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Conceptualising International High-Skilled Migration

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Abstract

Despite the increasingly positive perception of highly-skilled (labour) migrants from the perspective of receiving countries, pinning down a definition of high-skilled migration is a complex issue. The resulting ambiguity hinders the measurement of human capital, stymies meaningful international comparisons of the mobility of skills and undermines the evaluation of immigration policies. In this paper, we adopt three alternative stances to conceptualise high-skilled migration: from the perspective of those responsible for recording immigrants at the country level, from the standpoint of the methodologies that underpin countries' occupational nomenclatures and lastly an inductive approach that classifies high skilled migrants based upon nations' unilateral immigration policies. Each of the three approaches is contentious such that we identify three major discordances: a definitional discordance whereby the same individual may be deemed as highly skilled depending upon the variables used to define them, an occupational discordance whereby the same individual may be classified as highly skilled depending upon the occupational classification used to record them and a policy discordance whereby individuals defined similarly and working in the same occupations may be considered as highly skilled or otherwise depending upon the prevailing immigration policies. We discuss all three discordances in detail, before making recommendations to remedy each of them.

Keywords: High Skill, Human Capital, International Migration, Labour

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1 Introduction

If indeed we live in the Age of Migration (Castles, Haas and Miller 2014), then the last score years or so might be best described as an era of High-Skilled Migration. So ubiquitous is the expression ‘High-Skilled Migration’ in policy circles nowadays, it beggars belief that the phrase has only entered the parlance of migration scholars and academic circles relatively recently. Prior to 1988, not a single mention of ‘High-Skilled Migration’ was made across the entire literary repository of *Google*, while the frequency of the term increased in the same written sources by over 30 times between 1990 and 2007. Mirroring this trend has been a proliferation of high-skilled migration policies being implemented across the globe, as countries, increasingly cognizant of human capital’s pivotal role for economic development, vie to attract the best and the brightest. And thus while a common perception is that migration policies have conspired to restrict immigrant access to (developed country) labour markets, the reality is rather that nations have instead progressively implemented increasingly *selective* policies (de Haas et al 2014); the imposition of which has seen a meteoric rise in the numbers of tertiary-educated international migrants around the globe, which rose from 16.3 million in 1990 to 28.8 million in 2000, a rise of 77% (Artuç et al 2014).¹

Host Governments increasingly express a preference for (top-earning) high-skilled immigrants, since they are widely perceived as net contributors to host societies, which in turn makes it easier for politicians to pacify anti-immigrant sentiment among voters. This emphasis masks the fact that both the absolute level and absolute growth in employment in the more affluent countries of the globe will likely occur in low skilled occupations.² Nevertheless, given the current emphasis on movements of the highly skilled, it is important to question what or who constitutes a high-skilled migrant? This is far more difficult to answer than it may first appear and almost certainly explains why relatively few attempts have been made to pin down a precise definition. It is nevertheless an important question for both academic and policy makers to answer, in order to evaluate international movements of human capital and to assess the efficacy of policies aimed at attracting high-skilled workers.

In this paper we adopt three approaches to conceptualise high-skilled migration. First, we examine how national statistics authorities record high-skilled migration. Broadly, three major and overlapping definitions emerge: migrants’ education level, occupation and salary. Next we examine the methodological foundations that countries premise their conceptualisation of occupational classifications upon, which additionally consider the tasks migrants carry out, their sector of activity and their degree of specialisation. Finally, we investigate the roles of unilateral migration policy instruments and adopt an inductive approach to ascertain a definition of highly-skilled migration, differentiated by those characteristics emphasized within specific policies, further delineating migrants’ experience. This exercise is not without difficulty however, since migration policy, whether in general or specifically targeted towards the highly skilled, tends to reflect the intersection of a number of oft-competing priorities and objectives.

The main contribution of the paper is in identifying discordances that arise from our three conceptualisations of high-skilled migration. In Section 2 we discuss a *definitional discordance* whereby differing individuals are identified as highly skilled depending upon how host countries

¹ The data from the 2010 census round is currently being collated.

² As first suggested by William Baumol (1967) and later emphasised by Pritchett (2006), the ‘Baumol Effect’ suggests that certain service sectors (in an economy) that are particularly labour intensive are resistant to improvements in productivity, such that over time, the relative price of labour in such sectors increases. Given the reduced demand for labour in more high-tech sectors of society, these sectors increasingly dominate overall employment.

choose to define them. In Section 3 we highlight an *occupational discordance* that results from the same individual potentially being classified as high skilled or not depending upon countries' competing occupational nomenclatures. In Section 4 we identify a *policy discordance*, whereby an individual may variously be considered highly skilled or otherwise, even when similar definitions of skill and occupational concepts are adopted.

In the final section of the paper we make a number of policy recommendations. We repeat the call for better and more detailed data on immigrants to be disseminated and suggest a particular avenue to explore in terms of making data dissemination more efficient, specifically through strengthening regional institutions. We advocate an alternative standardised definition of what it means to be highly skilled, one based on occupation level and further discuss the role of bilateral agreements in overcoming cross-country differences in occupational classifications. Lastly, we discuss the difficulties in classifying national immigration policies and the incoherencies that naturally result. We argue that more detailed data are required on both policy and immigrant characteristics in order to classify immigration policy *systems* and identify their influence on human capital movements.

2 What data can we use to identify the skills of immigrants?

We begin by appraising how national statistics authorities record high-skilled migrants, which in turn has largely governed subsequent (quantitative) academic work. Migrants' skill levels are often recorded according to definitions based upon formal education or else those skills acquired over the course of one's working life, which culminate in a migrant's occupation; as opposed to cognitive or soft skills that no doubt constitute pivotal elements in individual's overall capabilities and success. Consequently, academic work has often adopted pragmatic approaches when creating data bases of migrants' skills, which draw upon as geographically disparate and harmonious a definition of high-skilled migration as possible. Although such databases have seen many advances in recent years, the availability of high-skilled migration data remains scarce.

The education level of migrants is the most readily available international statistic by which international migrants may have their skill level recorded. It is thus by default that this measure of high-skilled mobility proves most ubiquitous throughout academia, for example the cross-country data bases of Docquier and Marfouk (2006), Docquier et al (2009) and Artuç et al (2014), which present bilateral stock data disaggregated by education level and subsequently also by gender and to an increased set of destination countries in 1990 and 2000 respectively. In this regard, the most common definition is to refer to a migrant as highly-skilled should they have completed at least one year of tertiary education. While many researchers may be happy to go by the nominal equivalency of qualifications across nations, employers and government-authorities that ultimately facilitate migration, typically allow entry based on their own particular conceptions of the worth of qualifications. It matters where migrants receive their education. For example, Filipinos need to have amassed two years of higher education at home in order to enter higher education in Denmark.³

These differences impinge upon migrants' entry into various labour markets, since for example higher levels of education are assigned significant value in points-based immigration policies. Anecdotal evidence suggests that well-educated migrants may ultimately fill unskilled positions, or similarly be employed in positions that do not necessarily pertain to their field of education, resulting in lost productivity or the potential output of migrants, a so-called Brain Waste (Mattoo et al 2008). Such Brain Waste effects, if prevalent, might conspire to undermine academics'

³See: <http://ufm.dk/en/education-and-institutions/recognition-and-transparency/find-assessments/entry-to-higher-education>.

assessment of nation's total human capital stock and therefore their comparability across countries, perhaps ultimately constituting measures of the *human capital potential* of a particular labour force. These differences may be exacerbated by the prominent role of rapidly changing technology, which undermines the value of educational attainment in specific disciplines over time, and will likely be more severe the later migrants arrive in host countries. Beine et al (2007) quantify migrants' age of entry and in turn use this variable as a proxy for whether education was acquired in the home or host country. In the year 2000 these authors estimate that between 0.2% (Turkmenistan) and 81.9% (Guyana) of the stock of skilled OECD foreign-born adults arrived to the OECD after age 22. In other words, a significant proportion of foreign-born adults in the OECD in 2000 were likely educated abroad. This work therefore highlights the potential magnitude of those under-employed in host countries.

A second variable that potentially can be used to delineate migrants' skill level, most frequently implemented by countries in the Americas - but one which has generally not widely adopted in censuses elsewhere and hence by academics - is in relation to their overall salary. These data, in addition to occupation and education data, have been made available for several countries through the pioneering work of the University of Minnesota (Ruggles et al 2010), which provides anonymised micro-data across the whole spectrum of migrant (and native) characteristics. Recent years have experienced a proliferation of high-skilled migration policies and while income levels are often not explicitly cited as primary criteria for entry or permanent residence, they often nevertheless constitute thresholds used to assess whether a job is eligible for a work permit, or else above which additional points are awarded on national tests.⁴

A final way for migrants to be recorded by national statistics authorities, is that of migrants' occupation, the data for which has been available on a cross-country basis by: the OECD (see Dumont and Lemaitre 2004 and Dumont, Martin and Spielvogel 2007), or else through global surveys or cross-country data collections that focus on particular occupations, for example doctors (Clemens and Pettersson 2008, Bhargava et al 2011) or foreign-born scientists (Franzoni et al 2012). How countries classify migrants according to their occupation however varies across countries however, which we explore in the following section.

2.1 Discordance 1: Definitional

In this sub-section we draw upon data from the 3-year weighted sample of the American Community Survey, from 2010 to 2012, to appraise the similarities and differences that exist between the main definitions of skill already discussed. Our analysis includes all immigrants - as identified by their country of birth⁵ - of working age (18-64) and currently in the labour force. Figure 1 examines the correlations between the three main definitions, plotting by sub-major occupational category (2-digit), as identified in the U.S. Standard Occupational Classification (SOC), the log of wages on the Y-axis and the log of educational attainment of immigrants in the United States on the X-axis, weighted by the number of immigrants comprising each category. The clear positive correlation between education and income is evident; on average, better educated immigrants earn higher wages. In terms of the SOC, there a high-degree of correlation between individuals working in the upper tier according to the

⁴ The Danish Pay Limit Scheme is an example where such an explicit threshold exists. A job offer from a Danish employer with an associated salary of more than DKK 375,000 (approximately USD 80,000), makes one eligible for work and residence permits.

⁵ We exclude those born in American Samoa, Guam, Puerto Rico and U.S. Virgin Islands.

one-digit classification⁶ and advanced levels of education - which collectively constitute a definition of highly skilled (Chiswick and Taengnoi 2007) – and those on the highest salaries; since these professions constitute all of the upper-right occupations in Figure 1, with the exception of Healthcare practitioners.⁷ It is no surprise therefore that occupations falling within these categories often feature prominently in destination country occupation lists.

Figure 1: Scatter plot log wages and log education by major occupation, USA 2010-2012

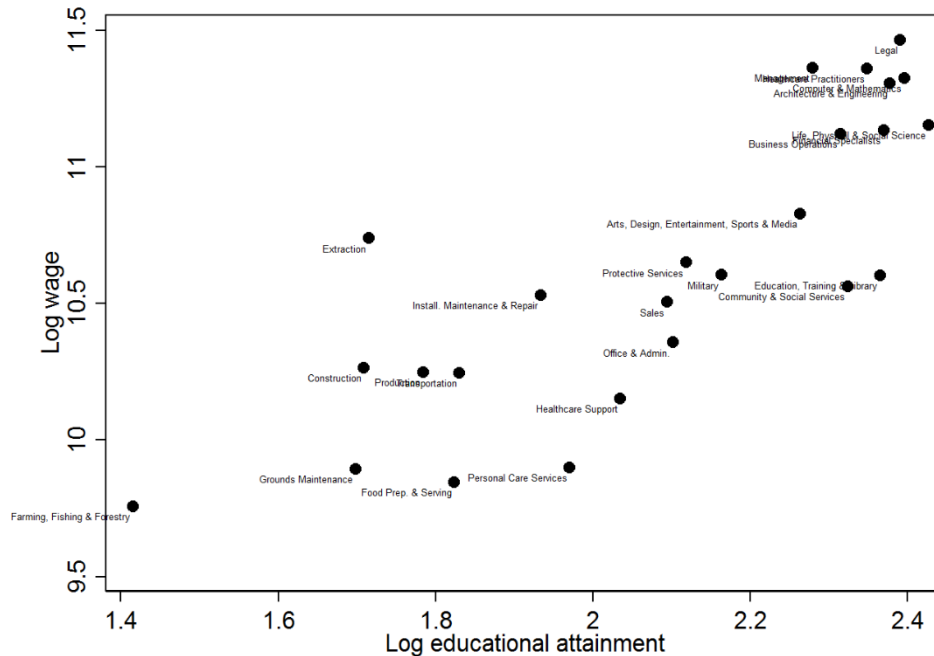
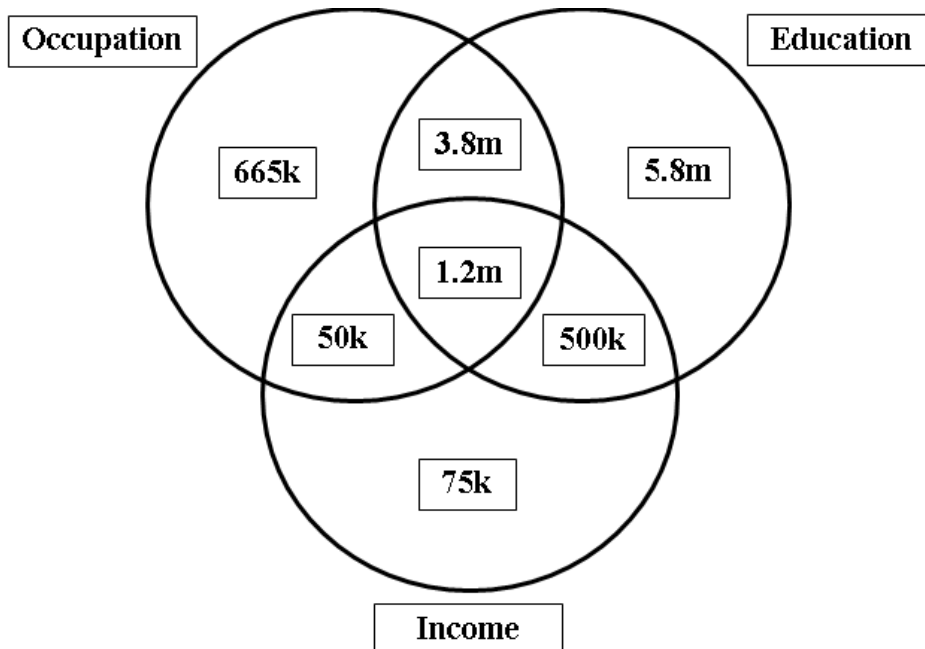


Figure 2: Numerical disparities between the main definitions of high-skilled



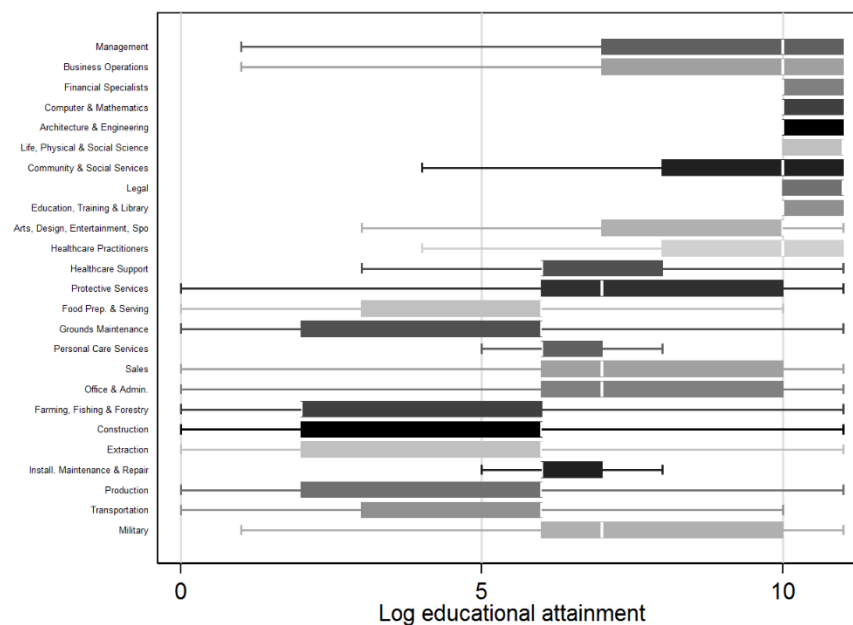
⁶ In terms of our 2-digit occupations that feature in Figure 1, these include Management, Business Operations, Financial Specialists, Computer & Mathematics', Architecture & Engineering, Life, Physical & Social Science, Community & Social Services, Legal, Education, Training & Library and Arts, Design, Entertainment, Sports & Media occupations.

⁷ Healthcare practitioners fall outside of the upper tier of the SOC, almost certainly because this category includes support occupations including: nurses, massage therapists, home health aides and assistants.

Despite these discernible correlations, it is important to emphasise that different individuals will be identified as ‘highly skilled’ depending on which definition is prioritised. This is demonstrated in Figure 2, which shows for the 12 million or so highly-skilled immigrants in our sample, by which variable immigrants are deemed to be skilled: should they have acquired at least one year of tertiary education, if they work in an occupation in the upper tier of the SOC or else if they earn a salary of at least \$100,000. The differences are stark. Just over one million immigrants are identified as highly-skilled according to all three definitions. Having completed at least one year of education is the most frequent definition of highly skilled in the sample, with over ten million individuals being identified as such. Nearly six million highly (tertiary) educated immigrants do not qualify as highly skilled by income or occupation however. The greatest overlap is between the education and occupation classifications, while the least is between income and occupation.

As opposed to averages across categories (Figure 1) or else totals across categories (Figure 2), Figures 3 and 4 instead document the heterogeneity in educational attainment and earnings within and between occupational categories.⁸ Figure 3 examines the educational distribution of those immigrants that comprise each occupational category, sorted from highest to lowest by the SOC classification. While this figure further demonstrates that those occupations typically considered ‘highly skilled’ comprise more highly educated workers, the starkest feature is the remarkable heterogeneity between and within categories. The educational value of ten corresponds to having completed four years of college education i.e. having completed a bachelor’s degree. Wholly 75% of the education distribution of all occupational categories with the exception of Financial Specialists, Computer and Mathematics, Architecture and Engineering, Life, Physical and Social Sciences, Legal and Education, Training and Library Occupations fall below this line; demonstrating that the majority of individuals in these occupations have not completed a first degree. Furthermore, the median of the distribution in Managements and Business Operations occupations coincide with the value 10 meaning that half of those in these professions lack a first degree.

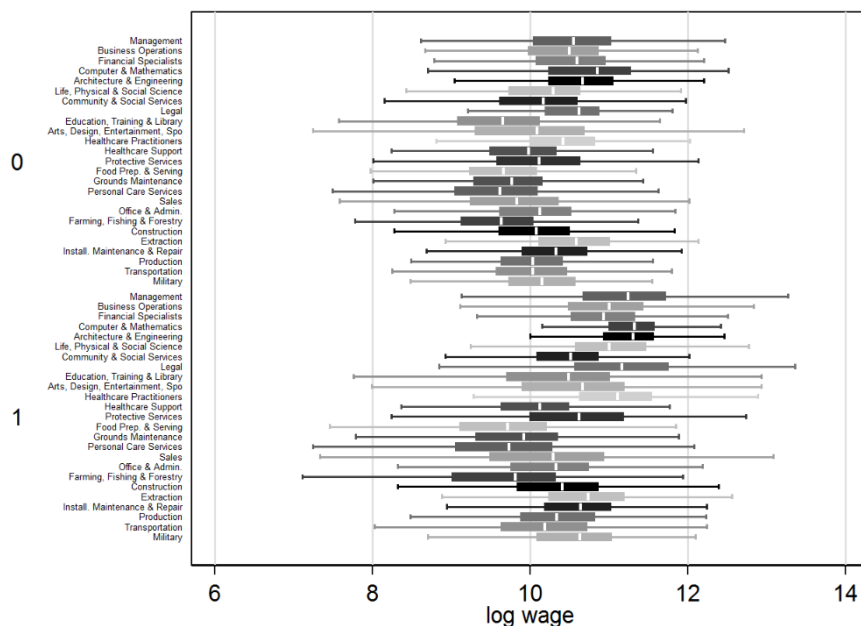
Figure 3: Educational distribution within occupational categories, USA 2010-2012



⁸ These box plots are bordered by the 25th and 75th percentiles of the educational distribution, with the median represented by the line within these borders. The upper and lower whiskers extend to the next adjacent values.

Figure 4 instead plots the wage distribution within each occupational category for those with and without at least one year of college education. The boxes for those with a college education by-and-large lie to the right-hand side of those that do not and furthermore the distance between the boxes for those with and without a college education are much larger for those occupations that feature in the top-right quadrant in Figure 1. In other words, the *education premium*, the financial reward for greater levels of education, is far higher in those occupations that are typically deemed high-skilled. Nevertheless, the income distributions for those with or without experience at college across each occupation category overlap, showing that other factors are clearly important in determining salaries, with on-the-job experience being a likely contender.

Figure 4: Wage distribution within occupational categories, for those with and without a college degree, USA 2010-2012



Such comparisons are more difficult to make across countries however, since countries variously adopt occupational nomenclatures. They do so since these classifications are used across different ministries for the purposes of monitoring national developments and prevailing market conditions for both immigrants and natives. Examining these classifications therefore represents an alternative avenue of enquiry through which we may conceptualise what it means to be high skilled and in doing so one may glean the extent to which different countries value alternative forms of labour, a subject to which we now turn.

3 How do countries conceptualise their occupational classifications?

3.1 International Standards

Historically, national occupational classifications tended to reflect social strata, but thanks to the wider promotion of international standards, such lists now focus upon the *nature* of specific work as opposed to worker characteristics. The International Standard Classification of Occupations (ISCO), first developed by the International Labour Organization in 1957, was reviewed three times prior to the current version that was published in 2008. In ISCO, occupations are grouped together based on a

two-dimensional concept of skill. Skill *level* measures the complexity and range of tasks performed. Skill *specialisation* rather defines the field of knowledge required, for example the range of tools or machinery used, the materials worked with and the variety of goods and services produced (Elias, 1997). Skill level therefore reflects the amount of formal training and education a job requires, whereas skill specialisation reflects the type of work performed.

The ISCO-08 nomenclature comprises four levels, each of which corresponds to a unique number with the equivalent number of digits. At the most aggregate, i.e. the 1-digit level, ten major groups are identified: (1) legislators, senior officials and managers; (2) professionals; (3) technicians and associate professionals; (4) clerks; (5) service workers and shop and market sales workers; (6) skilled agricultural and fishery workers; (7) handicraft and related workers; (8) plant and machine operators and assemblers; (9) elementary occupations; and (10) armed forces. These 1-digit major groups comprise 43 (2-digit) sub-major groups, 130 (3-digit) minor groups and 436 (4-digit) unit groups. The two-dimensional concept of skill is applied at *alternating* levels, such that the major and minor groups are organised according to skill *level*, whereas the sub-major and unit groups are organised according to skill *specialisation*.

3.2 Who are classified as occupationally high-skilled?

Table 1: Mapping of ISCO-08 major groups to skill levels

ISCO-08 major groups	Skill Level
1 – Managers, senior officials and legislators,	3 + 4
2 - Professionals	4
3 - Technicians and associate professionals	3
4 - Clerks 5 - Service and sales workers 6 - Skilled agricultural and fishery workers 7 - Craft and related trades workers 8 - Plant and machine operators, and assemblers	2
9 - Elementary occupations	1
0 – Military occupations	1 + 4

Each of the 10 major (1-digit) groups corresponds to one (or two) of four education levels set out by the International Standard Classification of Education (ISCED) namely: primary (1), secondary (2), university or tertiary (3) and graduate education (4), as shown in Table 1, thereby providing a link between the education and occupational definitions of skill. The ISCED categories commensurate with the major groups *do not imply however* that the skills required for specific tasks and duties of a given job can only be acquired only through formal education; since they may, and often are, acquired through informal training and experience (ILO, 1990; p.2). This was emphasized in the 1995 Canberra Manual on Human Resources in Science and Technology, a joint-initiative of the OECD and the European Commission, which draws on best national and international practice to develop a common definition of high-skilled workers in Science and Technology (S&T) across various national contexts. The Canberra Manual recognizes two types of high-skilled workers, those having successfully completed university or tertiary in an S&T field of study and those employed but not formally qualified in an S&T occupation in which such qualifications are normally required (OECD/EUROSTAT, 1995). Based on these two principles, the Manual recommends that all

occupations classified in ISCO major groups 2 (professionals) and 3 (technicians and associate professional) or in management sub-groups 122, 123 and 131 should be considered high skilled.⁹ The Canberra Manual remains the most popular attempt at producing a common definition of high-skilled workers based on the International Standard Classification of Occupations but its narrow focus on S&T occupations disregards other highly skilled categories including businessmen, managers, teachers and healthcare providers.¹⁰

3.3 National Classifications of Occupations

Although many countries have adopted ISCO's methodology, others have developed their own occupational classifications based on competing principles. We continue by exploring some of the divergences between national occupational classifications and ISCO, thereby highlighting how countries variously conceive high-skilled migration.

The most recent edition of the U.S. Standard Occupational Classification (SOC) was released in 2010 (SOC 2010) and uses as its guiding principle *work performed*. No difference is made between occupations based on skill level in the U.S. A civil engineer with a master's degree working for an environmental engineering firm for example is assigned the same code as a civil engineer with a bachelor's degree working for a construction firm since they are deemed to perform identical tasks. During the 2010 revision process, the U.S. Standard Occupational Classification Policy Committee considered introducing a measure of skill level, but ultimately rejected the concept, arguing that if an occupation involves several tasks at varying skill levels, it proves too difficult to ascertain the position of an occupation within the hierarchy (Emmel and Cosca, 2010).

Israel's Standard Classification of Occupations (SCO, 1994) is instead based upon education level. The main guiding principle for the SCO is the amount of *institutional training* required to fill a specific occupation, which is expressed in descending order of education down the major groups. Whereas in most classifications, the first major group tends to be managers and senior officials, in SCO 1994, Academic Professionals followed by Associate Professionals and Technicians are first, since they require extensive university training. The SCO 1994 attempts to separate those with formally recognized training, from those with little formal training and those with informal training. For example, an Academic Graphologist is considered a Psychologist, whereas a Non-Academic Graphologist is instead grouped with Entertainment Workers. If the occupation involves several activities at varying skill levels, then it is ranked according to the activity at the *highest* skill level. For example, an occupation that involves both truck driving as well as the loading and unloading of goods, is included in 'Truck Drivers', whereas an individual that cares for children and cleans the house is included in 'Nannies'. The practice of classifying occupations at the highest skill level means therefore that workers are generously placed in more senior positions.

The Swiss occupational classification system (NSP, 1990) classifies occupations into primary, secondary and tertiary sectors and within these categories occupations are stratified according to the area of activity or the economic branch to which they belong. This complicates differentiating

⁹ While major groups 2 and 3 are of specific interest to the Canberra Manual, major group 1 is considered to be of less importance. This is because some of the managers in major group 1 are not relevant occupations for Human Resources in S&T, e.g. retail and hospitality managers, hence the Manual's focus on sub-groups 122, 123 and 131 (OECD EUROSTAT, 1995).

¹⁰ UNESCO instead defines the highly-skilled as the total number of individuals participating directly in Science and Technology occupations while being paid for their services; therefore additionally including scientists, engineers, technicians and even auxiliary personnel. Similarly, the OECD Frascati Manual, which focuses upon Research and Development (R&D) personnel, suggests all persons employed in R&D should qualify together with those providing direct services to R&D including managers, administrators and clerical staff. Thus the focus of UNESCO and the Frascati Manual identify the highly skilled strictly on the basis of belonging to the field of Science and Technology.

between lower and more highly skilled workers and managers. For example, minor group 391 (catering and hospitality occupations) includes hotel and restaurant managers, chefs, cooks, kitchen staff, receptionists, housekeepers and room service and laundry maids. Whereas ISCO separates skilled workers from those involved in industrial processes, in the Swiss NSP it is the final product that is prioritised such that there is no distinction between occupations based on the manufacturing process. High-skilled workers in the Swiss labour market are thus conceptualised based upon what they produce as opposed to how they produce it, such that an individual providing a professional service is more likely to be considered high-skilled when compared to an individual involved in extracting raw materials, even if the former is a clerk and the latter is a chemical plant operator.

A final delineating factor operationalised in national classifications is the extent to which occupations rank in seniority. In the Canadian National Occupational Classification (NOC, 2011) ‘supervisors’ for example, are assigned separate codes, because they plan and direct activities and have the authority to hire and fire workers. In the Australia and New Zealand Standard Classification of Occupations (for example ANZSCO, 2009), ‘supervisors’ are not assigned separate codes since individuals in these occupations often carry out the same tasks as the workers they oversee. Similarly, whereas ISCO separates Professionals (major group 2) from Associate Professionals (major group 3), in ANZSCO associates are placed alongside the professionals in their field.¹¹ This suggests that Australia and New Zealand assign greater importance to the area of specialisation relative to education or formal training.

3.4 Discordance 2: Occupational

National occupational classifications furnish us with insights as to which high-skilled characteristics are given more prominence within particular national contexts. The divergences between national occupational classifications and the ISCO however, constitute a definitional discordance in the way high-skilled workers are conceptualised in various countries. Whereas some classifications are purely task-based (USA), others emphasize formal training and education (Israel). A third category (Switzerland, Germany and Austria) disregard the work performed, preferring to instead focus on the final product. Ultimately, the same worker may therefore potentially be considered high-skilled or otherwise depending upon which national nomenclature is adhered to.

4 How do countries operationalise their high-skilled migration policy?

National occupational classifications demonstrate which high-skilled characteristics are given prominence within particular national contexts. They have little direct bearing on immigration policies however since they oriented towards different goals and indeed pertain to the total population as opposed to the subset of immigrants.¹² Immigration policies, or collections of policies, may instead be considered broader conceptualisations of high skill¹³ since they include many aspects of human

¹¹ Unlike ANZSCO, the previous Australian Standard Classification of Occupations (ASCO, versions 1 & 2) was similar to ISCO in that it did separate Associate Professionals and Technicians from Professionals.

¹² A notable exception is Canada, in other OECD countries national occupational classification systems tend not to be used in the *selection* of high skilled migrants (EMN 2007: 14-15).

¹³ It may be argued that the de facto definitions of highly skilled that emerge from examining policy regimes may better be thought of as ‘high value-added’, as opposed to ‘highly skilled’, with the qualification that what constitutes ‘value added’ varies significantly between countries and is certainly not strictly limited to economic utility. In Australia for example, those with skills in oft-declining traditional industries e.g. tailoring or cabinet-making, are highly valued, while the profession-specific entry visas in Japan and Korea contribute to systems that express an overall preference for co-ethnics, while only

capital that occupational classifications alone overlook. In this sub-section we therefore adopt an inductive approach to explore alternative meanings of highly-skilled by extrapolating from elements of national policy systems. This is a novel approach¹⁴ presenting two distinct advantages. First, it defines high skilled on the grounds of migrants' characteristics at the time of migration, thereby militating against concerns of analytical slippage between those that have responded to policy incentives and the pool of migrants possessing human capital as subsequently defined (Jaso et al 1998). Secondly, such an approach focuses upon those migrant characteristics actually selected by policy, rather than starting with an *a priori* conception of skill. The following analysis is based upon a longitudinal analysis of national high-skilled migration policies implemented across 19 OECD countries.¹⁵ Policy data were obtained from the texts of laws, annual SOPEMI reports (OECD 1974-2013), analysis of the UC Davis 'Migration News' data base (UC Davis, 1994-2013) national government websites and resources that provide information to would-be migrants.

4.1 Primary modes of entry

Most countries permit immigrants entry across their borders contingent upon passing a *points-based test*, which typically comprises several distinct components, or else having secured a *job offer*, with the latter mode of entry additionally imposing subsidiary requirements.¹⁶ Bertoli et al (2009) and Chaloff and Lemaître (2009) differentiate between 'employer-driven' and 'immigrant-driven' systems, which could be imagined along a continuum of demand- (employer-driven) and supply- (immigrant-driven) orientated policy regimes. Ultimately, such broad categorisations identify particular policies or dimensions of value that interact with other policies in order to shape the prevailing policy *system*.¹⁷ Thus while contrasting supply and demand policy orientations provides an important analytical lens through which to analyse immigration policies, it proves vital to delve into the constituent elements of nations' immigration policies in order to understand their net impacts on particular groups.

4.2 Points-based systems

Points-based assessments have long been the primary means for granting migrants entry in Australia, Canada and New Zealand. Originating in Canada in 1967 they have subsequently been adopted by the Czech Republic (2003), the UK (2002, although substantially reformed in 2008), Denmark (2008) and Japan (2012). In the UK and Japan the points test is not the primary route of entry; they constitute secondary requirements for those already having secured a job offer. Points-based systems vary widely across countries, specifically in terms of how points are allocated, which is central to how highly-skilled migrants are implicitly defined. Most points-based systems strive to capture a multi-dimensional notion of human capital, allocating points along five dimensions: current national demand for particular skills; education level; professional experience (or previous earnings); age; and

admitting migrants in sectors where greater global engagement is necessary, such as 'foreign language teaching' and R&D (Kondo 2002; Park 2013).

¹⁴ Studies looking at the relationships between policy goals and outcomes deliver a complimentary approach (e.g. Kocharov 2011).

¹⁵ Specifically: Australia, Canada, The Czech Republic, Denmark, Finland, Germany, Israel, Japan, South Korea, New Zealand, Norway, Poland, Portugal, Romania, Slovakia, Sweden, Switzerland, the United States, and the United Kingdom.

¹⁶ One exception to this is the U.S. system, which is predominantly based upon having a secure job offer, for both of the most important high-skilled entry visas, H-1Bs and EBs, while also offering the possibility of those applying for an EB-2 Visa to obtain a 'national interest waiver' of the job-offer requirement, based on an assessment of their qualifications and experience, something not wholly unlike other countries' points-based assessments.

¹⁷ That Papademetriou and Sumption (2013) refer to as 'hybrid systems'.

integration costs (i.e. language ability and previous in-country work-experience). National demand for particular skills is typically expressed in shortage lists. While only Australia makes passing its points-based test contingent upon having a shortage-listed job, Canada, New Zealand and Denmark all have points tests that award points for shortage-listed professions. Most shortage lists are therefore best understood as offering alternative routes of entry to those possessing narrower indicators of transferable human capital i.e. education or work experience, that would be of immediate economic value to host nations.

Points awarded for education, experience and age, strive to capture a general and more flexible notion of human capital untied to a specific role, such that in most cases sufficient points across these dimensions may substitute for concrete job offers (or else in-demand professions). The political costs may therefore be greater, since migrants have greater freedoms to impinge upon domestic labour markets and displace native workers. The award of points for age represents an attempt to balance rewarding experience and selecting younger migrants whom are more likely to contribute to host nations over greater time horizons. Those in their late-twenties to early-thirties are awarded the most points, which illustrates the principle of balance between potential and experience. The final common dimension of value represents attempts to offset integration costs of migration: *personally* for the migrant, *economically* in terms of transition costs involved in adapting to the new workplace and *politically* in terms of native's attitudes towards immigration.¹⁸ Points are assigned for: being able to converse effectively in the national language, having in-country family members, having studied in the host country and previous in-country (or indeed in-EU) work experience.

4.3 Job-offer systems

The second broad set of immigration policies variously adopted internationally, instead make immigration contingent upon a job offer (in the first instance), thereby constructing a more tautological definition of high-skilled, i.e. those able to meet labour shortages that cannot otherwise be filled locally. A job offer is seldom sufficient on its own to be granted admission however, since this preliminary requirement is often further qualified by additional conditions that aim to positively discriminate in favour of high-value migrants including: passing a labour-market test, being employed in shortage-listed (entry-categories-listed) occupations, passing a further points-based assessment or otherwise holding requisite qualifications.

4.3.1 Labour market tests

The most common secondary requirement, labour-market tests, typically involve public advertisements to ascertain whether domestic workers are available to work in positions that migrants might otherwise fill. Although their popularity has waned in recent years, they nevertheless constitute the main secondary requirement in Finland, Israel, Poland, Slovakia, Sweden, Switzerland and the US; while also playing important roles in Germany, Japan, Portugal and the UK. When a labour market test is the main qualifying factor, the *de facto* definition of a 'desirable migrant' is an individual able to redress domestic labour shortages; such that immigrants' value-added might ultimately be low given the preferential treatment of native labour. Labour market tests – and thus these stipulations – vary according to their stringency however. Switzerland for example, requires both an EU-wide advertisement to be placed for a significant length of time, in addition to allowing

¹⁸ Facchini and Mayda (2012) find that more educated natives are less likely to favour skilled immigration, while richer people are more likely to do so and further that skilled immigrants are perceived to be more desirable on non-economic grounds, especially by individuals who are concerned about security and by those who value traditions and customs.

trade unions to weigh-in on, and even block, non-EU hires. In Germany, the test is far more generic, all that needs to be demonstrated is that hiring the foreign worker will not harm the German economy.

4.3.2 Shortage Lists

Substituting for, or indeed complementing, labour-market tests, countries variously restrict job-offer holders' entry based on a shortage list or else a set of profession-specific entry categories. Portugal, Japan and Korea are the strictest in this regard, limiting migration to those who have a job offer and a listed profession in Portugal or one granted entry based on a specific eligibility category in Japan or Korea. Shortage lists enable governments to classify what it means to be highly skilled beyond tautological definitions based on market demand, thereby incorporating particular priorities or values that are not necessarily expressed by prevailing market forces. In the case of Australia, the use of shortage lists reflects an attempt to mediate between competing social and economic priorities while facilitating long-term planning within migration policy, although as the rhetoric around Australia's immigration debate reflects, longer-term plans are occasionally undermined in favour of short-term political gains.¹⁹ Germany and Japan offer expedited processing and access to residency for those on narrow lists of the extremely highly skilled or most qualified. In Germany, these are defined primarily as scientists 'with special technical knowledge', researchers and academics; while in Japan, special allowances are made for those in 'specialized technical activities', business management, and academic research (EMN 2007; Immigration Bureau 2012).

4.3.3 Additional Points-based tests

Having been offered a job in Japan provides migrants with the opportunity to take a points-based test that offers a long-term visa and thus permanent residency. Similarly, in the UK, a points-based test is used to evaluate the basic qualifications, means of self-support and likelihood of integration of those having obtained job offers. In both cases, the points-based tests are used as secondary mechanisms of assessment to further refine the definition of high-skilled migrants: i.e. those whose skills are generally in demand, but who are also highly qualified and experienced and who earn (or will earn) above a particular threshold. Notably, the UK also has a shortage list, wherein listed professions with a job offer immediately pass the test. In this case, the list represents a government-selected list of high-human capital or severe shortage professions, above and beyond regular market shortages that manifest in present demand.

4.3.4 Earning power

The final supplementary criterion implemented in conjunction with the job offer primary-mode-of-entry (for high-skilled workers), are tests of qualifications or earning power. In Norway and Germany, migration is generally only open to those with undergraduate degrees, or higher-level vocational or professional qualifications. There is a requirement that those admitted into the foreign specialist/skilled-migrant routes to earn double or between three-to-four-times the national average income in Israel and Romania respectively. In Finland, where labour migration is *only* open to the highly skilled, either a higher qualification or an 'above average' salary are taken as indicators of skill, in which case, qualifications or earnings are taken as proxies for high levels of human capital. Despite making migration contingent upon job offers, many countries that privilege this general notion of human capital notably allow migrants to change employers, effectively using short-term market demand as the initial arbiter of entry, but not as the ultimate arbiter of stay. Examples include Finland, Norway and Romania.

¹⁹<http://www.amma.org.au/newsroom/media-releases/3394-coalition-s-skilled-migration-program-will-restore-business-confidence-scott-morrison>.

4.4 Demand versus Supply-driven systems

Broadly speaking, supply-orientations manifest predominately in point-tests while demand-orientations often in systems necessitating job offers. Points-based systems encapsulate the broadest concept of ‘high-skilled’, combining various dimensions of skill, immediate-term economic benefits as well as more general measures of human capital, which include education, age, experience and cultural capital. Supply-orientated immigration policies thus envision migrants as human capital and skilled migrants are conceptualized as expanding future economic possibilities. In contrast, demand-driven systems, commonly advocated on the grounds of present economic needs, instead aim to respond to short-term economic exigencies, thereby framing skilled migration in terms of renewable short-term stays, contingent upon persistent demand.

All migration policy systems combine supply- and demand-orientated policies however. Insofar as migration policies contain provisions for selecting migrants beyond market-demand-led mechanisms, they incorporate supply-based elements into the system. Similarly, points-based systems are not exclusively supply-oriented, since they may privilege market demand at the decisive condition of entry, while *also* selecting in favour of high-human-capital migrants. This suggests a need to examine policy *systems* not as singular wholes, but rather as mediating conflicting priorities in a hierarchical manner. It remains an empirical question as to whether regimes that encompass multi-dimensional notions of skill are more successful in attracting high-skilled migrants and indeed their subsequent impact on economic success.

Table 2. High Skilled Migration Policy: Modes of entrance and further conditions

Points Test (5 Dimensions)	Job Offer			
-Current demand for skills -Education -Work experience -Age -Adaptability Canada; Australia; New Zealand; Czech Republic; Denmark	Labour Market Test: Germany; Israel; Poland; Slovakia; Sweden; Switzerland; UK (if not in a shortage-listed profession); USA.	Shortage List/ Entry Categories: Japan; Korea; Portugal; Germany (researchers specialist scientists and academics) UK	(Secondary) Points-Test: Japan; UK	Minimum Qualification or Salary: Norway; Finland; Germany; Israel; Romania

The fact that demand-driven systems, contingent upon job offers, are more prevalent is telling however, since this suggests that most countries prioritise immediate economic value-added above the overall potential of migrants (Basri and Box 2008; Bertoli et al 2009; Chaloff and Lemaître 2009). The narrower definitions of skill adopted potentially limit the prospects of both migrants and their employers since the secondary assessment mechanisms adopted impose additional transition- and uncertainty-costs and in turn create incentives for would-be migrants and their employers to pursue entry through alternate channels. This short-termism also suggests it makes less sense to ask whether such countries are successful in attracting high-skilled migrants - defined in broader human-capital terms - when the policy regimes in place fail to necessarily allow migrants to realize their potential by: restricting their entry, tying them to employers or simply imposing undesirable conditions on their stay, such as an inability to attain permanency. Bertoli et al (2009) note that this orientation towards different economic horizons, short or long, will impact upon which selection criteria are privileged within points tests. Boeri et al (2012) note that migration policy is *only* able to meaningfully attract

and capitalize upon human capital – thus addressing economic challenges - when oriented towards the longer-term.

4.5 Discordance 3: Policy

The final discordance that we identify in this paper we term a *policy discordance*, which considers: the inherent contradictions in the treatment of specific groups by nation states when implementing policies, the difficulties in comparing national policy regimes and the use of proxy variables in operationalising high skilled policies in practice.

All policy regimes go some way to balance competing priorities and objectives, broadly between permissiveness and restrictiveness, but within any given national policy *system*, tensions exist between mediating individual policy components given competing political ambitions. Countries therefore often simultaneously implement policies that have differing effects on the same migrant group. As Joppke (2007a, b) suggests, pursuing divergent goals through various policy mechanisms may allow governments to reconcile competing goals, for example in cases where nominally tough rules appease popular anti-migration sentiment, while bureaucratic back-doors ensure migrants' entry, to stay, bring families and support economic projects. A discordance nevertheless arises between nations' immigration policies, which reflects competing national priorities, political dynamics, histories and positions within the international system.

As Shachar (2006) notes, attracting highly skilled migrants has led to a dynamic of attempting to mirror policies of successful countries whilst seeking to create unique incentives (see also Papademetriou and O'Neil 2004). The liberalization of entry and stay conditions together with policies specifically targeted towards highly-skilled migrants do serve to increase a country's proportion of skilled migrants, when taken as meaning highly educated or high-earning (Bertoli et al 2009; Kocharov 2011). Incoherent or restrictive policies do not necessarily translate into a lack of (skilled) migration however (Mayda 2010), as regimes often offer loopholes or alternative entry channels through which the same migrants may enter the host country. What therefore results is a failure to define a 'desirable' migrant as an object of law. Nevertheless, many countries, while recognizing the need for immigration, have refuted their status as 'countries of immigration' which has resulted in a failure to attract sufficient levels of desired talent. This was the German experience during the late 90s and early 2000s (Oezcan 2004; ECOTEC 2001; IOM 2009: 280), the Czech Republic from its independence until it began to reform its policy in line with the EU in 2002 (IOM 2009: 98) and Japan prior to 2012, especially prior to 1990 (Mayda 2010; Kondo 2002; Immigration Bureau 2012); none of which, save for Germany in recent years, have become especially successful at attracting skilled migrants today.

Although international differences in policy are largely understood through the lens of 'competition' for talent (Shachar 2006; Bertoli et al 2009; Boeri 2012), discordances within and between how skilled migrants are conceptualized by different national policy regimes, can, in effect, undermine the ability of states to use policy as a means to attract skilled migrants, whether competitively or otherwise. Belot and Hatton (2012), find no correlation between permissive policy and the education levels of migrants, although other factors such as cultural distance and income are shown to exert influence. This might suggest that countries face difficulties in distinguishing their high-skill from their broader migration policies, such that unique incentives for the high-skilled may fail to emerge. Examining the content of migration policies suggests this is largely a problem of internal discordance. In each country bespoke highly skilled migration policies are confounded with broader immigration policies, for example the special provision of expedited entry, but not for long-term stay, or else for stay but not for family reunification rights. Thus migration policies targeting the

highly skilled may be giving on the one hand while taking on the other, effectively counteracting incentives with disincentives elsewhere, or else rendering high-skilled policy regimes illegible to migrants, in a way which prevents them from responding to them as either incentives or disincentives.

We can also identify discordances between the use of proxy variables used to operationalize definitions of human capital and market demand. While some dimensions of human capital, such as linguistic ability, have been operationalized in internationally standardized ways – i.e. IELTS and TOEFL tests for English - other dimensions such as the recognition of educational or vocational qualifications or industry experience, remain more ad hoc. Other dimensions, such as family ties, or relevant work experience, remain hard to verify – potentially leading to skill downgrading (which proves important what examining immigrants’ impacts on host societies labour markets (Preston and Dustmann 2012)). Similarly, when assessing market demand, alternative routes for advertising vacancies exist that assign different values to occupations, which would better accommodate long-term policy goals should they be devised in light of predicted local supply. Taken together, these discordances culminate in unutilised talent, towards an inability to render migration patterns ‘legible’ in a way that allows for the formulation of long-term policy and to the potential deterrence of migrants who would, in principle, be considered valuable.

5 Conclusion

High skilled migration continues to grow unabated globally and yet the definition of what it means to be high skilled remains contentious. This ambiguity potentially undermines attempts to quantify human capital and militates against assessing the effectiveness of various policies that pertain to the movements of highly skilled individuals. In this paper we identify, and discuss the implications of, three different ways of conceptualising high skilled migration. First we examine the various definitions of high skill that are used by national statistics authorities to record human capital. Our analysis evokes a *definitional discordance* since vastly different numbers of individuals are identified as high skilled depending upon which definition is used. Secondly, we examine the underlying philosophies that nations use when compiling their national occupational nomenclatures. This gives rise to an *occupational discordance*, since the same individual might be classified as working in differing occupations (and therefore of different skill levels) depending on where they are physically located. Finally, we identify a *policy discordance*, which results from countries variously implementing complex immigration policy systems. Such policy *systems*: offer differing and changing incentives to similar immigrant groups over time, are difficult to compare across countries given their complexity and the various implementation of proxy variables. The consequence of this *policy discordance* is that different individuals may be admitted to countries’ labour markets regardless of which definition of skill or occupation are utilised. We conclude by offering some recommendations that go some way to remedy each discordance.

Section 2 highlights the fact that national data sources based on educational attainment, occupation or salary thresholds although strongly correlated, on average, identify different individuals. It clearly matters therefore which definition Governments choose to operationalise at the national level when recording migrants, not least given their competing national priorities. Such differences would no doubt be severely exacerbated should the inequality of education provision be more fully considered, which varies significantly both within and across national borders.

We therefore repeat the call for nation states to collect and publish greater amounts of more disaggregated data in ever greater detail (Santo Tomas et al 2009) such that individuals can be more similarly recorded. Ideally all published data would adhere to international standards and definitions (see for example United Nations 1998), but at least for the time being more disaggregated migration

data - on both stocks and flows – might at least provide sufficient scope for detailed harmonisations to be constructed. It is also crucial that countries spend sufficient financial resources to ensure that data are collected as systematically as possible and released in a timely fashion to ensure academic work is as accurate and up-to-date as possible.²⁰ International organisations, specifically the UNSD, UNPD, World Bank and the OECD have all played significant roles to date, but given the fundamental coordination difficulties and the collective incentives for all countries to benefit from the improved data of other nations, more constructive pressure is needed in the years to come. One potentially important starting point would be to focus on advancing the capacity of regional statistical agencies. Eurostat already attempts to collate comparable migration data from across the European Union, Afristat from across Francophone Africa, the Economic Commission for Latin America and the Caribbean for Central and South America and the Interstate Statistical Committee of the Commonwealth of Independent States from across the former Soviet Union. Strengthening these institutions makes all the more sense given that most international migration remains intra-regional (Özden et al 2011), such that countries, by teaming up with their regional neighbours when compiling data, would have access to data on a large fraction of their emigrants. Moreover, since (migration) data collections are time consuming, expensive and protracted processes that often rely on contacting (and indeed the benevolence of) a specific individual in one of a host of government agencies, economies of scale could also be realised when disseminating relevant migration statistics through regional agencies; thereby potentially reducing the financial costs and time taken for users to obtain such statistics.

It also matters which methodological tools are used to record high-skilled migrants in terms of which types of migration data are collected, which in turn lend themselves to alternative analyses. Currently, the available migration data disaggregated by skill level all pertain to a stock definition, which provide nebulous snapshots at a particular point in time; as opposed to flow data which are preferable for appraising migration dynamics.²¹ Stock data nevertheless constitute the most appropriate sources for examining the global distribution of skills, since despite differences in quality, most countries conduct decennial censuses and pose questions regarding individual's education level. An education definition is not applicable for migration flows however, since migrant's education levels are rarely recorded in the sources used to record entries and exist. Typically a range of administrative tools that are highly context specific are utilised which in the relatively rare cases that migrants' skills are in fact recorded, typically record migrants' occupations. These data are advantageous since they capture immigrants entering a country's labour force, i.e. they necessarily measure additions to host countries' human capital stocks.

The first best solution to overcome the *definitional discordance* would be for all countries to unanimously adopt the ISCO, which would then foster a first-best definition of what it means to be highly skilled, one harmonised between countries and over time. Given international progress to date however, this seems unlikely to happen in the near future. In the meantime academics need remain pragmatic - although cautious - utilising existing data to the greatest extent possible (Skeldon 2012). In the absence of countries unanimously adopting the ISCO nomenclature, sufficiently detailed data on migrants' occupation level from across different countries, represents an opportunity for an

²⁰ As important issue that is not often discussed in migration research are the large 'remainder groups' recorded in the underlying data, which typically arise if immigrants were recorded imperfectly at the time of entry. This is important since the correct assignment of such individuals proves vital in empirical work to allay fears of selection or measurement error biases.

²¹ Whereas a decade ago academics were deprived of migration stock data disaggregated by a high-skill break-down, today the same is true for migration flows. In the absence of such data, many potentially fruitful avenues of enquiry, for example the dynamic efficacy of immigration policies targeting high skill migrants, are denied to academics.

alternative harmonised definition of what it means to be high-skilled, one based on occupation and separate from the prevailing definition that takes one year of tertiary education as the relevant threshold. Since countries in the event that migrants' occupations are recorded, often do so to a significant number of digits, one practical avenue for future research would be to obtain such data and concord them to a standardised definition, the success of which would depend upon the level of detail obtained and the extent to which detailed occupational categories capture the same job across countries – which is unknown. The level of disaggregation of occupation data made available by national statistics authorities therefore remains key. The privacy policies that authorities implement to ensure that individuals cannot be identified from the raw data are also important, since these regulations govern the balance of zero and missing observations in the data provided to users and in addition the number and distribution of redacted cells in any data received.

Given existing efforts, one sensible definition to which data could be harmonised to would be one based on the Canberra Manual that defines as high skilled those occupations comprising ISCO categories 2 and 3 and sub-categories 122, 123 and 131. This approach benefits from recognising that an individual need not have formal qualifications to be a professional since one may have acquired experience on the job. Since the Canberra Manual specifically relates to S&T however, a more all-encompassing definition might also consider the additional occupations in category 1: managers in 121 (business services and administration managers), 132 (manufacturing, mining, construction and distribution managers), 133 (information and communications technology managers), 134 (professional services managers), 141 (hospitality and restaurant managers) and 142 (retail and wholesale trade managers). The advantage of such a definition based on occupation over one based on education will depend upon the degree to which disaggregated occupational data identifies similar workers across countries, relative to the extent that data capturing immigrants' education level reflects workers of varying abilities. This difference remains difficult if not impossible to quantify but given the large degrees of heterogeneity in education provision both within and across countries it is not unreasonable to assume that such a definition would certainly prove useful in particular contexts; not least when evaluating flow data by skill level, data which are typically not delineated by education.

Bilateral agreements, in particular agreements on the Recognition of Diplomas, represent potentially powerful tools for countries to move towards a more harmonised conceptualisation of occupational classifications. Bilateral agreements are typically market-demand-driven and focus upon cooperation between specific Governments on targeted areas of mutual assistance, in some cases even serving to promote the formulation, administration and implementation of migration policies (e.g. CEEC countries, OECD 2004). Such agreements promote better managed skill-flows and allow governments to define the characteristics and numbers of labour migrants between their territories thus serving as mechanisms of control.²²

Agreements on the Recognition of Diplomas serve to acknowledge education acquired abroad as well as accrediting relevant work experience. In some cases, employer organisations further organise training programmes in sending countries, therefore preparing migrants for employment in specific destinations; for example the agreement between some provinces and regions in Italy and Romania, which provides vocational training to Romanians in the health sector (SOPEMI 2007). Recognition of qualification agreements are commonly negotiated between professional organisations

²² One example is the agreement between the Czech Republic and Mongolia signed in 1999 (in effect since 2000), which mutually allows qualified labourers to obtain a work permit for one year in the respective country, with a cap at 1,275 labour migrants per year (Hur and Young 2008: 87, OECD 2004). Another example is the agreement between the United Kingdom and Spain from 2000 which is aimed to fill a gap in UK health professional workers, but only up to a yearly cap at 5,000 labour migrants (2000; OECD 2004).

or associations (Hartmann 2008) and are increasingly plurilateral in nature. For example agreements between the three accountancy associations of Australia,²³ and the accountancy bodies of the partner countries respectively (OECD 2004).²⁴ The International Council of Nurses is developing a framework for a 'Generalist Nurse' in order to provide global educational and professional standards. In the engineering sector, several international accords have been signed including: the Washington Accord 1989 the Sydney Accord 2001 and the Dublin Accord 2002 (International Engineering Alliance), which deal with equivalence in the accreditation of engineering qualifications. The APEC Engineer Economic Cooperation (Agreement), the International Professional Engineers Agreement and the International Engineering Technologist Agreement (International Engineering Alliance), instead cover the recognition of credentials of practicing engineers at the individual level.²⁵ Similarly, the European Federation of National Engineering Association and the European Network for Engineering Accreditation constitute agreements between their members and the signatories of other multilateral agreements/associations (CARIFORUM) to increase mobility and recognition among engineers across Europe. All of these agreements indirectly serve to harmonise definitions of particular occupations above and beyond idiosyncratic national nomenclatures.

Given the inherent contradictions between and within the packages of policies that nation states simultaneously implement, it makes greater sense to conceptualise them as *policy systems*, which collectively provide differing and changing incentives to various types of immigrants over time. Existing academic studies that have pioneered econometric approaches to analyse the effects of migration policies instead typically adopt singular measures when assessing the efficacy of nations' immigration policies (e.g. Mayda 2010 and Ortega and Peri 2013). These are more suited to analyse the overall effect of policies on aggregate immigration flows as opposed to their constituent components. Nevertheless, such approaches are complicated by trying to assign a unique value to a set of policies captured by a single variable, which variously affect different groups that constitute the aggregate flow in varying and unknown proportions.

A more satisfying approach would instead disaggregate prevailing *policy systems* into individual policies that are targeted towards (specific groups of) migrants. Such an approach would be advantageous because the effects of different policies on distinct migrant groups could be meaningfully identified. Moreover, existing studies examine changes in policies overtime for particular nation states and so it does not prove possible to conduct fair comparisons of policy systems between countries, since it is unclear to which level such changes are anchored to. Collecting data on

²³ The Certified Practising Accountants, the Institute of Chartered Accountancy Australia and the Institute of Practising Accountants.

²⁴ Including the Society of Management Accountants and the Certified General Accountants Association of Canada in 2008, the Chartered Accountants of India in 2009 and the Hong Kong Institute of Certified Public Accountants in 2010.

²⁵ These are the current signatories for the various agreements (excluding organisations holding provisional status), with the year in which they joined in brackets: Washington Accord: Australia (1989), Canada (1989), Hong Kong (1995), India (2014), Ireland (1989), Japan (2005), Korea (2007), Malaysia (2005), New Zealand (1989), Russia (2012), Singapore (2006), South Africa (1999), Sri Lanka (2014), Taiwan (2007), Turkey (2011), United Kingdom (1989), United States (1989); Sydney Accord: Australia (2011), Canada (2011), Hong Kong (2001), Ireland (2001), Korea (2013), New Zealand (2001), South Africa (2001), Taiwan (2014), United Kingdom (2001), United States (2009); Dublin Accord: Australia (2013), Canada (2002), Ireland (2002), Korea (2013), New Zealand (2013), South Africa (2002), United Kingdom (2002), United States (2013); APEC Engineer Economic Cooperation: Australia (2000), Canada (2000), Hong Kong (2000), Indonesia (2001), Japan (2000), Korea (2000), Malaysia (2000), New Zealand (2000), Philippines (2003), Russia (2010), Singapore (2005), Taiwan (2005), Thailand (2003), United States (2001); International Professional Engineers Agreement: Australia (1997), Canada (1997), Hong Kong (1997), India (2009), Ireland (1997), Japan (1999), Korea (2000), Malaysia (1999), New Zealand (1997), Singapore (2007), South Africa (1997), Sri Lanka (2007), Taiwan (2009), United Kingdom (1997), United States (1997), International Engineering Technologist Agreement: Canada (2001), Hong Kong (2001), Ireland (2001), New Zealand (2001), South Africa (2001), United Kingdom (2001).

the presence or absence of particular policies that constitute policy *systems* however would allow just such comparisons to be made. A particularly crucial advance in this regard is the ambitious IMPALA project (Beine et al forthcoming), which aims to record in heroic detail hundreds of individual policy elements and which no doubt, when completed, will represent the Gold Standard for years to come.

Given that aggregate flow data mask their constituent elements, in order to be able to meaningfully ascertain the impact of policy systems, even if disaggregated into their individual policy elements, there exists the need to compile and make available ever more disaggregated data on migration flows. Flow data on refugees and asylum seekers are already available and should data for at least a subset of destination countries on the various occupations of (economic) migrants become available, such data, especially if used in conjunction with the available data on total flows (e.g. United Nations (2013), Vezzoli et al (2014) would provide sufficient scope to test the efficacy of many types of immigration policy that currently remain untested.

In terms of the difficulties for policy makers and academics when considering the varying uses of proxy variables, it remains incumbent on Governments and the relevant national authorities to ensure that sufficient information is made available to interested parties, such that the nuances and differences can be taken into consideration. Here again the strengthening of regional institutions to facilitate the accurate and timely collection and dissemination of information on migration could play a crucial role.

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