-to-population ratio for the foreign-born population were well below those for the Thai-born population in 2000. More than three-quarters of Thai-born individuals were participating in the economy (75.8%), while the foreign-born labour force participation rate was 63.2%. The same magnitude holds when considering the employment-to-population ratio, which was 74.1% for the Thai-born and 62.7% for the foreign-born. Considering unemployment, the difference in the rates was 1.6 percentage points in favour of foreign-born workers in the year 2000 (Figure 3.1).

Figure 3.1. **Foreign-born labour force participation, employment and unemployment were relatively low in 2000**

Labour force participation, employment and unemployment by origin, 2000 (%)



Source: Authors' own work based on Minnesota Population Center (2015), *Integrated Public Use Microdata Series*, *http://doi.org/10.18128/D020.V6.5*; see also Annex 3.A1.

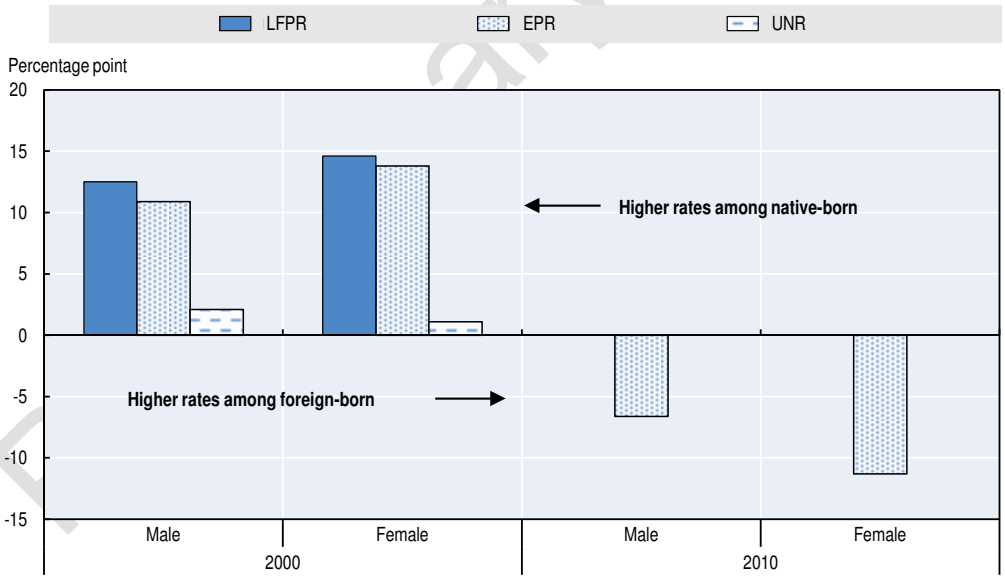
Overall, the unemployment rate for all individuals aged 15 years and over was 2.4% (Figure 3.1). Among Thai-born individuals, the rate was 2.4%, and 0.8% for their foreign-born counterparts. Both of these rates are relatively low compared to other middle-income economies, which is often attributed to a large informal economy in Thailand as well as considerable underemployment in private and public service sectors (Fry, Nieminen and Smith, 2013). In 2000,

the unemployment rate for Thai-born men was 2.1 percentage points higher than the rate of foreign-born men, whereas the corresponding gap for women was only 1.1 percentage points (2.5% of Thai-born women were unemployed, in comparison to 1.4% of foreign-born women).

Foreign-born employment increased strongly between 2000 and 2010

In stark contrast with the year 2000, the employment-to-population ratio (EPR) of the foreign-born population surpassed that of the Thai-born population in 2010 by almost 10 percentage points (see Annex Table 3.A1.2). Considering the entire decade (2000 -10), the increase of the foreign-born EPR was more than 20 percentage points. It can be expected that this drastic change is related to other indicators such as the level of education or the nature of jobs taken by immigrants in Thailand, and these indicators will be discussed in the following sections. When disaggregating the EPR by origin and gender, the differences between both female and male Thai-born and foreign-born workers become negative: both were higher for foreign-born workers in 2010 but not in 2000 (Figure 3.2).

Figure 3.2. **Foreign-born employment has increased rapidly for both men and women**
Differences between Thai-born workers and foreign-born workers (percentage points), 2000 and 2010



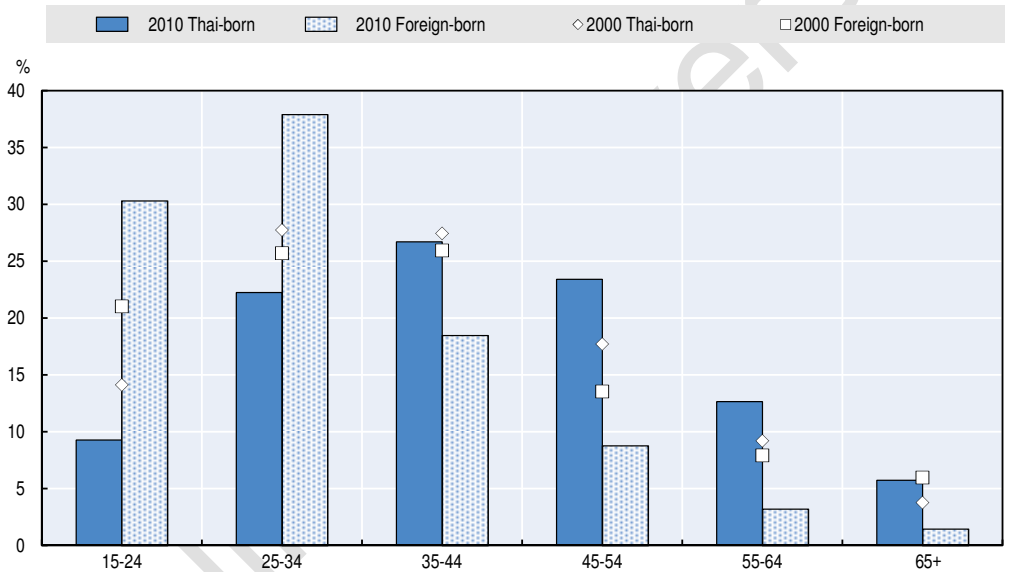
Note: The figure shows the rate for Thai-born workers minus the rate for foreign-born workers for each of the following three indicators disaggregated by sex: LFPR = labour force participation rate; EPR = employment-to-population ratio; UNR = unemployment rate. For the LFPR and UNR, data for 2010 was not available.

Source: Authors' own work based on Minnesota Population Center (2015), *Integrated Public Use Microdata Series*, *http://doi.org/10.18128/D020.V6.5* and National Statistical Office (undated), *Population and Housing Census 2010 microdata*, *http://web.nso.go.th/en/survey/lfs/lfs_main.htm*.

The importance of youth in light of demographic changes

In 2000, the average age of the foreign-born employed was slightly below the average age of the Thai-born employed: 37.6 and 38.6 years, respectively. Foreign-born workers were over-represented in the age groups 15-24 and 65+ and under-represented in all other age groups (Figure 3.3). By 2010 this situation had changed significantly, and foreign-born workers were to a much greater extent over-represented in the younger age groups (15-24 and 25-34). The average age of foreign-born workers in 2010 had decreased by 5 years to 32.2 years, while the average age of Thai-born workers increased by around 3.5 years to 42.2 years.

Figure 3.3. **Foreign-born workers are relatively young**
Employed population by age group and origin (%), 2000 and 2010



Source: Authors' own work based on Minnesota Population Center (2015), *Integrated Public Use Microdata Series*, *http://doi.org/10.18128/D020.V6.5* and National Statistical Office (undated), *Population and Housing Census 2010 microdata*, *http://web.nso.go.th/en/survey/lfs/lfs_main.htm*.

The increase in the average age for Thai-born workers is related to the decline in the youth employment-to-population ratio, as from 2000 to 2010 both the number of youth and the number of youth employed decreased considerably. In this decade, of the population aged 15 and above, the share aged 15-24 decreased from 22 to 17%; their levels of education and duration of stay in the education system rose (educational attainment of the employed is discussed later in the chapter). Accordingly, the youth EPR of Thai-born workers decreased from 46.8% in 2000 to 40.7% in 2010, while the EPR of Thai-born workers aged 25 years and above only showed a slight decrease of 1.7 percentage points.

Foreign-born youth counter ageing of the workforce

Given the strong growth in the share of the foreign-born age groups 15-24 and 25-34 in employment, and the relative decline in the number of Thai-born employed in these age groups (Figure 3.3), foreign-born workers seem to play a role in filling some of the gaps left by the changing demographic composition of the Thai-born workforce. This role of immigrant workers is of great importance for the Thai economy as its population growth rate has been close to zero since 2007. The overall age dependency ratio decreased from 2000 to 2010 (from 42% to 38%), which was principally due to a decreasing share of people aged 15 or under (the child dependency ratio decreased from 34.5% to 27.7% in this decade). The increase in the old-age dependency ratio from 8.8% to 12.6% could not counteract this decline and thus the overall dependency ratio fell. Nevertheless, the total dependency ratio is forecast to increase steadily within the next 50 years up to approximately 86% (United Nations Statistical Department, 2016).[2] This places a large burden on the Thai working-age population and the economy would benefit if immigration ensures a steady supply of younger workers.

The share of youth not in employment, education or training (NEET) among the foreign-born population decreased by 2.5 percentage points from 2000 to 2010 (Figure 3.4). Foreign-born males experienced a higher decrease in the NEET rate (4.9 percentage points from 7.9% in 2000 to 3% in 2010). In 2010, the NEET rate for foreign-born female workers was triple that of their male counterparts (9%). Among the Thai-born population, an increase of 0.4 percentage points resulted, over the same time period, in a higher level at 12.9%; while the gap between male and female rates for Thai-born workers was much smaller (0.3 percentage points).

Foreign-born youth have higher employment rates than their Thai counterparts

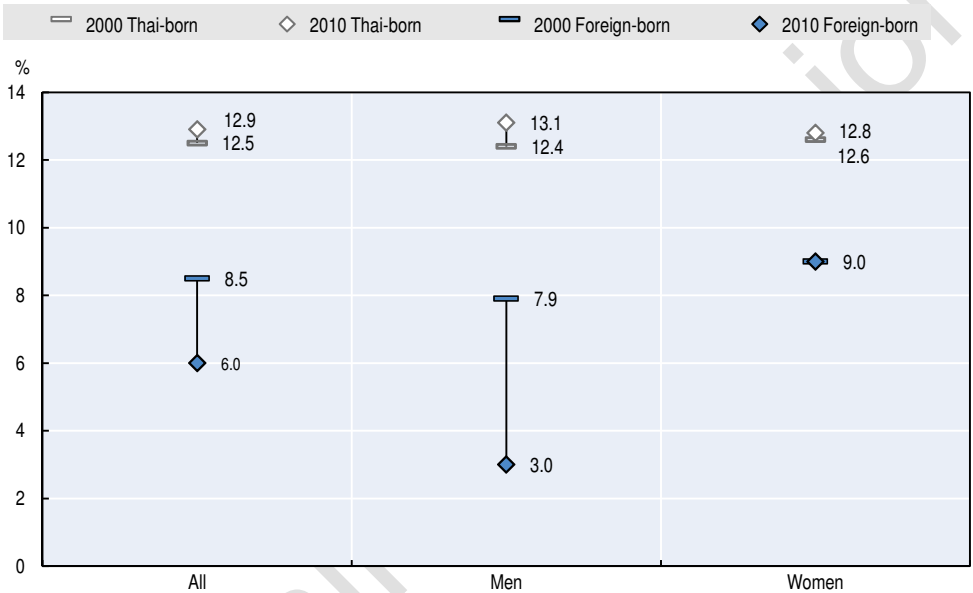
Part of the difference in NEET rates between the Thai-born and foreign-born populations is due to the far higher employment rate of foreign-born youth. In contrast to the sharp decline in the employment-to-population ratio of Thai-born youth from 2000 to 2010, the EPR of foreign-born youth increased from 78% to 91%. The same conclusion holds for young men and women separately. Thai-born male youth have an employment rate that is 46.8 percentage points lower than that of foreign-born male youth (46.1% and 92.9%, respectively). The difference is even larger when considering females: 53.1 percentage points (35.6% for Thai-born female youth and 88.7% for their foreign counterparts).

The differences between foreign- and Thai-born youth may reflect various factors. As many immigrant youth entered the country with the purpose to work, a higher employment rate can be expected for this group. Another factor is poverty or lower income among immigrants, which limits opportunities to pursue education among immigrant youth and allows for more support from family members among Thai-born workers (HelpAge International, 2013;

Suwanrada, 2009). Foreign-born youth had a lower school attendance rate than Thai-born youth in 2010 (22% and 32%, respectively). Compared to 2000, there was only a slight change: In 2000 Thai-born youth had an attendance rate of 30%, while their foreign counterparts exhibited a rate of 23%.

Figure 3.4. **The share of youth not in employment, education or training decreased strongly for foreign-born men**

Share of youth not in employment, education or training, by sex, 2000 and 2010



Source: Authors' own work based on Minnesota Population Center (2015), *Integrated Public Use Microdata Series*, *http://doi.org/10.18128/D020.V6.5* and National Statistical Office (undated), *Population and Housing Census 2010 microdata*, *http://web.nso.go.th/en/survey/lfs/lfs_main.htm*.

Nature and quality of jobs

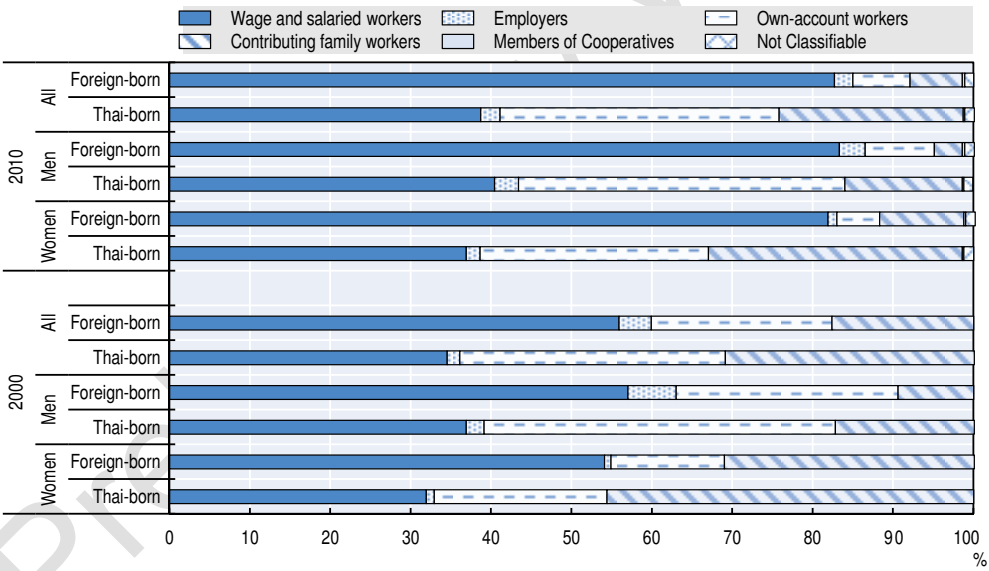
A widely used method to assess the quality of jobs is to consider vulnerable and non-vulnerable employment, which is based on the classification by status in employment. Vulnerable employment consists of the sum of own-account workers and contributing family workers, and these workers are less likely to have formal work arrangements (ILO, 2016; Sparreboom and Albee, 2011). Nevertheless, non-vulnerable employment such as wage employment may also fall short of decent work if, for example, an important part of wage employment is casual, informal or of limited duration, or if labour standards are not enforced. Immigrants are vulnerable to such situations, and are often concentrated in low-skill wage work in Thailand (see Chapter 2). In other words, although trends in vulnerable employment are important to assess labour markets, consideration needs to be given to additional indicators to understand

the position of immigrants, in particular occupational indicators which will be discussed in later sections.

In 2000, while 64% of the Thai workers were in vulnerable employment, 40.1% of foreign-born workers were. From 2000 to 2010, the rate of vulnerable employment decreased for all workers, reaching 57.6% for Thai-born workers and 13.6% for foreign-born workers. The decrease for foreign-born workers was much greater in comparison to that of Thai-born workers (26.5 percentage points and 6.4 percentage points, respectively), once again suggesting a dramatic change in the nature of immigration between 2000 and 2010: Apart from becoming younger, immigrant workers also became less likely to be an employer or own-account worker, and far more likely to be an employee (Figure 3.5). In 2010, wage and salaried employment accounted for the overwhelming majority of foreign-born workers (82.7%), compared with 38.7% of Thai-born workers; employers constituted 2.3% and 2.4%, respectively (Annex Table 3.A1.3).

Figure 3.5. **Wage employment has become more prevalent for all workers**

Status in employment by origin (%)



Source: Authors' own work based on Minnesota Population Center (2015), *Integrated Public Use Microdata Series*, *http://doi.org/10.18128/D020.V6.5* and National Statistical Office (undated), *Population and Housing Census 2010 microdata*, *http://web.nso.go.th/en/survey/lfs/lfs_main.htm*.

Based on the identification of immigrant workers by nationality (as opposed to country of birth in the analysis above), Habiyakare and Poonsab (2016) estimated that immigrant workers as well as Thai nationals continued to have the highest share of employment in the status group of wage and salaried work (75.3% and 39.1%, respectively) in 2012;[3] Habiyakare and Poonsab (2016)

also estimated the lowest shares continued to be in the employer category with 1.3% and 2.4%, respectively.

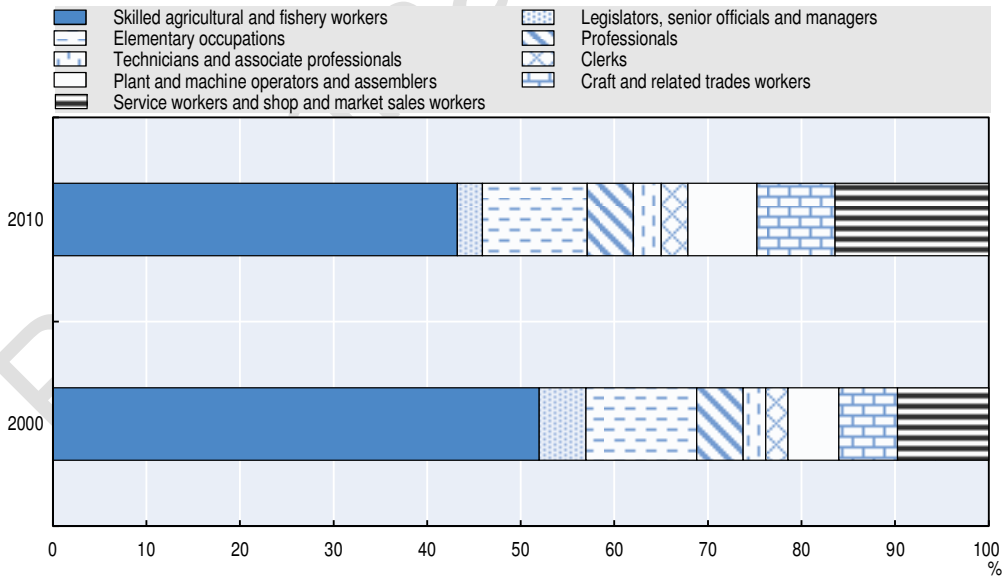
According to the data from the population censuses, and the identification of immigrant workers on the basis of country of birth, the share of women in wage employment is lower than the commensurate share of men for both foreign-born workers and Thai-born workers. Together with the higher share of women working as contributing family workers, this underlines their more difficult labour market position. In addition, a small increase in the share of workers in co-operatives can be seen from 2000 to 2010, as in the latter year 0.2% of Thai-born workers and 0.3% of foreign-born workers were employed in co-operatives (Annex Table 3.A1.3).

A shifting occupation profile

The diminishing role of agriculture as a source of employment, which was highlighted above, is also evident in the occupational structure of the workforce, as skilled agricultural and fishery workers was the major group showing the largest decrease between 2000 and 2010. More surprising are the decreases in the shares of legislators, managers and senior officials as well as elementary workers. Major groups of service and sales workers, craft workers, and plant and machine operators recorded the largest increases in employment shares (Figure 3.6 and Annex Table 3.A1.4).

Figure 3.6. **Employment in medium-skill occupations is growing fast**

Employment by major occupational group in 2000 and 2010 (%)



Source: Authors' own work based on Minnesota Population Center (2015), *Integrated Public Use Microdata Series*, *http://doi.org/10.18128/D020.V6.5* and National Statistical Office (undated), *Population and Housing Census 2010 microdata*, *http://web.nso.go.th/en/survey/lfs/lfs_main.htm*.

Foreign-born workers are over-represented in some of the fastest growing occupational groups

Following ILO (2014), we can make a distinction between high-skill occupations (major groups 1-3), medium-skill occupations (major groups 4-7) and low-skill occupations (major group 8). Average annual growth rates in these three groups were -0.3%, 1.6% and 0.7%, respectively. These rates may be compared with an average of 1.3% across all groups, which is driven by the large group of medium-skill occupations. Growth rates are thus relatively high in the middle of the distribution of occupations by level of skill, pointing at the growth of the industrial sector in Thailand, and the major role industrialisation has played as an engine of job creation from 2000 to 2010.

Foreign-born workers are over-represented in some of the fastest growing occupational groups, namely plant operators and craft workers (Figure 3.7). The over-representation in these two occupational groups is in accordance with the growing share of foreign-born workers in the manufacturing sector, which increased from 15.5% to 36.5% from 2000 to 2010. At the same time, the majority of occupations with slow and declining growth (legislators and senior officials, professionals, and skilled agricultural workers) have low proportions of foreign-born workers in comparison to their native-born counterparts. While the same observation regarding fast-growing occupational groups such as plant operators and craft workers can be made for men, this is only true for plant operators for women (Figure 3.7).

Nevertheless, these occupational patterns of foreign-born workers suggest that demand for labour is an important factor explaining the role of immigrant workers in Thailand. This is underlined by the relatively low proportions of foreign-born workers in skilled agriculture and legislative/senior official occupations. However, a special position seems to be taken by elementary occupations. Even though this occupational group is stagnant, it includes a relatively large proportion of foreign-born workers in comparison to Thai-born workers. This could be due to a variety of reasons including the accessibility of elementary jobs through accommodating policies (see Chapter 2), the lack of skill recognition in other occupations, the wage disparity between Thailand and other economies, and the fact that Thai-born workers are not interested in these jobs.

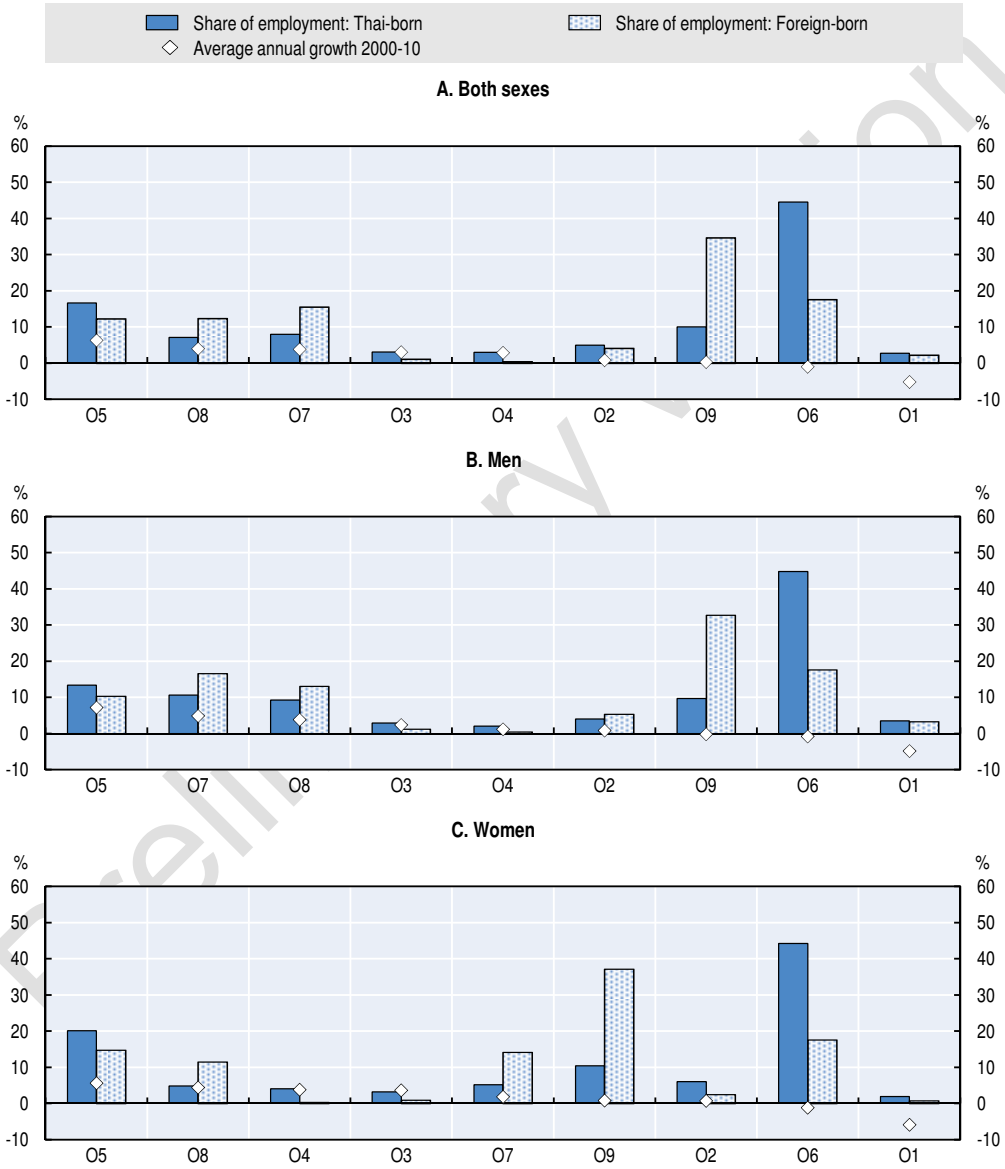
Foreign-born employment in elementary occupations is mostly found in industry

Breakdown by sector can shed more light on employment of foreign-born workers in elementary occupations.[4] Workers in these occupations account for almost 35% of all foreign-born workers (compared with 10% of Thai-born workers), and almost 40% of foreign-born workers in non-vulnerable employment. The largest shares of both Thai-born male and female workers in elementary occupations in non-vulnerable employment are working in the

agricultural sector (Figure 3.8). By contrast, the foreign-born population is mainly employed in the industrial sector (particularly manufacturing and construction).

Figure 3.7. **Foreign-born workers are over-represented in some of the fastest growing occupational groups**

Share of employment by major occupational group, origin and sex, 2010 (%)

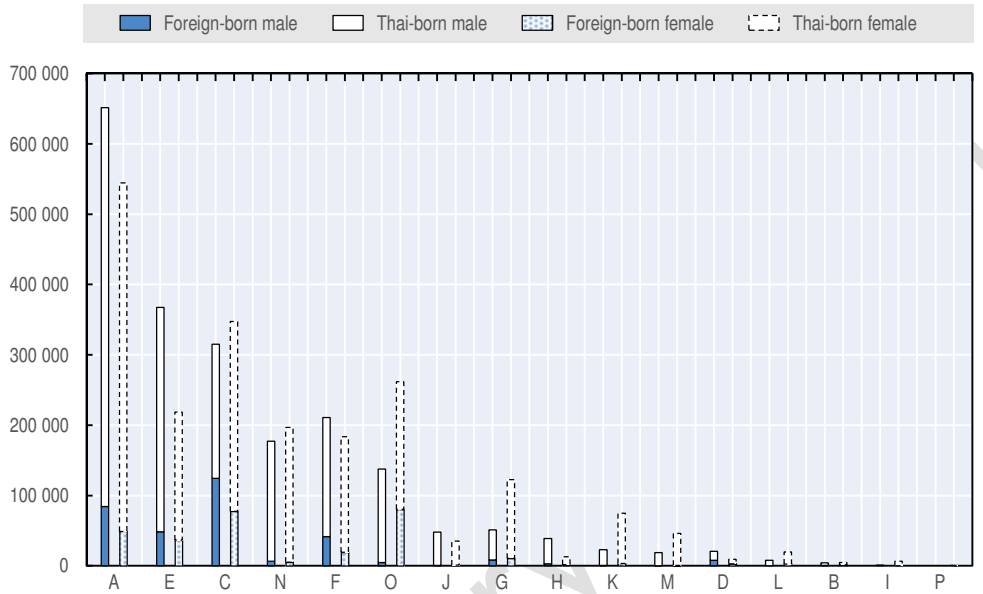


Note: Sectors are ordered according to the average annual growth between 2000 and 2010.

Source: Authors' own work based on National Statistical Office (undated), *Population and Housing Census 2010 microdata*, *http://web.nso.go.th/en/survey/lfs/lfs_main.htm*.

Figure 3.8. **Foreign-born workers are more likely to work in elementary occupations in industry**

Non-vulnerable employment in elementary occupations disaggregated by sector, sex and origin, 2010



Note: (A) Agriculture, forestry and fishing, (B) Mining, (C) Manufacturing, (D) Electricity, gas, and water, (E) Construction, (F) Wholesale and retail trade, (G) Hotels and restaurants, (H) Transportation and communications, (I) Financial services and insurance, (J) Real estate and business services, (K) Public administration and defence, (L) Education, (M) Health and social work, (N) Other services, (O) Private household services, (P) Other industries.

Source: Authors' own work based on National Statistical Office (undated), *Population and Housing Census 2010 microdata*, *http://web.nso.go.th/en/survey/lfs/lfs_main.htm*.

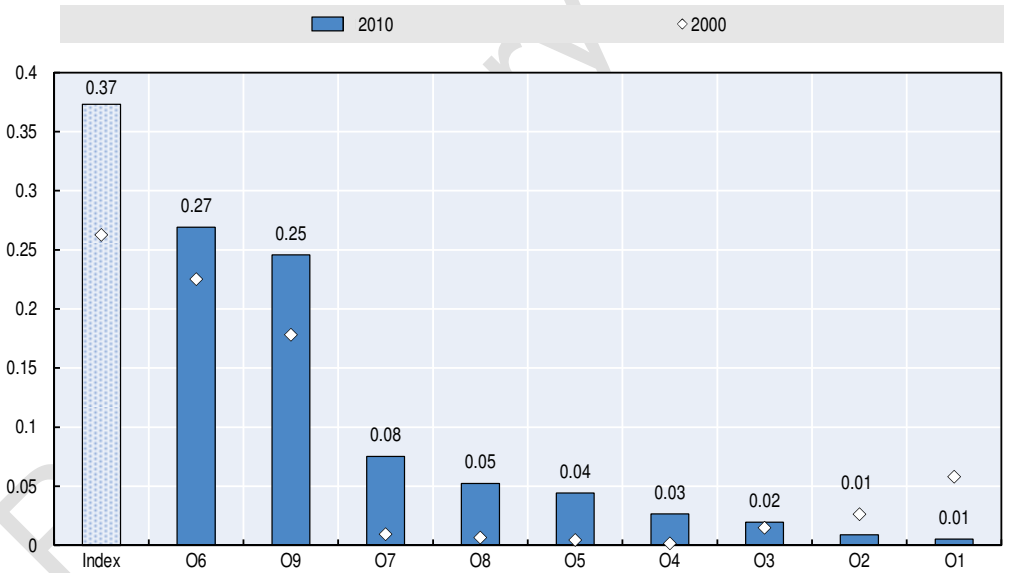
It is also of importance to note the large presence of foreign-born females in the private household service sector. This reflects the growing need for domestic services, while the educational attainment for young Thai women is increasing and they are no longer looking for work in private households. This trend has enabled more Thai-born women to work in more productive positions. At the same time domestic work has become a particularly vulnerable place of work for immigrants, where women need to deal with the lack of legal and social protection, exclusion, low incomes, exploitation as well as abuse (ILO, 2010). Most provisions under the Labour Protection Act B.E. 2541 (1998) do not cover domestic workers, who continue to be excluded from working hours limitations, overtime compensation, maternity leave and minimum wage protections (Anderson, 2016). Some domestic workers enter Thailand following arrangements set out in a Memorandum of Understanding, but more often arrangements follow the nationality verification system. As was indicated in Chapter 2, this system is employer-driven and administratively complex.

Occupational employment patterns of native-born and foreign-born workers have diverged

An index of dissimilarity based on occupational shares summarises occupational differences between the foreign- and native-born (see Annex 3. A1 for details). The index increased from 0.26 in 2000 to 0.37 in 2010, and was mostly driven by the increase in the absolute difference in native- and foreign-born employment shares for craft and related trades workers as well as for elementary occupations (Figure 3.9). Legislators/ senior officials and professionals saw a decrease in dissimilarity, while the remaining occupational groups experienced an increase. Overall, the largest dissimilarity in employment shares was due to the large differences in shares of foreign-and native-born workers in skilled agriculture and fishery occupations.

Figure 3.9. **Differences between occupational distributions of foreign- and native-born workers have increased**

Absolute value of the differences in occupational employment of native- and foreign-born workers and index of dissimilarity



Note: The column "Index" represents the index of dissimilarity for the years 2000 and 2010. The remaining columns represent the absolute value of the difference between the native-born and foreign-born occupational employment shares.

Source: Authors' own work based on Minnesota Population Center (2015), *Integrated Public Use Microdata Series*, *http://doi.org/10.18128/D020.V6.5* and National Statistical Office (undated), *Population and Housing Census 2010 microdata*, *http://web.nso.go.th/en/survey/lfs/lfs_main.htm*.

Demographic components of occupational change

Another way to examine the role of international immigrants in labour markets is to consider the evolution of occupations from a demographic perspective. Based on a demographic accounting framework, the net occupational change over the period 2000-10 can be attributed to contributions from new young entrants, new immigrants, prime-age workers and retirees. These age-related components of the net change are estimated by comparing the situation of so-called "pseudo age cohorts" in 2000 and 2010, respectively (see Annex 3. A1 for methodological details). This approach implicitly includes the effects of emigration and mortality, as well as the possibility of multiple occupational changes that may have occurred during the period (only the situations in 2000 and 2010 are observed).

The analysis is conducted at the level of major occupational groups (Figure 3.10). There is positive growth in the majority of the occupational groups, except in those comprising legislators/senior officials and skilled agriculture and fishery workers. In these two major occupational groups the negative growth rate is driven by retirees and prime-aged workers exiting. Thus, the large outflow of retirees (2.0 million) in the group of skilled agricultural workers explains most of the outflow from this group (2.5 million). The inflows into skilled agriculture (1.5 million) do not offset this outflow, which results in a -1% growth rate.

Most of the occupational growth is due to the entry of new young workers

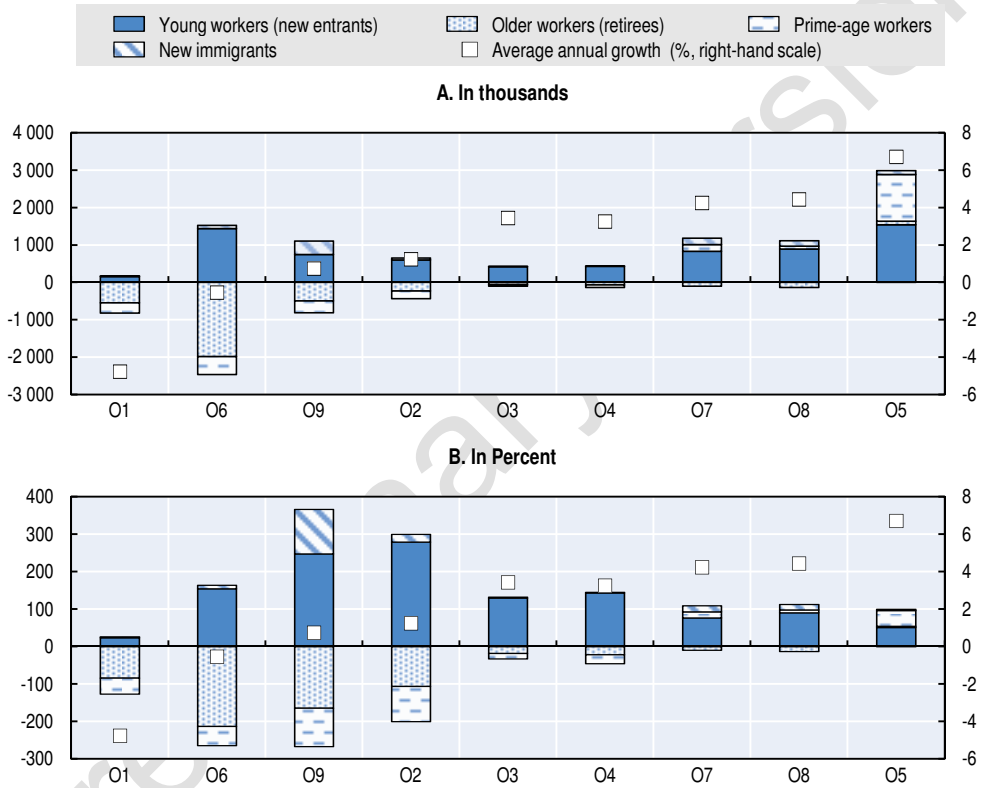
Apart from these two major occupational groups, the growth in the remaining occupations is largely due to the entry of new young workers. Furthermore, among both elementary occupations and professionals, prime-age workers had a relatively large downward influence on the annual growth rate when compared to other major growing occupations (Figure 3.10, Panel B). Another finding worth noting is that there was a relatively large number of new immigrants entering elementary occupations; the only occupational group in which such a relative impact can be witnessed. However, in absolute terms, new immigrants add to the net inflows of every major occupational group.

Comparing new immigrants and new young entrants by their relative share of each major occupational group, in three of the five major occupational groups experiencing employment growth, new young entrants grew proportionally more than new immigrants in these groups (Figure 3.11). This means that the inflow of new foreign-born workers deviates from the native-born pattern of occupational growth. This is most clearly visible in the large

number of new immigrants entering elementary occupations, which had the third largest decline in the employment share between 2000 and 2010. Considering gender differences, the same pattern is observed for both men and women.

Figure 3.10. **Most of the occupational growth is due to new young entrants**

Demographic components of net occupational change by major group, 2000-10

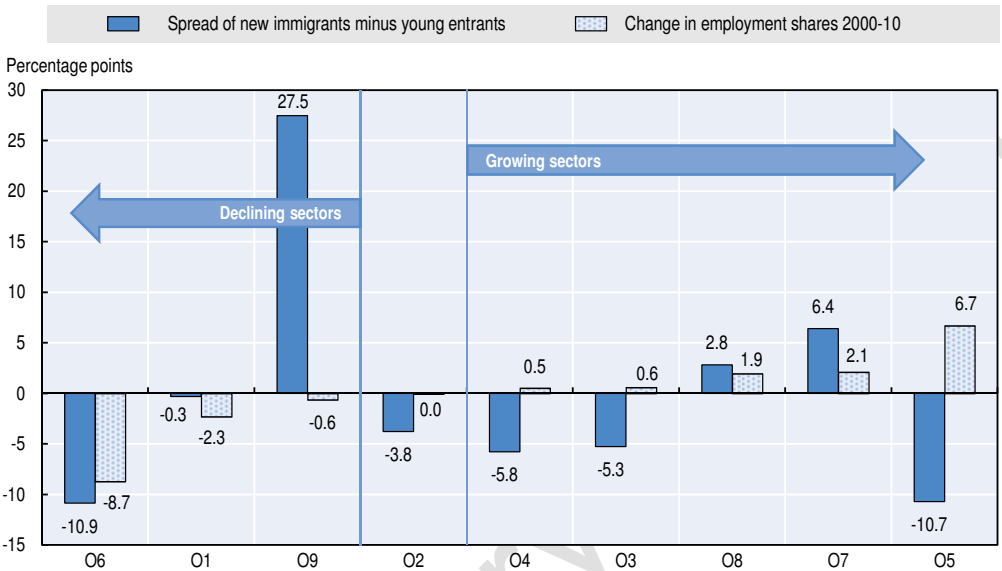


Note: (O1) Legislators, senior officials and managers, (O2) Professionals, (O3) Technicians and associate professionals, (O4) Clerks, (O5) Service workers and shop and market sales workers, (O6) Skilled agricultural and fishery workers, (O7) Craft and related trades workers, (O8) Plant and machine operators and assemblers, (O9) Elementary occupations. Occupations are ranked in order of increasing average annual employment growth rates from 2000 to 2010.

Source: Authors' own work based on Minnesota Population Center (2015), *Integrated Public Use Microdata Series*, *http://doi.org/10.18128/D020.V6.5* and National Statistical Office (undated), *Population and Housing Census 2010 microdata*, *http://web.nso.go.th/en/survey/lfs/lfs_main.htm* .; see Annex 3.A1 for methodological details on the demographic decomposition.

Figure 3.11. **The inflow of new immigrant workers deviates from the native-born pattern of occupational growth**

Difference between shares of new immigrants and new young entrants in growing and declining occupational groups (percentage points)



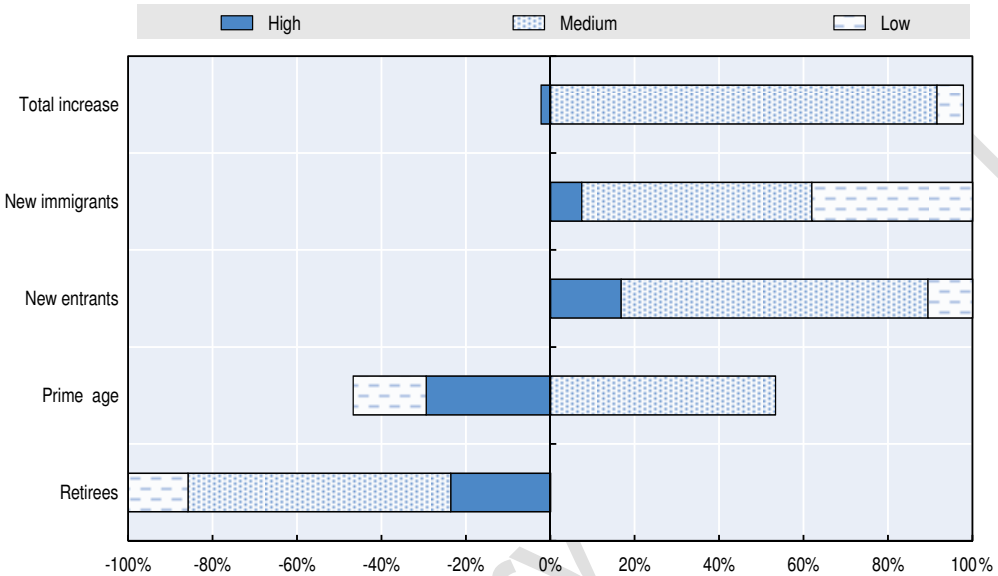
Note: The figure shows the share of new immigrants minus the share of new young entrants in each major occupational group, together with the change in the employment share of the group between 2000 and 2010. A positive difference in shares means that proportionally more new immigrants entered the group. (O1) Legislators, senior officials and managers, (O2) Professionals, (O3) Technicians and associate professionals, (O4) Clerks, (O5) Service workers and shop and market sales workers, (O6) Skilled agricultural and fishery workers, (O7) Craft and related trades workers, (O8) Plant and machine operators and assemblers, (O9) Elementary occupations.

Source: Authors' own work based on Minnesota Population Center (2015), *Integrated Public Use Microdata Series*, *http://doi.org/10.18128/D020.V6.5* and National Statistical Office (undated), *Population and Housing Census 2010 microdata*, *http://web.nso.go.th/en/survey/lfs/lfs_main.htm*; see Annex 3.A1 for methodological details on the demographic decomposition.

Further analysis of skills levels of demographic groups shows that new immigrant entries, in comparison with new young worker entries, are more likely in low-skill occupations (Figure 3.12). Prime-age workers also have relatively large shares of exits at high and low levels of skill, while overwhelmingly moving into medium-skill occupations.

Figure 3.12. **New immigrant entries are more likely in low-skill occupations when compared to new entrants**

Skill composition of occupational entries or exits, by demographic group, 2000-10



Source: Authors' own work based on Minnesota Population Center (2015), *Integrated Public Use Microdata Series*, *http://doi.org/10.18128/D020.V6.5* and National Statistical Office (undated), *Population and Housing Census 2010 microdata*, *http://web.nso.go.th/en/survey/lfs/lfs_main.htm.*; see Annex 3.A1 for methodological details on the demographic decomposition.

Education and skills mismatch

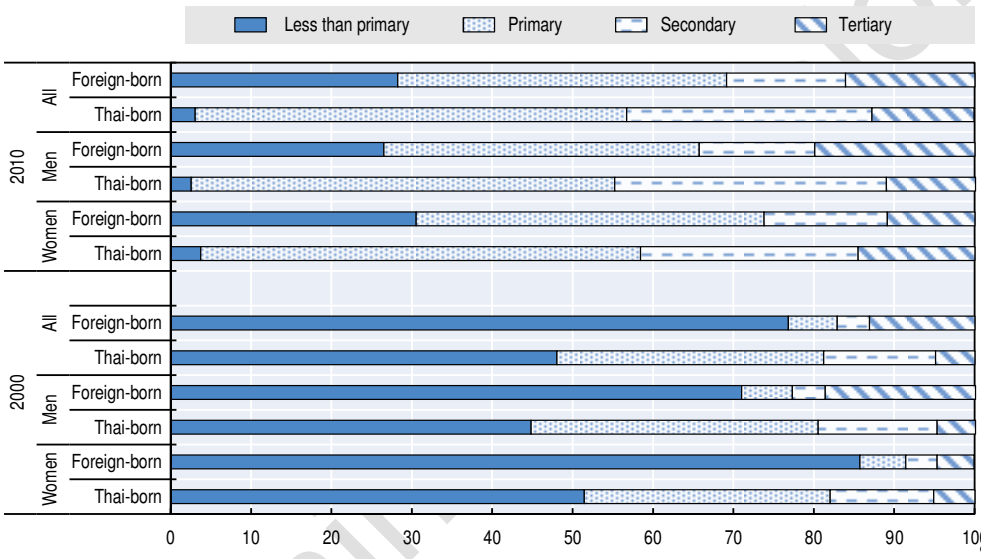
Education and skills of workers are an important factor influencing the patterns of occupational change discussed in previous sections, both for foreign-born and native-born workers. This section examines the development of levels of education of foreign-born workers in comparison with Thai-born workers in the context of changing labour market needs in the country.

In 2000, almost half of the Thai-born employed had less than a primary education, while the same was true for almost 77% of the foreign-born employed (Figure 3.13 and Annex Table 3.A1.5). Additionally, the share of foreign-born employed with a secondary education was below the corresponding share of Thai-born workers. Nevertheless, a larger share of foreign-born workers had obtained a tertiary education (13.1% versus 4.9% of the Thai-born employed). Immigrants were thus over-represented at both sides of the educational attainment range, but more so at the low side. The highest unemployment rate for Thai-born workers was among those that obtained a tertiary education (6.7%, see Figure 3.14). High levels of education may have allowed Thai-born individuals to be selective when considering job opportunities. By contrast, for foreign-born workers, the highest unemployment rate was recorded for those with a

primary education (3.6%). Unemployment rates for Thai-born individuals were higher at all educational levels when compared to their foreign counterparts. This may be due to the fact that an important share of immigrant workers is already employed upon entering the country (and thus do not search for work). Other factors, such as the relative importance of informal employment may also play a role.

Figure 3.13. **Most foreign-born workers continue to have primary education or less**

Employment by educational attainment (%)



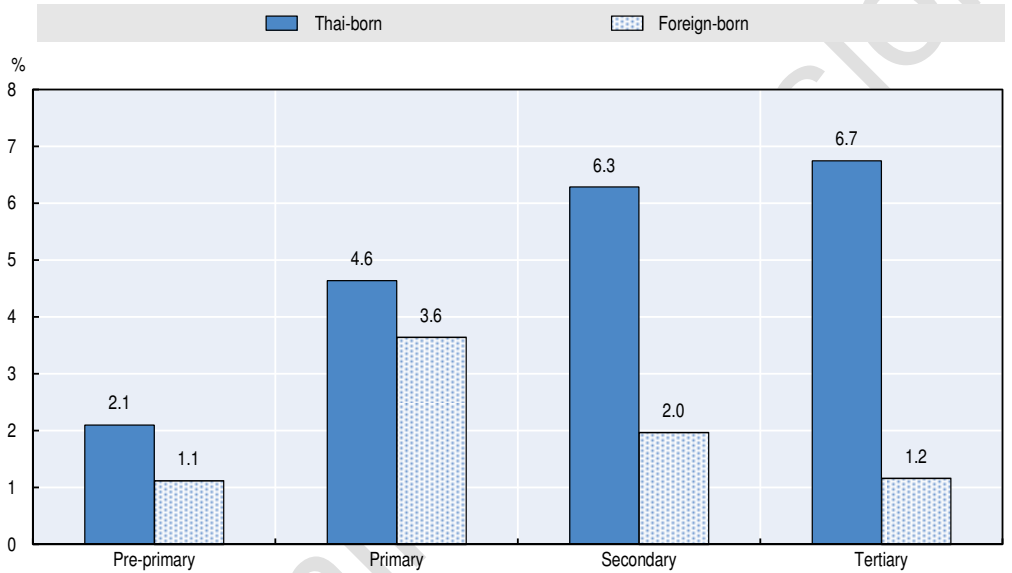
Source: Authors' own work based on Minnesota Population Center (2015), *Integrated Public Use Microdata Series*, *http://doi.org/10.18128/D020.V6.5* and National Statistical Office (undated), *Population and Housing Census 2010 microdata*, *http://web.nso.go.th/en/survey/lfs/lfs_main.htm*.

Over the 2000 -10 period, the levels of educational attainment improved for both Thai-born workers and foreign-born workers (Figure 3.13). The share of Thai-born workers with less than a primary education decreased by about the same amount as the corresponding share of foreign-born workers; however, the increase in the share of workers with a primary education was much larger for the foreign-born population when compared to their Thai counterparts. While the share of foreign-born workers with a primary education increased by about 35 percentage points, that of Thai-born workers increased by around 20 percentage points. By contrast, at the level of secondary education, the share of Thai-born workers increased much more in comparison to foreign-born workers. While the share of foreign-born workers with a secondary education increased by 10.8 percentage points, the share of Thai-born workers increased by more than 16 percentage points. Additionally, there was a sharper

rise in the share of the Thai-born employed with a tertiary education, which increased by 7.8 percentage points (3.0 percentage points for the foreign-born employed). Nevertheless, the share of Thai-born workers with a tertiary education remained below the level of the foreign-born employed (12.7% and 16.1%, respectively).

Figure 3.14. **Unemployment rates are lower for foreign-born workers at all levels of education**

Unemployment rate by level of educational attainment and origin, 2000 (%)



Note: This figure depicts the unemployment rates by level of educational attainment. The rates were calculated by dividing the number of unemployed with a certain level of education by the labour force with the same level of education.

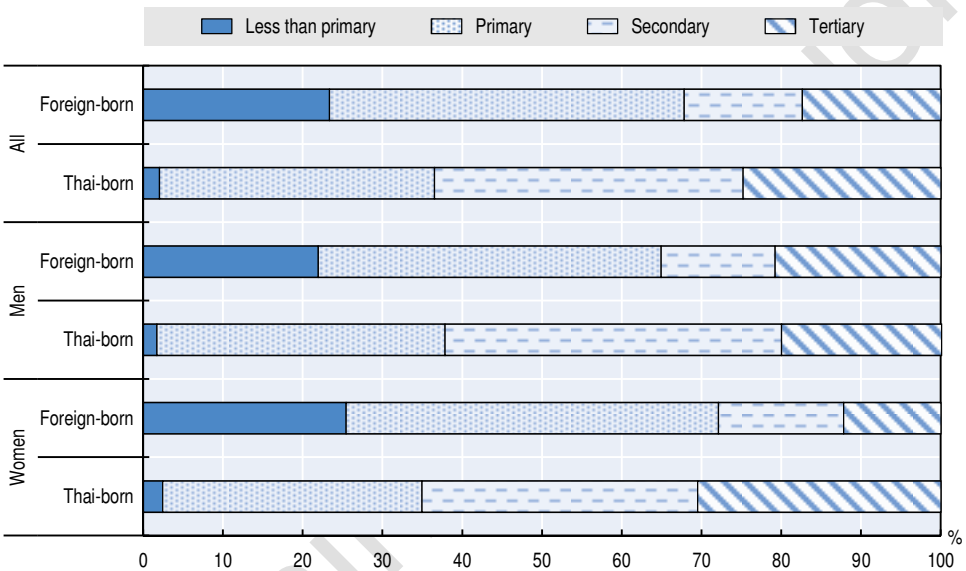
Source: Authors' own work based on Minnesota Population Center (2015), *Integrated Public Use Microdata Series*, *http://doi.org/10.18128/D020.V6.5*.

The strong presence of foreign-born workers with low levels of education does not seem to be in accordance with the pattern of occupational change discussed above, which shows a high rate of growth of medium-skill occupations. In order to align occupational growth with educational levels, more workers with a secondary education would be needed to match the growth in medium-skill occupations. The extent to which immigration is in accordance with occupational change is also not obvious at high levels of education. In 2010, around 4.1% of those in vulnerable employment had a tertiary education, compared with 24.5% in non-vulnerable employment. Furthermore, the proportion of tertiary-educated workers was lower among Thai-born workers than among the foreign-born workers in non-vulnerable

employment in 2000 (11.9% and 20.8%, respectively). However, by 2010 the situation had reversed and 24.8% of the Thai-born workers in non-vulnerable employment had a tertiary education, compared with 17.4% of foreign-born workers (Figure 3.15).

Figure 3.15. **Among foreign-born workers in non-vulnerable employment the share with tertiary education is lower than among native-born in non-vulnerable employment**

Non-vulnerable employment by educational attainment, 2010 (%)



Source: Authors' own work based on National Statistical Office (undated), *Population and Housing Census 2010 microdata*, *http://web.nso.go.th/en/survey/lfs/lfs_main.htm*.

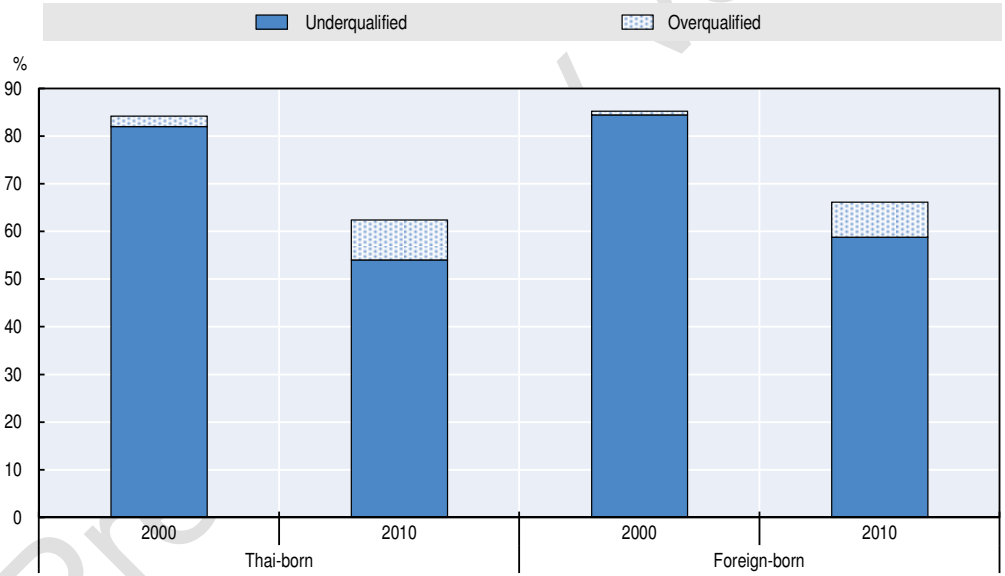
The increase in levels of educational attainment is partly supply-driven, but is also linked to economic growth and competitive pressures (see Chapter 2). Thailand in the course of the 1990s was less and less able to rely on cheap labour as an incentive for production and foreign investment, and educational reforms were therefore implemented which placed stronger emphasis on lifelong learning (Nitungkorn, 2001). These reforms included the extension of basic education to 12 years (allowing an increased transition from basic to secondary education), while higher education was expanded to accommodate increased graduation rates from secondary education (Nitungkorn, 2001). Not only did these reforms increase access to education, education also provided individuals with greater job opportunities in the growing industrial sector.

Over-qualification continues to be low in comparison with under-qualification

Skills mismatch may arise when levels of education are not in accordance with job requirements. Skills mismatch is an encompassing term which refers to various types of imbalances between skills offered and skills needed in the world of work, and includes over-qualification and under-qualification. Based on the normative measure, which matches occupations and levels of education (ILO, 2014), economy-wide levels of over-qualification in Thailand were low in 2000 but increased rapidly in the subsequent decade and reached 8.4% in 2010 (Annex Table 3.A1.6). The incidence of over-qualification was slightly higher for Thai-born workers than for foreign-born workers in 2000, and the small gap had remained stable by 2010 (Figure 3.16).

Figure 3.16. **Under-qualification is widespread and slightly higher for foreign-born workers**

Skills mismatch by origin (%)



Source: Authors' own work based on Minnesota Population Center (2015), *Integrated Public Use Microdata Series*, *http://doi.org/10.18128/D020.V6.5* and National Statistical Office (undated), *Population and Housing Census 2010 microdata*, *http://web.nso.go.th/en/survey/lfs/lfs_main.htm*.

On the other hand, under-qualification is widespread and affected more than 80% of the employed in 2000.[5] Although the incidence of under-qualification decreased for both Thai-born and foreign-born workers from 2000 to 2010, the decrease was less for foreign-born workers, while the level

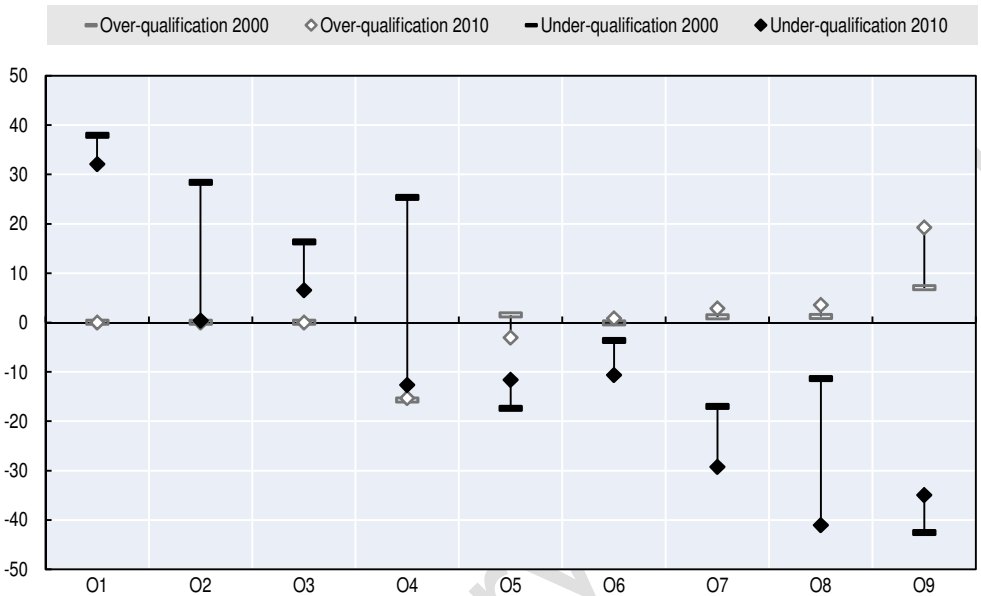
remained higher when compared to the Thai-born employed (Figure 3.16). Furthermore, under-qualification is more prevalent for women than for men. The male-female gap decreased tremendously for foreign-born workers from 14.4 percentage points in 2000 to 2.1 percentage points in 2010.

Over-qualification of foreign-born workers may be indicative of skills recognition issues. For example, in 2010 the incidence of over-qualification for clerks was 65.2% for foreign-born workers, compared with 49.9% for Thai-born workers. By contrast, levels of over-qualification were higher for Thai-born workers in elementary occupations (33.3%, compared with 14.0% for foreign-born workers), in part reflecting the higher levels of educational attainment for Thai-born workers. Other reasons for over-qualification may include underinvestment by firms that would allow for positions requiring higher levels of skills. Underinvestment in technology and more productive tools is partly attributed to the low wages of immigrant workers, which may result in disincentives for Thai firms to invest in new machineries to augment labour (SCB, 2015,).[6] In addition, workers who are trained in the Thai educational system, and in particular those who completed the academic as opposed to the vocational track, often lack the skills that are required in the labour market; the quality of education as well as the knowledge and skills are not in line with the growing sectors of the economy (SCB, 2015).

In 2010, Thai-born workers were over-qualified in many low- and medium-skill occupations (Figure 3.17).[7] For the same occupations, the foreign-born workforce exhibited higher rates of under-qualification. These findings are consistent with a situation in which foreign-born workers take many dirty, dangerous or difficult (3D) jobs, which usually encompass low-skilled occupations in agriculture, construction and manufacturing. The increased educational attainment of Thai workers has gradually reduced the number of the native-born that enter into low-skilled occupations. Also, demand for immigrants to work in 3D jobs has been increasing as employers are willingly employing the fully flexible and cheaper immigrant workforce (Rukumnuaykit, 2009). This underlines the vulnerable situation of immigrant workers as they are less likely to be familiar with Thai labour law (see Chapter 2) and more likely to lack recourse to enforcement of standards. Some employers may also favour immigrant workers as they are less likely to be organised in unions (HRW, 2010), which in turn may hamper improvement of workplace safety and limit pressure to improve conditions of work or productivity.

Figure 3.17. **Thai-born workers are over-qualified and foreign-born workers are under-qualified in similar occupations**

Skills mismatch gap by occupational group (percentage points)



Note: The figure shows the gaps (Thai-born minus foreign-born workers) in over-/under-qualification per major occupational groups for the years 2000 and 2010.

Source: Authors' own work based on Minnesota Population Center (2015), *Integrated Public Use Microdata Series*, *http://doi.org/10.18128/D020.V6.5* and National Statistical Office (undated), *Population and Housing Census 2010 microdata*, *http://web.nso.go.th/en/survey/lfs/lfs_main.htm*.

Conclusions

Given that the Thai economy has been prospering and income disparities between Thailand and its neighbouring countries have increased, the country has become more attractive as a destination for immigrant workers. International immigration benefits immigrants in Thailand, but it is also of importance to the Thai economy as it ensures a supply of young workers in the face of an ageing native-born population.

Foreign-born workers and Thai-born workers have different labour market positions, as reflected in a range of labour market indicators. For example, occupational distributions of native- and foreign-born workers are very different, and these differences became more pronounced between 2000 and 2010. Educational attainment has been improving for both the Thai-born and the foreign-born populations, and foreign-born workers have increasingly moved out of subsistence agriculture and into industrial sectors, thus contributing to the diversification and growth of Thailand's economy. A large increase in the share of foreign-born employment is seen for craft and trades workers as well

as plant and machine operators. The pattern of occupational growth suggests that demand for labour is an important factor explaining the role of immigrant workers in Thailand. This is underlined by the relatively low proportions of foreign-born workers in occupations that have become less important, such as skilled agriculture and legislative/senior official occupations.

However, the review of labour market information in this chapter also demonstrates a marked divergence in employment patterns of foreign-born and native-born workers. In particular, the share of low-skill occupations is high in comparison with other countries including the partner countries,[8] while it has been growing for foreign-born workers and decreasing for Thai-born workers. This could be due to a variety of reasons including the accessibility of elementary jobs through accommodating immigration policies (see Chapter 2), the lack of skill recognition in other occupations, or the wage disparity between Thailand and other economies.

Increased attainment of higher education led to an increase in over-qualification in the 2000-10 period, but under-qualification is far more widespread in Thailand. On average, foreign-born workers are slightly less likely to be over-qualified, but this is different in some occupations such as clerks. Foreign-born workers are also more likely to be under-qualified, which seems to reflect the fact that they often perform less attractive jobs. The fact that foreign-born workers often take less attractive jobs reduces the risk of displacement of native-born workers by foreign-born workers. This risk will be examined in the next chapter, which tests the impact of foreign-born workers on labour market outcomes of native-born workers.

Notes

1. No information on unemployment is available for 2010 due to data limitations.
2. The total dependency ratio is defined as the ratio of people younger than 15 or older than 64 to the population aged 15-64. Depending on the scenario, the forecasted dependency ratio changes, and the number cited in the text corresponds to the medium variant scenario in United Nations Statistical Department (2016).
3. The estimations for the year 2012 are based on the 2012 Migration Survey conducted by the National Statistical Office.
4. Chapter 5 includes a fuller discussion of employment by sector (across occupations).
5. Under-qualification is widespread in many developing countries, often affecting more than half of workers. For other countries in Asia, see e.g. ILO (2015b).
6. These findings are based on six key sectors and are mostly attributed to the labour-intensive industries of the broad industrial and agricultural sector.
7. Low- and medium-skilled occupations include those labelled O4 to O9 in Figure 3.17.
8. The share of low-skill occupations is higher for foreign-born workers than for native-born workers in most partner countries, but remains well under the 30% of workers in all partner countries except in Costa Rica and Kyrgyzstan.

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ANNEX 3.A1

Data, methodologies and additional tables

Data

The empirical analysis in this chapter is based on population censuses and surveys conducted by the National Statistical Office (NSO) of Thailand, which are made available directly to users by the NSO or through the Minnesota Population Center Integrated Public Use Microdata Series (IPUMS).

Unless stated differently, labour market indicators are defined in accordance with ILO (2015a).

Methodology to assess sectoral and occupational employment patterns

The similarity of sectoral employment patterns between native-born workers and foreign-born workers can be assessed using an index of dissimilarity. The index represents the proportion of a group, either native- or foreign-born, that would need to move in order to create an equal distribution. The index is calculated based on the following equation:

$$Dissimilarity\ (D) = \frac{1}{2}\sum_{i=1}^{s}\left|\frac{n_i}{N_T} - \frac{f_i}{F_T}\right|$$

in which case n_i is the number of native-born workers per sector, N_T is the total number of native-born workers across all sectors, f_i is the number of foreign-born workers per sector and F_T is the total number of foreign-born workers across all sectors; s is the number of sectors. The same index can be applied to occupational distributions.

Methodology of demographic decomposition

Following Chapters 3 and 4 of the OECD/European Union (2014), the decomposition used in this chapter is based on a demographic accounting method, applied to changes in the distribution of workers by level of education and by occupation.

This method builds on the following equation concerning the measure of change in a particular variable between two points in time:

Δ(T) = E + I + Δ(PA) – R;

Δ(T) = the total change observed in the variable over the period

E = non-immigrant new young entrants over the period

I = new immigrants who arrived over the period

Δ(PA) = change in the non-immigrant prime-age group over the period

R = non-immigrant retirees over the period.

This equation shows that total change over the period equals inflows minus outflows, while deaths and emigration are included implicitly. Table 3.A1.1 summarises how these components are obtained based on 2000 and 2010 population census data on the labour force (LF).

Table 3.A1.1. **Definition of components for the demographic accounting decomposition**

(1) = (2) - (3)	(2) 2010 Population census	(3) 2000 Population census
Non-immigrant new young entrants (E)	LF (aged 15-34 excluding foreign-born without long-term residence)	LF (aged 15-24)
Non-immigrant retirees (-R)	LF (aged 55+ excluding foreign-born without long-term residence)	LF (aged 45+)
Change in the non-immigrant prime-age group (Δ(PA))	LF (aged 35-54 excluding foreign-born without long-term residence)	LF (aged 25-44)
New immigrants (I)	LF (aged 15+ foreign-born without long-term residence)	0
Total change : Δ(T) = E + I + Δ(PA) – R	LF (aged 15+)	LF (aged 15+)

Non-immigrant new young entrants to the labour market are calculated by subtracting the labour force aged 15-24 in 2000 from the labour force aged 15-34 in 2010, which thus assumes that all persons 15-24 who were part of the labour force in 2000 are still in the labour force ten years later (when they are 25-34 years of age). Similarly, retirees are those in the labour force who were aged 45 and above in 2000 minus those aged 55 and above in 2010 (temporary withdrawals and re-entries prior to definitive retirement are implicitly netted out). The change in the size of the prime-age group equals the labour force aged 35-54 in 2010 minus the labour force aged 25-44 in 2000. Finally, the number of new immigrants is calculated as immigrants with duration of residence of less than five years, and such immigrants are excluded from the other components to avoid double counting. As can be verified from the table, these four components add up to the labour force in both 2000 and 2010. The same methodology can be used to decompose sub-groups of the labour force (such as the employed, educational and occupational groups).

Table 3.A1.2. **Employment-to-population ratio, by origin, sex and age group**

Year	Origin	Sex	Age	Employed ('000)	Population ('000)	Employed (%)
2000	All	MF	15+	34,036.4	45,996.3	74.0
2000	Thai	MF	15+	33,892.3	45,766.7	74.1
2000	Foreign	MF	15+	144.1	229.7	62.7
2000	All	M	15+	17,588.1	22,341.4	78.7
2000	Thai	M	15+	17,498.5	22,209.5	78.8
2000	Foreign	M	15+	89.5	131.9	67.9
2000	All	F	15+	16,448.4	23,654.9	69.5
2000	Thai	F	15+	16,393.8	23,557.2	69.6
2000	Foreign	F	15+	54.6	97.8	55.8
2000	All	MF	15-24	4,813.4	10,255.2	46.9
2000	Thai	MF	15-24	4,783.2	10,216.5	46.8
2000	Foreign	MF	15-24	30.3	38.8	78.1
2000	All	M	15-24	2,510.3	5,161.6	48.6
2000	Thai	M	15-24	2,496.2	5,144.1	48.5
2000	Foreign	M	15-24	14.0	17.6	79.9
2000	All	F	15-24	2,303.2	5,093.6	45.2
2000	Thai	F	15-24	2,286.9	5,072.4	45.1
2000	Foreign	F	15-24	16.2	21.2	76.6
2000	All	MF	25+	29,223.0	35,741.1	81.8
2000	Thai	MF	25+	29,109.2	35,550.2	81.9
2000	Foreign	MF	25+	113.8	190.9	59.6
2000	All	M	25+	15,077.8	17,179.8	87.8
2000	Thai	M	25+	15,002.3	17,065.5	87.9
2000	Foreign	M	25+	75.5	114.3	66.0
2000	All	F	25+	14,145.2	18,561.3	76.2
2000	Thai	F	25+	14,106.9	18,484.8	76.3
2000	Foreign	F	25+	38.3	76.6	50.0
2010	All	MF	15+	39,333.1	53,169.2	74.0
2010	Thai	MF	15+	37,473.3	50,929.3	73.6
2010	Foreign	MF	15+	1,859.8	2,239.9	83.0
2010	All	M	15+	20,335.5	25,683.9	79.2
2010	Thai	M	15+	19,276.9	24,445.6	78.9
2010	Foreign	M	15+	1,058.7	1,238.4	85.5
2010	All	F	15+	18,997.6	27,485.2	69.1
2010	Thai	F	15+	18,196.4	26,483.7	68.7
2010	Foreign	F	15+	801.1	1,001.5	80.0
2010	All	MF	15-24	4,038.2	9,149.1	44.1
2010	Thai	MF	15-24	3,475.1	8,529.0	40.7
2010	Foreign	MF	15-24	563.2	620.1	90.8
2010	All	M	15-24	2,208.0	4,470.8	49.4
2010	Thai	M	15-24	1,919.2	4,160.0	46.1
2010	Foreign	M	15-24	288.8	310.8	92.9
2010	All	F	15-24	1,830.2	4,678.4	39.1
2010	Thai	F	15-24	1,555.8	4,369.0	35.6
2010	Foreign	F	15-24	274.4	309.3	88.7

Table 3.A1.2. **Employment-to-population ratio, by origin, sex and age group** *(cont.)*

Year	Origin	Sex	Age	Employed ('000)	Population ('000)	Employed (%)
2010	All	MF	25+	35,294.9	44,020.0	80.2
2010	Thai	MF	25+	33,998.2	42,400.3	80.2
2010	Foreign	MF	25+	1,296.7	1,619.8	80.1
2010	All	M	25+	18,127.5	21,213.2	85.5
2010	Thai	M	25+	17,357.6	20,285.6	85.6
2010	Foreign	M	25+	769.9	927.6	83.0
2010	All	F	25+	17,167.3	22,806.9	75.3
2010	Thai	F	25+	16,640.6	22,114.7	75.2
2010	Foreign	F	25+	526.7	692.2	76.1

Source: Authors' own work based on Minnesota Population Center (2015), *Integrated Public Use Microdata Series*, *http://doi.org/10.18128/D020.V6.5* and National Statistical Office (undated), *Population and Housing Census 2010 microdata*, *http://web.nso.go.th/en/survey/lfs/lfs_main.htm*.

Table 3.A1.3. **Status in employment, by origin and sex**

Year	Origin	Sex	WSW (%)	E (%)	OW (%)	CFW (%)	MC (%)	NC (%)	Total (%)
2000	All	MF	34.5	1.6	32.9	30.9	0.1	0.0	100.0
2000	Thai	MF	34.5	1.6	33.0	31.0	0.1	0.0	100.0
2000	Foreign	MF	55.9	4.0	22.5	17.6	0.3	0.0	100.0
2000	All	M	37.0	2.2	43.6	17.2	0.0	0.0	100.0
2000	Thai	M	36.9	2.2	43.7	17.3	0.0	0.0	100.0
2000	Foreign	M	57.0	6.0	27.6	9.4	0.4	0.0	100.0
2000	All	F	31.9	1.0	21.5	45.6	0.1	0.0	100.0
2000	Thai	F	31.9	1.0	21.5	45.6	0.1	0.0	100.0
2000	Foreign	F	54.1	0.8	14.1	31.1	0.0	0.0	100.0
2010	All	MF	40.8	2.4	33.4	22.1	0.2	1.2	100.0
2010	Thai	MF	38.7	2.4	34.7	22.9	0.2	1.2	100.0
2010	Foreign	MF	82.7	2.3	7.1	6.5	0.3	1.1	100.0
2010	All	M	42.7	3.0	38.9	14.1	0.3	1.2	100.0
2010	Thai	M	40.4	3.0	40.6	14.6	0.2	1.2	100.0
2010	Foreign	M	83.3	3.2	8.6	3.5	0.3	1.1	100.0
2010	All	F	38.8	1.7	27.5	30.7	0.2	1.2	100.0
2010	Thai	F	36.9	1.7	28.4	31.6	0.2	1.2	100.0
2010	Foreign	F	81.9	1.1	5.3	10.5	0.2	1.1	100.0

Note: WSW = Wage and salaried workers; E = Employers; OW = Own-account workers; CFW = Contributing family workers; MC = Member co-operative; NC = Not classifiable.

Source: Authors' own work based on Minnesota Population Center (2015), *Integrated Public Use Microdata Series*, *http://doi.org/10.18128/D020.V6.5* and National Statistical Office (undated), *Population and Housing Census 2010 microdata*, *http://web.nso.go.th/en/survey/lfs/lfs_main.htm*.

Table 3.A1.4. **Employment by occupation, origin and sex**

Year	Origin	Sex	O1 (%)	O2 (%)	O3 (%)	O4 (%)	O5 (%)	O6 (%)	O7 (%)	O8 (%)	O9 (%)	Total (%)
2000	All	MF	5.0	4.9	2.4	2.4	9.7	51.7	6.2	5.4	11.8	100.0
2000	Thai	MF	5.0	4.9	2.4	2.4	9.7	51.8	6.2	5.4	11.7	100.0
2000	Foreign	MF	10.8	7.6	1.0	2.2	9.3	29.5	5.3	4.7	29.5	100.0
2000	All	M	6.2	4.0	2.4	1.9	7.2	51.0	7.3	7.1	12.0	100.0
2000	Thai	M	6.2	4.0	2.4	1.9	7.1	51.1	7.4	7.1	12.0	100.0
2000	Foreign	M	14.7	9.9	1.1	3.4	8.5	26.8	4.9	4.7	26.0	100.0
2000	All	F	3.7	5.9	2.4	2.9	12.4	52.5	5.0	3.6	11.5	100.0
2000	Thai	F	3.7	5.9	2.4	2.9	12.4	52.5	5.0	3.6	11.4	100.0
2000	Foreign	F	4.5	3.7	0.7	0.2	10.7	33.9	6.0	4.9	35.4	100.0
2010	All	MF	2.7	4.9	3.0	2.9	16.3	43.0	8.3	7.3	11.1	100.0
2010	Thai	MF	2.7	4.9	3.0	3.0	16.5	44.2	7.9	7.1	10.0	100.0
2010	Foreign	MF	2.2	4.1	1.1	0.4	12.2	17.6	15.5	12.4	34.6	100.0
2010	All	M	3.5	4.0	2.8	1.9	13.1	42.9	10.8	9.4	10.8	100.0
2010	Thai	M	3.5	3.9	2.9	2.0	13.2	44.3	10.5	9.2	9.6	100.0
2010	Foreign	M	3.2	5.3	1.2	0.4	10.3	17.5	16.5	13.0	32.6	100.0
2010	All	F	1.9	5.9	3.1	3.9	19.8	43.1	5.6	5.2	11.5	100.0
2010	Thai	F	1.9	6.0	3.2	4.0	20.1	44.2	5.2	4.9	10.4	100.0
2010	Foreign	F	0.8	2.5	1.0	0.3	14.8	17.7	14.2	11.5	37.2	100.0

Note:
O1 Legislators, senior officials and managers
O2 Professionals
O3 Technicians and associate professionals
O4 Clerks
O5 Service workers and shop and market sales workers
O6 Skilled agricultural and fishery workers
O7 Craft and related trades workers
O8 Plant and machine operators and assemblers
O9 Elementary occupations

Source: Authors' own work based on Minnesota Population Center (2015), *Integrated Public Use Microdata Series*, *http://doi.org/10.18128/D020.V6.5* and National Statistical Office (undated), *Population and Housing Census 2010 microdata*, *http://web.nso.go.th/en/survey/lfs/lfs_main.htm*.

Table 3.A1.5. **Employment by educational attainment, origin, sex and age group**

Year	Origin	Sex	Age	Less than one year (%)	Pre-primary (%)	Primary (%)	Secondary (%)	Tertiary (%)	Total (%)
2000	All	MF	15+	0.0	48.1	33.1	13.8	5.0	100.0
2000	Thai	MF	15+	0.0	48.0	33.2	13.9	4.9	100.0
2000	Foreign	MF	15+	0.0	76.8	6.1	4.0	13.1	100.0
2000	All	M	15+	0.0	44.9	35.5	14.8	4.8	100.0
2000	Thai	M	15+	0.0	44.8	35.7	14.8	4.8	100.0
2000	Foreign	M	15+	0.0	71.0	6.3	4.1	18.7	100.0
2000	All	F	15+	0.0	51.5	30.5	12.8	5.1	100.0
2000	Thai	F	15+	0.0	51.4	30.6	12.9	5.1	100.0
2000	Foreign	F	15+	0.0	85.7	5.7	3.9	4.6	100.0
2000	All	MF	15-24	0.0	7.2	70.5	19.8	2.6	100.0
2000	Thai	MF	15-24	0.0	6.8	70.8	19.9	2.6	100.0
2000	Foreign	MF	15-24	0.0	87.1	11.4	1.5	0.0	100.0

Table 3.A1.5. **Employment by educational attainment, origin, sex and age group** *(cont.)*

Year	Origin	Sex	Age	Less than one year (%)	Pre-primary (%)	Primary (%)	Secondary (%)	Tertiary (%)	Total (%)
2000	All	M	15-24	0.0	7.0	72.8	18.5	1.7	100.0
2000	Thai	M	15-24	0.0	6.6	73.1	18.6	1.7	100.0
2000	Foreign	M	15-24	0.0	86.4	12.0	1.6	0.0	100.0
2000	All	F	15-24	0.0	7.5	67.9	21.1	3.5	100.0
2000	Thai	F	15-24	0.0	7.0	68.3	21.2	3.5	100.0
2000	Foreign	F	15-24	0.0	87.8	10.9	1.3	0.0	100.0
2000	All	MF	25+	0.0	54.8	27.0	12.9	5.3	100.0
2000	Thai	MF	25+	0.0	54.8	27.0	12.9	5.3	100.0
2000	Foreign	MF	25+	0.0	74.0	4.6	4.7	16.7	100.0
2000	All	M	25+	0.0	51.2	29.3	14.1	5.3	100.0
2000	Thai	M	25+	0.0	51.1	29.4	14.2	5.3	100.0
2000	Foreign	M	25+	0.0	68.0	5.2	4.5	22.3	100.0
2000	All	F	25+	0.0	58.7	24.5	11.5	5.3	100.0
2000	Thai	F	25+	0.0	58.6	24.5	11.5	5.3	100.0
2000	Foreign	F	25+	0.0	84.9	3.6	5.0	6.5	100.0
2010	All	MF	15+	3.5	0.1	53.4	30.2	12.8	100.0
2010	Thai	MF	15+	2.9	0.1	53.7	30.5	12.7	100.0
2010	Foreign	MF	15+	28.2	0.0	40.9	14.8	16.1	100.0
2010	All	M	15+	3.0	0.1	52.3	33.2	11.3	100.0
2010	Thai	M	15+	2.4	0.1	52.7	33.8	11.1	100.0
2010	Foreign	M	15+	26.5	0.0	39.2	14.4	19.9	100.0
2010	All	F	15+	4.1	0.1	54.5	26.9	14.4	100.0
2010	Thai	F	15+	3.6	0.1	54.7	27.1	14.5	100.0
2010	Foreign	F	15+	30.5	0.0	43.3	15.3	10.9	100.0
2010	All	MF	15-24	0.0	0.0	25.8	65.3	8.8	100.0
2010	Thai	MF	15-24	0.0	0.0	23.6	67.2	9.1	100.0
2010	Foreign	MF	15-24	0.0	0.0	67.9	28.4	3.7	100.0
2010	All	M	15-24	0.0	0.0	28.8	65.8	5.4	100.0
2010	Thai	M	15-24	0.0	0.0	26.9	67.6	5.4	100.0
2010	Foreign	M	15-24	0.0	0.0	67.2	28.4	4.4	100.0
2010	All	F	15-24	0.1	0.0	22.0	64.8	13.1	100.0
2010	Thai	F	15-24	0.1	0.0	19.6	66.7	13.6	100.0
2010	Foreign	F	15-24	0.0	0.0	68.7	28.3	2.9	100.0
2010	All	MF	25+	3.9	0.1	56.3	26.5	13.2	100.0
2010	Thai	MF	25+	3.2	0.1	56.7	26.8	13.1	100.0
2010	Foreign	MF	25+	34.8	0.0	34.5	11.6	19.1	100.0
2010	All	M	25+	3.4	0.1	55.0	29.6	12.0	100.0
2010	Thai	M	25+	2.6	0.1	55.5	30.0	11.7	100.0
2010	Foreign	M	25+	32.1	0.0	33.3	11.4	23.2	100.0
2010	All	F	25+	4.5	0.1	57.6	23.2	14.6	100.0
2010	Thai	F	25+	3.9	0.1	58.0	23.4	14.6	100.0
2010	Foreign	F	25+	38.7	0.0	36.4	11.8	13.0	100.0

Source: Calculations for the year 2000 based on population census data from the Minnesota Population Center Integrated Public Use Microdata Series (IPUMS) (Minnesota, 2015); calculations for the year 2010 based on data from the 2010 Population and Housing Census (National Statistical Office).

Table 3.A1.6. **Skills mismatch between job requirements and qualifications, by origin, sex and age group**

Year	Origin	Sex	Age	Over-qualified (%)	Under-qualified (%)
2000	All	MF	15+	2.2	82.0
2000	Thai	MF	15+	2.2	82.0
2000	Foreign	MF	15+	0.8	84.4
2000	All	M	15+	2.2	80.6
2000	Thai	M	15+	2.2	80.6
2000	Foreign	M	15+	0.9	78.8
2000	All	F	15+	2.2	83.6
2000	Thai	F	15+	2.2	83.6
2000	Foreign	F	15+	0.8	93.2
2000	All	MF	15-29	3.5	69.5
2000	Thai	MF	15-29	3.5	69.3
2000	Foreign	MF	15-29	0.2	96.4
2000	All	M	15-29	3.2	68.9
2000	Thai	M	15-29	3.2	68.8
2000	Foreign	M	15-29	0.0	96.1
2000	All	F	15-29	3.9	70.0
2000	Thai	F	15-29	3.9	69.9
2000	Foreign	F	15-29	0.5	96.8
2000	All	MF	30+	1.7	86.8
2000	Thai	MF	30+	1.7	86.8
2000	Foreign	MF	30+	1.1	78.6
2000	All	M	30+	1.9	84.9
2000	Thai	M	30+	1.9	85.0
2000	Foreign	M	30+	1.2	72.8
2000	All	F	30+	1.5	88.8
2000	Thai	F	30+	1.5	88.8
2000	Foreign	F	30+	1.0	90.5
2010	All	MF	15+	8.4	54.1
2010	Thai	MF	15+	8.4	54.0
2010	Foreign	MF	15+	6.9	58.8
2010	All	M	15+	7.8	53.3
2010	Thai	M	15+	7.9	53.2
2010	Foreign	M	15+	7.1	58.0
2010	All	F	15+	8.9	54.9
2010	Thai	F	15+	9.0	54.7
2010	Foreign	F	15+	6.7	60.1
2010	All	MF	15-29	15.9	22.7
2010	Thai	MF	15-29	16.2	21.6
2010	Foreign	MF	15-29	9.0	47.9
2010	All	M	15-29	13.9	24.8
2010	Thai	M	15-29	14.1	23.6
2010	Foreign	M	15-29	11.1	50.9
2010	All	F	15-29	18.0	20.4
2010	Thai	F	15-29	18.5	19.4
2010	Foreign	F	15-29	6.6	44.3

Table 3.A1.6. **Skills mismatch between job requirements and qualifications, by origin, sex and age group** *(cont.)*

Year	Origin	Sex	Age	Over-qualified (%)	Under-qualified (%)
2010	All	MF	30+	6.5	61.8
2010	Thai	MF	30+	6.5	61.7
2010	Foreign	MF	30+	5.8	64.5
2010	All	M	30+	6.3	60.6
2010	Thai	M	30+	6.3	60.6
2010	Foreign	M	30+	5.3	61.2
2010	All	F	30+	6.8	63.0
2010	Thai	F	30+	6.8	62.9
2010	Foreign	F	30+	6.7	69.6

Source: Authors' own work based on Minnesota Population Center (2015), *Integrated Public Use Microdata Series*, *http://doi.org/10.18128/D020.V6.5* and National Statistical Office (undated), *Population and Housing Census 2010 microdata*, *http://web.nso.go.th/en/survey/lfs/lfs_main.htm*.

Chapter 4

How immigrants affect the labour market in Thailand

When considering how immigration affects an economy, a key concern is whether native-born individuals lose their jobs or get paid less because of the increased competition by foreign-born workers. This chapter addresses this question based on an econometric approach.

As discussed in Chapter 2, Thailand plays a major role in receiving workers from neighbouring countries as well as sending its own workers to other countries. Due to the rapid economic growth starting in the late 1980s, Thailand has transformed from a net emigration country in the 1970s and 1980s to a net labour immigration country by the early 1990s. Since then, the country has become an important destination for regional labour migrants. Immigrants from neighbouring countries such as Myanmar, Cambodia, and the Lao People's Democratic Republic (Lao PDR) accounted for more than 85 % of the total migrant populations in 2010 (see Chapter 2). This number is expected to increase due to Thailand's relatively favourable economic position in the region.

The analysis in chapter 3, in particular the high share of foreign-born workers in elementary occupations, suggests that employment of immigrant workers has partly been a response to the abundant supply of relatively cheap workers available in the Southeast Asia region. Furthermore, Thailand is experiencing a significant amount of demographic change (see Figure 3.3). Thailand's aging population and falling fertility rates are expected to contribute to labour shortages in the manufacturing, agricultural, as well as service sectors. Hence, the demand for migrant workers is projected to continue, especially for low and medium skilled workers (ILO/ADB, 2014). Given these strong pull factors, labour migration will likely remain important for Thailand's labour and economic growth and development in the short- and medium-term. An important question in this context is whether or to what extent the employment of immigrant workers has been beneficial or detrimental for the employment of native-born Thai workers.

This chapter looks into this question, using a formal econometric approach. In accordance with the literature, which generally does not report significant effects of an increased presence of foreign-born workers on native-born workers' employment rates, it is found that this presence has no impact on the overall level of native-born individuals' employment. However, there is a positive effect of immigration on the level of native-born paid employment.

According to economic theory, labour immigration increases labour supply in destination countries and leads to adjustments of employment and wages. At the theoretical level, the nature of such adjustments depends on various assumptions, while empirical studies in the context of developed countries tend to show limited effects. However, effects are more likely to be negative

for certain population groups, such as low-income or lower-educated workers and prior immigrant cohorts (Barone and Mocetti, 2011; Borjas, 1994, 1999, 2003, 2006, 2014, 2015; Borjas and Hilton, 1996; Card, 2001; Friedberg and Hunt, 1995; Hanson, 2008; Kerr and Kerr, 2011; Longhi, Nijkamp and Poot, 2005, 2010). While interest in the labour market effects of immigration in developing countries is growing, few empirical studies have been undertaken. Thailand is an exception in this regard, as a number of studies have explored the labour market impact of immigration in the country. The following section discusses some of the results in existing literature before turning to the empirical approach used in this chapter.

Effects of immigration on wages and employment

Previous studies suggest that immigration can have an impact on wages in Thailand, but its strength varies depending on the approach used. Kulkolkarn and Potipiti (2007) do not find significant effects of immigration on the reduction of wages for native-born individuals using a geospatial analysis, while Bryant and Rukumnuaykit (2007), based on a similar approach, argue that immigration does indeed cause a reduction in Thai workers' wages.[1] They reveal that a 10% increase in the foreign-born share can lead to a reduction in wages by 0.2%, when controlling for differences between districts. The authors find no significant effect of immigration on employment rates of Thai workers, and attribute these findings to the Thai market adjusting to increased immigration through reduced wages, rather than reduced employment. This reflects the fact that most Thais cannot afford to withdraw from the labour market, and the absence of a binding or enforced minimum wage at the time of the study (Bryant and Rukumnuaykit, 2007). Furthermore, immigrants experience a precarious legal situation and may therefore be more willing to accept lower wages. The authors warn, however, that they do not find any direct evidence to support one mechanism over another.

A relatively small effect on wages was also found by Lathapipat (2010), who also accounts for differences between districts as well as differences between and within industries. In addition, the author finds that prior immigrant cohorts are most strongly impacted by new immigration, while low unskilled Thai workers are also affected. Highly-skilled Thai workers benefit from higher wages. Lathapipat (2010) argues that labour intensive industries have become increasingly dependent on immigrant workers as Thais move up the skills ladder to take on better paying jobs. These effects are not found to be larger in provinces with a larger share of immigrants.

In a second analysis, Bryant and Rukumnuaykit (2012) use data from a registration campaign for immigrants from Cambodia, the Lao People's Democratic Republic (Lao PDR) and Myanmar in 2004 alongside survey data.

These authors find a negative effect of immigration on Thai wages which is again relatively small, though larger than often found in developed countries, and no evidence of negative employment effects. Similarly, Pholphirul, Kamlai and Rukumnuaykit (2010) find that employed immigrants reduce real wages of the native-born by on average 2.0%, but in particular in the agricultural sector (by 4.3%, compared to 2.4% in the manufacturing sector and only 0.2% in the service sector). Pholphirul and Kamlai (2014) find that an increase in the employment of immigrants in agriculture reduces agricultural employment by about 0.7% and wages by around 4.3%. This is attributed to the substitutability of low-skilled immigrant and native Thai workers in the sector. The authors recommend that immigration policy should be more firmly rooted in national economic and social development planning, in particular in terms of promoting skill development, recognition (preferential hiring of skilled immigrants) and technological development.

Basic economic principles would suggest that if immigration has a negative effect on wages, one would expect to see a concomitant positive effect on employment rates. As already hinted at above by the findings of Pholphirul and Kamlai (2014), this might not be the case in Thailand. Regarding the employment of native workers, Kulkornkarn and Potipiti (2007) show that a percentage increase in the ratio of migrant to native workers of a province in 2001 raised the native's unemployment rate by about 0.5% in 2005. In contrast, Bryant and Rukumnuaykit (2012) find no evidence that immigration has reduced Thai employment rates or has affected the internal migration of Thais.

Overall, findings of research in Thailand agree that if labour immigration does have an impact on the labour market outcomes of Thai workers, it will be mainly on the wages of Thai workers and not through changes in employment or unemployment rates. However, no consensus exists regarding the size of that impact – estimates depend on the methods and data that are used.

The issue of non-wage employment or self-employment has not been given much attention in the empirical studies undertaken in Thailand. Additionally, large numbers of undocumented workers migrate through irregular channels and many find informal employment in Thailand, as wage worker or as self-employed worker. There is little empirical evidence on the effect of undocumented immigrants on the wages and employment of Thais.

Empirical approach

Immigration can be considered as an increase in the supply of labour which, following Borjas (2003), can be analysed based on two dimensions: education and experience. Both dimensions have been emphasised by human capital theory as important to determining labour market outcomes (Becker,

1975; Mincer, 1974), and education and experience jointly determine the "skill cells", or groups of workers with similar human capital, which are central to the analysis of immigration in this chapter. The analysis uses data from the last three Thai population censuses conducted in 1990, 2000 and 2010.

The skill cells are used to assess how labour market outcomes of Thai-born workers of a certain skill level are affected by the proportion of immigrant workers of the same skill level. Skill level is approximated by dividing the working age population of Thailand into groups based on four levels of educational achievement and eight levels of years of experience. Subsequently, variations in the proportion of immigrants across skill cells are used to assess the impact of immigration on labour market outcomes (see Annex 4.A1 for methodological details).

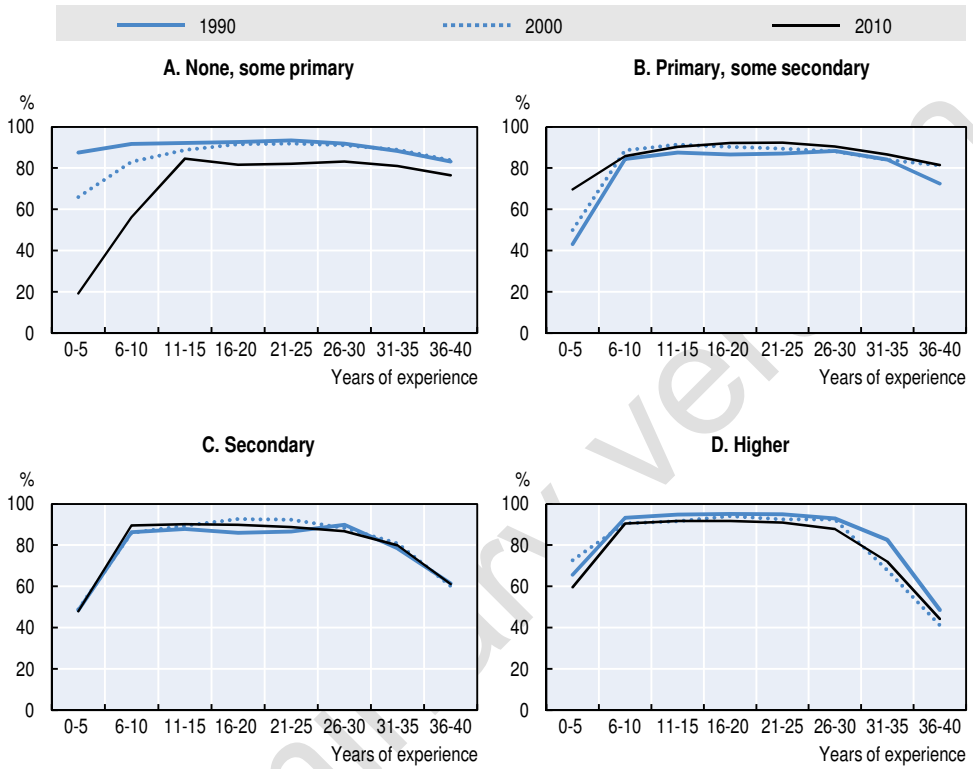
Labour market outcomes included in the analysis are the employment-to-population ratio (EPR) and the rate of paid employment of Thai-born workers. One can imagine a broad range of other meaningful labour market indicators which can be similarly analysed, including unemployment or underemployment rates, vulnerable employment rates, wages, or hours worked. The degree to which these indicators can be analysed depends on the quality and availability of data, which in the case of Thailand is challenging. As unemployment data were not recorded in the 2010 Thai census wave, it was not possible to look at immigration impacts on unemployment. Similarly, while wage information is available in the Thai labour force survey, this dataset contains no information on place of birth, rendering it impossible to calculate foreign-born shares per skill cell.

Employment rates for Thai workers depend on level of education and years of experience

The employment rate of native-born workers has decreased over the three censuses for workers with less than a completed primary level of education and less than ten years of work experience (Figure 4.1). By contrast, on average the employment rate of native-born workers has remained the same or increased over the three censuses for workers with a completed primary education, some secondary education level or more. A decline in employment rates is observed across all education groups at the edges of the experience range – there are relatively fewer employed Thai-born workers with few or many years of work experience compared to workers in the middle of the range. This may be because workers early in their careers are more likely to be cyclically unemployed as they look for the right job or continue their education, particularly in the higher education categories, while more experienced workers may start retiring, in some cases before they leave the working-age population (particularly at the higher levels of education).

Figure 4.1. **Thai-born employment-to-population ratios vary by years of experience and education**

The employment rate of native-born individuals as a percentage of the working-age population (ages 15-64) by education levels and years of experience



Source: Authors' own work based on Minnesota Population Center (2015), *Integrated Public Use Microdata Series*, *http://doi.org/10.18128/D020.V6.5* and National Statistical Office (undated), *Population and Housing Census 2010 microdata*, *http://web.nso.go.th/en/survey/lfs/lfs_main.htm*.

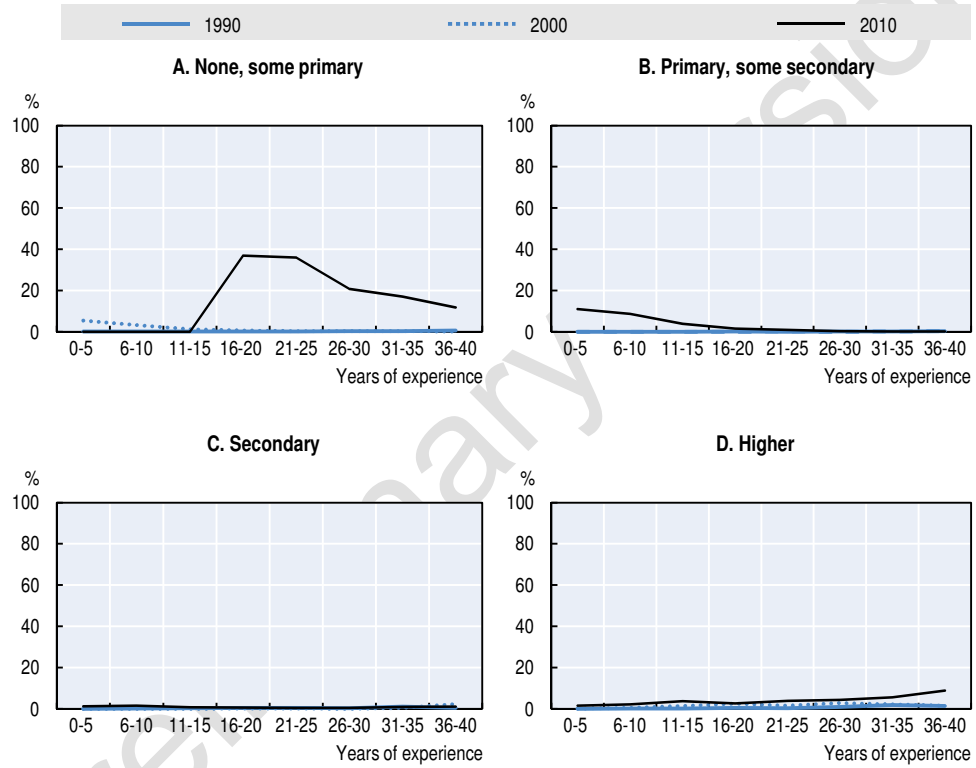
Immigrant workers in Thailand tend to have low levels of education

The immigrant share of the working-age population as shown in Figure 4.2 represents the percentage of immigrants in each skill cell per year. Recently, the share of immigrants is considerable among those with less than a completed primary level of education. In 2000, immigrants with less than a completed primary level of education represented about 5.5% of the working-age population with 0-5 years of work experience and 3.3% of those with 6-10 years of work experience. In 2010, immigrants with less than a completed primary level of education represented about 36.9% of the working-age population with 16-20 years of work experience and 36.0% of those with 21-25 years of work experience. The share of immigrants with a completed secondary level of education represented less than 3% of the working-age population for all three censuses. The immigrant share of the working age population has remained the

same or increased slightly over the three censuses for workers with a completed secondary or higher education level. The immigrant share of the working-age population demonstrates that most immigrants in Thailand have a low level of education (Figure 4.2; also see Chapter 3).

Figure 4.2. **Immigrant workers are over-represented among workers with low education and some experience**

The foreign-born workers as a percentage of the working-age population (ages 15-64) by education levels and years of experience



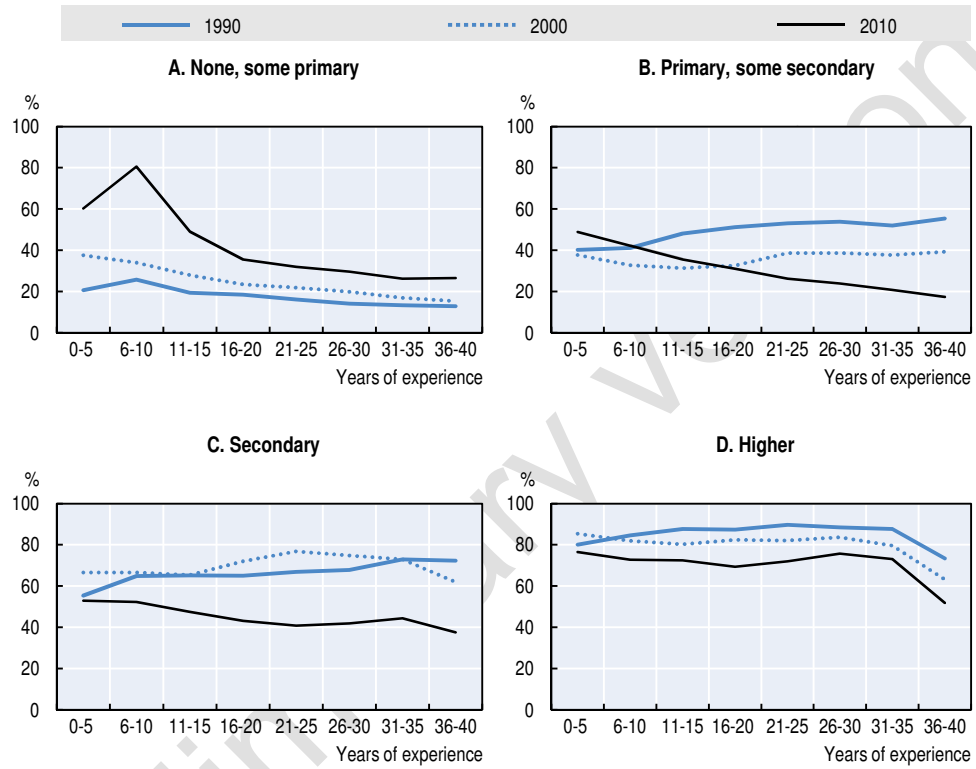
Source: Authors' own work based on Minnesota Population Center (2015), *Integrated Public Use Microdata Series*, *http://doi.org/10.18128/D020.V6.5* and National Statistical Office (undated), *Population and Housing Census 2010 microdata*, *http://web.nso.go.th/en/survey/lfs/lfs_main.htm*.

Figure 4.3 illustrates the native-born paid employed as a percentage of all native-born employed workers by level of education and experience for the three census waves. While paid employment increases considerably with education, the rate of native-born paid employed has declined significantly over the three census waves for workers with a completed secondary education and lower, who already have some years of work experience. Across all education levels, paid employment rates also decrease as work

experience increases. In other words, a higher level of education improves one's chances of finding paid employment, but having more work experience does not have the same effect.

Figure 4.3. **Paid-employment rates are far higher for better educated workers**

Thai-born paid employment rate (ages 15-64) by years of experience and education levels

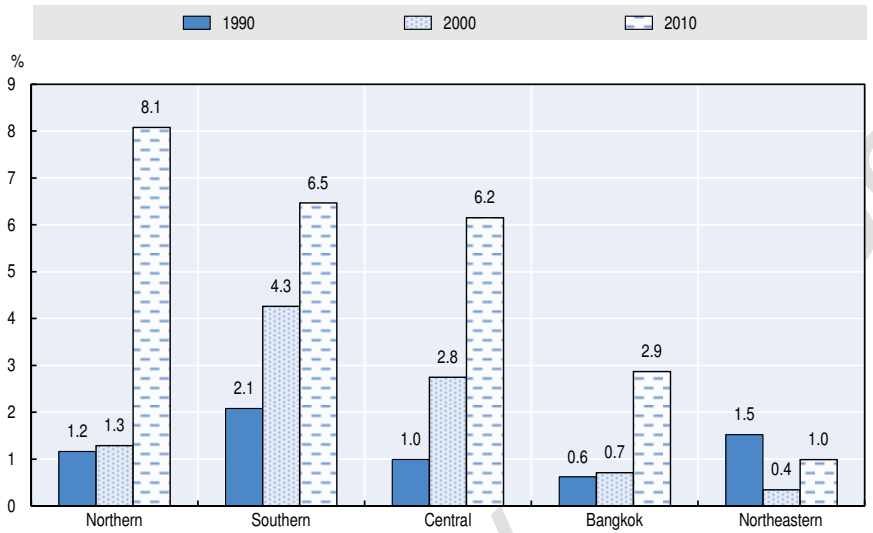


Source: Authors' own work based on Calculations based on National Statistical Office (undated), *Population and Housing Census 2010 microdata*, *http://web.nso.go.th/en/survey/lfs/lfs_main.htm*.

The immigrant share of the working-age population in all regions increases significantly over the three censuses except in the Southern region (Figure 4.4). In the Bangkok Metropolis region, the immigrant share increases from 0.6% in 1990 to 2.9% in 2010; it increases from 1.0% in 1990 to 6.2% in 2010 in the Central region; in the Northern region it increases from 2.1% in 1990 to 6.5% in 2010; and it increases in the Northeastern region from 1.2% in 1990 to 8.1% in 2010. In the Southern region, however, the immigrant share of the working age population declines from 1.5% in 1990 to 1.0% in 2010. In other words, over time the immigrant share has increased in most of the regions of Thailand, but especially in the regions that are closest to the borders between Cambodia, and Lao PDR and Myanmar. Native-born paid employment rates also differ considerably per region.

Figure 4.4. **Immigrants tend to concentrate in the North and Northeastern regions of Thailand**

Immigrant share of working-age population by region (%)

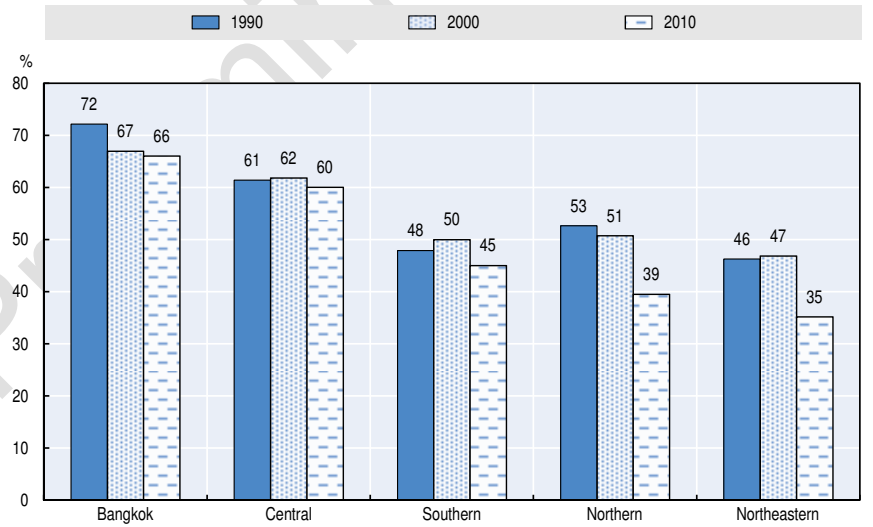


Note: Regions were sorted by the share in the Thailand Census of 2010.

Source: Authors' own work based on Minnesota Population Center (2015), *Integrated Public Use Microdata Series*, *http://doi.org/10.18128/D020.V6.5* and National Statistical Office (undated), *Population and Housing Census 2010 microdata*, *http://web.nso.go.th/en/survey/lfs/lfs_main.htm*.

Figure 4.5. **Regional variation in paid employment rates is important**

Native-born paid employment as a share of all native-born employed workers by region (%)



Note: Regions were sorted by the share in the Thailand Census of 2010.

Source: Authors' own work based on Minnesota Population Center (2015), *Integrated Public Use Microdata Series*, *http://doi.org/10.18128/D020.V6.5* and National Statistical Office (undated), *Population and Housing Census 2010 microdata*, *http://web.nso.go.th/en/survey/lfs/lfs_main.htm*.

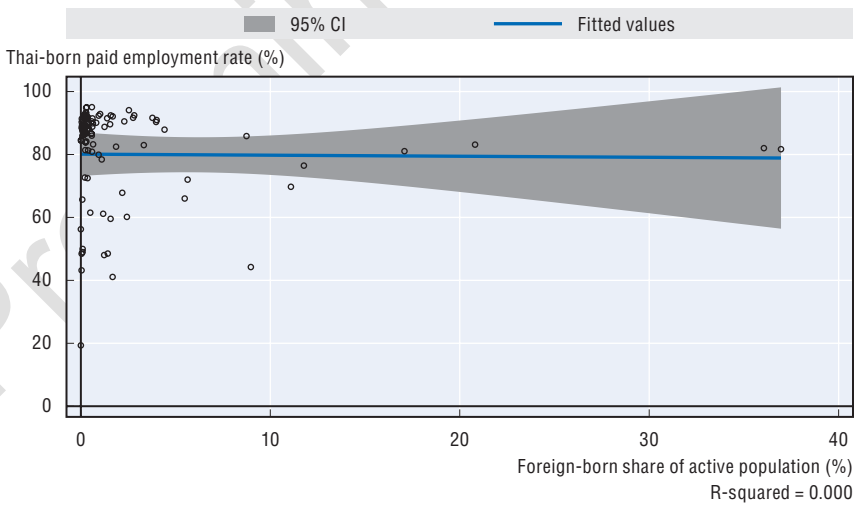
Immigration positively affects native-born paid employment rates

One graphic way of illustrating how concentrations of foreign-born workers and the labour market out comes of native-born workers are related is through simple correlations. A correlation is a statistical measure which indicates the extent to which two variables fluctuate together. The two variables analysed here are the average labour market outcomes of native-born workers in a given year and education and experience group on the one hand, and the share of foreign-born workers in that group on the other hand. It should be noted, however, that that a positive or negative correlation does not mean that a change in one of the two variables is the cause of the change in the other. Other factors could for instance affect the level of both variables at the same time.

Upon first inspection of Figure 4.6, there does not appear to be any relationship between the share of foreign-born workers and the EPR of Thai-born workers. As discussed for Figures 4.1 and 4.2, the concentration of observations in the top left corner of the figure suggests that, on the one hand, shares of migrants workers in skill cells tend to be very low, while at the same time, the EPR of Thai-born workers in most cells is very high. However, it is necessary to take in to account at least changes over time and differences between the various education and experience levels in order to look at more meaningful correlations.

Figure 4.6. **Thai-born employment-to-population ratios do not seem to vary with the share of foreign-born workers**

The employment rate of native-born individuals as a percentage of the working-age population (ages 15-64) versus the share of migrants in the working age population, by skill cells



Source: Authors' own work based on Minnesota Population Center (2015), *Integrated Public Use Microdata Series*, *http://doi.org/10.18128/D020.V6.5* and National Statistical Office (undated), *Population and Housing Census 2010 microdata*, *http://web.nso.go.th/en/survey/lfs/lfs_main.htm*.

In the following, the analysis assesses the correlation between immigration and labour market outcomes for Thai-born men and women, across the three survey years and grouped by skill cell, at the national and regional levels. This is followed by an analysis at the national level for men and women separately. The analysis also examines impacts of the most recent immigrants only. Table 4.1 presents the sign of estimated regression coefficients of the foreign-born share of the economically active population per skill cell on each labour market outcome (see Table 4.A2.1 for the estimated coefficient of the effects).

The relationship between the foreign-born share of economically active workers and the employment rate of native-born workers (Table 4.1) is insignificant at the national level, implying that the presence of immigrants does not affect Thai-born workers' overall employment rates. However, at the regional level, the presence of immigrant workers has a significant and positive effect on employment rates. This finding suggests that regional differences might obscure more localised labour market effects of immigration, as much due to the entry of new foreign-born workers as to the internal relocation of native-born workers between regions.

Table 4.1. **Immigrants have an impact on paid employment rates of the native-born**

Summary of the regression results on the relationship between native-born labour market outcomes and foreign-born shares

Variables	All workers National	All workers Regional	Men	Men (controlling for women)	Women	New immigrants
(1) Employment rate of Thai-born workers	o	+	o	o	o	o
(2) Paid employment rate of Thai-born workers	+	o	+	+	o	+

Note: The table reports the sign of the immigrants' share variables from regressions where the dependent variable is the mean Thai-born labour market outcome for an education*experience group at a particular point in time. o = no significant effect; + = a significant positive effect; - = significant negative effect. See Annex 4.A2 for effect size estimates.

Source: Authors' own work based on Minnesota Population Center (2015), *Integrated Public Use Microdata Series*, *http://doi.org/10.18128/D020.V6.5* and National Statistical Office (undated), *Population and Housing Census 2010 microdata*, *http://web.nso.go.th/en/survey/lfs/lfs_main.htm*.

The impact of immigration on labour market outcomes of native-born workers does not have to be limited to employment rates; it is also informative to look at how the quality of Thai-born workers' employment changes in the presence of foreign-born workers. Here the relationship between the share of immigrants and the paid employment rate of Thai workers is considered. This relationship is significant and positive at the national level, but not at the regional level. This suggests that employment of foreign-born workers generates additional opportunities for native-born workers, mostly likely at higher levels of skills.

When looking at the impact of the presence of foreign-born workers at the national level for men and women separately, only the sample of men shows a statistically significant relationship between the foreign-born share and the paid employment rate of native-born workers. However, the presence of immigrant women is not linked to any labour market outcome of Thai-born women, suggesting that the effect observed for all workers is driven mainly by the presence of immigrant men. Even when controlling for the share of women in a skill cell, an independent effect of the share of immigrant men remains significant and positive.

Finally, in order to look at the effects of only the most recently arrived workers, foreign-born workers are defined as only those who have been residents in the region for the past five years. This assumes that any foreign-born worker who entered the Thai labour market before that time will have been sufficiently integrated to no longer have the same impact as a more recent foreign-born worker. While results for this specification follow the same pattern as found in the sample of all foreign-born workers at the national level, the effect of the presence of new foreign-born workers on the paid employment rate of Thai-born workers is much larger (see Table 4.A2.1), suggesting that impacts of immigration might be stronger in the short-term. As immigrants integrate more fully into the labour market, their potential impacts may well diminish.

Conclusions

The analysis in this chapter aims to quantify some of the effects of immigration on the Thai labour market based on the widely used skill-cell approach developed in Borjas (2003) and used by Facchini, Mayda and Mendola (2013), De Brauw and Russell (2014), and others. The impact of immigration on labour market outcomes of native-born workers using this approach has been assessed by examining several labour market outcomes of Thai-born workers in relation to the proportion of economically active immigrants with comparable levels of skill. In line with findings of previous research (see Bryant and Rukumnuaykit, 2007; Kulkolkarn and Potipiti, 2007; Lathapipat, 2010), foreign-born workers do not displace Thai-born workers on the labour market at the national level.

Due to data limitations, the analysis does not address the impact of immigration on native-born wages, which, according to certain methodologies, has been found to be negative in previous research – in fact, most studies show that the strongest labour market impacts of immigration to Thailand are seen in the form of wage impacts. Nonetheless, given that the presence of foreign-born workers raises the proportion of native-born workers in paid employment, it might indeed be the case that certain categories of Thai-born workers are finding higher quality employment in the presence of more foreign-born workers, which might also have an impact on those workers' wages.

At the regional level the presence of foreign-born workers has a significant positive effect on employment rates of native-born workers. Borjas (2003) also compares results of national and regional level skill cells, and finds that the latter consistently lead to a reduction in the observed impact of immigration, contrary to what is found here. Borjas argues that impacts gets diffused across regions, through internal immigration, capital reallocation or other adjustment processes, assuming (implicit in the skill-cell approach) that workers within skill cells are perfectly substitutable. Critics have argued that this assumption leads to a potential overstatement of immigration's adverse effects (Bodvarsson and Van den Berg, 2013; Ottaviano and Peri, 2008). If foreign- and native-born workers are not perfect substitutes in Thailand, which seems very likely given the former's educational profiles and relative under-qualification (see Chapter 3), this would result in a downward bias of the estimated effects. If this is also the case here, it would lend strength to the interpretation that, likely in border regions, the increase in immigrant workers indeed leads to more employment opportunities for native-born workers.

It has been argued elsewhere that Thailand's mechanisms for protecting labour rights and empowering immigrant workers are inadequate (Vasuprasat, 2016). In view of this context, and given the high proportion of foreign-born workers in low-skill occupations (see Chapter 3), the positive impact on native-born workers' labour market outcomes might, to some extent, be due to unfavourable conditions in which the foreign-born work. In this respect, vulnerable employment is an important aspect to be taken into account when analysing immigration's impacts on the labour markets of developing countries. However, this issue has not been addressed in existing quantitative empirical studies undertaken in Thailand.

Nonetheless, as the positive impact of immigrants appears to lessen with time spent in Thailand, a long-term policy approach to immigrants' labour market integration, and adequate protection of immigrant workers, would not only contribute to improving prospects for immigrant workers themselves, but would also discourage firms' continued reliance on low-skilled labour at the expense of investing in long-term improvements in technology (cf. Pholphirul, 2012).

Note

1. The authors argue that their effect size (-1.77) is stronger than that of Longhi, et al.'s 2005 meta-analysis, which finds an average of -0.119. The authors claim that the strength of the effect is still much smaller than that found by Borjas (2003). It should be noted that in a later publication, Borjas (2015) also finds effect sizes between -0.5 and -1.5.

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ANNEX 4.A1

Methodology of labour market impact assessment

Following Borjas (2003), skill cells based on education and experience are used to assess how labour market outcomes of Thai-born workers of a certain skill level are affected by the proportion of immigrant workers of the same skill level. Accounting for any interactions between education and experience, and changes in these variables over time, the main equation to be estimated becomes:

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

Where Y_{ijt} is the labour market outcome for a Thai-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, work experience j at time t and N_{ijt} is the number of Thai-born workers with education i, 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) and the time period (c_t).

The analysis can be extended to include the impact of women on labour market outcomes of Thai-born workers (see De Brauw and Russell, 2014), by including the following control variable:

$$w_{ijt} = W_{ijt} / (W_{ijt} + K_{ijt}) \quad (3)$$

Where W_{ijt} is the number of women (both Thai- and foreign-born) with education i, work experience j at time t and K_{ijt} is the number of men (both Thai- and foreign-born) with education i, work experience j at time t.

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

$$Y_{ijtk} = \beta m_{ijtk} + e_i + w_j + c_t + d_k + (e_i * w_j) + (e_i * c_t) + (w_j * c_t) + (d_k * e_i) + (d_k * w_j) + (d_k * c_t) + u_{ijt} \quad (4)$$

where Y_{ijtk} is the labour market outcome for a Thai-born worker in district k (k = 1…K), with education i and work experience j for year t. The variable d_k is a fixed effect accounting for the regional distribution of workers.

Data are aggregated at the level of skill cells, and regressions are weighted by the size of the economically active population per education*experience*year period.

The sample is restricted to individuals aged 15-64 who take an active part in the labour market (i.e. are employed or unemployed), and includes both native-born men and women. Borjas (2003) argues in his analysis that work experience cannot be adequately approximated 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 case of the United States, changes in the labour force participation rate of men and women between 1960 and 2000 might have had a strong cultural component, this is not immediately evident for Thailand. Differences in employment rates by sex in 2010, for example, were small. Furthermore, according to the World Bank's World Development Indicators, the female labour participation rate (percent of the female population aged 15-64) in Thailand was approximately 80.0% in 1990, 70.7% in 2000 and 70.5% in 2010. The female labour participation rates (percent of female population aged 15-64) in Thailand are therefore much higher compared to the average female labour participation rates in for instance OECD members (56.4% in 1990, 59.0% in 2000 and 61.4% in 2010).

As argued by De Brauw and Russel (2014), women's labour market experience might also be affected by possible time outside the labour market due to childrearing or other domestic tasks. The responsibilities for these tasks often fall disproportionately on women, (see Blau and Kahn, 2013). These authors further find that including individuals with interruptions of full-time work experience can lead to measurement errors and biased estimates of the returns to experience as well as the quantity of post-school human capital investment. The lack of information on actual work experience can also have serious consequences for analysing differences in the gender pay gap.

In the analysis in this chapter, women's labour market experience is adjusted downwards by a maximum of 4 years, using age-specific fertility rates per year as cumulative weights to build up the 4-year gap between the ages of 15 and 49 (De Brauw and Russell, 2014).

In Chapter 4, employees are those who work in return for a wage or income per month, per day or per job. They may receive commission in return for the work or service they perform. The commission may be in the form of money or in kind payments. Employees may be divided into three types: 1) government employees, which refers to civil servants, municipality

officers, officers of the provincial administration organisations, personnel of international organisations; 2) government enterprise employees; and 3) private employees, who are those who work for a person or private business including those who are hired for household chores such as laundry, babysitting, cooking and house cleaning. This classification includes temporary and permanent employees.

ANNEX 4.A2

Regression results

Table 4.A2.1. **Estimates of effects of foreign-born workers on labour market outcomes of Thai-born workers**

Education*experience*year cells

Variables	All workers National	All workers Regional	Men	Men (controlling for women)	Women	New immigrants
(1) Employment rate of Thai-born workers	0.424	0.327**	0.220	-0.009	0.333	0.774
	(0.592)	(0.161)	(0.524)	(0.491)	(0.374)	(1.373)
(2) Paid employment rate of Thai-born workers	0.389*	-0.175	0.671*	0.724*	-0.093	0.910**
	(0.234)	(0.143)	(0.349)	(0.394)	(0.160)	(0.457)
R-squared	0.991	0.980	0.987	0.988	0.993	0.991

Note: The table reports the coefficient of the immigrants' share variables from regressions where the dependent variable is the mean Thai-born labour market outcome for an 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 36 observations at the national level and 180 observations at the regional level per year and are weighted by the sample size of the education*experience*year cell. All regression models include education, experience, period fixed effects and a full set of two-way interactions.

Source: Calculations for the years 1990 and 2000 based on population census data from the Minnesota Population Center Integrated Public Use Microdata Series (IPUMS) (2015); calculations for the year 2010 based on data from the 2010 Population and Housing Census (National Statistical Office, undated).

Chapter 5

Immigration and economic growth in Thailand

This chapter discusses the impact of immigration on the broad economy of Thailand. It takes into account the educational attainment of foreign-born and native-born workers, the sectors in which they work and their wages. The last part of the chapter discusses some of the issues involved in assessing the economic contribution of immigrant labour based on a computable general equilibrium econometric model.

Previous chapters provided the economic context of immigration in Thailand, and examined in particular the labour market position of foreign-born workers. This chapter assesses the contribution of immigrant workers to GDP in Thailand, based on labour market and other information.

An expansion of the workforce will almost invariably increase a country's total output level, as shown for example by Borjas (1999). Assuming that the economic contribution of immigrant workers is broadly related to the number of workers, it is possible to make a quantitative assessment of the direct output generated by immigrants in Thailand. As the sectoral distribution of workers is a major determinant of the contribution to GDP, this chapter starts with a brief review of sectoral development of the Thai economy and the position of foreign-born workers in this regard. It will be shown that foreign-born workers are over-represented in industrial sectors, particularly manufacturing and construction, but also in private household services.

Based on the sectoral distribution, and assumptions regarding labour productivity, the chapter estimates foreign-born workers contribute between 4.3% and 6.6% of GDP. Even though it is not feasible to determine the contribution of immigrant workers to GDP per capita with great accuracy, the chapter also demonstrates that it is likely that immigration raises income per capita in Thailand. Finally, an econometric model is used to illustrate some of the issues involved in the assessment of the contribution of foreign-born workers to GDP, such as the extent to which foreign-born workers are complementary to the native-born, and differences between short-run effects and impact in the long run.

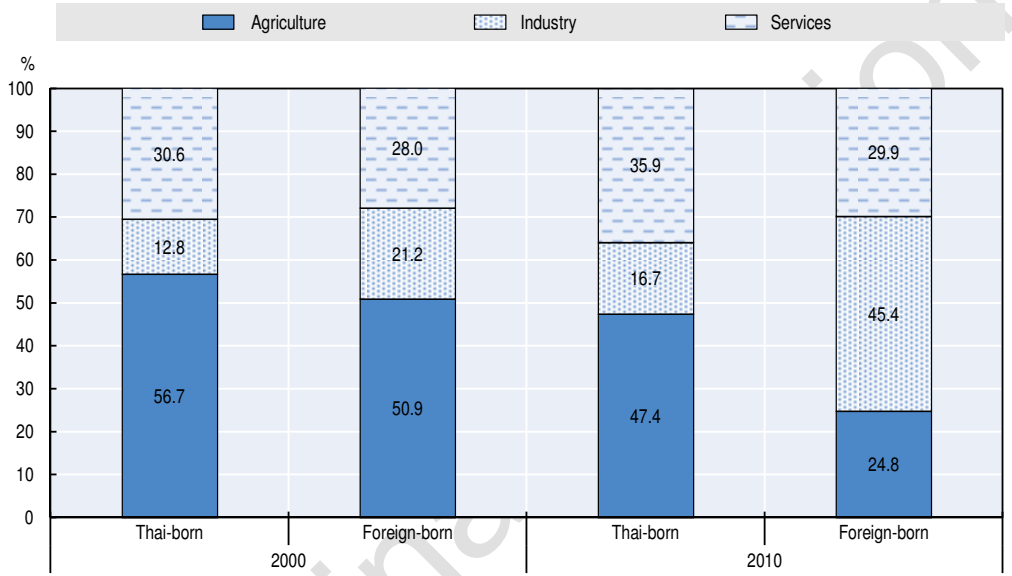
Shifts in sectoral employment away from agriculture

The standard development discourse suggests that, with economic growth, own-account work in traditional, subsistence agriculture will give way to wage employment in industry and services. As was highlighted in Chapter 2, agriculture indeed became less important for Thai GDP, and the same is true for both Thai-born and foreign-born workers between 2000 and 2010 (Figure 5.1). The share of Thai-born workers in agriculture declined by 9.3 percentage points, and for foreign-born workers the decline was 26.1 percentage points. In line with the standard discourse, employment in industry increased slightly for Thai-born workers and considerably for foreign-born workers, suggesting increasing industrialisation in Thailand's economy and an important role for immigrant labour in this process. Indeed, while services accounted for a far

higher employment share than industry for Thai-born individuals in 2010 compared to 2000 (35.9% in services and 16.7% in industry, respectively), the opposite was the case for foreign-born workers (45.4% in industry and 29.9% in services).

Figure 5.1. **Employment in industry is more important for foreign-born workers**

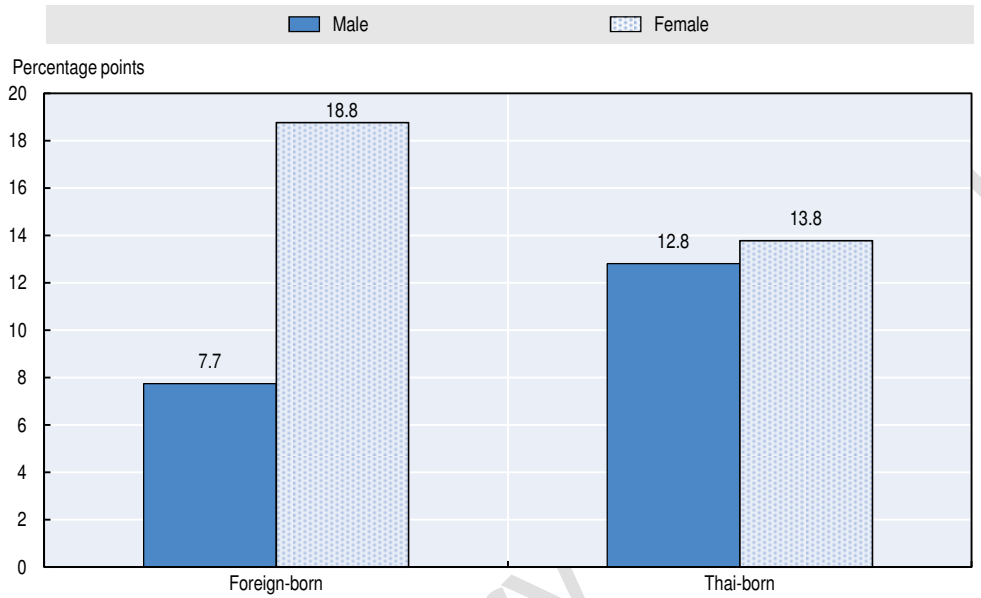
Employment by broad sector and origin (%)



Source: Authors' own work based on Minnesota Population Center (2015), *Integrated Public Use Microdata Series*, *http://doi.org/10.18128/D020.V6.5* and National Statistical Office (undated), *Population and Housing Census 2010 microdata*, *http://web.nso.go.th/en/survey/lfs/lfs_main.htm*.

Within the broad industry sector as well as across all sectors, the largest increase in the sectoral share of employment was demonstrated by manufacturing (see also Annex Table 5.A1.1). Due to the increased employment opportunities in manufacturing and in other sectors, there has been increased female immigration from abroad as well as heightened rural-urban immigration by foreign-born women rather than foreign-born men. In general, foreign-born workers (male and female) tend to be present more in the urban areas of Thailand with the magnitude increasing over time. While 50% of foreign-born male workers and 38% of foreign-born female workers were employed in urban areas in 2000, this increased to 58% and 56%, respectively, in 2010 (Figure 5.2). On the other hand, and despite on-going urbanisation, the Thai-born employed still reside mostly in the rural areas. While 71% of male workers and 72% of female workers were residing in rural areas in 2000, this declined to 58% for both men and women in 2010.

Figure 5.2. **Urban employment is particularly important for foreign-born women**
Changes in the urban share of the employed population (2000-10), by origin and sex (percentage points)



Source: Authors' own work based on Minnesota Population Center (2015), *Integrated Public Use Microdata Series*, *http://doi.org/10.18128/D020.V6.5* and National Statistical Office (undated), *Population and Housing Census 2010 microdata*, *http://web.nso.go.th/en/survey/lfs/lfs_main.htm*.

Manufacturing is to an important extent fuelled by immigrants

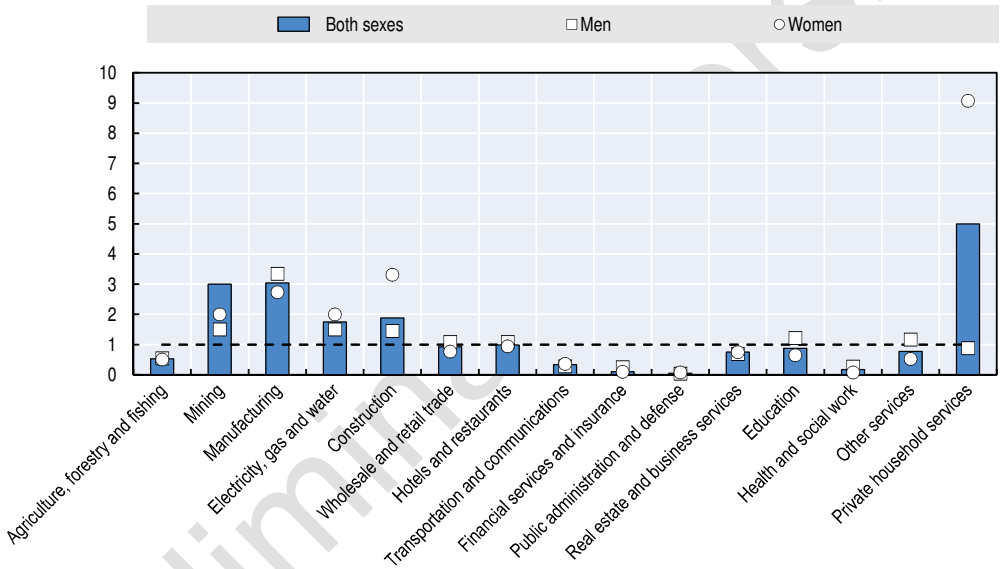
The number of immigrant workers in manufacturing suggests that this sector is to an important extent fuelled by immigrant labour. Whereas in 2000 immigrant workers accounted for around 1% of all workers in manufacturing, in 2010 close to one out of every eight workers in this sector was an immigrant. This also means that manufacturing accounted for more than a third of foreign-born employment (36.5%) in 2010, compared with a share of 12% of Thai-born employment. Important to note is the fact that manufacturing exhibited the highest percentage of foreign-born employment of all sectors in 2010, even higher than agriculture (Annex Table 5.A1.1). The large percentage of immigrants, particularly women, in manufacturing has been attributed to the success of export-oriented industries which have been important for Thailand's economic growth (Harima, 2012). Nonetheless, as indicated previously, the service sector has become slightly more important for both groups, and more so for Thai-born workers.

Apart from the manufacturing sector, foreign-born workers are over-represented in private household services, mining, construction and, perhaps surprisingly, electricity, gas and water. This is demonstrated in Figure 5.3 by a ratio between employment shares of the native- and foreign-born exceeding one for

these sectors. Disaggregating sectoral employment shares by gender shows that almost 39% of the male foreign-born workers were employed in manufacturing, compared with 11.5% of male Thai-born workers. For women, the share of Thai-born workers in the manufacturing sector was marginally higher than that of their male counterparts (12.5%), while that of female foreign-born workers was lower by 4.2 percentage points (34.2%). In some sectors, such as education, hotel and restaurants, other services, and wholesale and retail trade, foreign-born men are over-represented, while foreign-born women are not.

Figure 5.3. **Foreign-born employed are over-represented in several sectors, including private household services, manufacturing and construction**

Ratio of foreign-born to Thai-born sectoral employment shares, 2010



Note: A ratio of one indicates that the number of foreign-born employed in a particular sector, expressed as a proportion of all foreign-born employed, is the same as the proportion of the native-born employed in this sector; ratios exceeding one indicate "over-representation" of foreign-born workers in a particular sector.

Source: Authors' own work based on National Statistical Office (undated), *Population and Housing Census 2010 microdata*, *http://web.nso.go.th/en/survey/lfs/lfs_main.htm*.

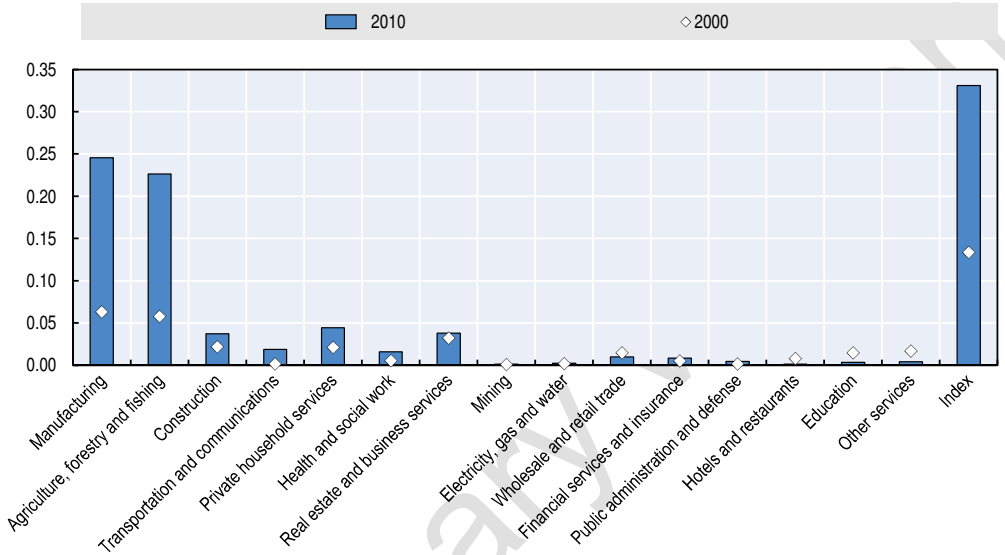
Sectoral employment patterns of native-born and foreign-born workers have diverged

One way to summarise differences in sectoral distributions between Thai-born and foreign-born workers is to calculate the index of dissimilarity based on differences in their respective shares (see Annex 3.A1 for details). The index increased from 0.13 in 2000 to 0.33 in 2010 (Figure 5.4), meaning that the segregation between foreign-born and native-born workers across sectors has become more severe. From 2000 to 2010, around half of the sectors witnessed an increase in the difference between native-born and foreign-born employment

shares, but the increase in the index of dissimilarity across time was mainly driven by agriculture and manufacturing.

Figure 5.4. **Most of the sectoral employment differences between native- and foreign-born workers are due to manufacturing and agriculture**

Absolute value of the differences in sectoral employment of native- and foreign-born workers and index of dissimilarity



Note: The column "Index" represents the index of dissimilarity for the years 2000 and 2010. The remaining columns represent the absolute value of the difference between the native-born and foreign-born sectoral employment shares.

Source: Authors' own work based on Minnesota Population Center (2015), *Integrated Public Use Microdata Series*, *http://doi.org/10.18128/D020.V6.5* and National Statistical Office (undated), *Population and Housing Census 2010 microdata*, *http://web.nso.go.th/en/survey/lfs/lfs_main.htm*.

In this context, it is interesting to note that an IMF report recently concluded that the average productivity of Thailand as well as its standard of living could be raised if a significant number of workers would move out of the agricultural sector and into industry or services (Klyuev, 2015). According to this report, Thailand is facing (i) a high dispersion of labour productivity in comparison to other Asian nations; (ii) very low labour productivity in agriculture compared to other sectors; (iii) a share of employment in agriculture that is considerably higher than what is typical for a country at Thailand's level of income; and (iv) little progress in trying to move away from such an unequal distribution across sectors (Klyuev, 2015). However, it was stated that a more equal distribution in employment across sectors could benefit the Thai economy and it was calculated that reaching a share of employment in agriculture of 22% (a value consistent with Thailand's overall income level) while maintaining sectoral productivity would increase the overall productivity of Thailand by 20% (Klyuev, 2015).

Contribution of immigrant workers to GDP and economic growth

An important question is whether immigration positively or negatively affects the level and growth rate of Thailand's real per capita income. At the theoretical level, the impact of immigration on GDP depends on a number of assumptions and the direction of this impact is not determined a priori.[1] At the empirical level, the impact of immigration on GDP can be assessed by dividing GDP per capita into two components: (1) the share of the employed in the total population; and (2) labour productivity (GDP per employed worker).[2]

Foreign-born workers are likely to raise incomes per capita

Based on the review in Chapter 3, the direct effect of employing immigrants in 2010 was an increase in the share of the employed in the total population. Firstly because the employment-to-population ratio of the foreign-born population (83%) was higher than that of native-born population (74%), while the share of the foreign-born population of working-age (90%) was higher than the corresponding native-born share (80%). Furthermore, immigration did not reduce total employment of native Thai workers (Chapter 4). In other words, the analysis of the first component suggests that immigration raises GDP per capita in Thailand.

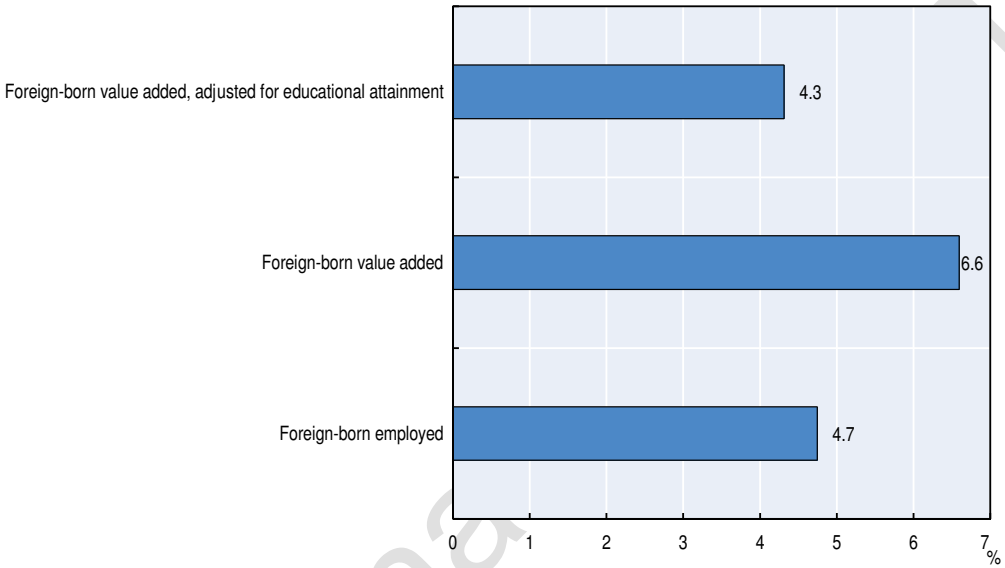
To assess the second component, it is useful to consider the capital-labour ratio, average human capital per worker and total factor productivity.[3] Average human capital per worker is probably lower for the foreign-born employed (see below), despite the relatively high share of foreign-born workers with a tertiary education (see Chapter 3). The effect of immigration on the capital-labour ratio is not known, but the literature suggests that low-skilled immigration does not necessarily induce investment in Thailand (Pholphirul, Kamlai and Rukumnuaykit, 2010; SCB, 2015). Finally, both high-skilled and low-skilled immigration may raise total factor productivity, for example due to efficiency gains through increased specialisation in the labour force. One form of specialisation is that high-skilled native-born workers spend more time on the job while domestic chores are carried out by foreign-born workers (Hanson, 2012), and there is some evidence of this in Thailand (see Chapter 3). Furthermore, total factor productivity may be boosted by a rise of the native-born paid employment rate due to immigration. Although positive economic effects for the native-born population therefore seem likely, the overall effect of foreign-born labour on GDP per capita remains an empirical matter.

Information on the sectoral employment distributions of Thai-born and foreign-born workers, together with average sectoral labour productivity calculated across all workers, can be used to assess the contributions of the two groups to the economy. Taking this information into account, the contribution of the foreign-born employed to GDP in 2010 (6.6%) was higher than the commensurate share in employment (4.7%, Figure 5.5). The reason is that

foreign-born workers are less likely than native-born workers to be active in low productivity agriculture, and more likely to be active in relatively productive sectors such as manufacturing.

Figure 5.5. **The economic contribution of immigrant workers is higher than expected by their number, but lower if educational attainment is taken into account**

Foreign-born employed (% of all employment) and foreign-born value added (% of GDP), 2010



Source: Authors' own work based on National Statistical Office (undated), *Population and Housing Census 2010 microdata*, *http://web.nso.go.th/en/survey/lfs/lfs_main.htm* and (UN, 2017), UN (2017), *Statistical Database for Value Added per Economic Activity*, *http://data.un.org/Data.aspx?d=WDI&f=Indicator_Code%3ANV.IND.TOTL.ZS*.

The assessment of the economic contribution of immigrant workers can also take into account additional information regarding the productivity of workers within sectors, based for example on proxies such as years of education. The average number of years of education of foreign-born workers is below that of Thai-born workers (six and eight years, respectively), but this differs by sector (Figure 5.6). It seems reasonable to assume that these differences affect the productivity of workers in each sector, which results in a lower contribution of foreign-born workers to GDP (4.3%). This is 0.4 percentage points below the share of foreign-born workers in employment, which again suggests that foreign-born workers tend to be employed in low-skilled (relatively less productive) positions.

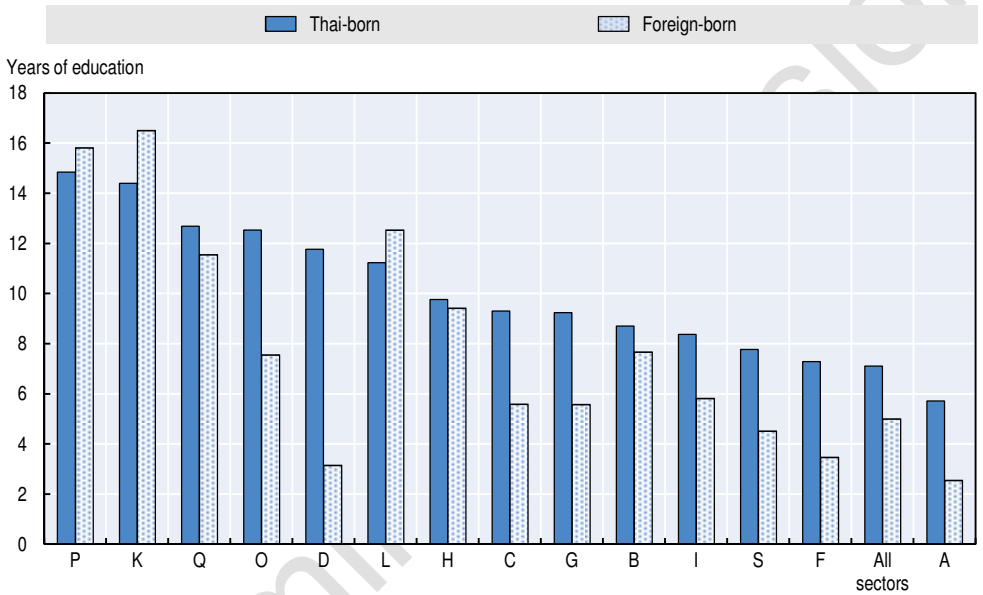
Foreign-born workers often work in low-wage sectors

Furthermore, many immigrant workers in Thailand are employed in sectors that have relatively low average wages (Figure 5.7 and Annex Table 5.A1.2). As indicated earlier in this chapter (Figure 5.3), foreign-born workers are over-represented in private household services, manufacturing and construction,

and wage levels in these sectors are relatively low (THB 5 196, 7 938 and 6 308 per month in 2010, respectively, compared with an average level of THB 9 262). The opposite situation is evident in some of the sectors in which immigrant workers are under-represented, such as financial intermediation, education, and transportation and communication, which are sectors with relatively high wages.

Figure 5.6. **Native Thai workers are better educated than foreign-born workers, but not in all sectors**

Years of education of the foreign-born and Thai-born employed by sector, 2010



Source: Authors' own work based on National Statistical Office (undated), *Population and Housing Census 2010 microdata*, *http://web.nso.go.th/en/survey/lfs/lfs_main.htm*.

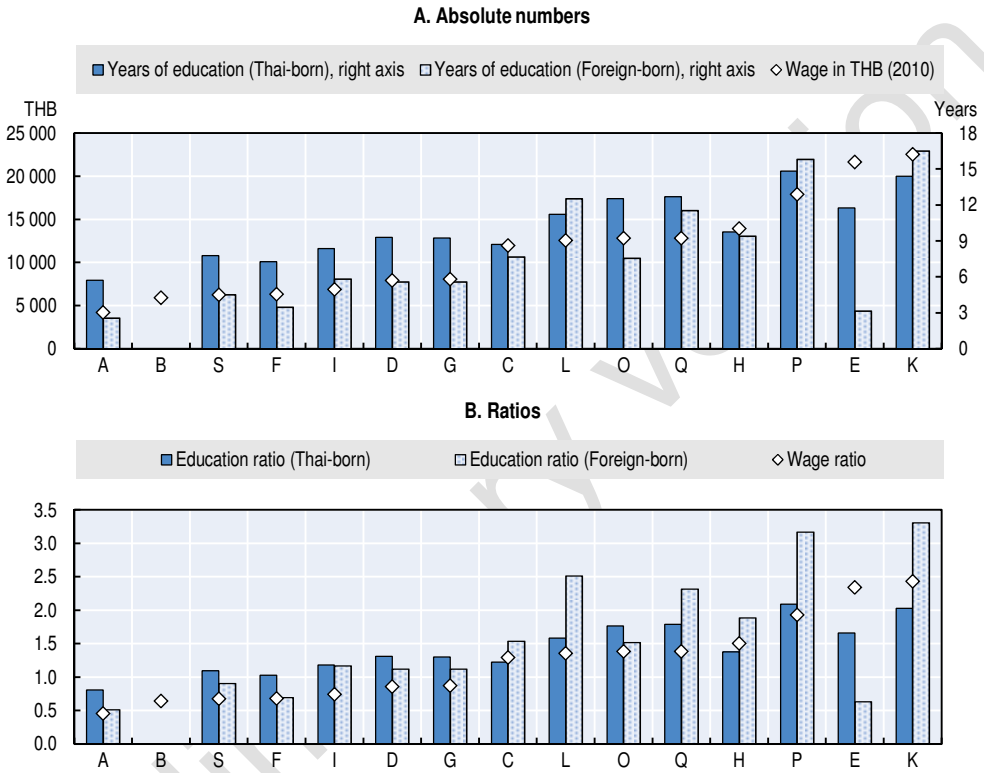
A comparison of sectoral average wages with average years of education for both Thai-born and foreign-born workers in 2010 demonstrates that in general higher levels of educational attainment are associated with higher financial rewards (Figure 5.3). The same relationship is evident if ratios of sectoral wages to average wages are considered together with ratios of sectoral years of education to averages across all sectors for both Thai-born and foreign-born workers. The utility sector seems to be an exception, in that foreign-born individuals have very low levels of education.

Immigrant workers may be paid below the minimum wage (IOM, 2014). There are multiple reasons for this which may include employer discrimination due to prejudice or distrust, the perception that foreign-born workers may have lower income needs in comparison to their native-born counterparts, as well as the fact that immigrant workers are under-represented or unrepresented

through collective representation structures (see Chapter 2) (Chalamwong, Prugsamatz and Hongprayoon, 2010; ILO, 2015; Sunpuwan and Niyomsilpa, 2012).

Figure 5.7. **Several sectors which are important for immigrant workers have low average wages**

Wages and years of education by sector and origin, 2010



Note: The wage ratio is computed by taking the ratio of the average annual wage per sector to the average annual wage of all sectors. The education ratio is computed by taking the ratio of the average years of education per sector to the average years of education across all sectors. The education ratio was computed for the Thai-born workers as well as for the foreign-born workers.

Source: Authors' own work based on National Statistical Office (undated), *Population and Housing Census 2010 microdata*, *http://web.nso.go.th/en/survey/lfs/lfs_main.htm*) and National Statistical Office (2010), *2010 Report of the Labour Force Survey*.

Macroeconometric model simulations of immigration

Empirical insights into the economic contribution of immigrant workers in Thailand can be generated using an econometric model. The model used in this chapter is a computable general equilibrium (CGE) model based on the single country standard model outlined by the Partnership for Economic Policy (PEP).[4] The model has been adapted to enable the assessment of the economic contribution of immigrant workers, as detailed in Puttanapong, Limskul and Bowonthumrongchai (2017) and explained in Box 5.1.

Box 5.1. **A macro econometric model for Thailand**

The computable general equilibrium (CGE) model that is used in this chapter is based on the following main mechanisms and assumptions:

- Each sector has one representative producer that maximises profits.
- Each household maximises its utility and earns income as returns of contributing factors of production; some households receive transfers from the government.
- Institutions in the model include five groups of households (three groups differentiated by level of income and two groups of immigrant households, one high-skilled and the other low-skilled), the government and the rest of the world.
- Some categories of households pay income tax and allocate some parts of income as savings. Immigrant households transfer their incomes back to their home countries (remittances).
- Government collects both direct and indirect taxes; the government's consumption expenditure is exogenous.
- All markets of goods and services are in equilibrium and prices are equilibrating variables.
- There is non-linear behaviour in the extent to which domestic and export products are substitutes and the same for domestic and imported goods.

Production in each sector is determined by a production function, which uses capital, labour and intermediate inputs. The mixture of intermediate inputs is based on the fixed coefficients available from the input-output matrix for the year 2010 produced by the National Statistical Office in Thailand. Labour consists of high-skilled and low-skilled workers, and both groups consist in turn of native- and foreign-born workers. The composition of labour inputs is determined by the optimality conditions and parameters of the constant elasticity of substitution production function, which assumes inputs are complementary. This assumption seems justified both on the basis of the literature and the findings in previous chapters, and is widely used in the literature (Shen and Whalley, 2013).

National accounts data have been used to feed and calibrate the model. In combination with labour force survey data (2001-15), national accounts data have been used to make empirical estimates of the extent to which labour and capital are substitutes in Thailand. The same is the case for high-skilled and low-skilled labour, where high-skilled labour has been defined based on major occupational groups (including groups 1-3: managers, professionals and associate professionals).

Following the model's calibration and validation, it is able to simulate main components of GDP such as consumption, investment and trade with a large degree of accuracy (Annex 5.A1.3). Discrepancies between generated values and actual outcomes are all less than 8% for the period 2010-14, and 2% or less in the case of GDP and aggregate private consumption. Nevertheless, it is important to bear in mind that the CGE model is a stylized representation of the economy, as reflected in the assumptions listed above.

Model simulations demonstrate the significant economic contribution of immigrant workers

Simulations have been conducted based on several scenarios. First, a static simulation of the reduction of employment of low-skilled immigrants is used to illustrate some of the macroeconomic impacts of this employment. Thereafter, dynamic simulations of long-term adjustment of the economy to productivity changes of immigrant workers are discussed.

To examine the macroeconomic effects of low-skilled immigrant workers, who constitute the majority of immigrant workers in Thailand, a simulation has been conducted based on a gradual reduction in the number of low-skilled immigrant workers from 10% to 90% (Table 5.1). The reduction of employment affects the production capability of firms via the imperfect substitution of native-born workers for foreign-born workers, which leads to a reduction in output. The reduction of employment also reduces the income of households and lowers consumption, which is reinforced by rising prices and causes a decline in aggregate demand. Together with the lowered saving of households, this leads to a negative impact on investment (i.e. gross fixed capital formation), which further depresses GDP.

Table 5.1. **The economic impact of decreasing employment of low-skilled immigrants may be disproportional**

Deviation from the base case (%)

Employed low-skilled immigrants	Real GDP	Private consumption	Gross fixed capital formation	Consumer price index
-10	-0.13	-0.08	-0.20	0.01
-20	-0.29	-0.17	-0.44	0.01
-30	-0.47	-0.28	-0.72	0.02
-40	-0.68	-0.42	-1.05	0.03
-50	-0.96	-0.58	-1.47	0.04
-60	-1.31	-0.80	-2.02	0.06
-70	-1.80	-1.10	-2.78	0.08
-80	-2.58	-1.58	-3.97	0.12
-90	-4.14	-2.57	-6.38	0.20

Source: Puttanapong, Limskul and Bowonthumrongchai (2017), *Study on Macroeconomic Impacts of Immigration Using a SAM-Based CGE Model*.

Results in Table 5.1 demonstrate the highly non-linear response of macroeconomic indicators – including real GDP, private consumption and investment capital formation – to the reduction of employment of low-skilled immigrants. At low levels of reduction, such as a decrease in the number of low-skilled immigrants by 10%, the impact is relatively small. The reduction in GDP would amount to 0.13% and investment would decrease by 0.20%. As it becomes increasingly difficult to substitute native-born labour for foreign-born labour, the impact increases if more foreign-born labour is withdrawn. A decrease in the number of low-skilled immigrants by 50% results in a disproportionate reduction in GDP by 0.96%, while investment would decrease by 1.47%.

This can be further illustrated by assuming that native-born and foreign-born labour are highly complementary, which means that it is very difficult to substitute native-born for foreign-born labour, and comparing the results with the opposite case in which native- and foreign-born labour are near-perfect substitutes. If native- and foreign-born labour are highly complementary, the negative impact of a reduction of foreign-born labour will be far more severe than in the opposite case (Table 5.2). For example, the negative impact of a decrease in the number of unskilled immigrant workers by 50% would result in a reduction of output by 7.6% if native-born and foreign-born are highly complementary, while the reduction in output would be less than 0.6% if the complementarity is low.

Table 5.2. **The economic impact of decreasing employment of low-skilled immigrants depends on the complementarity between native- and foreign-born workers**

Moderate, low and high complementarity of workers, deviation from the base case (%)

Employed low-skilled immigrants	Moderate complementarity	Low complementarity	High complementarity
-10	-0.13	-0.11	-0.28
-20	-0.29	-0.23	-0.90
-30	-0.47	-0.35	-2.10
-40	-0.68	-0.46	-4.23
-50	-0.96	-0.58	-7.58
-60	-1.31	-0.71	-12.38
-70	-1.80	-0.83	-18.95
-80	-2.58	-0.95	..
-90	-4.14	-1.08	..

Note: The model cannot be used when the reduction in immigrant employment exceeds 70%.

Source: Puttanapong, Limskul and Bowonthumrongchai (2017), *Study on Macroeconomic Impacts of Immigration Using a SAM-Based CGE Model*.

In all cases, the model not only captures the immediate effect of a reduction in employment, but also the second order effects on consumption and investment, and their subsequent impact on GDP. Results from the scenarios underline the importance of knowledge about the complementarity between native- and foreign-born labour, which determines the magnitude of the impact that foreign-born workers have on the economy. The greater the complementarity, the more reducing immigrant employment will harm the economy. The magnitude of the negative impact on GDP when a greater proportion of immigrant workers is withdrawn also illustrates the extent to which these workers are connected with production in the economy.

Impact of changes in productivity of immigrant workers demonstrates variations by level of skills

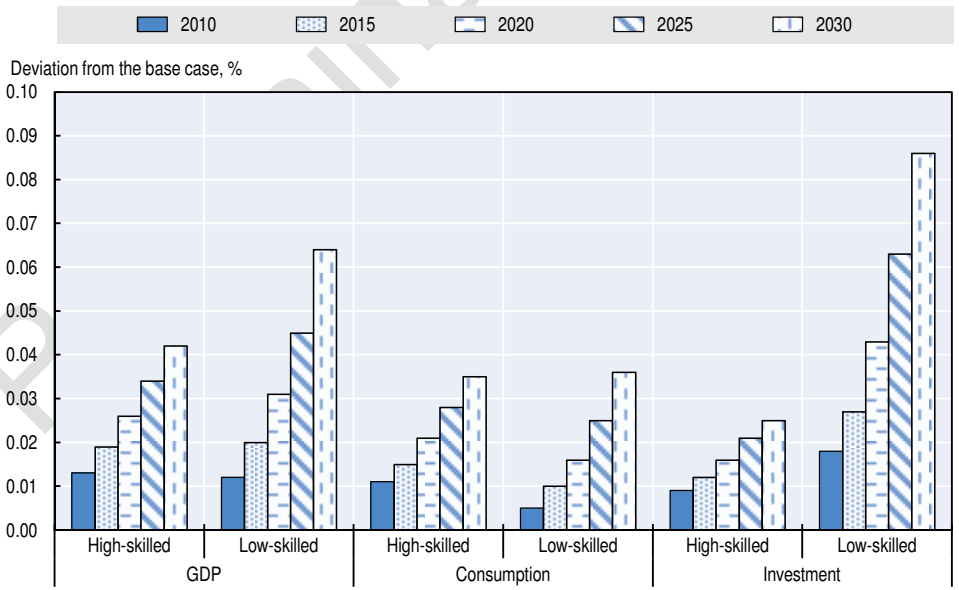
Dynamic simulations can be used to illustrate some of the adjustments of the economy due to immigration-related shocks. Positive shocks in the productivity levels of low-skilled or high-skilled immigrants will generate increases in GDP, and negative shocks will generate decreases. Over time, and

using an increase of productivity as an example, the effects on GDP will be stronger than the initial positive (supply) effect. Again, this reflects second order effects when increases in consumption and investment raise aggregate demand and lead to further increases in GDP.

Initially, the effect on GDP of an increase in the productivity of high-skilled workers is stronger than a similar increase in the productivity of low-skilled workers. This is the combined result of a stronger effect on consumption in the case of high-skilled immigrant workers (due to the higher average levels of income of this group); and a weaker effect on investment, in turn due to the fact that high-skilled workers are a relatively small group (see Figure 5.8). Although initially the consumption effect prevails, by 2030 the differences in aggregate consumption between the two scenarios of productivity increases of high-skilled and low-skilled workers are small, while the effect on investment becomes more important over time. According to the simulation, the increase in investment due to the productivity shock of low-skilled workers is eventually three to four times the increase due to the rise in productivity of high skilled workers (0.086% compared with 0.025%). In other words, the full effects of changes in productivity only become apparent over time, and it is investment that drives the adjustment of the economy in the model.

Figure 5.8. **The economic impact of an increase in the productivity of low-skilled workers is stronger in the long run**

Impact of an increase of the productivity of low-skill and high-skill workers on GDP, consumption and investment, selected years (deviation from the base case, %)



Source: Puttanapong, Limskul and Bowonthumrongchai (2017) *Study on Macroeconomic Impacts of Immigration Using a SAM-Based CGE Model*; see also Annex Table 5.A1.4 and 5.A1.5.

Conclusions

The analysis in this chapter confirms that immigrant workers are contributing significantly to the Thai economy. Given the sectoral distribution of workers and their productivity, the current economic contribution of immigrant workers is estimated to range from 4.3% to 6.6% of GDP, compared to a share in employment of 4.7% in 2010. Although foreign-born workers tend to have relatively low-skilled positions, which depresses their direct contribution to the Thai economy, they are also less likely to be employed in low-productivity agriculture, which on average raises their contribution. The growing presence of foreign-born workers in manufacturing also contributed to the divergence between native-born and foreign-born sectoral employment patterns.

An empirical assessment of the impact of foreign-born workers on income per capita cannot be made with certainty, but several elements suggest this impact is positive in Thailand. The share of the employed in the foreign-born population is relatively high, and foreign-born employment tends to raise the Thai-born paid employment rate. Although the average level of education of foreign-born workers is relatively low, additional positive effects due to the more productive employment of Thai-born labour in the presence of foreign-born labour therefore seem likely.

The econometric model used in this chapter broadly supports the strong connection of the immigrant workforce with production in the Thai economy. This is demonstrated by the potentially very strong negative impact that would result from reducing the immigrant workforce. At the same time, the strong presence of low-skilled foreign-born workers points at the need for occupational diversification of immigrant work, including through skills development. The potential benefits from skills development are illustrated by the econometric model, to the extent that productivity gains are achieved. Similarly, economic benefits from labour immigration could be raised by a stronger representation of immigrant workers in high productivity sectors such as business and financial services.

Notes

1. For an overview, see for example Bodvarsson and Van den Berg (2013).
2. GDP per capita can be decomposed as follows:

$$\frac{GDP}{POP} = \frac{GDP}{EMP} * \frac{EMP}{POP} = \frac{GDP}{EMP} * \frac{EMP}{WAPOP} * \frac{WAPOP}{POP},$$

where POP represents the population, WAPOP is the population of working age and EMP is employment.

3. This follows the example of a standard Cobb-Douglas production function (Aleksynska and Tritah, 2015; Jaumotte, Koloskova and Saxena, 2016):

$\frac{GDP_{dt}}{EMP_{dt}} = \propto lnHC_{dt} + (1- \propto) ln \frac{K_{dt}}{EMP_{dt}} + lnA_{dt}$, where HC_{dt} is human capital per worker, $\frac{K_{dt}}{EMP_{dt}}$ is the capital-to-labour ratio, A_{dt} is total factor productivity and $\propto$ is the labour share.

4. *www.pep-net.org/pep-1-t-single-country-recursive-dynamic-version*.

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ANNEX 5.A1

Additional tables

Table 5.A1.1. **Employment by sector, origin and sex**

Year	Origin	Sex	A (%)	B (%)	C (%)	D (%)	E (%)	F (%)	G (%)	H (%)	I (%)	J (%)	K (%)	L (%)	M (%)	N (%)	O (%)	Total (%)
2000	All	MF	56.7	0.1	9.2	0.4	3.1	11.7	2.4	2.6	1.1	3.4	0.6	3.3	1.3	3.5	0.7	100.0
2000	Thai	MF	56.7	0.1	9.2	0.4	3.1	11.7	2.4	2.6	1.1	3.4	0.6	3.3	1.3	3.5	0.7	100.0
2000	Foreign	MF	50.9	0.2	15.5	0.2	5.3	13.2	3.2	2.7	0.6	0.2	0.8	1.9	0.8	1.8	2.8	100.0
2000	All	M	56.0	0.2	8.2	0.6	4.8	10.3	1.8	4.3	1.1	4.8	0.7	2.8	0.8	3.4	0.2	100.0
2000	Thai	M	56.0	0.2	8.2	0.6	4.7	10.3	1.8	4.3	1.1	4.8	0.7	2.8	0.8	3.4	0.2	100.0
2000	Foreign	M	47.1	0.3	17.1	0.4	6.3	14.3	3.7	3.7	0.8	0.4	0.9	1.6	0.2	1.6	1.6	100.0
2000	All	F	57.4	0.1	10.2	0.1	1.3	13.1	3.1	0.7	1.0	1.9	0.6	3.9	1.8	3.5	1.2	100.0
2000	Thai	F	57.4	0.1	10.2	0.1	1.3	13.1	3.1	0.7	1.0	1.9	0.6	3.9	1.8	3.5	1.2	100.0
2000	Foreign	F	56.9	0.0	12.8	0.0	3.6	11.4	2.5	1.3	0.2	0.0	0.7	2.3	1.6	2.1	4.6	100.0
2010	All	MF	46.4	0.1	13.1	0.4	4.3	13.0	5.3	2.6	0.9	3.8	1.6	3.0	1.8	2.2	1.3	100.0
2010	Thai	MF	47.4	0.1	12.0	0.4	4.2	13.1	5.3	2.7	1.0	4.0	1.6	3.1	1.8	2.2	1.1	100.0
2010	Foreign	MF	24.8	0.3	36.5	0.7	7.9	12.1	5.2	0.9	0.1	0.2	1.2	2.7	0.3	1.7	5.5	100.0
2010	All	M	46.5	0.2	12.9	0.6	6.4	12.0	3.7	4.1	0.8	5.1	1.6	2.3	1.1	1.9	0.8	100.0
2010	Thai	M	47.6	0.2	11.5	0.6	6.3	12.0	3.7	4.3	0.8	5.4	1.6	2.3	1.1	1.8	0.8	100.0
2010	Foreign	M	25.7	0.3	38.4	0.9	9.1	13.0	4.0	1.2	0.2	0.2	1.1	2.8	0.3	2.1	0.7	100.0
2010	All	F	46.2	0.1	13.4	0.2	2.1	14.1	7.0	1.1	1.1	2.5	1.6	3.8	2.5	2.5	1.8	100.0
2010	Thai	F	47.2	0.1	12.5	0.2	1.9	14.3	7.0	1.1	1.1	2.6	1.6	3.9	2.6	2.5	1.3	100.0
2010	Foreign	F	23.7	0.2	34.2	0.4	6.3	10.9	6.6	0.4	0.1	0.2	1.2	2.5	0.2	1.3	11.8	100.0

Note:
A Agriculture, forestry and fishing
B Mining
C Manufacturing
D Electricity, gas, and water
E Construction
F Wholesale and retail trade
G Hotels and restaurants
H Transportation and communications
I Financial services and insurance
J Real estate and business services
K Public administration and defence
L Education
M Health and social work
N Other services
O Private household services

Source: Authors' own work based on Minnesota Population Center (2015), *Integrated Public Use Microdata Series*, *http://doi.org/10.18128/D020.V6.5* and National Statistical Office (undated), *Population and Housing Census 2010 microdata*, *http://web.nso.go.th/en/survey/lfs/lfs_main.htm*.

Table 5.A1.2. **Annual average wages per sector as a ratio of the wage across all workers, 2001-10**

	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
	Wage levels (Thai baht)									
All workers	6,663	6,611	6,759	6,915	7,389	7,851	8,085	8,913	8,694	9,262
	Ratios									
Agriculture, hunting and forestry	0.34	0.37	0.38	0.39	0.38	0.42	0.43	0.47	0.41	0.45
Fishing	0.65	0.65	0.66	0.64	0.61	0.65	0.65	0.59	0.58	0.64
Mining and quarrying	1.28	0.85	1.26	1.13	1.08	0.98	1.15	1.42	1.40	1.29
Manufacturing	0.93	0.91	0.92	0.89	0.88	0.86	0.87	0.86	0.89	0.86
Electricity, gas and water supply	2.26	2.29	2.20	2.33	2.49	2.48	2.34	2.26	2.41	2.34
Construction	0.69	0.70	0.70	0.71	0.68	0.68	0.69	0.67	0.68	0.68
Wholesale and retail trade	0.98	1.00	0.99	0.95	0.91	0.93	0.92	0.91	0.90	0.87
Hotel and restaurants	0.77	0.79	0.76	0.77	0.74	0.75	0.74	0.77	0.75	0.74
Transport, storage and communication	1.59	1.67	1.68	1.71	1.66	1.62	1.60	1.53	1.47	1.50
Financial intermediation	2.49	2.41	2.44	2.54	2.62	2.37	2.32	2.24	2.48	2.43
Real estate, renting and business activities	1.35	1.37	1.29	1.37	1.34	1.35	1.34	1.39	1.37	1.36
Public administration and defence	1.49	1.56	1.59	1.56	1.56	1.50	1.48	1.44	1.42	1.38
Education	1.88	1.90	1.93	2.02	2.05	2.07	2.07	2.03	2.04	1.93
Health and social work	1.36	1.36	1.35	1.51	1.51	1.43	1.34	1.31	1.35	1.39
Other service activity	0.88	0.83	0.84	0.82	0.87	0.85	0.85	0.95	0.80	0.79
Private households	0.56	0.57	0.58	0.61	0.57	0.60	0.61	0.58	0.55	0.56
Extra-territorial organisations and bodies	3.53	4.65	5.18	2.78	3.56	2.55	4.16	2.51	2.80	3.22

Source: National Statistical Office (2010), *2010 Report of the Labour Force Survey*.

Table 5.A1.3. **Discrepancies between model-generated results and actual outcomes are small**

Root-mean-square error (RMSE) of the CGE model's generated main components of GDP

Real GDP	
Root-mean-square error (Unit: Billion baht)	205.2
RMSE: Compared to the average of real GDP 2010-14	**1.8%**
Private consumption expenditure	
Root-mean-square error (Unit: Billion baht)	117.4
RMSE: Compared to the average of private consumption expenditure 2010-14	**2.0%**
Gross fixed capital formation	
Root-mean-square error (Unit: Billion baht)	154.8
RMSE: Compared to the average of gross fixed capital formation 2010-14	**5.5%**
Government consumption expenditure	
Root-mean-square error (Unit: Billion baht)	29.4
RMSE: Compared to the average of government expenditure 2010-14	**1.6%**

Table 5.A1.3. **Discrepancies between model-generated results and actual outcomes are small** *(cont.)*

Total exports	
Root-mean-square error (Unit: Billion baht)	296.8
RMSE: Compared to the average of export 2010-14	**3.7%**
Total imports	
Root-mean-square error (Unit: Billion baht)	554.6
RMSE: Compared to the average of import 2010-14	**7.5%**

Source: Puttanapong, Limskul and Bowonthumrongchai (2017), *Study on Macroeconomic Impacts of Immigration Using a SAM-Based CGE Model*.

Table 5.A1.4. **Impact of changes in the productivity of unskilled immigrants**

		Real GDP		Private consumption		Gross fixed capital formation	
		Unit: Billion baht	Deviation from the base case %	Unit: Billion baht	Deviation from the base case %	Unit: Billion baht	Deviation from the base case %
2010	Base case	10 217.47		5,894.80		2,593.17	
	Productivity -1%	10,216.25	-0.012%	5,894.51	-0.005%	2,592.71	-0.018%
	Productivity +1%	10,218.69	0.012%	5,895.09	0.005%	2,593.62	0.018%
2015	Base case	11,775.82		6,714.20		3,035.47	
	Productivity -1%	11,773.51	-0.020%	6,713.56	-0.010%	3,034.63	-0.027%
	Productivity +1%	11,778.13	0.020%	6,714.85	0.010%	3,036.30	0.027%
2016	Base case	12,128.10		7,089.80		3,007.27	
	Productivity -1%	12,125.48	-0.022%	7,089.05	-0.011%	3,006.33	-0.031%
	Productivity +1%	12,130.72	0.022%	7,090.55	0.011%	3,008.21	0.031%
2017	Base case	12,481.20		7,320.20		3,112.01	
	Productivity -1%	12,478.24	-0.024%	7,319.34	-0.012%	3,110.95	-0.034%
	Productivity +1%	12,484.15	0.024%	7,321.06	0.012%	3,113.07	0.034%
2018	Base case	12,850.02		7,561.09		3,221.99	
	Productivity -1%	12,846.70	-0.026%	7,560.10	-0.013%	3,220.80	-0.037%
	Productivity +1%	12,853.34	0.026%	7,562.07	0.013%	3,223.18	0.037%
2019	Base case	13,235.07		7,812.94		3,337.44	
	Productivity -1%	13,231.34	-0.028%	7,811.82	-0.014%	3,336.10	-0.040%
	Productivity +1%	13,238.80	0.028%	7,814.06	0.014%	3,338.78	0.040%
2020	Base case	13,636.52		8,076.07		3,458.49	
	Productivity -1%	13,632.34	-0.031%	8,074.79	-0.016%	3,456.99	-0.043%
	Productivity +1%	13,640.71	0.031%	8,077.35	0.016%	3,459.99	0.043%
2025	Base case	15,926.75		9,586.33		4,160.66	
	Productivity -1%	15,919.50	-0.046%	9,583.97	-0.025%	4,158.05	-0.063%
	Productivity +1%	15,933.99	0.045%	9,588.69	0.025%	4,163.27	0.063%
2030	Base case	18,800.99		11,498.69		5,062.73	
	Productivity -1%	18,788.94	-0.064%	11,494.55	-0.036%	5,058.37	-0.086%
	Productivity +1%	18,813.02	0.064%	11,502.81	0.036%	5,067.08	0.086%

Source: Puttanapong, Limskul and Bowonthumrongchai (2017), *Study on Macroeconomic Impacts of Immigration Using a SAM-Based CGE Model*.

Table 5.A1.5. **Impact of changes in the productivity of skilled immigrants**

		Real GDP		Real total private consumption		Real gross fixed capital formation	
		Unit: Billion baht	Deviation from the base case %	Unit: Billion baht	Deviation from the base case %	Unit: Billion baht	Deviation from the base case %
2010	Base case	10,217.47		5,894.80		2,593.17	
	Productivity -1%	10,216.12	-0.013%	5,894.17	-0.011%	2,592.93	-0.009%
	Productivity +1%	10,218.82	0.013%	5,895.42	0.011%	2,593.40	0.009%
2015	Base case	11,775.82		6,714.20		3,035.47	
	Productivity -1%	11,773.63	-0.019%	6,713.17	-0.015%	3,035.10	-0.012%
	Productivity +1%	11,778.00	0.019%	6,715.24	0.015%	3,035.83	0.012%
2016	Base case	12,128.10		7,089.80		3,007.27	
	Productivity -1%	12,125.67	-0.020%	7,088.65	-0.016%	3,006.87	-0.013%
	Productivity +1%	12,130.52	0.020%	7,090.95	0.016%	3,007.67	0.013%
2017	Base case	12,481.20		7,320.20		3,112.01	
	Productivity -1%	12,478.53	-0.021%	7,318.93	-0.017%	3,111.58	-0.014%
	Productivity +1%	12,483.85	0.021%	7,321.47	0.017%	3,112.45	0.014%
2018	Base case	12,850.02		7,561.09		3,221.99	
	Productivity -1%	12,847.10	-0.023%	7,559.69	-0.019%	3,221.51	-0.015%
	Productivity +1%	12,852.93	0.023%	7,562.48	0.018%	3,222.47	0.015%
2019	Base case	13,235.07		7,812.94		3,337.44	
	Productivity -1%	13,231.87	-0.024%	7,811.40	-0.020%	3,336.92	-0.016%
	Productivity +1%	13,238.26	0.024%	7,814.47	0.020%	3,337.96	0.016%
2020	Base case	13,636.52		8,076.07		3,458.49	
	Productivity -1%	13,633.03	-0.026%	8,074.38	-0.021%	3,457.93	-0.016%
	Productivity +1%	13,640.00	0.026%	8,077.75	0.021%	3,459.06	0.016%
2025	Base case	15,926.75		9,586.33		4,160.66	
	Productivity -1%	15,921.38	-0.034%	9,583.67	-0.028%	4,159.80	-0.021%
	Productivity +1%	15,932.09	0.034%	9,588.98	0.028%	4,161.52	0.021%
2030	Base case	18,800.99		11,498.69		5,062.73	
	Productivity -1%	18,793.00	-0.043%	11,494.60	-0.036%	5,061.44	-0.026%
	Productivity +1%	18,808.93	0.042%	11,502.74	0.035%	5,064.01	0.025%

Source: Puttanapong, Limskul and Bowonthumrongchai (2017), *Study on Macroeconomic Impacts of Immigration Using a SAM-Based CGE Model*.

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