Flight of International Medical Graduates - A cross-country comparative study examining key events in the trajectory

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Abstract

In the past two decades the growth in health workforce migration has drawn global attention towards the role of different factors in influencing the observed patterns and trends. This PhD thesis is an inquiry into factors that determine health worker migration and integration in destination countries, using international medical graduates (IMGs) as an example. The thesis attempts to achieve this by exploring and analyzing both the analytical and theoretical aspects - critically appraising the literature and using comprehensive datasets to undertake sophisticated analyses to identify the drivers of international migration.

I find that limitations of the existing migration theories have affected our understanding of factors that determine international migration of health workers. This has been accentuated by the lack of analytical research on the determinants of health worker migration. I analyse data from multiple secondary sources in a gravity model to identify that a range of geography, demography and cultural factors influence the movement of physician between source and destination countries. In addition, I find that immigration policies in destination countries have modest but significant influence in determining these flows.

Using Australia, a key destination country, as a case study I report that in destination countries policy settings have frequently been modulated with periodic shifts between phases of containment and growth in international recruitment of health workers. I find that the dynamics of the process is determined by the level of political action taken by key groups - the profession, state and employers.

Using data from the 2011 Australian Census, I demonstrate that the labor market outcome of IMGs in destination countries is an important issue. My results show that IMGs are
significantly less likely to find employment in occupations commensurate with their professional training, especially in the early settlement period. The probability of being employed as a physician is lowest for IMGs from non-English speaking background countries in Asia and Eastern Europe.

Using New Zealand, another key destination country, as a case study I discuss the challenges associated with managing an internationally recruited medical workforce. I highlight the need for countries to focus on finding long-term domestic answers to the workforce problems.

Based on a systematic review of the literature I report that the available literature is insufficient to generalize that IMGs provide valuable service in rural areas, except in some rural communities. Further, I find that there are contradictions regarding their contribution to the rural workforce beyond the years of obligated service or training. A range of professional, personal and family factors affect their retention in rural location.

I conclude that the trends and patterns of health workforce migration seem to be intrinsically linked to geographic, demographic, economic, political and cultural factors. The growing demand of health workers in destination countries and the related policy context have a clear role in shaping the migration processes. The dependence on international recruitment however raises concerns regarding their integration, retention and the sustainability of the approach in the long-term. In order to better address these concerns there is a recognized need to continue to improve our understanding through further research on key areas related to management of the migrant health workforce.
Declaration

This is to certify that:

i. the thesis comprises only my original work towards the PhD except where indicated in the Preface,

ii. due acknowledgement has been made in the text to all other material used,

iii. the thesis is fewer than 100,000 words in length, exclusive of tables, maps, bibliographies and appendices.

(Indrajit Hazarika)
Writing acknowledgements as the last words in my PhD thesis comes with mixed emotions. There are relief and a sense of accomplishment in finally completing this long, gruelling process, and I am filled with much gratitude to the many who have supported me throughout this journey.

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For Armaan
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### Abbreviations

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<thead>
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<th>Acronym</th>
<th>Full Form</th>
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<tr>
<td>AMA</td>
<td>Australian Medical Association</td>
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<td>AMC</td>
<td>Australian Medical Council</td>
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<td>APHRA</td>
<td>Australian Health Practitioner Regulation Agency</td>
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<td>ABS</td>
<td>Australian Bureau of Statistics</td>
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<td>AIHW</td>
<td>Australian Institute of Health and Welfare</td>
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<td>EEA</td>
<td>European Economic Area</td>
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<td>GDP</td>
<td>Gross Domestic Product</td>
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<td>GHWA</td>
<td>Global Health Workforce Alliance</td>
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<td>GMC</td>
<td>General Medical Council</td>
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<td>GP</td>
<td>General Practitioner</td>
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<td>HWA</td>
<td>Health Workforce Australia</td>
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<td>IMG</td>
<td>International Medical Graduate</td>
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<td>JLI</td>
<td>Joint Learning Initiative</td>
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<td>MBD</td>
<td>Medical Brain Drain</td>
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<td>MCNZ</td>
<td>Medical Council of New Zealand</td>
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<td>MCQ</td>
<td>Multiple Choice Question</td>
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<td>MNL</td>
<td>Multinomial Logistic</td>
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<td>NHS</td>
<td>National Health Service</td>
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<tr>
<td>OECD</td>
<td>Organisation for Economic Co-operation and Development</td>
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<tr>
<td>OTD</td>
<td>Overseas Trained Doctor</td>
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<tr>
<td>TTMRA</td>
<td>Trans-Tasman Mutual Recognition Arrangement</td>
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<tr>
<td>UK</td>
<td>United Kingdom</td>
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<tr>
<td>US</td>
<td>United States</td>
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<tr>
<td>WHO</td>
<td>World Health Organization</td>
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CHAPTER I. INTRODUCTION

Background

In the past two decades, concern over growing shortages of health workers, in particular physicians and nurses, has emerged as an issue that has attracted global attention. (Joint Learning Initiative [JLI] 2004; World Health Organization [WHO] 2006; Organization for Economic Co-operation and Development [OECD] 2008; Bärnighausen & Bloom 2009; Martineau, Decker & Bundred 2004) A recent report commissioned by the World Health Organization (WHO), estimates that the current global shortage in physicians, nurses, and midwives stands at 7.2 million and is expected to increase to 12.9 million by 2035 unless remedial measures are taken. (Campbell et al. 2013) These shortages are due to a multitude of factors, which include the ageing population (not only contributes to an increase in the demand for health workers but also reduces the share of population in employable age), increased purchasing power for health services, poor workforce planning, feminization of the workforce (resulting in reduced working hours), mobility and workforce exits. (WHO 2006; Bärnighausen & Bloom 2009; Martineau et al. 2004; Global Health Workforce Alliance [GHWA] & WHO 2008)

The shortages in the health workforce are ubiquitous, affecting both the developed and developing regions of the globe. (JLI 2004; WHO 2006; OECD 2008) Nearly half the deficit (47%) is in the South-East Asia region followed by the African region (25%). (Campbell et
al. 2013) While in high-income\(^1\) countries these shortages are more pronounced in regional areas, in low-middle income countries they tend to affect the health system in general. Furthermore, the magnitude of the shortages is more acute in the low-income countries that suffer from a much smaller workforce size compared to their needs. (WHO 2006) For instance, sub-Saharan Africa carries 25% of the global disease burden, yet is home to only 3% of the global health workforce. (WHO 2012) It has a tenth of the nurses and doctors for its population compared to Europe. For example, compared to the United Kingdom (UK), Malawi has over 100 times less physicians per population. (WHO 2007)

The growing demand for health workers has led countries to adopt different workforce strategies according to their health needs. In several high-income countries, health workforce policies have been modified in a bid to improve retention, ensure equitable distribution and encourage skill-mix. (Pond & McPake 2006; Chopra et al. 2008; Crisp et al. 2008; Dumont & Zurn 2007) In addition, domestic training rates have been increased to meet the demand-supply gap. (GHWA & WHO 2008) However, due to the long duration of medical training and variable effect of these policy changes, the potential impact on health workforce availability has been limited. (Dumont & Zurn 2007) This has led several developed countries to increasingly depend on the international recruitment of health workers as an important measure to manage temporary disequilibria or address regional imbalances. (OECD 2008; WHO 2006; GHWA & WHO 2008)

In this PhD thesis I plan to examine key aspects of health workforce migration, in particular role of the immigration and professional regulation policies in destination countries.

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\(^1\) Based on the GNI per capita, World Bank classifies an economy as low income, middle income (subdivided into lower middle and upper middle), or high income.
Health Workforce Migration – The Global Picture

International migration of health workers has emerged as a major force throughout the developed world. (JLI 2004; Stilwell B et al. 2004; OECD 2008; WHO 2006; GHWA & WHO 2008; Bärnighausen & Bloom 2009; Martineau T et al. 2004) In 1972, almost 140,000 physicians or 6% of the world’s physicians were living outside their country of origin. (Mejia 1978) Over the last forty years, the emigration rate has increased further, particularly from low-middle income countries. (Bundred & Levitt 2000; OECD 2007; WHO 2010) The same has been facilitated by the increased demand for health professionals in many high-income countries; aided by globalization of markets and the introduction of free trade agreements. (Bundred & Levitt 2000; Martineau T et al. 2002; Diallo 2004) In traditional immigrant-receiving societies such as Australia, Canada, New Zealand and the United States (US), the volume of immigrant health workers has grown. (Pond & McPake 2006; OECD 2007; OECD 2008) [Figure 1.1] In the US, for instance, the proportion of international medical graduates (IMGs) has increased 2.5 fold from approximately 10% in 1965 (West 1965) to 25% in 2010 (American Medical Association [AMA] 2010). Likewise, in New Zealand IMGs accounted for 41.5% of the medical workforce in 2011 (Medical Council of New Zealand [MCNZ] 2011), up from 38% in 2005 (MCNZ 2005); they constitute more than 60% of the workforce in rural areas. (Foley 2007) In England, in 2012, up to 35% of registered physicians were overseas trained. (Campbell J et al. 2013) If the overseas trained health professionals were to leave these countries today, one-fifth to one-third of all posts would become vacant. (Dumont & Zurn 2007; OECD 2007)

Despite ongoing efforts to achieve self-sufficiency, in high income countries, the level of dependance on overseas trained health professionals is expected to increase. (OECD 2008;
Dumont & Zurn 2007; OECD 2007) In the US, for instance, as per forecast there will be shortages of 500,000 nurses and of 44,000 family physicians in 2025. (Needleman, Buerhaus, Stewart, Zelevinsky, Mattke 2006; American Association of Colleges of Nursing [AACN] 2013; Science Blog 2008) Similarly, the European Commission has estimated that shortages across all European Union countries will be close to 2,000,000 by 2020. (European Commission 2012)

Figure 1.1 Trends in the share of international medical graduates in the key destination countries, 2000-2010

Source: Canada (CIHI, SMDB Scott's Medical Database); New Zealand (MCNZ); Australia (AIHW); UK (GMC/OECD Health Data); US (AMA/OECD Health Data)

Source countries for health workers

The past few decades have seen a decisive shift in the source countries for the immigrant health workforce away from Europe - the historically dominant source - towards Asia,
Africa, and Latin America. (Massey et al. 1993; Massey 2003) In Europe, meanwhile, countries that for centuries had been sending out migrants have transformed into immigrant-receiving societies. (Williams & Baláž 2009) After 1945, as a result of major efforts to reconstruct the war devastated social systems, virtually all countries in the global north began to attract significant numbers of workers from abroad. ((Massey et al. 1993) By the late 1960s the migrant health workers mostly came from the global south, from countries in Africa, Asia and the Caribbean. (Mejia 1978; Massey 2003) Mobility from the global south was further facilitated by changes in immigration law in key destination countries that had previously restricted entry of people of non-European descent.

Recent years have witnessed a further growth in the rates of emigration from countries in the global south. (Bundred & Levitt 2000; OECD 2007; WHO 2010) For instance, between 1991 and 2004, the emigration rate for health workers from sub-Saharan Africa increased from 16.7% to 19%. (Hamilton & Yau 2004) Mobility of health workers from these countries has not only exacerbated the acuteness of their health workforce crisis but has also worsened the maldistribution. (JLI 2004; WHO 2006) Although lack of comparable emigration data is a major limitation in analysing trends, registration statistics from destination countries have helped map out that the flows are a global phenomenon, with interconnections across regions. (Diallo 2004)

While the primary destinations continue to be the Anglophone countries of Australia, Canada, New Zealand, the UK and the US; (OECD 2008; WHO 2006; Dumont & Zurn 2007) countries in Western Europe and the oil-exporting Gulf States also attract a sizeable

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2 The north–south divide is a socio-economic and political division between the wealthy developed countries, known collectively as the "Global North," and the poorer developing countries, known as the "Global South."
number of health workers. (Hamilton & Yau 2004) In addition, some middle-income countries in Asia such as Singapore and Malaysia, too, are becoming both destinations and sources of skilled workers. Similarly, while South Africa is an important source country for the global north, it a destination for health professionals from neighbouring countries in sub-Saharan Africa. (Hamilton & Yau 2004) In Brazil, a program was launched in 2013 to recruit 6,000 physicians and other professionals in the coming three years. (Portal da Saúde 2013)

Mobility of health professionals between the developed countries is also a known phenomenon. (OECD 2008) For instance, there is an established corridor for migration of health professionals from the UK to Australia, New Zealand, US and Canada. (Mejia 1978; OECD 2007; OECD 2008) In the same vein, facilitated by the Trans Tasman Mutual Recognition Arrangement (TTMRA), migration of health professionals from New Zealand to Australia is common. (Zurn & Dumont 2008) Similarly, the case of mobility within the European Union could potentially lead to increase in various types of temporary migration. However, the lack of specific migration data in relation to health professionals (Diallo 2004) makes it difficult to develop a detailed international picture on the trends or to assess the balance between temporary and permanent flows.

**Migrant health workers – the pathways**

Research on migration streams have highlighted several key trends in the approaches adopted by migrant health workers. The findings emphasize the complex transnational nature of migration, characterized by a range of ‘receiving’ and ‘transit’ locations. (Levitt
2001; Collison 2009) It often occurs from the poorest regions to high-income countries; the final destination being determined by a variety of factors including immigration policies, migration experiences and social groups/ peer networks. (Collison 2009) A survey conducted among overseas trained physicians in Victoria, Australia found that 66% of the physicians had made up to five major geographical moves prior to their current position. (Hawthorne et al. 2007a)

The route of entry chosen by migrant health workers can be rather diverse. Most health professionals arrive on temporary or permanent employment-based visas, while others gain work and residence rights independent of their occupation through family unification, humanitarian migration or free-movement. (OECD 2007) To avoid the barriers created by the foreign credential recognition and licensing requirements, the student migration pathway is also gaining ground as an important pathway among the migrants. (Hawthorne & To 2012) In Australia, for instance, the number of international medical students who commenced courses leading to provisional registration increased almost two-folds between 2003 (378) and 2012 (651). (Health Workforce Australia [HWA] 2013)

**Theoretical approach to health worker migration**

Although there is a growing body of literature on migration, surprisingly few attempts have been made to define and theorise the underlying dynamics of health workforce migration using an interdisciplinary approach. In the literature migration of health workers has commonly been described simply in terms of the ‘push’ of economic need and ‘pull’ of economic opportunity between ‘sending’ and ‘receiving’ locations or labor markets, which is
an oversimplification of a highly complex and diverse process. (Massey et al. 1993; Massey 2003)

Instead, health workforce migration should be analyzed as an integral part of global transformation processes. It has to be understood in its totality as a complex system of social interactions with a wide range of institutional structures and informal networks in both source and destination countries, and at the international level. In the contemporary world, migration has to be viewed through the lens of transnationalism, which Schiller, Basch and Blanc-Szanton (1992) define as “the process of building social fields that link together the immigrant’s country of origin and settlement”. It should include a comprehensive and fine-tuned theoretical and analytical approach to health workforce migration. The same should be accompanied by a keener investigation into the key steps in the entire migration process and a deeper understanding of the link between the micro-level\(^3\) determinants, meso-level drivers of migration with macro-level trends. (Collison 2009; Castles & Miller 2003) This is an important limitation of the existing empirical literature on determinants of health workforce migration, which confines itself to economic and demographic factors, and tends to typically disregard the role of states and policies in influencing the migratory flows.

In general, international migration continues to be a major consequence of the North-South gap. The existing differentials in life expectancy, demography, economic structure, social conditions and political stability between the industrialized democracies and most of the rest of the world have remained key drivers for migration. (Castles & Miller 2003)

\(^3\) Depending on the focus, migration theories can be classified into three levels. Micro-level theories focus on individual migration decisions, whereas macro-level theories explain migration trends based on macro-level explanations such as the policy environment. The focus in the meso-level is in between the micro and macro level, e.g. on the household or community level.
Health workers, like other high skilled workers, tend to move to areas where working and living conditions are considered to be better. In the literature, the factors that drive the migration of health workers have broadly been classified into ‘push’ and ‘pull’ factors. (OECD & WHO 2010) These factors have commonly been linked to better employment opportunities abroad (encompassing salaries, working conditions, career advancement, etc.). Indeed, especially in low-middle income countries, the migration of health workers tends to be a symptom (push) of the difficulties faced in working with the health system - low remuneration, lack of job satisfaction, poor career opportunities and bad governance. In addition, factors such as the possibility of a better and safer future for their family have also been identified as a key determinant. (Buchan, Parkin & Sochalski 2003; OECD & WHO 2010)

Table 1.1 Main push and pull factors in international migration of health workers

<table>
<thead>
<tr>
<th>Push factors</th>
<th>Pull factors</th>
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<tr>
<td>Low pay (absolute and/or relative)</td>
<td>Higher pay</td>
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<tr>
<td>Poor working conditions</td>
<td>Opportunities for remittances</td>
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<td>Lack of resources to work effectively</td>
<td>Better working conditions</td>
</tr>
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<td>Limited career opportunities</td>
<td>Better resourced health systems</td>
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<tr>
<td>Limited educational opportunities</td>
<td>Career opportunities</td>
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<tr>
<td>Impact of HIV/AIDS</td>
<td>Provision of post-basic education</td>
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<tr>
<td>Unstable/dangerous work environment</td>
<td>Political stability</td>
</tr>
<tr>
<td>Socio-economic instability</td>
<td>Travel opportunities</td>
</tr>
<tr>
<td>Limited health budget</td>
<td>Aid work</td>
</tr>
<tr>
<td>Poor infrastructure</td>
<td>Policy incentives</td>
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Source: Adapted from Buchan J, Parkin T & Sochalski J. (2003)
Health Workforce Migration: Influence of States and Immigration Policies

Albeit international migration is shaped by the decisions made by individuals/households and the social networks that arise through the migratory process, key factors that play a vital role in shaping long-term trends and outcomes are the prevailing immigration as well as health workforce policies in the destination country. The ebb and flow of health professionals is often a reflection of policy decisions and the broader policy context of health workforce planning.

There is some evidence to show that policy instruments have often been used by key destination countries to plan and control the level of entry of overseas trained health professionals. (Pond & McPake 2006; Birrell 2004) These changes in policies, and hence the permitted level of entry for migrant health workers, have often been synchronous with cycles of perceived surpluses and shortages in the key destinations. For instance, in Australia, perception regarding surplus of medical professional in the early 1990s led to implementation of policies to restrict the entry of overseas-trained doctors, which included the introduction of the 10-year restriction (moratorium) on access to Medicare benefits. Since 2003, perceptions regarding workforce shortages have led to a reversal of the Government’s policies. This was accompanied by the introduction of two temporary visas categories i.e. subclass 457 and 422 (the latter closed in July, 2010). (Please refer to Chapter IV & V the PhD thesis for a detailed discussion) In addition, since 2001, changes to immigration arrangements have been made to assist medical practitioners to migrate to Australia under the General Skilled Migration (GSM) program. (Department of Immigration and Citizenship [DIAC] 2012) [Refer to Annex 1 for a chronological listing of changes in immigration policies for key destination countries, namely Australia, Canada, New Zealand, UK and US]
Similarly, in the UK, the 2002 National Health Service (NHS) recruitment drive resulted in a steep increase in the number of new registrations by doctors trained in developing countries. Since then, changes to the immigration law and introduction of new work permit regulations have made it difficult for health professionals from outside the European Economic Area (EEA) to find employment in the UK. (Work Permit 2006) Consequently, between 2003 and 2007, the number of foreign-trained doctors newly registering with the GMC fell from 14,000 to less than 5,000. This period also coincided with the withdrawal of the automatic recognition of qualifications from seven countries – Australia, China, Hong Kong SAR, Malaysia, New Zealand, Singapore, South Africa and the West Indies. (WHO 2014)

In 2008 a points-based system of immigration for highly-skilled migrants was introduced. This was revised in November 2010, to allow only those highly-skilled migrants already holding job offers (known as Tier 2 migrants) to enter the UK. The total number of these Tier 2 permits was also capped. Those doctors without existing job offers (known as Tier 1) who were previously able to enter the UK under the points-based system were no longer admitted. (UK Border Agency [UKBA] 2012) These changes have been associated with a major reduction in new General Medical Council (GMC) registrations by doctors trained in non-EEA countries since 2005. In contrast, there has been an increase in new registration by doctors trained in less economically developed European countries newly joining the EAA after 2004. (Blacklock et al. 2012)

**Research Questions**

In this PhD thesis, I focus on the research questions discussed below to provide a more careful and complete analysis of the issues related to international migration and integration.
of health workers relative to the previous literature.

I. Effect of policy on international migration of health workers

Although there is consensus that macro-contextual economic and political factors and meso-level factors such as networks, recruitment agencies all play ‘some’ role (Castles & Miller 2003), certain fundamental and interrelated questions regarding the role of states and policies in health workforce migration remain unaddressed. As policies can have a significant effect on immigration and integration (Ortega & Peri 2013), there is a need to measure the effect of policies on immigration of health workers and to improve our insight into the nature, evolution and determinants of migration policies.

- What has been the nature and evolution of immigration and professional regulation policies in key destination countries for immigrant health workers?
- Who are the main stakeholders driving these policy changes?
- What has been the net effect of these policies on the flow of immigrant health workers?

II. Factors affecting the labor market performance of immigrant health workers

Furthermore, given the highly regulated character of the health sector, health professionals have to fulfil appropriate registration and licensing requirements of the destination country before commencing employment. As well documented in the literature these licensing

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4 Regulated professions are governed by provincial regulatory bodies and/or professional associations and have very specific requirements regarding the credentials necessary to practice the occupations.
systems can act as a major barrier to the employment of overseas-trained health workers and hinder registration. (Bach 2003) Moreover, the licensing procedures are frequently lengthy, complex and costly that may delay or prevent integration into the destination country’s workforce. Whilst there is some literature on labor market integration of migrant health professionals, the influence of destination country experience and policies has not been fully explored.

- What variations are there in employment patterns of IMGs according to such criteria as age, gender, birthplace, time since arrival, education and training, and policy setting?

**III. Dynamics of flow of overseas trained health workers**

In many countries, overseas trained health workers are considered to play a `gap filling' or `safety net' role in the health system. (Mick 1993; Barnett 1998; Mick, Lee & Wodchis 2000) Beyond the absolute numbers, some supporting empirical evidence suggests that in most developed countries, these health workers help improve geographical imbalances by choosing less attractive job positions. In areas of health workforce shortages, these health workers are often the sole providers and have become an important part of the fabric of health services. However, in recent years, there has been increased interest from both researchers and policy-makers with regard to the retention of these health workers considering the high-level of inter- and intra-country mobility.

- What is the current research evidence on overseas trained health professionals as providers in rural areas?
- Despite its current scale, what are the challenges associated with international recruitment of as a strategy to address health workforce shortages?

For my research I have used data from various secondary sources (specified under each analytical section of the PhD thesis) to examine the questions presented above, using International Medical Graduates (IMGs) as a prototype of health worker migration. The focus of my research is specifically on medical graduates for several reasons. First, physician shortages seem to be substantial in both high- and low-middle income countries and are projected to increase in forthcoming years. (Campbell et al. 2013) In addition, physicians are key to the provision of health care services in all countries and their shortage can critically affect both the quality and equity of services.

Further, even though emigration of medical graduates occurs from both high- and low-middle income countries, the focus will be more on physician emigration from low-middle income countries because the implications of such movement on the health systems are much more severe in these countries.

Structure of the Thesis

The PhD thesis is divided into seven chapters, in addition to the introduction and conclusion. The first chapter (Chapter II) reviews the existing literature on migration theories and applies it to our understanding of international health workforce migration. The chapter illustrates the complex and multifarious nature of migration processes and highlights the importance of structural and institutional factors in influencing the flows. The arguments presented in the chapter adds to the existing scholarships by providing a contemporary
approach to health workforce migration, which is still primarily explained on the basis of the antiquate ‘push-pull’ theory. This chapter also provides the theoretical framework that will be used to develop the analytical model used in Chapter III of the PhD thesis.

Chapter III addresses the first research question and focuses on five main destination countries i.e. Australia, Canada, New Zealand, UK and the US to empirically assess the main drivers of migration, including the effect of immigration policies on migratory flows of IMGs. These countries were chosen as they provide an excellent opportunity to undertake comparative-contrastive research. Firstly, being major destination countries, all five countries are global competitors in the race to attract and retain internationally trained health professionals. Secondly, the health system in all five countries relies heavily on the international health workforce (A quarter of the working doctors in Australia, Canada and the US; more than a third in UK and New Zealand are trained overseas; Refer to Figure 1.1). Finally, these countries face enormous challenges with credential recognition and retention of overseas trained health personnel, especially in non-urban communities.

The analysis presented in this chapter uses the Medical Brain Drain Database (1991-2004) compiled by Bhargava, Docquier & Moullan (2011) as well as the immigration policy index constructed by Ortega & Peri (2012). The chapter is of significance as it presents quantitative estimates of the effect of geographic, economic, demographic, sociocultural and policy variables in the destination countries on flow of IMGs, using a gravity model.

Chapter IV and V use Australia as an illustrative case study to address the first set of research questions. The chapters sequentially track changes in the policy setting (immigration and professional regulation) for IMGs while analyzing the contextual factors leading to these
changes and its consequences. Australia was chosen as the country for this case study as, (i) it is a key destination country with a high level of reliance on IMGs (Australian Bureau of Statistics [ABS] 2013); and (ii) it is probably one of the few countries to have specific migration policies for health professionals (OECD 2008).

Chapter VI addresses the second set of research questions and focuses on the issue of integration and the determinants of the labor market outcomes of IMGs. It analyzes the Australian Census 2011 data to identify key characteristics that determine the labor market integration of IMGs. Australia was chosen as the country for the analysis, as previous research has shown that only about half of the IMGs in the country are employed as physicians, with observable differences in the occupational outcomes depending on individual-level characteristics. (Hawthorne et al. 2007)

Chapter VII uses New Zealand as a case study to demonstrate the potential challenges associated with the growing reliance on IMGs to address domestic shortages, addressing the third research question. New Zealand was chosen as the country for this case study as, (i) it has the highest proportion of IMGs in its workforce amongst all OECD countries (Zurn & Dumont 2008); and (ii) the level of dependence on international recruitment has steadily increased to 2014 (MCNZ 2005; MCNZ 2012).

Chapter VIII also addresses the third research question and assesses the role played by IMGs in resolving distributional disequilibria in key destination countries (Australia, Canada, New Zealand, UK and US). It presents a systematic review of the literature that analyzes the role of IMGs in resolving shortages in the medical workforce in rural and underserved areas in
these key destination countries.

Chapter IX summarizes the main findings and conclusions from each chapter of the PhD thesis. It also presents some policy implications of the analyses.
CHAPTER II: APPRAISAL OF EXISTING MIGRATION THEORIES

Background

As introduced in Chapter I of this PhD thesis, increases in international migration of health workers, especially from lower income countries with already fragile health systems, has generated global interest. Concern about the accelerated loss of health workers from countries facing critical shortages has led to polarized debates on the ethics of international recruitment by relatively developed countries and the individual rights of health workers to migrate. (OECD & WHO 2010; ILO 2010)

In this context, at various times policy formulations have been proposed to counterbalance the negative aspects of international migration of health workers. These have ranged from compensation payments, promotion of return migration, twinning of institutions in receiving and sending countries, stimulation of remittance flows and development of bilateral or multilateral codes of practice for recruitment. (Lowell & Findlay 2002; Connell & Buchan 2011) The most prominent and recent of these codes is the WHO Global Code of Practice on the International Recruitment of Health Personnel, which was adopted by the 63rd World Health Assembly in May 2010. The Code, a legally non-binding instrument, aims to establish and promote ethical international recruitment of health worker and serve as a platform for continuing dialogue. (WHO 2010)

The endorsement of the Code has been a significant global achievement. However, there is on-going skepticism about its ability to achieve the stated aims, as even in the past Codes and Memorandum of Understanding (MOUs) formulated by individual governments or regional bodies have had limited impact (either they were hard to implement and monitor or
received little support from stakeholders in the public and private sectors). (Mackey 2012)

Unsurprisingly, nearly three years after its adoption, the progress made by Member States on the implementation of the Code has been less than satisfactory. As of February 2013, only 51 countries had reported on implementation of the Code, of which 36 were countries in the European Region. (WHO 2013) (see Table 2.1)

Table 2.1 Number of designated national reporting authorities established, by region, and number of reports received as at 21 February 2013

<table>
<thead>
<tr>
<th>WHO Region</th>
<th>Name of designated national authority established</th>
<th>Number of reports received using the national reporting instruments</th>
</tr>
</thead>
<tbody>
<tr>
<td>Africa</td>
<td>13</td>
<td>1</td>
</tr>
<tr>
<td>The Americas</td>
<td>11</td>
<td>4</td>
</tr>
<tr>
<td>South-East Asia</td>
<td>4</td>
<td>3</td>
</tr>
<tr>
<td>Europe</td>
<td>42</td>
<td>36</td>
</tr>
<tr>
<td>Eastern Mediterranean</td>
<td>8</td>
<td>3</td>
</tr>
<tr>
<td>Western Pacific</td>
<td>6</td>
<td>4</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>84</strong></td>
<td><strong>51</strong></td>
</tr>
</tbody>
</table>

Source: WHO Secretariat, April 2013

Inarguably the unregulated outflow of health workers is problematic. However for policy initiatives to achieve the desired impact they have to address the core issues that drive the process. To date policies on international migration of health workers have often been generic in nature, primarily based on the theoretically void push-pull model that fail to take into consideration the multi-layered, dynamic and complex nature of contemporary migration processes. (de Haas 2011) This is unfortunate, as in the era of globalization migration of health workers has to be investigated and understood in the context of broader global transformation processes, linking micro-level understanding of migration to the meso- and macro-level trends. As discussed in Chapter 1, there is an inherent need to develop a
more comprehensive, theoretical and analytical approach. Having identified this need, it is important to explore the possibility of using or combining the existing theories on migration to enhance our understanding regarding the migratory behavior of health workers. In case that this not achievable, it is important to identify the limitations and constraints.

I begin this chapter by chronologically reviewing the progression in the existing migration theories. I focus on the neoclassical theories as well as the more recent ‘pluralist’ views on migration. I then attempt to elaborate the contours for analytical analysis of migration of health workers within a broader theoretical perspective by integrating insights from contemporary, pluralist views on migration. Although there is a clear distinction between internal and international migration, the chapter focuses on the latter. It is noted that many theories attempting to explain population movements refer to internal migration, which are also included in the discussion, as contemporary migration processes have reduced the diversity between the mechanisms driving the two types of migration.

**International Migration – Appraisal of the existing theories**

Although there is an expanding body of literature on international migration, “the absence of a single, coherent, interdisciplinary theory that is able to explain the full complexity of the migration processes”, (de Haas 2011) is conspicuous by its absence. In fact, the diverse and multifaceted nature of the process has led some to claim that migration is only weakly theorized (e.g. Arango 2004). Others have strongly argued that the lack of an interdisciplinary approach has held back the synthesis of a coherent migration theory. (Massey et al. 1993; de Haas 2008) These arguments are still germane. While there have been continued efforts to advance the analytical and theoretical approach to understand migration process, the absence of a composite theory remains a handicap.
The first attempt to theorize population movement dates back to the migration laws of Ravenstein (1885; 1889). Based on empirical observations on the internal migration in Great Britain, he summarized that factors such as distance, population size of the origin and destination regions, absorption capacities of the latter, sex of migrants etc. influenced the intensity of the migratory process. (Ravenstein 1885; Ravenstein 1889)

Subsequent theoretical developments have been dominated by the economic literature. These theories have considered migration to be driven by the economic-decision making of individual migrants and/or their households, within a rational market that tends to achieve equilibrium. For instance, the neo-clasical economic theory explains that migration is driven by income and supply differentials that cause workers to move from low wage (labor surplus) to high-wage (labor scare) regions. On the assumption that migrants have free choice and full access to information, the theory argues that migrants make a utility maximizing decision. In a perfectly neo-classical world, it is postulated that the phenomenon will continue as long as the incentive to migrate persists. (Harris & Todaro 1970; Ranis & Fei 1961)

Todaro (1969) and Harris & Todaro (1970) elaborated on the neo-classical migration theory, to argue that migration is not necessarily only driven by simple wage differentials between regions but rather by the “expected” income differential, that is, the income differential adjusted for the probability of finding employment. (Todaro 1969)

This argument has been extended by Borjas (1989; 1990; 2005) to explain mobility in the international immigration market. In his view potential migrants choose between destinations based on cost-benefit calculations.
An important limitation of the economic theories is the assumption that migration is dependant on specific structural characteristics such as the returns (financial), costs and risks of migration. It does not take into consideration factors such as human capital characteristics, segmentation of destination country labor markets as well as immigration policies that are important determinants in the migration process. Furthermore, it is well acknowledged that the heterogeneity and dynamism of the migration system is influenced by a combination of social, cultural, political, and institutional factors. (Massey et al. 1993) The neo-classical migration theory and its subsequent refinements were not able to incorporate and explain the role of these factors.

Concurrent to the neo-classical theory, was the emergence of the historical-structural theory. The theory postulates that imbalances in the distribution of economic and political power among the developed and underdeveloped countries is the main driving force for migration. For instance, the ‘world-systems theory’ (Wallerstein 1974; Wallerstein 1980) classifies countries as the capital intensive “core” nations and the labor intensive “semi-peripheral” and “peripheral” nations. It is argued that there is a power hierarchy between them, wherein the powerful and wealthy "core" societies dominate and exploit weak and poor “peripheral” societies. The ‘systems’ theory conceptualized migration as circular, multi-causal and interdependent process wherein changes in one part of the system had implications on the remaining. (King 2012) This was seen as novel approach to the comprehension of the migration process, however the approach has been criticized for being too determinist and rigid in viewing individuals as “pawns” of macro-forces, thereby largely ruling out the role of individual agency. (de Haas 2008) (Refer to Table 2.2 for a chronological list of the different theories).
### Table 2.2 Chronological articulation of the migration theories

<table>
<thead>
<tr>
<th>Author(s)</th>
<th>Migration Theory</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ravenstein (1885; 1889)</td>
<td>Laws of migration - factors such as distance, population size of the origin and destination regions, absorption capacities of the latter, migrants’ sex etc. influence the intensity of the process.</td>
</tr>
<tr>
<td>Stouffer (1940, 1960)</td>
<td>Interplay between distance and opportunities available for prospective migrants in various locations.</td>
</tr>
<tr>
<td>Stewart (1941); Zipf (1946); Isard (1960/1965)</td>
<td>Gravity theory of migration - migration between regions is proportional to the product of population sizes in the source and destination regions, and inversely proportional to the distance between the two regions.</td>
</tr>
<tr>
<td>Lewis (1954)</td>
<td>Neoclassical macroeconomic migration theory - migration is a disequilibrium phenomenon, which ceases as soon as the equilibrium is reached.</td>
</tr>
<tr>
<td>Sjaastad (1962)</td>
<td>Neoclassical microeconomic theory: prospective migrants choose the destinations that are maximizing the net present value of their expected future income.</td>
</tr>
<tr>
<td>Lee (1966)</td>
<td>“Push-and-pull” - migration is determined by the presence of attracting (pull) factors at destination, and repelling (push) factors at source.</td>
</tr>
<tr>
<td>Harris &amp; Todaro (1970)</td>
<td>Migration decision is based on expected income differentials between rather than simple wage differentials.</td>
</tr>
<tr>
<td>Zelinsky (1971)</td>
<td>Mobility transition – social modernization caused an increase and a continuous diversification of human mobility patterns.</td>
</tr>
<tr>
<td>Piore (1979)</td>
<td>Dual labor markets theory - migration flows are to a large extent determined by labor demand characteristics at the destination.</td>
</tr>
<tr>
<td>Kritz et al. (1992); Mabogunje (1970); Zlotnik (1998)</td>
<td>Migration is a continuous interplay with historical, economic, cultural and political linkages between the countries, both on the micro and macro levels.</td>
</tr>
<tr>
<td>Massey (1990)</td>
<td>Cumulative causation - as migratory experience grows within a source community, the likelihood that other community members will enter the migratory process increases.</td>
</tr>
<tr>
<td>Massey et al. (1993)</td>
<td>Institutional theory of migration - various institutions, from for-profit entities and enterprises (legal or illegal), to humanitarian organisations, NGOs, etc. facilitate migration.</td>
</tr>
<tr>
<td>Faist (2000)</td>
<td>Transnational social spaces consist of combinations of social and symbolic ties, their contents, positions in networks and organizations, and networks of organizations that can be found in multiple states.</td>
</tr>
<tr>
<td>Castles &amp; Miller, (2009)</td>
<td>Social capital theory - migration network perpetuate movement irrespective of policies pursued by sending and receiving countries</td>
</tr>
</tbody>
</table>
Lee (1966) revised Ravenstein’s laws on migration and proposed a new analytical framework for migration (commonly referred to as the “push-pull model”). According to the model, the decision to migrate is determined by factors associated with the source; factors associated with the destination; intervening factors (such as distance, physical barriers, immigration laws, and so on); and personal factors. Lee (1966) further argued that individuals tend to move within well-defined “streams”, which have been established on the basis of opportunities available in destination countries and the flow of information for later migrants. The model is largely analogous to neo-classical theory and has been frequently used in the literature on international migration of health professionals. (Buchan 2006; MoHProf 2012) Its popularity stems from its intuitive approach and relative ease of application in practice. The model has however been criticised for ad-hoc classifications of the migration determinants (push versus pull). Another limitation of the model is that it does not allow the assignment of relative weights to the different factors that affect migration decisions. Further, an important fundamental weakness of the model is that the factors categorized as ‘push’ and ‘pull’ generally mirror each other. For instance, while ‘poor working condition’ is considered as an important “push” factors, its “pull” counterpart is ‘better working condition’. Another major shortcoming of the ‘push-pull’ theory is its inability to explain why only some health workers move, who they are, why they choose to move when others remain, where do they move and when.

The 1980s and 1990s saw further developments in migration research that sought to provide better explanation and estimation of key parameters. It highlighted the role of the wider social entities and interactions within them in conditioning migration behavior. (Massey et al. 1993) For instance, the New Economics of Labour Migration literature discusses migration
as a decision-making process taken at the micro level by households in their pursuit to
maximise or protect household income. This was followed by studies (Massey et al. 1993;
Massey et al. 1998; Gurak & Caces 1992; Fawcett 1989; Tsuda 1999; Pellegrino 2004) that
present a strong argument on the role of ‘networks’ in facilitating the migration process.
Massey et al. (1993) define networks as “sets of interpersonal ties that connect migrants,
former migrants, and nonmigrants in origin and destination areas through bonds of kinship,
friendship, and shared community origin”. The studies argue that once a certain critical
number of migrants have settled in the destination, they have a strong influence on
subsequent migration patterns. Massey (1989) argues that upon reaching the critical mass,
migration becomes self-perpetuating as the social structure required to sustain the process
are created.

A close affiliate of the network theory is the migration systems theory. The fundamental
assumption of this theory is that “migration alters the social, cultural, economic, and
institutional conditions at both the source and destination — that is, the entire developmental
space within which migration processes operate”. (Fawcett 1989) The theory stresses the
importance of feedback mechanisms - favourable feedback encourages further migration and
leads to the establishment of migration corridors.

The 1990s saw a new trend in the scholarly debates on migration - the discussion on the
transnational aspect of migration. (Castles & Miller 2003; Faist 2004; Glick et al. 1991;
Vertovec 1999) The literature on transnational behavior is based on the observation that
over generations migrants continue to remain involved in different ways and maintain bonds
with their source communities. (de Haas 2005; Gaumizo et al. 2003) Vertovec (1999) states
that transnationalism can be conceived as “a social morphology, as a type of consciousness,
as a mode of cultural reproduction, as an avenue of capital, as a site of political engagement, and as a reconstruction of ‘place’ or locality.” The transnational approach to migration is viewed as a progressive move away from general structuralist or functionalist theories towards a "more pluralist or hybrid approaches". (de Haas 2008)

The 2000s has seen continued attempts to develop a composite and inter-disciplinary approach to explain the determinants of the migration processes. However, as de Haas (2008) states "attempts to combine different theoretical perspectives are more problematic than sometimes suggested due to incommensurability issues and associated disciplinary divisions". As a consequence, our ability to adequately explain ‘who’ is moving, ‘where’ and ‘why’ remains unaccomplished. Moreover, advances in telecommunication and connectivity have allowed a paradigm shift, progressively giving way to temporary and circular migration. There has also been a widespread interest in the role national, bi- or multi-national policies in fostering and managing various dimensions of migration. (Vertovec 2007)

**Applying existing theories to health workforce migration**

The available literature suggests that health workers migrate due to a variety of reasons. While the truism holds that economic forces are a root cause of migration, studies also report on the role of institutional factors such as unsatisfactory work environment, professional reasons (e.g. upgrading professional qualifications, career progression) and preference to move to places where the standards of living are better, as other factors that shape of migration patterns. (Awases et al. 2004; Connell & Brown 2004; Dovlo 2004; Narasimhan et al. 2004; Anarfi et al. 2010; Buchan 2006; Nair & Webster 2013; Kingma 2005; Kline 2003)
While there is a relative wealth of theoretical literature on the importance of these factors in migration of health workers, surprisingly few attempts have been made to draw attention to the role of other determinants such as nation states, geographical proximity, social networks, and cultural and historical factors in creating new and existing migration patterns. The identified gaps in literature have primarily been the outcome of lack of field-specific data.

Among these, the paucity of literature on the role of states, politics and policies in influencing health professional migration is striking. It is implicit that sending and receiving states and policies play a critical role in the migration of health professionals through the determination of the macro-economic environment, labor market policies and their influence in establishing immigration quotas. Moreover, states and policies can potentially be of huge influence in the formation of migration patterns that may result in the establishment of "migration streams" between specific places and countries. These patterns can become self-perpetuating through networks and other feedback mechanisms. Further, the influence of past colonial ties, labor recruitment process, bi- and multi-lateral health agreements in the formulation of these migratory patterns is seldom adequately described in the health workforce migration literature. Another important gap in the literature is the absence of an analytical approach to the mobility of health workers using the lens of the existing theories of migration. In this section, I attempt to summarize the known theories on migration and their ability to potentially explain the migration behaviour of health workers, using the available empirical evidence.

The neoclassical theory of migration suggests that expected income gains are the main driver of international migration. Furthermore, the new economics of migration underlines the importance of households as a basic unit of an analysis. In terms of health workforce
migration, the empirical literature on the role of economic gains (either at the individual or household level) in guiding migration decisions is both limited and inconsistent. Dräger et al. (2006) report that the enormous gaps in wages for health workers in rich and poor countries provides a great incentive for migration. However, they argue that in source countries, improving wages alone will not fundamentally change the emerging patterns of migration - indicating the vital role of non-financial factors and improved working conditions. In contrast, Vujicic et al. (2004) report that there is little correlation between health worker migration and the size of the income differential amongst source and destination countries. Overall the literature on the role of economic factors in health workforce migration is limited, and the general lack of indicative data makes it difficult to make conclusions in this regard.

The dual labour market theory, pioneered by Piore (1979), focuses on the labor market demand in the destination countries, as an important determinant. It views migration as a purely demand driven phenomenon tied to a limited supply and inadequate distribution of native workers in the secondary sector. When applied to health professional migration, in many destination countries, international recruitment is often considered an effective short-to medium-term strategy to address labor market shortages, especially since migrant workers may be more willing to work (at a lower salary rate) in remote or unattractive locations. (Martineau 2004) For instance, Starfield et al. (2007) establish that physicians from poor countries add a relatively greater percentage of the primary care physicians than the overall percentage of primary care physicians in the United States. The role of governments and recruitment agencies in systematically mediating and encouraging migration of health workers has also been been highlighted in the literature. (Bach 2003)
theory (Wallerstein 1974) perceives migration as a natural outcome of globalization - technological progress leading to reduced communication and transport costs, and increased interconnectedness. These processes and the associated oversupply of labor in peripheral areas have facilitated the entry of professionals such as health workers into the labor markets of destination (core) countries. The growth in the magnitude of flows of health workers from countries in the global south to countries in the global north can be considered as illustrative of this phenomenon. (WHO 2014) Unfortunately, there is limited empirical research to fully substantiate the observation.

The network and transnational theories refer to the existence of networks (Taylor 1986) and the manner in which transnational ties (Portes et al. 1999; Vertovec 2004) condition migration processes. It is well recognized that existing networks by sharing information and reducing the transitional cost accelerate migration flows. In the context of health workforce migration, major destination countries tend to have some specific migration corridors of note. For instance, the US hosts about 13,000 Mexican medical professionals and sizeable numbers of Haitian nurses. Similarly, prior to the tightening of visa and professional licensing requirements, the UK received significant numbers of doctors and nurses from its former colonies. There are also some known migration routes between the major destination countries, most notably from the UK to Australia and (to a lesser extent) Canada. (WHO 2014) However, the lack of comparative cross-country statistics on these flows is a major limitation to establishing and estimating the size of these corridors.

In general, while these theories are able to explain certain aspects of health workforce mobility, improvements in our understanding of the process will depend on the development of more sophisticated theoretical and analytical approaches that links micro-
level understanding of migration to the meso- and macro-level trends. Although pluralistic theories of migration such as the world systems theory of Wallerstein (1974), the migration systems theory of Kritz et al. (1992), the unifying perspective of Massey (2002) are available, applying them in an empirical framework is problematic, as they are not sufficiently formal in terms of the analytical expression. Furthermore, although the available (limited) data provides a general picture on international migration of health workers, at present it lacks the depth required to make empirical generalizations or to connect it back to the existing theories.

In order to deepen our understanding of the interaction of the political, social, cultural, institutional, historical contexts in which health workers move, further research is necessary to extend this knowledge.

**Conclusion**

The theories on migration have progressively evolved over time to incorporate the different facets of the migration process but still lack the ability to adequately explain ‘who’ is moving, ‘where’ and ‘why’. This is partly associated with major research gaps, compounded by dearth of field-specific data and the lack of an inter-disciplinary approach.

The absence of a comprehensive analytical framework of the migration process also affects our comprehension of the factors that influence international migration of health workers. The available literature is primarily based on survey data from health professionals in source countries and is primarily exploratory in nature, with small sample sizes, making it difficult to generalize the findings. Improvements in our understanding of health workforce migration will be contingent to the development of fine-tuned theoretical and analytical approaches that are suitable for investigating the interaction within the migration dynamics. This will
depend on the speed with which new evidence is produced to inform the role of the different factors that potentially influence migration decisions.

In *Chapter III* of this PhD thesis I use the gravity model in economics to understand the influence of the political, social, cultural, institutional and historical factors on health workforce migration. My findings have the potential to make an important contribution to the literature by addressing some identified gaps in knowledge. My analysis uses cross-country panel data in a gravity regression to explore the role of the different factors in migration of health professionals.
CHAPTER III. DERIVATION OF A GRAVITY MODEL OF INTERNATIONAL MIGRATION OF PHYSICIANS

Theoretical framework

Further to the discussions in Chapter II of this PhD thesis, it is inferred that migration decisions are based on utility-maximizing decisions. (Grogger & Hanson 2011) From all available alternatives, potential migrants compare and choose whether and where to emigrate so as to maximize their utility. A set of factors relevant to the source country, destination country and the characteristics of the migrants themselves determine the direction and magnitude of the flow. As seen in Chapter II, although a number of theories have tried to explain the migration patterns, fully specified behavioral models of migration decisions are scarce. (Kennan & Walker 2009)

In the economic literature on migration, the income maximization framework - popularly known as the Roy model (Roy 1951) has been the foundation for a large body of research. The model proposes that the selectivity of migrants and their sorting across destination countries depends on cross-country differences in the reward to skill. Borjas\(^5\) (1989) improvised this model to include variables representing characteristics of destination and source countries that influence the magnitude and composition of immigrant flows. The model implies that population migration is influenced by aggregate economic activities, immigration policies, political orientation and level of a country’s education. (Borjas 1989)

---

\(^5\) Borjas has explored a wide spectrum of topics on migration including selection and assimilation of migrant workers, the impact of immigration on labor markets and worker wages, and the economic benefits and losses that result from immigration.
Borjas (1989) argues that the decision to migrate is made if the expected returns from immigration are higher than the foreseeable migration costs. This has been summarized in the proposed theoretical model of immigration in three equations: a wage earning function for the source country; a wage earning function for the destination country; and a function representing the migration costs - moving from source to a destination country. The model has however been critiqued for its minimalistic approach, as migration decisions are influenced by a complex range of factors operating at the micro-meso-macro levels. (Refer to Chapter I & II of this PhD thesis for a detailed discussion)

In the literature, researchers who have used similar models and have generally focused on a single host (and multiple sources) in their model. An alternative approach that has been used to provide an empirically robust analysis of the numbers and composition of immigrant flows has been the gravity model. (Lewer & Van den Berg 2008; Karemera et al. 2000) These models are based on gravity regressions that have become very popular in analyzing trade flows. (Anderson & Eric van 2003; Chaney 2008).

**Gravity Model – An overview**

Since the seminal work of Tinbergen (1962), gravity models have been widely used in the applied international trade literature. The model links trade flows directly with economic size and inversely with trade costs, usually proxied by geographical distance to capture patterns in international trade and production. Leamer & Levinsohn (1995) argue that the gravity model has produced “some of the clearest and most robust findings in empirical economics”.

According to Tinbergen’s version of the gravity equation, $F_{ij}$, the size of the trade flow between any pair of countries is stochastically determined by: (1) $S_a$, the amount of exports a
country $i$ is able to supply to country $j$, depending on its economic size measured in terms of Gross National Product (GNP) converted in US dollars; (2) $D_j$, the size of the importing market, measured by its GNP, also converted in US dollars; (3) $\Omega_{ij}$, the geographical distance between the two countries, as a rough measure of transportation costs. The model was expressed in a log–log form, so that the elasticity of the trade flow is a constant ($a_1$, $a_2$, and $a_3$) with respect to the three explanatory variables. The equation was augmented with political or semi-economic factors: a dummy variable $V_{ij}$. In the model, a gravitational constant $G$ and a stochastic term $\epsilon_{ij}$ was also included. In equation-form:

$$\ln F_{ij} = \ln G + a_1 \ln S_i + a_2 \ln D_j + a_3 \Omega_{ij} + a_4 V_{ij} + \epsilon_{ij} \quad (1)$$

$a_0$ = constant economic attractors distance policy error term

The use of gravity models is no longer limited to only analyzing trade in goods and has been applied to analyze migration flows as well. In fact, even before the gravity model became popular in applied international trade literature, Ravenstein (1889) and Zipf (1946) had used the gravity concepts to model migration flows. As the supply and demand for migrants can be linked systematically to the size of the populations, the size of national income or per capita income, (Greenwood 1975; Wadycki 1973; Borjas 1987) the gravity equation described above, can and has been applied to model mobility between destination and source countries. An advantage of the model is that it provides an empirical base to assess the impact of different policies on migration flows. Within the gravity framework, variables such as regulatory policies as well as political and institutional characteristics of countries have been used to model their influence on migration. (Ortega & Peri 2012; Karemera 2000)
Gravity Model in Migration

Using the above framework, if we denote the source country \(i\) and destination country \(j\), the migrant flow from \(i\) to \(j\) will depend on potential supply factors, \(S\). These factors are a function of income \(y\), which represents the capacity to migrate, population \(n\), and factor endowments. (Karemera et al. 2000) Therefore, \(S = f(y, n)^2\).

Potential demand factors \(D\) are likewise a function of income and population, representing the pull factors in the destination country. Thus, \(D = f(y, n)\). The exponents in the equations above and below represent migration elasticities.

Combining \(S\) and \(D\) yield a migrant flow equation as:

\[
F_{ij} = a_0 S_i^{a_1} D_j^{a_2} / R_{ij}^{a_3} \quad I = 1, \ldots, N1; j = 1, \ldots, N2
\]

(2)

where \(R_{ij}\) represents factors aiding or restraining migrant flows from \(i\) to \(j\), such as migration costs.

Migration cost depends on several factors, such as travel cost from source to destination country and information cost for alternative destination countries. Taking logs of both sides of Equation 2, and replacing terms by their equivalents, yields the basic migration model as:

\[
F_{ij} = \alpha_0 + \alpha_1 n_i + \alpha_2 n_j + \alpha_3 y_i + \alpha_4 y_j + \alpha_5 c_{ij} + \epsilon_{ij} \quad i = 1, \ldots, N1; j = 1, \ldots, N2
\]

(3)

where \(F_{ij}\) is the migration flow between countries \(i\) and \(j\); \(n_i(n_j)\) is the population of the source country \(i\) (the destination country \(j\)); \(Y_i(Y_j)\) is the income of the source country \(i\) (the destination country, \(j\)); and \(c_{ij}\) and \(\epsilon_{ij}\) replace \(R_{ij}\) in Equation 2, and denote travel costs and immigration policies, respectively. The \(\alpha\)'s are estimable parameters. The term \(\epsilon_{ij}\) is described.
by Schultz (1982) as a function of additional attributes of the source country $i$ and/or destination country $j$, including all factors facilitating or impeding migration flows.

Equation 3 is in its simplest form when $\varepsilon_{ij}$ is just an unobserved idiosyncratic term, a gravity model of migration proposed by Greenwood (1975) and Borjas (1989). The migration flow from country $i$ to country $j$ is a negative (positive) function of income in source (destination) country, a negative (positive) function of population size of the destination (source) country, and a negative function of monetary and psychological costs of moving to the destination country.

To empirically estimate Equation 3 in its most general form, explanatory terms for $\varepsilon_{ij}$ have to be identified. The term $\varepsilon_{ij}$ could include variables that represent political, economic and demographic characteristics of countries of source and destination. Karemera et al. (2000) classified these characteristics into the following three variable groups:

(i) political, economic and demographic factors affecting migrant flows from the source country;

(ii) political, economic and demographic factors affecting migrant flows to the destination country;

(iii) natural and artificial factors enhancing or restraining migrant flows to the destination country.

In the destination country, artificial factors include policies that restrict the entry of immigrants. In the source country, artificial factors include limitations on population movements; while natural factors include distance, and transport, information and psychic
costs\textsuperscript{6}. Expanding Equation 3 to include these characteristics yields an empirical specification of the migrant flow equation of the form:

\[ F_{ij} = \lambda_0 + \lambda_1 d_{ij} + \lambda_2 n_i + \lambda_3 n_j + \lambda_4 y_i + \lambda_5 y_j + \lambda_6 c_{ni} + \lambda_7 G_i + \lambda_8 G_j + \lambda_9 P_i + \lambda_{10} I_{xy} + \lambda_{11} T_{ij} + \lambda_{12} E_{ij} + \lambda_{13} s_i + \lambda_{14} h_i + \lambda_{15} pc_j + \epsilon_{ij} \]

\[ i = 1, \ldots, N_1; \ j = 1, \ldots, N_2 \quad (4) \]

There are several sets of explanatory variables in Equation 4. The first set is gravitational demographic variables: distance \( d_{ij} \), population \( n_i, n_j \), and income \( y_i, y_j \). As mentioned above, a common practice in empirical studies is to use the distance between the source and destination countries as proxy for migration costs. The contingency variable \( c_{ni} = 1 \) if country \( i \) and \( j \) have a common border, \( 0 \) otherwise) is added under the assumption that sharing a common land border enhances migration.

The second set of explanatory variables used in the model account for a country’s financial performance, proxied by GDP per capita \( G_i, G_j \). It is hypothesized that better financial performance is an indication of better future economic opportunities, which could potentially enhance its attractiveness as a destination country on one hand while reducing the expected incentives for migration on the other hand.

Migrant networks are now widely recognized to be very influential in migration decisions. These networks can facilitate migration in different ways: by providing information on the migration process; by providing information and aiding integration in the labor market after arrival; and by providing financial support for migration. (Ryan 2011) This can be proxied by

\textsuperscript{6} Refers to the emotional impact of leaving family and friends and having to cope with life in an unfamiliar and potentially hostile environment.
including a third set of variables that accounts for the size of the migrant population in the destination country \((P_d)\). Further, it is hypothesized that existence of commonality factors encourages migration to the country of cultural similarities. The effect of common language and cultural similarity on the size and composition of migration flows can be assessed \((L_{ij})\) by including variables to represent both aspects.

The fourth sets of variables are those that account for linkage between a country’s trade relations and the migration process \((I_{ij}, E_{ij})\). It is hypothesized that countries with strong trade relationships will also have established migration routes.

The fifth set of characteristics relate to the country’s current and past political situation. To identify the impact of domestic political instability on the size and composition of migration flows, a dummy variable \((s_i = 1, \text{for countries that are in a state of conflict; } 0 \text{ otherwise})\) can be included. It is expected that a conflict state will lead to an increase in the emigration rate. The role of historical political relations between source and destination countries can be assessed by introducing another dummy variable \((h_i = 1, \text{for countries that were hegemony of the destination; } 0 \text{ otherwise})\). The available literature suggests that colonial ties can increase the bilateral migration flows. (Massey et al. 1998) A key limitation of standard gravity-model formation is that it tends to neglect the role of historical factors and suffers from omitted-variable bias. Equation 4 addresses this limitation by taking into consideration these factors.

Available evidence suggests that migration policies have a significant effect on the flows, although the effect may be limited compared to other migration determinants. (Czaika & de Haas 2011) The prevailing migration policies, especially of the destination country, can be an
important artificial factor that either encourages or restricts mobility. To identify the effect of immigration policy changes during the period 1991 – 2004 on migrant flows, a dummy variable $p_{cj}$ is introduced.

To my best knowledge, a gravity model as described in Equation 4 has previously not been used in the migration literature to analyze the flows of high-skilled professional groups such as physicians (as outlined in Chapter I of the PhD thesis, physicians are the focus of my analyses). In fact, so far, empirical studies on the mobility of health professionals have been restricted to qualitative-directional and quantitative-numerical assessment of stocks and flows. My analysis uses the above described gravity model to analyze unique demographic, political, economic and policy characteristics associated with both the source and destination countries.

**Data**

The data used in the analysis spans 5 destination countries and 116 source countries over the period 1991-2004. *Table 3.1* provides the complete list of countries included in the analysis. The period of analysis was primarily dictated by the availability of reliable and comparable data on migration of physicians across the key destination countries.
Table 3.1 List of countries included in the migration flow analysis: 1991 - 2004

<table>
<thead>
<tr>
<th>Continent/region</th>
<th>Countries</th>
</tr>
</thead>
<tbody>
<tr>
<td>Africa</td>
<td>Angola; Benin; Burkina Faso; Belize; Central African Republic; Ivory Coast; Cameroon; Comoros; Djibouti; Cape Verde; Algeria; Egypt; Eritrea; Ethiopia; Ghana; Equatorial Guinea; Kenya; Lesotho; Madagascar; Mali; Mauritius; Malawi; Namibia; Niger; Nigeria; Rwanda; Sudan; Sierra Leone; Chad; Uganda; South Africa; Zambia; Zimbabwe; Seychelles; Tunisia</td>
</tr>
<tr>
<td>Asia</td>
<td>Bangladesh; Bahrain; China; India; Jordan; Japan; Cambodia; Korea; Kuwait; Mongolia; Malaysia; Philippines; Nepal; Pakistan; Singapore; Thailand; Taiwan</td>
</tr>
<tr>
<td>Europe</td>
<td>Azerbaijan; Austria; Bulgaria; Cyprus; Czech Republic; Germany; Denmark; Estonia; Finland; United Kingdom***; Grenada; Croatia; Hungary; Ireland; Italy; Kazakhstan; Kyrgyzstan; Lithuania; Latvia; Moldova; Norway; Poland; Portugal; Romania; Russia; Slovakia; Slovenia; Sweden; Turkey; Ukraine; Tajikistan; Yemen</td>
</tr>
<tr>
<td>Pacific</td>
<td>Australia***; Fiji; New Zealand***; Papua New Guinea; Tonga; Samoa</td>
</tr>
<tr>
<td>North America</td>
<td>Canada***; United States***; St Lucia</td>
</tr>
<tr>
<td>Central &amp; South America</td>
<td>Argentina; Antigua &amp; Barbuda; Bahamas; Bolivia; Brazil; Barbados; Chile; Colombia; Cuba; Dominican Republic; Guatemala; Guyana; Honduras; St Kitts &amp; Nevis; México; Nicaragua; Perú; El Salvador; Surinam; Trinidad &amp; Tobago; Uruguay; Venezuela</td>
</tr>
</tbody>
</table>

*** Destination countries

The details on the construction and source of the immigration data (both general and physician) are presented below.

**Immigration Flows**

The general immigration data used in the analysis measures the yearly inflow of foreign nationals who intend to be residents in the destination countries. By definition this implies that all foreign-born (or in some cases foreign nationals) who come to the country to reside there and not for temporary tourism, study or business reasons were included. The data was sourced from the Ortega & Peri (2012) immigration database, which has been created by merging bilateral immigration data from three sources. The first source is Mayda (2010), which uses the original OECD series on flows of migrants. The second source is United Nations (2005). The third source is the International Migration database (IMD) gathered by the OECD.
The immigration data on physicians was obtained from the Medical Brain Drain (MBD) database constructed by Docquier and Bhargava (Docquier & Bhargava 2007). The database measures the yearly inflow of foreign physicians who intend to be residents in the destination countries and covers the period from 1991–2004. (Fig. 3.1) The data were compiled from national agencies. For Canada, New Zealand, United Kingdom and the United States, data was obtained from the national medical associations. Emigrants were defined according to their country of qualification. For Australia, data from the medical council was not available. The national Censii were used to extract the information based on the available data points. For the remaining years data was interpolated using a log-linear adjustment. Immigrants were defined according to their country of birth. Docquier & Bhargava state that due to the variability in the source and definition of emigrants, the data may either “be too inclusive or too exclusive”, which is a limitation. (Docquier & Bhargava 2007).

Figure 3.1 Yearly immigration flows of physicians to the five destination countries: 1991 - 2004
Overall, the two databases are generally consistent in their definition of immigrants across countries. However, there are some differences between destination country definitions. An important one is that some countries define immigrants on the basis of the place of birth, and others on the basis of nationality. While this inconsistency can make a pure cross-country comparison inaccurate, our analysis focuses on changes within destination countries over time. Besides this, another limitation is that the timing of recording in the database may not be the same as the time of entry. A third limitation is that the databases do not capture most of the outflows due to return or temporary migration, which are either not or poorly recorded. A fourth limitation is the period covered by the dataset (up to 2004). This does not enable a more thorough understanding of how the context shifted in response to the global financial crisis (2008) or following the adoption of the WHO Global Code of Practice on the International Recruitment of Health Personnel (2010). Finally, although it is widely recognized that health professional migration is a multi-step process (Hawthorne et al. 2007a) the data do not take into account transit destinations. The results presented in my analysis have to be interpreted in the light of these limitations. Further empirical analysis and continued effort in data gathering will be crucial to reach a consensus on the presented findings.

**Immigration Policy Index**

Immigration policy has become a salient discussion point in many countries. The issue of allowing or impeding immigrants has driven some countries to adopt substantial reforms of their immigration laws, aimed at controlling the flows. In my analysis, I use the immigration policy index that Ortega & Peri (2012) have constructed to capture the direction of the change in entry tightness associated to any major immigration law. In the index, each
country initialized at zero in the first year (1991). The variable remained zero if no relevant policy changes occurred. The value of the variable was increased by one in the year when an immigration law is passed that entails a tightening of entry conditions. Alternatively, the degree of tightness was reduced by one if the reform resulted in relaxation of entry conditions. Ortega & Peri (2012) state that a reform was considered as tightening of entry laws if “(i) it introduces or decreases quotas for entry, or (ii) it increases the requirements, fees or documents for entry, or (iii) it increases requirements or the waiting time to obtain residence or work permits.” For reforms that indirectly affected ease of entry but did not explicitly fit any of the categories above, were classified as loosening or tightening, or no change, based on the scrutiny of the content of the regulation. The list of immigration laws by country and year and a brief description of each of them created by Ortega & Peri are presented in Annex 1. (For further details on the construction of the immigration index are available in their paper titled “The effect of income and immigration policies on international migration.”)

Ortega & Peri (2012) report that an important limitation of this index is that it captures only one specific dimension of immigration policies, namely how the process of admission to a country is numerically restricted. They argue that whilst migration decisions may be influenced by other laws such as integration (professional and licensing policies) and citizenship, access to social benefits and employment, the narrow focus of the index allows a more precise assessment of the association between entry laws and immigration flows. In relation to my analysis, a limitation of the index is that it does not distinguish immigration policies that are specific to health professional migration.
**Other variables**

An important contribution of my analysis is the creation of a database on income of physicians. The primary data on the wages of physicians was obtained from the Occupational Wages around the World (OWW) database (Freeman & Remco 2011), which has been derived from the ILO October Inquiry database by calibrating the data into a normalized wage rate for each occupation. The normalized monthly wage rates for physicians were used. In the database, for some countries two or three data points were usually available. In general, the pattern of missingness was not monotone hence assumed to be arbitrary. I interpolated the data for the remaining years using the multiple imputation (MI) procedure to replace the missing value. MI is a simulation-based procedure and is a preferred, as it manages missing data in a way that results in valid statistical inferences. (Stata Corp 2013) MI is particularly useful when the pattern of missingness is not monotone (Rubin 1987), as it can generate valid estimates of the distribution from the observed data. Vansteelandt et al. (2010) argue that MI is a more efficient option compared to Inverse Probability Weighting (IPW), as the latter is based on fully observed data (rather than partially observed for MI).

The other control variables used in the gravity model such as distance between country pairs, dummy for sharing a contiguous border, dummy for sharing a common language (not necessarily the official one) by large shares of the population (>9%), dummy for having colonial ties, were derived from the CEPII Gravity Dataset. (CEPII) The country data on Gross Domestic Product (GDP) per capita was obtained from the Penn World Tables [version 8.0] (Feenstra et al. 2013). Complete definitions of variables and sources of data are shown in Table 3.2.
### Table 3.2 Definition and source of variables used in the analysis

<table>
<thead>
<tr>
<th>Variables</th>
<th>Description</th>
<th>Source</th>
</tr>
</thead>
<tbody>
<tr>
<td>Migrants/immigrants</td>
<td>Number of voluntary migrants/immigrants</td>
<td>Ortega-Peri Database¹</td>
</tr>
<tr>
<td>Physician Immigrants</td>
<td>Number of physician immigrations</td>
<td>MBD Database²</td>
</tr>
<tr>
<td>Stock of immigrants</td>
<td>Number of foreign born/foreign nationals</td>
<td>Ortega-Peri Database¹</td>
</tr>
<tr>
<td>Trade</td>
<td>Exports/imports of country of destination</td>
<td>CEDPII³</td>
</tr>
<tr>
<td>GDP per capita</td>
<td>GDP per capita for destination country (current US$)</td>
<td>Penn World Tables⁴</td>
</tr>
<tr>
<td>Distance</td>
<td>Nearest air distance between the two countries</td>
<td>CEDPII³</td>
</tr>
<tr>
<td>Population</td>
<td>Size of population in both countries of source and destination</td>
<td>CEDPII³</td>
</tr>
<tr>
<td>Physician Income</td>
<td>Represented by gross national products in both countries of source and destination expressed in US$</td>
<td>OWW Database⁵</td>
</tr>
<tr>
<td>Common language</td>
<td>Dummy variable if language by at least 9% of the total population</td>
<td>Ortega-Peri Database¹</td>
</tr>
<tr>
<td>Hegemony</td>
<td>Dummy variable if source is current or former hegemon of destination</td>
<td>CEDPII³</td>
</tr>
<tr>
<td>Colony</td>
<td>Dummy variable if country pair ever in a colonial relationship</td>
<td>CEDPII³</td>
</tr>
<tr>
<td>Contiguity</td>
<td>Dummy variable for country pair sharing common borders</td>
<td>CEDPII³</td>
</tr>
<tr>
<td>Conflict</td>
<td>Dummy variable representing unstable socio-political situation</td>
<td>Ortega-Peri Database¹</td>
</tr>
<tr>
<td>Entry law tightness</td>
<td>Changes in immigration policy initiatives of destination countries</td>
<td>Ortega-Peri Database¹</td>
</tr>
</tbody>
</table>


All of the variables used in the model, except the dummy variables, are expressed in logs, so that the estimated coefficients represent impact elasticities. Moreover, the model has a panel dimension that allows me to include a much richer set of random effects that control for origin-specific variables which are often not available or very imprecisely measured. (Bertoli
et al. 2011) Figure 3.2 plots the dependent variable (physician immigration) against the key independent variables (general migration, stock of immigrants, GDP per capita, income, distance and trade).

Figure 3.2 Scatter plot of dependent and independent variables

Results

Descriptive Statistics

The countries included in the analysis are those for which consistent migration data are available over time and across countries. The observations span the period 1991 – 2004 annually.
Table 3.3 Summary Statistics for the Main Variables

<table>
<thead>
<tr>
<th>Variable</th>
<th>Observations</th>
<th>Mean</th>
<th>Std. Dev.</th>
<th>Min</th>
<th>Max</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bilateral Migration flow</td>
<td>5999</td>
<td>2100.41</td>
<td>8408.53</td>
<td>0</td>
<td>218822</td>
</tr>
<tr>
<td>Bilateral Physician Migration flow***</td>
<td>5999</td>
<td>52</td>
<td>236.53</td>
<td>0</td>
<td>444</td>
</tr>
<tr>
<td>Stock of immigrant population</td>
<td>5999</td>
<td>30746.87</td>
<td>295952</td>
<td>0</td>
<td>10201705</td>
</tr>
<tr>
<td>Physician Income</td>
<td>5999</td>
<td>1406</td>
<td>1901.09</td>
<td>3.03</td>
<td>13046.17</td>
</tr>
<tr>
<td>GDP per capita (destination)</td>
<td>5999</td>
<td>23931</td>
<td>6112.71</td>
<td>11525.95</td>
<td>39771.79</td>
</tr>
<tr>
<td>Distance</td>
<td>5999</td>
<td>9823.22</td>
<td>4327.366</td>
<td>425.33</td>
<td>18521.32</td>
</tr>
<tr>
<td>Contiguity</td>
<td>5999</td>
<td>0.009</td>
<td>0.09</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>Common language</td>
<td>5999</td>
<td>0.41</td>
<td>0.49</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>Colony</td>
<td>5999</td>
<td>0.08</td>
<td>0.27</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>Conflict</td>
<td>5999</td>
<td>0.007</td>
<td>0.08</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>Hegemony</td>
<td>5999</td>
<td>0.009</td>
<td>0.09</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>Entry law tightness</td>
<td>5965</td>
<td>-1.26</td>
<td>2.68</td>
<td>-6</td>
<td>2</td>
</tr>
</tbody>
</table>

*** Dependant variable in the model

Note: The source for each variable is described in the Table 3.2. The dummy variables [contiguity, common language (>9% of population speaks the language), colony, conflict, hegemony take on a value of one if applicable, zero otherwise. The variable on entry law tightness is based on the immigration index constructed by Ortega & Peri.

The descriptive statistics for the main variables used in the analysis is presented in Table 3.3. The table reports the averages across years and country pairs. The average bilateral general migration flow is 2,100 individuals, with a very large standard deviation. While the average bilateral migration flows for physicians is 52, again with large standard deviation, with several countries pairs having zero migration flows between them, during specific time period. The largest flows of physicians were experienced between India and the US followed by flows from the Philippines to the US. In the model, the impact of geographical, cultural, and
demographic factors is estimated using variables such as circular distance, continuity, physician income, common language, colonial ties (country pairs that were in a colonial relationship). Finally, in the model a policy variable (entry law tightness) is used to identify the impact of policy changes on physician migration. The average of this variable takes on a negative value which indicates that across years and countries, entry laws were loosened more often than they were tightened.

**Regression Analysis**

My regression analysis is based on the gravity model equation (4) to estimate the factors influencing the scale of physician migration. I run the model on the panel data on country pairs by year. In Model I, I only include the geographical, cultural, and demographic variables. In Model II, I also include the immigration policy variable. (See Table 3.4 for details)

The main hypothesis for the analysis is that factors such as higher income in destination countries, presence of a social network and favorable immigration laws have a positive association on physician migration flows. On the contrary, variables that proxy for higher migration cost such as geographical or socio-cultural distance have a negative effect. Additionally, factors such as colonial ties are expected to have a facilitatory role on mobility between a given country pair. My data has a full panel specification with multiple destination and source countries and spans over several years. This allows me to have better control of unobserved country specific factors, thereby identifying the effects of individual variables in influencing the scale of migration over time.

In the model, the dependent variable is the log of annual physician migration flows (plus one) between a particular country pair, which allows the exact logarithmic specification
obtained in the model to be maintained, and at the same time retain information for the zero-migration pairs. The explanatory variables are the logs of lagged income for physicians at destination and source, the log of distance, log of lagged annual general migration flow, log of lagged stock of immigrants (destination), log of lagged trade flows (exports and imports), log of lagged per capita GDP (destination) and dummy variables for sharing a land border, sharing a common language (spoken by >9% of the population), colonial ties (hegemony or former colony) and conflict situations.

Because the dependent variable has a log-odds metric, the magnitude of the regression coefficients measure the elasticities, that is, a percentage increase in the independent variable results in a given percentage change in the dependent variable. As such, in this section I focus on the signs and significance levels of the coefficients. In general the sign and significance of the variables are as expected. Distance decreases significantly physician migration flows, while income, sharing a land border, sharing a common language and having been part of the same colonial empire all increase significantly the size of bilateral physician immigration. Table 3.4 reports the estimates of the gravity model and the section below presents a discussion on the quantitative effect of key variables on the scale of physician immigration.
Table 3.4 Geography, culture and demography and physician immigration – Results of the regression analysis

| Dependant Variable: ln (Physician Immigration) | Coef. | Std. Err. | Z     | P>|z|  | 95%     |
|-----------------------------------------------|-------|-----------|-------|------|---------|
| lnGeneral Migration**                        | 0.046 | 0.006     | 7.97  | 0.000| 0.035   |
| lnStock of Immigrants**                      | 0.011 | 0.001     | 7.66  | 0.000| 0.008   |
| lnGDP per capita** (destination)            | 0.269 | 0.028     | 9.67  | 0.000| 0.214   |
| lnIncome**                                   | 0.019 | 0.012     | 1.56  | 0.120| -0.005  |
| lnTrade**                                    | -0.004| 0.002     | -1.94 | 0.052| -0.008  |
| lnPopulation (destination)**                 | 0.944 | 0.057     | 16.45 | 0.000| 0.832   |
| lnPopulation (source)**                      | 0.752 | 0.031     | 24.36 | 0.000| 0.692   |
| Conflict**                                   | -1.058| 0.907     | -1.17 | 0.243| -2.836  |
| Common language**                            | 1.149 | 0.141     | 8.17  | 0.000| 0.873   |
| Contiguity                                   | 1.798 | 0.768     | 2.34  | 0.019| 0.293   |
| lnDistance                                   | -0.623| 0.114     | -5.45 | 0.000| -0.848  |
| Hegemon (destination)                       | 2.590 | 0.769     | 3.37  | 0.001| 1.083   |
| Colony                                       | 0.640 | 0.255     | 2.51  | 0.012| 0.140   |
| Observations                                 |       |           |       |      | 5881    |
| R-squared                                    |       |           |       |      | 0.6004  |
| Rho                                          |       |           |       |      | 0.948   |

** lagged variables

Although anecdotal evidence suggests that many health workers migrate to high-income countries for greater income, empirical literature on the same is limited. George et al. (2013) argue that health workers decision to move is not positively associated with lower salaries and is instead determined by other factors including age, levels of stress experienced and job satisfaction. Vujicic et al. (2004) report that there is little correlation between health worker migration and the size of the income differential amongst source and destination countries. My model estimates are in line with these reports. I note that although physician income is positively associated with migration flows, the overall effect is marginal. A one percent increase in income is associated to a 0.02 percent increase in the migration flows. However,
in the model, when I restrict the analysis to a subsample that excludes the five key destination countries as sources, I notice a significant increase in the point estimate of income as determinant of the flows. A one percent increase in income becomes significantly associated to a 0.024 percent increase in the migration flows (significant at 10% level; results not shown). The results suggest a link between income and migration decisions that is probably driven by the income gap between source and destination country pair. Overall, there appears to be a tendency to move in search of a better locational match when the income realization in the current location is unfavorable. The observed effect of income can also be explained by its role as a proxy for other variables such as job satisfaction, living standards etc. that are known to influence migration decisions. (Buchan 2006)

The model coefficient suggests that bilateral movement of physicians between source and destination countries is positively and significantly associated with general migration flows. A one percent increase in general migrations is associated with a 0.05 percent increase in physician migration. This potentially implies that physicians tend to migrate to destinations that also attract other migrants. However, we need caution in interpreting the results, due to the data limitations and highly stylized nature of the model. Firstly, my data does not differentiate amongst the low-, medium-, high-skilled migrants. Moreover, my analysis is limited to five key destination countries that have selective immigration policies that are biased towards skilled migrants.

The available literature (Massey et al. 1993; Massey et al. 1998; Gurak & Caces 1992; Fawcett 1989; Tsuda 1999; Pellegrino 2004) on migration has well-established the role of social networks in the structuring and continuing the migratory flows over time. These studies have demonstrated that migrant networks facilitate movement by reducing the costs of
migration over time. In my analysis, I find that share of the source country’s population in
the destination country has a positive and significant impact on immigration of physicians.
According to the estimate in regression, a one percent increase in the source country’s
population in the destination significantly increases emigration of physicians by 0.01 percent.

In my model, I also explore the role played by geographic (log distance and land border),
demographics (population in source and destination countries), cultural (common language
and colony), and economic (GDP per capita (destination) and bilateral trade) determinants,
respectively.

My regression results indicate that geography, demography and culture are important among
this set of drivers of physician migration flows. According to the estimate in Table 3.4,
doubling the great circle distance between the source and host country significantly decreases
the number of emigrants by 1.2 percent. On the other hand, a common land border appears
to play a significant role in facilitating physician migration. In the model, a common border
dummy variable was used to estimate the migration effect of border crossings. Its coefficient
has the expected positive sign and is significant at 5% level. These findings are consistent
with the classical theory of spatial equilibrium. The negative impact of increased distance can
be explained by the associated increase in costs and logistics needs with distance, which
reduces the propensity to migrate. My findings are consistent with the existing body of
literature that reports, ceteris paribus, distance has a strong negative effect. The farther two
regions are from each other, the lower will be the flow of migrants between them. (Sahota
1968; Beals et al. 1967; Schwartz 1973; Skeldon 1997)
In the model, the estimated coefficient on source population has the expected positive sign and is significant at 1% level. This implies that continued population growth in the source countries is likely to result in increased immigrant of physicians. Similarly, the positive coefficient for destination country population implies that an increase in domestic population is significantly associated with increased physician migration. The latter finding is possibly linked to the increase in the demand for health services with population growth. That is, a rise in the demand for health services will increase the need for health workers, which will create the opportunity for foreign trained physicians to migrate.

In the model, I used Gross Domestic Product (GDP) per capita as a proxy for level of economic development and absorption capacity in the destination country. This can also be considered as a proxy for the pull factor. In the model outputs, the estimated coefficients have the expected signs and are significant. The finding reinstates that migration of physicians is sensitive to the level of development and the absorption capacity of the destination countries. The importance of economic development as a major pull factor for migration was first suggested by Ravenstein (1885; 1889) in his “laws of migration”. The law asserted that migration was an inseparable part of development, and that the major causes of migration were economic. (Ravenstein 1885) This perspective that individuals tend to move to areas with higher economic development has also been reported in subsequent literature on motives of migration, and is also the underlying assumption of push-pull theories.(Castles & Miller 2003; de Haas 2008)

In my analysis, I find that physician migration is uninfluenced by the magnitude of bilateral trade between the destination and source countries. In fact, although not significant, the
estimated coefficient has a negative sign implying that bilateral movement is lower amongst countries with established trade relations.

The literature suggests that the linguistic and cultural distance is important in migration decisions. Pedersen et al. (2008) report that the more “foreign” the new culture and the larger the language barrier is, the higher are the migration costs, making it unattractive as a host destination. In a recent study Belot & Ederveen (2012) conclude that the pattern of migration flow between developed countries is better explained by cultural barriers than traditional economic variables. In my model, a colony dummy variable was used to estimate the migration effect of the colonial past. I find that past colonial relationships have a significant effect on the migration of physicians. The bilateral physician movement increases significantly if the source was a colony of the destination country. This finding can be explained on the following grounds. First, the physician migration can be considered as a part of a past colonial labor migration trend aimed at supplying cheap labor in destination countries during the postwar expansion. (Grasmuck & Ramón 1997) Secondly, in the some of the source countries, the medical education system was established by the colonial powers and continues to have several similarities with existing systems in the destination countries. This facilitates the adaptation of immigrant physicians. Thirdly, as destination countries often have established migration routes with their colonies, the role of the social networks in facilitating the flows cannot be underestimated.

In the model, a dummy variables for common language (spoken by >9 percent of the destination population) and conflict were used. The model estimate suggests that common language spoken by a sizeable proportion of the destination population has a positive and
statistically significant effect on physician migration. This finding reiterates the important of cultural similarity and social networks on migration flows during the period of the present study. Existing literatures (Kossoudji 1988; Bleakley & Chin 2010; Chiswik & Miller 2007) as well as my analysis (described in Chapter VI of this thesis) have demonstrated that fluency in destination country language and/or widely spoken languages boosts the immigrant’s success in the destination labor market hence plays a key role in the migration decisions. In contrast, the estimated coefficient for the variable conflict bears a negative signs and is not statistically significant. It is difficult to interpret the implications of this finding, as the literature on the decision making process of the forced migrant is miniscule. (Kunz 1981) Further, with regard to forced migration, the dynamics and the determinants for choice of a destination country are often not clear. (Castles 2003; Lindley 2008)

As discussed in Chapter I, the effectiveness of immigration restrictions in controlling immigration flows is of interest to both policy makers and researchers. Historically, restrictions have played a crucial role but it is unclear whether the same is true in the current context with lower transportation and communication costs and stronger economic incentives to migrate between poor and rich countries. Mayda (2010) reports that immigration policies and changes in the policies over time strongly contribute to shape migration flows, as they differ between potential receiving countries. Ortega & Peri (2012) report that tightening of laws regulating immigrant entry reduce rapidly and significantly their flow. On the contrary, Karemera et al. (2010) report that effectiveness of immigration policy changes on controlling the migration flows depends on the country context. In their analysis they found that the immigration policy changes resulted in significant reduction in migrant flows to the USA but were less effective in Canada.
To assess the influence of policy changes in modulating the physician migration flow, in the model we included a time-varying dummy variable to represent the changes in immigration policies. The dummy variable is based the immigration index created by Ortega & Peri (2012) and measures the tightness of entry laws. In their index, Ortega & Peri record the introduction of immigration laws and specifically note the direction of the law, that is, whether it indicates a tightening or loosening of the entry requirements.

Prior to discussing the results, it is important to mention the caveats associated with the dummy variable on tightness of entry laws. Ortega & Peri (2012) state that the variables are “rather coarse proxies for capturing the stance of immigration laws.” They state that in its creation they have only considered the introduction of laws, and have not included any details about their implementation. Based on the introduction, the significance of the law cannot be completely quantified. Moreover, the variable only includes laws explicitly affecting entry, which makes it a less than perfect measure. In addition, as stated previously, the index does not distinguish entry laws that were specific to migrant health professionals.

Asylum laws can also have an impact on the number of physicians fleeing conflict regimes and seeking asylum in destination countries. However, in the model I have not included (dummy) variables to represent the influence of changes in the asylum laws on physician immigration. The same is based on the assumption that majority of physicians moving to destination countries will either be permanent settlers or documented labor migrants; although a small proportion will be refugees, asylum seekers and displaced individuals. (Buchan 2006) Furthermore, most destination countries impose general requirements that immigrant physicians have to fulfill in order to enter licensed medical practice. These provisions vary between countries but in general include national regulation governing the
issuance of work permits, procedures and tests for examining applications. As the main focus of my analysis is to assess the effectiveness of immigration restrictions in controlling the flows, in the model I have not included (dummy) variables to represent the changes in the professional practice laws. As changes in the professional practice laws can have an impact on professional migration (discussed in details in Chapter IV of this thesis), it is considered as a limitation of the current analysis.

Thus, the empirical results presented below have to be interpreted bearing the above stated limitations in mind. However, despite the limitations, it has to be emphasized that my analysis for the first time introduces variables capturing specific immigration laws within a gravity model to measure their impact physician migration.

In Table 3.6 I report my estimates of specification on including the immigration policy variable in the model. As in the previous model, the dependent variable is the log of annual physician migration flows (plus one). Besides lagged income and the same set of control variables as in Table 3.5, I now include the time-varying immigration policy variables. The entry policy variables are measured lagged one period as the physician immigration flows. We used lagged measures for the policy variables, as there may be implementation delays. Furthermore, immigrant inflow may take some time to respond to the immigration laws of a country.

Further, I employ both the fixed and random effects techniques to fit the data. The assumption inherent to the fixed effects model is the existence of an unobserved heterogeneous component that is constant over time and which affects each individual (pair
of countries) of the panel in a different way. By contrast, the random effects model implicitly assumes that the unobserved heterogeneous component is strictly exogenous. (Gómez Herrera E 2013)

I find that with the introduction of the immigration policy variable in the random model, coefficients for variables such as income, GDP per capita, prior colony becomes slightly larger than in the previous model and is more significant. The degree of tightness of entry laws has a significant negative effect, indicating that the tightening of entry conditions results in an effective fall in the immigration of physicians, although the magnitude of the impact is small. The outputs of the fixed effect model are of the same signs and significance levels of the coefficients, with the exception of income. Overall, the results confirm that changes in the destination country immigration policies have a small but significant effect on physician migration.
Table 3.5 Immigration policies and physician immigration – Results of the regression analysis

<table>
<thead>
<tr>
<th>Dependant Variable:</th>
<th>Model II (random effect)</th>
<th>Model II (fixed effect)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Coef.</td>
<td>95% CI</td>
</tr>
<tr>
<td>ln(Physician Immigration)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>ln(General Migration)^{^}</td>
<td>0.047***</td>
<td>0.035</td>
</tr>
<tr>
<td>ln(Stock of Immigrants)^{^}</td>
<td>0.01***</td>
<td>0.007</td>
</tr>
<tr>
<td>ln(GDP per capita)^{^} (destination)</td>
<td>0.286***</td>
<td>0.229</td>
</tr>
<tr>
<td>ln(Income)^{^}</td>
<td>0.022*</td>
<td>-0.003</td>
</tr>
<tr>
<td>ln(Trade)^{^}</td>
<td>-0.004**</td>
<td>-0.009</td>
</tr>
<tr>
<td>ln(Population (destination))^{^}</td>
<td>1.091***</td>
<td>0.959</td>
</tr>
<tr>
<td>ln(Population (source))^{^}</td>
<td>0.76***</td>
<td>0.696</td>
</tr>
<tr>
<td>Conflict^{^}</td>
<td>-1.008</td>
<td>-2.785</td>
</tr>
<tr>
<td>Common language^{^}</td>
<td>1.074***</td>
<td>0.788</td>
</tr>
<tr>
<td>Contiguity</td>
<td>1.809**</td>
<td>0.322</td>
</tr>
<tr>
<td>ln(Distance)</td>
<td>-0.587***</td>
<td>-0.817</td>
</tr>
<tr>
<td>Hegemon (destination)</td>
<td>2.249***</td>
<td>0.538</td>
</tr>
<tr>
<td>Colony</td>
<td>0.716***</td>
<td>0.216</td>
</tr>
<tr>
<td>Entry laws tightness^{^}</td>
<td>-0.006***</td>
<td>-0.009</td>
</tr>
<tr>
<td>Observations</td>
<td>5422</td>
<td></td>
</tr>
<tr>
<td>R-squared</td>
<td>0.6178</td>
<td></td>
</tr>
<tr>
<td>rho</td>
<td>0.943</td>
<td></td>
</tr>
</tbody>
</table>

^^ lagged variables; ***, **, * significant at 1%, 5%, 10% level

Conclusions

There is a large literature on the determinants and consequences of migratory movements, which highlight the economic determinants in line with neoclassical economics. There is also a growing body of empirical research on the influence of non-economic factors on migration decisions. Despite these advances, the literature on the mobility of health professionals has
remained restricted both in its scope as well as robustness of theoretical framework that is used to analyze the stocks and flows. My analysis takes two important steps in the direction of establishing and implementing a framework to analyze the determinants (economic and non-economic) of international health professional migration. First, guided by the rich empirical literature on international trade flows, I use a gravity model incorporating unique demographic, political, economic and policy characteristics associated with both the source and destination countries. I exploit the robustness of the model to derive an estimating equation for aggregate bilateral physician migration, which I estimate using a large annual panel of source–destination countries over time. This use of panel data enhances the rigor of my statistical analysis by controlling for unobserved heterogeneity.

I report several interesting results. First, physician income is positively associated with migration flows. The overall effect is marginal - one percent increase in income is associated to a 0.02 percent increase in the migration flows. However when the five key destination countries are excluded as sources, the effect is augmented, suggesting that the income gap is an important driver. Second, my regression results indicate that geography, demography and culture are significant factors for physician migration. While increase in distance significantly reduces the number of immigrant physicians, sharing a common land border facilitates the process. I find that factors such as destination GDP per capita, population size of source and destination countries, colonial legacy and common language spoken by a sizeable proportion of the population, have a significant effect on physician immigration flows. Finally, the results suggest that restrictive immigration policies can significantly reduce physician flows; although magnitude of the effect is modest.
Overall, my results suggest that a range of geography, demography and culture factors influence physician immigration between source and destination countries, and will possibly continue to generate international health professional mobility. In the destination countries, immigration policies play an important role in determining these flows. However the size of the effect of these policies on the immigration of physicians is likely to remain small. While my estimates deliver rather robust and plausible implications, further work is needed in order to qualitatively understand the effects of immigration policy on flows. To this effect, in the next chapter of this PhD thesis (*Chapter IV*), I track the changes in the policies (immigration and professional registration) in a major destination country (Australia) to discuss its implications on the flow of international medical graduates.
CHAPTER IV. POLICY SWITCHES MODULATING THE FLOW OF THE INTERNATIONAL MEDICAL WORKFORCE: AUSTRALIA AS AN ILLUSTRATIVE CASE

Background

In Chapter III of this PhD thesis, I quantitatively assessed the role of immigration policies in the migration of health workers. My findings confirm that changes in the destination country immigration policies have a small but significant effect on physician migration. The importance of the policy setting on the mobility of health workers is increasingly recognized and has attracted academic and public discourse. (Imison et al. 2013) There has also been some discussion in the literature on the role of health workforce specific policies on workforce mobility. (Pond & McPake 2006; Blacklock et al. 2012) The available research indicates that the policies have often been designed to address the concerns regarding equitable access to health services. While cost containment strategies have restricted entry into the workforce, (Health Resources and Services Administration [HRSA] 1998) efforts to improve service access have led to expansions in domestic training capacities, (Joyce et al. 2006) including the international recruitment of health workers.

Over the past three decades, countries such as the United States (US) (American Medical Association [AMA] 2010), United Kingdom (UK) (Blacklock et al. 2012), Australia (Carver 2008; Hawthorne 2012), Canada (Dauphinee 2006) and New Zealand (Zurn & Dumont 2008) have increasingly used the strategy of international recruitment to make up for local shortages in the medical workforce. In these countries international medical graduates (IMGs) account for one-fourth to more than one-third of the active workforce (Refer to Fig
1.1), the proportions being higher in underserved areas. (Hann et al. 2008; Thompson 2009; House of Representatives Standing Committee on Health and Ageing 2012) Recruitment of IMGs has featured in the policy agenda of these countries, as it provides an attractive option, at least in the short-term, to meet unanticipated workforce needs without incurring the cost of training. (Pond & McPake 2006) However, a longitudinal review of the workforce policies in these countries suggests periodic shifts between phases of containment and growth in international recruitment, the supply and demand components of the labor market being the driving force behind the policy design. (Blacklock et al. 2012) Moreover, these countries have adopted different strategies to recruit IMGs ranging from employer-based recruitment (US, Australia) to immigration-based recruitment (Australia, Canada, New Zealand, UK) or targeted recruitment (Australia). (Table 4.1)

Australia is a key destination country with a high level of reliance on IMGs. (Productivity Commission 2005) According to a report from the OECD (2007), amongst comparable countries, Australia was one of the least self-sufficient nations in terms of meeting the health workforce needs through domestic training efforts. Furthermore, it is probably one of the few countries to have specific migration policies for health professionals (OECD 2008) that are highly responsive to the health workforce situation.
Using Australia as a case study, in this chapter I will first review the medical workforce\textsuperscript{7} policy formation and the consequent changes in the policies (workforce and immigration) for IMGs, covering a period spanning four decades i.e. from 1970–2010. I also describe the

\textsuperscript{7} As stated in Chapter I, the focus of this PhD thesis is on physicians
effect of these policy changes on the entry of IMGs in the Australian medical workforce. The intent is to build on the findings of Chapter III of this thesis, to provide the context and understanding of the background of the policy changes.

**Australian Health System and its Workforce**

I begin with a brief review of the organization of the Australian health care system. The country has a federal system of governance under which Australia’s six States and two Territories have the responsibility for provision of public hospitals and other health services. (AIHW 2013) The arbitrary division of responsibilities between the federal and the state/territorial governments sets up perverse financial incentives, creating opportunities for cost-shifting and frequent claims of blame-shifting. (Dwyer & Eagar 2008; Boxall & Buckmaster 2009; Buckmaster 2005) Reforms introduced in 2011 by the Labor government provide for a stronger role for the federal government in influencing funding and governance arrangements for public hospitals, although the administration and provision of public hospital care continues to be the responsibility of the states/territories. (Jakubowski & Saltman 2013; Mason 2013)

In Australia, the federally funded health insurance scheme (Medicare) provides free or subsidized health care services in the public sector. Operating in parallel to the public delivery system is a growing private health sector. Providers (doctors and hospitals) within the private sector are largely free to determine the number of rebateable services they provide and the patient fees. The cost of health care in these settings is usually covered by private health insurance, which often complements the Medicare coverage. In fact, nearly
half of the Australians purchase a private health insurance policy, making it one of the largest duplicate markets across the OECD. (OECD 2004)

The planning and design of Australia’s health workforce is shared by the Commonwealth, state and territory governments. In brief, the federal government is principally responsible for policy relating to, and funding of, university education for medical students (a key determinant of medical workforce numbers). State and territory governments however retain responsibility for most of the institutions that provide medical clinical training and employ sizable numbers of medical practitioners. (Carver 2008)

Similar to other OECD countries, the distribution of the medical workforce is characterized by major regional disparities, particularly in rural and remote areas. (OECD 2008) In 2011, per capita ratio of General Practitioners (GPs) to population in major cities (227.8 per 100,000) was twice that of remote areas (113.0 per 100,000), and considerably higher than the ratio of GPs in regional areas (144.9 per 100,000). The majority of the specialists (85%) work in major cities. The ratio of specialists working in regional areas was around half (61.1 per 100,000) that of the ratio in major cities (144.1 per 100,000), while in remote areas the ratio was particularly low (15.5 per 100,000). (Australian Bureau of Statistics [ABS] 2013)

Despite the stated aim of health workforce self-sufficiency (Buchan et al. 2011), the country has developed a steady reliance on IMGs since the late 1990s. (Birrell 2004) According to a Department of Health and Ageing Submission (2011), based on full-time work equivalent

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8 In a report titled “Australia’s New Health Crisis – Too Many Doctors” (Birrell 2011), the view on ‘major regional disparities’ has been argued. Based on data from Primary Health Care Research & Information Service (PHC RIS), Birrell states “there is still a gulf between metropolitan and rest of state areas in the provision of FWE GPs but it has narrowed significantly in just three years.” He further states “number of FWE GPs billing on Medicare continued to increase in non-metropolitan Australia at a greater rate than in metropolitan Australia after 2006-07”. These claims have thereafter been contested. Health Workforce Australia (HWA 2013) issued a clarification to the report stating “key inaccuracies and issues” with Birrell’s estimation. A recent AIHW report (2014) on Australia’s Health reinstates that “the concentration of health professionals in Major cities is greater than that for the broader population”. (AIHW 2014)
(FWE), approximately 39% of the medical workforce in Australia and 46% of GPs in rural and remote locations are overseas trained. Between 2000-01 and 2009-10, there was a 70% increase in the proportion of overseas trained GPs working in rural, remote areas. (House of Representatives Standing Committee on Health and Ageing 2011)

**Context of the Medical Workforce Policies - 1970-1990**

Since the 1970s efforts have been made to accurately forecast Australia’s health workforce needs (in particular the medical workforce) that have included commissioned reviews and studies. The first major policy review was the Karmel Report on ‘Expansion of medical education’ released in July 1973. (Brooks et al. 2001) This review was set up to make recommendations to the Australian Universities Commission on the need for new or expanded medical education in the light of likely trends in health service delivery in Australia over the period 1971 to 1991. The report predicted a shortage of doctors in the future and recommended an increase in the number of medical undergraduates (by about 300 per annum) that led to the establishment of two new medical schools (Newcastle Medical School in New South Wales in 1973 and Flinders Medical School in South Australia, a year later). (www.health.gov.au) As a result of the expansion in intakes, graduations from medical schools rose from 851 in 1970 to 1278 in 1980. (Joyce et al. 2007)

Fifteen years later, the Doherty Report was released. The report titled “Australian Medical Education and Workforce into the 21st Century” did not recommend any changes in the medical school intakes but recommended among other measures the establishment of an Australian medical workforce surveillance committee. It proposed that the function of the
Committee should be to review the Australian medical workforce and make recommendations on its appropriate size. (Doherty 1988) In response to this recommendation, the Medical Workforce Committee was established in 1989. (Productivity Commission 2005)

This period was marked by wide variations in the legal framework, policies and administrative processes for recognition and registration of IMGs between the states and territories. Prior to 1978, each State and Territory Medical (Practitioners) Act had its respective lists of overseas medical qualifications that they automatically recognized for the purposes of registration. (House of Representatives Standing Committee on Health and Ageing 2011b) The list included qualifications from up to 20 countries (the major English speaking countries as well as countries such as India, Lebanon, Pakistan, Puerto Rico and Uganda). (Iredale 2009) Doctors from countries that were not included in the list had to undergo supervised practice for a period of two to three years in main teaching hospitals before becoming eligible for registration. (House of Representatives Standing Committee on Health and Ageing 2011c)

By 1978 the list of countries with automatically recognizable qualifications had been reduced and was limited to United Kingdom, Ireland and New Zealand. (Tasmania also recognized graduates of South African medical schools). (House of Representatives Standing Committee on Health and Ageing 2011a) These changes were influenced by fears of oversupply as a result of too many IMGs coming into Australia. (Iredale 2009)
The lack of a standardized, structured procedure across the states and territories for the assessment and registration of IMGs was eventually addressed in 1978 when the Medical Boards agreed to adopt the Foreign Practitioners Qualifications Certificate (FPQC) model, as a national screening examination for IMGs. In 1984 the Australian Medical Council (AMC), an independent national standards body for medical education and training, was formed and from 1986 onwards it assumed responsibility for the assessment of overseas-qualified medical practitioners. (House of Representatives Standing Committee on Health and Ageing 2011a) Thereafter, AMC has administered the pre-registration assessment, which for non-specialist applicants essentially consists of the Multiple Choice Question (MCQ) and the clinical examination.

This period was also marked by a surge in the arrival of permanent settlers holding medical qualifications, predominantly from countries that were considered to have comparable training and accreditation systems such as the UK, Ireland and New Zealand. (Birrell 1995)

In the 1980’s concerns regarding a perceived oversupply of some of the medical and health professions, particularly GPs and pharmacists in metropolitan areas began to emerge. According to the Health Insurance Commission records the number of GPs per head of the Australian population had increased by 15.8% over the 1984-85 to 1989-90 period. (Deeble 1991) The growth in the size of the workforce meant direct cost implications for Medicare, which came into operation in 1984. (Boxell 2012) The unrestricted entry of overseas trained doctors entering Australia was considered to be an important contributing factor to the escalations in the Medicare outlays. (Birrell 1995)
Medical Workforce Policies in the 1990s – A period of containment

In the 1990s, growing concerns regarding oversupply, especially in metropolitan areas, and its implications for growing Medicare expenditures dominated the medical workforce policy debates. In February 1992 the Medical Workforce Supply Working Party (a sub-committee on medical workforce) documented concern at Australia’s ‘persistent over-supply of doctors’. (House of Representatives Standing Committee on Health and Ageing 2011b) This view was endorsed by the Australian Medical Workforce Advisory Committee (AMWAC), which was established in 1995 to advice on national medical workforce matters in Australia. The Committee highlighted that any gaps in the supply of doctors in Australia were due to maldistribution of the medical workforce rather than underlying shortages. (House of Representatives Standing Committee on Health and Ageing 2011b) In response, a range of proactive measures were introduced in 1995 with the goal of reducing the rate of growth in the size of Australia’s medical workforce, which included a reduction in the number of medical school intakes from around 1,200 to around 1,000 per annum. (Birrell 1995)

Since the 1980s, immigration policies in Australia have been designed to target migrants with experience in areas of skill shortages. In the early 1990s, a nominated skills list was introduced for general skilled migration to improve the focus on better employment outcomes for migrants. (Phillips & Spinks 2012) In the aftermath of a perceived oversupply in the medical workforce, directives were issued to Department of Immigration and Ethnic Affairs (DIEA) to introduce point penalties for doctors applying for permanent-residence visas under the points tested categories. In 1995, the penalty factor was increased from 10 to 25 points. (Birrell 1995) This drastically reduced the number of medical settler arrivals to 200 in 1995-96, from a previous range of 400 and 800 per year. (Iredale 2010)
In 1992 the need for AMC accreditation was extended to include permanent resident doctors from the UK. (Birrell 1995) Further a decision was implemented to put a quota on the numbers eligible to take the AMC's clinical test, that is only the top 200 performers in Australia or overseas in the MCQ test were permitted to take the clinical test. This was however contested before the Human Rights and Equal Opportunity Commission (HREOC) and the Federal Court, which subsequently forced the AMC to abolish the quota provision for the 1996 onwards. From 1998, a new regulation was introduced that allowed candidates only two attempts for either the MCQ or the clinical test. (Birrell 1995)

To slow the rate of doctors eligible to bill on Medicare it was made a requirement that all GPs had to undertake the Royal Australian College of General Practitioner (RACGP) training program to be able to obtain a Medicare provider number to practice as a GP. To further limit the number of GPs, in 1996, the total number of new training places was capped at 400 per annum. (Birrell 1997) (Later increased to 450 in the year 2000)

Further, to reduce the motive to migrate and Medicare costs, in 1997 legislation was passed that stipulated that henceforth all doctors entering Australia (including those trained in New Zealand) would not be allowed to bill on the Medicare system until ten years after they had gained accreditation (the “Ten-Year Moratorium”).9 (House of Representatives Standing Committee on Health and Ageing 2011b) This meant that for those who managed to pass

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9 Section 19AB of the Health Insurance Act (1973) requires OTDs to work in designated districts of workforce shortage (DWS) for 10 years in order to access Medicare benefits (commonly referred to as the “Ten-Year Moratorium”). This obligatory period of service in DWS was introduced to deter internal migration. From 2010, ‘scaling discounts’ were introduced to the ten-year rule, which offers opportunities to reduce the moratorium restriction period. Time reductions are determined by the remoteness of the DWS areas.
their AMC exams, the only medical employment option for ten years was salaried employment in the public hospital system.

As a measure to address rural and regional shortages, in 1999 the Federal Government introduced the ‘five-year OTD scheme’ that exempted IMGs with post-graduate GP qualifications and experience considered as equivalent to Australian trained doctors from taking the AMC pre-registration exams. In case their qualifications were recognized but not considered equivalent, they were still eligible to enter the scheme on the condition that pass the RACGP fellowship examination within two years. Upon passing the exam, an IMG placed in an eligible Scheme vacancy could apply for permanent residency (PR) status and was entitled to bill on the Medicare system after five years as opposed to ten years. In 2004, it was reported that approximately 250 IMGs had entered via the scheme. (ARRWAG 2004)

The above policy changes resulted in a decline in the numbers entering the medical workforce, manifesting in regional shortages during the late 1990s. State/territory health departments responded to these shortages through the recruitment of IMGs using new state-based rural recruitment agencies funded by the federal government. These agencies capitalized on government endorsed or initiated programs and schemes (such as the five-year OTD scheme) to recruit IMGs to fill vacancies in the system. (Hawthorne & Birrell 1997)

Accordingly, the number of visas issued to IMGs under category 422 (temporary migration) increased from 664 in 1993-94, to 1,419 in 1999-2000. (Birrell 2004) This marked the beginning of the era of employer-sponsored mass recruitment of IMGs in Australia. (House
of Representatives Standing Committee on Health and Ageing 2011d) It also prompted the beginning of the ongoing reliance on recruitment of IMGs to ‘area-of-need’ positions.

**Medical Workforce Policies in the past decade (2001- 2011) – A period of targeted recruitment**

In early 2000 the concerns regarding shortages in the general practice workforce and a range of medical specialties continued to escalate. This led to a range of policy changes that were a sharp ‘u-turn’ from decisions taken in the past.

To increase domestic training five new medical schools were announced as a result of which the number of domestic medical graduates has doubled from 1264 in 2002 to 2567 in 2011. (Health Workforce Australia [HWA] 2013) In addition, changes in the visa conditions that heightened prospects for longer-term or permanent settlement resulted in escalations in the number of international medical students attending medical schools in Australia by four-folds between 2002 and 2011. (Joyce et al. 2006) The inherent delays in the training pipeline also led to several policy initiatives to encourage the use of IMGs, particularly in areas of geographic and specialty need.

To remedy the workforce shortages in the short-term, targeted recruitment of IMGs as temporary residents, occupational trainees or permanent residents was further encouraged.

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10 An Area of Need is any position/location in which there is a lack of specific medical practitioners or where there are medical positions that remain unfilled following multiple recruitment attempts over a period of time. It applies to both public and private sector positions.
The recruitment of IMGs under the 422-visa category and the Occupational Trainee category (category 442) was intensified and the immigration policy was amended in 2003 to increase the duration of temporary visas for IMGs from 2 years to 4 years. (Birrell 2004) In addition, IMGs were also encouraged to apply under the long-term business visa category 457, which subsequently became the most important route of entry. (Hawthorne 2012) (Under this category, IMGs are sponsored by Australian employers to pre-arranged work in ‘area of need’ locations and are allowed to work on a conditional or limited registration basis for up to 4 years). (www.immi.gov.au)

Additional changes to immigration policy saw the inclusion of medical practitioners in the Department of Immigration's nominated skills list in 2004, which meant that IMGs no longer needed a sponsor to immigrate. This encouraged IMGs to enter via the permanent general skilled migration (GSM) flows in addition to the temporary entries under the above-mentioned categories. (Joyce 2004)

As a part of the Strengthening Medicare Initiative, the International Recruitment Strategy (IRS) was introduced in 2004. The aim of the strategy was to increase the supply of appropriately qualified IMGs in areas of need. This led to the establishment of the seven state and territory Rural Workforce Agencies (RWAs), which are not-for-profit organizations funded by Department of Health and Ageing (DoHA), as well as their respective state governments. (Deloitte Access Economics 2011) RHWA, the nodal body, through the

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11 This visa allows people to complete workplace-based training in Australia on a temporary basis. The training must provide people with additional or enhanced skills in the nominated occupations, tertiary studies or fields of expertise.
RWAs, is responsible for implementing programs including: (i) the International Recruitment Strategy - under this strategy, employers and IMGs are provided support and assistance during the recruitment process; (ii) the five-year OTD scaling scheme - non-cash incentive offered to IMGs as an opportunity to reduce the 10 year moratorium restriction period if they are prepared to work in locations which are the most difficult to recruit to; (iii) the Additional Assistance Scheme – provides opportunities for IMGs to take part in courses and training to help them achieve GP Fellowship; and (iv) the Rural Locum Relief Program - allows permanent resident IMGs to work as GPs in rural and remote areas while they are working towards their GP Fellowship. (RHWA; www.ruralhealthaustralia.gov.au)

According to available statistics around 2,500 doctors were recruited each year using business visa classes 457 and 422. (House of Representatives Standing Committee on Health and Ageing 2012a) In addition, a growing number of doctors were entering using the Occupational Trainee class visa (442) and GSM flows. (Joyce et al. 2006) (Figure 4.1) For instance, between 2000 and 2008 approximately 120 new IMGs per annum were recruited largely from India, Sri Lanka and Africa to meet required GP workforce numbers in rural and remote Western Australia. (House of Representatives Standing Committee on Health and Ageing 2012b)
The period was also characterized by a lack of a coherent national process to govern the registration of medical practitioners. Individual States and Territories maintained their own discretionary powers within their Medical (Practitioners) Acts to conditionally register IMGs under "public interest" categories or for designated area of need positions. Such wide variations in the processes and standards of IMG assessment and support between the states and territories culminated in unintended consequences; the most notable being that of Dr Patel in Queensland in 2005. (Joyce et al. 2006) To avoid similar recurrences, in 2007 the Council of Australian Governments (COAG) International Medical Graduate Assessment Initiative was rolled out that established the assessment and registration processes that now

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12 A US trained surgeon of Indian origin, Dr Jayant Patel, was convicted in 2010 for manslaughter of three patients who died after he operated on them at a Queensland hospital where he worked from 2003-05.
apply to IMGs entering the medical workforce in Australia. (House of Representatives Standing Committee on Health and Ageing 2011c)

A major review of the Australian health workforce was commissioned in 2005 (the Productivity Commission report). One of the key recommendations was to set-up a single national registration and accreditation board for health professionals. In March 2008 the COAG signed an intergovernmental agreement resulting in the establishment of the Australian Health Practitioner Regulation Agency (AHPRA) in July 2010, to provide administrative support for these functions and advice on associated matters to the Medical Board of Australia (and national boards for the other nine regulated health professions, from 2012 extended to Aboriginal and Torres Strait Islander health practice, Chinese medicine, medical radiation practice and occupational therapy). (Productivity Commission 2005; AHPRA 2012) This marked the beginning of a nationally consistent approach to health practitioners’ registration standards. In addition, in January 2010, Health Workforce Australia (HWA) was created to provide national-level advice, coordination and consultation on a nationally coherent approach to health professional staffing. (www.hwa.gov.au)

This period has also witnessed a rapid diversification in the source countries of the IMGs. While in the past the majority of IMGs came from countries that were considered to have similar training and accreditation systems to Australia’s, such as UK, South Africa or Ireland, more recent arrivals were mainly from non-English speaking background countries in Asia, the Middle East, Africa and Eastern Europe. This observation was confirmed by both the Department of Immigration and Citizenship (DIAC) data on permanent and temporary arrivals as well as the Australian Medical Council (AMC) examination candidates’ data.
For instance, between 2008 and 2012, the top three source countries for the AMC examinations were India, Pakistan and Sri Lanka. (Figure 4.2)

**Figure 4.2** Proportion of candidates sitting in the AMC MCQ Examination (first attempt) based on their country of medical qualification (classified based on the United Nations geoscheme): 2008-2012

Source: Australian Medical Council Annual Reports 2008 - 2012

To encourage the entry of IMGs who had completed prescribed examinations or accredited training in countries that have similar (competent) health care systems such as the UK, Ireland, Canada, the US and New Zealand, in addition to the pre-existing AMC examination pathways, the fast-track option of the Competent Authority (CA) pathway was introduced in 2007. (Hawthorne 2012) The pathway encourages candidates who have completed training or assessment through AMC designated and approved Competent Authorities to apply for ‘advanced standing’. If the AMC grants advanced standing status, the IMG is not required to
sit the AMC MCQ or clinical examinations, but is required to undertake a period of supervised workplace based performance assessment. (www.medicalboard.gov.au) Between 2008 and 2012, 7,739 Competent Authority applications had been received, and 6,035 Certificates of Advanced Standing had been issued, primarily to applicants from the UK and Ireland.13 (Table 4.2)

Table 4.2 Top ten countries for applicants that have been granted Advanced Standing Certificate: 2008 - 2012

<table>
<thead>
<tr>
<th>Country of Training</th>
<th>2008</th>
<th>2009</th>
<th>2010</th>
<th>2011</th>
<th>2012</th>
</tr>
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<tbody>
<tr>
<td>Bangladesh</td>
<td>**</td>
<td>8</td>
<td>**</td>
<td>**</td>
<td>**</td>
</tr>
<tr>
<td>Canada</td>
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<tr>
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<td>83</td>
<td>53</td>
<td>55</td>
<td>57</td>
</tr>
<tr>
<td>Iraq</td>
<td>11</td>
<td>13</td>
<td>**</td>
<td>11</td>
<td>13</td>
</tr>
<tr>
<td>Ireland</td>
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<td>234</td>
<td>182</td>
<td>189</td>
<td>139</td>
</tr>
<tr>
<td>Iran</td>
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<td>**</td>
<td>**</td>
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<tr>
<td>Myanmar</td>
<td>10</td>
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<td>**</td>
<td>**</td>
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<tr>
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<td>12</td>
<td>**</td>
<td>11</td>
<td>16</td>
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<tr>
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<td>36</td>
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</tr>
<tr>
<td>South Africa</td>
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<td>**</td>
<td>8</td>
<td>**</td>
<td>**</td>
</tr>
<tr>
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<td>8</td>
<td>14</td>
<td>12</td>
<td>12</td>
</tr>
<tr>
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<td>393</td>
<td>829</td>
<td>780</td>
<td>939</td>
<td>945</td>
</tr>
<tr>
<td>USA</td>
<td>11</td>
<td>25</td>
<td>27</td>
<td>24</td>
<td>22</td>
</tr>
</tbody>
</table>

** Not amongst the top ten countries in the concerned year

Source: Australian Medical Council Annual Reports 2008 - 2012

As a result of these policy initiatives, in the past decade the size of Australia’s medical workforce has grown at almost three times the average annual population growth rate.14 This growth (a result of both increased domestic training as well as targeted recruitment of IMGs)

13 Based on Australian Medical Council Annual Reports 2008 - 2012

14 Calculated based on Australian Bureau of Statistics data.
has renewed the academic debate regarding doctor oversupply. (Birrell 2013) However, a recently released national workforce modeling report titled ‘Health Workforce 2025’ suggests continued reliance on IMGs to meet the demand for health services. (HWA 2012)

**Discussion**

Given the complexities of health care delivery, it is technically difficult to forecast and plan workforce needs over long-term periods. All countries struggle with this. At least some of the so-called ‘failures’ of workforce planning are due to the inability to predict the nature of interaction between factors such as an ageing population, changing burden of disease, demand for health services, expectations for service delivery, evolving technology and broader labor market issues that determine the required size of the health workforce. Such challenges associated with health workforce needs often result in important and regularly recurring policy issues relating to the adequacy of supply to meet demand: do we have enough doctors, do those we have possess the right attributes, and are we facing a shortage crisis?

The socio-political structure within which the health care system operates implies that when skills gaps arise, they frequently attract significant political and public attention. (Gish & Godfrey 1979) These outcomes add to the political pressure on the government to do something about the supply of doctors resulting in policy intervention to meet the increased demand. Historically governments have been active in health workforce issues, particularly relating to doctors given the cost implications of oversupply. As such, policy levers applied to influence the supply and distribution of the doctors have swung between interspersed periods of shortages or surpluses. (Pond & McPake 2006) Whenever shortages in the
workforce have surfaced governments have tried to deal with the situation at their own discretion, in some instances undermining the national standards or norms. The unrestricted use of conditionally registered IMGs by the state and territorial governments in Australia to address regional shortages is a prime example. Noteworthy is the engagement of designated private sector recruiters to fill vacancies in the system. (Birrell 2004) Under the International Recruitment Strategy, the Australian government funds the Rural Workforce Agencies (non-government organizations) in each state and territory to recruit qualified IMGs to rural communities. (www.rhwa.org.au)

Policy attention directed to achieve workforce balance (quantity, location, specialty) are challenged by the maldistribution of health professionals (oversupply in some areas and undersupply in others); the unlikely success of training additional professionals as a measure to redress imbalances; long lead times for education and training of health professionals. This often results in the use of the alternate workforce levers such as the recruitment of IMGs. As a mandatory condition in their visa or employment terms, IMGs can be obliged to work in underserved areas. This has been widely employed by Australia through the ‘Ten-Year Moratorium’ policy and the ‘five-year OTD scaling scheme’. However, the limited literature available on these policies has voiced concerns regarding their long-term success.

In a recent paper it has been reported that if these policies were removed, most IMGs mandated to provide GP services to rural populations would leave these communities in the short-term. (McGrail et al. 2012)

Demand for health workers coupled with favorable policy settings that give IMGs greater access to developed country labor markets have been instrumental in shaping the pattern and magnitude of international health workforce migration. (O’Brien & Gostin 2009)
contrary, introduction of restrictive policies have acted as critical barriers to the immigration of IMGs. This can be clearly seen during the sequential changes in the policy setting in Australia over the past four decades. (Figure 4.3) In the early 1990s, the dominant perception regarding oversupply in the medical workforce resulted in several policy decisions intended to stem the growth, including restrictions on the entry of IMGs. As a consequence of these initiatives, gaps in the supply began to emerge in the late 1990s, which led to diametric changes aimed at loosening up of both migration and accreditation policies and the expansion of training numbers. These changes increased the scale of arrival of IMGs under both the permanent (GSM) as well as temporary (mainly 457 business visa) categories from a range of source countries. It is important to note that the high diversity in the source countries has raised concerns about the differential labor market outcomes of IMGs from non-English speaking background countries (discussed in depth in Chapter VI of this PhD thesis), including the risk of developing “two-tier” medical care as a result of the growth in IMGs drawn from non-Western medical settings. (Hawthorne 2012)
The findings reported of this chapter are important as they clearly illustrate the frequent modulation of the policy settings with periodic shifts between phases of containment and growth in international recruitment in key destination countries such as Australia. In fact, based on my findings it may not be incorrect to conclude that the policy directions and labor market forces in the destination countries are powerful influencers for health workforce mobility (substantiating the findings reported in Chapter III of this PhD thesis). These findings suggest that mere voluntary codes for ethical recruitment of health workers, whether international or domestic, will possibly have limited value. Guidance on ethical behavior is obviously not enough unless this is accompanied by corresponding changes in
the labor market forces and policy in developed countries. This can be attained if these countries achieve a high level of national self-sufficiency in their health workforce and reduce their reliance on overseas trained health professionals to fulfill local demands.

My findings also raise an important question regarding the implication of the frequent changes in the policy setting on the integration of IMGs in the destination countries. Given the highly regulated nature of the medical profession, have changes in policies been accompanied by corresponding changes in the licensure process? If so, are these changes also a reactive response to the workforce scenarios and which key groups are responsible for determining the direction of these changes? In the next chapter of this PhD thesis (Chapter V), I review the medical professional licensure regime in Australia to provide an answer to these questions.
CHAPTER V. GATEKEEPING ROLE OF LICENSURE
POLICIES FOR INTERNATIONAL MEDICAL
GRADUATES – AN ILLUSTRATIVE CASE OF AUSTRALIA

Introduction

As discussed in Chapter IV of the PhD thesis, key destination countries such as Australia have attempted to address the looming gap between demand and supply of health workers by progressively liberalizing their immigration policies to attract overseas-trained professionals. In these countries, the high demand for health professionals backed by favorable policy settings has led to a rapid expansion in the inflows. (OECD 2007; JLI 2004) For instance, in Canada, facilitation of temporary routes of migration has resulted in 40% increase in immigrant doctors. (OECD 2010)

The use of self-serving policies to meet the domestic demand for health workers from countries that have a low threshold of skilled workforce has captured global interest, producing a growing body of literature on migration of health professionals. (Stilwell 2003; Scott 2004; McElmurry 2006; Wright 2008; Runnels 2011) Missing from the current debate is a discussion on the corresponding developments in regulatory and certification processes in destination countries that can have serious implications on the ability of overseas-trained professionals to practice.

Across countries, health professionals have to meet licensure requirements set by the respective regulatory authorities before they are permitted to practice. (Forcier 2004; OECD 2007; Rabben 2013) The stringency of these requirements varies between countries, and in
some federated nations between the states/provinces. (Sodeman 1971; Spike 2004, Barer 1992) Usually the licensure process requires demonstration of a minimum degree of competency to serve the public and is intended to have beneficial effects for consumers by increasing the quality of service. (Kleiner 2006) However, it has been alleged that by restricting entry into practice, these requirements serve the dual purpose of reducing competition, thus safeguarding the interests of professional groups. (Freidson 2001; Olsen 1999; Samanta 2004)

The responsibility for managing the licensure processes usually rests with the government or an agency approved by government. For example in some countries an independent body, such as professional councils, manages these while in others the Ministry of Health closely monitors it. (OECD 2007) Over time the duration and complexity of the licensing processes have evolved in response to factors either internal or external to the profession. In the past the profession enjoyed a high level of input in determining the licensing provisions but in recent years a relative decline in professional dominance has brought with it a greater role for state and non-state actors into what was once a purely professional process. (Butter 1977; Coburn 1993; Salter 2001)

The conventional wisdom is that licensure requirements have been established to maintain uniform standard in the quality of services, however a functionalist interpretation of changes to the licensure process suggest a reactive response to workforce scenarios and prevailing socio-political circumstances. In this chapter I illustrate this by firstly discussing the licensure requirements for IMGs in major destination countries. Then I use Australia as a case study to track changes in licensing policies advised by factors internal and/or external to the
profession. I conclude by discussing the influence of the profession, the state and the employers in the design of licensing policies while highlighting its ‘gatekeeping’ role.

**IMGs and Licensure**

Amongst the regulated professions, the barriers to professional practice are particularly daunting for IMGs. (Rabben 2013) Before they are allowed to legally practice their profession in a destination country, IMGs often have to demonstrate equivalence of their academic qualification (pass accredited licensing examinations) and/or undergo a period of supervised practice. This is in addition to basic requirements such as a medical degree from an approved medical school that is listed either in the Foundation for Advancement of International Medical Education and Research (FAIMER) or the AVICENNA Directory for Medicine and acceptable level of proficiency in a designated language (depends on the destination country, typically English).

The complexity of these licensure requirements vary between destination countries, each having their own entry criteria for credentialing and registration. For instance, in the United Kingdom, doctors from non-European Economic Area (non-EEA) countries have to pass the Professional and Linguistic Assessment Board (PLAB) test to obtain limited registration. After one year of supervised training, they can get fully registered. In contrast, the registration process for doctors from the EEA and Switzerland is quite straightforward, being entitled to full registration under the European law. (BMA 2013)

In some countries, the requirements can be more daunting. For example, to practice in the
United States, IMGs have to complete their residency training (ranges from three to five years, depending on the medical specialty). (AMA 2013) Similarly, in Canada, IMGs generally have to undergo two to six years of postgraduate medical training at a Canadian university. (CARMS 2013) In recent years, increases in the scale of transnational migration have resulted in stronger and more complex licensing statutes across countries.

The barriers associated with the transference of educational equivalence and professional experience has on occasions compelled IMGs to seek employment in unskilled labor, causing downward occupational mobility. (Basran 1998; Mattoo 2005; Haleja 2011) Although the overall extent of the problem is difficult to quantify (due to the lack of relevant comparable data), this has often been addressed in the academic literature as ‘brain waste’. (Pang 2002; Mattoo 2005; Mackey 2012)

The argument that is generally put forward in support of the medical licensure requirements for IMGs is the need to maintain standards in the quality of the medical services, especially because of the rapid diversification in source countries, in particular an increase in the flows from non-English speaking background (NESB) countries. (OECD 2007) Despite the emphasis on quality, empirical evidence on the effects of these policies in upholding the quality of services has been notable by its absence. (Friedman 1962; Gross 1978; Hogan 1983) Instead, review of the landscape of licensure policies in destination countries suggests that these policies are increasingly assuming a ‘gatekeeping’ role, to regulate the entry of IMGs into practice. As an illustrative example, changes in the policy regime in Australia are discussed.
Australian context and historical background

Australia represents an excellent case study for the investigation of the gatekeeping role of licensure policies. As discussed in Chapter IV of this PhD thesis, Australia is one of the least self-sufficient nations in terms of meeting its health workforce needs. (OECD 2007)

IMGs intending to practice medicine in Australia can choose from a range from permanent or temporary migration options. Two routes that are most commonly used include the general skilled migration (GSM) category (selects applicants on points-based criteria to grant permanent residency status), and subclass 457 business visas (used by employers to sponsor IMGs to pre-arranged work). In addition to these, a number of IMGs enter Australia as dependents of the primary applicants of GSM category, New Zealand nationals (permitted free movement), family migration and humanitarian streams. (Hawthorne 2012)

Whereas Australia is one of the very few OECD countries with specific migration policies for health professionals, (OECD 2007) research reports have indicated an appreciable incidence of cases where settlers have been unable to re-enter the occupation in which they originally qualified. (Fry Committee 1982) The incidence of such cases in medicine has been reported to be as high as 51%, (Hawthorne 2007b) an indication of the restrictions imposed on admission into practice.

Medical Boards and AMA

To practice medicine in Australia, practitioners are required by law to be registered with the Medical Board. Until recently, under the federal system of governance, the regulation of the medical profession (and other licensed health professionals) was a state responsibility and
was administered through the relevant State and Territory Medical (Practitioners) Acts. In each state/territory, the Medical Boards (statutory organizations instituted by the government) were the sole authority for governance of the medical profession. These were established as early as 1837 in Tasmania (MJA 1916) (followed by New South Wales (1838) (NSW Archives) and Victoria (1844). The composition of the board varied between the jurisdictions and in most the members were nominated by the Minister of Health. (Kisely 2001)

The organization of the medical fraternity into an influential, legitimate professional group was initially fraught with intense rivalry among the various associations and their individual members. Eventually, the factionary groups aligned themselves as an overseas branch of the British Medical Association (BMA), with individual branches in each state in the late nineteenth century onwards. In 1962, the BMA\(^\text{15}\) branches formally merged into the Australian Medical Association (AMA), a peak membership organization representing the interests of registered medical practitioners and medical students in Australia. (AMA 2013) From the start, the AMA has been a powerful group that lobbies government on workforce issues. Although the AMA does not directly control entry to the medical profession (this is the responsibility of State and Territory registration boards, which enforce the medical regulation laws), (Fry Committee 1982) it has been an influential pressure group with representation in the government, state health departments, medical boards and on university councils. (Iredale 2009)

\(^\text{15}\) Throughout this chapter AMA will be used to refer to both AMA and the Australian chapter of BMA, as it was earlier known.
**Medical Registration – The Historical Context**

The recognition of medical qualifications for the purposes of registration in Australia has been a complex issue, characterized (until recently) by wide variations in the processes followed by each state and territory medical board. Historically, these variations have been the consequence of lack of uniformity in the legislature that governed the functioning of the individual boards. Each individual Medical Act gave the board the power to maintain a register of qualified practitioners and to determine the entry qualifications. For instance, in Queensland, in accordance with the provisions of the *Medical Act of 1867*, any person with medical training was entitled to be registered. In contrast, the requirements for registration were comparatively more stringent for the other boards. In New South Wales (NSW), the *Medical Practitioner (Amendment) Act of 1915*, categorically excluded practitioners who held an Austrian or German degree only, or who were German or Austrian subjects (an influence of widespread anti-German feeling during World War I). (Kamien 2006) In South Australia, reciprocity in the recognition of South Australian medical qualification was an important clause in the *Medical Act of 1913*.

**A phase of professional dominance**

In the next few years, the licensure policies underwent several changes that were influenced by the dominion of the professional groups. For instance, efforts initiated by the federal government to create a coherent national registration system were stymied, as the states refused to surrender their sovereign rights. The role of the state branches of the AMA in jeopardizing these efforts was obvious. For example, the Victorian branch opposed the transference of medical registration from the care of the state parliaments to that of the
federal government on the ground that the “transference might possibly lead to the lowering of the standard of efficacy of the medical profession”. (MJA 1918a) Another reason for the opposition was the lack of agreement between the boards regarding registrable qualifications. For example, the Medical Act, 1918 in Tasmania was seen as a “mischievous” piece of legislation intended at widening rift between the government and the medical profession because it entitled the holders of a degree or diploma of a Class “A” American medical college for registration. AMA vehemently opposed the legislation, terming those who aligned with the government, in opposition to the resolution of the AMA, as “derelicts, the failures and the undesirables”. (MJA 1916; MJA 1918b)

From 1936 onwards, the federal government in Australia had begun to ease the restrictions on ‘alien immigration’ that had been introduced in the 1920s when the government had opposed the idea of an influx of Jewish refugees from Eastern Europe. (Rutland 1985) This had caused a high influx of Jewish refugee doctors from Germany, Austria, Russia and Poland. These “alien”, “refugee” or “displaced person” doctors (terms commonly used to refer to this group of doctors) faced a hostile medical registration system, as new requirements were added to prevent them from entering into practice. (Winterton 2005) For instance, in NSW the Medical Practitioners Act, 1938 replaced the Medical Practitioners (Amendment) Act, 1915. As per the new legislation doctors from non-Commonwealth countries had to pass the fourth, fifth and final decree examinations prescribed by the Senate of the University of Sydney for students in the Faculty of Medicine. (MPA 1938a) (Up till 1974, the University of Sydney retrained “refugee doctors” but only allowed eight to graduate each year.) (Iredale 2009)

These developments were occurring in the context of a growing rift between the medical
fraternity and the federal government in connection to the National Health Insurance Bill (1938), which was viewed by AMA as averse to the autonomy of their practices. There were emerging concerns that the federal government might utilize the services of the refugee doctors “to defeat the profession (domination) in the matter of the national insurance”. A letter published in the *Medical Journal of Australia* showcases the sentiments of its members; “the only salvation for the profession is for every doctor in Australia to join those other who have notified their local members of Parliament that they will vote against them at the next election unless the member opposes the National Health Insurance Bill”. (MJA 1938)

The AMA ran a campaign to discredit the refugee doctors labeling them as “incompetent” and “unqualified”. (Kunz 1975) However, they showed little opposition to the use of these doctors to address shortages in regional areas, which had become a major problem. For instance, in NSW, the *Medical Practitioners Act 1938* was amended in 1939 (Medical Practitioners (Amendment) Act, 1939) to make provisions for regional registration of medical practitioners. These regions, defined as “areas that were not adequately provided for in respect of medical and/or surgical services”, were carefully chosen to ensure that they did not pose a threat to established medical practices. (MPA 1939)

*Growth in the influence of the state*

The issuance of regional registration certificates by the boards marked the beginning of temporary registration in Australia and soon became popular with the states as a measure to redress geographic imbalances. For example, in NSW, the *Medical Practitioners Act 1938* was
amended in 1955 (Medical Practitioners (Amendment) Act, 1955) to enable doctors who have qualified in a Commonwealth country to gain temporary registration (up to 12 months) in specified locations, provided they performed satisfactorily in exams conducted by the Examining Medical Committee (established by the board, specifically for this purpose). The board however retained control on the number of temporary registration that were granted, which prompted a further amendment to the Act in 1957 giving the state department the discretion to authorize doctors to take up temporary registration. (MPA 1938b) The growing role of the state in setting standards and policies of the board in order to meet perceived workforce imperatives was becoming obvious.

Between 1956 and 1963, four new medical schools had been established increasing the total number of medical schools in Australia to eight. (Brooks 2001) Still the domestic training capacity was insufficient to match the growing demand for services. To meet the gap in supply, states further liberalized the registration of IMGs, who were also benefitting from simultaneous changes that were taking place in Australia’s immigration policy. (Phillips 2005) An end to the “white Australia policy” (DIAC 2012) had removed the restrictions on the immigration from non-European countries, and the implementation of the Trans-Tasman Mutual Recognition Arrangement (TTMRA (1973)) had facilitated free movement between New Zealand and Australia. These changes manifested as an increase in the diversity of source countries of doctors migrating to Australia (a sizeable proportion of the doctors were now from NESB countries in the Commonwealth).

In the late 1960s, to facilitate the recognition of professional qualifications obtained overseas, the federal government established the Council on Overseas Professional
Qualifications (COPQ). The COPQ developed an examination process that was modeled on the screening examination process developed by the Educational Commission on Foreign Medical Graduates (ECMG) in the United States. (Fry Committee 1982) Unsurprisingly, the COPQ was unable to convince the state/territory boards to accept the results of the screening examination for registration purposes. (AMC 2010) Each board wanted to retain their hegemony and maintained a list of overseas medical qualifications that were granted automatic recognition.

In 1974, Victoria implemented the Foreign Practitioners Qualifications Certificate (FPQC) examination for IMGs seeking registration in the state. The examination consisted of a test of English language proficiency, an MCQ examination of medical knowledge, and a clinical examination based on the final qualifying examination of the University of Melbourne. In 1978, all state medical boards agreed to adopt the FPQC examination from Victoria as a common screening examination (formally known as the Australian Medical Examining Council (AMEC)). (AMC 2010) However, the individual boards retained the discretionary powers to waive the AMEC examination requirements for graduates from certain countries. (In 1978, this included graduates from New Zealand, UK and Ireland medical schools; Tasmania also recognized graduates of South African and Canadian medical Schools). (Fry Committee 1982)

The acceptance of these overseas qualifications was not wholly explicable in terms of the standards of medical education in those countries, as the boards neither inspected nor monitored the medical education in countries that are given favorable registration status. Moreover, the boards did not accept the judgment of other assessing bodies. For instance, in
1975 the COPQ reported favorably on the Royal University of Malta; however its recommendation was unsuccessful in persuading the board to retain Maltese qualification on the list of acceptable qualifications. (Fry Committee 1982)

In 1984, the Australian Medical Council (AMC), an independent national authority, was established which took over the responsibility of the AMEC. Although it was expected that all AMC certificate holders would undergo a period of supervised training and assessment, it remained the prerogative of medical boards to grant registration either without the need for such supervision or for more limited periods. (AMC 2010)

During this period, the AMA had witnessed a decline in their power to influence government decisions. A major blow to the AMA had been its failure to prevent the introduction of the national health insurance scheme (Medibank), which had resurfaced in the mid-1980s as ‘Medicare’. The AMA had strongly opposed the scheme, as it had resulted in a steady reining in of their incomes. (De Voea 2003) The growth in the size of the medical workforce and the accompanying fear of competition, led the AMA to lobby the government to limit both training numbers as well as restrict the entry of IMGs. The AMA called for a five-year ban on the immigration of doctors wishing to take up permanent posts in Australia, besides reducing the output of graduates from Australian medical schools. Their concerns about oversupply were boosted by the activities of the National Health Strategy Review that had been established to examine Medicare. (Lush 1991) As increase in the number of doctors had direct implications for the Medicare outlays, it prompted the introduction of several proactive measures to reduce the size of the medical workforce. (Birrell 1995)
A phase of restrictions to professional entry

To reduce the motive to migrate as well as to eliminate the claim of possible bias in the handling of IMGs, in 1992, the need for AMC accreditation was extended to include permanent resident doctors from the UK and Ireland (countries that had been considered to have similar training and accreditation standards). Additionally, a quota on the access to the AMC clinical examination was introduced, which restricted the number of AMC candidates who could proceed through to the clinical examination to a maximum of 200 per year, selected on the basis of merit order of performance of the MCQ examination. (Birrell 1995)

Under this arrangement, it was possible for a candidate to achieve a pass score at the MCQ examination, but fail to obtain a quota place in the clinical examination. In late 1994, a case of racial discrimination was lodged against the AMC and the Australian government in the Human Rights and Equal Opportunity Commission (HREOC) and the Federal Court. The effect of the hearing was that the AMC abolished the quota provision from 1996 onwards. (AMC 2010) (From 1998, a new regulation was introduced that allowed candidates only two attempts for either the MCQ or the clinical test.)

In 1997, a group of Sydney-based IMGs began a hunger strike outside the NSW Parliament in protest at their inability to proceed through the AMC examination processes. An end to the hunger strike was negotiated, which included funding of up to 100 places in the final years of Australian medical schools for IMGs to complete Australia medical qualifications. Some 500 IMGs applied for this scheme and the successful candidates were selected on the basis of their performance in a special ‘Deans’ examination. This initiative was offered only once. (AMC 2010)
Federal legislation was passed in 1997 which stipulated that henceforth all doctors entering Australia (including those trained in New Zealand) would not be allowed to bill on the Medicare system until ten years after they had gained accreditation (the “Ten-Year Moratorium”). (ADTOA 2011)

At the same time, the role of specialist colleges such as Australian College of Rural and Remote Medicine (ACRRM) and Royal Australian College of General Practitioners (RACGP) in safeguarding their professions was also becoming apparent. Section 19AA of the Health Insurance Act 1973 was introduced that restricted access to Medicare benefits, unless medical practitioners were Fellows of a specialist college or were doing an approved placement on a Section 3GA program. This meant that IMGs who had completed their ten-year moratorium but had not gained Fellowship of a specialist medical college remained subjected to restrictions under Section 19AA of the Act limiting their access to the higher Medicare rebate. (Birrell 1997; DoHA 2010)

Initially access to the AMC examination was restricted to IMGs who were permanent residents (PR) or had applied for PR status. IMGs on temporary visas, including most IMGs registered for ‘area of need’ positions, were not eligible to apply for assessment through the AMC examination pathway. In 1989, following the events in Tiananmen Square in China, the federal government announced that all Chinese nationals who were in Australia

16 Approved training and workforce programs under Section 3GA include: (i) Approved Medical Deputising Service Program; (ii) Approved Private Emergency Department Program; (iii) Approved Placements for Sports Physicians Program; (iv) Queensland Country Relieving Doctors Program; (v) Rural Locum Relief Program; (vi) Special Approved Placements Program; (vii) Temporary Resident Other Medical Practitioners Program; (viii) Remote Vocational Training Scheme. (Source: MTRP 2013)

17 Is defined as any position/location in which there is a lack of specific medical practitioners or where there are medical positions that remain unfilled following multiple recruitment attempts over a period of time. It applies to both public and private sector positions. (Source: Department of Health, Victoria, Australia)
on a temporary visa at that time could remain until June 1994 under a special protective visa category. Amongst them were IMGs who were ineligible to sit for the AMC examination, hence unable to progress towards recognition of their qualification. In 1999, the AMC revised its eligibility criteria to allow all IMGs, including those on temporary resident visas, to apply for assessment. (AMC 2010)

**Temporary migration and the role of employers**

In sharp contrast to the measures that were being taken to reduce the size of permanent medical immigration, parallel efforts were initiated to recruit IMGs on temporary visas to fill essential gaps in medical services. IMGs were recruited to work in situations where state/territory health authorities, hospitals and health services and locum agencies were unable to recruit Australian doctors. To facilitate their recruitment, a new visa category (Medical Practitioner Visa (Subclass 422)) was introduced in 1992. In addition, the state/territory board legislatures were amended to permit conditional registration. For instance, in NSW a clause was introduced to the *Medical Practice Act 1992* that gave the board discretionary power to grant conditional registration to IMGs to practice in ‘area of need’ locations. This created a ‘back-door’ entry into the medical workforce in Australia, the importance of which can be realized from the growth in its scale over the next few years. Between 1992-93 and 1997-98, the number of IMGs on temporary visas entering Australia increased from 667 to 1,702, with an average annual increase of 25.9%. *(Figure 5.1)* (The increases were evident in all states and territories and the level of reliance in each jurisdiction was independent of the number of medical school places. For example, South Australia with
the highest per capita output of medical graduates reported an increased need to utilize temporary resident IMGs as GPs in rural areas. (AMWAC 1999)

*Figure 5.1* Temporary and Permanent migration of IMGs to Australia for employment: type of migration, 1992–93 to 1999–00

A range of stakeholders including individual GPs, GP and specialist group practices, divisions of General Practice, health authorities, hospitals, locum agencies and medical recruitment agencies were conducting these recruitments. In 1998, with funding support from the federal government's Department of Health and Ageing as well as their respective state governments, Rural Workforce Agencies (not-for-profit organizations) were established in each state/territory to support the recruitment of doctors for rural and remote communities. This signaled the beginning of an era of employer-sponsored recruitment of IMGs in Australia. (Reliance Medical Practice 2011)
The legislation and related policies guiding the recruitment and conditions of registration for IMGs was furthered in the early 2000s. By the early 2000s, growing evidence of medical practitioner shortages in some outer-metropolitan locations furthered the efforts to recruit IMGs. The immigration policy was amended in 2003 to increase the duration of the temporary visas from 2 years to 4 years. (Birrell 2004) A year later, the federal government announced the Strengthening Medicare Initiative (2004), which included the International Recruitment Strategy (IRS). The aim of the strategy was to increase the supply of appropriately qualified IMGs in areas of workforce shortages. Under this strategy, IMGs were encouraged to apply under the long-term business
visa category 457\textsuperscript{18}, which subsequently became the most important route of entry. (Figure 5.2)

IMGs varied across the states and territories. (AMWAC 1999) For instance, in Northern Territory, the Medical Act (1997) gave discretionary powers to the board to grant conditional registration for an area of need position if the board was satisfied that “it is in the public interest to grant registration or that the person is suitable to meet a community need”. In contrast, in NSW, conditional registration was preferentially granted to graduates of medical schools in the UK, Ireland, South Africa, Hong Kong, Singapore, Canada or the US.

Moreover, in regards to ‘area-of-need’ positions, the employer generally made the decision about the selection, often without any systematic evaluation of the candidates’ medical knowledge or clinical skills. In most instances, the state boards granted conditional registration based on the judgment of the employers without any direct involvement in assessment of the candidates, except in NSW. (Birrell 2004) Such wide variations in the processes and standards of IMG assessment and support between the states and territories potentially led to unintended consequences - the most notable being the case of Dr Reeves in NSW in 2004 and the case of Dr Patel in Queensland in 2005. (Joyce 2006)

\textsuperscript{18} This visa subclass was also preferred subclass 457 Visa by the employers, as it enabled them to nominate a number of positions to be filled and the validity of the approvals was for a 12-month period. (In contrast, subclass 422 Visa only allowed a single sponsorship at a time for one nominated position.)\textsuperscript{18} This enabled employers to undertake large-scale recruitments based on a single approval. Further, in 2009, flexible working arrangements were included in the subclass 457 visa program (previously available only under the Subclass 422 visa) that allowed employees to work for more than one employer. The temporary route remains the common pathway entry into medical practice in Australia and it was estimated that in the 2010–11 financial year close to 3,000 doctors were granted temporary skilled worker visas. (Source: Department of Immigration and Citizenship; Health Workforce Australia)
Towards a nationally consistent approach

The Productivity Commission's report (2005) on the Australian health workforce recommended the setting up nationally consistent standards for assessing IMGs. (Productivity Commission 2005) Three years on, in July 2008, four pathways for registration were introduced that involved an assessment of the IMGs’ skills, qualifications and experience. IMGs who wished to practice medicine in Australia had to fulfill the requirements for one of the pathways. One of the pathways (Competent Authority19) specifically targeted medical graduates who had registered in countries such as the UK, Ireland, Canada, the US and New Zealand, which were deemed to have similar (competent) health care systems. (Hawthorne 2012)

Figure 5.3 Standard pathway for the assessment and registration of IMGs proposed by Australian Health Ministers’ Advisory Council - 2007


19 Competent Authorities are designated overseas accredited medical training and licensing examination authorities that have been reviewed and approved as competent to undertake a basic assessment of medical knowledge and clinical skills for the purposes of registration in Australia. The AMC has approved four examination authorities in the UK (PLAB examination), the US (the USMLE examination), Canada (the MCC Licensing Examination) and New Zealand (the NZREX examination). The AMC has also approved medical school accreditation programs in the UK and the Republic of Ireland as Competent Authorities.
Further, in 2008, with the aim of establishing nationally consistent registration standards, an intergovernmental agreement was signed, which created the National Registration and Accreditation Scheme (NRAS)\(^2\). To implement the NRAS, the Australian Health Practitioner Regulation Agency (AHPRA) was established in July 2010 (an agency that provides administrative support and advice to the national boards of fourteen regulated health professions) (House of Representatives Standing Committee on Health and Ageing 2012).

Under the NRAS, the Medical Board of Australia (MBA), a national board for medicine was established for the registration of all medical practitioners in Australia. The Australian Health Workforce Ministerial Council appoints the members of the MBA, thus creating opportunities for political expediency.

At the same time, the AMA was not very positive about the NRAS. The AMA saw the proposed governance structure as an extension of the political bureaucracy, implying a further decline of its involvement in the regulation of the profession. It was also concerned that under an umbrella scheme covering the registrable health professions, the professional boundaries may be renegotiated without their scrutiny. (AMA 2007; AMA 2008)

In summary, licensure of IMGs in Australia has been a high stake process that has undergone several policy reversals and has been subject to considerable public scrutiny. The most recent

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\(^2\) The National Registration and Accreditation Scheme (NRAS) for health practitioners commenced on 1 July 2010. The NRAS has been established by state and territory governments through the introduction of consistent legislation in all jurisdictions. The NRAS is not a Commonwealth Scheme. The aims of NRAS include: (i) protecting the public by ensuring that only suitably trained and qualified practitioners are registered; (ii) facilitating workforce mobility across Australia; and (iii) enabling the continuous development of a flexible, responsive and sustainable Australian health workforce. (Source: Department of Health and Ageing, Australian Government)
being the House of Representatives Standing Committee on Health and Ageing inquiry (2011-12) into registration processes and support for IMGs. The inquiry highlighted the barriers that IMGs have to face in their path to professional licensure and outlined forty-five recommendations that are aimed at reducing the bureaucratic and administrative hurdles. (House of Representatives Standing Committee on Health and Ageing 2012) While it is anticipated that implementation of these recommendations will help streamline the licensing process for IMGs, past experiences strongly suggest that the course of the policy changes will eventually be determined by a complex interaction between the profession, the state and the employers.

Conclusions

The primary purpose of professional licensing is to safeguard the quality of services consumers receive by restricting the entry to only those who meet the standards for providing the services. (Ginsburg 1992; Kleiner 2000) In health care, it is a vital component of a wider framework aimed at ensuring a high quality of services for the public. To uphold these standards, regulatory bodies have established requirements that IMGs have to fulfill to obtain a license to practice. The need for these requirements has often been justified on the basis of substantial variability in the quality of education in the 2,334 medical schools operating across 180 countries. (Kassebaum 2000; IMED 2013) The complexity of these requirements varies considerably across countries and can have important implications on transferability of skills, seriously compromising the IMG’s employability.

The findings in this chapter clearly illustrate that Australian medical licensure policies have undergone frequent changes, the nature of which has often been determined by factors both
internal and external to the profession. Overall three distinct trends are observed.

At the start, professional licensure was introduced to impose professional and ethical standards on medical practice in a legislative environment. With the organization of the medical fraternity into influential professional groups, licensure regulation became dominated by these groups and was used as a means to preserve their self-interest. As a result, several restrictions were imposed on the grant of full licensure. A number of states employed rigid approval mechanisms for IMGs, while others simply excluded IMGs from certain countries from full licensure. Although concessions were made with the grant of ‘regional registration’ to redress distributive issues, significant barriers for entry into medical practice persisted. The dominance of the professional groups over the establishment of these standards remained uncontested because the provision of health care during this period was primarily privately financed.

The introduction of the national health insurance scheme in the late 1970s made the state more accountable for ensuring access to health care services. It also challenged the customary dominance of the professional groups and boosted the state’s role in the governance of the regulatory processes. Although professional groups continued to lobby the state on workforce issues, market forces and cost of health care became the dominant factors that influenced policy decisions. Whenever oversupplies in the workforce was perceived, concerns regarding over-servicing, particularly in metropolitan areas, resulted in the introduction of restrictive licensure policies aimed at reducing the size of the workforce, including the number of IMGs. For instance, during the 1970s-80s an alleged over-supply of doctors resulted in a reduction in the number of countries with automatically recognizable
qualifications. Also, in the early 1990s a quota on the access to the AMC clinical examination was introduced to reduce the number of IMGs entering professional practice. On the contrary, during periods of shortages the regulatory and certification processes have been relaxed to assist IMGs in obtaining registration more easily. For example, to ease the mobility of IMGs from countries with comparable (competent) health systems, new registration pathways (competent authority) were introduced. Likewise, additional registration categories such as ‘conditional’ or ‘limited’ registration category have been introduced to simplify licensing procedures on a temporary basis. Such dichotomy in the requirements for different categories of registrants has raised valid concerns regarding the integrity of the regulatory system. (Birrell 1997; Joyce 2004; Iredale 2009)

Despite these concerns, in the past two decades, the number of IMGs on conditional or limited registration has grown exponentially. This category became increasingly popular with the states and employers, as it provided a ready solution for specific needs in the health care system. More importantly, IMGs provided a flexible short-term option as the vulnerability of their visa and registration position could be worked to the advantage of the system. The employers showed a high preference for conditionally registered IMGs, as it bypassed the traditional occupational barriers to international recruitment. In many instances, the employers chose their own employees independent of or with minimal outside interference, thereby taking the assessment and accreditation process outside the scope of professional bodies or government authorized agencies.

From the experiences in Australia it is clear that professional practices are no longer defined and controlled solely by the regulatory authorities. While specific proposals such as
mandatory licensure of IMGs continue to be part of the generalized agenda to establish quality control, over time, the dynamics of the process is often determined by the level of political action taken by key groups (the profession, state and employers). Depending on the nature of these actions, the licensure regimes have either been relaxed or made more stringent.

That is, licensure policies have assumed the dual role of being both arbiters of competence and *de facto* health workforce planning instruments. Within this context, IMGs constitute an ‘ideal’ reservoir, to be utilized when and where needed. However, the frequent changes in policy and licensure arrangement means that IMGs who wish to enter medical practice in Australia have to face uncertainty and inconsistency. The impact of these changes on IMGs is likely to be often damaging, either precluding them from practicing or forcing them to discontinue practicing. To provide a better understanding of the extent of the problem, especially in the context of a changing policy environment, in *Chapter VI* of this PhD thesis, I analyze the Australian Census 2011 data to estimate the level of integration of IMGs in the host country labor market.
CHAPTER VI. INTERNATIONAL MEDICAL GRADUATES IN THE DESTINATION COUNTRY LABOR MARKET – AN ILLUSTRATIVE CASE OF AUSTRALIA

Introduction

The global quest for talent has spurred paradigm policy shifts and forced countries to consider selective immigration initiatives designed to attract the most skilled workforce. (Abella 2006) In the majority of immigrant receiving countries, its growing significance has resulted in a change in focus from family reunification towards a greater emphasis on economic immigration streams, to respond quickly to labor market demands. For instance, as outlined in Chapters I & IV of this PhD thesis, immigration policies in key destination countries have frequently been modulated to encourage the movement of overseas-trained health workers to address local shortages. Although these policies have often been criticized in the midst of popular anxieties about immigration (Brader et al. 2008), there is a growing recognition regarding their necessity to meet domestic demands.

Whilst these policy regimes have been successful in transforming transnational migration, for them to produce the expected benefits it is necessary that immigrants integrate successfully in the labor market of the destination country, and multiply their economic value. Increasingly, governments are faced with the interlinked task of designing polices for their successful integration. This has emerged as a key issue as non-recognition of qualifications and work experience that were acquired in different contexts in the countries of origin act as systemic barriers to meaningful employment, resulting in skills discounting. (Reitz 2003; OECD 2012) Even in countries with selective migration policies, immigrants have continued
to achieve less favorable labor market outcomes than natives, most notably in the early settlement period. (Jean et al. 2010)

These challenges are especially daunting for regulated professions. Due to issues associated with the recognition of foreign credentials, immigrants often have to work in jobs that do not use their skills or spend long periods out of the labor force, as they requalify to practice their professions. (Sumption 2013) As seen in Figure 6.1, based on Australian Medical Council data, (on average) less than two-third of the IMGs pass the MCQ and clinical examinations in a given year. Moreover, the recertification process is often complex involving different agencies and government department, significantly affecting the types of work that immigrants do and their career trajectories. (OECD 2007)

**Figure 6.1 AMC MCQ and Clinical Examination, pass rates, 2003–04 to 2011–12**

![Graph showing pass rates of AMC MCQ and Clinical Examinations from 2003-04 to 2011-12](Source: Australian Medical Council Annual Reports, 2008-2013)
Previous scholarship (Borjas 1987; Borjas 1986; Chiswick 1984; Chiswick 1982; Portes 1981; Kossoudji 1989; Alba & Victor 1997; Hagan 1998; Portes & Böröcz 1989) on the labor market integration of high-skilled immigrants show that occupational success depends on a complex interplay between micro-level (the demographic features of individual immigrants such as age, language proficiency, education level, time spent in the destination country, education level and labor market experience), meso-level (characteristics of households, social networks, recruitment agencies) and macro-level (policy regimes i.e. immigration systems, professional licensing, integration, destination labor market dynamics, differential immigration streams i.e. employer-led, points-based, family-reunion, humanitarian etc.) determinants.

**IMGs and Labor Market Performances**

Amongst regulated professions, the barriers to professional practice are particularly significant for international medical graduates (IMGs). (Rabben 2013) As discussed in Chapter V of this PhD thesis, across all destination countries IMGs have to either demonstrate equivalence of their academic qualification (pass accredited licensing examinations) and/or undergo a period of supervised practice before they are allowed to legally practice their profession. It is argued that these regulatory processes are necessary to safeguard the quality of health services in the public interest, especially in the context of substantial variability in the quality of medical education across countries. (Olsen & Friedman 1962; Samanta & Samanta 2004) Of particular note, the complexity of the licensing statutes can seriously challenge the IMGs’ ability to successfully navigate the system and achieve favorable labor market outcomes.
It is in the interest of the destination country to support IMGs. To this effect, specific ‘bridging’ programs (Horvath 2004; Maudsley 2008; McGrath et al. 2009) have been introduced to facilitate their effective integration into the health care system in select destination countries (such as Australia and Canada). While some of these programs are designed as induction programs for IMGs starting residency training or hospital placements, a few also assist IMGs negotiate the barriers associated with the licensing requirements. To date, these bridging programs have been very limited in number and met with variable success.

Although in the past two to three decades, the transnational migration of IMGs has drawn global attention and there has been growth in scholarship on the topic, research on the labor market integration in the destination country has been limited. The few studies (McDonald et al. 2011; Boyd & Schellenberg 2007; Hawthorne et al. 2007a) that have analyzed the performance of IMGs in host labor markets have highlighted the significance of skill underutilization. In Canada (Boyd & Schellenberg 2007) and Australia (Hawthorne et al. 2007) only half of the IMGs are employed as physicians, with observable differences in the occupational outcomes depending on individual-level characteristics such as age, country of origin and period of arrival. (McDonald et al. 2011; Boyd & Schellenberg 2007; Hawthorne et al. 2007a) Further, it has been reported that in the United States and Canada the immigrant selection system and the policy context play a significant role in IMGs’ labor market performance. (McDonald et al. 2011) These studies are however not strictly comparable because each has its own focus and sample selection criteria. Moreover, they share some common limitations; the most important being that their model either did not control for key variables such as English language ability, life stage at arrival, years of
experience in destination country etc., which can significantly influence the outcomes (McDonald et al. 2011; Boyd & Schellenberg 2007; Hawthorne et al. 2007a); or their model offer limited depth, as they only use binary outcomes (Boyd & Schellenberg 2007; Hawthorne et al. 2007a).

To analyze a broader range of factors that influence the labor market performance of IMGs, in this chapter I use Australia as a case study. The chapter proceeds in three sections. In the first section, I provide an overview of the IMG workforce in Australia (building on the discussions presented in Chapter IV of this PhD thesis). The second section presents an empirical model to investigate the role of different factors in influencing the labor market outcomes for IMGs. Using data from Australian Census 2011, I then analyze the extent to which these factors influence employment probabilities in their profession of training. The final section of the chapter summarizes the results and concludes.

**Australia – A key destination country for IMGs**

As described in previous chapters of this PhD thesis, Australia represents an excellent case study to investigate the labor market performance of IMGs. The country has a high level of reliance on IMGs, especially to address geographical imbalances. Between 2000-01 and 2009-10, there was a 70% increase in the proportion of overseas trained GPs working in rural, remote areas. (Department of Health and Ageing Submission 2011)

IMGs who wish to immigrate to Australia can apply either under the points-based (General Skilled Migration (GSM)) or the employer-led (Subclass 457) selection model. As shown in
Table 6.1, the employer-led recruitment of IMGs on temporary visas to pre-arranged work has now become the most common route of entry. In addition to these two routes, a number of IMGs also enter the country as dependents of the primary applicants of GSM category, New Zealand nationals (permitted free movement under the Trans-Tasman Mutual Recognition Agreement (TTMRA)), family migration and humanitarian streams.

Table 6.1 Permanent and Temporary New Arrivals (2010-13)

<table>
<thead>
<tr>
<th>Medical Practitioners</th>
<th>General Skilled Migration</th>
<th>457 Temporary Visa</th>
</tr>
</thead>
<tbody>
<tr>
<td>Generalist Medical Practitioners</td>
<td>409</td>
<td>642</td>
</tr>
<tr>
<td>Other Medical Practitioners</td>
<td>58</td>
<td>309</td>
</tr>
<tr>
<td>Specialist Physicians</td>
<td>14</td>
<td>41</td>
</tr>
<tr>
<td>Surgeons</td>
<td>10</td>
<td>12</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>491</td>
<td>1004</td>
</tr>
</tbody>
</table>

Source: Analysis of unpublished immigration arrivals data provided to L. Hawthorne by the Department of Immigration and Border Protection, Canberra (November 2013). Please note some 457-visa number may have been re-counted.

IMGs who intend to practice medicine in Australia have to register with a designated authority. As outlined in Chapter V of this PhD thesis, prior to 2010, the registration authority was with the Medical Board of the individual states and territories. But with the implementation of the National Registration and Accreditation Scheme in July 2010, national registration with the Medical Board of Australia was introduced. The Board offers a range of different types of registration (general, specialist, provisional, limited), which is determined by the IMG’s level of training, country of training, experience and registration purpose (clinical practice or post-graduate training, research, teaching). To be eligible for registration, IMGs first have to demonstrate equivalence of their academic qualification. Depending on
their country of training they may have to pass the two-step Australian Medical Council (multiple choice questions and clinical) examinations as well as meet the English language requirements. This often poses as a challenge for IMGs, who may already be at a disadvantage as a result of gaps in information, relevant skills and market knowledge. In the short run, it can greatly impede their labor market integration and occupational mobility as they struggle to acquire the required credentials, improve their language ability and gain knowledge of the medical labor market. According to the AMC Annual reports, typically less than half the candidates pass the multiple choice question (MCQ) examination in their first attempt. (AMC 2013)

In Australia, the issue of transferability of IMGs’ skills has been the subject of considerable public scrutiny. (Please refer to Chapter IV of this PhD thesis for a detailed discussion). The most recent is the House of Representatives Standing Committee on Health and Ageing inquiry (2011-12) into registration processes and support for IMGs. The inquiry highlighted the barriers that IMGs have to face in their path to professional licensure and outlined forty-five recommendations that are aimed at reducing the bureaucratic and administrative hurdles. While it is anticipated that implementation of these recommendations will streamline the registration process for IMGs, it is important to assess how individual-level characteristics influence their labor market performance, to fine-tune the immigration selection process or advice polices for successful integration.

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21 Under the Trans-Tasman Mutual Recognition Agreement medical graduates from New Zealand can obtain full registration. Besides, from 2007 onwards, under the competent authority pathway, medical graduates registered in United Kingdom, Ireland, Canada and United States are exempted from the Australian Medical Council licensing examinations.
Econometric Specification and Data

The literature suggests that labor market experience of immigrants depends on a range of factors that ultimately determine the success of their attempt to establish occupational status. (Borjas 1987; Borjas 1986; Chiswick 1984; Chiswick 1982; Portes 1981; Portes & Böröcz 1989) As discussed earlier, there appears to be relatively little research on the role of these factors in influencing the labor market performance ofIMGs. Are IMGs at a disadvantage in the labor market compared to natives with the similar measured characteristics? Do their labor market outcomes differ depending on whether a medical graduate entered Australia as an adult or child migrant? What role does birthplace and language ability play in influencing their participation in the labor market? Do the labor market outcomes depend on the timing of their arrival (influence of policies and labor market demand for services) and is there evidence of upward mobility contingent on duration of residence in the destination country?

In order to test these hypotheses, I need to compare the occupational probabilities for international medical graduates. The model used here is one of occupational outcomes and the specific goal is to examine the determinants of a medical graduates’ capacity to enter their own profession. I intend to focus on occupational outcomes, instead of earnings, as a measure of performance because the earnings may not explicitly reveal what a medical graduate actually does, although they are likely to be correlated with occupational choices. Moreover, considering the global shortage in the medical workforce it is of interest to know how migrants’ investment in human capital has fared in the destination country labor market. I acknowledge that the choice of occupation can be endogenous but argue that some measured individual characteristics such as English language ability, labor market experience,
country of birth, relative occupational opportunities can directly impact the occupational choice.

**Data and Descriptive Statistics**

The primary data came from the 2011 Australian Census Masterfile, which contains detailed individual-level information, in particular, data on education that allows for identification of medical graduates, their country of birth, their year of arrival in Australia and whether or not they are currently working as a physician. I restrict my data to include: (i) individuals who have a medical degree (bachelors, masters or post-graduate level qualification) regardless of their occupation, (ii) overseas-born medical degree holders who entered the country in the years between 1990 and 2011, (iii) native-born medical degree holders who are currently in practice, and (iv) individuals for whom data on all the variables included in the model was available (n = 39,373). To reduce the probability of including individuals who had not completed their medical degree (Gerber & DeLoyde 2010), I restricted the age range in the sample to 28 to 60 years. (Table 6.2) I then broadly categorized individuals into two broad groups i.e. native-born (n = 17,846) and overseas-born medical graduates (n = 21,527).

**Table 6.2 Native and overseas-born medical graduates by age and gender (2011)**

<table>
<thead>
<tr>
<th>Age groups</th>
<th>Male</th>
<th></th>
<th>Female</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Native-born</td>
<td>Overseas-born</td>
<td>Native-born</td>
<td>Overseas-born</td>
</tr>
<tr>
<td></td>
<td>(n=9,228)</td>
<td>(n=11,498)</td>
<td>(n=8,618)</td>
<td>(n=10,029)</td>
</tr>
<tr>
<td>28-34 years</td>
<td>25.31%</td>
<td>28.00%</td>
<td>34.53%</td>
<td>34.73%</td>
</tr>
<tr>
<td>35-44 years</td>
<td>40.12%</td>
<td>39.18%</td>
<td>39.87%</td>
<td>38.47%</td>
</tr>
<tr>
<td>45-60 years</td>
<td>34.57%</td>
<td>32.81%</td>
<td>25.60%</td>
<td>26.80%</td>
</tr>
</tbody>
</table>

I further identified the overseas-born based on their country of birth. However, the small sample sizes required me to pool together certain country of birth groups into regional groups. (Please refer to Table 6.6) Where possible, I used the ‘year of arrival’ and ‘age’
information in the dataset to single out the overseas-born as those who migrated as adults (n = 19,253) and those who migrated as children (n = 2,274). (Table 6.3) The reasons for the sample stratification into native-born and overseas-born are obvious but the stratification by region, country of origin, and time of migration contribute to the specific questions addressed in this chapter i.e. I test the hypothesis that country of birth and age at migration alters occupational outcomes.

Table 6.3 Overseas-born medical graduates by age at migration and country of birth (2011)

<table>
<thead>
<tr>
<th>Country of Birth</th>
<th>Migrated as Adults</th>
<th></th>
<th>Migrated as Child</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Male</td>
<td>Female</td>
<td>Male</td>
<td>Female</td>
</tr>
<tr>
<td></td>
<td>(n=10,391)</td>
<td>(n=8,862)</td>
<td>(n=1,107)</td>
<td>(n=1,167)</td>
</tr>
<tr>
<td>New Zealand</td>
<td>4.10%</td>
<td>3.68%</td>
<td>2.98%</td>
<td>2.66%</td>
</tr>
<tr>
<td>Oceania</td>
<td>1.11%</td>
<td>0.85%</td>
<td>1.08%</td>
<td>0.43%</td>
</tr>
<tr>
<td>Central Asia</td>
<td>0.80%</td>
<td>0.96%</td>
<td>0.99%</td>
<td>0.69%</td>
</tr>
<tr>
<td>Chinese Asia**</td>
<td>6.21%</td>
<td>10.37%</td>
<td>15.81%</td>
<td>14.65%</td>
</tr>
<tr>
<td>Japan &amp; Korea</td>
<td>0.66%</td>
<td>0.59%</td>
<td>2.80%</td>
<td>1.80%</td>
</tr>
<tr>
<td>Southeast Asia</td>
<td>8.43%</td>
<td>10.73%</td>
<td>39.93%</td>
<td>40.10%</td>
</tr>
<tr>
<td>India</td>
<td>16.85%</td>
<td>14.07%</td>
<td>4.07%</td>
<td>5.66%</td>
</tr>
<tr>
<td>Other South Asia</td>
<td>14.55%</td>
<td>16.51%</td>
<td>7.59%</td>
<td>8.31%</td>
</tr>
<tr>
<td>North Africa &amp; Middle East</td>
<td>12.08%</td>
<td>7.21%</td>
<td>4.07%</td>
<td>3.08%</td>
</tr>
<tr>
<td>Other sub-Saharan Africa</td>
<td>5.20%</td>
<td>2.03%</td>
<td>2.08%</td>
<td>3.17%</td>
</tr>
<tr>
<td>South Africa</td>
<td>6.88%</td>
<td>4.95%</td>
<td>2.08%</td>
<td>3.17%</td>
</tr>
<tr>
<td>North America</td>
<td>2.02%</td>
<td>2.52%</td>
<td>5.06%</td>
<td>3.77%</td>
</tr>
<tr>
<td>South America</td>
<td>1.09%</td>
<td>1.62%</td>
<td>0.27%</td>
<td>0.26%</td>
</tr>
<tr>
<td>Central America</td>
<td>0.13%</td>
<td>0.15%</td>
<td>0.00%</td>
<td>0.26%</td>
</tr>
<tr>
<td>Caribbean</td>
<td>0.32%</td>
<td>0.17%</td>
<td>0.00%</td>
<td>0.26%</td>
</tr>
<tr>
<td>Eastern Europe</td>
<td>1.80%</td>
<td>4.50%</td>
<td>1.99%</td>
<td>3.60%</td>
</tr>
<tr>
<td>Southern Europe</td>
<td>0.89%</td>
<td>1.68%</td>
<td>0.72%</td>
<td>1.11%</td>
</tr>
<tr>
<td>UK &amp; Ireland</td>
<td>13.59%</td>
<td>13.35%</td>
<td>5.60%</td>
<td>4.37%</td>
</tr>
<tr>
<td>Other Northwest Europe</td>
<td>2.97%</td>
<td>3.59%</td>
<td>1.90%</td>
<td>1.97%</td>
</tr>
<tr>
<td>Southeast Europe</td>
<td>0.15%</td>
<td>0.27%</td>
<td>0.00%</td>
<td>0.51%</td>
</tr>
<tr>
<td>Others</td>
<td>0.17%</td>
<td>0.20%</td>
<td>0.27%</td>
<td>0.00%</td>
</tr>
</tbody>
</table>

** Includes China, Hong Kong, Macau, Mongolia and Taiwan

I created dummy variables to represent four occupational outcomes: (i) employed as a

---

22 Census Data based on the Australian and New Zealand Standard Classification of Occupations (ANZSCO). For the purpose of this analysis ‘another high-skilled profession’ includes managers, professionals; ‘low-skilled
physician, (ii) employed in another high-skilled profession, (iii) employed in a low-skilled profession and (iv) not in the labor force. For descriptive purposes only, the categories are assumed to be ordered (from highest to lowest); the analysis itself does not consider the categories to be ordered. These occupational categories are based on the 2011 Census groupings and generally reflect basic skill/credential requirements and working conditions.

Based on their English language ability, individuals are coded into one of three groups: (i) native English speakers, (ii) very well or well, and (iii) not well or not at all. These categories were determined solely on the basis of the self-reported skill question. Although additional Census questions such as ‘language spoken at home’, addresses the issue of usage habits, it was ignored to avoid confounding cultural and family lifestyle with the basic element of skill.

The cross-sectional nature of our dataset is an important limitation, as it poses problems in making life cycle inferences. Previous scholarship (Clark & Lindley 2006) has suggested the existence of a cohort effect wherein the occupational outcomes for immigrants is influenced by the ‘timing of the arrival’ i.e. labor market as well as policy context when they arrived in the destination country. As discussed in Chapters IV & V of the PhD thesis, the Australian immigration and medical registration policies have undergone significant policy reversals in the period covered by my analysis. Consequently, it is possible that immigrants may have been subjected to a varying set of pre-immigration opportunities and constraints. For example, between 1992 and 2003 concerns regarding an oversupply in the medical workforce were prevalent leading to the allotment of negative points to medical practitioners to reduce

---

profession’ includes technicians and trades workers, community and personal service workers, clerical and administrative workers, sales workers, machinery operators and drivers and labourers.
the numbers visaed.

In contrast, from 2004 onwards perception of shortages in the medical workforce led to the inclusion of medical practitioners in the migration occupations in demand list (MODL), skilled occupation list (SOL) and consolidated sponsored occupation list (CSOL)\(^{23}\), making it relatively easy for IMGs to enter Australia. In addition, employer-led temporary recruitment of IMGs that started in the early 1990s subsequently became the most common route of entry. IMGs on temporary visas have better immediate labor market outcomes as they are recruited to pre-assigned positions.

Unfortunately, based on the Census data I cannot ascertain under which immigration statute immigrants acquired their visas. In my analyses, to mitigate the ‘timing of arrival’ effect on occupational outcomes, I created dummy variables for year of arrival in Australia (Table 6.4) to as closely match the policy regimes as possible:

- 1990-94: restrictive policy regime to limit the immigration of medical professionals
- 1995-99: growth in the use of temporary visas to fill regional vacancies
- 2000-04: policy changes favoring immigration of medical professionals
- 2005-11: increased use of temporary visas; introduction of alternative registration pathways

Further, using the ‘year of arrival’ and ‘age’ information I describe a variable on ‘years since arrival’ to represent the assimilation effect.

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\(^{23}\) These include list of skilled occupations that are in need in Australia. Occupations featuring in the list are prioritized for immigration purposes.
As shown in Table 6.4, significant differences are seen across year of arrival groupings. A large share of the IMGs have arrived since 1995, with a large increase in arrivals in the period between 2005-2011 (n=10,522), which is consistent with the liberalization of the immigration policies (both permanent and temporary) for IMGs. It is worth noting that the occupational outcome for female IMGs has consistently been poor, in particular during restrictive policy regimes (1995-1999 & 2005-2011).

In Table 6.5, I present proportion of IMGs by country/region of birth, according to whether the person is working as a physician in Australia. I see large cross-country differences with some countries (United Kingdom, Ireland, New Zealand, South Africa) having a larger share of IMGs who are employed as physicians in stark contrast to their counterparts from East and Central Asia.
Table 6.5 Occupational outcome rank-ordered by country/region of birth (2011)

<table>
<thead>
<tr>
<th>Country of Birth</th>
<th>Working as physician</th>
<th>Working in other high skilled professionals</th>
<th>Working in low skilled professions</th>
<th>Not in labor force</th>
</tr>
</thead>
<tbody>
<tr>
<td>South Africa</td>
<td>89.04%</td>
<td>6.43%</td>
<td>0.99%</td>
<td>3.54%</td>
</tr>
<tr>
<td>Australia</td>
<td>87.22%</td>
<td>7.17%</td>
<td>1.67%</td>
<td>3.93%</td>
</tr>
<tr>
<td>UK &amp; Ireland</td>
<td>86.37%</td>
<td>6.91%</td>
<td>1.59%</td>
<td>5.13%</td>
</tr>
<tr>
<td>New Zealand</td>
<td>84.93%</td>
<td>8.82%</td>
<td>2.82%</td>
<td>3.43%</td>
</tr>
<tr>
<td>Oceania</td>
<td>83.57%</td>
<td>1.93%</td>
<td>4.35%</td>
<td>10.14%</td>
</tr>
<tr>
<td>Other sub-Saharan Africa</td>
<td>82.66%</td>
<td>5.44%</td>
<td>3.42%</td>
<td>8.48%</td>
</tr>
<tr>
<td>Caribbean</td>
<td>82.35%</td>
<td>5.88%</td>
<td>11.76%</td>
<td>0.00%</td>
</tr>
<tr>
<td>India</td>
<td>78.42%</td>
<td>5.60%</td>
<td>4.28%</td>
<td>11.71%</td>
</tr>
<tr>
<td>Other Northwest Europe</td>
<td>77.50%</td>
<td>10.88%</td>
<td>1.79%</td>
<td>9.84%</td>
</tr>
<tr>
<td>Southeast Asia</td>
<td>77.35%</td>
<td>5.48%</td>
<td>5.48%</td>
<td>11.69%</td>
</tr>
<tr>
<td>North America</td>
<td>76.55%</td>
<td>10.51%</td>
<td>3.00%</td>
<td>9.94%</td>
</tr>
<tr>
<td>Other South Asia</td>
<td>71.67%</td>
<td>3.80%</td>
<td>6.65%</td>
<td>17.87%</td>
</tr>
<tr>
<td>Southeast Europe</td>
<td>69.37%</td>
<td>23.91%</td>
<td>0.00%</td>
<td>6.52%</td>
</tr>
<tr>
<td>North Africa &amp; Middle East</td>
<td>68.51%</td>
<td>5.01%</td>
<td>5.57%</td>
<td>20.91%</td>
</tr>
<tr>
<td>Southern Europe</td>
<td>66.41%</td>
<td>12.60%</td>
<td>6.87%</td>
<td>14.12%</td>
</tr>
<tr>
<td>Central America</td>
<td>63.33%</td>
<td>13.33%</td>
<td>13.33%</td>
<td>10.00%</td>
</tr>
<tr>
<td>Japan and Korea</td>
<td>59.54%</td>
<td>9.83%</td>
<td>4.62%</td>
<td>26.01%</td>
</tr>
<tr>
<td>Eastern Europe</td>
<td>57.85%</td>
<td>17.69%</td>
<td>9.54%</td>
<td>14.92%</td>
</tr>
<tr>
<td>South America</td>
<td>57.03%</td>
<td>6.08%</td>
<td>12.17%</td>
<td>24.71%</td>
</tr>
<tr>
<td>Chinese Asia*</td>
<td>38.01%</td>
<td>23.87%</td>
<td>18.64%</td>
<td>19.48%</td>
</tr>
<tr>
<td>Central Asia</td>
<td>30.48%</td>
<td>16.04%</td>
<td>24.60%</td>
<td>28.88%</td>
</tr>
<tr>
<td>Others</td>
<td>74.36%</td>
<td>0.00%</td>
<td>0.00%</td>
<td>25.64%</td>
</tr>
</tbody>
</table>

* Includes China, Hong Kong, Macau, Mongolia and Taiwan

The Model

The descriptive statistics presented above suggest that in Australia the rates of working as a physician for IMGs vary depending on the gender, their country of birth, timing of arrival etc. In order to fully assess the relationship between these determinants and the occupational outcome for IMGs, I use a multinomial logistic (MNL) regression model.

MNL is a simple extension of the binary logistic regression model in which the dependent
variable has polytomous unordered categories. The model is fitted by simultaneously estimating binary logistic regression models for all possible comparisons of the outcome category with a baseline category. (Aldrich & Nelson 1984; Hosmer & Lemeshow 2000)

In the model, if $Y$ denote the outcome variable and $k$ denote the outcome variable category where $k = 0, 1, \ldots, K$. The probability that the outcome is equal to $k$, conditional on a vector $x$ of $j$ covariates ($j = 1, 2, \ldots, J$) is denoted by

$$P(Y = k | x) = \varphi_k(x)$$

In the multinomial logistic regression model, generally the first category of the outcome ($k = 0$) is set to be the baseline, and the probability of the baseline, conditional on $x$, is denoted by

$$P(Y = 0 | x) = \varphi_0(x)$$

Using the multinomial logit link, the MNL can be expressed in terms of logit (log odds) as:

$$M_k(x) = \ln \left( \frac{P(Y = k | x)}{P(Y = 0 | x)} \right) = \beta_{0k} + x' \beta_k \quad k = 1, 2, \ldots, K \quad (1)$$

In Equation (1), $\beta_{0k}$ is the constant term, and $\beta_k$ is the regression coefficient vector in the $k^{th}$ logit. The benefit of using MNL is that it models the odds of each category relative to a baseline category as a function of covariates. The parameter and the standard error estimates, simultaneously satisfying $K$ multinomial logits can be estimated using the maximum likelihood estimation method. (Dolgun & Saracbasi 2014)
Table 6.6 Dependent and independent variables used in the multinomial regression model

<table>
<thead>
<tr>
<th>Dependent variable</th>
<th>Categories</th>
</tr>
</thead>
<tbody>
<tr>
<td>Occupational Outcome</td>
<td>employed as a physician <em>(baseline category)</em></td>
</tr>
<tr>
<td></td>
<td>employed in another high-skilled profession</td>
</tr>
<tr>
<td></td>
<td>employed in a low-skilled profession</td>
</tr>
<tr>
<td></td>
<td>not in the labor force</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Independent variables</th>
<th>Categories</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gender</td>
<td>Male <em>(baseline category)</em></td>
</tr>
<tr>
<td></td>
<td>Female</td>
</tr>
<tr>
<td>Age (years)</td>
<td>28-34 <em>(baseline category)</em></td>
</tr>
<tr>
<td></td>
<td>35-44</td>
</tr>
<tr>
<td></td>
<td>45-60</td>
</tr>
<tr>
<td>Year of Arrival (in Australia)</td>
<td>1990-1994 <em>(baseline category)</em></td>
</tr>
<tr>
<td></td>
<td>1995-1999</td>
</tr>
<tr>
<td></td>
<td>2000-2004</td>
</tr>
<tr>
<td></td>
<td>2005-2011</td>
</tr>
<tr>
<td>Years of experience in Australia (years)</td>
<td>&lt;5 <em>(baseline category)</em></td>
</tr>
<tr>
<td></td>
<td>5-9</td>
</tr>
<tr>
<td></td>
<td>10-14</td>
</tr>
<tr>
<td></td>
<td>≥ 15</td>
</tr>
<tr>
<td>Life stage at arrival</td>
<td>Adult <em>(baseline category)</em></td>
</tr>
<tr>
<td></td>
<td>Child</td>
</tr>
<tr>
<td>Country of Birth</td>
<td>Australia <em>(baseline category)</em></td>
</tr>
<tr>
<td></td>
<td>Chinese Asia*</td>
</tr>
<tr>
<td></td>
<td>Eastern Europe</td>
</tr>
<tr>
<td></td>
<td>India</td>
</tr>
<tr>
<td></td>
<td>New Zealand</td>
</tr>
<tr>
<td></td>
<td>North Africa &amp; Middle East</td>
</tr>
<tr>
<td></td>
<td>North America*</td>
</tr>
<tr>
<td></td>
<td>Northwest Europe**</td>
</tr>
<tr>
<td></td>
<td>sub-Saharan Africa</td>
</tr>
<tr>
<td></td>
<td>South Africa</td>
</tr>
<tr>
<td></td>
<td>Southeast Asia</td>
</tr>
<tr>
<td></td>
<td>South-Central Asia*</td>
</tr>
<tr>
<td></td>
<td>Southern Europe</td>
</tr>
<tr>
<td></td>
<td>UK &amp; Ireland</td>
</tr>
<tr>
<td></td>
<td>South-Central America</td>
</tr>
<tr>
<td></td>
<td>Others</td>
</tr>
<tr>
<td>English Language Ability</td>
<td>Native speaker <em>(baseline category)</em></td>
</tr>
<tr>
<td></td>
<td>Very Well or well</td>
</tr>
<tr>
<td></td>
<td>Not well or not at all</td>
</tr>
</tbody>
</table>

*Includes China, Hong Kong, Macau, Mongolia & Taiwan; **Includes Bermuda, Canada, St Pierre and Miquelon, United States; **Excludes UK & Ireland; ^ Excludes India

In my model, the key dependent variable \( Y \) represents the four possible occupational
outcomes (k) - (i) employed as a physician, (ii) employed in another high-skilled profession, (iii) employed in a low-skilled profession and (iv) not in the labor force. I specified ‘employed as a physician’ as the baseline category in the model. Table 6.6 explains the coding scheme adopted for the independent variables and the dependent variable that were used to conduct the analysis in STATA Version 13 statistical program.

The results of the MNL model are discussed below.

**Empirical results**

International medical graduates in Australia are a highly heterogeneous group of individuals with widely varying characteristics. My analysis demonstrates that these characteristics can have a significant effect on their likelihood of finding employment in their chosen profession, in particular within the first five years of arrival. Seven observations stand out, which are discussed in the following subsections. (Table 6.7)

**Gender**

Medicine has traditionally been considered a male-dominated profession but a consistent and steep growth in female workforce participation has been documented. For instance in Australia, the proportion of females in the medical workforce was 19% in 1981 (Joyce & McNeil 2006) and is projected to increase to 42% by 2025 (Health Workforce Australia 2012), which is consistent with global trends. My analysis shows that whilst a comparable proportion of the medical graduates born overseas are females, they are at a significant disadvantage in the labor market compared to the males and are less likely to find commensurate employment. They are more likely to work in other high-skilled (OR = 1.51)
or low-skilled (OR = 1.63) professionals. Importantly, they have a four times higher likelihood of being unemployed (p = <0.001). Although these findings can be interpreted as gendered institutional processes in the form of policies and practices, professional accreditation systems and employers’ preferences (Feliciano & Rumbaut 2005), it could also be an indication of women's inability to gain accreditation as a result of their familial responsibilities or a decision to defer the process, which relatively affluent women may be empowered to make. (Iredale 2005) In addition, it is also known that a large number of professional women do not enter through labor market channels but as dependents of principal applicants and family migrants and may not have the required skills to relicense. (Kofman 2003) I also find that there are sharp differences in the employment outcomes depending on the country of birth – more than one-in-five of the female IMGs from Asia24, North Africa25 and Middle East26 are unemployed (data not shown).

Gender differences in participation constitute an important point of attention, as it can have a negative effect on migrant women’s well-being and future prospects. Given the important role that women play in household provisioning, it can also have negative repercussions on their families. (Entzinger & Biezeveld 2002; Benería et al. 2012; Fernando et al. 2013) The low participation of women in my sample calls for additional research, as it may be an expression of the challenges that female IMGs face. It also raises important policy questions.

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24 Includes Chinese Asia (China, Hong Kong, Macau, Mongolia & Taiwan), South-East Asia (Burma, Cambodia, Laos, Thailand, Vietnam, Brunei Darussalam, Indonesia, Malaysia, Philippines, Singapore, Timor-Leste), South Asia (Bangladesh, Bhutan, Maldives, Nepal, Pakistan, Sri Lanka), Central Asia (Afghanistan, Armenia, Azerbaijan, Georgia, Kazakhstan, Kyrgyzstan, Tajikistan, Turkmenistan, Uzbekistan)

25 Includes Algeria, Egypt, Libya, Morocco, Sudan, Tunisia, Western Sahara, South Sudan

26 Includes Bahrain, Gaza Strip and West Bank, Iran, Iraq, Israel, Jordan, Kuwait, Lebanon, Oman, Qatar, Saudi Arabia, Syria, UAE, Yemen, Turkey
about the potential role of an active labor market policy, antidiscriminatory measures, and other interventions to deal with occupational segregation. (Del Río & Alonso-Villar 2012) While it is beyond the scope of this PhD thesis, these are important issues that need further investigation.

**Age**

The age at migration can have a dual effect on an immigrant’s occupational outcome in the destination country. (Portes 1981) Although it can be intuitively argued that higher years of experience will increase the likelihood of working in one’s chosen profession, previous studies have reported that work experience accumulated prior to immigration is neither readily accepted nor effectively utilized in the host economy. (Chiswick & Miller 2008; Reitz 2005) Alternately, increasing age may be a disadvantage either due to age-related discrimination or immigrants’ inability to adjust to the labor market needs. The latter is particularly pertinent for regulated professions such as medicine, as IMGs have to undergo examinations and licensing procedures before they are able to practice. It has previously been reported that older candidates find it harder to pass the licensing exams as compared to the younger graduates. (Hawthorne et al. 2007a) These factors are likely to place older IMGs at a disadvantage. My findings are consistent with these assumptions and indicate that a higher age at migration significantly reduces the likelihood of working as a physician. IMGs in the age category 45-60 years have approximately 1.5 times odds of working in either other high- or low-skilled professions.
Table 6.7 Multinomial logistic regression results for occupational outcomes

<table>
<thead>
<tr>
<th>Variables</th>
<th>Working in other high skilled professions</th>
<th>Working in low skilled professions</th>
<th>Not in the labor force</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>OR</td>
<td>P-value</td>
<td>OR</td>
</tr>
<tr>
<td>Gender</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Females</td>
<td>1.51</td>
<td>0.000</td>
<td>1.63</td>
</tr>
<tr>
<td>Age group</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>35-44 years</td>
<td>1.45</td>
<td>0.000</td>
<td>1.21</td>
</tr>
<tr>
<td>45-60 years</td>
<td>1.66</td>
<td>0.000</td>
<td>1.44</td>
</tr>
<tr>
<td>Year of Arrival in Australia</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1995-1999</td>
<td>2.16</td>
<td>0.001</td>
<td>1.63</td>
</tr>
<tr>
<td>2000-2004</td>
<td>1.97</td>
<td>0.003</td>
<td>1.42</td>
</tr>
<tr>
<td>2005-2011</td>
<td>2.39</td>
<td>0.000</td>
<td>1.53</td>
</tr>
<tr>
<td>Years of experience in destination country</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5-9 years</td>
<td>0.96</td>
<td>0.584</td>
<td>0.57</td>
</tr>
<tr>
<td>10-14 years</td>
<td>0.94</td>
<td>0.495</td>
<td>0.54</td>
</tr>
<tr>
<td>≥ 15 years</td>
<td>1.07</td>
<td>0.443</td>
<td>0.52</td>
</tr>
<tr>
<td>Life stage at arrival</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Child migrant</td>
<td>0.44</td>
<td>0.000</td>
<td>0.22</td>
</tr>
<tr>
<td>Country of Birth**</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Chinese Asia³</td>
<td>3.49</td>
<td>0.000</td>
<td>9.84</td>
</tr>
<tr>
<td>Eastern Europe</td>
<td>1.44</td>
<td>0.122</td>
<td>3.22</td>
</tr>
<tr>
<td>India</td>
<td>0.37</td>
<td>0.000</td>
<td>1.07</td>
</tr>
<tr>
<td>New Zealand</td>
<td>0.60</td>
<td>0.038</td>
<td>1.06</td>
</tr>
<tr>
<td>North Africa &amp; Middle East</td>
<td>0.39</td>
<td>0.000</td>
<td>1.64</td>
</tr>
<tr>
<td>North America</td>
<td>0.89</td>
<td>0.644</td>
<td>1.39</td>
</tr>
<tr>
<td>Northwest Europe##</td>
<td>0.71</td>
<td>0.157</td>
<td>0.45</td>
</tr>
<tr>
<td>sub-Saharan Africa ^</td>
<td>0.38</td>
<td>0.000</td>
<td>0.99</td>
</tr>
<tr>
<td>South Africa</td>
<td>0.38</td>
<td>0.000</td>
<td>0.28</td>
</tr>
<tr>
<td>Southeast Asia</td>
<td>0.46</td>
<td>0.000</td>
<td>1.87</td>
</tr>
<tr>
<td>South-Central Asia</td>
<td>0.33</td>
<td>0.000</td>
<td>2.05</td>
</tr>
<tr>
<td>Southern Europe</td>
<td>0.89</td>
<td>0.693</td>
<td>2.11</td>
</tr>
<tr>
<td>UK &amp; Ireland</td>
<td>0.43</td>
<td>0.000</td>
<td>0.63</td>
</tr>
<tr>
<td>South-Central America</td>
<td>0.58</td>
<td>0.072</td>
<td>3.75</td>
</tr>
<tr>
<td>English Language Ability</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Very Well or well</td>
<td>1.16</td>
<td>0.019</td>
<td>1.82</td>
</tr>
<tr>
<td>Not well or not at all</td>
<td>4.30</td>
<td>0.000</td>
<td>28.50</td>
</tr>
</tbody>
</table>

³ Includes China, Hong Kong, Macau, Mongolia and Taiwan; ## Excludes UK & Ireland; ^ Excludes South Africa; **Country of Birth category "Others' dropped due to collinearity
Life Stage at Arrival

Child immigrants (Portes & Rivas 2011) and international students (Hawthorne et al. 2004) by virtue of their training in the destination country and a relatively longer period of adaptation have the advantage of preparing themselves to become productive and successful in labor market. In contrast, adult immigrants have to negotiate the challenges associated with transferability of foreign qualifications, lack of destination country work experience, limited social support and time spent in resettlement activities. (Suto 2009) My model prediction supports this hypothesis. I find that compared to adult migrants, child migrants have a significantly lower odds of either working in a low-skilled profession (OR 0.22, p<0.001) or being unemployed (OR 0.76, p=0.012).

Timing of Arrival

The labor market organization and structure in the destination country along with the policy context can play an important role in shaping the immigrants’ level of integration. (Reitz 2003) Given the dynamic nature of the labor market and policies, the timing of arrival can significantly influence the likelihood of finding employment in their profession of training. In my analysis, I find that the employment success of IMGs vary depending on the arrival cohort. The likelihood of being underemployed or unemployed is significantly high for arrivals in the periods 1995-99 (OR 3.02, p<0.001) and 2005-2011 (OR 5.99, p<0.01). In general, these findings are consistent with the policy environment and labor market situation in Australia at these junctures. The medical workforce policies in the 1990s were directed at restricting immigration and entry into practice. In fact, the true impact of these restrictive policies on the occupational outcome of IMGs may have been attenuated by the concurrent growth in employer nominated recruitment. Interestingly, for the most recent cohort (2005-
11), whilst it was expected that exponential growth in 457 temporary visa recruitment (refer to Table 6.1) to pre-arranged work would have improved the occupational outcomes, the model predicts a high probability of being underemployed or unemployed. This probably mirrors changes in the immigration policy, as bonus points given to physicians under the points system allowed unfiltered movement of individuals with a relatively low rate of relicensing. (See Figure 6.1) Another explanation is that the Census data includes all overseas born persons (regardless of their visa status) as long as they meet the definition of a resident. It is likely that a sizeable number of IMGs may have entered as dependents of principal applicants and are currently not participating in the labor market. For instance, it has been estimated that between 2004 and 2009, 1,104 IMGs entered as spouses of GSM applicants. (Hawthorne 2012) Further, the census primarily focuses on permanent resident IMGs hence most IMGs under

As expected, during this period a higher proportion of IMGs from countries such as the UK, Ireland, New Zealand and South Africa were working as physicians (as discussed in Chapter IV & V of this PhD thesis, the first three countries benefit from privileges granted under the Competent Authority Pathway to registration).

Country of Origin

Multinomial logistic regression can be used to predict the probability of categorical outcome of the dependent variable based on multiple independent variables. The outputs of my model indicate that a medical degree holder born in Australia, and assumed to have trained in an Australian institution would have an 87% predicted probability of working as a physician. Taking all other variables into account, their overseas trained counterparts trained in South Africa, United Kingdom, New Zealand and sub-Saharan Africa would also have
very good chances, estimated at 89%, 86%, 85% and 83% respectively. In contrast, IMGs from countries in Asia, especially Chinese Asia or in Eastern Europe have the lowest hypothetical chances (38% and 58% respectively) of being employed as a physician (Figure 6.2) From my findings it is apparent that the differences in the outcomes are more pronounced for IMGs who have completed their medical training in non-Western settings and are likely to face difficulties in meeting the pre-registration assessment requirements such as English language standards. (Hawthorne et al. 2007) It is also possible that these differences in the employment probabilities due to inherent to source country characteristics (education and health system standards) that may have affected the immigrant’s training and work experience.

**Figure 6.2 Predicted probability of finding an occupation as a physician as per country of origin**
Nevertheless, the findings do suggest that the differences in the occupational outcomes between the native and IMGs are probably related to re-accreditation requirements.

My finding on the differences in employment outcomes based on the country of origin is possibly also an indication of the potential entry routes used by the IMG. For example, given the employer’s preference for IMGs from Northern Europe and America, (Louis et al. 2010) it is likely that a substantially higher proportion of them may have entered on the 457 temporary visa category to direct employment opportunities. In contrast, IMGs from some of the countries of origin may have entered Australia on family reunion, dependent of principal applicants and refugee categories (identified as common routes of entry for immigrants from countries in Asia, East Europe and Africa).

**English Language Ability**

Language proficiency has important effects on the employment probabilities of non-English speaking background immigrants. (Dustmann & Fabbri 2003; Kossoudji 1988) My model predicts that the likelihood of not working in their profession is significantly higher for non-native English speakers. Further, the probability of working in a low-skilled profession or being unemployed increases sharply for individuals who have poor command of the language. (OR 28.50, p<0.001 & OR 55.35, p<0.001, respectively) This is obvious as in Australia fluency in English is a requirement for medical recertification.\(^{27}\) It has been reported that in 2011, the overall pass rate in the Occupational English Test (OET) for IMGs was only 52% and the failure rates are higher for IMGs from southeast and central

\(^{27}\) The Medical Boards of Australia has established English language standards (current standards are IELTS Academic module score of at least 7 in all modules or OET grade of at least B) that medical degree holders have to meet to be eligible for registration.
Asia. (Hawthorne & To 2013) Thus, poor English language ability is not only a barrier to medical practice but presumably also reduces the ability of the individual to secure other high skilled professions. Moreover, lack of proficiency in English can be a proxy for medical training in non-Western settings, which we have found to be associated with poor labor market outcomes.

**Destination Country Experience**

Previous scholarships (OECD 2012; Chiswick 1978; Carliner 1980; Kerr & Kerr 2011) have reported that in the early settlement period, immigrants underperform natives in terms of wages, employment rates, or both. The gap decreases following a period of assimilation, but typically persists even after a long period of stay – especially as far as unemployment is concerned. (OECD 2012) In line with these reports, I find that in the initial years IMGs have a 1.5 time odds of working in a low-skilled profession or being unemployed (p<0.001), which decreases significantly after the fifth year.

*In summary*, my model output indicates that a number of characteristics affect the transferability and utilization of IMGs’ skills. Considering the high level of training of a medical graduate, it would be assumed that if individuals were unable to find employment in their profession of choice, they would still have the human capital needed to find employment in another high-skilled occupation. However, this does not appear to be the case. My findings demonstrate that IMGs with certain characteristics are at a clear disadvantage and need support to meet the re-accreditation and labor market standards of the destination country.
Conclusion

Inquiry into the performance of immigrants in the destination country labor market has preoccupied scholars in recent years. However, there is limited empirical research on the labor market outcomes of IMGs. Considering the shortages in the global medical workforce, it is of interest to know how IMGs have fared in the destination labor market. It is anticipated that lack of recognition of foreign credentials and work experiences is potentially a serious problem.

Using data from the 2011 Australian Census, I was able to demonstrate that over the years policy changes have been successful in ensuring increases entry of IMGs to meet domestic market demands, however underutilization of their skills is an important issue. My analysis confirms that IMGs are significantly less likely to find employment in occupations commensurate with their professional training, especially in the early settlement period. The probability of being employed as a physician is lowest for IMGs from non-English speaking background countries in Asia and Eastern Europe. In addition, the female IMGs are at a significant disadvantage in the destination labor market. It is likely that the observed differentials in the occupational outcomes are related to re-accreditation requirements. These findings are consistent with reports that stress that re-accreditation requirements are important factors mediating the labor market integration of the overseas-trained professionals. (Baker & Benjamin 1994; Hawthorne 2013)

My findings represent a cause for concern in terms of Australian immigration policy's capacity to select medical graduates who will find employment in jobs that are suited to their
skill levels. It also raises the debate regarding the availability of integration programs and the type of integration measures that are being or should be provided. In a dynamic global environment, where skill shortages in labor market will continue to be met by overseas recruitment, governments will have to think carefully about how they engage and select from the global talent pool. Highly skilled immigrants such as medical graduates have made deep and often extensive investments in developing their human capital and underutilization of their skills should be considered as an inexplicable loss.

Having said that, it is understood that there are differing views on the role of the destination in facilitating the assimilation and integration of immigrants in host societies. (Reitz 2002; Ager & Strang 2008) It has been argued that if immigration is predominantly supply-driven then the responsibility lies with immigrants to self-select based on the host labor market demands in order to achieve favourable outcomes. In contrast, if immigration is demand-driven then the host societies have a larger role in institutionalizing integration measures.

In a global economy, the mobility of professionals is bound to increase. In this context, integration has to be considered as a two-way process – role for both immigrants and host societies. On the one hand, it is the responsibility of migrants to make a calculated decision based on their understanding of the challenges and barriers in the host labor market. On the other hand, it is the responsibility of the host society to maximize their full participation in the economic, social, cultural and political life of the country. Finding the right balance between the two roles is and will remain a challenge.
CHAPTER VII. THE CHALLENGE OF MAINTAINING THE MEDICAL WORKFORCE: LESSONS FROM THE NEW ZEALAND CASE

Background

The health care system depends heavily on the commitment and skills of its human resources. (JLI 2004; Narasimhan et al. 2004) Despite consistent investment in health workforce development since the 1990s, in most OECD countries, the efficiency and effectiveness of the workforce continues to face a spectrum of challenges, including shortages and distribution issues. (JLI 2004; OECD 2008; Robinson & Clark 2008) Although precise quantification is difficult, many outer metropolitan, rural and remote areas in these countries suffer acute shortages of doctors. Whilst substantial emphasis has been put on domestic training as a solution, the high rates of medical expenditure have meant that policy concerns have often shifted between equity and efficiency issues. (Rushing 1985; Barnett 1991)

As equity concerns are laden with political overtones, (Bambra et al. 2005) whenever shortages in the medical workforce have emerged, countries have relied on, and encouraged overseas recruitment to augment the national workforce pool. The strategies used to attract international medical graduates (IMGs) have ranged from active (Buchan et al. 2004) [e.g. targeted recruitment (Willetts & Martineau 2004) or overseas recruitment excursions (Health Workforce Australia 2012)] to passive (Buchan et al. 2004) [e.g. changes in the regulatory frameworks or immigration policies] (Pond & McPake 2006) measures. (Please refer to Chapters IV & V for a detailed discussion on the Australian case study)
In the past two to three decades, many OECD countries have witnessed rapid increases in the proportion of IMGs working within their health systems. In these countries, IMGs now form one-fourth to more than one-third of the medical workforce (OECD 2008; Hann et al. 2008; Thompson et al. 2009; House of Representatives Standing Committee on Health and Ageing 2012) indicating a growing reliance rather than a decreasing dependence, as advocated by the Global Code on the International Recruitment of Health Personnel (2010). (Taylor et al. 2011) International recruitment remains an attractive option, as besides averting the cost of training, it provides a quick-fix solution to address shortages in the short-to-medium term. (OECD 2008) Furthermore, immigrant doctors can be obliged (for example, as a condition of visa entry) to work in areas of shortages to redress distribution issues. (House of Representatives Standing Committee on Health and Ageing 2012; Mueller et al. 2002)

The growing dependence on IMGs has been viewed as contentious not only because of the humanitarian and ethical dimensions of the permanent departures on source countries, but also because it circumvents core systemic issues affecting destination country national workforces. Recent reports have also questioned the sustainability of this approach in a competitive global labor market wherein countries that offer the greatest chance for advancement tend to attract the most talent. (Buchan 2011; Dussault & Franceschini 2006; Chen et al. 2004) Furthermore, given the current demand in OECD countries for experienced medical staff from English-speaking countries, the highly mobile nature of the workforce, the danger of turning into a revolving door where the receiving country become the first port of call in the global market has also been described in the literature. (Buchan et al. 2004)
Among OECD countries with high-level of reliance on IMGs, New Zealand is uniquely characterized by both large immigration and emigration of doctors. (OECD 2007) Relative to most other OECD countries, the proportion of migrant doctors in its workforce has consistently increased over the years. (OECD 2007) Despite repeated calls for “self-sufficiency” (Zurn & Dumont 2008), health workforce planning practices have often been fragmentary and focused on short-term responses. (Gorman 2012) Notwithstanding recent efforts to meet the required staffing levels, the density for doctors continues to be lower than the OECD average [in 2011, with 2.64 practicing physicians per 1,000 population, New Zealand was below the OECD average of 3.16] (OECD Library 2013). At the same time, recruitment and retention issues continue to challenge the long-term sustainability of the workforce.

Following the Australian case studies (discussed in Chapters IV, V & VI of this PhD thesis), in this chapter, I present the findings of my review of the medical workforce situation in New Zealand. The findings from New Zealand provide an excellent opportunity to illustrate the challenges that threaten the sustainability of the medical workforce, and provides a lens through its situation and experiences for other countries to learn. This chapter draws on available literature to describe some of important changes that have taken place over the past three decades in New Zealand medical workforce and to discuss them in light of the medical supply situation, especially with respect to IMGs.

**New Zealand Medical Workforce**

New Zealand had around 14,150 practicing doctors in 2013, an increase of 22% since 2005 (11,578). (MCNZ Annual Report 2013 & 2005) This represents an average annual growth of 322 doctors or 3%. IMGs accounted for 43.6% of the medical workforce in 2013, (MCNZ
Annual Report 2013) up from 38% in 2005. (New Zealand Medical Workforce in 2005) In rural areas, more than 60% of the workforce was comprised of IMGs. (Foley 2007) In fact, since 2001, IMGs have consistently constituted more than 75% of new medical registrants entering the workforce annually. The extraordinary reliance on IMGs has been linked to a number of factors that contributed to New Zealand’s underinvestment in its health workforce. (Ministry of Health 2008)

Workforce planning in New Zealand has had a chequered history in the past three decades. The initial efforts to plan the health workforce started in the 1980s under the Labour government, which recognized the need for a national framework to encourage integrated workforce development. These efforts were however were discontinued in the early 1990s under the National government, which favored structural reforms along market model lines. Its preference for market-based solutions compared to centralized workforce planning led to the dissolution of the workforce planning structures and processes that had been established in the Department of Health. In place, in 1995, the Clinical Training Agency (CTA) was established to purchase post-entry clinical training of the health workforce. By mid-1990s the failure of the market-based reforms to address workforce issues became apparent. Consequent efforts under the National/New Zealand First coalition government were directed towards newer approaches to workforce planning. This led to the establishment of the Committee Advising on Professional Education (CAPE) in 1996 to inform policy directions for the education of the health workforce. In 1998, the CAPE recommended the setting-up of an agency to oversee medical workforce planning, however the proposition was

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28 Calculated based on Medical Council of New Zealand data
rejected. The same year CAPE was discontinued and its functions were taken over by the Ministry of Health.

In 2001, the Labour/Alliance coalition government introduced a number of overarching workforce strategies to guide the health and disability sector. Under the New Zealand Public Health and Disability Act (2000), 21 District Health Boards were established as local organizations responsible for the purchasing and provision of health and disability support services at a local level. (New Zealand Health System Reforms 2009) To provide strategic advice to the Minister of Health on the complex needs of the health workforce, the Health Workforce Advisory Committee (HWAC) was established in 2001. In 2003, HWAC convened a Medical Reference Group (MRG) to inform policies on the education and deployment of doctors. (Ministry of Health 2001)

In 2005, the Ministry of Health commissioned the New Zealand Institute of Economic Research (a for-profit consulting firm) to estimate the impact of population ageing on the future demand for health services. Their analysis predicted that between 40% and 70% more health workers would be needed by 2021 to maintain the then current health service levels. (New Zealand Institute of Economic Research 2004) Although this prediction has since been criticized for its incorrect assumptions such as stable worker productivity, (Gorman 2012) the report clearly indicated the need for having a health workforce policy to address future challenges.

In 2006, HWAC was disestablished and replaced by a Workforce Taskforce. In 2007, in response to a Workforce Taskforce recommendation, the Minister of Health and the Minister for Tertiary Education established the Medical Training Board (MTB), to oversee medical education and training. (Medical Training Board 2009) The Board advocated in favor of a self-sufficiency policy and estimated that an increase of 100 medical school places
by 2012 was necessary to reduce the over-reliance on IMGs. Previous reviews (Health Workforce Advisory Committee 2003; Workforce Taskforce 2007; Training the Medical Workforce 2006 and beyond) had made similar recommendations on the need to increase the domestic training capacity. This had resulted in a raise in the level of the cap on funded undergraduate medical school places for the first time in 2004 (from its previous level of 285 set in 1981). In the past decade, the numbers of medical students have almost doubled from 285 in 2003 to 549 in 2013. (New Zealand Medical Student Association 2011) [Figure 8.1] [Despite this, in 2011, New Zealand had fewer medical graduates than the OECD average – 8 per 100,000 population compared with 10.2] (OECD Library).

**Figure 8.1 Domestic intake Otago and Auckland Medical Schools, 2003 – 2014**

![Graph showing domestic intake Otago and Auckland Medical Schools, 2003 – 2014](Source: New Zealand Medical Students' Association)
The growth in the number of domestic medical graduates did little to improve the dependence on IMGs. In fact, Medical Council of New Zealand (MCNZ) data shows that the number of IMGs practicing in New Zealand was 33% of the practicing workforce in 1985, 34.5% in 2000 and 41.5% in 2011. (Figure 8.2) The data also suggests a rapid diversification in the source countries of the IMGs. While in the past the majority of IMGs came from countries that were considered to have similar training and accreditation systems to New Zealand's, such as Australia, United Kingdom (UK), South Africa or Ireland, more recent arrivals includes graduates from non-English speaking background countries in Asia, Pacific Islands and Eastern Europe. (Table 8.1)

*Figure 8.2 Percentage of International Medical Graduates in the Medical Workforce, 1990 - 2013*

![Percentage of International Medical Graduates in the Medical Workforce, 1990 - 2013](source: Medical Council New Zealand Annual Reports 1990 - 2013)
Table 8.1 Top ten sources of new registrants (Provisional General) - Medical Council of New Zealand, 2005 – 2013

<table>
<thead>
<tr>
<th>Source (No. of graduates)</th>
<th>2005</th>
<th>2010</th>
<th>2013</th>
</tr>
</thead>
<tbody>
<tr>
<td>South Africa (87)</td>
<td></td>
<td>United States (124)</td>
<td>United States (207)</td>
</tr>
<tr>
<td>Scotland (81)</td>
<td></td>
<td>Ireland (64)</td>
<td>Scotland (91)</td>
</tr>
<tr>
<td>United States (54)</td>
<td></td>
<td>Scotland (85)</td>
<td>Ireland (68)</td>
</tr>
<tr>
<td>Ireland (34)</td>
<td></td>
<td>India (40)</td>
<td>India (54)</td>
</tr>
<tr>
<td>India (27)</td>
<td></td>
<td>Wales (33)</td>
<td>Wales (30)</td>
</tr>
<tr>
<td>Germany (19)</td>
<td></td>
<td>Germany (30)</td>
<td>Germany (29)</td>
</tr>
<tr>
<td>Wales (17)</td>
<td></td>
<td>Canada (20)</td>
<td>Canada (26)</td>
</tr>
<tr>
<td>Canada (18)</td>
<td></td>
<td>Sweden (18)</td>
<td>Australia (16)</td>
</tr>
<tr>
<td>Philippines (10)</td>
<td></td>
<td>Pakistan (14)</td>
<td>South Africa (12)</td>
</tr>
</tbody>
</table>


To provide direction to health workforce planning and development, in 2009 under the National Party government, a ministerial taskforce recommendation resulted in the establishment of Health Workforce New Zealand (HWNZ). (Medical Workforce Issues 2011) The agency has also assumed the responsibility for the work of the Clinical Training Agency (now known as Investment Relationships and Purchasing). Although the HWNZ has initiated a range of changes, the efficiency and effectiveness of the health workforce continues to face three formidable challenges, which are recruitment, retention and repatriation. (Health Workforce New Zealand 2011a)
Recruitment of IMGs – Policy settings and pathways

Immigration routes to the medical workforce

Immigration has been integral in shaping New Zealand’s labor workforce. Over the past three decades, the immigration policy has undergone successive changes to respond to the purposes of economic and social needs. The Immigration Policy Review of 1986 symbolized a major shift from the long-standing tradition of favoring immigration from a selected range of mainly European countries to a merit-based points system, similar to those used in Canada and Australia. (Bedford et al. 2001) Under this system, irrespective of their ethnicity, migrants who applied for residence under the General Category and met the points criteria were approved for residence. This gave an automatic right to settle in New Zealand to several hundred professionals, including doctors. Although overseas doctors were eligible for immigration, they were barred from professional registration if their qualification was not recognized under the Medical Practitioners Act (1968). (Trlin et al. 2010) This resulted in a pool of unemployed IMGs, which prompted policy changes in 1995 establishing the requirement for registration of professionals with the appropriate statutory body before they could gain points for their qualifications. (North et al. 1999)

Over the next few years the immigration policies shifted from the passive acceptance of residence applications to the active selection of skilled migrants. Two main pathways emerged from 2003 onwards. The first was the permanent skilled migrant category (SMC) that included a two-stage process i.e. qualification under the points system (points are granted for age, experience, employability and qualifications) and submission of an Expression of Interest. Bonus points are given for recognized qualifications and
qualifications in an area of absolute skills shortage (Long Term Skill Shortage List), which includes almost all health occupations. (www.immigration.govt.nz)

The second was a process of transitioning from temporary permits for work and study to permanent residence. There are two main types of ‘Work to Residence’ visas (Long Term Skill Shortage and Accredited Employer). Health professionals are eligible to apply for both types and after working in the job for at least 24 months, can apply for a resident visa. Another route of entry is the “Working holiday visas” available to young people from select countries, usually aged 18-30 years. Health professionals qualifying in this category can work in New Zealand for up to 12 months (23 months in case of the UK). (www.immigration.govt.nz)

Besides these, the Family Sponsored and International Humanitarian routes continued to remain potential pathways for health professionals to enter New Zealand.

Unlike Australia (OECD 2008), there is no specific immigration policy for health professionals. However, the inclusion of health professionals in the Long Term Skill Shortage List and recognition of qualification from competent health authorities approved by the Medical Council of New Zealand (New Zealand Gazette 2010) makes it relatively easy for doctors to immigrate to New Zealand via the permanent and temporary routes. The introduction of temporary routes has provided the employers the upper hand in recruitment of skills they need and is increasingly being used. (Table 8.2) While this has provided employers with an easy access to offshore skills to meet domestic labor market demands, it
can mainly be viewed as a short-term measure (considering the high remigration rate amongst IMGs) and has enhanced the volatility of the health workforce.

**Table 8.2 Visas granted to medical professionals under the permanent and temporary routes, 2007 - 2013**

<table>
<thead>
<tr>
<th>Skilled Migration Category</th>
<th>2007-08</th>
<th>2008-09</th>
<th>2009-10</th>
<th>2010-11</th>
<th>2011-12</th>
<th>2012-13</th>
</tr>
</thead>
<tbody>
<tr>
<td>Permanent Migration (Resident Visa)</td>
<td>77</td>
<td>288</td>
<td>304</td>
<td>292</td>
<td>283</td>
<td>225</td>
</tr>
<tr>
<td>Temporary Migration (Work Applications)</td>
<td>426</td>
<td>1,378</td>
<td>1,458</td>
<td>1,405</td>
<td>1,243</td>
<td>1,158</td>
</tr>
</tbody>
</table>

*Source: Immigration Statistics, New Zealand*

**Registration of immigrant medical workforce**

The Medical Council of New Zealand (MCNZ) is responsible for the registration of doctors. In general the registration requirements depend on the country in which the medical degree was obtained, previous work experience and purpose of the stay. Until the 1990s, graduates of universities in Australia, UK, Canada and South Africa were eligible for full registration. (MCNZ 1996) With the introduction of the Health Practitioners Competence Assurance (HPCA) Act 2003 the number of approved medical schools has been limited to graduates from Australia, UK or Ireland. (As a transitional arrangement, for two years (until September 2006) temporary registration policy for graduates from Canada, South Africa and the United States of America was continued.) (New Zealand Gazette 2004) Graduates from other countries have to meet pre-requisite English-language requirements (overall IELTS score 7.5), followed by a pass in USMLE steps 1 and 2. Furthermore, they also have to pass the New Zealand Registration Examination (NZREX) clinical examination and demonstrate

29 International EnEnglish Language Testing System

30 United States Medical Licensing Examination
work experience of 36 months during the 48 months prior to application, in a health system comparable\textsuperscript{31} to New Zealand.

With an aim to encourage IMGs who have completed accredited training and assessment in countries that are deemed to have similar or comparable health care systems, in 2009, the scopes of practice and prescribed qualifications were revised, and four separate pathways to registration were introduced. These are summarized in \textit{Box 8.1}.

\textit{Box 8.1 Main pathways for general scope registration, 2013}

\begin{itemize}
\item \textbf{NZ AUS Grad Pathway}\newline
\begin{itemize}
\item holds a primary medical degree from a New Zealand or Australian university medical school
\item complete at least four 3-month runs, including (medicine, surgical and two others)
\item complete three consecutive runs immediately prior to applying for registration
\item work for no less than 10 weeks (or 10 weeks full time equivalent) out of each run
\item certify as competent in cardiac life support
\item be recommended for registration in a general scope of practice by the Intern Supervisor.
\end{itemize}
\item \textbf{Competent Authority Pathway}\newline
\begin{itemize}
\item for United Kingdom and Irish graduates
\item have 1 year of general medical experience under the jurisdiction of that same competent authority
\item satisfy the English language policy requirements
\item complete 6 months work within a provisional general scope in New Zealand under the supervision
\item receive two consecutive satisfactory supervision reports for the 6 months of medical practice
\item be recommended for registration within a general scope of practice by the supervisor.
\end{itemize}
\item \textbf{Comparable Health Pathway}\newline
\begin{itemize}
\item Austria, Belgium, Canada, Czech Republic, Denmark, Finland, France, Germany, Greece, Iceland, Israel, Italy, Norway, Singapore, Spain, Sweden, Switzerland, The Netherlands, United States of America
\item work experience in a comparable health system for a minimum of 30 hours per week for at least 3 out of the last 4 years before application
\item satisfy English language policy requirements; and
\item complete 12 months work in New Zealand under supervision
\item receive satisfactory supervision reports for the 9 months of medical practice
\item be recommended for registration within a general scope of practice by the supervisor.
\end{itemize}
\item \textbf{NZ REX Pathway}\newline
\begin{itemize}
\item hold a primary medical qualification listed in the AVICENNA Directory for medicine
\item satisfy the English language policy requirements
\item have passed within the last 5 years the: USMLE Steps 1 and 2 (Clinical Knowledge) or AMC MCQ examination or PLAB test Part 1
\item complete at least four 3-month runs, including (medicine, surgical and two others)
\item work for no less than 10 weeks (or 10 weeks full time equivalent) out of each run
\item be recommended for registration in a general scope of practice by the Intern Supervisor.
\end{itemize}
\end{itemize}

\textit{Source: Medical Council of New Zealand, 2013}

\textsuperscript{31} Australia, United Kingdom, Republic of Ireland, Canada, United States of America, The Netherlands and Germany
To fast-track recruitment from UK and Ireland, the Competent Authority pathway has been designed, which is now the most common route of entry into the medical workforce. (Figure 8.3)

**Figure 8.3 Provisional general registration issued by Medical Council of New Zealand, 2005 – 2013**

*Source: Medical Council New Zealand Annual Reports 2005 – 2013*

**Integration into the medical workforce**

Until the mid-90s, as a result of lack of coordination between New Zealand Qualifications Authority (NZQA) and Immigration, IMGs gained immigration points on account of their medical qualification. (MCNZ 1994) However their qualifications were not considered equivalent to the standards set by the Medical Council to practice in New Zealand. Inability to pass the English and licensing examination resulted in around 650 IMGs languishing in low-paid jobs. (www.stuff.co.nz)
To capitalize on the skills of these underemployed IMGs and to facilitate their integration into the medical workforce, in 1999 the New Zealand government announced a policy that aimed to provide immigrant doctors training and registration in return for accepting remote General Practice positions. (Jobsletter 1999) In 2000, the Ministry of Health provided funding for a bridging program to assist doctors to prepare for the NZREX clinical examination. From 2002 to 2004, 328 doctors were enrolled in the program at a cost of around $60,000 each (excluding tax). (The New Zealand Herald) The program was however discontinued as it failed to achieve the desired results [45% of the participants had not secured employment] (Confederation of Postgraduate Medical Education Councils [CPMEC] 2004) and was replaced by the ‘ready for work’ programs. One such program is the ‘NZREX Preparation Placement Programme’ funded by HWNZ and delivered by Auckland District Health Board’s Clinical Education and Training Unit (CETU). This optional 12-week program is available to IMGs who are already residing in New Zealand and have permanent residence but who have not yet passed the NZREX examination. It helps them prepare for the NZREX clinical examination and also addresses potential issues such as language barriers, cultural differences, and lack of familiarity with the New Zealand hospital system. (NZREX Preparation Programme) This program has been reported to be successful with 96% of the participants securing employment within 3 months. (McMilland 2011)

Furthermore, provisions have also been made to provide supervision to newly registered IMGs, to ensure their safe integration into medical practice in New Zealand. Based on the UK General Medical Council (GMC) model, institutions (District Health Boards) and general practice organizations have been accredited as approved practice setting (APS)
authorized to provide supervision to IMGs. In addition, each employer is required to submit a proposed supervision plan to Council for each IMG.

Via these programs and policy changes, efforts have been directed at recruitment and successful integration of IMGs to enhance the national workforce pool. While these have been successful in attracting IMGs from a diverse range of source countries (as evident from the MCNZ registration data), their retention in the workforce (discussed below) on a long-term basis has remained an insurmountable challenge.

*Retention of medical graduates – A persistent challenge*

Outmigration is a key feature of the New Zealand workforce. The penchant to travel abroad (commonly termed as “overseas experience”) is a usual practice. For instance, in 2011-12, the mean outflow of New Zealanders departing for a minimum of one year was 39,500 more than the number returning after one or more years overseas. Medical professionals are no exception in this respect. According to the MCNZ data, on average, 84% of New Zealand medical graduates (NZMG) are retained 2 years after graduation, the retention rates dropping to between 61-67% in years 8 to 14 after graduation. (New Zealand Medical Workforce in 2011) The retention rates are even lower for IMGs (on average, in the year after initial registration less than 50% remain in New Zealand, declining further to 33% in the third year after registration). These rates have showed little change over the past decade. *(Figure 8.4)*

Amongst both NZMGs and IMGs, the average retention rates are lower for young and recent graduates. In contrast, retention rates were higher for graduates who had obtained
registration within a general or vocational scope. For instance, within the vocational scope of practice, the retention rate after 1 year for NZMGs is just under 90%, and only slightly lower for IMGs. After 2 years, the retention rate for NZMGs stabilizes at just over 90%, while for IMGs it decreases gradually to around 75% after 6 years. (New Zealand Medical Workforce in 2011)

*Figure 8.4 Percentage of medical graduates retained, by post-registration year, 2000-2010*

NZMG (New Zealand Medical graduates); UK (United Kingdom); SSA (Sub-Saharan Africa); Oceania (includes Australia and Pacific Islands); Asia (includes south-east, north-east, southern and central regions); European (north-west, southern and eastern regions, excluding UK)

*Source: The New Zealand Medical Workforce 2011 - Medical Council of New Zealand*

The poor retention rate among IMGs illustrates the short-term pattern of the migration, casting doubts on the role that migration might play to address long-term supply needs.
Amongst IMGs, the retention rates are the lowest for doctors from the Americas and UK, countries that are accorded favorable status during the registration process. On the other hand, graduates from Asia and Africa are comparatively more likely to remain in practice in New Zealand for longer. (New Zealand Medical Workforce in 2011)

Facilitated by the 1973 Trans-Tasman Mutual Recognition Arrangement (TTMRA), Australia remains the main destination country for New Zealand migrants. In 2000, it was estimated that 1,086 New Zealand-born doctors were practicing in Australia, which was slightly less than in 1998 when 12% of the medical workforce in Australia was from New Zealand. (Medical Training Board 2009) Since then the numbers have increased with 2,112 New Zealand doctors practicing in Australia in 2009 (3% of working doctors in Australia obtained their first qualification in New Zealand). These figures are likely to underestimate the importance of out-migration, as they do not include IMGs who had initially registered to practice in New Zealand. In contrast, in 2012, only 347 doctors from Australia had practicing certificates in New Zealand. (Health Workforce Australia 2012) It is anticipated that the mobility to Australia may be furthered by the changes announced to the Health Insurance Amendment (New Zealand Overseas Trained Doctors) Act 2009 that removes the 10-year moratorium on billing Medicare for New Zealand-born and trained doctors working in Australia. (Elkin 2010)

The high professional mobility has not only threatened workforce sustainability but has also challenged workforce planners with a factor of uncertainty. (As shown in Table 8.3, the
The medical workforce lost annually ranges from 5-10%). More specifically, the data suggests that New Zealand is an important country for medical graduates who choose to work in other OECD countries, especially Australia and the UK. The high attrition rate is estimated to cost the country $100 million annually. (Foley 2007)

Table 8.3 Number of doctors lost based on annual registration data

<table>
<thead>
<tr>
<th></th>
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<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Size of the medical workforce</td>
<td>10,732</td>
<td>11,029</td>
<td>11,398</td>
<td>11,854</td>
<td>12,152</td>
<td>12,493</td>
<td>12,644</td>
<td>13,488</td>
<td>13,874</td>
</tr>
<tr>
<td>New registrants - NZMG</td>
<td>316</td>
<td>311</td>
<td>315</td>
<td>296</td>
<td>290</td>
<td>323</td>
<td>348</td>
<td>328</td>
<td>382</td>
</tr>
<tr>
<td>New registrants – IMG</td>
<td>976</td>
<td>1,434</td>
<td>1,270</td>
<td>1,065</td>
<td>1,081</td>
<td>1,141</td>
<td>1,174</td>
<td>1,218</td>
<td>1,270</td>
</tr>
<tr>
<td>Expected size of the medical workforce</td>
<td>12,024</td>
<td>12,774</td>
<td>12,983</td>
<td>13,215</td>
<td>13,523</td>
<td>13,957</td>
<td>14,166</td>
<td>15,034</td>
<td>15,526</td>
</tr>
<tr>
<td>Lost to the medical workforce</td>
<td>-</td>
<td>995</td>
<td>1,376</td>
<td>1,129</td>
<td>1,063</td>
<td>1,030</td>
<td>1,313</td>
<td>678</td>
<td>1,160</td>
</tr>
<tr>
<td>% lost to the medical workforce</td>
<td>-</td>
<td>9%</td>
<td>12%</td>
<td>10%</td>
<td>9%</td>
<td>8%</td>
<td>10%</td>
<td>5%</td>
<td>8%</td>
</tr>
</tbody>
</table>

Source: Medical Council of New Zealand Annual Reports 2004 - 2012

The reasons for the low retention rates are manifold. A recent online survey conducted amongst doctors leaving New Zealand identified the motivational factors for emigration to be training opportunities, higher remuneration, family reasons, improved work conditions and locum opportunities. The survey also established that 50% of the doctors who responded never intended to stay in New Zealand for the long term. (MCNZ 2011) Previous reviews (Ministry of Health & District Health Boards New Zealand Workforce Group 2007; Ministry of Health 2009a; Ministry of Health 2009b) have also highlighted higher wages, especially for junior doctors who have to reimburse their student loan, professional opportunities and the quest for a new lifestyle as the main factors for migration of health professionals.

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32 Calculated based on Medical Council of New Zealand data
To address these concerns and to improve the retention rates in the domestic workforce, new initiatives have been introduced in the past five years. These include:

a. Voluntary Bonding Scheme (VBS) rewards recent graduates working in hard-to-staff communities and specialties with payments against their student loans. Doctors are entitled to receive $10,000 (after tax) for each full year worked. To be eligible for the scheme, the graduate must be working or intending to work in the “hard-to-staff” areas for three to five years. Since it was introduced in 2009 more than 1350 graduates have been confirmed on the scheme. (Health Workforce New Zealand 2011b) A recent review of the Scheme found widespread support amongst stakeholders and participants. (Review of the Voluntary Bonding Scheme 2012) However, preliminary data on doctors has been less encouraging with fewer enrollments (compared to 115 doctors in 2009, only 43 participated in 2012) and high attrition.

b. Advanced Trainee Fellowship for medical registrars was introduced in 2010. It offers a scholarship to cover the costs of training or study in New Zealand or overseas, in return for which the trainee makes a contractual commitment to work in a shortage specialty area in New Zealand after completing their training. (CPMEC 2004)

c. Career Plan for HWNZ-funded trainees: A previous review had identified that the lack of a career pathway for Resident Medical Officers (RMOs) in Post Graduate Year (PGY) 2 and PGY3 as a reason for attrition. To address this, from 2011 all trainees have been provided with a career plan, agreed with their employer. (CPMEC 2004) In addition, four regional postgraduate training hubs have become operational since 2012 to cater to the training needs. (HWNZ Stakeholder Bulletin 2012)
The high emigration rate poses an important challenge for the management of the health workforce in New Zealand. Although strategies have been introduced to address this challenge, there is a need for systematic analyses to disentangle the different factors that encourage emigration so that appropriate policy responses can be identified. Moreover, emigration should also be viewed as an opportunity, if willing emigres can be encouraged to return.

**Repatriation – An untapped opportunity**

The size of the New Zealand diaspora is estimated to be in the range of 700,000 to 1 million, of whom, in 2011, 483,000 were living in Australia. (Migration Trends and Outlook - 2011/2012) Since 1990, the number of New Zealanders who return has averaged approximately 24,000 migrants each year, with minimal annual variations. (Watkins LT) There is a sizeable pool of potential “returnees” and the prospect of harnessing this human capital has attracted attention in recent years. Unfortunately, little is known about who actually returns, or what incentives are effective. Hence at this point, the prospect for return migration of medical professionals remains purely conjectural.

It is however encouraging to note that in a recent online survey amongst emigrating doctors, majority indicated that they intended to return. Although most respondents could not specify the planned length of overseas stay, the survey identified that doctors with primary medical qualifications gained in New Zealand were the more likely to return. (MCNZ 2011) Such findings indicate an opportunity, generating the need for efforts to encourage return by addressing the integration challenges and settlement needs, and by increasing the incentives for return.
Discussion

Given the complex workforce scenario, what are the options available to policymakers and educators in countries such as New Zealand to address future medical workforce needs? The status quo is not an acceptable option. To meet the demand, efforts will have to be channeled towards achieving expansion and sustainability of the workforce. The effectiveness of these efforts will depend on the policy, regulation, funding and the ability to grow and develop the workforce in the required timeframes.

In New Zealand, expansion of the medical workforce is currently being achieved via two main sources: (i) domestic medical graduates, and (ii) overseas trained doctors. However, there are significant issues associated with each source. The New Zealand medical schools have indeed expanded after a long period without growth (between 2004 and 2013, the training capacity has almost doubled). Regardless of the number of domestic graduates, the key factor that determines the subsequent size of the medical workforce is the numbers that remain in the country. Unless their retention is improved, enhanced production will not be able to deliver the number of medical practitioners that NZIER calculated, even in the best case scenario, would be required by 2021 to meet the health demand. The retention strategies introduced with support from HWNZ are the right move but it is still too early to comment on its effectiveness.

Of note, increase in domestic training capacity has not helped reduce the level of reliance on overseas recruitment. In fact, the dependence on overseas supply has consistently increased over time. Currently IMGs make up 41.5% of the medical workforce, indicating an unhealthy dependence on other countries to educate substantial proportions of the workforce. Under the current context, it is obvious that IMGs will continue to constitute at
least 20-25% of the workforce over the next 50 years. Importantly, the high remigration rates amongst these graduates indicate that the costs incurred in competency assessment, registration and enculturation (estimated at $100 million annually) is probably counterproductive. This suggests the need for heightened efforts to improve their retention and to better integrate them into the community. Further, to reduce the volatility of workforce, the country could consider trialing locally adapted version of the 10-year moratorium policy\textsuperscript{33} and Five-Year OTD scaling scheme\textsuperscript{34}, which have been implemented in Australia with some success.

From a long-term perspective, both immigration and emigration in New Zealand appear to have increased confirming its status as a transit destination and threatening the sustainability of the workforce. The introduction of new registration pathways such as competent authority has increased the number of new entrants and provided an opportunity for employers to access offshore skills to meet domestic labor market demand. The competent authority pathway has become the most common route of entry into the medical workforce. Besides this, there has been a tremendous growth in the use of temporary migration routes (three-folds increase between 2007/08 and 2012/13). Given the high remigration rates amongst medical graduates from competent authority countries, it is unclear if these changes have improved the medical workforce pool in totality. Moreover, considering the \textit{laissez-faire}

\textsuperscript{33} Applies to IMGs and foreign graduates of an accredited medical school (FGAMS) and restricts their access to Medicare benefits and requires them to work in a ‘district of workforce shortage’ (DWS) for a minimum period of ten years from the date of their first medical registration.

\textsuperscript{34} The five-year OTD scaling scheme - non-cash incentive offered to IMGs as an opportunity to reduce the 10 year moratorium restriction period if they are prepared to work in locations which are the most difficult to recruit to
policy context, there appears to be a submission to the temporary nature of these arrangements.

The portability of medical qualifications with Australia seems to have increased mobility over time in terms of outflows and has reasserted New Zealand as a transit destination for IMGs intending to join the Australian medical practice. Considering the imbalance of the flows, the bilateral agreement (TTMRA) has been emerged as a threat to the workforce in New Zealand rather than a benefit. (In 2009, while 2,112 New Zealand doctors were working in Australia, there were only 326 Australian doctors with practicing certificates in New Zealand). In order to curtail the magnitude of outflows, it may be in New Zealand’s favor to advocate for changes to the TTMRA more in line with the North American Free Trade Agreement (NAFTA) agreement between United States, Canada and Mexico, for professions in high demand such as physicians. Although, a recent report (MCNZ 2011) has suggested that in case of New Zealand medical graduates some of these departures are temporary in nature, the lack of data on returning health professionals makes it difficult to assess the magnitude of these circulatory flows.

The significance of the return migration still remains largely ignored and under investigated. It may be worthwhile exploring its potential. Indeed, domestic and IMG returnees can be of great value as they not only cancel out the loss of human capital but also bring forth experience, skill and a network of international connections. (Hugo 2004) At present, there

35 Under the non-immigrant NAFTA professional (TN) visa, physicians are limited to teaching and/or research activities. A TN physician cannot be primarily engaged in clinical patient care. This rule applies even if the TN physician obtained his or her medical education in a US medical school. Patient care incidental to teaching/research is permissible. Canadian physicians seeking entry to participate in residencies, internships or direct patient care must use the J-1 or H-1 classification.
is a dearth of empirical knowledge and understanding with respect to return migration, especially as it relates to health professionals. In addition, the need for effective policies to attract back expatriates cannot be overlooked. Since major share of the diaspora resides in Australia, the potential for initiatives under the TTMRA designed with a focus on recruiting back expatriates should be explored.

It is obvious that the ageing population in countries such as New Zealand will create a greater demand for health services. In the absence of policy and political leadership, the dependence on overseas recruitment as a ‘quick-fix’ solution to serve the population will continue. Henceforth, workforce policies will have to focus on finding long-term domestic answers to the workforce problems. In addition to the scale-up of schemes aimed at improving recruitment and retention (such as the VBS and Advanced Training Fellowships in New Zealand), opportunities for workforce flexibility, task shifting and role substitution have to be explored. In New Zealand’s context, it is anticipated that the on-going review of the Health Practitioners Competence Assurance Act 2003, (Health Workforce New Zealand consultations) will result in renegotiation of professional boundaries and create the enabling environment for the realization of these changes.
CHAPTER VIII. THE ROLE OF INTERNATIONAL MEDICAL GRADUATES IN RESOLVING RURAL WORKFORCE SHORTAGES IN DEVELOPED COUNTRIES: A SYSTEMATIC REVIEW OF THE LITERATURE

Introduction

Disenchantment with rural medical practice and consequent shortages in the workforce is a worldwide phenomenon. (OECD 2008; WHO 2010) To manage imbalances in the distribution of the health workforce, developed countries have increasingly used international recruitment as a measure. As discussed in previous chapters of this PhD thesis, key destination countries have either made changes to their immigration policies or offered alternative pathways to licensure to attract international medical graduates. (Table 7.1) In Australia (Skill Shortage List, 2012) and New Zealand (Long-Term Skill Shortage List, 2012) health professionals are placed in the list of skill shortages and granted special points for permanent skilled migration. In Australia, specific areas have been identified as “areas of need” to which IMGs may be recruited, temporarily or permanently, sometimes under conditional registration. (Hawthorne 2007b; Birrell 2004) (Please refer to Chapter IV, V & VII of this PhD thesis for a detailed discussion)

In the US, IMGs completing their graduate medical education under a J-1 visa are required to return to their home country or country of last residence for at least two years before re-entering the US. Under the Conrad 30 Waiver program, this foreign residence requirement can be waived if the physician agrees to practice in an underserved area for at least 3 years. (Crouse 2006; Hagopian 2003) In Canada, a number of provinces have attempted to integrate IMGs into the provincial health care system by granting provisional medical licenses, which enable them to practice with restrictions until requirements for full licensure
are completed. The provisional licensure is often coupled with rural contracts. (Audas 2005; Dumont 2008)

Table 8.1 Recruitment to rural or underserved areas – A comparison of four major destination countries, 2014

<table>
<thead>
<tr>
<th>Policy issue</th>
<th>Australia</th>
<th>Canada</th>
<th>New Zealand</th>
<th>United States</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Immigration &amp; IMGs</strong></td>
<td>Permanent - General Skilled Migration</td>
<td>Permanent - General Skilled Migration</td>
<td>Permanent - General Skilled Migration</td>
<td>Employer based (H1B and J1 visas)</td>
</tr>
<tr>
<td></td>
<td>Temporary – 457 (long stay) business visa; 442 occupational visa (now retired)</td>
<td>Provincially sponsored visas (Provincial Nominee Program)</td>
<td>Work to residence visa – employment offer under Long Term Skill Shortage List Work category</td>
<td>NAFTA – TN visa category</td>
</tr>
<tr>
<td></td>
<td>Trans-Tasman migration</td>
<td>NAFTA (primarily US professionals)</td>
<td>Trans-Tasman migration</td>
<td></td>
</tr>
<tr>
<td><strong>IMG &amp; rural recruitment</strong></td>
<td>10 year moratorium on access to Medicare billing</td>
<td>Provisional licensure with restrictions on practice locations (underserviced areas only)</td>
<td>Provisional licensure with restrictions on practice locations (underserviced areas only)</td>
<td>Conrad State 30 program allows for waiver J-1 visa return-home requirement on the condition that they agree to practice in HPSA or Medically Underserved Area (MUA), and are sponsored by an interested US government agency</td>
</tr>
<tr>
<td></td>
<td>Five-year OTD scheme</td>
<td>Temporary Foreign Worker Program</td>
<td>Essential Skills Work Category</td>
<td></td>
</tr>
<tr>
<td><strong>IMGs - mandated duration of rural practice</strong></td>
<td>Ranges from 5-10 years depending on remoteness of the practice location and ability to earn Royal Australian College of General Practitioners (RACGP) fellowship</td>
<td>Variable depending on satisfactorily completion of the Medical Council of Canada Evaluating (MCCE) Examination</td>
<td>Up to 2 years</td>
<td>Minimum of 3 years</td>
</tr>
</tbody>
</table>

In some countries, non-governmental organizations also play a key role in placing IMGs in rural practice. For instance, in France, recruitment campaigns to bring in doctors from Romania to work in underserved areas for at least five years is conducted by a non-governmental association. (Stilwell 2004) In Australia, the Rural Workforce Agencies (not-
for-profit organizations) in each state facilitate international recruitment to meet workforce shortages in rural areas. (RHWA 2012) In South Africa, the Rural Doctors’ Association (a membership-based network of professionals) runs a Recruitment Project, in collaboration with the Rural Health Initiative, to link overseas doctors and other health care professionals with hospitals in need. (Working in South Africa 2012)

Such efforts to recruit IMGs to rural practices has led to a strong perception that IMGs often locate in rural areas and bear a special burden in improving access to medical services. On the contrary, the extent to which IMGs help ease the need for medical care in rural and underserved areas is not as clear-cut. (Cohen 2006) Several reports have contradicted the importance of IMGs in rural practice. (Barnett 1988; Mick 1999; Wenghofer 2011; Dove 2009) Despite its scale, information on IMGs’ role in rural health remains fragmented from a global standpoint.

In this Chapter of the PhD thesis, I intend to identify, appraise, select and synthesize the research evidence about IMGs as rural health care providers. I systematically review articles on IMGs in rural practice locations, and then critically summarized the findings to identify their role in addressing rural shortages. I also analyze each article to abstract information on the following categories: (i) retention of IMGs in rural areas, and (ii) reasons for their subsequent relocation from rural areas.
Methods

A literature review was conducted of six internet databases: PubMed, MEDLINE, EMBASE, Scopus, Cochrane Library and Google Scholar. In each database, I searched the literature from the earliest date at which records were available. I used the following search terms: foreign medical graduates or international medical graduates or overseas trained doctors or foreign doctors or refugee doctors; rural health services or medically underserved area or non-metropolitan or professional practice location; retention or length of stay or practice duration or relocation; [COUNTRY NAME] health human resources, [COUNTRY NAME] health human resources rural. I combined the search terms with the Boolean operator "and" in order to operationalize the search themes. In addition, I searched the reference lists of all the identified articles.

Selection criteria

Primary articles published in peer-reviewed journals or in grey literature that reported results on IMGs36 in rural practice locations37 in developed countries38 were eligible for inclusion. I only considered articles published in English language and excluded articles that reported on others aspects of IMGs in developed countries. For instance, informative literature regarding the IMGs’ history or general description of IMGs in destination countries were excluded because the aim of the review was to specifically identify their role in addressing rural shortages. Brief reports, commentaries, editorials, news and policy briefs were excluded.

36 For the purposes of the review, IMGs were defined as physicians who had received their medical education outside the country of clinical practice.

37 For purposes of the review, specific definitions of ‘rural’ and ‘retention’ were not formulated. I accepted the range of definitions found in the literature reviewed. The precise definition for these terms differs across the studies reviewed in this article.

38 Based on World Bank List of Economies (July 2012).
After exclusion of 1,172 duplicate records, my searches identified a total of 3,197 articles, 3,099 of which were excluded based on their titles or abstracts. I conducted full-text reviews of the remaining 72 articles and of 26 additional articles identified in reference list. Fifty-three articles were included in the final review. (Figure 8.1)

**Fig. 8.1** Flow diagram of the identification of literature for inclusion in this systematic review
Results

Articles included in the review evaluated three pre-identified domains: IMGs practicing in rural locations (43 articles), retention of IMGs in rural practices (15 articles) and reasons for their relocation from rural area (5 articles). Thirty-one articles were from the US, nine from Canada, nine from New Zealand and four from Australia. The geographic unit of analysis varied with majority of the articles being national in scope (37 articles), the remaining focusing on a specific state or province (16 articles). All the articles were cross-sectional in design, and except three qualitative studies, the rest were based on analyses of secondary databases or surveys. Due to substantial methodological diversity, a narrative synthesis is used to describe the articles and their results.

The definition of “rural” varied between the articles. (Annex 2) In general, ‘rurality’ was defined based on either the census definition or areas that are generally considered as rural within the country context (understood mostly in terms of population size and distance from an urban area). It should be pointed out that other terms somewhat related to “rural” are also used in the literature, such as “remote,” “non-metropolitan,” and “under-serviced area.” While these terms are not identical, there is considerable overlap in meaning in the sense that they all refer to places with a small population and some distance away from a major urban center.

**IMGs and Rural Practice**

The existing literature does not provide a uniform or universal view on the role of IMGs in rural areas. (Annex 3)
**IMGs in rural practice in the US**

Studies have either analyzed the American Medical Association (AMA) physician masterfile or conducted surveys to assess the role of IMGs in rural practice. (Table 7.2) According to US Department of Health and Human Services (DHHS) Report (1995) and articles published subsequently (Mick 1995; Mullan 1995; Mick 1996; Politzer 1998; Mick 2000; Fink 2003; Hart 2005; Morris 2006; Akl 2007; Thompson 2009, Richards 2009; Fordyce 2012), IMGs were no more likely than US medical graduates (USMGs) to practice in rural areas. Based on their review that covered the period between 1981-2001, Hart et al. (2005) report that a decline in the trend of IMGs in rural practice locations. Politzer et al. (1998) report that the growth in the proportion of IMGs had worsened the geographical distributions. In a recent article, Fordyce et al. (2012) conclude that although IMGs constitute a quarter of the total clinically active workforce, less than one-fifth were engaged as rural primary care providers. The authors also report that, compared to osteopathic doctors, the proportion of IMGs decreased with increasing rurality.

In sharp contrast, ten articles (Swearingen 1977; Madison 1981; Baer 1998, Baer 1999; Baer 2001; Randolph 2001; Hagopian 2004; Thompson 2005; Mertz 2007; Phillips 2007) report that IMGs were proportionately more likely than USMGs to practice in rural locations especially in Health Professional Shortage Areas (HPSAs). Baer et al. (1999) report that one in six positions in community health centers in underserved communities would remain

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39 HPSAs may be urban or rural areas, population groups or medical or other public facilities, which have been designated as having a shortage of primary medical care, dental or mental health providers.
unfilled if IMGs were not available. Similarly, Hagopian et al. (2004) conclude that approximately one-fourth of the Critical Access Hospitals were reliant on IMGs.

Articles that have analyzed the interstate differences in the distribution of IMGs report substantial variations, with some states exhibiting greater proportion of IMGs in rural areas. (Madison 1981; Mick 1996; Baer 1998; Mick 1999; Mick 2000) Mick et al. (2000) estimate that 29 of the 44 states have IMG disproportions in their rural counties. These counties were more often located in the West North Central and the East South Central census division regions. Baer et al. (1998) conclude that states such as Mississippi, North Carolina, and Montana had markedly higher percentages of IMGs in rural locations, especially in HPSAs. The distribution of IMGs in rural location may be dependant on the clinical specialization. (Mick 1999; Fink 2003) Thompson et al. (2005) and Terhune et al. (2010) report that general surgeons in the smallest rural areas were significantly more likely to be IMGs.

Studies have also suggested that the ethnicity of an IMG may be a determinant. While a higher proportion of IMGs from sub-Saharan Africa (Hagopian 2004), China - Taiwan, Hongkong (Xierali 2013) and Lebanon (Akl 2007) were reported to be practice in urban areas, IMGs from Asia (Mertz et al. 2007) and Canada (Phillips et al. 2007) were more likely to be involved in direct patient care in rural areas (as compared to USMGs).

**IMGs in rural practice in Canada**

Although articles from Canada were too few to draw any strong generalized inference, Barer (1999) and Thind (2007) report that only about one-fourth of the practitioners outside
census metropolitan areas were IMGs. The authors also report inter-provincial variations in the proportion of IMGs in rural Canada. This was supported by a Canadian Institute for Health Information report (2005) that estimated a higher percentage of IMGs in provinces such as Saskatchewan, Newfoundland and Labrador and Yukon. In contrast, in Ontario, Thind et al. (2007) and Wenghofer et al. (2011) report similar pattern of the distribution amongst IMGs and Canadian medical graduates - the proportion decreasing with increasing rurality. The possibility of differences in distribution on the basis of clinical specialty has also been suggested. Humber et al. (2008) report that two-third of the general practice-surgeons in rural communities were trained overseas.

**IMGs in rural practice in New Zealand**

Nine articles (Barnett 1987; Barnett 1988; Barnett 1992; Barnett 1991; Raymont 2005; Pande 2009; Smith 2009; Lawrenson 2011; Garces-Ozanne 2011) report that although IMGs constitute a high proportion of the rural workforce, their presence in urban areas has been increasing. Articles (Barnett 1987; Barnett 1988; Barnett 1992; Barnett 1991) published prior to 1990s report that IMGs were more likely to practice in rural areas as compared to New Zealand Medical Graduates (NZMG). In contrast, articles published in the past decade report a growth in the proportion of IMGs in urban centers. (Raymont 2005; Pande 2009; Smith 2009) Two articles (Barnett 1988; Pande 2009) report that the pattern of distribution of IMGs differed between the north and south islands. In the north island majority of the IMGs were located in non-metropolitan areas, while in the south island IMGs constituted a larger share of the workforce in the metropolitan and regional city areas. (Barnett 1988)
Garces-Ozanne et al. (2011) conclude that IMGs trained in developed English-speaking countries were more likely to practice in minor urban and rural areas.

Based on the available literature it is difficult to infer conclusively if IMGs help remedy physician shortages in rural areas, as the information is inconsistent. This is partly because of the cross-sectional nature of the studies, as they provide only a snapshot of the composition of the dynamic rural physician workforce. The literature however indicates that in some states and regional locations, IMGs play an important role as rural care providers - their spatial distribution is probably influenced by state or regional preferences, clinical specialty and ethnicity.

Retention of IMGs in rural practice

Fifteen articles (Crouse 2006; Mullan 1995; Pathman 2004; Kahn 2010; Mathews 2007; Mathews 2008; Audas 2009; Mcdonald 2012; Barnett 1988; Barnett 1991; Barnett 1992; Garces-Ozanne 2011; Hawthorne 2003; Carlier 2005; Hans 2006) were identified that analyzed retention of IMGs in rural practices. (Annex 4) In the US, Mullan et al. (1995) report that IMGs filling residency and staff positions in smaller communities remain in the practices till the completion of their training. Thereafter they become "free" to relocate and were as likely to select urban communities as their USMG counterparts. In Washington State, Kahn 2010 report that J-1 waiver physicians remained in underserved areas for a median period of about two years after completion their obligation - almost all choosing to relocate to urban areas. Likewise, in rural Wisconsin, Crouse 2006 report that in spite of the

40 Defined by the authors as IMGs from United Kingdom, Australia, United States, Canada and Ireland.
3-years obligation associated with the J1 waiver program, only one-third of the IMGs completed the period in the assigned communities.

In Australia, Hawthorne et al. (2007a) report that in Victoria only one in six IMGs remain in rural areas for 4-5 years; about half for 2-3 years. Similarly, in south Australia, Carlier 2005 report that only about half the IMGs in rural areas intended to stay in their current practice location for more than five years.

Based on the general tendency to relocate, Han et al. (2006) have described four typologies of IMGs i.e. satellite operators (commute to practice), the ambivalent (unsure about long-term rural settlement), fence-sitters (unable to live away from the city) and the integrated (appreciate rural life and practice).

Barnett (1988) report that in New Zealand although IMGs may initially be forced to locate in rural areas, the turnover was high, with many moving as soon as other practice opportunities become available. The author further describes a “stepwise migration” wherein resident IMGs evidently move up the urban hierarchy, with a slight tendency for the older IMGs to be located in small and medium sized urban places. (Barnett 1991) Garces-Ozanne et al. (2011) report that IMGs were also more likely to migrate internally or internationally compared to NZMGs. (Barnett 1991)

Articles from Canada report that although IMGs make up a large proportion of newly licensed physicians in certain province, relatively few remain in the province one year after earning full licensure. Mathews et al. (2008) report that in Newfoundland and Labrador the median practice time for IMGs was roughly two years. The same authors report that only
about one in five IMGs remain in the province for a period of five years. (Mathews 2007) The majority move to work in urban communities, in particular to urban centers where a larger number of people who share their ethnic background live. (Mathews et al. 2008) The frequent turnover of IMGs has led to the notion that rural practice location provides an entry point for IMGs to practice elsewhere in Canada. In a recent analysis, Mcdonald et al. (2012) report that the magnitude of outflows was substantial and that the retention of IMGs in rural areas and in some provinces continues to be difficult. Large Canadian cities (mainly in Ontario) were likely to be the final destination for IMGs initially recruited to practice in rural provinces.

Overall the literature on retention of IMGs in rural practice is limited, however the available evidence consistently suggests that the turnover rate of IMGs is high. Most IMGs remain in rural communities till the completion of their obligated period of service or completion of licensure requirements, and thereafter mimic the locational patterns of their native counterparts.

**Reasons for relocation**

Six articles (Crouse 2006; Vardy 2006; Mathews et al. 2008; McDonald 2012; Hawthorne 2007a; Hans 2005) were identified that described the reasons for relocation of IMGs from rural areas. (*Annex 5*) These factors can broadly be grouped into two main categories i.e. professional and personal or family. Professional reasons included heavy workload, professional isolation, nature of the clinical work, non-relevance of position to their medical skills, dissatisfaction with quality of training/supervision, lack of access to specialist services,
dissatisfaction with pay and lack of support/time available to pass pre-registration exams. (Hawthorne 2007a; Hans 2005; Mathews 2008; Vardy 2006) Personal or familial factors include opportunities for children’s education, spouse adjustment and opportunities for their spouses to pursue their careers. The importance of spousal characteristics such as education, age, and number of years since immigration has been identified as an important determinant. (McDonald 2012)

Alongside these factors, dissatisfaction with social networks and the desire to live in a community with individuals of a similar cultural background have also been reported as important. Overall, a key predictor influencing the decision to remain in rural practice appears to be the level of integration with the community. (Crouse 2006)

**Discussions**

The relative contribution of IMGs to the medical workforce has long been a topic of research inquiry and policy debate. A prominent issue in these debates is whether IMGs are more likely than their counterparts to contribute to the health care safety net or whether they simply exacerbate physician surplus in urban areas. What is the role of IMGs in the provision of health care in rural settings? In the current review, I tried to appraise and synthesize the research evidence to provide an answer to this question.

I identified 53 articles that met my inclusion criteria, of which the majority reported on the IMG workforce in the US. Although IMGs constitute a significant part of the rural workforce in other developed countries, (Mejía 1972; OECD 2007; Stilwell 2004; Martineau
(OECD 2008) my search did not identify relevant literature from these countries, which is an important observation of the review.

Overall, there is some evidence to suggest that IMGs practice in proportionately greater numbers in rural areas. However, the findings are not consistent to convincingly conclude that IMGs help remedy physician shortages in these settings. Further, the literature suggests substantial inter-country variations in the distribution of IMGs, which are possibly due to differences in the accreditation, licensure and certification requirements as well strategies employed to recruit and place IMGs in rural placements.

The available literature does not properly document the pattern of IMG settlement in rural communities. First, most of the articles are focused on entire the population of rural physicians, aggregating those who had recently moved with those who have been practicing in these locations for several years. Secondly, because the articles do not differentiate between the rural areas, the possibility of combining rural towns with smaller communities cannot be ignored. Finally, although articles were identified that describe the spatial distribution of IMGs most were published more than a decade back. These articles were typically based on cross-sectional data sources such as the AMA Physician Masterfile, which precludes the ability to analyze the reasons for IMGs’ locational decisions.

There is some evidence to suggest that some states or provinces might have a higher proportion of IMGs as rural practitioners. The apparent “gap filling” role at the sub-national level is possible a consequence of policies specifically formulated to recruit IMGs to rural location in certain states/provinces. For instance, in Canada each province has alternate
routes to licensure. In British Columbia or Alberta, IMGs may be granted a provisional licence but are restricted to practice under supervision in an underserviced area or specified community. Likewise, in provinces such as Ontario, Newfoundland and Labrador and Saskatchewan the grant of provisional licence may be conditional on a Return of Service agreement, which can be up to 5 years. In Australia, different incentive schemes have been implemented to attract qualified and experienced IMGs to select rural locations. In Queensland, for instance, this initiative has been introduced as the ‘Docs for the Bush’ program, which provides IMGs support to undergo full registration in return for service in an underserved area for 3-5 years. (Docs for the Bush, 2012)

While the role of these policies and incentives in influencing the distribution of IMGs is apparent, the importance of other factors such as employer preferences for hiring IMGs, demand for generalist/specialist positions and the influence of IMGs’ social and professional networks cannot be discounted. There is some evidence to suggest that clinical speciality and ethnicity of the IMGs have an influence on their practice location.

Besides distribution, retention of IMGs in rural practice locations has been identified as a challenge. The available literature suggests that IMGs can be induced to serve in rural communities for short periods, typically one to five years. (Hawthorne 2007a; Mullan 2005; Crouse 2006; Kahn 2010; Mathews 2008) Thereafter, IMGs relocate primarily to urban areas, especially following the completion of obligatory services or after successfully completion of the licensure requirements. This potentially creates something like a revolving door in many communities, with IMGs staying only long enough till another practice
opportunity becomes available. Such continuous stream of IMGs from rural locations, may create the tendency to exacerbate urban oversupply situations.

The reasons for IMGs’ subsequent relocation can broadly be categorized as either personal or professional circumstances and considerations, or nature of the rural setting. (Crouse 2006; Vardy 2006; Mathews 2008; McDonald 2012; Hawthorne 2007a; Hans 2005) Although it is difficult to ascertain which factor(s) play the dominant role in the decision to relocate, recent studies have highlighted the importance of family considerations, especially the role of the spouse. Further, issues surrounding the integration of IMG and their family into the community have also featured in the literature, in particular in communities with which the IMGs lack ethnic coherence. Several states/provinces have initiated programs that focus on the family, and in particular the integration of the physician’s spouse or the education of their children. For instance, in Alberta (Canada), the Rural Physician Spousal Programming of the Alberta Rural Physician Action Plan facilitates integration of the health worker and their spouse with the community. (Dumont 2008) Similarly, in Australia several rural health workforce agencies have started programs to support families in rural and remote practice sites. For example, the Rural Medical Family Network (RMFN) funded by the New South Wales Rural Doctors Network supports IMG families by creating a 'friendship network' to lessen feelings of loneliness and isolation. (Rural Medical Family Support, 2012) The effectiveness of these programs remains largely undocumented, indicating the need for evaluation research to determine the impact of these social interventions.

In summary, the literature is insufficient to generalize that the role of IMGs in rural practice locations, except in some states or provinces, and in some rural communities. Moreover, the
crosssectional design of the available articles makes it difficult to fully comprehend the changing dynamics of rural workforce.

There is some evidence to suggest that IMGs’ contribution to the rural workforce beyond the years of obligated service or training is limited. However, the published literature is still scant and the findings may not be generalizable.

Relocation from a rural areas is influenced by a range of professional, personal and family factors. While there have been efforts to improve retention in rural locations through the provision of economic incentives, professional development and family support, there isn’t sufficient documentation regarding their impact on retention of IMG.

**Limitations**

This review synthesizes evidence from many published articles to provide an insight on the role of IMGs in the provision of health care in rural settings. There are however some limitations of the review, which should be acknowledged.

It is recognized that searching for primary studies or reports on IMGs practicing in rural areas is challenging. My search strategy was designed to ensure that all relevant articles are identified without generating an unmanageable number of references. Notwithstanding these efforts, the possibility of missing some relevant articles cannot be ruled out, especially since my search was limited to the English language. In addition, since the search was limited to articles that have primarily reported on the role IMGs in rural practice locations, the possibility of missing grey literature with information on distribution of IMGs has to be considered.

Majority of the articles included in the review were cross-sectional in design and were based on secondary databases such as AMA Physician Masterfile. The location details in these
databases are based on the addresses given by the physician, some of which may have been residential rather than work addresses. In addition, the validity of the practice location is contingent on lag time in updating the field in the database. As such the possibility of misclassification in these articles cannot be ruled out and may have, in some instances, over- or understated the numbers and proportions of IMGs practicing in rural locations.

**Conclusion**

Across countries, IMGs are considered to play an important role in providing medical services to some rural communities. However, based on the available evidence, it is difficult to fully substantiate the claim. Articles included in this review suggest that when aggregated at the national level, the findings are somewhat contradictory, with some articles suggesting that IMGs are relatively more likely to practice in rural areas. In general, the level of participation of IMGs in rural practice appears to vary at the sub-national level, with higher proportion of IMGs in some states/provinces. More importantly, while these states or provinces may have been successful in recruiting IMGs to rural practices, they seldom ‘stick’ beyond the periods of obligated service. The decision to relocate is determined by several underlying factors at the personal, professional or contextual level. Over time they, like their native counterparts, disproportionately migrate to urban settings.

These conclusions have to be interpreted in light of the apparent limitations of the available literature. Further research is required to fully understand the complexities and dynamics of rural practice locations.
CHAPTER IX. CONCLUSION

In the past two decades, the growth in health workforce migration has drawn global attention. The chronic worldwide need for some 2.4 million more physicians, nurses and midwives, and for almost two million more pharmacists and other paramedical workers (WHO 2006), have advanced concerns that mobility of the health workforce will continue and intensify in the future.

Currently, it is estimated that there are almost 60 million health workers globally. However, these health workers are unevenly distributed across countries and regions; typically with acute shortages in countries where they are most needed. In both developed and developing countries, changes in the demographic and epidemiological profile have created huge challenges – accentuated by imbalance between increasing demand and faltering supply. (WHO 2013) As described in the chapters of this PhD thesis, such growth in the demand for health workers in key destination countries has spurred migration flows.

In countries such as Australia, Canada, New Zealand, United Kingdom and the United States, overseas-trained health professionals make up a significant share of the health workforce. In these countries, international recruitment is commonly viewed as a short-to-medium term solution to address local needs. As described in Chapters IV, V & VIII, this has led to a growing reliance on immigrant health workers to fill positions across the skill spectrum.
International migration of health workers is a long-standing phenomenon. Despite the growing realization of its impact on the health systems in the migrants’ source countries, in reality, tackling the flows remains an insurmountable challenge. While there have been policy initiatives to address the issue - the most recent being the WHO Global Code of Practice on the International Recruitment of Health Personnel; they have been unable to achieve the desired impact.

The limited effectiveness of these policy initiatives raises the question regarding the role of underlying factors in influencing the dynamics of health workforce migration. Can the existing theories of migration explain the observed trends in flows? What is the overall effect of policies in key destination countries on immigration of health workers? What is the role of different stakeholders in influencing the design of policy instruments in destination countries? This also raises the question regarding the labor market outcomes of immigrant health workers in destination countries and their key determinants? Finally, the growing dependence on international recruitment draws attention to its role in addressing regional disequilibria in key destination countries and the consequent challenges of over-reliance.

In my PhD thesis, titled “Flight of International Medical Graduates - A cross-country comparative study examining key events in the trajectory”, I analyze an unprecedented range of secondary data [Ortega and Peri (1991-2004) immigration database; Medical Brain Drain dataset (1991-2004); Australia Census (2011)] with the aim to examine the above-mentioned research questions, using international medical graduates as an example. I approach the phenomenon of international migration of health workers by exploring and analyzing both the analytical and theoretical aspects - critically appraising the literature and using
comprehensive datasets to undertake sophisticated analyses to identify the drivers, determinants and outcomes.

In *Chapter II* of the PhD thesis, I review the existing migration theories - focusing on the neoclassical theories as well as the more recent ‘pluralist’ views on migration. In the chapter, I elaborate the contours of a conceptual framework for analyzing international migration of health workers within a broader theoretical standpoint by integrating insights from contemporary perspective on migration.

In line with previous scholarship, I report that the existing theories on migration have largely developed in isolation from one another and are limited by the lack of an inter-disciplinary approach. Although contemporary migration theories have adopted a plural view, they have not been successful in fully capturing the multi-layered process. An important barrier is the lack of available data on ‘who’ is moving, ‘where’ and ‘why’. By definition, international migration involves several countries (source, destination and in some contexts transit). Accordingly, a nuanced analysis of the cause and consequences of migration requires internationally comparable data. Beyond numbers, the available official datasets add little value in analyzing the cause, consequence and impact of migration. (Massey 1994; Bilsborrow et al. 1997; Stillman et al. 2007)

Similar limitations have also affected our understanding of factors that determine and drive international migration of health workers. The lack of reliable and internationally comparable data has hampered major research directed at answering questions related to this issue. While the available research literature provides some useful information, it also has several
limitations. One is that, primarily because of data limitations, most research is of case-study design, which reduces their representativeness. Secondly, the available research tends to be predominantly supply rather than demand driven, which does not allow for cross-national comparisons. Finally, much research is qualitative and exploratory in nature, with small sample sizes, making it difficult to generalize the findings.

In the literature, while there is (limited) data on the importance of the macro-contextual economic factors in migration of health workers, very few attempts have been made to draw attention to the role of other determinants such as nation states, geographical proximity, social networks, and cultural and historical factors in creating new and existing migration patterns. Among these, the paucity of analytical literature on the role of states, politics and policies in influencing health professional migration is striking.

Improvements in our understanding of health workforce migration will be contingent to the development of fine-tuned theoretical and analytical approaches that are suitable for investigating the interaction within the migration dynamics. This will depend on the speed with which new evidence is produced to inform the role of the different factors that potentially influence migration decisions.

In an attempt to add to the body of research, in Chapter III of this PhD thesis, I investigate the role of the different factors in driving migratory flows using a comprehensive panel dataset that was constructed from publicly-available, representative cross-national data [Ortega and Peri (1991-2004) immigration database, Medical Brain Drain (1991-2004) database, Ortega & Peri Immigration Policy Index, Occupational Wages around the World
(OWW) database, CEPII Gravity Dataset and Penn World Tables]. Advised by the rich empirical literature on international trade flows, I use a gravity model incorporating unique demographic, political, economic and policy characteristics associated with both the source and destination countries.

In the chapter I report several interesting results. First, I confirm that physician income is positively associated with migration flows. Second, my regression results indicate that geography, demography and culture are significant factors for physician migration. While increase in distance significantly reduces the number of immigrant physicians, sharing a common land border facilitates the process. I find that factors such as destination GDP per capita, population size of source and destination countries, colonial legacy and common language spoken by a sizeable proportion of the population, also have a significant effect. Finally, my results suggest that restrictive immigration policies can significantly reduce physician flows; although magnitude of the effect is modest.

My results reaffirm the multifactorial character of migration - a wide range of factors can influence physician immigration. It also confirms the role of immigration policies in destination countries in orchestrating the flows. While these factors have previously been reported in the literature, empirical research on their significance in driving the migration of health workers has been slight. My model by delivering robust and plausible results clearly demonstrates the importance of these different factors in influencing cross-national migration. Of significance is the role immigration policy in destination countries, which has previously been implied in the literature but not fully analyzed. To further explore the
implication of this finding, as well as to better understand the context, it was important to qualitatively study the effect of immigration policy on the flows.

To examine this, in Chapter IV of the PhD thesis, I use Australia as a case study to systematically analyze the immigration and health workforce policy changes over a period spanning four decades (1970 to 2010). I reviewed key policy documents and analyzed immigration and professional registration data. I find that over the period there have been sequential changes in the policy setting in Australia. In the early 1990s, the dominant perception regarding oversupply in the medical workforce resulted in several policy changes directed at stemming the growth, including restrictions on the entry of IMGs. As a consequence of these policy decision gaps in the supply began to emerge in the late 1990s that led to diametric changes aimed at loosening up of both migration and accreditation policies along with expansion of domestic training numbers.

The findings reported of this chapter illustrate the frequent modulation of the policy settings, with periodic shifts between phases of containment and growth in international recruitment, in a key destination country - Australia. In fact, based on my findings it may not be incorrect to conclude that policy directions and labor market forces in the destination countries are powerful influencers for health workforce mobility (substantiating the findings reported in Chapter III of this PhD thesis). Although the findings are in the context of a single destination country (Australia), they nevertheless suggest that mere voluntary codes for ethical recruitment of health workers (international or domestic) will possibly have limited value. Guidance on ethical behavior is obviously not enough unless this is
accompanied by corresponding changes in the labor market forces and policy in developed countries.

During the course of the review it also became apparent that in countries such as Australia, stakeholders with distinct objectives and mandates have a strong influence in guiding the policy framework. Thus, it was important to identify the main stakeholders and their relative influence in the policy arena.

In Chapter V of this PhD thesis, I use Australia as a case study to explore the role of key stakeholders (internal as well as external to the profession) in influencing changes in professional licensing policies. Based on a comprehensive review of key policy documents and published literature, I conclude that professional practice is no longer defined and controlled solely by the regulatory authorities. The dynamics of the process are determined by the level of political action taken by key groups (the profession, state and employers). Depending on the mandate of these groups, the licensure regimes have either been relaxed or made more stringent. I infer that licensure policies have assumed the dual role of being both arbiters of competence and de facto health workforce planning instruments. Such (frequent) changes in policy and licensure arrangement imply that overseas-trained health professionals have to face uncertainty and inconsistency, which can potentially either preclude them from practicing or force them to discontinue practice. Immigrants who have not been tested in advance for employment attributes or registerability are at a particular disadvantage. (Hawthorne 2013)

To empirically analyze the influence of factors that affect the labor market outcomes of
international medical graduates (IMGs), in Chapter VI of this PhD thesis, I use data from the 2011 Australian Census. Using a multinomial logistic (MNL) regression model, I demonstrate that while there have been consistent increases in the entry of IMGs to meet domestic market demands, underutilization of their skills is an important issue. I find that IMGs are significantly less likely to find employment in occupations commensurate with their professional training, especially in the early settlement period - the probabilities being lowest among females and IMGs from non-English speaking background countries. These findings are consistent with reports that stress that re-accreditation requirements are important factors mediating the labor market integration of the overseas-trained professionals. (Baker & Benjamin 1994; Hawthorne 2013)

A recent study reports that IMGs selected through temporary sponsored pathway (visa subclass 457) as well as those entering under the permanent General Skilled Migration Program have the best labor market outcomes. Consequently, in the past decade, these have become the dominant pathways in Australia. (Hawthorne 2013). As such, the importance of immigration pathways in determining workforce integration highlights the differences between supply and demand-driven flows - the outcomes being lowest for the latter group of arrivals. This raises the debate regarding the availability and provision of integration programs for those who are at a disadvantage in the labor market.

In the academic literature sustainability of the (growing) dependence on overseas-trained health professionals to provide services has been questioned. (Buchan & Sochalski 2004; Clark, Stewart & Clark 2006; Gorman & Brooks 2009) To inform upon, and investigate, in Chapter VII of this PhD thesis, I use New Zealand as a case study to examine the challenges of using international recruitment of health workers, as a measure to address workforce
shortages. Drawing upon the available literature and data, I conclude that in New Zealand reliance on overseas recruitment of migrant doctors has grown steadily. Although New Zealand is not alone (dependency on international recruitment has intensified across OECD nations), its level of reliance is unparalleled. Both the permanent and temporary routes make it relatively easy for IMGs to immigrate in New Zealand. At the same time, New Zealand also has high emigration rates, mainly to other OECD countries. (Zurn & Dumont 2008) Further, repatriation of New Zealand’s health workers is a potential but is currently unharnessed. In New Zealand’s context, international migration poses both an opportunity as well as a challenge for the management of the health workforce.

The country’s struggle to retain the internationally recruited medical workers is indicative of the need for countries to focus on finding long-term domestic answers to the workforce problems. Newer approaches to health workforce policies, beyond ‘quick-fix’ solutions (overseas recruitment), such as opportunities for workforce flexibility, task shifting and role substitution need to be considered.

In the destination countries, it is commonly perceived that immigrant health workers play a ‘gap filling’ or ‘safety net’ role by resolving rural health workforce shortages and expanding health coverage. (Mick 1993; Barnett 1998; Mick, Lee & Wodchis 2000) In the final chapter of this PhD thesis (Chapter VIII) I present the results of my systematic review of the literature, focusing on the key destination countries (Australia, Canada, New Zealand, United Kingdom and the United States). I conclude that the current literature is insufficient to generalize that IMGs provide valuable service in rural areas, except in some rural communities. Further, I find that there are contradictions regarding their contribution to the
rural workforce beyond the years of obligated service or training. My results indicate the need for continued monitoring of IMG flows, especially to rural areas, to understand the changing dynamics of the rural workforce and the role of IMGs in it. The available (limited) literature report a range of professional, personal and family factors that affect retention of IMGs in rural location. Further, while there have been some efforts to improve retention through the provision of economic incentives, professional development and family support – the evidence on their impact is sparse.

In summary, in the different chapters of my PhD thesis I have explored and analyzed aspects of health workforce migration (primarily from a demand-side perspective); beginning with the main drivers of migration to factors in destination countries that determine and modulate these flows, including the challenges associated with the integration and management of the international health workforce.

I consider that my findings add to the existing body of literature on health workforce migration. For instance, there is little structured, cross-national research on the factors that determine and drive international migration of health workers. Further, although there is a growing consensus on the role of policies and labor market conditions in key destination countries on health worker mobility, the empirical evidence to support this is rather slight to date. These findings support the need for better international monitoring and communication about health workforce policy and movements of health professionals across countries - a view that was articulated in the OECD report titled “The looming crisis in the health workforce: How can OECD countries respond?”. (OECD 2008)
My research provides a theoretical framework to health workforce migration; highlighting the role of policies in the key destination countries; and providing empirical evidence on the influence of economic, geographic, demographic, political and cultural factors on migration and integration of IMGs. This potentially advances our understanding of factors that influence and shape health worker mobility – arguably of strong strategic relevance.

**Shortcomings of the analyses**

The analyses presented in the different chapters of this PhD thesis made use of a rich set of characteristics available through publicly-available, representative datasets. However, a major limitation of the analyses is the cross-sectional nature of these datasets. As policies in destination countries change over time - the lack of longitudinal, individual-level data makes it difficult to make accurate estimation of the size of the effect. Also, the datasets used did not capture either the outflows (return/circular migration) or the multi-step process of migration (intermediary or transit destinations). In addition, the data used in Chapter III of the PhD thesis covers a limited period (up to 2004), which does not enable an analysis of the impact of global financial crisis (2008) or adoption of the WHO Global Code of Practice on the International Recruitment of Health Personnel (2010) on health workforce migration patterns. As such, the findings presented in the dissertation have to be interpreted in the light of these limitations.
**Suggested policy implications**

The increases in migration of health workers can partly be explained by the fact that international recruitment is commonly used as a ‘quick fix’ solution to address unanticipated health workforce needs in the destination countries. An important factor limiting our understanding of the dynamic of health workforce migration is the lack of systematic monitoring of migratory flows in both destination and source countries. Improving data availability should be viewed as a key component of broader efforts to improve information on health workforce development and management. The availability and comparability of statistics on international migration of health workers can inform policy debates and facilitate evaluation of policies and programs that have been introduced to affect migration patterns. It can also encourage research and improve our understanding of key aspects of health workforce migration.

Despite the introduction of voluntary codes of practice on international recruitment of health professional, the magnitude of the migratory flows will largely depend on the combination of human resource development and management policies, and immigration policies adopted by destination countries. This needs to be further investigated using more up-to-date, longitudinal, individual-level and cross-comparative data.

Integration of immigrant health professionals in destination countries is another major policy concern. It is apparent that substantial share of the IMGs face various barriers to employment - issues with the professional recognition, language skills, regulatory requirements etc. The employment outcomes are likely to be worse for those arriving
unfiltered (via supply-driven immigration pathways.) It has generally been observed that, over the duration of stay in the destination country, the magnitudes of these barriers diminish. A better understanding of how the different immigration pathways affect employment and wage assimilation will help in designing more relevant policy recommendations.

The observed gender differentials in the labor market outcomes of immigrant health workers - poorer employment outcomes of female IMGs - raises the question on the potential role of an active labor market policy, anti-discriminatory measures, and other interventions to deal with occupational segregation. It also highlights the need for a more detailed gender analysis of health worker mobility and the employment context in destination countries to better identify the policy needs, especially considering the growing feminization of the medical workforce, including skilled migrants.

Professional licensing creates a tool for controlling or reducing immigration inflows, and increases the risk of “skill waste”. The risk of “skills waste” among immigrants can potentially be reduced by including screening on characteristics that place them at a disadvantage as an integral part of the admission process. Recent policy changes in countries such as Australia and New Zealand indicate the liberalization of professional registration requirements for IMGs with similar health systems (competent authority pathway [Please refer to Chapters IV & V for details]). The long-term effectiveness of such screening measures in
improving labor market outcomes and addressing the domestic health workforce shortages needs to be further evaluated.

In some countries, “bridging” programs have been introduced to assist immigrant health workers with the integration process. Unfortunately, there is limited evidence to comment on the overall effectiveness or cost-benefit of these programs. As such, there is a need to evaluate the impact or effectiveness of current ‘bridging’ measures. Furthermore, the design of these programs should be informed by ethnographic studies among the immigrant populations - to fully identify the barriers to successful integration.

It is commonly perceived that migrant health workers address geographical imbalances. In key destination countries such as Australia, United States and Canada, immigration policy has been used to draw migrant health practitioners to areas perceived to face shortages, as a condition of their visas. Although limited, the available evidence suggests that retention of these health workers beyond the obligated period of service is a critical challenge. The available evidence however suggests that retention of these health workers beyond the obligated period of service is a critical challenge. This highlights the importance of sustainable, long-term, domestic solutions to resolve health workforce demands.

There is emerging concern in destination countries regarding the risk of developing “two-tier” medical care, as a result of the growth in IMGs drawn from non-Western medical settings. The evidence to support or counter this argument is sparse indicating the need for further research, especially on the quality of services provided byIMGs.
In conclusion, the trends and patterns of health workforce migration are intrinsically linked to geographic, demographic, economic, political and cultural factors. The growing demand of health workers in destination countries and the related policy context have a clear role in shaping the migration processes. The dependence on international recruitment however raises concerns regarding their integration, retention and the sustainability of the approach in the long-term. In order to better address these concerns there is a recognized need to continue to improve our understanding through further research on key areas related to management of the migrant health workforce.
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Description of changes in Immigration Laws by country and year (1991 – 2004)

<table>
<thead>
<tr>
<th>Country</th>
<th>Year</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Australia</td>
<td>1991</td>
<td>Migration (Health Services) Charge Act: This act extends to all territories taken to be a part of Australia and stipulates that a charge ($822) is applied for visa or entry permit as of August 1991 for the appropriate health related expenses.</td>
</tr>
<tr>
<td>Australia</td>
<td>1992</td>
<td>Immigration (Education) Charge Act: This act outlines payment procedures for a new English education charge (not to exceed $4,080) imposed on visa applicants, if the application was made on or after January 1, 1993.</td>
</tr>
<tr>
<td>Australia</td>
<td>1992</td>
<td>Legislation: The government established a Special Assistance category for immigration procedures in order to reach groups who are in vulnerable situations and have close links with Australia but who do not fit into traditional refugee or humanitarian categories. A loan fund was established to assist independent immigrants from central and eastern Europe and increased information on job opportunities within Australia to allow migrants to better assess their labor market prospects.</td>
</tr>
<tr>
<td>Australia</td>
<td>1992</td>
<td>Migration Reform Act: This act modified the 1958 act in the following ways: established regulation of the immigration and presence of non-citizens, established rights of non-nationals for residing in Australia, and for the removal and deportation of illegal entrants.</td>
</tr>
<tr>
<td>Australia</td>
<td>1994</td>
<td>Migration Reform Act: This act simplified the legal basis for the administration of entry to and stays in Australia, in additional to facilitating the removal of illegal residents.</td>
</tr>
<tr>
<td>Australia</td>
<td>1996</td>
<td>Bill for the Principal Act: This Bill was aimed at implementing the Government's policy of cost recovery with respect to immigration procedures and services. This included consolidating the English Education Charge and the Health Services Charge into the application fee, and giving the Minister the power to make regulations specifying exemptions and concessions.</td>
</tr>
<tr>
<td>Australia</td>
<td>1997</td>
<td>Migration Agents Registration Application Charge Act: A charge on applications received on or after March 21, 1998 was imposed for those individuals who register as migration agents.</td>
</tr>
<tr>
<td>Australia</td>
<td>1997</td>
<td>Migration (Visa Application) Charge Act: The fee requirements related to English education and the associated guidelines of the Bill for Principal Act created controversy. This acts introduces amendments to this Bill that are minor and technical in nature.</td>
</tr>
<tr>
<td>Australia</td>
<td>1999</td>
<td>Australia Migration Program: Approximately 70,000 available places for foreign entry, allocated primarily for highly skilled workers was established.</td>
</tr>
</tbody>
</table>
Australia 2000 Migration Program: Immigration policy shifted in focus towards encouraging immigration of skilled workers. New laws were passed in September 2001 to combat the arrival of illegal immigrants by boat. These immigrants would be brought to a safe territory (Nauru or Papua New Guinea) until their refugee status can be established.

Australia 2002 Bilateral Agreement: The Australian government established bilateral agreements with South Africa, Thailand, and Afghanistan regarding migration and voluntary return.

Canada 1993 Policy: With the change in the government, immigration policy abandoned quantitative goals such as quotas and became oriented around qualitative aspects (i.e. considering applications based on the individual’s background and the needs for the country)

Canada 1994 The North American Free Trade Agreement supersedes the United States-Canada Free-Trade Agreement and involves Canada, United States and Mexico. It establishes mutual recognition of professional qualifications among member states, while still retaining decision-making power regarding high skilled migration policies to the countries involved. NAFTA is less integrated and on a smaller scale than the EU measures. For example, in an effort to secure permanent employment in home countries as well as to promote border security, there is no central decision making authority and no common market for the movement for labor. NAFTA established procedures for the temporary entry into the United States of Canadian and Mexican citizens with the following features: (1) For Canadians, no non-immigrant visa, prior petition, labor certification, or prior approval required, but appropriate documentation must be presented to the inspecting officer establishing Canadian citizenship and professional engagement in one of the occupations listed in the qualifying occupation schedule; For Mexicans, non-immigrant visa, prior petition by employer, and Department of Labor attestation are required in addition to proof of Mexican citizenship and professional engagement in one of the occupations listed in the qualifying occupation schedule; (2) For Canadians, non-immigrant visas are not required of spouses and minor children who possess Canadian citizenship; For Mexicans, non-immigrant visas are required of spouses and minor children who possess Mexican citizenship; (3) For Canadians, no limit to number of admissions; For Mexicans, a limit was set for a transition period for up to ten years at 5,500 initial approvals per year.

Canada 1997 Policy: The government imposed stricter eligibility requirement, involving income requirements and delays, on family sponsorship.

Canada 1997 Work Permits: The government issued 170,000 temporary work permits to foreign workers.

Canada 1997 Canada Chile Free Trade Agreement: This agreement establishes broad categories for employment requirements—with flexible requirements for highly skilled workers

Canada 1998 Policy: Canada admitted 17,000 workers in accordance with NAFTA and GATS.

Canada 2001 Immigration and Refuge Protection Act: Immigration policy shifted away from occupation based admission of foreigners to one that emphasizes education, language and flexibility of skill sets.
<table>
<thead>
<tr>
<th>Country</th>
<th>Year</th>
<th>Events</th>
</tr>
</thead>
<tbody>
<tr>
<td>Canada</td>
<td>2002</td>
<td>Immigration Plan: This plan adjusted the target immigration goals: a range of 210,000 to 235,000 immigrants in 2002 and 220,000 to 245,000 in 2003, of which 60% admitted based on economic basis, 26% on family, and 13% on refugee.</td>
</tr>
<tr>
<td>Canada</td>
<td>2002</td>
<td>Immigration and Refugee Protection Act (2001): This act, which came into force in 2002, replaced the former, 25 year old act. In addition to outlining specific visa application procedures and criteria for sponsorship, the main objectives include: (1) permit Canada to pursue maximum social, cultural and economic benefits; (2) support the development of a strong and prosperous economy; (3) promote successful integration of immigrants; (4) offer safe haven to asylum seekers. Furthermore, this act included the definition of permanent resident, reinforced the government commitment to gender equality and provided for hearings for those who lost permanent resident status, in addition to reinforcing the skill based immigration policy while simultaneously easing family reunification guidelines.</td>
</tr>
<tr>
<td>Canada</td>
<td>2004</td>
<td>A regulatory change allows foreign workers who are citizens of visa exempt countries and who have confirmed job to apply for a work permit at a port of entry. This has facilitated the entry of workers whose services are urgently required by their Canadian employers.</td>
</tr>
<tr>
<td>Canada</td>
<td>2004</td>
<td>Canada and the United States implemented the Safe Third Country Agreement, which requires that refugees claim protection in the first safe country where they arrive. It aims at preventing asylum shopping of claims in both countries.</td>
</tr>
<tr>
<td>New Zealand</td>
<td>1991</td>
<td>Immigration Amendment Act 1991 came into effect. A formal right of appeal against declined residence applications was enshrined in legislation for the first time. The Act established two independent appeal bodies (the Residence Appeal Authority and the Removal Review Authority). Potential migrants could apply under the General, Business Investment, Humanitarian, and Family Categories. The General Category was replaced by the General Skills Category in 1995.</td>
</tr>
<tr>
<td>New Zealand</td>
<td>1995</td>
<td>Policy changes announced included: a more rigorous definition of investment; and the requirement for statutory registration of professionals seeking to practice in New Zealand (such as doctors) with the appropriate statutory body before they could gain points for their qualifications.</td>
</tr>
<tr>
<td>New Zealand</td>
<td>1997</td>
<td>New Zealand reduced its refugee quota from 800 a year to 750 and agreed to pay travel costs.</td>
</tr>
<tr>
<td>New Zealand</td>
<td>1998</td>
<td>The Immigration (Migrant Levy) Amendment Act 1998 introduced the migrant levy. Key policy changes included: the abolishment of the English language bond introduced in 1995 and replacement with pre-purchased English language training; recognition of all work experience for General Skills Category points; a new Entrepreneur Category for residence; a new Long-Term Business Visa; a new Investor Category to replace the Business Investor Category; and streamlined processes for investors.</td>
</tr>
<tr>
<td>New Zealand</td>
<td>1999</td>
<td>Under the Immigration Amendment Act 1999 there were faster removal procedures for people in New Zealand unlawfully without a permit.</td>
</tr>
<tr>
<td>New Zealand</td>
<td>2000</td>
<td>The Government indicated the number of Working Holiday Visas would double to 20,000 places per year.</td>
</tr>
<tr>
<td>New Zealand</td>
<td>2001</td>
<td>Introduction of the New Zealand Immigration Programme - the total number of residence approvals at 45,000 each year for the next three years. It also introduced three residence approval streams that operated independently of each other. A Talent Visa was to be introduced whereby accredited employers could recruit highly talented and skilled individuals to boost their access to global skills and knowledge.</td>
</tr>
<tr>
<td>New Zealand</td>
<td>2002</td>
<td>Migrants seeking residence started to receive a points premium for job offers that were relevant to their qualifications or work experience.</td>
</tr>
<tr>
<td>New Zealand</td>
<td>2003</td>
<td>The Skilled Migrant Category commenced. The policy promoted the active recruitment of skilled migrants to New Zealand.</td>
</tr>
<tr>
<td>New Zealand</td>
<td>2004</td>
<td>The Immigration Settlement Strategy was announced with the aim to help migrants settle better by addressing issues such as access to education, health, housing and employment. Measures aimed at enabling Pacific Island quotas to be filled were announced. These included swifter verification of job offers and the release of quota places throughout the year rather than during just one month.</td>
</tr>
<tr>
<td>United Kingdom</td>
<td>1993</td>
<td>The Asylum and Immigration Appeals Act 1993 * focuses on asylum. This bill included provisions about the treatment of persons who claim asylum in the UK and their dependents, amends the law relating to immigration appeals, and provides for visas for certain transit passengers.</td>
</tr>
<tr>
<td>United Kingdom</td>
<td>1993</td>
<td>Treaty on EU: The “Maastricht Treaty” extended cooperation to political activities, including foreign policy. This treaty also lifted the remaining restrictions on migration from Spain and Portugal to other EU countries.</td>
</tr>
<tr>
<td>United Kingdom</td>
<td>1996</td>
<td>The Asylum and Immigration Act 1996 focuses on asylum (tightening the conditions to obtain it) but also defines limitations for economic migrants. The Act provides the introduction of new immigration offences, powers and penalties. The Act extends the penalties associated with being an &quot;illegal entrant&quot; to include those seeking to &quot;obtain leave to enter or remain&quot; in the UK through deception. Increase of penalties associated with immigration offences. Creation of a new criminal offence: employing someone &quot;subject to immigration control&quot; who is not regular. Increase of the powers of the Police and immigration officers in relation to immigration offences: they now have the power to arrest without a warrant those suspected.</td>
</tr>
<tr>
<td>United Kingdom</td>
<td>1997</td>
<td>Act: The government passed a law that establishes the right of appeal for individuals liable to deportation on grounds of national security. This ended the “Primary Purpose Rule” which stated that in order to simply enter the country, those coming to the UK with the intention of marriage had to prove that the purpose of the marriage was not one of convenience.</td>
</tr>
<tr>
<td>United Kingdom</td>
<td>1997</td>
<td>Dublin Convention: This was an attempt to harmonize policy on refugees by requiring asylum seekers to apply in the first EU country they enter. The objective was to determine the Member State responsible for examining an application for asylum, a matter that is not settled by the Geneva Convention on the status of refugees. The application of this Convention would ensure that every asylum-seeker's application would be examined by a Member State, unless a &quot;safe&quot; non-Member country could be considered as responsible. This would avoid situations of refugees being shuttled from one Member States to another, with none accepting responsibility, as well as multiple serial or simultaneous applications.</td>
</tr>
<tr>
<td>Date</td>
<td>Event</td>
<td>Details</td>
</tr>
<tr>
<td>------------</td>
<td>----------------------------------------------------------------------</td>
<td>----------------------------------------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>United Kingdom 1999</td>
<td>The Immigration and Asylum Act 1999 tightens the conditions to enter for migrants and asylum seekers. The Act provides a great number of requirements to enter and to remain in the country. The Act gives new powers to immigration officers: they can conduct personal searches on arrested persons.</td>
<td></td>
</tr>
<tr>
<td>United Kingdom 2000</td>
<td>Commencement of the National Asylum Support Service: This service assists with accommodation and voucher provision for asylum seekers. The capacity of existing system increased by 50% to handle the backlog of applicants</td>
<td></td>
</tr>
<tr>
<td>United Kingdom 2001</td>
<td>Policy: Immigration policy focused the direction toward allowing more foreign workers.</td>
<td></td>
</tr>
<tr>
<td>United Kingdom 2002</td>
<td>The Nationality, Immigration and Asylum Act 2002 tightens the conditions to enter and to remain for asylum seekers and migrants.</td>
<td></td>
</tr>
<tr>
<td>United Kingdom 2003</td>
<td>The Act provides the introduction of a new scheme for recruiting qualified labour. The Highly Skilled Migrant Programme (HSMP) aims to attract high human capital individuals who have the qualifications and skills required by Uk business to compete in the global marketplace. This scheme is different to the existing work permit and permit-free categories because the applicant can be given leave to enter the UK to seek work instead of having to demonstrate a pre-existing offer of employment.</td>
<td></td>
</tr>
<tr>
<td>United Kingdom 2004</td>
<td>The Asylum and Immigration (Treatment of Claimants, etc.) Act 2004 tightens immigration and asylum procedures to enter the country. It defines new rules to fight illegal immigration. Increase of fines to be imposed on those who employ illegal workers. Introduction of new powers for Immigration Officers to arrest people for crimes such as bigamy and forgery.</td>
<td></td>
</tr>
<tr>
<td>United Kingdom 2004</td>
<td>In May 2004 UK was one of only three existing Member States (along with the Sweden and Ireland) that agreed to allow citizens of the eight, new Eastern European Member States to work without formally requesting a permit</td>
<td></td>
</tr>
<tr>
<td>United States 1992</td>
<td>Immigration Act: This act amended previous provisions with regard to the permanent and temporary residence of migrants, increased in the number of visas to be granted annually in the fiscal years 1992—1994, while simultaneously attempting to safeguard US nationals’ wages and working conditions. It increased total immigration cap, revised grounds for exclusion and deportation, new non-immigrant admissions categories, amended the substantive requirements for naturalization (waived the English language requirement, lifted the permanent bar to naturalization for aliens who applied to be relieved from the US military service), and revised criminal and deportation provisions. Quantitative changes include increasing in total immigration under an overall flexible cap of 675,000 immigrants beginning in fiscal year 1995, preceded by a 700,000 level during fiscal years 1992 through 1994. This 675,000 figure consists of 480,000 family-sponsored; 140,000 employment-based; and 55,000 &quot;diversity&quot; immigrants.</td>
<td></td>
</tr>
<tr>
<td>United States 1992</td>
<td>Soviet Scientist Immigration Act: This act established permanent residence status on a maximum of 750 scientists from the Soviet Union and the Baltic states in the area of biology, chemical, nuclear technical and high technology defense.</td>
<td></td>
</tr>
<tr>
<td>United States</td>
<td>1994</td>
<td>The North American Free Trade Agreement supersedes the United States-Canada Free-Trade Agreement and involves Canada, United States and Mexico. It establishes mutual recognition of professional qualifications among member states, while still retaining decision-making power regarding high skilled migration policies to the countries involved. NAFTA is less integrated and on a smaller scale than the EU measures. For example, in an effort to secure permanent employment in home countries as well as to promote border security, there is no central decision making authority and no common market for the movement for labor. NAFTA established procedures for the temporary entry into the United States of Canadian and Mexican citizens with the following features: (1) For Canadians, no non-immigrant visa, prior petition, labor certification, or prior approval required, but appropriate documentation must be presented to the inspecting officer establishing Canadian citizenship and professional engagement in one of the occupations listed in the qualifying occupation schedule; For Mexicans, non-immigrant visa, prior petition by employer, and Department of Labor attestation are required in addition to proof of Mexican citizenship and professional engagement in one of the occupations listed in the qualifying occupation schedule; (2) For Canadians, non-immigrant visas are not required of spouses and minor children who possess Canadian citizenship; For Mexicans, non-immigrant visas are required of spouses and minor children who possess Mexican citizenship; (3) For Canadians, no limit to number of admissions; For Mexicans, a limit was set for a transition period for up to ten years at 5,500 initial approvals per year.</td>
</tr>
<tr>
<td>United States</td>
<td>1994</td>
<td>Crime Control and Law Enforcement Act: This act established a criminal alien tracking center, non-immigrant classification for alien witness cooperation and counterterrorism information, deportation for denied asylum applicants, improved border management, and strengthened penalties for passport and visa offenses.</td>
</tr>
<tr>
<td>United States</td>
<td>1996</td>
<td>Antiterrorism and Effective Death Penalty Act: This act expedited procedures for removal of alien terrorists, enacted measures to exclude the entry of members of terrorist organizations, modified asylum procedures to improve identification of alien terrorists, and improved criminal alien procedures.</td>
</tr>
<tr>
<td>United States</td>
<td>1996</td>
<td>Welfare Reform Act: This act established a restriction on the eligibility of immigrants from some government funded benefits and broadened the restrictions on public benefits for illegal aliens and non-immigrant.</td>
</tr>
<tr>
<td>United States</td>
<td>1996</td>
<td>Illegal Immigration Reform and Immigrant Responsibility Act: General features of this act include the following: US border control, removal measures for criminal and other deportable aliens, benefit restrictions for aliens, miscellaneous administrative reform.</td>
</tr>
<tr>
<td>United States</td>
<td>2000</td>
<td>Legal Immigration Family Equity Act: This act authorized illegal residents who had files an immigrant application to adjust to the status without having to leave US. A “V” visa was created to enable the admission of those spouses and children of permanent residents whose immigrant applications had been pending for at least three years. This enables eligible but previously rejected people to apply for immigrant status.</td>
</tr>
<tr>
<td>United States</td>
<td>2000</td>
<td>Victims of Trafficking and Violence Protection Act: This act created 15,000 non-immigrant visas for women and children victims of trafficking and of physical and mental abuse and required a three year waiting period of eligible immigrants for permanent residence status.</td>
</tr>
<tr>
<td>United States</td>
<td>2001</td>
<td>USA PATRIOT Act 2001: This act authorized the allocation of substantial additional resources to border control and inspection, and implemented student monitoring system, which was supplemented by the 2002 Enhance Border Security and Visa Entry Reform Act.</td>
</tr>
<tr>
<td>United States</td>
<td>2002</td>
<td>Enhanced Border Security and Visa Entry Reform Act of 2002: This act enhanced the tracking system of aliens and an improved information sharing system between relevant government agencies. It prohibits the admission of an alien from a country designated to be a state sponsor of international terrorism (as defined by this Act) unless the Secretary has determined that such individual does not pose a risk or security threat to the United States. Furthermore, it sets forth transitional foreign student monitoring requirements, including: (1) restrictions on visa issuance; (2) INS notification of visa issuance; (3) institution notification of U.S. entry; and (4) INS notification (by the institution) of failure to enroll.</td>
</tr>
<tr>
<td>United States</td>
<td>2004</td>
<td>Canada and the United States implemented the Safe Third Country Agreement, which requires that refugees claim protection in the first safe country where they arrive. It aims at preventing asylum shopping of claims in both countries</td>
</tr>
</tbody>
</table>
### ANNEX 2

**Summary of definitions used to define ‘rural’**

<table>
<thead>
<tr>
<th>First Author, Year, Journal/Report</th>
<th>Geographic Scale</th>
<th>Definition of ‘rurality’</th>
</tr>
</thead>
<tbody>
<tr>
<td>Butter I et al.; 1971; <em>Med Care</em></td>
<td>National (USA)</td>
<td>“Non-metropolitan” areas defined using the Standard Metropolitan Statistical Area classification scheme employed by the American Medical Association Department of Survey Research.</td>
</tr>
<tr>
<td>Swearingen CM et al.; 1977; <em>Med Care</em></td>
<td>Rural section of upstate New York, USA</td>
<td>Rural counties around Rochester and New York</td>
</tr>
<tr>
<td>Madison DL et al.; 1981; <em>J Comm Health</em></td>
<td>National (USA)</td>
<td>&quot;Rural&quot; counties were defined as those having populations of less than 50,000.</td>
</tr>
<tr>
<td>Mick SS &amp; Pfahler MN; 1995; <em>US DHHS Report</em></td>
<td>National (USA)</td>
<td>Nonmetropolitan statistical areas, as defined by the Office of Management and Budget</td>
</tr>
<tr>
<td>Mullan F et al.; 1995; <em>JAMA</em></td>
<td>National (USA)</td>
<td>US Department of Agriculture code for nonmetropolitan counties.</td>
</tr>
<tr>
<td>Mick SS et al.; 1996; <em>J Rural Health</em></td>
<td>National (USA)</td>
<td>Non-metropolitan counties</td>
</tr>
<tr>
<td>Baer LD et al.; 1998; <em>Med Care</em></td>
<td>National (USA)</td>
<td>Nonmetropolitan statistical areas, as defined by the Office of Management and Budget</td>
</tr>
<tr>
<td>Politzer R et al.; 1998; <em>Med Care Rev Rev</em></td>
<td>National (USA)</td>
<td>Non-metropolitan counties</td>
</tr>
<tr>
<td>Mick SS et al.; 1999; <em>J Rural Health</em></td>
<td>National (USA)</td>
<td>Nonmetropolitan statistical areas as defined by the Office of Management and Budget</td>
</tr>
<tr>
<td>Baer LD et al.; 1999; <em>Am J Pub Health</em></td>
<td>National (USA)</td>
<td>Rural community health centers (CHCs) as defined by Bureau of Primary Health Care</td>
</tr>
<tr>
<td>Baer LD et al.; 2001; <em>UNC Working Paper</em></td>
<td>National (USA)</td>
<td>Nonmetropolitan statistical areas as defined by the Office of Management and Budget</td>
</tr>
<tr>
<td>Randolph GD et al.; 2001; <em>Pediatr</em></td>
<td>National (USA)</td>
<td>Nonmetropolitan statistical areas as defined by the Office of Management and Budget</td>
</tr>
<tr>
<td>Pink KS et al.; 2003; <em>Health Affairs</em></td>
<td>National (USA)</td>
<td>Non–metropolitan statistical area counties were designated as being rural underserved areas</td>
</tr>
<tr>
<td>Hagopian A et al.; 2004; <em>J Rural Health</em></td>
<td>National (39 states)</td>
<td>Critical access hospitals (CAHs) i.e. isolated rural facilities with ≥15 acute care beds supported by Medicare</td>
</tr>
<tr>
<td>Hagopian A et al.; 2004; <em>Hum Resour Health</em></td>
<td>National (USA)</td>
<td>Condensed version of the Rural-Urban Commuting Area (RUCA) designations</td>
</tr>
<tr>
<td>Hart LG et al; 2005; <em>CFHW Studies Working Paper</em></td>
<td>National (USA)</td>
<td>Rural-Urban Commuting Area (RUCA) designations</td>
</tr>
<tr>
<td>Thompson MJ et al.; 2005; <em>Arch Surg</em></td>
<td>National (USA)</td>
<td>Rural-Urban Commuting Area (RUCA) designations</td>
</tr>
<tr>
<td>Morris AL et al.; 2006; <em>Hum Res Heal</em></td>
<td>National (USA)</td>
<td>Non-metropolitan areas</td>
</tr>
<tr>
<td>Akl EA et al.; 2007; <em>BMC Health Serv Res</em></td>
<td>National (USA)</td>
<td>Condensed version of the Rural–Urban Commuting Area (RUCA) designations</td>
</tr>
<tr>
<td>Akl EA et al.; 2007; <em>J Gen Int Med</em></td>
<td>National (USA)</td>
<td>Condensed version of the Rural–Urban Commuting Area (RUCA) designations</td>
</tr>
<tr>
<td>Mertz E et al.; 2007; <em>JHCPU</em></td>
<td>California State, USA</td>
<td>Federally designated HPSAs and Medically Underserved Areas</td>
</tr>
<tr>
<td>Phillips JR et al.; 2007; <em>CMAJ</em></td>
<td>National (USA)</td>
<td>Rural–Urban Commuting Area (RUCA) designations</td>
</tr>
<tr>
<td>Thompson MJ et al; 2009; <em>J Rural Health</em></td>
<td>National (USA)</td>
<td>Rural-Urban Commuting Area (RUCA) designations</td>
</tr>
<tr>
<td>Reference</td>
<td>Year</td>
<td>Journal/Journal/Continuum</td>
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<tr>
<td>Terhune KP et al.; 2010; <em>J Am Coll Surg</em></td>
<td>National (USA)</td>
<td>Rural-Urban Commuting Area (RUCA) designations</td>
</tr>
<tr>
<td>Xierali I M; 2011; <em>Geo</em></td>
<td>National (USA)</td>
<td>Federally designated HPSAs and MUAs</td>
</tr>
<tr>
<td>Fordyce MA et al.; 2012; <em>Fam Med</em></td>
<td>National (USA)</td>
<td>Rural-Urban Commuting Area (RUCA) designations</td>
</tr>
<tr>
<td>Pong RW et al.; 2005; <em>CIHI</em></td>
<td>National (Canada)</td>
<td>Based on Standard Geographical Classification (SGC) system of Statistics Canada</td>
</tr>
<tr>
<td>Mathews M et al.; 2008; <em>Open Med</em></td>
<td>Newfoundland &amp; Labrador (Canada)</td>
<td>Communities with population sized &lt;10,000</td>
</tr>
<tr>
<td>Wengofer et al., 2010; <em>RRH</em></td>
<td>Northern and southern rural Ontario (Canada)</td>
<td>Based on Statistics Canada’s Metropolitan Area and Census Agglomeration Influenced Zones</td>
</tr>
<tr>
<td>Raymont A et al.; 2005; <em>NZ Med J</em></td>
<td>National (New Zealand)</td>
<td>Areas with population rural &lt;30,000</td>
</tr>
<tr>
<td>Smith FG et al.; 2008; <em>Aust J Rural Health</em></td>
<td>National (New Zealand)</td>
<td>Rural ranking scale (RRS) for rural funding ≥ 35</td>
</tr>
<tr>
<td>Garces-Ozanne A et al.; 2011; <em>NZ Med J</em></td>
<td>National (New Zealand)</td>
<td>Areas with population rural &lt;30,000</td>
</tr>
<tr>
<td>Lawrenson et al.; 2011; <em>RRH</em></td>
<td>National (New Zealand)</td>
<td>List of rural hospitals developed in conjunction with district health boards and the rural doctors’ network</td>
</tr>
<tr>
<td>Russo G et al.; 2012; <em>Hum Resour Health</em></td>
<td>National (Portugal)</td>
<td>Based on Portuguese National Statistics Institute Nomenclature of Territorial Units for Statistics</td>
</tr>
</tbody>
</table>
### ANNEX 3
Studies on IMGs in Rural Practice, by Country

<table>
<thead>
<tr>
<th>First Author, Year, Journal/Report</th>
<th>Geographic Scale</th>
<th>Study Design</th>
<th>Data source; Target Population; Sample size</th>
<th>Results</th>
</tr>
</thead>
<tbody>
<tr>
<td>Butter I et al.; 1971; <em>Med Care</em></td>
<td>National (USA)</td>
<td>Cross-sectional</td>
<td>1968 AMA data; registered physicians; NR</td>
<td>IMGs do not necessarily help to relieve imbalances in the geographic distribution of physicians.</td>
</tr>
<tr>
<td>Swearingen CM et al.; 1977; <em>Med Care</em></td>
<td>Rural section of upstate New York, USA</td>
<td>Cross-sectional</td>
<td>Medical directory (Ed. 1953, 1963 &amp; 1973); registered physicians; 49 in 1953, 50 in 1963 &amp; 121 in 1973</td>
<td>IMGs, especially from developing countries, are disproportionately represented among primary care physicians in rural areas.</td>
</tr>
<tr>
<td>Madison DL et al.; 1981; <em>J Comm Health</em></td>
<td>National (USA)</td>
<td>Cross-sectional</td>
<td>AMA data; physicians (except anesthesiologists, radiologists and pathologists), aged ≤45 yrs recently settled in rural communities between 1973 and 1976 &amp; stayed in these locations for ≥ 1 year; 951</td>
<td>IMGs are heavily represented among recent settlers in small rural communities, especially in certain states. IMGs are far less likely than USMGs to be certified in family practice or to be practicing as non-certified generalists.</td>
</tr>
<tr>
<td>Mick SS &amp; Pfahler MN; 1995; US DHHS Report</td>
<td>National (USA)</td>
<td>Cross-sectional</td>
<td>AMA and ARF data; registered physicians; NR</td>
<td>IMGs are no more likely than USMGs to practice in rural underserved areas.</td>
</tr>
<tr>
<td>Mullan F et al.; 1995; <em>JAMA</em></td>
<td>National (USA)</td>
<td>Cross-sectional</td>
<td>AMA and ARF data (1992); office-based physicians; 383,099</td>
<td>Hospital-based training and practice locations of IMGs tend to be in counties in the metropolitan rim and certain non-metropolitan counties that are contiguous to metropolitan hubs.</td>
</tr>
<tr>
<td>Mick SS et al.; 1996; <em>J Rural Health</em></td>
<td>National (USA)</td>
<td>Cross-sectional</td>
<td>AMA data (1969-82); ECFMG certified physicians; 55,031 IMGs &amp; 191,723 USMGs</td>
<td>On an aggregate national distribution IMGs do not fill the gap in rural America. However, non-metropolitan counties in the West North Central and the East South Central census divisions had proportionately more IMGs than USMGs.</td>
</tr>
<tr>
<td>Baer LD et al.; 1998; <em>Med Care</em></td>
<td>National (USA)</td>
<td>Cross-sectional</td>
<td>AMA and ARF data files (1996); post-resident IMGs &amp; USMGs; NR</td>
<td>IMGs distribution is higher in areas of shortage however the extent to which they compensate for rural physician shortages varies. Some states exhibiting greater percentages of IMGs in rural, underserved areas.</td>
</tr>
<tr>
<td>Mick SS et al.; 1999; <em>J Rural Health</em></td>
<td>National (USA)</td>
<td>Cross-sectional</td>
<td>AMA data files (1997); post-resident primary care USMG &amp; IMG; NR</td>
<td>In some states, disproportionate numbers of IMGs are located in needy rural counties (high IMR, low SES, high proportion of nonwhite population, high proportion of population ≥65 years &amp; low physician-to-population ratio) than USMGs.</td>
</tr>
<tr>
<td>Baer LD et al.; 1999; <em>Am J Pub Health</em></td>
<td>National (USA)</td>
<td>Cross-sectional (survey)</td>
<td>Questionnaire survey; random sample of CHC administrators; 100</td>
<td>One in six positions would probably go unfilled if IMGs were no longer available. IMGs were significantly easier to recruit than USMG and physicians in the National Health Service Corps.</td>
</tr>
<tr>
<td>Reference</td>
<td>Setting</td>
<td>Study Design</td>
<td>Data Sources</td>
<td>Summary</td>
</tr>
<tr>
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<tr>
<td>Mick SS et al.; 2000; Soc Sci Med</td>
<td>National (USA)</td>
<td>Cross-sectional</td>
<td>AMA (1997) and ARF data; registered physicians; NR</td>
<td>Not all IMGs were located in high new or underserved counties; IMGs were more likely than USMGs to be located in states with a large number of physicians.</td>
</tr>
<tr>
<td>Baer LD et al.; 2001; UNC Working Paper</td>
<td>National (USA)</td>
<td>Cross-sectional (mixed methods)</td>
<td>AMA (1991 &amp; 1996) and ARF data; registered physicians; NR</td>
<td>Without IMGs, one out of every five “adequately served” nonmetropolitan counties would become underserved.</td>
</tr>
<tr>
<td>Randolph GD et al.; 2001; Pediatr</td>
<td>National (USA)</td>
<td>Cross-sectional</td>
<td>AMA data (1981-96); pediatricians; 19,739 in 1981 &amp; 34,100 in 1996</td>
<td>IMG pediatricians were more likely to practice in rural HPSAs than their US counterparts.</td>
</tr>
<tr>
<td>Fink KS et al.; 2003; Health Affairs</td>
<td>National (USA)</td>
<td>Cross-sectional</td>
<td>AMA (2000) and ARF data; registered primary care physicians; 524,404</td>
<td>Likelihood of an IMG working in a rural underserved area differed by primary care specialty and birth country.</td>
</tr>
<tr>
<td>Hagopian A et al.; 2004; J Rural Health</td>
<td>National (39 states)</td>
<td>Cross-sectional (survey)</td>
<td>Telephone interviews; CAH administrators; 388</td>
<td>Approximately one in four of the CAH admitting physicians are IMGs.</td>
</tr>
<tr>
<td>Hagopian A et al.; 2004; Hum Resour Health</td>
<td>National (USA)</td>
<td>Cross-sectional</td>
<td>AMA data (2002); physicians trained in sub-Saharan Africa; 5,334</td>
<td>Almost 95% of sub-Saharan immigrant physicians are located in urban areas.</td>
</tr>
<tr>
<td>Thompson MJ et al.; 2005; Arch Surg</td>
<td>National (USA)</td>
<td>Cross-sectional</td>
<td>AMA data (2001); registered surgeons; 17,243</td>
<td>General surgeons in the smallest rural areas were significantly more likely to be IMGs compared to urban areas.</td>
</tr>
<tr>
<td>Akl EA et al.; 2007; BMC Health Serv Res</td>
<td>National (USA)</td>
<td>Cross-sectional</td>
<td>AMA data (2004); registered physicians; all Lebanese IMGs, 1,000 USMGs &amp; 1,000 other IMGs</td>
<td>Compared with USMG, Lebanese IMGS were more likely to practice in an urban location and less likely to practice in a large rural location.</td>
</tr>
<tr>
<td>Akl EA et al.; 2007; J Gen Int Med</td>
<td>National (USA)</td>
<td>Cross-sectional</td>
<td>AMA data (2004); registered physicians; 1,000 USMGs &amp; 1,000 other IMGS</td>
<td>A higher proportion of IMGS were in urban areas compared to USMGs and were less likely to be placed in large and small rural areas, but equally likely to be in isolated small rural areas.</td>
</tr>
<tr>
<td>Mertz E et al.; 2007; JHCPU</td>
<td>California State, USA</td>
<td>Cross-sectional</td>
<td>California Medical Board Licensure Survey (2003); registered physicians; 74,780</td>
<td>Both South Asian and non-South Asian IMGS were much more likely than USMGs to practice in poor communities and communities designated as HPSAs or MUAs.</td>
</tr>
<tr>
<td>Phillips JR et al.; 2007; CMAJ</td>
<td>National (USA)</td>
<td>Cross-sectional</td>
<td>AMA data (2004 &amp; 2006); Canadian IMGs in the US; 19,210</td>
<td>Canadian IMGS more likely than USMGs to practice in rural areas.</td>
</tr>
<tr>
<td>Thompson MJ et al.; 2009; J Rural Health</td>
<td>National (USA)</td>
<td>Cross-sectional</td>
<td>AMA data (2002); registered primary care physicians; 205,063</td>
<td>On aggregate, the proportion of generalists IMGS was greater in urban settings than in rural areas. However, state-level analysis showed 18 states had higher proportion of IMGS in rural practice.</td>
</tr>
<tr>
<td>Reference</td>
<td>Country</td>
<td>Study Type</td>
<td>Data Sources</td>
<td>Findings</td>
</tr>
<tr>
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</tr>
<tr>
<td>Terhune KP et al.; 2010; <em>J Am Coll Surg</em></td>
<td>National (USA)</td>
<td>Cross-sectional</td>
<td>AMA data (2008); general surgeons; 17,727</td>
<td>IMG surgeons were mainly represented in urban areas.</td>
</tr>
<tr>
<td>Xierali I M; 2011; <em>Geo</em></td>
<td>National (USA)</td>
<td>Cross-sectional</td>
<td>AMA data (2010); Chinese IMGs in the US; 8,797</td>
<td>Majority of Chinese IMGs are concentrated in urban areas and no significant differences were found for their distributions in underserved areas.</td>
</tr>
<tr>
<td>Fordyce MA et al.; 2012; <em>Fam Med</em></td>
<td>National (USA)</td>
<td>Cross-sectional</td>
<td>AMA data (2005); registered physicians; 185,569</td>
<td>One out of five rural PCP workforce is an IMG but their relative representation varies geographically. With increased rurality, the proportion of DOs increased that of IMGs decreased.</td>
</tr>
<tr>
<td>Pong RW et al.; 2005; <em>CIHI</em></td>
<td>National (Canada)</td>
<td>Cross-sectional</td>
<td>Southam Medical Database, National Physician Database, 2004 National Physician Survey; registered physicians; 60,612</td>
<td>In 2004, IMGs accounted for approximately one-fourth of all generalists and specialists in rural Canada. There is a heavier reliance on IMGs in rural Canada, Saskatchewan, Newfoundland and Labrador and the Yukon.</td>
</tr>
<tr>
<td>Thind A et al.; 2007; <em>Can Fam Phy</em></td>
<td>Southwestern Ontario (Canada)</td>
<td>Cross-sectional</td>
<td>Survey of family physicians; 685</td>
<td>Small town and rural, isolated communities had slightly higher percentage of IMGs.</td>
</tr>
<tr>
<td>Mathews M et al.; 2008; <em>Open Med</em></td>
<td>Newfoundland &amp; Labrador (Canada)</td>
<td>Cross-sectional</td>
<td>Memorial University of Newfoundland (MUN) postgraduate database, Scott’s Medical Database, MD Select 2004; family physicians/GPs who received a new license between 1997 &amp; 2000; 278</td>
<td>Three-fourth of the IMGs work in urban communities.</td>
</tr>
<tr>
<td>Humber N et al.; 2008; <em>Can J Surg</em></td>
<td>British Columbia (Canada)</td>
<td>Cross-sectional</td>
<td>Medical directories for British Columbia (1996-2004) and PURRFECT (6.0 &amp; 9.0); rural GP-surgeons; 20</td>
<td>One-third of the GP-surgeons in rural communities with no resident general surgeon were IMGs.</td>
</tr>
<tr>
<td>Wenghofer et al., 2010; <em>RRH</em></td>
<td>Northern and southern rural Ontario (Canada)</td>
<td>Cross-sectional</td>
<td>College of Physicians and Surgeons of Ontario (CPSO) Annual Membership Renewal Survey; GPs, and specialists; 22,688</td>
<td>In both southern and northern regions of Ontario the proportion of IMGs decreased with increasing rurality.</td>
</tr>
<tr>
<td>Barnett JR; 1987; <em>NZ Med J</em></td>
<td>National (New Zealand)</td>
<td>Cross-sectional</td>
<td>Medical Register; registered physicians; NR</td>
<td>In the early 1970’s, IMG GPs were overrepresented in rural, poorer urban and other areas that experienced doctor shortages.</td>
</tr>
<tr>
<td>Barnett JR; 1988; <em>Soc Sci Med</em></td>
<td>National (New Zealand)</td>
<td>Cross-sectional</td>
<td>General Medical Service (GMS) schedule and Medical Register; registered physicians; NR</td>
<td>In areas where there was more competition from NZMGs, IMGs overrepresented in rural locations. This was however less evident in the South Island where IMGs increased their share of the workforce most rapidly in the metropolitan and regional city areas.</td>
</tr>
<tr>
<td>Barnett JR; 1991; <em>Soc Sci Med</em></td>
<td>National (New Zealand)</td>
<td>Cross-sectional</td>
<td>General Medical Service (GMS) schedule and Medical Register; registered physicians; NR</td>
<td>Compared to NZMGs, new IMGs are more likely to be found in smaller, and particularly more remote, towns.</td>
</tr>
<tr>
<td>Barnett JR; 1992; <em>NZ Med J</em></td>
<td>National (New Zealand)</td>
<td>Cross-sectional</td>
<td>General Medical Service (GMS) schedule and Medical Register; registered physicians; NR</td>
<td>More IMGs than NZMGs have located in rural areas.</td>
</tr>
<tr>
<td>Authors</td>
<td>Location</td>
<td>Study Type</td>
<td>Data Source</td>
<td>Findings</td>
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</tr>
<tr>
<td>Raymont A et al.; 2005; <em>NZ Med J</em></td>
<td>National (New Zealand)</td>
<td>Cross-sectional (survey)</td>
<td>National Primary Medical Care Survey (2001); stratified random sample of GPs; 244</td>
<td>IMGs constitute about half of the rural workforce.</td>
</tr>
<tr>
<td>Smith FG et al.; 2008; <em>Aust J Rural Health</em></td>
<td>National (New Zealand)</td>
<td>Cross-sectional (survey)</td>
<td>Postal questionnaires (2005); rural GP managers, GPs, nurses, community pharmacy managers &amp; pharmacists; 358</td>
<td>More than half of the rural primary care workforces are overseas-trained</td>
</tr>
<tr>
<td>Pande MM et al.; 2009; <em>J Prim Health Care</em></td>
<td>National (New Zealand)</td>
<td>Cross-sectional (survey)</td>
<td>RNZCGP membership survey (2007); RNZCGP members; 1,995</td>
<td>Most IMGs are based in urban centers, and mostly in the North Island. Compared to 2005 survey data, IMGs in urban centers had increased while those in rural centers had decreased.</td>
</tr>
<tr>
<td>Garces-Ozanne A et al.; 2011; <em>NZ Med J</em></td>
<td>National (New Zealand)</td>
<td>Cross-sectional (survey)</td>
<td>NZ medical register (2000-08); registered physicians; 7,220 (2008)</td>
<td>IMGs have a much greater propensity to practice in minor urban and rural areas. IMGs trained in non-English-speaking countries are relatively less likely to practice in rural communities.</td>
</tr>
<tr>
<td>Lawrenson et al.; 2011; <em>RRH</em></td>
<td>National (New Zealand)</td>
<td>Cross-sectional (survey)</td>
<td>Survey of rural hospitals; physicians in rural hospitals; 69</td>
<td>Two-third of the physicians were IMGs.</td>
</tr>
<tr>
<td>Russo G et al.; 2012; <em>Hum Resour Health</em></td>
<td>National (Portugal)</td>
<td>Cross-sectional</td>
<td>Portuguese Medical Council database; registered physicians; 39,473 in 2008</td>
<td>IMGs show a generalized preference for metropolitan areas, the tendency being more marked among physicians from African PALOP countries. Spanish physicians however appear to prefer areas away from the two major cities, possibly closer to the border with Spain.</td>
</tr>
</tbody>
</table>

NR: Not Reported; AMA: American Medical Association; IMG: International Medical Graduates; USMG: US Medical Graduates; HPSA: Health Professional Shortage Area; MUA: Medically Underserved Areas; RUCA: Rural Urban Commuting Areas; RUA: Rural Underserved Area; PCP: Primary Care Provider; GP: General Practitioner; NZMG: New Zealand Medical Graduate; PURRFECT: Population Utilization Rates and Referrals For Easy Comparative Tables
## ANNEX 4
### Studies on retention of IMGs in Rural Practice

<table>
<thead>
<tr>
<th>First Author; Year; Journal/ Report</th>
<th>Geographical scale</th>
<th>Study design</th>
<th>Data source; Target population; Sample size</th>
<th>Results</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mullan F et al.; 1995; <em>JAMA</em></td>
<td>National (USA)</td>
<td>Cross-sectional</td>
<td>AMA and ARF data (1992); office-based physicians; 383,099</td>
<td>IMGs are filling residency and staff positions in smaller communities, but when &quot;free&quot; to locate to an office practice after completing training, they select the same urban oriented pattern of communities as their USMG counterparts.</td>
</tr>
<tr>
<td>Pathman DE et al.; 2004; <em>Am J Pub Heal</em></td>
<td>National (USA)</td>
<td>Cross-sectional (survey)</td>
<td>Survey (1991 &amp; 1996-97); physicians in HPSA and non-HPSA areas; 308 in HPSA &amp; 197 in non-HPSA</td>
<td>No difference in retention rates between IMGs and USMGs in rural, underserved area practices</td>
</tr>
<tr>
<td>Crouse BJ et al.; 2006; <em>WMJ</em></td>
<td>Wisconsin State (USA)</td>
<td>Cross-sectional</td>
<td>Survey of chief executive officers or human resources representatives regarding J1 Waiver IMGs; 72</td>
<td>Physicians participating in a placement program without J-1 Visa Waivers had a significantly higher retention rate. One-third of the J1 Waiver physicians did not complete 3 years in these communities.</td>
</tr>
<tr>
<td>Kahn TR et al.; 2010; <em>Acad Med</em></td>
<td>Washington State (USA)</td>
<td>Cross-sectional (survey)</td>
<td>Survey of J1 waiver physicians; 77</td>
<td>Median and mean duration of stay in underserved areas after completing their obligations were 26 and 34 months, respectively. After completion of the obligation period, nine out of ten J-1 physicians practice in urban areas.</td>
</tr>
<tr>
<td>Mathews M et al.; 2007; <em>Healthcare Policy</em></td>
<td>Newfoundland &amp; Labrador (Canada)</td>
<td>Cross-sectional</td>
<td>Memorial University of Newfoundland (MUN) postgraduate database, Scott’s Medical Database, MD Select 2004; IMGs, MUN post-graduates and other Canadian MGs</td>
<td>Compared to MUN graduates, IMGs and Canadian Medical Graduates were less likely to work in Canada and Newfoundland &amp; Labrador.</td>
</tr>
<tr>
<td>Mathews M et al.; 2008; <em>Open Med</em></td>
<td>Newfoundland &amp; Labrador (Canada)</td>
<td>Cross-sectional</td>
<td>Memorial University of Newfoundland (MUN) postgraduate database, Scott’s Medical Database, MD Select 2004; family physicians/GPs who received a new license between 1997 &amp; 2000; 278</td>
<td>Relatively few of the IMGs remain in the province 1 year after earning full licensure.</td>
</tr>
<tr>
<td>Audas R et al.; 2009; <em>Can J Rural Med</em></td>
<td>Newfoundland &amp; Labrador (Canada)</td>
<td>Cross-sectional</td>
<td>Database provided by the Newfoundland and Labrador College of Physicians and Surgeons (1995-2006); provisionally licensed (PL) IMGs; 1,176</td>
<td>About 1 in 5 PL IMGs remain in province for a period of 5 years. Those who emigrate within Canada are most likely to go to an urban location.</td>
</tr>
<tr>
<td>McDonald TJ et al.; 2012; <em>Soc Sci Med</em></td>
<td>National (Canada)</td>
<td>Cross-sectional</td>
<td>Canadian Census 20% confidential master files (1991-2006); physicians; NR</td>
<td>Retention of IMGs in rural areas and in some provinces continues to be difficult. Large Canadian cities (mainly in Ontario) are the likely destination for IMGs typically recruited to other areas.</td>
</tr>
<tr>
<td>Author(s)</td>
<td>Year</td>
<td>Journal</td>
<td>Location</td>
<td>Design</td>
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</tr>
<tr>
<td>Barnett JR; 1988; <em>Soc Sci Med</em></td>
<td>National (New Zealand)</td>
<td>Cross-sectional</td>
<td>General Medical Service (GMS) schedule and Medical Register; registered physicians; NR</td>
<td>Many IMGs may initially be forced to locate in rural areas but turnover is high, with many doctors moving as soon as other practice opportunities become available.</td>
</tr>
<tr>
<td>Barnett JR; 1991; <em>Soc Sci Med</em></td>
<td>National (New Zealand)</td>
<td>Cross-sectional</td>
<td>General Medical Service (GMS) schedule and Medical Register; registered physicians; NR</td>
<td>Stepwise migration of already resident IMGs up the urban hierarchy is evident.</td>
</tr>
<tr>
<td>Barnett JR; 1992; <em>NZ Med J</em></td>
<td>National (New Zealand)</td>
<td>Cross-sectional</td>
<td>General Medical Service (GMS) schedule and Medical Register; registered physicians; NR</td>
<td>The turnover rates between IMGs and NZMGs are similar indicating that their presence had not resulted in any improvement in the continuity of care provided.</td>
</tr>
<tr>
<td>Garces-Ozanne A et al.; 2011; <em>NZ Med J</em></td>
<td>National (New Zealand)</td>
<td>Cross-sectional</td>
<td>NZ medical register (2000-08); registered physicians; 7,220 in 2008</td>
<td>IMGs are significantly more likely to be mobile within New Zealand and are especially likely to be internationally mobile.</td>
</tr>
<tr>
<td>Hawthorne L et al.; 2003; <em>RWAV Victoria</em> (Australia)</td>
<td>Victoria (Australia)</td>
<td>Cross-sectional (survey)</td>
<td>Mail-out survey; IMGs in rural Victoria; 84</td>
<td>13% of the IMGs were in their current location for 4-5 years, 56% for 2-3 years and rest were recent arrivals.</td>
</tr>
<tr>
<td>Carlier N et al.; 2005; <em>Aust Fam Phy</em></td>
<td>South Australia</td>
<td>Cross-sectional (survey)</td>
<td>Questionnaire survey; IMGs in rural practice; 20</td>
<td>Amongst IMGs, intended length of stay in rural areas varied from 1-4 years (25%) through 5-9 years (30%) to ≥10 years (20%), while 20% were unsure.</td>
</tr>
<tr>
<td>Hans GS, 2006; <em>J Sociol</em></td>
<td>Victoria (Australia)</td>
<td>Qualitative (in-depth interviews)</td>
<td>In-depth interviews; IMGs in rural Victoria; 57</td>
<td>Four typologies of IMGs in rural practice: satellite operators, the ambivalent, fence sitters and the integrated.</td>
</tr>
</tbody>
</table>

## ANNEX 5
### Studies on Reasons for Relocation from Rural Practices

<table>
<thead>
<tr>
<th>First Author; Year; Journal/Report</th>
<th>Geographic scale</th>
<th>Study Design</th>
<th>Data source; Target Population; Sample size</th>
<th>Results</th>
</tr>
</thead>
<tbody>
<tr>
<td>Crouse BJ et al.; 2006; <em>WMJ</em></td>
<td>Wisconsin (USA)</td>
<td>Cross-sectional (survey)</td>
<td>Survey of chief executive officers or human resources representatives regarding J1 Waiver IMGs; 72</td>
<td>A key predictor for retention was the physician's level of integration with the community.</td>
</tr>
<tr>
<td>Vardy D et al.; 2006; <em>Our Diverse Cities</em></td>
<td>Newfoundland and Labrador (Canada)</td>
<td>Cross-sectional (survey)</td>
<td>Survey of provisionally licensed IMGs who practiced in the province between 1995 &amp; 2004; 200</td>
<td>Inadequate opportunities for their spouses to pursue their careers, dissatisfaction with pay, lack of social networks and desire to live in a community with individuals of a similar cultural background to their own were cited as the common reasons for relocation.</td>
</tr>
<tr>
<td>Mathews M et al.; 2008; <em>Open Med</em></td>
<td>Newfoundland &amp; Labrador (Canada)</td>
<td>Cross-sectional</td>
<td>Memorial University of Newfoundland (MUN) postgraduate database, Scott's Medical Database, MD Select 2004; family physicians/GPs who received a new license between 1997 &amp; 2000; 278</td>
<td>Most IMGs move to urban centers where a larger number of people who share their ethnic background live.</td>
</tr>
<tr>
<td>McDonald TJ et al.; 2012; <em>Soc Sci Med</em></td>
<td>National (Canada)</td>
<td>Cross-sectional</td>
<td>Canadian Census 20% confidential master files (1991-2006); physicians; NR</td>
<td>Migration is a family decision, and spousal characteristics (education, age, years in Canada for immigrants) are important.</td>
</tr>
<tr>
<td>Hawthorne I. et al.; 2003; <em>RIPAI</em></td>
<td>Victoria (Australia)</td>
<td>Qualitative (in-depth interviews)</td>
<td>In-depth interviews; IMGs in rural Victoria; 84</td>
<td>Quality of schooling, quality of training/supervision, access to partner's job, nearness to family/friends, level of support/time available to pass pre-registration exams and access to ethnic community determined the low satisfaction factors.</td>
</tr>
<tr>
<td>Hans GS et al.; 2005; <em>Aust J Rural Health</em></td>
<td>Victoria (Australia)</td>
<td>Qualitative (in-depth interviews)</td>
<td>In-depth interviews; IMGs in rural Victoria; 57</td>
<td>Preparation for the AMC’s exams, professional isolation, heavy workload, inexperience in rural practice, lack of access to specialists and the frequent moves for different training locations. Lack of opportunities for children’s education and spouse adjustment.</td>
</tr>
</tbody>
</table>

NR: Not reported; IMG: International Medical Graduates; GPs: General Practitioners; AMC: Australian Medical Council
Author/s:
HAZARIKA, INDRAJIT

Title:
Flight of international medical graduates: a cross-country comparative study examining key events in the trajectory

Date:
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File Description:
Flight of international medical graduates: a cross-country comparative study examining key events in the trajectory