Policy, Social Capital and Health: The Multiple Implications of Immigrant Economic Incorporation

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To
my grandparents Măndiţa and Alexandru,
Now and Forever

Bunicilor mei Măndiţa şi Alexandru
Acum şi pentru totdeauna

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Abstract

For many the success of a migration decision depends on making a successful transition into the new labor market. The objective of this dissertation is to shine light on the link between the labor market outcomes of first-generation immigrants and the policy configuration of their host country. The body of this dissertation consists of three empirical chapters. The first assesses a policy shift in Austria to highlight its impact on the education-occupation mismatch. The second assesses the role of social networks in post-migration employment and occupational mobility in Australia. The third tackles the interplay between immigration, obesity and wages in Australia, focusing on the way in which obesity is measured. The general conclusions attest to the multi-faceted nature of the immigrant experience and, moreover, to the importance, especially when discussing policy, of a comprehensive perspective accounting for both the start point and the trajectory of immigrants subsequent to arrival.

Keywords: immigration, policy, labor market, social capital, health

Resumen

Para muchos el éxito de una decisión migratoria depende de una transición exitosa hacia el nuevo mercado laboral. El objetivo de esta disertación es arrojar luz sobre la relación entre los resultados obtenidos por inmigrantes de primera generación en el mercado laboral y la configuración de las políticas del país de acogida. Esta disertación está conformada por tres capítulos empíricos. El primero evalúa un cambio en la política de inmigración de Austria con el fin de resaltar su impacto en el desajuste entre educación y ocupación. El segundo evalúa el papel que juegan las redes sociales en el empleo y en la movilidad ocupacional post-migratorios en Australia. El tercero aborda la interrelación entre la inmigración, la obesidad y los salarios en Australia, enfocándose en la forma en la que se mide la obesidad. Las conclusiones generales avalan la naturaleza polifacética de la experiencia del inmigrante y, además, la importancia, especialmente cuando se habla de políticas, de una perspectiva global que dé cuenta tanto del punto de partida como de la trayectoria de los inmigrantes con posterioridad a la llegada.

Palabras clave: inmigración, políticas, mercado laboral, capital social, salud

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Introduction

Motivation and Relevance

Research has shown a tremendous amount of variation in countries' ability to integrate immigrants into the labor market. One potential reason stems from the economic and social exclusion that immigrants might face. Some of the European countries with the largest economies and highest share of immigrant population, Austria among them, started reshaping their immigration policies to achieve greater control over who comes to work and settle. Other non-European countries, specifically Australia, have had this type of policies for a longer period. My goal is to assess the labor market performance of those who interact most directly with the immigration regime in place - first-generation immigrants - in these two countries, in terms of transferability of educational attainment, initial employment and occupational mobility, and wages.

The primary concerns of immigration policy are setting the overall level of immigration and choosing among the many potential immigrants. The problem with policy design originates from the fact that it may need to satisfy the conflicting needs of all involved parties. More precisely, a country focused on economic migration should receive economic gains of immigration (e.g., fill its labor shortage), but should also make sure that immigrants are motivated to choose that country (e.g., credential recognition, job mobility).

Selective immigration policy that favors skilled workers might represent a way to please all involved. From the immigrant's point of view, successful integration might somehow come easier and at lower costs. From the

receiving country's perspective, the change might simultaneously help reduce the inflow of low-skilled labor force and guarantee a stable and realistic position in the highly competitive international labor market for well-trained workers (Constant and Zimmmermann 2005: 98). One aspect is worth remembering. A strong emphasis on economic migration might increase the total migration (i.e., international treaty obligations regarding family protection and sanctuary provision for refugees) and generate fiscal pressure, which is something most countries are reluctant to agree upon. Therefore, to keep all figures at bay, restrictiveness may manifest itself not only prior to crossing the national borders and not only in relation to human capital dimensions (e.g. health profile), but also once pass them and part of the receiving country's labor market (e.g., financial maintenance targets, access to social provision). For an immigrant, these are matters that weight heavily when assessing a life altering geographical move.

What I am interested in is how immigrants fare – in relation to natives, exploring variation in country of origin and or attributes - once they have managed to jump through the hoops of a selective mechanism. On the one hand, Tani (2014) notes in a state of the art review that all existing analyses of points-based systems suggest a disconnect between the evaluation of attributes by system and that by the labor market. On the other hand, employer-driven selection systems are often identified for increasing vulnerability to exploitation (e.g. Lowell 2005). As Kogan (2015) remarks, the role played by the interlink between the institutional features of the labor market and immigration policy in immigrants' labor market success is uncharted territory. Everything accounted, shining light on the relationship between immigrant outcomes and policy environment is crucial since for many the success of the migration decision depends on making a successful transition into the new labor market. It is equally crucial when one considers that empirical evidence often serves as basis for

policy design and refinement. Specific points in the timeline of the immigration system of Austria and Australia, constitute the focus of the first and second chapter, respectively. Current systems are yet to account for all shortcomings of the past and destination countries considering selection mechanism should not exclusively focus on recent policy elements. Experiments with a hybrid selective system that got scraped – Denmark, that are upcoming – Germany (Points-Based Immigration System Trial 2016), or are undergoing changes – the Czech Republic, Sweden, Japan, Singapore, and the UK, speak to a dire need for grounded evidence. My efforts aim to provide a robust picture of labor market inequalities by tackling an array of labor market outcomes and assessing either the starting point or trajectory of integration of immigrants. Ultimately, I aim to add to the burgeoning literature on selection mechanisms an exploration of the consequences of a policy alteration (Austria)- in chapter one - and two examinations of the climate created at the intersection of immigration policy and social policy (Australia) – in chapters two and three. I use novel measurement approaches and the best tailored data available to support the arguments I put forth. To the limit of generalizability allowed by my conceptual and methodological setup, I provide policy remarks and comparisons with similar work in different policy contexts.

Below I present a summary of the theoretical and technical considerations that guided the chapters of this dissertation. Specifically, I start by discussing the policy considerations that dictated the case selection understood as the country and period specific policy context pined by each empirical chapter. I then proceed to explicate the term 'immigrant' as employed in each chapter, with the intent to ensure clarity in comparisons, generalizations and policy considerations. I continue by developing on the outcomes I regarded most relevant to the economic integration of immigrants per policy environment. I note the measurement solutions I

utilized to forward and challenge research in the field. Lastly, I highlight the distinctive nature of the data I needed to tackle each research questions. All these elements accounted for, I surefootedly close in on a summary presentation of the empirical work constituting the subsequent three chapters.

Case Selection and Framing

Immigration Policy and Policy Environment

Economic migration to advanced industrial economies occurs in the framework of one of two competing models: (employer)/ (government/sector)-led selection (i.e., demand) or points-based system (i.e., supply), though more recent times have seen the two intersect into a hybrid system (Papademetriou and Sumption 2008; Kolb 2010).

Employer-driven systems allow employers to select the workers they need in real time, subject to governmental regulatory parameters for selection. One being selected by an employer in accordance with the rules and regulations set in place by the government is evidence of skills in demand and guarantee of employment upon arrival. Nevertheless, concerns arise regarding: employers manipulating the system to their benefit (i.e., top skills at cheap(er) prices) and or employee dependency on the employer (i.e., vulnerability to exploitation and skill depreciation). Moreover, since these systems aim to ensure local workers' protection, immigrant workers prevailingly receive temporary work authorization and must comply with stringent criteria to unlock permanency. The best-known employer-driven, skill targeting selection schemes is the so-called H1-B visa in the US. A clear majority of European countries have an employer-driven, skill-

oriented system for third country nationals, however all share just partial features of the Austrian system (i.e., quota mechanisms have mostly been abolished), which standards apart in its restrictiveness and selectivity.

The Austrian regime, as accounted for in chapter one (between 1996 and 2010), combines a strict quota system with targeted employer-selection. Between 1996 and 2003 to contract labor an employer had to apply for a one year 'restricted work permit' which tied the worker to the region, firm and position. Any changes implied a new permit. Regional residence and employment quotas as well as qualitative requirements were in place. After one year, a two-year valid 'work permit' for a given state was accessible. After working for five years out of eight of residence, one could personally request an 'exemption certificate' allowing unrestricted access to the labor market for five years. Between 2003 and 2010 non-temporary labor migration more clearly focused on 'key' workers, subject to quotas. Key workers received their work and residence permit simultaneously, once their employer filed the paperwork. Their skills and experience had to match the occupational requirement and their future wages had to meet a certain standard. As early as one year they could access a 'restrictive' or 'unrestrictive' work permit. This was valid for one year. Despite the appearance of easier market mobility, conditionality made it that still after five years of work one could truly achieve unrestrictive access to the market. Moreover, one had to comply with an 'integration agreement'. Family class migrants continued to be discouraged from labor market access, yet had the option of labor market testing if not 'key' themselves. Nationals of new EU member states were largely subjected to the same requirements as third-country nationals, owning to the transitional period of seven years Austria chose to impose.

Points-based systems seem appealing to both policymakers and immigrants as they are simple, transparent and flexible. They constitute a "human-capital accumulation" formula: a way to increase the population of workers who poses certain attributes which are either in short supply or considered of great intrinsic (long-term) economic value (Papademetriou and Sumption 2011:2). A minimum of certain attributes can be mandatory, and certain attributes might be mandatory, yet without point value. The problem lies within the fact that since employers are not involved in the selection process, there is no guarantee of employment for admitted immigrants. Moreover, there is no guarantee that employers will recognize and or value credentials and expertise similarly to state officials. This poses challenges in terms of integration and long-term economic benefits of migration (Papademetriou and Sumption 2011:1). There are three countries well-known for the introduction and use of a points-based system (PBS from here on): Canada (1967), Australia (1989), and New Zeeland (1991).

Australia had a standard PBS up until the late 1990s – a point in time referred by the second chapter of this dissertation. Specifically, at the time our cohort of interest permanently migrated to Australia – 1993-1995 – the system in place looked at and assigned points for: intended occupation – up to 80 points; level of education - assessed in relation to the intended occupation, hence zero points; work experience - assessed in relation to the intended occupation, hence zero points; English ability- up to 20 points; age- up to 30 points; geolocation – 5 points (i.e., willingness to reside in in a low populated or regional area of Australia) and the sponsor's status in Australia (family connection – up to 15 points, citizenship for at least 5 years – 10 points, and employment status – 10 points). The maximum number of points one could accumulate was of 165 with the pass mark set at 110 (Boucher 2013: 354).

Countries can choose not to allow immigrants immediate access to social provision seeing as this decision might cause financial burden on the system. Prior to 1997, Australia was less restrictive. Chiswick and Miller (2007:20) note that prior to 1993 settler arrivals had instant access to social security payments (unemployment among) under the same conditions as Australians. Only exception was aged pension - minimum 10 years of residence required. Since January 1, 1993, new immigrants had to wait for six month or until receiving a permanent visa - whichever later (Daniels 2004) before being eligible for Job Search Allowance, Newstart Allowance, Sickness Allowance or the 1995 introduced: Youth Training Allowance and Parenting Allowance. Exceptions were made for humanitarian cases and partners of Australian residents with more than 26 weeks of permanent residency. In case of unforeseen changes in circumstances, Special Benefit was accessible. They had immediate access to Medicare benefits, family payments and Austudy (Birrell and Evans 1996). March 4, 1997 is when a wait period of 104 weeks (2 years) was introduced for all allowances for immigrants arriving after said date. The number of exception was reduced. This lead to a diminished rate of welfare utilization.

All in all, the cohort reference by chapter two – entered Australia 1993-1995- fully benefited from the support of an accessible system and could take its time (i.e., activate social networks) in the quest for employment. In fact, Birrell and Evans (1996:1) note that the welfare arrangement at the time created an incentive for migration. Whether welfare leniency translated into a better labor market position is contested (Richardson et al. 2001) and beyond my scope.

A hybrid system combines the best of both worlds. It has the flexibility of the points-based system in that it offers multiple pathways to permanent residency and eases employment changes, yet prioritizes employer demand

in the format of arranged employment or experience in the host country (i.e., temporary-to-permanent pathway). It should be noted, however, that all points systems allow some form of employer-driven selection.

Employer Nomination based visas have always been part of the Australian system, yet in 1999 a sharp reconfiguration towards a hybrid system began as points started being awarded for arranged employment. Moreover, as of 1999 Australia increasingly developed temporary-to-permanent visas pathways for (potentially skilled) fee paying foreign students and for temporary business sponsored full-time employed skilled migrants. It also started treating its foreign students as a pool from which workers can be recruited (i.e., since 1998/9 bonus points started being awarded for an Australian qualification; since mid-2001 students have been eligible to apply for skilled migration onshore; between 1999 and 2007 students seeking two-step migration were exempted from English-language testing when applying for permanent residency and the work experience requirement was waived if the visa application was lodged within 6 months of completing their studies; since 2007 exemptions were cancelled, but students have been granted up to 18 extra months in the country to gain Australian work experience in their field of study and to better their English – Hawthorne 2008).

In the third chapter I do not reference a policy period. Specifically, I do not differentiate between immigrants who were and immigrants who were not subjected to a more hybrid selection nor do I focus on those who were. As stated, points systems are in a continuous evolution with respect to their 'hybrid' status and some of these stages are short-lived. The analyses presented focus on outcomes achieved at the intersection between this hybrid system's human capital and health (i.e., The Health Requirement below described) component.

"Nations of immigrants" ensured population health by taking a stance against "loathsome diseases" early on (e.g., the US- the Immigration Act of 1891, Australia- the Chinese Exclusion Act, followed by the 1901 Immigration Restriction Act). By consequence, in such countries the health screening of migrants has been regulated less by public health law than by migration law. Australia stands apart from the group as it focuses on the potential fiscal costs caused by migrants and the prejudice to access health care by Australian citizens, in addition to public health concerns – see the Migration Regulations 1994 - Public Interest Criteria (1994). In doing so it does not focus on direct public health concerns, but looks at the indirect impact caused by the health conditions, by considering the medical and social welfare system. By consequence, it has the potential to deny the presence of migrants with health conditions "which results in a significant cost", but do not necessarily cause a direct public health concern. Australia ranks fifth in terms of obesity levels among the adult population (OECD 2014:2). In this framework, Australia uses BMI as a screening/diagnosis tool for diabetes and heart conditions (i.e., obesity), but also for tuberculosis, cancer, malnutrition (i.e., underweight). Specifically, the Department of Immigration and Citizenship medical guidelines (DIC 2009:54) state that when attempting to enter Australia one receives a B grade - referral to physician for further investigation meant to address nature and severity of complications, treatment needs, and fitness for travel and stay in Australia- if her BMI is smaller than 16kg/m2 or larger than $40kg/m^2$ (temporary migrant) or $30kg/m^2$ (permanent migrant). However, as remarked in the 2009 House of Representatives Committee on Migration on the Health Requirement (HRC 2009: 35-36), costs associated with obesity are yet to be properly picked up in those (few) instances where waiver arrangements still apply (e.g., temporary skilled business class visa).

The third chapter analyses account for immigrants who, with few exceptions, were subjected to the Health Requirement with its obesity component. However, this happened: at different ages, as temporary and or permanent migrants, and with a variable degree of ease in meeting the thresholds. I do not have such information. Consequently, the policy component of the chapter only goes in as far as to assume that screening inevitably fostered a 'healthy immigrant effect' and toned down some of the financial aspects employers factor in when hiring an individual who departs from the 'normal' body size. A policy assessment is not attempted. As earlier stated, the intent is merely that of assessing how health screening operate in conjunction with human capital selection.

Unit of Analysis

There is no consensus on a single definition of 'immigrant'. There is no definition by law. Immigrants can be defined based on foreign birth, foreign citizenship, and the length of their settlement. These differences translate into different estimates. Thus, to avoid improper future comparisons and to facilitate policy evaluations, one should clearly state the operational definition.

A further level of ambiguity is brought by the use in conjunction of the term 'generation'. The term 'first-generation' can refer either a native-born citizen or resident whose parents are foreign born or a foreign-born citizen or resident who has immigrated to a new country of residence. The understanding under which this dissertation operates is that the term "first-generation" designates foreign-born citizens or residents. Moreover, it acknowledges Rumbaut's (2004 for an overview) distinction between those who are true first-generation (foreign-born who migrated after the age

of 17) and the rest: the '1.25 generation' (migrated between the age of 13-17), the '1.5 generation' (migrated between the age of 6-12) and the '1.75 generation' (migrated between the age of 0-5).

Each chapter of this dissertation addresses first-generation immigrants, yet it does so under slightly, if not totally, different definitions. The focus on first-generation immigrants derives from the interest in the effects of the immigration policy framework.

In the first chapter, 'first-generation' consists of the 'pure first-generation' and to an extremely limited extent the 'the 1.25 generation' (around 1% of the total sample of immigrants). This is part due to the fact the EU-Labour Force Survey collects data only from individuals 15 or older, and part to the fact that I look at individuals who entered Austria very recently and are in employment. The 'immigrant', as well as the 'native', definition is based on both country of birth and citizenship. The use of strict definitions is meant to ensure the clearest comparison possible between natives and those subjected to change in immigration policy. Natives are considered all those who were born in Austria and have Austria citizenship. Immigrants are considered all assumed to have been subjects of restrictive access: third country nationals. Third country nationals are considered all non-EU foreign nationals. The EU enlarged, yet Austria opted to apply a transitional period (i.e., 7 years of restriction on the free movement of workers), hence the focus on non-EU-15. Immigrants are all those who were not born in EU-15 and do not have EU-15 citizenship. This definition is limited in that data availability precluded an account of possible special arrangements between countries.

In the second chapter, the parameters of the definition were tightly defined by the nature of the data – the first Longitudinal Survey of Immigrants to

Australia (LSIA). The age eligibility criterion for inclusion in LSIA was of 'at least 15 years of age', while in our sample of 'at least 18 years of age'. As such 'first-generation' consists of the 'pure first-generation' and to limited extent the 'the 1.25 generation' (about 1%). The term 'immigrant' refers a foreign-born, non-New Zealander citizen, who had an identifiable country of birth and whose parents were not born in Australia or New Zealand. Moreover, she was an offshore principal applicant visaed, but not for a special eligibility visa class. There are two obvious limitations of this definition: conclusions can only be drawn with respect to permanent migrants and said conclusions are biased by the lack of information on the temporary visaed status of those who did not straightforwardly applied for permanent status.

In the third chapter, the term 'first-generation' is all-inclusive: from 1.00 to 1.75 generation. This decision was largely dictated by sample size constraints. An immigrant is defined, as the chapter's title indicates, solely on nativity consideration, and nativity is just another word for country of birth. Sample size constraints and the topic at hand dictated a categorization distinguishing between those born in: Australia, in English speaking countries (ESC), and in non-English speaking countries (NESC). Those born in the United Kingdom, America, New Zealand, Canada, Ireland and South Africa are categorized as immigrants from ESC, while the rest as immigrants from NESC. This categorization is as suggested by the Australian Bureau of Statistics (ABS) and as such fosters the possibility of a comparative assessment of our results. As ABS notes, countries are not classified based on whether English is the predominant or official language, but merely on whether they constitute 'main countries from which Australia receives, or has received, significant numbers of overseas settlers who are likely to speak English' (ABS 2013). Ethnicity provides an extra layer to the definition, but only concerning natives. Indigenous people (i.e.,

Aboriginals and Torres Strait Islanders) are excluded from the sample because of their distinct socio-demographic and health profile. Since this is the least clean immigrant definition, I refrain from making anything but tentative policy remarks.

Outcomes of Interest

The scope of this dissertation is to study the economic incorporation of immigrants in relation to the policy setup they interact with when migrating. Consequently, policy considerations largely dictated the choice of outcome(s) investigates in each chapter. The first chapter focuses on an immigration policy which forefronts the need for an adequate match between employers' needs and employees' work profile. Therefore, by looking at educational mismatches in held occupations I explicit target the policy's intended outcome.

In the second chapter I focus on immigrants' ability to secure employment within 42 months of migrating and the occupational status difference between this initial job and the one held in the country of origin. At the time of the analysis, Australia allowed immigrants almost immediate access to benefits. This meant less pressure to pursue employment, but also more time to extensively (i.e., involving social networks, but not only) search for and find a status-adequate job. It is well documented that the first job sets the tone of the integration trajectory.

The third chapter tackles one health related outcome – body size and one labor market outcome – wages. Since body size is used in the Australian immigration process as a screening tool for a series of diseases with high financial costs attached, to check whether those who successfully migrated

are in better shape than natives, is a natural extension. Wages are one of the most important aspects of a job for most workers. The prospect of wages parity between nativity groups is one of the most substantial rewards for passing selection and successfully incorporating oneself into the local labor market. Hence, I question whether body profiles are valued similarly and how so.

Measurement Considerations

Each dissertation chapter takes on the challenge to either favor a measurement solution capable of unifying research in the field or to support a novel, superior approach. It does so either with respect to the measured outcome (first chapter) or the main predictors (the remainder empirical chapters).

The first chapter takes a stance in favor of comparability, validity and generalizability with respect to the measurement of over- and under-education. There are a number of subjective and objective ways to identify a match between the main occupation and the level of qualification of an individual. None come without a set of disadvantages. I use the 2007 OECD suggested method which relies on ISCED-based educational thresholds inside each ISCO88 occupational group (OECD 2007: 156). The international and time-invariant nature of the two classification standards facilitates a relation between existing, currently presented, and future estimates.

The second chapter addresses the fuzzy notion of "job networks" (Elliot 1999: 213). It does so, by distinguishing between and accounted for two time points in the job-acquisition process: the search and the securement

itself. A non-network-found job does not exclude the beneficial role of social networks in the search. The job-search measure departs from those commonly found in the literature in that it focuses on the added benefit of networks along alternative search methods. As suggested by Krug and Rebien (2012), it dichotomizes between those who benefited from the use of their network (in this case: family, friends, sponsor) in their search and those who did not. Two other measurement aspects are key. First, information on the nature of the performed job search exists for all respondents, in all waves, whether resulting in a job or not (i.e., for wave one 'employed' respondents I have retrospective information on their job search process). It is advantageous as all respondents contribute search histories, not just those unemployed at time of interview. Second, I exclude those who did not perform an unemployed job search at some point after migration. In doing so, I more accurately identify the active population. Overall, I further the conceptually challenging discussion on 'job networks' and welcome similar work.

The last empirical chapter puts the spotlight on one of the most known and contended measures in the health literature: The Quetelet Index or Body Mass Index *(*BMI*).* Recent work indicates the waist-to-height ratio (WHtR) as a superior measure in pinpointing obesity (Ashely and Gibson 2014) and predicting the health risk associated with it (e.g. Ashely and Gibson 2014), as well as mortality rates (Ashwell et al. 2014). The reason is twofold: medical and methodological. Medically, the most dangerous place to carry weight is in the abdomen. Methodologically, WHtR is cheaper and easier to collect, its boundary value is not sensitive to age, gender or ethnicity, and can easily be converted into a consumer-friendly chart (Browning, Hsieh and Ashwell 2010:265). Analyses are carried using both measures. This approach fosters comparability on two ends: between the two measures and with the existing BMI-based body of work.

Data Aspects

Each chapter of this dissertation presents cross-sectional analyses based on a different data source. The decision not to employ the same data source throughout was dictated by the distinctive nature of each research question tackled and by consequence the need for broad, yet specific information.

Data for the first chapter comes for the European Union Labour Force Survey (EU-LFS) 1998-2010. The EU-LFS is the commonly used data source for education-occupation mismatch analyses in the European context. Hence, it guarantees comparability to past and future similar work. The changes in the Austrian data collection process posed a challenge in constructing a duplicates-free repeated cross-sectional sample. Initially the Austrian Labor Force Survey (AT-LFS) covering the EU-LFS questionnaire was carried out as an annual supplementary programme of the quarterly Mikrozensus survey. The Mikrozensus' rotation scheme was of eight waves. In 2004, applicable starting 2005, the AT-LFS was redesigned to a continuous survey, covering all weeks of the year, and the rotation scheme was restructured to five waves. The total analyzed sample consists of 153,460 employed individuals, age 15-69, out of whom 150, 881 natives and 2, 579 immigrants: 1, 461 arriving in Austria before the policy change (i.e., during 1996-2002) and 1, 118 arriving after (i.e., during 2003-2010).

The analyses presented in chapter two are based on the first Longitudinal Survey of Immigrants to Australia (LSIA). LSIA is the most comprehensive data source linking employment outcomes to visa type. Equally important, it contains detailed information on how immigrants searched for and found

jobs. The sample is drawn from the Principal Applicants in the Department of Immigration and Multicultural and Indigenous Affairs' Settlement Database. The time of arrival of those included in LSIA 1 is between September 1993 and August 1995. I use all three data waves collected, which gathered information on the period pre-migration and up around 42 months after migration. To answer my research question, I do not require a longitudinal approach, yet I benefit from a larger time spam. In constructing the social capital measures, I use the additional information supplied via the Migrating Unit Spouse (MU) data and the Other Household Members (OH) data, which is then merged with the Principal Applicant (PA) data. I also use supplementary information from the Community Profiles generated by the Australia Bureau of Statistics based on the 1996 Australia Census, and from the Daft Logic- Google Maps Distance Calculator. The total sample for the employment analysis is of 2,763 individuals, while that for the occupational mobility analysis of 1,902 individuals, age 18-65 who entered Australia without arranged employed and declared conducting unemployed search at some point since.

In chapter three I use data from the Household, Income and Labour Dynamics in Australia (HILDA) Survey release 13. HILDA has the great advantage of having collected information on Body Mass Index (BMI) since wave 6, and on waist-to-height ratio (WHtR) only since wave 13. By consequence, I resort to a cross-sectional approach. HILDA also includes The Medical Outcomes Study Short Form (SF-36) since wave 1. Wave 13 re-includes the dedicated Health Module designed in wave 9. I profit from the richness of the information collected and incorporate respondents' cognitive and non-cognitive ability profiles, which were covered in wave 12 only. Lagged BMI by one year allows me to explore the impact of endogeneity. As such, though the analysis is cross-sectional, all estimates are weighted using weights for a balance continuous panel from wave 12

onward. The total analyzed sample is size of 2,387 men, age 21-65, in paid employment (1,858 native, 279 English speaking country born, 250 non-English speaking born).

Structure of the Dissertation

The first empirical chapter is titled *The Impact of Immigration Policy on the Education -Occupation Mismatch in Austria*. By answering the question: 'Do stronger selective immigration criteria reduce the risk of education mismatch for immigrant workers?' it addresses the potential educational mismatch in occupational attainment in the context of a restrictive change in immigration policy. The answer is provided employing European Union Labour Force Survey (1998-2010) data. Immigrants who entered Austria 1996-2010 form the sample, and the 2003 policy reconfiguration constitutes the turning point. The policy intervention was intended to more strictly tie residence and labor market access for immigrants to occupational demands resulting in a more restrictive matching mechanism of employers' needs and workers' profile as per regional quotas. This chapter makes two contributions two the empirical literature on educational mismatch and immigration. First, it provides a thorough account of the distribution and determinants of educational mismatch among Austrian immigrants, with an emphasis on its variation with years of residence in the host country. This is the first effort that goes beyond descriptive accounts. It implicitly adds to the discussion on the distribution and determinants of mismatch among natives. The goal is that of highlighting trends in the incorporation processes which might have negative economic consequences on the economy, firm and individual. Second, it questions the role of immigration policy in shaping the distribution of education levels within a given occupation. There is but one

other similar effort – Tani (2012). If in the process of meeting occupational demands the supply of skills gets destabilized, then policymakers need to address the consequences and prevent their reoccurring.

The second chapter focuses on the role social networks in the job attainment of immigrants once part of the Australian skill-orientated society, and it's titled *Social Capital and Economic Incorporation. The Case of Immigrants to Australia*. I use data from the first edition of the Longitudinal Survey of Immigrants to Australia (LSIA) which speaks to immigrants who entered Australia between 1993 and 1995. Recent work in the Australian context offers insight into time to first post-migration job (Thapa and Gørgens 2006), immigrant occupational mobility (Chiswick et al. 2003, 2005) and the impact of job searching channels on job quality (Mahuteau and Junankar 2007), but less so on the role of social networks in initial post-migration employment and the associated occupational mobility. This chapter builds upon job search activities (of immigrants) literature in three ways. First, differently from previous work, I can account for the search process of all survey participants (i.e., including those who entered the survey 'employed') if they stated having performed unemployed job search since migration, and I focus on social networks as a method of search along other alternatives. This constitutes an effort towards a more exhaustive analysis of a more accurately identified active population, and towards conceptualizing social networks as operating in conjunction with and not distinct from other search strategies. Second, I assess the impact of social networks in terms of employability and its variation with education in this respect, while accounting for different components of social capital. It is a contextualized test - the likelihood of employment of skilled individuals in a skill-oriented and welfare lenient environment is less dependent on the inclusion of social networks in job search – advantaged by rich social capital data. Third, I investigate the network effect on initial occupational

mobility on the premises on Montgomery's (1992) model. This speaks to the idea that one should look at the effect of job-search and not job-finding methods to grasp the relationship between social networks and job quality. Otherwise one disregards the fact that networks can have a direct (i.e., offer distribution), but also an indirect (i.e., arrival rate) – see Krug and Rebien (2012) effect.

Chapter 3 - *Big, Fat Paycheck: An Australian Tale of Wages Differentials by Nativity Accounting for Body Size* – constitutes a concentrated effort to uncover the link between immigration, obesity and wages. There is substantially supported consensus on the association between the decision to migrate and a good health status – "healthy immigrant hypothesis". There is also considerable work on the link between obesity and wages, yet diverse causality solving solutions lead to mixed conclusions (see Averett 2011 for a review). However, as Averett et al. (2013:242) note, there are only two studies that specifically focus on the joint effect of obesity and immigration on wages: Cawley et al. (2009) and Averett et al. (2012). I provide empirical evidence on this link for Australia using The Household, Income and Labour Dynamics in Australia (HILDA) Survey Release 13 data. The chapter extends the existing literature on three dimensions. First, I focus on the performance of first-generation immigrants in a country which given the high level of immigration and rate of obesity has opted for related health screening embedded in a (hybrid) points-based migration process. Apart from providing a compelling case study, I relate my results to those obtained in the context of two other distinct immigration policy regimes. Specifically, the estimates obtained using the immigrants only sample are linked to those of Cawley et al. (2009) for the US and Averett et al. (2012) for the UK, while the estimates obtained using the pooled sample with those of Averett et al. (2012) for the UK. Second, I distinguish

between immigrants from an English (ESC) and a non-English speaking country (NESC). In doing so I simultaneously account for (1) a similar obesity rate and lifestyle to the Australian one and (2) an easier labor market insertion. To my knowledge, this is the first explicit test of the argument that the direction and or magnitude of the influence body size has on wages varies with nativity group profile. Third, I employ both BMI and a superior measure to it: the waist-to-height ratio (WHtR), and investigate the possible added benefit of one strategy in tackling the endogenous nature of the obesity-wages relation. To my knowledge, no other work relates WHtR to an economic outcome.

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A very similar version of Chapter 1 ('The Impact of Immigration Policy of the Education-Occupation Mismatch in Austria') is accepted for publication in *Migration Studies.*

Chapter 2: Social Capital and Economic Incorporation. The Case of Immigrants to Australia

Introduction

What is the role of social networks in the job attainment of immigrants in the Australian skill selective context? Although recent work has offered insight into time to first post-migration job (Thapa and Gørgens 2006), immigrant occupational mobility (Chiswick et al. 2003, 2005) and the impact of job searching channels on job quality (Mahuteau and Junankar 2007), little is known about the role of social networks in initial post-migration employment and the associated occupational mobility. This research builds upon job search activities (of immigrants) literature in three ways. Differently from previous work, we can also account for the search process those already employed underwent, and we focus on social networks as a method of search among other alternatives. We assess their impact in terms of employability and its variation with education in this respect, while accounting for different components of social capital. On the premises of Montgomery's (1992) model we then investigate the network effect on initial occupational mobility. Our results are estimated using the first edition of the Longitudinal Survey of Immigrants to Australia (LSIA) which speaks to immigrants who entered Australia between 1993 and 1995.

We find that involving networks in job search increases the odds of entering employment in the three and a half years window after migration. Somewhat in line with the intentions behind a system which favors pre-arrangement employment and self-reliance among the highly skilled, we reveal lower employment returns to network involvement for those with specialized training compared to those with less than secondary training.

As far as initial occupational mobility is concerned, once we consider Montgomery (1992) and Mouw (2003) theory-based criticism we uncover little evidence that networks might influence the relative risk of experiencing downward mobility as opposed to no mobility. These results bring into question previous work in the area in as far as they raise the concern of thoroughly discussing the meaning and inherent relations between different network indicators.

Social Capital and Labor Market Outcomes

Core Work

As a construct, social capital can be operationalized in several ways. Bourdieu (1986:248-9) describes it as membership in a group, which entitles the members to credit, "in the various senses of the word". Lin (2000: 786) defines it as "an investment and use of embedded resources in social relations for expected returns", while Van der Gaag and Snijeders (2005: 1-2) as "a collection of resources which are available to the individual as a result of the history of the relationships" that produced them. A relatively concrete, and widely accepted, approach considers social capital to be encapsulated by personal social ties (i.e., social networks). In terms of resources, some argue that social capital can increase an individual's capacity for action by providing benefits, chiefly in the format of information, influence or control, and social solidarity (Sandefur and Laumann 1998: 493).

This work targets the point in the job-acquisition process at which social capital is first mustered, exploring the relationship between the flow of information provided by networks and the impact of this resource on the

job search process. The intention is to assess initial employment and occupational mobility. The latter is defined as the increase or decrease in occupational prestige subsequent to migration.

The importance of social capital, defined by networks, has a strong tradition in the literature. The starting point is generally Granovetter's (1973, 1974) seminal work, which introduces a typology of the strength of network ties and, moreover, links the idea of information provided by personal contacts during job search to the act of job acquisition. Although not directly addressing mobility in terms of occupational prestige, Granovetter (1995: 13) points out that those who find their job via personal contacts are better off in terms of several monetarily (i.e., wages) and non-monetarily (i.e., job satisfaction and intention to quit).

The empirical evidence, as noted by Granovetter (1995:147), is mixed (see Green 1999, Mouw 2003, Marsden and Gorman 2001, Elliott 2001). Individuals in high-status jobs are found to have large social networks, but these networks do not clearly play a direct role in the acquisition of these jobs (Lin 1999). Mouw (2003: 874) attributes this association or lack of it, to unobserved individual characteristics and introduces the notion of "spurious" social capital defined as "the nonrandom acquisition of social ties and the presence of unobserved ability in survey data". This concern is echoed by Montgomery (1992) who points out that a focus on how a job was obtained disregards the types of jobs which were rejected during the search process and their effect on the assessment of subsequent offers. In other words, as the job-search process unfolds, the experience of the job-seeker increasingly plays a role in the assessment of subsequent offers.

The earlier work of Granovetter (1973, 1974) spawned a broader literature (see, Granovetter 1995, Mouw 2003, Voss 2007 for overviews) which

offers two general insights. First, there is a lack of consensus with respect to network-based search's ability to facilitate better jobs. Second, it is unclear whether 'job networks' are pertinent to job search behavior or to recruitment and job acquisition methods (Elliot 1999: 213).

Montgomery's Model and Empirical Application

Montgomery's (1991, 1992) approach focuses on job search. While on the market, the seeker is presented, sequentially, with offers. The process involves accepting or rejecting an offer and continuing the search. This search, however, is a costly process. Theoretically, at some point one will accept a job of a certain status, given that he/she does not expect to find a better job that will justify the continuation of the search (Mortensen 1986). The higher the status of a given job (or the expectation of the viability of the acquisition of a high-status job), the longer a search process can be pursued, as a reasonable match will provide sufficient compensation to justify the time and effort invested. In addition, the more offers one anticipates the higher his/her expectations and the higher the probability of finding a high-status job as a given rejection is of less importance. The job offer arrival rate is a function of a job-seeker's human and social capital.

The idea behind Montgomery (1992) model is that in addition to formal methods, social networks methods have a key role in the search process as they influence both the job arrival rate and the offers distribution. This role is systematized by Krug and Rebien's (2012), who distinguish between an indirect (i.e., arrival rate) and direct mechanism (i.e., offer distribution). There is no a priori knowledge of whether the two mechanics coincide and thus researchers resort to assumptions. Mouw (2003: 870) defines the

problem as being the result of "multiple methods of job search". In other words, one might search via both social networks and formal channels, but ultimately makes a singular choice. Herein lays the lack of precision in that comparing outcomes between job-finding methods can be misleading since one cannot pinpoint the relevant mechanism – direct, indirect, or both (Montgomery 1992: 590). To grasp the relationship between social networks and job quality one's safest bet is to ultimately rely on the effect of job-searching techniques (Krug and Rebien 2012).

The main appeal of Montgomery's model is that it distinguishes between strong and weak ties, and in doing so directly speaks to the theoretical origin of this strand in the literature (Granovetter 1973, 1974). A reduced format of this comparison in the format of network versus formal channels was hinted upon by Montgomery (1992: 593) and formalized by Mouw (2003: Appendix A and B).

Recent work distinguishes two network search scenarios (Krug and Rebien's 2012: 319-321). In both scenarios, the indirect mechanism reflects a higher job offer rate for networks compared to formal methods. The direct mechanism, however, might or might not reflect similar quality offers. In the first scenario (very similar to what Montgomery attributes to Lin (1982)) the offers from the network are of better quality than those from the formal channel since network allows the seeker to gather better information on the availability and characteristics of a wider array of jobs. Researchers focusing exclusively on the job-finding method would then correctly identify the positive causal effect of using networks as reflected both directly and indirectly. In the second scenario (corresponding to what Montgomery attributes to Granovetter (1974)) the offer distribution is similar in terms of quality. Under these conditions, a job-seeker who simultaneously gets a formal and a network-derived offer will choose the

formal offer only if it is of better quality. As Mouw (2002:513) notes, lack of data on the job offers misleadingly conceals or reveals the size of the causal effect of networks.

Empirically, one cannot distinguish between the first and second scenario since one does not observe the search process in its entirety. A solution would be to try to be as explicit as possible about the assumptions made. When considering the non-monetary outcome of "job adequacy", Franzen and Hangarten (2006:356) presume that the distribution of offers differs between channels in as much as networks have a better capacity to convey information to employers. Hence, they lead to better matches. Their reasoning is highly plausible, yet is does not remove the ambiguity resulting from not having direct observations. An intuitive fix would be to back assumptions with existing evidence of the direct and indirect effect of networks. Blau and Robinson (1990) for the US and Gregg and Wadsworth (1996) for the UK found that friends and relatives are responsible for the most offers and acceptances per contact. From the work of De Graaf and Flap (1988) up to more recently, Obukhova's (2012), there is substantial support for the argument that the quality of job offers does not differ by the channel used. Therefore, relying solely on job-findings methods to assess the benefits of networks is difficult to justify.

One option is an indirect setup for testing the positive effect of networks (Mouw 2003). For networks to have a causal effect two conditions need be met: 1) the network structure indicator should be correlated with the probability of finding a job via the network, and 2) the same network structure should also be correlated with the outcome (i.e., acquiring a job). Passing this test will, however, be a necessary but not sufficient condition to claim a causal effect (Mouw 2003:873). To apply the test valid data on network structure is in order. If one lacks such information, research shows

that an indicator of whether one implicated or not his network structure in the search process is a reasonable proxy (Krug and Rebien 2012:322). In this way, any positive difference corresponds to a positive network effect and the results are unambiguous under both scenarios.

Limitations do exist. The sample must contain a sufficiently large number of individuals who use non-network channels. A positive bias in the estimates is possible if those who use networks are a select group, using networks only when considered helpful. Conversely, a negative bias might arise from individuals resorting to networks only after failing via formal channels. Given that network search is always cheaper, these sound like contra-intuitive scenarios.

Population of Interest and Hypotheses

The Who and The Why

We focus exclusively on the labor market position of new permanent immigrants immediately after migration. The Australian context advantages this work in several ways. Firstly, it has one of the most open and transparent service markets in the world (Dockery 1999), which fosters the use of formal market processes corresponding to the formal processes of employment selection (Huang and Western 2011). Second, Australia uses a points-based immigration policy that targets highly-trained immigrants with a good command of English who address specific skills shortages (Cobb-Clark 2000, 2003). This system also rewards social capital through the status (i.e. family connection, citizenship and employment) of the sponsor in Australia (Boucher 203:356). Third, at the time of our analysis, immigrants had access to most social provisions within six most

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of migration (Chiswick and Miller 2007: 20). Hence, they had the opportunity to conduct job searches under less pressure and with better support. For some it might have been an incentive for migration (Birrell and Evans 1996:1). This setup offers a tremendous advantage over contexts where formal job listings are less prevalent and or encouraged. Despite the clear advantages the Australian context offers for understanding formal and informal job-search processes, a systematic assessment of the use of social resources in the job search in Australia is rare (Huang and Western 2012: 171).

The focus on the first job acquired has to do with the crucial role it plays in the observed occupational trajectories of immigrants in Australia. Specifically, a typical immigrant follows a "U-shaped" pattern of occupational mobility (Chiswick et.2003, 2005) defined by a decline in job status upon arrival, the steepness of which can vary significantly depending on the characteristics of the individual. High-level professionals experience the deepest fall as their specialization can be initially difficult to transfer to a new labor market. This is less relevant for immigrants coming from countries with comparable economic and institutional contexts (Chiswick et.2005:335). Refugees and tied-movers experience a steeper decline than economic migrants as they have a different set of calculations/investments and a different pattern and degree of connectivity.

Applied Empirical Work and Expectations

Human capital in its various conceptual incarnations is the dominant explanation for immigrant's economic integration (e.g., Bevelander and Veenman 2004; Sanders and Nee 1996) and occupational status (e.g., work

on Australia by Forrest and Johnston 2000). Moreover, host-country specific human capital, accumulated before and after migration, has the most impact on labor market performance (Friedberg 2000). That said, available resources that could facilitate integration into a given labor market are not limited to human capital factors. Social capital, manifest in a strong social network, can play an intermediary role in process of immigrant economic incorporation, reflecting an endogenous interplay between itself and human capital. Social capital is derived from (Boxman, de Graaf and Flap 1991), interacts with (Sanders and Nee 1996) and contributes to the accumulation of human capital (Boxman, de Graaf and Flap 1991; Coleman 1988).

When considering the economic mobility of immigrants, a large sociological literature emphasizing the compensatory role that social capital plays in helping members of disadvantaged groups (e.g., Massey et.1987, Portes and Bach 1985, Portes and Jensen 1989, Zhou and Logan 1989). This is not the only narrative to emerge. Other work suggests networks may not be economically beneficial to a similar extent for all members of an immigrant group (Lin 2001; Portes 1995, 1998; Portes and Sensenbrenner 1993; Aguilera 2002). The latter perspective calls for a cautionary warning that one's social capital does not operate in a singular fashion towards "more equality" with a certain reference group (i.e., non-immigrants). Instead, social capital could facilitate several trajectories, not all of which positive.

For a variety of reasons (e.g., language proficiency, education and legal documentation) immigrant job-seekers do not have potential information about all existing job vacancies (Nee et al. 1994, Aguilera and Massey 2003, Elliot 2001), and, moreover, about potential good matches. It is at this point that social capital can offer a relative advantage. The theoretical

literature on job search (see Calvo-Armengol 2004, Calvo-Armengol and Jackson 2004, Calvo-Armengol and Zenou 2005) emphasizes the advantages of networks in so far as their ability to convey more reliable information in a timely and less costly manner. The empirical evidence on the job search behavior of the general population reveals that between 20 and 60 percent of individuals obtain their job after network search (Holzer 1988, Blau and Robins 1990, Bortnick and Ports 1992, Gregg and Wadsworth 1996, Addision and Portugal 2001, Kleit 2002, Mouw 2003, Rankin 2003). Research into the entirety of the job search activities of immigrants is, however, very limited and favors the UK context (Battu et.2011, Frijters et.2005, Giuletti et.2013). Nevertheless, the overall conclusion with respect to the relation between search strategy and human capital is congruent: networks are more often the main search strategy for people with a lower stock of human capital (Corcoran et al.1990, Elliot 1999, Böheim and Taylor 2002, Marsden and Gorman 2001). Given the less costly nature of networks, our intent is to simultaneously consider the direct and indirect effect of networks on employment (i.e., as a strategy among many others and not as the main or the only strategy). The understanding that involving social networks in the job search process is beneficial, especially when other forms of capital, particularly human capital, are in shorter supply leads to the expectation that *higher levels of human capital weaken the positive relation between the inclusion of social networks in job search (network-based job search) and likelihood of entering employment (H1).*

Acquiring employment is only one dimension of immigrant labor market integration. Although a necessary first step in the process of occupational mobility, it provides an incomplete picture in the absence of a closer look at the quality of the job. Huang and Western (2011) analysis on occupation attainment finds a negative effect of social networks on occupational status

for the Australian population. They define networks in acquisitional terms. Piracha, Tani and Vaira-Lucero (2013:12) find per each unit increase in their social capital index a corresponding 11% increase in the odds of immigrant white-collar (i.e., high skill) employment in Australia. No significant effects are reported in the case of the blue collar (i.e., low skill) employment. Mahuteau and Junankar's (2007) work with both a subjective (i.e., job satisfaction) and an objective (i.e., prestige-wise the job in the host country job is just as good as the one previously held in the home country) measure to indicates that in the case of immigrants formally found jobs are of better quality than the ones found via networks. Despite mixed findings unable to guide our expectations, based on the assumption that even weak networks are stronger than formal job search methods (i.e., arrival rate, offer distribution), we expect that *network-based job searches reduces initial downward mobility (H2)*.

Data

The data come from the first edition of the Longitudinal Survey of Immigrants to Australia (LSIA 1), as provided by The Economic Analysis Unit of the Australian Department of Immigration and Citizenship. The sample for LSIA is drawn from Principal Applicants in the Department of Immigration and Multicultural and Indigenous Affairs' Settlement Database. It includes Principal Applicants who were at least 15 years of age, new offshore visaed permanent immigrants, did not have special eligibility visas, were not New Zealand Citizens and had an identifiable country of birth. The time of arrival of those included in LSIA 1 is between September 1993 and August 1995. Information is collected for everyone in the household. However, detailed information is collected from the Principal Applicant (PA) and from the spouse, if the spouse is

part of the migrating unit. There are three data collection waves. Wave 1 covers the period prior to arrival and (approximately) the first 6 months after migration. Wave 2 refers the period six to 18 months after migration. Wave 3 addresses the period 18 to 42 months after migration. Total initial sample size at wave 1 is 5,192 immigrants. In constructing the social capital measures, we use the additional information supplied via the Migrating Unit Spouse (MU) data and the Other Household Members (OH) data, which is then merged with the PA one. We also use information from the Community Profiles generated by the Australia Bureau of Statistics on the basis of the 1996 Australia Census, and from the Daft Logic- Google Maps Distance Calculator[2].

The final sample retains all those of age 18-65 who entered Australia without arranged employed and declared conducting unemployed search at some point since. Information for them is available at least at the first and last wave (i.e., there are some who were not in Australia at wave 2) – a total of 2,763 individuals out of which 449 did not manage to find employment. Less than 1% can be classified as "1.25 generation" immigrants. For the mobility part of the analysis, the sample is reduced to those individuals for whom there is also occupation information referring to the pre-migration period and to the job-finding methods re their first post-migration job: a total of 1,902 immigrants.

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[2] Online software calculating the straight-line distance between two geographical points using Google Maps

Measurement

Dependent Variable: First Post-Migration Job

We define the first post-migration job similarly to Chiswick et al. (2005). Specifically, if one held just one job in Australia, we consider the job at time of interview or the job that terminated prior to the interview to be the respondent's first job. If one held multiple jobs, we consider for those not employed at the time of the interview the job in which they were employed for the longest period, while for the rest the job with the earliest start date.

We work with summary measures of occupational status based on the ANU3 status attainment scale, developed by Jones (1989) specifically for Australia. Though ANU3 is based on prestige ratings, it is not a prestige scale in a strict sense since it combines elements of a prestige scale with a measure of socioeconomic status. This offers a more intuitive interpretation as certain occupations (e.g., artistic professions) enjoy a higher position than their earnings profile would suggest and vice-versa. What the ANU3 measures is the relative difference in market power, occupational prestige, occupational requirements and occupational rewards, on a scale from 0 to 100. We define downward mobility as a negative difference between the score of the current occupation and that of the last occupation held in home country. Upward mobility stands for a positive difference and no mobility for lack of change.

Social Capital Measures

As Lancee (2012: 17-24) notes all existing definitions of social capital contain the distinction between its individual and collective nature, its

structural and cognitive character, and its use and access to. When considering economic and occupational mobility, some researchers view social capital as a buddle of resources available for individual goal attainment, which ties social capital to a specific outcome (Bourdieu 1986, Lin 2001b). Others focus less on the individual and view social capital as a group resource, collectively produced and mutually beneficial (Coleman 1990, Putnam 1993). There are also some who prefer a multilevel approach (Poortinga 2006). Similar to Lancee (2012), we focus on the individual-level to capture access to resources without disregarding the collective dimension understood as available resources on the basis of similarity.

The idea behind the structural dimension of social capital is institutional embeddedness of ties defined as the result of human interconnection (Lancee 2012: 18). If ties are embedded in institutions, there is a higher probably of a resource exchange (Putnam 1993). The cognitive dimension of social capital regards those attitudes and values that support the exchange of resources (Poortinga 2006). We solely account for the first dimension.

At the individual level, the clearest form of structural capital is the family. Nee and Sanders (2001:388) stress the fact that an immigrant's incorporation is highly dependent on the ability to use family resources "within and apart from the existing structure of ethnic networks and institutions". They refer to family as both nuclear and extended in order to reflect cultural variations in the connotation carried by this level of kinship. We capture the effect of a family network via several proxies.

The number of immediate relatives living in Australia at the time of arrival is accounted for in categorical format (i.e., none, less than 10 and more than 10 relatives). The number of immediate relatives living overseas at the same point in time is expressed in a similar fashion (i.e., less than 5,

between 5 and 10, 10 or more relatives). For the availability of non-immigrant family networks at time of arrival, we include a measure of whether a respondent has an Australian partner, a non-Australian partner or no partner at all. At large, we also account for the number of co-residents (family members, but not only) older than 15 (i.e., school-age) who might serve as connection points to the labor market.

At the collective level, structural capital could manifest in the form of all ties with co-ethnics (see Sanders 2002 for a review). However, Sanders and Nee (1996) stress the fact that solidarity at the level of ethnic ties is vulnerable on the enforceability front. Research suggested that ethnic networks might represent the main source of information on jobs (Zhou 1992, Menjivar 2000) and catalyze labor market performance (Portes and Sensenbrenner 1993; Portes 1995; Sanders et al.2002). However, in an "enclave" economy setting employers might prefer to hire co-ethnics (Borjas 2000) which in turn might be detrimental to acquiring host country skills (Lazear 1999) and to the quality of job offerings. Phalet and Health (2010) consider ethnic social capital that which is produced by an ethnic community in a city. Their proxy for measurement is "ethnical background". We follow this approach by opting for a measure of co-ethnic concentration (i.e., individuals sharing the same country of birth), with the minor refinement of only using information on those older than 15. The areas we use are narrowed down to the statistical subdivisions provided in the LSIA. Moreover, we construct a measure of distance between one's location at the time of the first interview and the capital city of the Australian State/Territory of residence. These cities are meant to embody the height of cosmopolitanism and multiculturalism, fact which appears to gradually extend to the suburbs (Turner 2008).

Lin (2001b) differentiates between access to social capital – the bundle of potentially mobilizable social resources, and use of social capital – the mobilization of resources as to create returns (e.g., upward occupational mobility). We define use of social capital in relation to one's employment and occupation and via two measures of mobilization of the available resources within the social network. The first one is concentrated on actions, specifically on the dynamics of job search strategies. Similar to see Krug and Rebien (2012), we construct an indicator which equals 1 if when performing unemployed job search the individual received help from his network: family, friends, and sponsor. It equals 0 if during the same period of time (i.e. until first post-migration job was found) the seeker received no such help. Dissimilar to previous research (see Elliot 1999, Battu et al.2011, Frijters et al. 2005, Giuletti et al. 2013) information on the nature of the performed job search exists for all respondents (i.e., if at time of first interview one was already employed we know who helped them in their post-migration unemployed job search). The indicator is timed to best reflect upon the outcome[3]. The second measure is outcome oriented, precisely it accounts for the type of channel through which one found the job. We distinguish between network-based (friends, family, sponsor) and non-network-based job finding (ethnic or Australian press, private agency, government, arranged).

Human Capital and Additional Control Variables

We define human capital in terms of education attainment and language proficiency. The measure of education is derived from the highest level

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[3] For individuals who found their first job by the second interview and who declared themselves unemployed at looking for work at the first interview, but also in the period between the first and second interview, the indicator describes their search strategy for the latter moment.

completed at time of arrival (i.e., less than secondary, secondary and some tertiary, technical or trade, BA or higher).

Forrest and Johnson (2000), Chiswick et al. (2003) and Chiswick et al. (2005) have all shown the positive impact of language skills on occupation status. The language "penalty" seems to vary by group (Forrest and Johnson 2000). In addition, there may be a negative effect of ethnic networks on language proficiency (Chiswick and Miller 1996). We account for whether English is an official language in the country or birth or not, and for the self-assessed level of speaking English at arrival (i.e., very well, well, not well/at all).

We control for differences in visa track as Cobb-Clark (2000) previously pointed out that those on an Independent visa were significantly more likely to be employed than those in all other categories (Family, Humanitarian,). We operate a distinction between those who entered Australia on a preferential and those who entered on a concessional family track as their labor market participation rate varies substantially.

Methods

To test the first hypothesis, we assess whether one becomes (1) employed (i.e., employee or self-employed) or (0) not subsequent to migration using a logistic regression defined by the equation:

$$L_i = \log(o_i) = \log\left(\frac{p_i}{1-p_i}\right) = \alpha + x_i\beta \qquad i=1,...n \qquad (1)$$

where p_i is the probability of success for the i-th individual or group, o is the odds of the event, L is the log odds of the event. x_i is a vector of

covariates associated with the i-th individual or group, α is a constant and β a vector of regression coefficients.

To test the second hypothesis, we employ a multinomial logit defined by the equation.

$$h_{ij} = \log\frac{p_{ij}}{p_{iJ}} = \alpha_J + x_i\beta_j \qquad\qquad i=1,...n \text{ and } j=1,2, J\text{-}1 \qquad (2)$$

where α_j is a constant and β_j is a vector of regression coefficients, for for $j=1,2,\cdots,J-1$, where J is the number of response categories. x_i is a vector of covariates associated with the i-th individual or group. The J-1 equations contrast each of the categories 1, 2, J-1 with category J. The occupational trajectories are no mobility (1), downward (2) and upward (3). We contrast categories 1 with 2, and then 1 with 3.

To ensure unbiased treatment estimates we test this model on a balanced dataset generated by propensity matching. In the first instance, we consider as treatment the channel through which the job was found, while in the second the search method used.

Within the framework of Rubin's Causal Model (Rubin 1974; Holland 1986) the average treatment effect on the treated (ATT) allows us to compare the outcome of those who received the treatment to the outcome of the same individuals had they not received it. The propensity score matching (PSM from here on) estimator determines the ATT by matching those who did network-based search with those who did not, yet have an identical vector of pre-treatment covariates x. Otherwise said, they have the same propensity score (Rosebaum and Rubin 1983, 1985; Heckman et al. 1998; Morgan and Harding, 2006).

The matching estimator is constructed as a weighted difference in means. D indicated whether data refers treated or control individuals. I_1 indicates those who received the treatment (i.e., network-based job finding), I_0 those who did not, and CS the region of common support between the treatment and control group in terms of propensity score distribution:

$$\hat{\delta} = \frac{1}{n_1}\sum_{t\in I_1\cap CS}\left[h_{ij1t} - \hat{E}\left(h_{ij0t}|D = 1, P_t\right)\right] \qquad (3)$$

$$\hat{E}\left(h_{ij0t}|D = 1, P_t\right) = \sum_{r\in I_0} W(t,c)h_{ij0c}$$

n_1 is the number of individuals in the set $I_1\cap CS$. The match for each individual who received the treatment $t \in I_1 \cap CS$ represents a weighted average over the outcomes of those in the control group, where the weights $W(t, c)$ depend on the distance between propensity scores P_t and P_c, respectively (Todd 2007: 3864). h_{ij} refers the outcome per (2), with h_{ij1} indicating the outcome in the case of those who received the treatment (i.e., network-based job finding), while h_{ij0} the so-called contrafactual.

We use single-nearest neighbor matching (SNNM) without replacement. To avoid nearest neighbors matches which are far away from $P(x_i)$ a maximum level of distance (caliper) of 0.005 is set. As we are interested in the ATT, the control units outside the region of common support are discarded (Ho et al. 2011: 8). The estimates of matching without replacement are sensitive to the order in which observations are matched. Hence, the treatment units are randomly matched to the control ones (Caliendo and Kopeinig 2005:9). We use Austin and Mamdani (2006) formula to assess the covariates' balance.

Caliendo and Kopeinig (2005:6) advise that a propensity score model should include only those variables unaffected by the treatment or its anticipation. Consequently, we use the same two blocks of covariates as for the employment model: human capital indicators as a manifestation of homophony in social network development (McPherson et al. 2011) and the individual's stock of social capital. The final specification is most parsimonious as recommended by Bryson et al. (2002).

The problem of unobserved heterogeneity occurs if a certain influential variable cannot be included in the propensity score model. Nevertheless, using a method developed by Rosenbaum (2002) we are able to perform a sensitivity analysis to determine how strong the influence of such a confounder must be to challenge our estimates (see Keele 2010). This test cannot be applied to multinomial logit model. Hence, we perform it for a simple logit model in which other forms of mobility represent the baseline when estimating the odds of downward or of upward mobility.

Results

Overall Trends in Employment Status and Occupation Mobility

[Table 1 here]

Table 1 speaks to the profile of those who managed to enter the Australian labor market in the (approximately) 42th month window since migration. 83.8 percent (2,314 individuals) of those for whom we have information managed to find employment at least once. These results depart from those obtain by Cobb-Clark (2001, 2003) and Richardson et al. (2001), mainly because of the strategy chosen in constructing the dependent

variable. Namely, their work focuses on the percentage of those in employment eighteen month after arrival, while ours considers any act of employment by the 42nd month. Of those who found employment, 34.7 percent involved networks in their job search. By comparison, of those who did not find employment, only 27.8 percent involved networks in their job search.

Downward occupational mobility is prevalent - 61.9 percent of those employed experienced it, while only 13.5 percent managed an upward mobile occupational status. As far as network-based job search is concerned, those who experienced downward mobility were more reliant on it (36.1 percent) than those who underwent no occupational change (28.72 percent) or who underwent a positive one (27.1 percent). A slightly larger difference is noted when it comes to network-based job finding – roughly half of those who experienced downward mobility found their job via networks (47.9 percent), compared to just 23.1 percent of those who experienced no change and 34.6 percent of those who experienced an upward surge.

No differences are noted in the average pre-immigration occupational prestige (43.4 vs. 43.7) between those who managed to get employed after migration and those who did not. As far occupational mobility is concerned, the average occupational drop is higher than the average occupational increase (27.8 vs. 12.6). The average pre-immigration occupational prestige among those who experienced no occupational status change points towards the middle of scale – 45.3.

Employment Status: Multivariate Analysis

[Table 2 here]

Table 2 includes the labor market estimates. The simplest model (Model 1) includes network-based job search and visa indicators. The estimates show that one's odds of entering the labor market almost double if network help is provided while job hunting. Predictably, those who entered Australia as Independents or Concessional Family (i.e., point-tested[4]) have the highest odds of finding a job.

In the second stage (Model 2), we include the demographic and human capital measures. We find that the better one speaks English the higher the odds of employment - those who speak very well have 3.18 times as high odds of finding employment as those who do not speak well/at all. Not surprisingly, specialized training materializes in higher odds of employment – twice as high for those with less than secondary education. Important to remark is that males have four times as high odds of employment as females, estimate which might be substantiated by the gender segregation in employment characterizing Australia (Harrison 2002).

Once we additionally control for the stock of social capital (Model 3), we note no differences in the direction or magnitude of the estimates for network-based job search or for the levels of human capital. As far as the social capital stock is concerned, three things are worth remarking. First,

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[4] Independent Class applicants may score points under Skill, Age, and Language Skills; Concessional Class may score points under Skill, Age, Relationship, Citizenship, Settlement and Location (Hawkins 1991) and as of 1992/3, same as the Independent Cass applicants, needed to pay a fee meant to cover language tuition when scoring poorly on the offshore English language test (Hawthorne 1997 :15)

being in a relationship with an Australian seems to be the most efficient path towards labor market insertion. Second, the more relatives one has overseas, the lower the odds of finding employment, while the more co-ethnics of working age in same statistical unit (SU), the higher the odds. Third, though only marginally, distance from the state capital negatively impacts employment.

Model 4 and Model 5 directly address the first hypothesis. If we reduce the definition of human capital to education (Model 4) we note the following. The odds of entering employment are 3.12 times as high for the lowest educated if they involve networks in the job search as in the case of not doing so. Contrary, those with a BA and higher have almost twice -1.83- as high odds of employment as the lowest educated if they do not involve networks in the job search. To that, the odds of finding employment for those who involved networks in their job search, relative to those who did not, are lower – 1.34 (3.12 times 0.43)– among those BA educated. If we expand the human capital definition as to include linguistic skills (Model 5), we note that the size and direction of the network and education-related terms is relatively stable. The effect of involving network in the search now indicates three times as high odds of employment for those who are lower educated, do not speak English well and are from a country where English is not the official language. Being from an English-speaking country almost doubles, while speaking English very well almost triples the odds of employment, despite not involving networks in the job search. Lastly, we note that the odds of finding employment are only marginally higher for those who involved networks in their job search relative to those who did not, among those most linguistically able. However, the coefficients are not statistically significant largely because of small cell count. Overall, we have enough evidence as to accept our first hypothesis.

Sensitivity Analysis

It could be argued that since the network search measure accounts for the behavior characterizing the last search episode prior the event of interest, it disregards the possibly of an endogenous search. To this end, we re-estimated our model by considering any network involvement occurring prior to the event of interest. The new estimates were consistent to the old ones, yet predictably the size of the coefficients for networks search was larger.

Occupational Mobility

[Table 4 here]

Tables 4 contain the results of the standard testing (before matching) and the indirect causal testing (after matching) involved by the second hypothesis. Before discussing these results, it is crucial to note a positive and significant correlation of 0.37 between the network-based search and the network-based job finding indicators – one of the two requirements of Mouw's (2003) proposed indirect test.

The difference measured before controlling for any variation in the composition of job-seekers indicates that for those who have found their job via social networks compared to those who have not, the relative risk of experiencing downward occupational mobility in their first job instead of no mobility increases by a factor of 3. This estimate could be interpreted as to support a detrimental effect of networks, yet also leave room for an indirect beneficial effect interpretation if we are willing to accept a scenario in which networks have a higher job offer arrival, yet

the average quality of job offers is no different than that of formal channels (see Krug and Rebien 2012: 320). The relative risk of experiencing upward occupational mobility instead of no mobility increases by a factor of 1.74. Shifting the focus on job search, we note a similar pattern at a lower magnitude. For those who involved networks in their search as opposed to those who have not, the relative risk of experiencing downward occupational mobility instead of no mobility increases by a factor of 1.52, while that of experiencing upward mobility by 1.28. This second set of estimates unambiguously highlights the detrimental role of networks when it comes to downward mobility.

On the basis of these results, one would reject the second hypothesis by which we expected those who performed a network-based job search to have suffered less of a drop in occupational status. It is though up to the PSM results to confirm this preliminary conclusion as there are two possible interpretation of the uncovered effect. This result might reflect the fact that networks are ineffective both via the direct and indirect mechanism. It could also be that it reflects a spurious relation which conceals a positive effect of networks. Precisely, that would be the case in which a non-network channel provides less job offers, without reducing downward mobility (i.e., providing jobs of the same or better quality as in the home country).

Table 3 reports the logistic regressions to predict the propensity score for the job-search and job-finding method, as well as the measure of matching quality. In both cases the model fit is stable to the use of a parsimonious specification (Model 2). The matching balances all covariates, leading to an overall balance improvement of 99.9 percent and a per covariate improvement between 45 and 99.9 percent. Moreover, the standardized mean difference is smaller than 0.01 in all cases.

The second block column in Table 4 repeats the occupation mobility results after matching (Model 2). As far as downward mobility is concerned, the direction of the coefficients remains unchanged, yet we note a fall in magnitude and significant results only with respect to the job-finding method. Our intuition is that this scenario might derive from the fact that we are in fact dealing with workers who are not necessarily interested in or, for some reason or another, able to find a position similar to their professional profile. Consequently, they place little importance on the quality of their first job. We support this intuition with the results of the logistic model addressing mobility vs. no mobility (Table 4). The relative risk of upward mobility to no mobility seems to be invariant to network-based search. It is higher for jobs found through networks if lenient towards a 10 percent significance level, in the case of a small sample.

Sensitivity Analysis

As noted in the Methods section, by reducing the model to a series of logistic regressions we can perform a sensitivity analysis targeting the impact of unobserved confounders. Results are presented in Table 4, bottom part, second half of the table when looking left to right. We start by simulating a situation with no unobserved heterogeneity and proceed to assume different degrees of heterogeneity. The heterogeneity might result from personal or job characteristics we are unable to observe.

By assuming no unobserved heterogeneity, we report that after matching network involvement in job search has no significant impact on the odds of experiencing downward mobility as opposed to another form of mobility.

The result is robust to the degree of influence we consider. Jobs found via the network are conducive to downward mobility when we assume unobserved heterogeneity, yet a medium level of influence (i.e., OR=1.3), already affects any intended causal claims. Irrespective of the network-based measure used we find no significant difference in the odds of upward mobility versus other forms of mobility. Most importantly, increasing the degree of assumed heterogeneity only substantiates this statement.

Summary and Conclusions

This work addresses the relationship between social capital, employment and downward occupational mobility for permanent immigrants in the context of a highly selective immigration policy in place. Specifically, we assess the extent to which network-based job search positively impacts the odds of initial post-migration employment and reduces initial post-migration downward mobility (measured in terms of occupational prestige change), while accounting for different forms of social capital. We ensure that the estimates are unbiased by using a PSM based solution to Montgomery's (1992) critique regarding network jobs. This approach is extremely novel (see Krug and Rebien, 2012) and to the author's knowledge has yet not been implement in the case of an immigrant population. To these ends we employ the Longitudinal Survey of Immigrants to Australia (1993-1995).

The employment analysis reflects some old truths, while bringing to light some notable facts for both the academic and policy arena. On the first end, we once more (Cobb-Clark and Chapman, 1999; Richardson et al. 2001; VandenHeuvel and Wooden 1999, 2000) demonstrate that there is a strong association between the screening processes one goes through,

(i.e., visa category), and his/hers position in the labor market. As in many other studies (Cobb-Clark and Chapman 1999; Cobb-Clark 2001, 2003; VandenHeuvel and Wooden 2000), a higher position on the education curve and good language skills translate best into employment. Moreover, the gendered nature of the Australian labor market transpires from the higher odds of employment among men (Harrison 2002).

On the second end, the employment analysis indicates that, at higher levels of education network-based search is less beneficial to one's odds of employment. We chiefly envisage a human capital explanation by which for the highly-educated network support represents but one of the many strategies and as such its effect lessens. Though not theoretically substantiated, there are two other possible scenarios worth considering. The first one is a search intensity and timing argument: less effort goes into non-network search the moment networks get involved in the process. The second one is a selection argument: those who resort to incorporate networks do so either because their diploma was not recognized as such or because it is not an accurate representation of their level of skills. Whichever one at play, we are inclined to put forth the idea by which if highly skilled and decided to make Australia your permanent home, the safest bet is to enter the country with a job offer or be aware that in their case employment is less reliant on involving social networks in the job search.

It should be remembered that these results address a context in which, when migrating, points can be scored for human capital characteristics, but also for the status (i.e., family relation, citizenship, employment) of the sponsor on the territory of Australia. They also address a context of rapid access to social benefits for permanent residents, which fosters a more thorough job search. As such, it is not surprising that the less-skilled

advantage from the additional support of social networks in terms of labor market insertion, while the more-skilled can resort to them if and when the situation requires it.

As far as the mobility analysis results are concerned, from a standard perspective (i.e., job-finding method), no PSM, we would have concluded a negative impact of networks on downward mobility. By taking Montgomery's (1992) critique into account in a PSM framework, this claim does not hold water. The two network measures – search and finding - are correlated, yet only the job-finding method indicator bares significance in terms of impact. We believe this result to characterize a certain worker profile, and as such we are lenient to conclude no network effect on the possibility of experiencing downward mobility when looking for the first post-migration job in Australia. In addition, we show that if one decides to consider a network-found job a true indicator of a 'network job', the robustness of the results is concerning (i.e., it took just a medium size unobserved covariates influence to explain the higher proportion of individuals experiencing downward mobility).

Policy-wise it could be said that an environment sensitive to one's possible need to use social networks facilitates networks' positive impact on employment. The degree of impact is contingent upon the need for a compensatory structure. However, the same environment cannot help change a permanent migrant's predicament in terms of occupational downgrading. A probable explanation is that those instances in which the added involvement of social networks cushions downgrading are evened out by those in which the market's reaction to a workers' profile (i.e., skill recognition) or the worker's mindset (i.e., permanent migrant in no rush to prove himself) override benefits. This situation raises a question mark as to the utility of more job search time via rapid access to social benefits. It is,

however, with great caution that we put forth these conclusions given that we do not benefit from a contrafactual for this particular labor market and policy setup.

To sum up, our results revert to the studies introduced in our literature review, indicating a growing need to more carefully address the problematic issue of the direct and indirect job-search mechanisms as pointed out by Montgomery (1992) or Mouw (2003). Whereas the concern over unobserved heterogenity is increasingly accounted for, to our knowledge no work has challenged Montgomery's or Mouw's criticism in an immigration studies setup. By recognizing the problem and following Krug and Rebien's (2012) novel strategy, we hope to challenge the idea that future work not only needs to, but actually can tackle the issue.

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Tables

Table 1: Distribution of the Sample by Employment Status and Occupational Mobility. Categorical and Continuous Variables

	Unemployed % or mean (SD)	Employed % or mean (SD)	Occupational Mobility		
			Downward % or mean (SD)	None % or mean (SD)	Upward % or mean (SD)
Job Search - Network	27.8	34.7	36.1	27.1	32.3
Job Found - Network	-	58.0*	47.9	23.1	34.6
Visa track					
Preferential Family	46.3	39.3	40.2	24.8	44.4
Concessional Family	12.5	21.7	24.5	27.6	23.3
Independent	3.6	22.6	19.8	44.2	22.2
Humanitarian	37.6	16.4	15.5	3.4	10.1
Male	37.9	65.2	66.1	71.2	61.5
Relationship status					
No relationship	24.5	26.1	13.0	27.1	20.2
AUS. partner	7.3	13.8	13.0	12.2	21.4
Non- AUS. Partner	68.2	60.1	63.0	60.7	58.4
Education					
Less than Secondary	29.2	12.0	10.2	6.8	11.7
Secdr./Some Tertiary	16.9	14.5	13.8	4.7	13.2
Trade/Technical	22.7	32.1	31.7	40.2	34.6
BA or Higher	31.2	41.4	44.3	48.3	40.5
COB English official	12.5	27.5	26.4	35.7	28.8
Spoken English					
Very well	13.6	37.7	34.0	57.5	44.7
Well	20.9	27.6	29.1	25.00	29.2
Not well/At all	65.5	34.7	36.9	17.5	26.1
No. relatives in AUS.					
None	27.8	35.1	34.4	37.6	36.2
Less than 10	57.9	50.9	51.7	49.6	50.6
More than 10	14.3	14.0	13.9	12.8	13.2
No. immediate relatives overseas					
Less than 5	42.1	43.2	41.5	41.4	49.8
Between 5 and 10	40.3	42.0	43.1	44.7	36.6
More than 10	17.6	14.8	15.4	13.9	13.6
%co-ethnics 15+ S.U.					
Less than 1%	38.7	41.7	42.5	43.6	37.7
Between 1 and 3%	34.1	29.6	30.0	28.2	31.5
Between 3 and 5%	6.0	9.5	9.9	7.2	9.7
Between 5 and 10%	18.5	13.9	13.1	12.2	15.6
More than 10%	2.7	5.3	4.5	8.8	5.5
Age	36.71(12.16)	31.72(7.48)	32.44(7.62)	32.05(6.14)	31.84(7.10)
No. months 1st job	-	9.39(9.95) *	9.72(9.98)	5.75(7.59)	9.35(9.73)
No. ppl.15+ in HH†	3.24(1.69)	2.99(1.53)	3.03(1.56)	2.70(1.30)	2.74(1.40)
Dist. State Capital	18.26(15.17)	18.01(19.31)	18.36(19.86)	17.28(17.50)	19.28(24.75)
ANU3 pre-migration	43.4(23.5) *	43.7(21.5) *	46.5(21.4)	45.3(20.8)	28.6(17.8)
ANU3 post-migration	-	26.5(21.1) *	18.7(15.1)	45.3(20.8)	41.2(20.2)
N	449(16.2%)	2,314(83.85%)	1,177(61.9%)	468 (24.6%)	257 (13.5%)
			1, 902		

Sources: main: *Longitudinal Survey of Immigrants to Australia 1(1993/1995)*
additional: *Community Profiles from the 1996 Census; Daft Logic-Google Maps Distance Calculator*
Note: *when I retain only those cases for which I have values – sample size smaller than that listed; † top coded at 7

Table 2: The Odds of Finding the First Post-Migration Job in Australia

	Model 1	Model 2	Model 3	Model 4	Model 5
Job Search involved Networks (ref. No)	1.71***	1.97***	1.96***	3.12***	3.01***
Visa track (ref. Humanitarian)					
Preferential Family	2.04***	1.74***	1.75***	1.77***	1.77***
Concessional Family	4.33***	2.22***	2.43***	2.42***	2.42***
Independent	16.41***	4.96***	5.65***	5.45***	5.47***
Sex (ref. Female)		3.72***	4.05***	4.11***	4.11***
Age		1.19***	1.20***	1.21***	1.21***
Age (quadratic term)		0.99***	0.99***	0.99***	0.99***
Human capital					
Education (ref. less than Secondary)					
Secondary / Some Tertiary		1.59**	1.56**	1.87***	1.89***
Specialized (Technical/Trade)		1.97***	1.83***	2.24***	2.27***
BA or Higher		1.50**	1.40*	1.83***	1.88***
COB English official (ref. No)		1.44***	1.60**	1.63***	1.58**
Spoken English (ref. Not well/At all)					
Well		1.65***	1.64***	1.65***	1.54**
Very Well		3.19***	2.85***	2.80***	2.70***
Social Capital					
Relationship status (ref. No relationship)					
AUS. Partner			1.54*	1.52*	1.53*
non-AUS. partner			0.97	0.96	0.96
No. relatives in AUS. (ref. None)					
Less than 10			0.96	0.95	0.96
More than 10			0.78	0.76	0.76
No. immediate relatives overseas (ref. Less than 5)					
Between 5 and 10			0.77**	0.77*	0.77*
More than 10			0.61**	0.61***	0.61***
No. ppl in HH 15+			1.02	1.02	1.02
Dist. to State Capital			0.97***	0.97***	0.97***
Dist. to State Capital (quadratic term)			1.00***	1.00***	1.00
Percentage of co-ethnics 15+ S.U. (ref.Less than 1					
Between 1 and 3 %			1.02	1.01	1.00
Between 3 and 5%			2.24**	2.20***	2.21***
Between 5 and 10%			1.01	0.97	0.98
More than 10%			1.56	1.51	1.53
Interaction terms					
Network-based Search * Secdr./Secdr.+				0.63	0.59
Network-based Search * Trade/Technical				0.58	0.56
Network-based Search * BA or Higher				0.43**	0.38**
Network-based Search * Well					1.31
Network-based Search * Very Well					1.14
Network-based Search * English speaking COB					1.18
Constant	1.80**	0.06***	0.07***	0.06***	0.06***
Pseudo R²	0.08	0.22	0.25	0.35	0.25
N			2,763		

Table 3: Propensity Score Model – Extended and Reduced Model. Balance Improvement

	Treatment 1 – Search			Treatment 2 – Found		
	Model 1	Model 2	% Balance Imprv.	Model 1	Model 2	% Balance Imprv.
Visa track (ref. Humanitarian)						
Preferential Family	0.91	0.96	99.99	0.99	0.93	96.03
Concessional Family	0.99	0.97	91.46	0.76	0.74*	57.11
Independent	0.74	0.74*	68.87	0.63*	0.57***	99.90
Sex (ref. Female)	1.27	1.28**	98.18	0.90		
Age	0.98	0.98**	54.30	0.95		
Age (quadratic term)	0.99		88.56	1.00		
Human capital						
Education (ref. less than Secondary)						
Secondary / Some Tertiary	0.75	0.75	78.81	0.75	0.76	91.33
Specialized (Technical/Trade)	0.54***	0.55***	64.41	0.65*	0.64**	75.90
BA or Higher	0.52****	0.52***	98.37	0.53***	0.53***	93.22
COB English official (ref. No)	0.90			0.85		
Spoken English (ref. Not well/At all)						
Well	0.65***	0.63***	44.85	0.45***	0.43***	64.60
Very Well	0.41****	0.38***	97.09	0.25***	0.23***	95.68
Social Capital						
Relationship status (ref. No relationship)						
AUS. Partner	1.29			0.82		
non-AUS. partner	1.13			0.96		
No. relatives in AUS. (ref. None)						
Less than 10	0.78**	0.79**	64.00	1.18		
More than 10	0.92	0.95	59.81	1.16		
No. immediate relatives overseas (ref. Less than 5)						
Between 5 and 10	1.03			1.01		
More than 10	0.94			1.11		
No. ppl in HH 15+	1.12***	1.12***	93.77	1.16***	1.16***	90.51
Dist. to State Capital	1.00			0.99		
Dist. to State Capital (quadratic term)	0.99			1.00		
Percentage of co-ethnics 15+ S.U. (ref. Less than 1						
Between 1 and 3 %	0.92			1.28**	1.27**	79.11
Between 3 and 5%	1.19			1.15	1.13	78.90
Between 5 and 10%	1.15			1.32*	1.30	94.90
More than 10%	1.10			1.33	1.28	84.75
Constant	1.48	1.67		3.31	1.65	
Pseudo R^2	0.07	0.07		0.13	0.13	
Distance			99.99			99.99
N		1,902				

Table 4: Network-based Job Finding vs. Network-based Job Searching Effects on Occupation Mobility re First Post-Migration Job – Bias Correction

	Before Matching (Model 1)			After Matching (Model 2)						
							P-values for the causal effect, assuming …			
	RRR//OR	Std. Error	Treated/ Controls	RRR//OR	Std. Error	Treated/ Controls	No Unobs. Heterogenity	A Low Level of (OR=1.1)	A Medium-Low Level of (OR=1.2)	A Medium Level of (OR=1.3)
Job Found-Networks			761/1,141			482/482				
Downward Mobility v. *No Mobility*	3.06***	0.38	564/613 v. *108/360*	2.13***	0.16	346/282 v. 73/127			---	
Upward Mobility v. *No Mobility*	1.76***	0.30	89/168 v. *108/360*	1.5*	0.23	63/73 v. 73/127				
Downward Mobility v. *Other Forms of Mobility*	2.47***	0.25	564/613 v. *197/528*	1.8***	0.14	346/282 v. 136/200	0.000	0.000	0.002	0.012
Upward Mobility v. *Other Forms of Mobility*	0.76*	0.11	89/168 v. *672/973*	0.84	0.19	63/73 v. 419/409	0.844	0.942	0.979	0.992
Mobility v. *No Mobility*	2.78***	0.34	653/781 v. *108/360*	2.00***	0.16	409/355 v. 73/127	0.000	0.000	0.001	0.007
Job Search- Networks			635/1,267			475/475				
Downward Mobility v. *No Mobility*	1.52***	0.18	425/752 v. *127/341*	1.03	0.16	307/296 v. 102/101			---	
Upward Mobility v. *No Mobility*	1.28	0.22	83/174 v. *127/341*	0.84	0.22	66/78 v. 102/101				
Downward Mobility v. *Other Forms of Mobility*	1.39***	0.14	425/752 v. *210/515*	1.10	0.13	307/296 v.168/179	0.246	0.570	0.740	0.890
Upward Mobility v. *Other Forms of Mobility*	0.95	0.14	83/174 v. *552/1,093*	0.82	0.18	66/78 v.409/397	0.878	0.955	0.985	0.995
Mobility v. *No Mobility*	0.47***	0.17	508/926 v. *127/341*	0.98	0.16	373/374 v. 102/101	0.562	0.777	0.905	0.965

Sources: main: *Longitudinal Survey of Immigrants to Australia 1(1993/1995);* additional: *Community Profiles from the 1996 Census; Daft Logic- Google Maps Distance Calculator*
Note: *p<0.10, ** p<0.05, *** p<0.01; SNNM, no replacement, caliper 0.005; propensity score matching and sensitivity analysis performed in R 3.1.1using MatchIt 2.4-21 (Ho et al. 2007), respectively rbounds 2.0 (Keele 2010)

Chapter 3. Big, Fat Paycheck: An Australian Tale of Wages Differentials by Nativity Accounting for Body Size

Introduction

The goal of this article is to shine additional light on the complex interplay between immigration, obesity and wages. There is a growing literature and consensus on the association between the act of migrating and a good health status – healthy immigrant hypothesis. There is also considerable literature on the link between obesity and wages, yet the constant questioning of (direct or reverse) causality (Averett, Argys and Kohn 2013:245) lead to mixed conclusions (see Averett 2011 for a literature review). However, as Averett et al. (2013:242) note, there are only two studies that specifically tackle the effect of both obesity and immigration on wages. Specifically, Cawley, Han and Norton (2009) work using U.S. data and Averett, Argys and Kohn (2012) work using UK data.

We provide empirical evidence on this link using data from Australia, which ranks seventh in terms of being most popular destination for immigrants (OECD 2014a: 20), and fifth in terms of obesity levels among the adult population (OECD 2014b:2). We extend the existing literature on three dimensions. First, we look at the performance of immigrants in a country which given the high level of immigration and rate of obesity has opted for related health screening embedded in a points-based migration process. Second, we distinguish between immigrants from an English (ESCs from here on) and a non-English speaking country (NESCs from here on) as to simultaneously account for (1) a similar obesity rate and

lifestyle to the Australian one and (2) an easier labor market insertion. Third, we employ a superior measure of obesity to BMI: the waist-to-height ratio (WHtR), and investigate the possible added benefit of one strategy addressing the endogenous nature of the relationship obesity-wages.

We find sufficient support for the 'Healthy Immigrant Hypothesis' only in the case of NESCs, irrespective of employed body size measure. On an immigrants only sample, using BMI and assuming a similar effect for both groups, we find no evidence of a body size effect on wages in Australia. Results are consistent to those for the US and the UK. However, when using WHtR we find, admittedly week, evidence of an obesity premium. On the full sample of natives and immigrants, using BMI and assuming a distinct effect, we find that NESCs incur a wage penalty on overweight, while overweight ESCs share the predicament of a premium with natives. Nevertheless, WHtR indicates that in fact body size has no bearing on wages.

The article proceeds as follows. We provide a brief overview of migration to Australia and an account of the labor market conditions and health requirements faced by immigrants. We then segue into a review of the assumptions behind the healthy immigrant hypothesis and summarize the literature on immigrant wages and on obesity and wages. We discuss the relevant literature keeping in mind the context of interest. We conduct our analysis using the Household, Income and Labour Dynamics in Australia (HILDA) Survey Release 13, and contribute new evidence on the combined effect of immigration and obesity on wages. We wrap up by discussing the implications of our results and note the limitations of our analyses.

Migration, Labor Markets and Obesity. Australia

Australia is the seven most popular destination for immigrants (OECD 2014a: 20). In 2013, 28 percent of its estimated resident population was born overseas - an increase by about 5 percentage points over the past decade (ABS 2013a: 7).

Whereas in the post-World War Two era the 'Ten Pound Pom' policy resulted in Australia's migrant population hailing largely from a European background, more recently a decisive shift towards filling the skills gaps in the workforce positioned parts of Asia as main sources of immigrants. In 2012-2013, India and China were ahead of Australia's traditional source country for permanent migrants -the UK (DIBP 2014a:5). The top ten source countries list is completed by: Republic of Philippines, South Africa, Vietnam, Republic of Korea, Ireland, Malaysia and Sri Lanka (DIBP 2014a: 24). Over the past decade, the fastest increase was in the number of people born in Nepal, followed by those born in India, Pakistan, Bangladesh and Sudan. British people continue to make up the largest portion of Australia's overseas-born population, followed in the top ten by those born in: New Zealand, China, India, Philippines, Vietnam, Italy, South Africa, Malaysia and Germany (ABS 2013a: 7-8). New South Wales (NSW) and Victoria (VIC) are the leading states of both intended and actual residence. Western Australia (WA) has experienced the largest increase over the past decade in the 'intended residence' ranking (DIBP 2014b: 16) and has the highest proportion of foreign-born population. The fact that 68 percent of all permanent arrivals come under the skilled migrant category of the immigration program reflects on immigration being geared to the needs of the Australian labor market (DIBP 2014a: 5). Moreover, lately about half of temporary immigrants become permanent immigrants (DIBP 2014a: 20).

Australian immigration policy was redefined to focus on distinct human capital characteristics. In the late 1990s, the points-based system (PBS) emphasized productivity-related characteristics. Beginning 1999, this earlier system was modified in three ways, denoting a sharp reconfiguration towards a hybrid system. First, Australia increased in the number of skilled-based visas, increasingly developed temporary-to-permanent visas pathways for (potentially skilled) fee paying foreign students and for temporary business sponsored full-time employed skilled migrants, and decreased family-based visas. Second, a cap was put on the entry of parents (concessional family class), which consequently reduced the average age of family-based migrants (Richardson et al. 2001:18). Third, and most importantly in terms of changing the human capital distribution, the Department of Immigration and Multicultural Affairs (DIMA) made substantial changes to the point test itself - most notable being the awarding of points for arranged employment. Policy makers expected these changes to operate towards diminishing integration, performance, and remuneration gaps on the labor market, between natives and immigrants.

New Zealanders (from here on NZs) enjoy a privileged status which goes back to the 1973 Trans-Tasman Agreement. Prior to 1994 NZs were treated as exempt non-citizens in Australia. Since 1994 all NZs must hold a visa. They receive a temporary special category visa if they have a valid passport and meet the health and character requirements. Since 2001, for NZs to access certain social security payments (income support among) they must apply for permanent residence.

Immigrants join a labor market which shares some characteristics with those of other Anglo-American countries. The labor market is highly deregulated and union density is relative weak. The wage setting is

decentralized- 80 percent is the result of collective bargaining, wage dispersion is on the rise, the share of statutory minimum wage to median wage is declining (Herr and Ruoff 2014; Greenville, Poblke and Rogers 2013; OECD 2004) and there is evidence of an increase in the incidence of low pay over the last decade and a half (Buchanan 2006). Moreover, the employment protection legislation has constantly been among the least strict in the OECD and the Government Social Spending out of the Net National Income is in the realm of 25 percent (Freeman 2008, OECD 2013:72, OECD 2016). During our period of analysis Australia's unemployment rate was relatively low, yet on a marginally upward trend from to 5.6 percent in 2009 to 5.2 in 2010-2012 to 5.7 percent in 2013 (World Bank 2016).

Applicants for visas to either visit or migrate to Australia must meet the Health Requirement. This helps ensure the public health expenditure is contained and that Australia citizens' access to services which are in short supply is safeguarded, but also that risk to public health in Australia is minimized– see the Migration Regulations 1994- Public Interest Criteria (1994). Since the system is primarily designed to focus on financial burdens, it has the potential to deny the presence of migrants with health conditions 'which result in a significant cost', but do not necessarily cause a direct public health concern. Given that Australia places fifth in terms of obesity levels among the adult population (OECD 2014b:2) obesity concerns rank high both in the temporary and the permanent residence status acquirement process. Specifically, the Department of Immigration and Citizenship medical guidelines (DIC 2009:54) state that, during the health examination linked to an attempt to enter Australia, one receives a B grade -referral to physician for further investigation meant to determine fitness for travel and stay in Australia- if his or her BMI is smaller than 16kg/m2 or larger than $40kg/m^2$ (temporary migrant) or $30kg/m^2$

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(permanent migrant). However, as remarked in the 2009 House of Representatives Committee on Migration on the Health Requirement (HRC 2009: 35-36), costs associated with obesity are yet to be properly picked up in those (few) instances where waiver arrangements still apply (e.g., temporary skilled business class visa- 457). More to the point, temporary migrants with an intended stay of less than one year are exempt from a medical examination. NZs are in a unique position as their special visa process allows them to up and leave whenever, bypassing the need for a medical examination.

It should be remembered that a heavier body size does not constitute an exclusion criterion. It does, however, indirectly select out certain individuals. All in all, this policy framework is expected to foster healthy and highly trained immigrants in the labor market.

Literature Review

In this section, we try to link the literature on the "healthy immigrant" hypothesis with that which examines the consequences of obesity on wages, without disregarding the large body of work on the integration of immigrants into the labor market of the host country. We review each stream, providing at the end of each subsection an overview of existing work on Australia. We state our hypotheses at the end of the section as a concluding remark.

The Healthy Immigrant Hypothesis

The healthy immigrant effect (HIE from here on) refers to the fact that upon arrival immigrants are in a better health condition than native and,

moreover, than those from their home country who decided not to migrate. This situation tends to be attributed to "selection" arguments. Immigrants might come from countries characterized by a healthier lifestyle and nutrition pattern (Popkin 2002) and might tend to invest more not only in their human capital, but in their health. The immigration policy of the host country might involve a screening process partial to the healthiest. In addition, those who suffer from an illness might return, voluntarily or by consequence of no visa renewal, to their home country – the salmon-bias effect (Pablos-Mendez 1994).

Research also looks at whether this initial advantage fades over time. The 'unhealthy' assimilation hypothesis/ acculturation explanation states that the longer one resides in a country exhibiting high obesity rates the higher is the probability of bad diet and reduced activity alike that of natives. The erosion of the initial advance is, however, held back by delayed acculturation and cultural buffering if close cultural ties to the homeland still manifest.

The evidence regarding HIE and 'unhealthy' assimilation in Australia is generous. Kennedy et al. (2006) work strongly supports HIE, in particular in the case of immigrants from developing countries. The intake of mainly skilled, young migrants is highlighted as a major driver for these results, with the important mention that the education health gradient is significantly smaller for immigrants compared to native-born individuals.

As far as the evidence in favor of the adoption of obesogenic behaviors and experience of weight gain subsequent to arrival in Australia is concerned, there seem to be more supportive than dismissive results. On the one hand, work by Biddle et al. (2007) shows that the more time immigrants spend in Australia, the closer their health approximates that of the Australian-born

population. Renzaho et al. (2006) go further and specifically highlight the fact that in the case of children coming from countries with a lower rate of obesity the likelihood of experiencing it in Australia increases with the length of time since migration, while Hauck et al. (2011) indicate that, despite their initial lower rate, Asians are at risk of assimilating to the predominant mainstream culture in only one generation, with a consequent BMI increase. Menigoz et al. (2016) find that male immigrants who have been living in Australia for over 15 years have a significantly higher BMI then their counterparts living for less than five years. Their results are, however, sensitive to function specification and degree of comprehensiveness of the model. More consistent are the results noting that male immigrants who arrived as young children or adolescents have significantly higher BMIs. On the other hand, Renzaho et al. (2008:1) results suggest that "maintenance of traditional cultural orientation is associated with lower rates of obesity and sedentary behaviors". Hauck et al. (2009) analysis indicates that a slower transition to native rates of obesity occurs if part of a large ethnic enclave. Recent work by Jatrana and Rao Pasupuleti (2014) finds that immigrants from an English-speaking country come with no health advantage and do not become disadvantaged. Immigrants from a non-English speaking country lose their initial obesity advantage once in Australia for more than 20 years.

Lastly, it is important to note that work such as that by Delavari et al. (2013, 2015) highlights the need to explore factors which might moderate or mediate the association between acculturation and body weight.

Immigrant Wages

There is a considerable amount of literature dedicated to examining the wages of immigrants in the host country and their assimilation towards native level. A review of this literature, which goes back to the late 1970s, highlights the following aspects that impact the size of the penalty and the rate of assimilation: *language proficiency* (e.g. Chiswick and Miller 1995, Trejo 1997, Davila and Mora 2000), *portability of human capital* (e.g. Chiswick 1978, Duleep and Regets 1997a, Friedberg 2000), *selection process*: self-selection into migration (i.e., favorable supply of migrants for labor market success –e.g. Chiswick 1978, 2000; Borjas 1985, 1995), opportunity-driven selection (Duleep and Regets 1997a,b) and selection policies (i.e., skill-based admission criteria –e.g. Borjas 1993, Duleep and Regets 1992, Wright and Maxim 1993, Bloom, Grenier and Gunderson 1995, Winkelmann 1999, Barrett 1996, Clarke and Skuterud 2016), *nationality/country of origin* (e.g. Jasso and Rosenzweig 1986, Schmidt 1992, Adsera and Chiswick 2004, Constant and Massey 2005, Duleep et al. 2014), *ethnicity* (e.g. Shields and Wheatley-Price 1998, Algan et al. 2010) *and or ethnic identity* (Zimmermann 2007, Constant and Zimmmermann 2009, Casey and Dustmann 2010), *race* (e.g. Chiswick 1980, Model 1991, Daneshvary and Schwer 1994, Zavodny 2003), *cohort affiliation* (e.g. Borjas 1985, 1995, 2015).

A sizeable part of this literature examines the issues in Australia. Chiswick and Miller (1985) find that, compared to Australian-born, immigrant men have lower returns on education and work experience achieved in home country, particularly if from a non-English speaking country. Most studies have found that those from non-English countries face a wage penalty, while those from English speaking countries are on par with (Preston 2001:

108) or earn more than Australian-born (Chapman and Mulvey 1986, Langford 1995, Voon and Miller 2005). The usual suspects help explain the wage differentials: labor market condition at time of migration (McDonald and Worswick 1999), flexibility of the labor market (Miller and Neo 2003, Antecol et al. 2006), selection criteria and visa class (Hawthorne 2006, Davidoff 2006), international transferability of human capital (Chapman and Iredale 1993, Green et al. 2007, Chiswick and Miller 2010, Chan et al. 2012), English skills (Chiswick and Miller 1995), age at migration (Wilkins 2003), years of residence (Chiswick and Miller 1985, Chiswick et al. 2005; McDonald and Worswick 1999), cohort effect (Miller and Neo 2003, Antecol et al. 2003, 2006; Breuning et al. 2013).

Obesity and Wages

Never has the mantra "association does not mean causation" been truer. There is currently in the social science literature a growing effort to puzzle out whether one should indeed talk about the negative impact of obesity on labor market outcomes. Obese workers might have lower wages simply because there are discriminated against on grounds of labor productivity. They are perceived as lazy, socially inept (Sobal 2004, Han et al. 2009), lacking in looks (Caliendo and Gehrsitz 2016) and competence (Levine and Schweitzer2015). They are economically myopic and consequently less likely to invest in skill acquisition (Baum and Ford 2004). Discrimination can also occur as a result of cultural norms. The social degree of acceptance of obesity is dependent on a country's obesity rate, as well as on the intensity of a country's social life (Costa-Font and Gil 2004; Brunello and D'Hombres 2007; Garcia and Quintana-Domeque 2007). Obese workers might also have lower wages because their employer must pay a premium for their health insurance - a financial loss for which the employer must be

compensated (Bhattacharya and Bundorf 2009). Reverse causality is very much possible in as far as those with lower wages cannot afford the costs of a healthy diet (Drewnowski 2009). Last, the possibility of obesity having a positive effect on wages should not be disregard of the bat. For the obese the marriage market might be tight and consequently the decision to heavily invest in human capital skills conducive of higher wages is a likely scenario (Averett and Korenman 1996).

The segment of the empirical literature investigating the link between obesity and wages in Australia seems to reconcile the theoretical conundrum by concluding no effects. Kortt and Leigh (2010) find no significant relationship between BMI and wages. This result is supported by Lee (2014) who stresses the importance of thinking in terms of height-weight combinations while focusing on age groups.

Hypotheses

The above synthesis incorporates nutrition, immigration and labor market theories to explain immigrants' initial body size advantage, its likely convergence to native level over time, and associated wage penalty. It emphasizes how immigration might affect population health and to that end economic returns, in two ways.

First, based on HIE, we hypothesize that immigrants within a short duration after arrival have a body size advantage over the native born, but this advantage erodes over time. We expect to find a more substantial initial advantage in the case of immigrants coming from countries economically and culturally dissimilar to Australia- NESCs.

Second, as far as nativity differentials in wages returns to body size are concerned, we hypothesize no differences between natives and ESCs. In as far as differences between natives and NESCs, we put forth the idea by which we expect NESCs to incur a (higher) penalty for heavier body size. Our expectations are based on cultural norms explanations. Specifically, ESCs' body size will be easier accepted given that they come from countries with a similar obesity rate and intensity of social life as Australia. NESCs body size will be held to the dissimilar standard of their country of origin, and consequently departures from the group's average will be more severely penalized.

Methods

We investigate the existence of a HIE by estimating body size differentials by nativity, controlling for individual characteristics, as specified by an *ordered logit:*

$$P(Y_i > j) = g(X\beta_j) = \frac{exp(\alpha_j + X_i\beta_j + ESC_i\mu_j + NESC_i\omega_j)}{1 + \{exp(\alpha_j + X_i\beta_j + ESC_i\mu_j + NESC_i\omega_j)\}}$$

$$j=1,2 \dots J\text{-}1 \qquad (0)$$

where J is the number of response categories of the ordinal dependent variable - in this case three (normal weight, overweight, obese), hence two equations (category 1 vs. 2+3 and category 1+2 vs. 3).

We estimate an obesity ordinal dependent model for consistency across models. Specifically, a RESET test (Thursby and Schmidt 1977) indicated

that the hypothesis of linearity of wages in body size is rejected at a 5 percent significance level.

We opt for an ordered model over a multinomial model as not to discard the ordered nature of the data and potentially lose efficiency (Peterson and Harrell 1990). The parallel lines/proportional odds assumption (β's, μ's and ω's are the same for all values of j, α's are distinct) was assessed in preliminary analyses using Brant test. We decided for a generalized ordered logit model (gologit) which relaxes it. Specifically, we employ a *partial proportional odds model* (from here on PPO)- *a special case of gologit allowing just some of the covariates to not have proportional effects (Some β's, μ's and ω's differ across levels of j but others do not)*. Ananth and Kleinbaum (1997) provide a thorough discussion of the statistical theory behind the partial proportional odds model. The STATA command gologit2 (Williams 2006) was used to fit the model.

We estimate the same model(s) also as an OLS specification in order to facilitate comparisons with existing and future similar efforts.

$$Y_i = \propto + X_i\beta + ESC_i\mu + NESC_i\omega + \varepsilon_i \tag{0}$$

The effect of obesity on wages has been addressed in a variety of studies, majority of which being preoccupied with establishing the direction of causality. The issue of addressing the possibly endogenous relationship between wages and obesity resulted in a variety of strategies, none without pitfalls (see Averett et al. 2013: 247-248 for a thorough discussion). Irrespective of choice, the general idea is that when controlling for endogeneity most times the effect of obesity disappears.

The primary goal of this article is that of providing evidence of the dual effect of immigration and obesity on the wages of immigrants to Australia, and not that solving the endogeneity puzzle. As such, we start by estimating on the sample of immigrants an OLS model based on a specification similar to that employed by Cawley et al. (2009) and Averett et al. (2012):

$$W_i = \alpha + X_i\beta + OW_i\varphi + OB_i\tau + YR_i\theta + \varepsilon_i \qquad (1)$$

W_i stands for the respondent's log hourly wages. Body size enters the equation as a piece-wise constant in 3 categories: individuals are either overweight (OW) or obese (OB), with normal weight and underweight combined as the omitted category. X is a vector of demographic controls, while YR accounts for years of residence. Previous work conducted by Lee (2014) supports our decision of a parametric instead of a semi-parametric strategy.

We then, similar to Averett (2012), extend the model as to directly compare immigrant and native populations. We do this by estimating the following equation, which augments (1) by including an indicator of nativity:

$$W_i = \alpha + X_i\beta + ESC_i\mu + NESC_i\omega + OW_i\varphi + OB_i\tau + ESC_i * OW_i\sigma +$$
$$NESC_i * OW_i\gamma + ESC_i * OB_i\rho + NESC_i * OW_i\vartheta + YR_i\theta + +\varepsilon_i \qquad (2)$$

The move from associations towards a possible causal conclusion is further hampered by the act of migration itself as information on family members becomes limited and disconnected from ones' outcomes in the current country of residence. Nevertheless, following Averett and Korenman (1996) when employing BMI we re-estimate our models using BMI lagged by one year as to account for endogeneity.

Data

The Dataset

This article uses unit record data from the Household, Income and Labour Dynamics in Australia (HILDA) Survey. The HILDA Project was initiated and is funded by the Australian Government Department of Families, Housing, Community Services and Indigenous Affairs (FaHCSIA) and is managed by the Melbourne Institute of Applied Economic and Social Research (Melbourne Institute). The findings and views reported in this article, however, are those of the author and should not be attributed to either FaHCSIA or the Melbourne Institute.

HILDA is a nationally representative household-based panel study which began in 2001. The release we use -13- consists of 13, 386 surveyed households (including the Top-Up sample from 2011). Specifically, it includes 19,987 Continuing Sample Members (CSMs) and 1,341 Temporary Sample Members (TSMs). CSMs are all those members of wave 1 households. Any children subsequently born to or adopted by CSMs are also classified as CSMs. Further, all new entrants to a household who have a child with a CSM are converted to CSM status. CSMs remain in the sample indefinitely. All other people who share a household with a CSM in wave 2 or later are considered TSM (Summerfield et al. 2015: 3). Interviews are conducted annually with all adult members of each household. With respect to language difficulties, only a small number of interviews were conducted with the help of a professional interpret, most times another member of the household acting as an interpreter.

Since WHtR was only measured in wave 13, most information refers this wave. We use information collected in wave 12 to test the robustness of the BMI estimates and to benefit from additional covariates. The control variables subsection provides further details.

The data used in this article was extracted using the add-on package PanelWhiz for Stata®. PanelWhiz (http://www.panelwhiz.eu/) was written by Dr. John P. Haisken- DeNew (john@PanelWhiz.eu). See Hahn and Haisken- DeNew (2013) and Haisken- DeNew and Hahn (2010) for details. The PanelWhiz generated DO file to retrieve the data used here is available from me upon request. Any data or computational errors in this article are my own.

HILDA allows us to identify immigrant status, obesity and wages as described below.

Sample Selection

We restrict our examination of the data to employed male respondents, age 21-65. We exclude those in self-employment and employees of own business as they negotiate and collect wages at a different rate. We also exclude those currently taking full-time courses or classes. We focus on male respondents as their obesity rate tends to fluctuate less across the life cycle span (Lovejoy 1998). The age restriction speaks to working-age workers and to the fact that little to no height increase occurs after the age of 21(Kortt and Leigh 2009).

We use information on the country of birth to identify and categorize immigrants. We conduct our analysis considering three groups, namely

Native-born (NB), born in English speaking countries (ESC), and born in non-English speaking countries (NESC). Immigrants from the United Kingdom, America, New Zealand, Canada, Ireland and South Africa are categorized as immigrants from ESC, while the rest as immigrants from NESC. This categorization is as suggested by the Australian Bureau of Statistics (ABS) and as such fosters the possibility of a comparative assessment of our results. As ABS notes, countries are not classified based on whether English is the predominant or official language, but merely on whether they constitute 'main countries from which Australia receives, or has received, significant numbers of overseas settlers who are likely to speak English' (ABS 2013b). It must be emphasized that this classification is partial to our endeavor given that ESC countries rank similarly to Australia in terms of obesity rates (OECD 2014b). However, as NZs are distinct in the ESCs group on account of innate similitudes to Australians and the preferential treatment they enjoy with respect to migration, we consistently checked whether the ESCs estimates are sensitive to the exclusion of NZs from the sample. The NB group is restricted to non-indigenous people (i.e., non-Aboriginals and non-Torres Strait Islanders). The distinct obesity and demographic profile of the indigenous (ANHPA 2014) directed this decision.

Measurement

Dependent variable: Wages

Income information is collected in the Person Questionnaire. Income imputation was undertaken by the HILDA team in three steps, at the derived variable level, leaving the original data unchanged. The steps were: (1) carryover of zeroes, (2) nearest neighbor regression imputation and (3)

Little and Su imputation. In wave 13, 10.4 percent of "responding persons" missing cases were imputed via (2) and 89.6 percent via (3). Ideally, all records would be imputed by (3), however sufficient information is not always available (Summerfield et al. 2015: 63-64). In the analyzed sample about 2.5 percent of the wages and salary in the main job observations are imputed.

Particularly, we are interested in gross hourly wages and salary in the main job. These are calculated by dividing the gross weekly wage in the main job by the number of hours per week worked in said job. Wage observations below half the federal minimum wage are dropped – about 1.5 percent of the sample because we regard these as implausibly low[5].

Independent variable: Obesity

When it comes to measuring obesity, for a long time three magic letters held most weight– BMI (Body Mass Index). BMI represents an arithmetic derivation of an individual's height and weight – weight (kgs) divided by height (meters) squared. Individuals are considered underweight if their score is below 18.5, of normal weight if between 18.5 and 25, overweight if between 25 and 30 and obese if 30 or greater. Self-reported height and weight are collected in HILDA since wave 6. Some respondents provided their height and weight in both metric and imperial units. Rules for which measurement to consider were adopted based on empirical evidence from the dataset on which age groups were more likely to use the metric or imperial units. There is about 14 percent missing data resulting not from refusal to provide data, but from non-completion of the Self-Completed

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[5] In 2013, most respondents were interviewed between August and November 2013, when the federal minimum wage for workers aged 21 and over was $16.37 per hour, so we drop those earning less than half the minimum wage ($8.185).

Questionnaire (Wooden et al. 2008:7). For comparative purposes re obesity measure, we only use wave 13 data.

Recent work indicates the waist-to-height ratio (WHtR) as a superior measure in pinpointing obesity (Ashwell and Gibson 2014) and predicting the health risk of: diabetes, hypertension, dyslipidemia and cardio-vascular disease outcomes (Schneider et al. 2010, Ashwell, Gunn and Gibson 2012, Ashwell and Gibson 2016), as well as mortality rates (Ashwell et al. 2014). The reason is twofold: medical and methodological. Medically, the most dangerous place to carry weight is in the abdomen. Fat in the abdomen is "metabolically active and produces various hormones that can cause harmful effects, such as diabetes, elevated blood pressure and altered lipid levels" (Amen 2011:13). Methodologically, mean boundary values for WHtR are not sensitive to age, gender or ethnicity as reflected by several systematic reviews and meta-analyses (Browning, Hsieh and Ashwell 2010; Lee et al. 2008; Ashwell, Gunn and Gibson, 2012). Same cannot be said about the cutoffs for BMI. WHtR is also cheaper and easier to collect (i.e., same piece of string can be used for both required measures) and can easily be converted into a consumer-friendly table (Browning, Hsieh and Ashwell 2010: 265).

As the name indicates, WHtR is calculated by dividing waist size by height. Ideally, the waist circumference should be less than half of the height -0.5 represents the main proposed boundary value. The second boundary value is 0.4, and the third 0.6. Reviewing the chart-based literature she pioneered in the 1990s, Ashwell (2011:80) notes that values below 0.4 indicate one will not need to decrease waist circumference and might even be underweight. Values between 0.4 and 0.5 characterize an OK status. Values between 0.5 and 0.6 signify one should "Consider Action" (if adult) or

"Take Action" (in the case of a child[6]). Values larger than 0.6 clearly identify a "Take Action" case.

Self-reported waist measurement was collected through HILDA starting wave 13, using the tape measure provided. During the editing process, it was noted that many respondents seemed to have provided their waist measurement in inches or provided an implausible value. If plausible with respect to age and gender, the values which seemed provided in inches were converted to centimeters. A second plausibility check was then performed in relation to weight and height. All extremely low or high values were visually inspected before deemed implausible (DSS 2014).

Control Variables

HILDA wave 13 benefits from the re-inclusion of the Health Module. The module contains information on physical activity both via a single-item Self-Completed Questionnaire (SCQ) measure and the International Physical Activity Questionnaire (IPAQ) measures. Wooden (2014: 15) concludes that the SCQ measure performs just as well if not better than the IPAQ variables, one possible explanation being that it accounts for usual activity as opposed to activity in the last 7-days. As such, and considering the possibility of comparability with similar work, we make use of the SCQ measure. This is a categorical measure: 'low', 'moderate', 'high' level of physical activity. Part of the Health Module is also information on one's dieting behavior. We account for it by distinguishing between those who have been on a diet to lose weight over the past year (including those being on one at the moment) and those who have not.

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[6] Over 5-years old

A consistent body of public health literature focuses on the relationship between obesity and health risks. Pi-Sunyer (1996) notes among the overweight and obese a higher blood cholesterol level, as well as a higher prevalence of type II diabetes, gallbladder disease, depression, musculoskeletal disorders, a variety of heart conditions and several cancers. To quantify the extent to which health status affects the relation between obesity and wages, same at Kortt and Leigh (2010), we include four summary measures of physical health status derived from the SCQ's Short Form Health Survey (SF-36) section, which address limitations in everyday activities over the past four weeks: the physical functioning, role-physical, bodily pain, and general health indices. The scale is 0-100, where 100 is less disability.

Similar to Cawley et al. (2009) and Averett et al. (2012) we include variables on smoking status and alcohol consumption in order to account for myopic time preferences. 'Smoking status' differentiates between those who smoke, those who no longer smoke and those who never smoked. As to alcohol consumption, we distinguish between abstainers (i.e., never or no longer drink), moderate drinkers and heavy drinkers. Drinking habits were classified per Cruise (2009: 34-36).

There is debate in the literature as to whether one should control for education and experience when estimating wages (see Neal and Johnson 1996, Heckman 1998 for a discussion). Work of the topic indicates that results solely based on a measure of cognitive ability are not robust (Darity and Mason 1998, Lang and Manove 2011) and adding back education into the wage equation makes the ethnic/racial gap reemerge. The explanation is that while cognitive ability accounts for aptitude, education accounts for additional productivity attributes such as acquired skills or knowledge. In the case of our analysis, it could additionally be argued that education and

experience might either serve as a channel through which body size impacts wages or be confounding variables (Kortt and Leigh 2010: 73). In line with previous literature, we chose to control for both. Consequently, using information collected in wave 12 we control for cognitive ability (Backwards Digital Span –BDS – highest rate of response, not influenced by language skills – see Wooden 2013 for details), non-cognitive ability (two achievement motivation scales: "hope for success" and "fear of failure"- see Wooden 2013 for details), education (3 levels of attainment: Year 12 or less, other post-school and Degree) and years of experience in current occupation. We have no reason to believe that among these individuals cognitive and non-cognitive abilities fluctuated over the period of one year. Hence, we are not concerned about bias in estimates. If anything, lagged ability measures should in fact provide more robust estimates.

The number of years of residence in Australia is calculated as the difference between the year of the survey and the year one first came to Australia. As such, the measure suffers from slight imprecision resulting from the fact that spells of time spent abroad since the first visit are not accounted for. Thus, we operate under the assumption of an interrupted stay.

The following regressors are included to control for *characteristics of employment*: contractual status (distinguishing between a fixed term, casual or permanent contract), length of tenure (years) with current employer, industry of activity(1-digit ANZSIC 2006 division, reorganized into 9 categories due to small sample sizes: primary industry or utilities; manufacturing; construction; retail or hospitality; transport; culture; finance or science; education or health; other services), sector of activity (public sector as opposed to private sector or to private non-commercial sector), size of the employer (on the basis of the number of employees throughout

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Australia: small, medium-small, medium or large firm), and indicator variables for whether the respondent is part of a trade union or employee association, his or her job is full-time (defined at 20 hours per week), has a white collar occupation (as defined by ABS – ABS(2011a:1), Australian ABS (2011n)- based on 1-digit ANZCO 2006: Manager, Professional, Community and personal service worker, Clerical and administrative worker, Sales worker).

As far as additional *demographic characteristics* go, the list of regressors includes: age (and its quadratic effect), partnership status (three categories: married or de facto; divorced, widowed or separated; never in officiated partnership), number of dependent children (sum of the number of children aged under 15, including partner's, residing in the household, and the number of own dependent non-residing children), and region of residence (New South Wales, Victoria, Queensland, South Australia, Western Australia, Tasmania, Northern Territory, Australian Capital Territory).

Results

All estimates presented are weighted[7]. Given how certain covariates were constructed, we use responding person longitudinal weights for a balanced panel.

Sample Characteristics

One of the reasons for distinguishing between ESC and NESC immigrants is to reflect the lower obesity rates in the sending countries. Of the NESCs

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[7] We use the the Stata svy command with the subpop option

sample, 45 percent were born in either India, Nepal, Philippine, Bangladesh or China. This top five list is consistent with similar ones by Australian authorities (ABS 2013a, DIBP 2014a). All the countries on it place at the bottom of obesity rate rankings (OECD 2014b).

Table 1 provides summary statics on our dependent and independent variable. Hourly wages average $36.56 for natives, $46.07 for ESC ($47.52 when excluding New Zealanders) and $33.80 for NESC men. These are in line with the theoretical expectation that ESCs are at par with if not better off than natives, while NESC incur a penalty.

Both the BMI and WHtR average by nativity are worrisome, highlighting a general trend of overweight. BMI averages at 27.65 for natives, 27.86 for ESCs and 26.03 for NESCs, while WHtR at 0.55 for natives, 0.55 for ESCs and 0.53 for NESCs. Notable, when NZs are excluded from the ESCs sample, the average BMI drops by more than half a point – 27.22 – yet this difference is not statistically significant.

The BMI classification, as well as the WHtR one, indicates NESCs as being far more frequently of normal weight than either natives or ESCs are. There is also a substantially lower risk of obesity among NESCs, yet a similar one among natives and ESCs. Per BMI classification, there is no difference in the percentage of overweight among immigrant groups, which is higher than among natives. Per WHtR classification, however, the percentage of overweight is higher among ESCs, and similar among NESCs and natives. Measurement wise it is worth remarking that, compared to the BMI, the WHtR classification pinpoints a slightly lower incidence of obesity and a higher incidence of overweight across the board. Same as Ashwell and

Gibson (2014) we note[8], for all groups, that a high percentage of individual classified as of normal weight by BMI are overweight by WHtR, while a small percentage of individuals classified as overweight or obese by BMI are of normal weight by WHtR. Both classifications identify few cases of underweight, which upon further investigation prevailingly refer mild thinness. There is thus little concern over treating these cases as instances of normal weight.

[Table 1 here]

Table 2 offers statistics on the demographic and health profile of our sample. We begin by noting an older average age profile for ESCs and an average number of years of residence above 15 for both NESCs and ESCs. The longitudinal nature of the data is the main driver of the latter situation. It should be but about 30 percent of the sample of immigrants is '1.25 or higher generation' immigrant (see Rumbaut 2004 for an overview), but due to small sizes we cannot pursue this distinction in our analyses.

In as far as skills and ability differences between groups are concerned it is worth remarking that, compared to both natives and ESCs, a substantially higher percentage of NESCs are highly qualified and a higher average 'fear of failure' characterizes NESCs.

About family demographics, a higher percentage of both ESCs and NESCs is currently in an official form of partnership, and a lower percentage of them has never been in one, compared to the Australian-born.

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[8] exact descriptives available upon request.

Health wise, there are a couple of substantial and significant differences between groups. A higher percentage of NESCs are alcohol abstainers and do not suffer from a long-term condition impacting their type or amount of work. NESCs also have an average bodily pain score indicating less disability. However, natives have a superior average physical functioning score than immigrants.

While the geographical distribution of ESCs tends to mimic that of Australian-born, NESCs seem to mainly favor the first and the second-most populous state (New South Wales and Victoria).

[Table 2 here]

Table 3 addresses statistics on the employment related variables used in our specifications. We remark that immigrants are substantially and significantly less likely to be a part of a trade union/employee association (especially ESCs), more likely to be in a white-collar occupation (especially NESCs), work in the private sector, and to have a lower average tenure with their employer (especially NESCs). NESCs also exhibit a lower average number of years of experience in their occupation.

While among ESCs most – about a fifth - activate in the Construction industry, among NESCs most – about a quarter – activate in the Education/Health industry. Among both groups the Finance/Science industry ranks a close second. NESCs industry concentration is more similar to that of Australian-born than to that of ESCs. Noted differences in industry concentration profile are statistically significant.

[Table 3 here]

Heathy Immigrant Effect

Table 4 allows us to examine the presence of a healthy immigrant effect (HIE). Model (0) solely accounts for nativity and years of residence in Australia. Model(s) 1 replicates the covariate specification used by Cawley et al. (2009) and Averett et al. (2012), while Model(s) 2 accounts for additional cognition, non-cognitive, health and residence related characteristics. We simultaneously discuss results for BMI and WHtR, accounting for model specification (functional form and covariates) and estimates' sensitivity to the exclusion of NZs from the ESC group.

BMI and OLS specifications conclusively identify a substantial and significant HIE effect among NESCs – per Model 2: on average about 1.5 points lower BMI at time of arrival (scale to 100). When NZs are excluded from the ESCs group, a similar conclusion is extended to ESCs – per Model 2B: on average about 1.25 points lower BMI upon arrival.

WHtR and OLS specifications provide sufficient evidence of a HIE effect among NESCs – per Model 2: upon arrival, on average about 0.01 lower WHtR points (scale to 1). We say sufficient as Model 1 estimate brushes, yet not reaches significance (p=0.12). NZs excluded from the ESCs group, NESCs estimates increase significance and ESCs estimates provide significant evidence of a HIE effect only in the most parsimonious model – on average about 0.03 WHtR points per Model 0B.

BMI and PPO specifications provide weak evidence of a HIE effect among NESCs. Specifically, estimates are significant in the most parsimonious specification – Model 0. The parallel lines assumption test is significant at 5 percent. Thus, upon arrival, the odds of NESCs to be overweight or obese

(reference: normal weight) are only 58 percent as high as those of natives, while the odds to be obese (reference: normal weight or overweight) are only 33 percent as high. When NZs are excluded from the sample, Model 2 adds additionally evidence of a HIE among NESCs, though significant at 10 percent. The parallel lines assumption test is not significant at 5 percent. Thus, the odds of NESCs to be overweight or obese (reference: normal weight) and the odds of NESCs to be obese (reference: normal or overweight) are equal and amount to 64 percent of the odds of natives to experience the same status. As to a HIE effect among ESCs, though all estimates points towards one, none reach conventional significance.

WHtR and PPO specifications provide sufficient evidence of a HIE effect among NESCs. In neither specification is the parallel lines assumption test significant at 5 percent. Thus, the odds of NESCs to be overweight or obese (reference: normal weight) and the odds of NESCs to be obese (reference: normal weight or overweight) are equal. Per Models and 1 and 2, these odds are only 64 percent as high as those of natives. We say sufficient as Model 1 estimate brushes, yet does not reach significance (p=0.11). NZs excluded from the sample, NESCs estimates increase significance. Same as when employing BMI, no significant HIE effect is found among ESCs, despite the direction of the estimates indicating one.

 It should be noted that for each model, the joint F-test on nativity reaches the conventional levels of significance, meaning there is no reason to question the explanatory power of nativity on obesity.

The low magnitude and often not significant effect of 'years of residence' seems to suggest that, once in Australia immigrants do not change their obesogenic profile. Thus, we find no evidence of an acculturation effect. This conclusion is consistent with that of Jatrana and Rao Pasupuleti (2014)

who using the same data went even further and looked at acculturation by nativity, using a different econometrical strategy. However, caution is warranted by the fact that about 60 percent of our sample has been in Australia for more than 10, and the average number of years is above 15. Thus, our measure is less able to capture a fine gradient.

Estimates for all other covariates are available upon request, yet we briefly overview here the ones significant across all models and specifications. BMI/WHtR increases with age at a diminishing rate. A high level of instruction is associated with lower BMI/WHtR. Not surprisingly, a high level of physical activity and a good general health reduce BMI/WHtR. To diet as to lose weight leads to higher BMI/WHtR. To have smoked also has a positive impact on BMI/WHtR. As per epidemiological literature (see Chiolero et al. 2008) nicotine increases energy expenditure and could reduce appetite. Hence, smoking cessation is frequently followed by weight gain. The status of a 'moderate drinker' has a negative impact on BMI/WHtR. It is not an uncommon find (Traversy and Chaput 2015), confounded by factors such as primary and or secondary malnutrition, smoking and meal-skipping, atop consumer characteristics and preferred drinks (Suter and Tremblay 2005). Lastly, we note that a too hopeful attitude can be detrimental to body size. This finding calls for further research into the extent to which overly hopeful individuals find it difficult to support long-term self-regulation when faced with initial negative results (Teixeira et al. 2012).

[Table 4 here]

Wages

Immigrants Only

[Table 5 here]

We start our analysis of nativity, obesity and wages by estimating models similar to those reported by Cawley et al. (2009) and Averett et al. (2012) on a non-natives sample – Model(s) 1. We also expand these models by including additional controls for cognitive, non-cognitive, health, job and residence related characteristics – Model(s) 2. Our results can only be viewed as associations.

Irrespective of the specification or obesity measure used, we find no effect of overweight on wages in an immigrants only sample in Australia. Where we to assume conventional statistical significance, results referencing BMI are inconsistent as to the direction of the expected effect, whereas results referencing WHtR point towards a positive effect of being overweight.

When employing BMI, we moreover find no statistically significant evidence of obesity impacting wages. This is in line with both Cawley et al. (2009) and Averett et al. (2012), who similarly fail to find a significant effect of body size employing their BMI specification. Like Cawley et al. (2009) and opposed to Averett et al. (2012) our estimates seem to favor a wage premium. Then again, the more robust lagged BMI estimates seem to indicate the opposite. When using WHtR – see Model 2 - we find a positive effect (15.03 percent[9] wage premium). The estimate is significant at 10 percent (p=0.06) and the joint F-test on the coefficients of body size rejects

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[9] $100*[\exp(0.14)-1] = 15.03$

at 10 percent level (p=0.09) the notion that that the true coefficients of body size are zero in the model. To our knowledge this is the first evidence – admittedly weak one- on a non-natives sample of an effect of body size on wages.

By excluding NZs from the sample, we note one change in our BMI estimates (see Table 1 Annex 2): obesity is associated with a 16.18 percent[10] wage premium in the simplest specification – Model 0. However, the F-joint test fails even at 10 percent (p=0.16). Per Model 0-2 for the WHtR classification, being obese and not of normal weight results in an average wage premium of 33.64 percent, 19.72 percent, respectively 23.37 percent[11]. The joint F-test reached customary significance only for Model 0 and Model 2 (p=0.06 Model 0, p=0.13 for Model 1 and p= 0.03 for Model 2). As such, we find that our earlier remarks are not particularly sensitive to the presence of NZs in the sample.

Full Sample of Natives and Immigrants

[Table 6 here]

In line with Averett et al. (2012) we extend the previous model as to directly compare natives and immigrants with respect to the effect of body size on wages. We further extend their model with the addition of controls for cognition, health, job and residence related characteristics – Model(s) 2.

The simplest model- Model 0 – is indicative of a wage premium associated with overweight, of a similar magnitude for both measures – 8.34 percent.

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[10] $100*[\exp (0.15)-1] = 16.18$
[11] $100*[\exp (0.29)-1] = 33.64$; $100*[\exp (0.18)-1] = 19.72$; $100*[\exp (0.21)-1] = 23.37$

Moreover, the endogeneity robust BMI estimate is consistent[12]. Obesity triggers no wage effect.

Model 1 continues to point towards a wage premium for the overweight, but only when BMI is used to account for body size. Specifically, the ceteris paribus average percentage change in hourly wage between an overweight and a normal weight Australian-born is of 6.18[13] percent. Averett et al. (2012) uncover a similarly-sized effect for UK natives. ESCs seems to benefit from a similar premium, while NESCs, quite the opposite. Specifically, the ceteris paribus average percentage change in hourly wage between an overweight and a normal weight NESC is of - 9.52 percent[14]. Obesity, when BMI is used, has no significant impact on native or ESCs wages. We note, however, that NESCs benefit from a substantial wage premium of 16.18 percent[15]. When WHtR is used, both obese natives and ESCs incur a wage penalty of 6.76 percent[16] when compared to their counterparts of normal weight, as opposed to NESCs who profit from an 18.53 percent[17] premium. However, while a joint F-test on the coefficients related to the interaction between body size and nativity reaches the conventional levels of significance (p=0.01) when the BMI classification is used, it brushes, yet does not reach it (p=0.11) when the WHtR one is. Hence, we conclude that we can only firmly discuss of premiums and or penalties when employing BMI. Lagged BMI estimates are consistent with BMI estimates.

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[12] 100[exp (0.08)-1] = 8.34, 100[exp (0.07)-1] = 7.25
[13] 100[exp (0.06)-1] = 6.18
[14] 100[exp (0.06-0.16)-1] = - 9.52
[15] 100[exp (-0.02-0.17)-1] = 16.18
[16] 100[exp (-0.07)-1] = 6.76
[17] 100[exp (-0.07+0.24)-1] = 18.53

Model 2 estimates depart little in magnitude and not at all in direction from Model 1 estimates, but do not always reach significance. When employing BMI, we once more note that overweight natives and ESCs benefit from a wage premium of 5.12 percent[18], whereas overweight NESCs face an average wage penalty of -7.69 percent[19] when compared to their counterparts of normal weight. We note no significant effect of obesity. When employing WHtR, we solely record an average obesity premium of 12.75 percent[20] for NESCs. Nevertheless, the joint F-test regarding the interaction terms is once more significant just in the case of the BMI classification (p=0.07 for BMI; p=0.21 for WHtR). Lagged BMI estimates align to BMI estimates and the joint F-test is significant at the 5 percent level (p=0.04).

Estimates excluding NZs (see the Annex) from the ESC group are consistent with those including them. The otherwise not significant estimates in the WHtR specification become significant, but at levels requiring cautious interpretation. Precisely, per Model 1, both obese natives and ESCs incur an average penalty of 6.76 percent, while obese NESCs benefit from an average premium of 19.72 percent[21]. The joint F-test is, however, significant at 10 percent (p=0.09). Per Model 2, there is no obesity penalty for natives, while ESCs enjoy a premium of 23.37 percent[22]and NESCs one of 12.75 percent[23]. The joint F-test brushes 10 percent significance (p=0.10).

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[18] 100[exp (0.05)-1] = 5.12
[19] 100[exp (0.05 -0.13)-1] = -7.69
[20] 100[exp (-0.05+0.17)-1] = 12.75
[21] 100[exp (-0.07+0.25)-1] = 19.72
[22] 100[exp (-0.04+0.25)-1] = 23.37
[23] 100[exp (-0.04+0.16)-1] = 12.75

Summary and Conclusions

The goal of this article is to provide evidence of the effect of immigration (i.e., nativity) and body size on wages in Australia. The effort contains several comparative components. First, we place our results on an empirical continuum, building up on and contrasting the models with those of Cawley et al. (2009) - for the US - and Averett et al. - for the UK (2012). Second, we set BMI against WHtR estimates. Third, we test the estimates' sensitivity to the exclusion of a policy-wise privileged group – NZs – from the otherwise standard (and partial to our endeavors) nativity distinction between ESCs and NESCs.

We start by inspecting the association nativity – obesity. We find sufficient support for an HIE in the case of NESCs, irrespective of employed measure. We say sufficient as functional form choice matters (i.e., BMI seems partial to an OLS specification) and so does the exclusion of NZs from the sample (i.e., significance of estimates increases). We find extremely limited support for an HIE effect in the case of ESCs. As for the effect of years of residence, assuming it operates similarly for both groups, we find that it does not deter or improve the profile noted upon time of arrival.

Evidence supporting the HIE put forth, we shift our focus toward the link between body size and wages. In line with Cawley et al. (2009) and Averett et al. (2012), we begin by assessing the relation on an immigrants only sample. Same as them, when employing BMI, we find in the case of Australia no statistically significant evidence of body size impacting wages. However, when we switch measure – from BMI to WHtR – we find evidence of a 15.03 percent average wage premium attached to being obese as opposed to of normal weight. To our knowledge this is the first such

evidence on a non-natives sample, though admittedly weakened by a 10 percent significance level (p=0.06).

In the final step, we look at the effect of obesity on wages by nativity. When BMI is the measure of choice, our results following Averett et al. (2012) specification, support the conclusion of a wage premium attached to overweight for natives. However, as we account for three nativity groups, we find, as hypothesized, that while the effect for ESCs is the same as for natives, NESCs do indeed incur a penalty. The more comprehensive model does not challenge this conclusion. We depart once more from Averett et al. (2012) in that we find nor for natives or ESCs an impact of obesity on wages. We do, however, find not a penalty, but a premium for obese NESCs. The more comprehensive model does not, however, support this conclusion. None of the estimates are sensitive to the exclusion of NZs from the sample. All estimates are robust to the use of lagged BMI. We are aware the latter is not sufficient to assert causality, but it is enough to hint it. We do not reject our second hypothesis and conclude no differential in returns to body size between natives as ESCs (i.e., premium on overweight), and a differential for NESCs (i.e., penalty on overweight; premium on obesity per a more parsimonious specification).

When WHtR is the measure of choice, the picture changes. Overweight has no bearing on wages. Obesity seems to be associated with a penalty for both natives and ESCs, and, once more, with a premium for NESCs. This impact is significant and so is the contribution of the body size variable to the models (at p=0.09), only when NZs are the excluded from the sample and only in the parsimonious specification. As such, we conclude no differences in returns to body size by nativity, and the returns as null in a multivariate setup.

Our results serve as food for thought. On average NESCs enter Australia 'lighter' than natives, which does not seem to be the case for ESCs. This is not surprising when one considers the average body size profile of their countries of origin. ESCs come from countries which consistently rank among the first in terms of obesity rate. NESCs from the opposite (i.e., majority hail from South Asian countries). Selection processes (i.e., self-selection and policy selection) catalyze this difference. This situation draws attention to the fact that the possibility of a waiver on the Health Requirement for visa categories more easily accessible to ESCs (i.e., temporary skilled business class visa- 457) should maybe be reconsidered. The noted differences in body size at time of arrival do not seem to change over time. Hence, an emphasis on initial screening is warranted if a slender body size profile is a desired policy goal.

The fact that wages-wise overweight is associate with a premium for natives and ESCs, yet with a penalty for NESCs, seems to suggest that body size-wise one's departure from a lower group average toward a more local, heavier profile is negatively rewarded on the labor market. It would undoubtedly be of interest to check if said difference persist past first-generation immigrants. These wages-related remarks are exclusively based on BMI estimates. It is therefore important to reiterate that measurement choices – BMI vs WHtR- dictate both the way we understand a condition and the impact of said condition. BMI's validity has been long criticized and maybe it is time for general population surveys to collect alternative measures which could challenge the current empirical literature.

Limitations

Data limitations include the use self-reported measures for body size measures, which introduce bias through measurement error (O'Neil and Sweetman 2013 discusses the lack of proper solutions), and inherent longitudinal household survey issues when employing less recent data waves: small sample sizes and a high average number of years of residence in the case of non-native groups.

Our results are constrained in their degree of generalizability by a series of selection related processes we could not account for. One issue is that we had insufficient data[24] to assess the impact of body size conditional on one's visa type and or residency status (i.e., distinct health and human capital criteria). Selection into the labor market constitutes another issue. Although many studies on wages use a Heckman approach to estimate the unconditional effect of independent variables on wages, we do not. There are no identification variables in HILDA (i.e., capable to help us determine whether a man works, but unrelated to his wage conditional on working). Models depending exclusively on functional form for identification are notoriously unstable (Dow and Norton 2003). Thus, what we reported and discussed are wage estimates conditional on employment.

Lastly, our study, has solely been able to combat the endogeneity of body size in just one way- using lagged BMI. It was not our intent to assert causality, and we went far beyond what Cawley et (2009) and Averett et al. (2012) could achieve with their data. Same as them, we hope future work will be able to far better tackle this issue.

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[24] In HILDA questions on visa and residence refer only those born overseas, non-NZ citizen and who arrived in 2000 or later

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Tables

Table 1 Summary Statistics for the Dependent Variable and Body Size Variables

Variable	Mean/ Frequency		
	Australian-born (N=1,858)	English-speaking COB (N=279/198)	non-English speaking COB (N=250)
Dependent variable			
Hourly Wage in Main Job	36.56(0.558)	46.07 (2.436) 47.52 (3.087)	33.80 (2.088)
ln(wage)	3.49 (0.013)	3.70 (0.050) 3.73 (0.061)	3.42(0.060)
Body Size Variables			
Body Mass Index (BMI)	27.65(0.136)	27.86 (0.325) 27.22 (0.302)	26.03 (0.439)
Underweight (BMI ≤ 18.5)	0.01z	0.01z / 0.01z	0.00
Normal weight (18.5 ≤BMI< 25)	0.30	0.25 / 0.27	0.38
Overweight (25 ≤ BMI <30)	0.43	0.49 / 0.48	0.49
Obese (30 ≤ BMI)	0.26	0.25 / 0.24	0.13
Waist to Height Ratio (WHtR)	0.55 (0.002)	0.55 (0.005) 0.55 (0.005)	0.53 (0.009)
Underweight (WHtR ≤ 0.4)	0.01z	0.00 / 0.00	0.01z
Normal weight (0.4≤WHtR <0.5)	0.25	0.18 / 0.20	0.35
Overweight (0.5≤ WHtR <0.6)	0.53	0.58 / 0.56	0.53
Obese (0.6 ≤ WHtR)	0.21	0.24 / 0.24	0.11
	N= 2,387/ 2,306 (w/out NZ)		

HILDA Release 13. wave 13. Weighted data: Linearized standard errors are presented in parentheses; z – forcefully rounded to that decimal

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Table 2. Summary Statistics for Non-Employment Related Explanatory Variables

Variable	Mean/ Percentage Frequency		
	Australian-born (N=1,858)	English-speaking COB (N=279/198)	non-English speaking COB (N=250)
Age in Years	41.80	44.77 / 45.72	40.21
	(0.314)	(0.827 / 0.843)	(1.596)
Years of residence in Australia		21.29 / 22.97	17.73
		(1.832 / 2.515)	(1.906)
Education			
Degree	0.29	0.36 / 0.39	0.66
Other post-school	0.42	0.43 / 0.44	0.20
Year 12 or less	0.29	0.21 / 0.17	0.14
Cognitive ability: BDS	5.13	5.21 / 5.28	5.14
	(0.038)	(0.121 / 0.161)	(0.150)
Non-cognitive ability			
Hope for success	21.56	22.50 / 22.27	22.23
	(0.100)	(0.449 / 0.583)	(0.457)
Fear of failure	17.06	16.01 / 15.80	17.87
	(0.179)	(0.624 / 0.829)	(0.467)
Family demographics			
Partnered (married/de facto)	0.71	0.87 / 0.88	0.81
Separated (divorced/separated/widowed)	0.07	0.05 / 0.05	0.04
Never (never married/not de facto)	0.22	0.08 / 0.07	0.15
No. of children under 15	0.68	0.79 / 0.69	0.57
	(0.027)	(0.091/ 0.099)	(0.109)
Health Behaviors			
Smoking			
Never smoked	0.54	0.54 / 0.52	0.54
Former smoker	0.28	0.29 / 0.33	0.28
Current smoker	0.18	0.17 / 0.15	0.18
Drinking			
Abstainer (drinking)	0.23	0.19/0.20	0.28
Moderate drinker	0.56	0.61/ 0.60	0.52
Heavy drinker	0.21	0.20/0.20	0.20
Diet now/past year (lose weight)	0.32	0.31 / 0.29	0.30
Physical functioning (SF-36)	91.79	88.29 / 88.91	86.03
	(0.370)	(1.876 / 1.812)	(1.942)
Role-physical(SF-36)	90.32	91.59 / 91.78	91.84
	(0.632)	(1.532 / 1.895)	(2.396)
Bodily pain(SF-36)	78.19	79.42 / 79.30	81.57
	(0.515)	(1.770 / 2.508)	(1.389)
General health (SF-36)	70.94	74.25 / 73.02	73.43
	(0.481)	(2.175 / 3.146)	(1.860)
Work limitation			
No long-term condition	0.83	0.85 / 0.83	0.91
LT condition not limiting	0.11	0.08 / 0.08	0.05
LT condition limiting	0.06	0.07 / 0.09	0.04
Physical Activity			
Low	0.22	0.22 / 0.23	0.24
Moderate	0.30	0.35 / 0.36	0.43
High	0.48	0.43 / 0.41	0.33
Residence state			
New South Wales	0.27	0.23 / 0.22	0.50
Victoria	0.27	0.15 / 0.14	0.25
Queensland	0.23	0.31 / 0.32	0.07
South Australia	0.07	0.07 / 0.08	0.03
Western Australia	0.11	0.18 / 0.17	0.08
Tasmania	0.02	0.01 / 0.02	0.01z
Northern Territory	0.01z	0.02 / 0.01	0.01z
Australian Capital Territory	0.02	0.03 / 0.04	0.05

2,387/ 2,306 individuals (w/out NZ)

HILDA Release 13. wave 13. Weighted data: Linearized standard errors are presented in parentheses; z – forcefully rounded to that decimal

Table 3. Summary Statistics for Employment Related Explanatory Variables

Variable	Australian-born (N=1,858)	English-speaking COB (N=279/198)	non-English speaking COB (N=250)
	Mean/ Percentage Frequency		
Full-time Employment	0.90	0.93 /0.91	0.87
Contractual employment status			
Fixed Term	0.08	0.10 / 0.07	0.07
Casual	0.11	0.06 / 0.05	0.11
Permanent	0.81	0.84 / 0.88	0.82
Union/Association Membership	0.31	0.20 / 0.21	0.24
White Collar Occupation	0.59	0.68 /0.70	0.73
Sector of Employment			
Private	0.71	0.79 / 0.77	0.77
Public	0.24	0.16 / 0.18	0.19
Private non-commercial	0.05	0.04 / 0.05	0.04
Industry			
Primary/ Utilities	0.09	0.10 / 0.11	0.05
Manufacturing	0.12	0.11 / 0.12	0.12
Construction	0.15	0.19 / 0.17	0.14
Retail/Hospitality	0.10	0.09 / 0.10	0.17
Transport	0.08	0.09 / 0.05	0.06
Culture	0.04	0.04 / 0.04	0.05
Finance/ Science	0.14	0.18 / 0.20	0.16
Education/Health	0.25	0.17 / 0.18	0.21
Other Services	0.03	0.03 / 0.03	0.04
Size of employer			
Small (< 20 employees)	0.17	0.11 / 0.11	0.10
Medium Small (20-99 employees)	0.16	0.12 / 0.12	0.21
Medium (100-499 employees)	0.16	0.11 / 0.12	0.14
Large (> 500 employees)	0.51	0.66 / 0.65	0.55
Length of tenure (years) with employer	8.65 (0.232)	6.81/ 7.08 (0.513/ 0.648)	6.26 (0.663)
Years of Experience in current occupation	11.01 (0.265)	11.53 (1.065)	9.05 (1.129)
	2,387/ 2,306 individuals (w/out NZ)		

HILDA Release 13. wave 13. Weighted data: Linearized standard errors are presented in parentheses; z – forcefully rounded to that decimal

Table 4. Body Size (BMI/WHtR) and Immigration: Healthy Immigrant Effect

		Model 0				Model 1				Model 2			
		OLS		PPO		OLS		PPO		OLS		PPO	
	Variables	A	B	A	B	A	B	A	B	A	B	A	B
BMI	*Nativity (AUS Born, non-Aboriginal)*												
	English Speaking COB (A)	-0.81		0.86		-0.03		1.21		-0.19		1.16	
		(0.656)		(0.259)		(0.614)		(0.385)		(0.571)		(0.377)	
	(B)		-1.97***		0.70		-1.17**		0.99		-1.25**		0.98
			(0.710)		(0.275)		(0.625)		(0.404)		(0.565)		(0.394)
	Non-English Speaking COB	-2.48***	-2.81***	0.58***	0.55***	-1.37***	-1.77***	0.75	0.69	-1.47***	-1.85***	0.69	0.64*
		(0.558)	(0.529)	(0.113)	(0.113)	(0.519)	(0.489)	(0.163)	(0.161)	(0.491)	(0.452)	(0.166)	(0.161)
				0.33***	0.30***								
				(0.100)	(0.095)								
	Years of residence	0.05**	0.07***	1.01	1.02*	0.01z	0.03	0.99	0.99	0.02	0.03**	0.99	1.00
		(0.019)	(0.019)	(0.008)	(0.009)	(0.018)	(0.017)	(0.008)	(0.008)	(0.017)	(0.015)	(0.008)	(0.009)
	Constant	27.65***	27.65***	2.30***	2.28***	21.67***	21.55***	0.13***	0.11***	23.01***	23.85***	0.12**	0.16*
		(0.136)	(0.136)	(0.134)	(0.132)	(1.677)	(1.669)	(0.084)	(0.075)	(2.277)	(2.008)	(0.116)	(0.151)
				0.34***	0.35***			0.03***	0.03***			0.04***	0.06***
				(0.024)	(0.024)			(0.020)	(0.020)			(0.036)	(0.051)
	R2	0.025	0.030			0.108	0.112			0.233	0.236		
WHtR	*Nativity (AUS. Born, non-Aboriginal)*												
	English Speaking COB (A)	-0.01		0.77		0.01z		1.19		0.01z		1.19	
		(0.010)		(0.229)		(0.009)		(0.335)		(0.008)		(0.338)	
	(B)		-0.03**		0.65		-0.01		1.02		-0.01		1.04
			(0.011)		(0.220)		(0.008)		(0.295)		(0.008)		(0.317)
	Non-English Speaking COB	-0.04***	-0.04***	0.33***	0.32***	-0.01	-0.02**	-0.64	0.61**	- 0.01*	-0.02***	0.64*	0.60***
		(0.011)	(0.011)	(0.112)	(0.109)	(0.008)	(0.008)	(0.177)	(0.166)	(0.007)	(0.007)	(0.158)	(0.142)
	Years of residence	0.01z***	0.01z***	1.04***	1.04***	0.01z	0.01z	0.99	1.01	0.01z	0.01z*	1.00	1.01
		(0.001z)	(0.001z)	(0.011)	(0.012)	(0.001z)		(0.008)	(0.008)	(0.001z)	(0.001z)	(0.008)	(0.007)
				1.02**	1.02**								
				(0.009)	(0.009)								

Variables	Model 0				Model 1				Model 2			
	OLS		PPO		OLS		PPO		OLS		PPO	
	A	B	A	B	A	B	A	B	A	B	A	B
Constant	0.55***	0.55***	2.89***	2.90***	0.43***	0.43***	0.05***	0.04***	0.47***	0.49***	0.07**	0 10***
	(0.001z)	(0.001z)	(0.192)	(0.194)	(0.026)	(0.026)	(0.037)	(0.034)	(0.035)	(0.033)	(0.080)	(0.114)
			0.27***	0.27***			0.01z***	0.01z***			0.01***	0.01***
			(0.020)	(0.020)			(0.004)	(0.003)			(0.019)	(0.014)
R2 /Pseudo R2	0.027	0.031	0.001	0.003	0.156	0.163			0.256	0.264		

2,387/ 2,306 individuals (w/out NZ – Models B)

HILDA Release 13. wave 13. Weighted data. Linearized standard errors in parentheses. *** p<0.01, **p<0.5, *p<0.1
Model 0 – Nativity + Years of Residence
Model 1 – similar Cawley (2009) & Averett (2012): education; age; marital status; children<15; smoking status; alcohol consumption
Model 2- Model 1 + cognitive and noncognitive ability + SF-36 scales + physical activity + dieting + state of residence

Table 5. Body Size and Wages. Immigrants Only Sample

Variables	LN WAGES								
	Model 0			Model 1			Model 2		
	BMI	LAG-BMI	WHtR	BMI	LAG-BMI	WHtR	BMI	LAG-BMI	WHtR
Body Size (Normal)									
Overweight	0.03	-0.01z	0.14	-0.01	-0.05	0.06	0.01z	-0.04	0.06
	(0.070)	(0.063)	(0.099)	(0.061)	(0.052)	(0.071)	(0.047)	(0.042)	(0.047)
Obese	0.06	-0.02	0.19	0.03	-0.06	0.12	0.02	-0.03	0.14*
	(0.085)	(0.079)	(0.129)	(.064)	(0.081)	(0.093)	(0.057)	(0.075)	(0.076)
Nativity (English Speaking COB)									
Non-English Speaking COB				-0.26***	-0.27***	-0.26***	-0.19***	-0.19***	-0.18***
				(0.071)	(0.073)	(0.068)	(0.039)	(0.040)	(0.038)
Years of residence				0.01z	0.01z	0.01z	0.01z	0.01z	0.01z
				(0.003)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)
Constant	3.52***	3.55***	3.43***	2.76***	2.76***	2.79***	2.24***	2.22***	2.28***
	(0.054)	(0.054)	(0.095)	(0.416)	(0.418)	(0.403)	(0.374)	(0.380)	(0.374)
R2	0.002	0.001z	0.021	0.209	0.209	0.213	0.462	0.463	0.468
				529 individuals					

HILDA Release 13. wave 13. Weighted data. Linearized standard errors in parentheses. *** p<0.01, **p<0.5, *p<0.1
z – forcefully rounded to that decimal
Model 0 – Nativity + Years of Residence
Model 1 – similar Cawley (2009) & Averett (2012): education; age; marital status; children<15; smoking status; alcohol consumption
Model 2- Model 1 + cognitive and noncognitive ability + employment related controls (see Table 3) + SF-36 scales + physical activity + work limitations + state of residence

Table 6. Body Size and Wages. Full Sample of Natives and Immigrants

Variables						LN WAGES				
		Model 0			Model 1			Model 2		
	BMI	LAG-BMI	WHtR	BMI	LAG-BMI	WHtR	BMI	LAG-BMI	WHtR
Body Size (Normal)									
Overweight	0.08**	0.07**	0.08**	0.06**	0.07***	-0.01	0.05**	0.06**	-0.01z
	(0.031)	(0.030)	(0.039)	(0.026)	(0.025)	(0.027)	(0.023)	(0.022)	(0.024)
Obese	-0.02	-0.02	0.01	-0.02	-0.01	-0.07*	-0.01	-0.02	-0.05
	(0.035)	(0.031)	(0.050)	(0.030)	(0.030)	(0.036)	(0.028)	(0.028)	(0.034)
Nativity (Australian Born, non-Aboriginal)									
English Speaking COB (ESC) (1)				0.08	0.16	0.10	-0.01	0.06	0.01
				(0.090)	(0.120)	(0.111)	(0.070)	(0.098)	(0.070)
Non-English Speaking COB(NESC)				-0.12*	-0.10*	-0.26***	-0.12**	-0.11**	-0.22***
				(0.062)	(0.062)	(0.073)	(0.048)	(0.048)	(0.045)
*Overweight * ESC*				0.02	-0.06	-0.02	0.07	-0.02	0.01
				(0.099)	(0.08)	(0.104)	(0.073)	(0.072)	(0.085)
Overweight NESC*				-0.16**	-0.18**	0.10	-0.13*	-0.15**	0.05
				(0.081)	(0.078)	(0.098)	(0.074)	(0.068)	(0.075)
*Obese*ESC*				0.01	-0.17	0.07	0.04	-0.08	0.11
				(0.116)	(0.129)	(0.140)	(0.090)	(0.131)	(0.124)
*Obese*NESC*				0.17**	0.13*	0.24***	0.08	0.11	0.17**
				(0.072)	(0.072)	(0.067)	(0.065)	(0.070)	(0.074)
Years of Residence				0.01z	0.01z	0.01z	0.01z	0.01z	0.01z
				(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)
Constant	3.48***	3.48***	3.46***	2.15***	2.13***	2.20***	1.99***	1.98***	2.045***
	(0.023)	(0.022)	(0.038)	(0.150)	(0.149)	(0.148)	(0.175)	(0.180)	(0.175)
R2	0.008	0.007	0.006	0.227	0.230	0.222	0.407	0.409	0.402

2,387 individuals

HILDA Release 13. wave 13. Weighted data. Linearized standard errors in parentheses. *** p<0.01, **p<0.5, *p<0.1

z – forcefully rounded to that decimal

Model 0 – Nativity + Years of Residence

Model 1 – similar Cawley (2009) & Averett (2012): education; age; marital status; children<15; smoking status; alcohol consumption

Model 2- Model 1 + cognitive and noncognitive ability + employment related controls (see Table 3) + SF-36+ physical activity + work limitations + state of residence

Annex

Table A1. Body Size and Wages. Immigrants Only Sample (New Zealanders excluded)

Variables	LN WAGES								
	Model 0			Model 1			Model 2		
	BMI	LAG-BMI	WHtR	BMI	LAG-BMI	WHtR	BMI	LAG-BMI	WHtR
Body Size (Normal)									
Overweight	0.03	-0.03	0.16	-0.01	-0.07	0.05	0.01	-0.03	0.04
	(0.073)	(0.069)	(0.097)	(0.061)	(0.053)	(0.068)	(0.05)	(0.042)	(0.047)
Obese	0.15*	-0.01z	0.29**	0.03	-0.04	0.19*	0.06	-0.01z	0.21**
	(0.083)	(0.084)	(0.129)	(0.064)	(0.083)	(0.098)	(0.060)	(0.0853)	(0.081)
Nativity (English Speaking COB)									
Non-English Speaking COB				-0.27***	-0.28***	-0.26***	-0.19***	-0.20***	-0.18***
				(0.079)	(0.080)	(0.073)	(0.042)	(0.043)	(0.040)
Years of residence				0.01z	0.01z	0.01z	0.01z	0.01z	0.01z
				(0.002)	(0.003)	(0.002)	(0.002)	(0.002)	(0.002)
Constant	3.49***	3.55***	3.40***	2.56***	2.53***	2.60***	1.81***	1.79***	1.79***
	(0.051)	(0.057)	(0.092)	(0.445)	(0.446)	(0.434)	(0.383)	(0.387)	(0.384)
R2	0.012	0.001	0.040	0.235	0.232	0.240	0.490	0.489	0.502
				448 individuals					

HILDA Release 13. wave 13. Weighted data. Linearized standard errors in parentheses. *** p<0.01, **p<0.5, *p<0.1

z – forcefully rounded to that decimal

Model 0 – Nativity + Years of Residence

Model 1 – similar Cawley (2009) & Averett (2012): education; age; marital status; children<15; smoking status; alcohol consumption

Model 2- Model 1 + cognitive and noncognitive ability + employment related controls (see Table 3) + SF-36 scales + physical activity + work limitations + state of residence

Table A2. Body Size and Wages. Full Sample of Natives and Immigrants (New Zealanders excluded)

Variables	LN WAGES								
	Model 0			Model 1			Model 2		
	BMI	LAG-BMI	WHtR	BMI	LAG-BMI	WHtR	BMI	LAG-BMI	WHtR
Body Size (Normal)									
Overweight	0.08**	0.06**	0.08**	0.06**	0.07***	-0.01	0.05**	0.06***	-0.01z
	(0.031)	(0.030)	(0.038)	(0.026)	(0.025)	(0.027)	(0.023)	(0.022)	(0.024)
Obese	-0.01z	-0.01	0.03	-0.03	-0.02	-0.07**	-0.01	-0.02	-0.04
	(0.035)	(0.032)	(0.050)	(0.030)	(0.030)	(0.035)	(0.027)	(0.028)	(0.034)
Nativity (Australian Born, non-Aboriginal)									
English Speaking COB (ESC) (2)				0.03	0.16	0.07	-0.03	0.07	0.02
				(0.087)	(0.136)	(0.124)	(0.077)	(0.11)	(0.087)
Non-English Speaking COB(NESC)				-0.13**	-0.11*	-0.26***	-0.11**	-0.10**	-0.20***
				(0.063)	(0.063)	(0.073)	(0.049)	(0.049)	(0.044)
*Overweight * ESC*				0.06	-0.08	-0.02	0.10	-0.01	-0.02
				(0.107)	(0.070)	(0.108)	(0.086)	(0.071)	(0.100)
Overweight NESC*				-0.16**	-0.18**	0.09	-0.13*	-0.14**	0.04
				(0.081)	(0.078)	(0.098)	(0.074)	(0.066)	(0.074)
*Obese*ESC*				0.15	-0.16	0.21	0.16*	-0.05	0.25**
				(0.111)	(0.143)	(0.135)	(0.086)	(0.167)	(0.116)
*Obese*NESC*				0.16**	0.13*	0.25***	0.08	0.11	0.16**
				(0.072)	(0.072)	(0.094)	(0.065)	(0.070)	(0.075)
Years of Residence				0.01z	0.01z	0.01z	0.01z	0.01z	0.01z
				(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)
Constant	3.47***	3.48***	3.45***	2.10***	2.08***	2.150***	1.87***	1.87***	1.92***
	(0.021)	(0.022)	(0.036)	(0.151)	(0.150)	(0.149)	(0.170)	(0.174)	(0.166)
R2	0.007	0.005	0.006	0.236	0.237	0.232	0.409	0.410	0.409

2,306 individuals

HILDA Release 13. wave 13. Weighted data. Linearized standard errors in parentheses. *** p<0.01, **p<0.5, *p<0.1
z – forcefully rounded to that decimal
Model 0 – Nativity + Years of Residence
Model 1 – similar Cawley (2009) & Averett (2012): education; age; marital status; children<15; smoking status; alcohol consumption
Model 2- Model 1 + cognitive and noncognitive ability + employment related controls (see Table 3) + SF-36- physical activity+ work limitations + state of residence

Closing Discussion

Concluding Remarks

In the 1880s the statistician E. G. Ravenstein formulated one of the first theoretical models to explain migration, highlighting the centrality of economic reasoning in explaining the scope of migration: *"Bad or oppressive laws, heavy taxation, an unattractive climate, uncongenial social surroundings, and even compulsion (slave trade, transportation), all have produced and are still producing currents of migration, but none of these currents can compare in volume with that which arises from the desire inherent in most men to "better" themselves in material respects."* (Ravenstein 1889: 286). To date, it is the economic dimension of migration that makes for contentious referendums, political parties organizing partially or wholly around the issue of borders, and policies being drafted as to ensure that countries better themselves or at least do not harm themselves by allowing migrants to settle. It comes as no surprise that later attempts at migration models, such as the one proposed by demographer Everett S. Lee, list "*institutional hindrances to migration*" as one of the factors behind the decision and process of migration (Lee 1969:282-297). As a leading migration researcher once described the role of the state in migration "*National states are acting in fact to inhibit or prevent, to encourage or impel, to guide or force the movement of people in such a way that 'international migration is now everywhere dominated by policy orientations"* (Tomasi 1981:321-322). In this climate, one can't help but wonder if facing a policy setup designed with the intent that all parties benefit, is indeed a wise decision in economic respects. Or could it be that for all their assessed human capital and 'melting' potential, immigrants perform just as poorly when compared to their native counterparts.

Literature Address

By reverting to existing literature, it could be said that the three pieces composing this dissertation provide contextualized answers to both old and recent questions situated at the intersection of social and economic processes.

Chapter one is anchored in an array of established theoretical models suited to account for the incidence of a mismatch between one's level and education and the level required by her occupation. The more recent question is how to reconcile the established expectations with immigration policy and its changes. As predicted by all theoretical accounts, in Austria overeducation is more common among immigrants. Moreover, in a country where positive self-selection on both experience and skills are in place, undereducation is more common among natives than immigrants. For immigrants, the imposition of a tighter matching scheme and more irregular ways to achieve unrestricted labor market access resulted in an overall higher level of overeducation. Although the level of undereducation decreased among them, with years of residence they become undereducated for the jobs they perform. These estimates do not speak to improved efficiency in the use of human capital. Specifically, in the case of overeducation they speak of poor allocation of human capital and lower returns on investment in education, and in the case of increasing undereducation of reduced job mobility and or a higher capacity to secure jobs above the credential level.

Chapter two speaks to the debate on spurious social capital and labor outcomes, which has been on the forefront of immigration research over the past 25 years. It addresses a context in which pressure of employment is

minimal as Australia grants immigrants relatively rapid access to benefits. This work builds upon the job-search literature, showing that at higher levels of human capital the positive relation between the inclusion of social networks in the job search and the likelihood of entering employment is weaker. Importantly, direct and indirect effect of networks on employment are simultaneously considered. In other words, networks are considered as one among several job search methods and not as the main or the only search methods. It then proceeds to demonstrate that social networks have no impact on initial labor market mobility. It does so by employing Mouw's (2003) indirect test of whether a proposed measure of social capital has a causal effect, as more recently refined by Krug and Rebien (2012). The test is the product of Montgomery's (1992) search-theoretical model which stresses the fact that networks can have an indirect (i.e., arrival rate) and or direct impact (i.e., offer distribution) on a job-seeker's outcomes.

Chapter three contributes most to recent strands of literature. It solidifies existing evidence of the 'healthy immigrant effect' re body size in Australia, particularly in the case of natives of non-English-speaking countries (NESCs). In the process, it contrasts an established and a novel measure of obesity (i.e., body mass index-BMI and waist-to-height ratio - WHtR), as well as two functional form choices (i.e., linear and logit). It then forwards the argument that body size impacts wages, with the novel twist that the impact is expected to differ between immigrant groups, relative to the native population. When considering BMI, no impact on wages is found among immigrants. The same conclusion was reached by work on the US (Cawley et al. 2009) and the UK (Averett et al. 2012). However, when considering waist-to-height ratio(WHtR) some evidence of an obesity premium among immigrants emerges. The BMI-based test of the proposed argument reveals that while overweight NESCs experience a wage penalty, overweight natives of English-speaking countries (ESCs),

same as natives, experience a premium. Work in the UK by Averett et al. (2012) indicates immigrants in general face an overweight, but also obese, wage penalty, while natives a premium. The added insight brought by a detailed nativity account becomes apparent. Noteworthy, the argument has no substance when WHtR is instead used. This speaks to the contentious nature of BMI and results driven by it.

Overarching Conclusions

At a policy level, the empirical results presented in this dissertation are somewhat disheartening when considering the efforts individuals make to legally cross the borders and access the labor market of the countries analyzed.

To begin with, in the first chapter evidence was brought on the inefficient use of human capital in Austria. Specifically, a policy reconfiguration that increased restrictions on both residence and the matching scheme in the labor market, all the while making post-migration unrestricted labor market access more fluid, resulted in a higher overall level of overeducation and a higher positive association between years of residence and undereducation.

In the second chapter, we uncovered that for the high-skilled, as opposed to the low-skilled permanent migrants entering Australia without a secured job, the odds of initial employment are less influenced by the added involvement of networks in the job-search. Hence the low-skilled advantage from an immigration process rewarding social capital, while the high-skilled who might have no/a limited social network need stress less if non-network job searches savvy. Networks do not seem to impact one's initial downward occupational mobility. Reduced search pressure via facile

access to social benefits for permanent residents might not improve mobility if a positive network effect is counterbalanced by credential recognition and the worker's outlook on job quality.

Lastly, third chapter estimates suggest that in Australia there's a double standard with respect to the body size of natives of non-English speaking countries (NESCs). Overweighed NESCs face a wage penalty while overweighed natives and natives of English-speaking countries (ESCs) faced a premium when compared to their normal weighted counterparts. Overweight NESCs live in an otherwise 'heavy' country, yet the average body size of their group is much lower, partially owning to the Health Requirement embedded in the visa process.

At a general level, the conclusions of this dissertation attest to the importance of accounting for the multifaced heterogeneous nature of the immigration experience.

Chapter one emphasizes how variation in the conditions under which one settles into a new country and is allowed to access its labor market can hamper overall and overt-time labor market integration. Specifically, further restricting a system can result in higher overall overeducation and an increase in undereducation with years of residence among those subjected to the changes.

Chapter two draws special attention to the moderating role of social networks. Net of social capital stock, the highly-educated profit to a smaller extent from the additional involvement of networks in their job search. They resort to implicate social networks less often. It is possible that they decrease their non-network search effort once activating their network and it is likely that those who involve networks have a hard time getting their

credentials recognized on the market. All in all, highly-skilled have a different job search experience. The chapter also notes that for those who count on the support of networks to cushion initial downward occupation mobility, there is no gain (or loss).

Chapter three highlights the importance of exploring variation by immigrant group. A healthy immigrants effect is identified with respect to natives of non-English speaking countries (NESCs), but not to those of English-speaking countries (ESCs).Whereas earlier similar work concluded that overweight immigrants face a wage penalty on the labor market (Averett et al. 2012), this chapter notes that in Australia it is only overweight NESCs that are penalized, as overweight natives of English-speaking countries (ESCs) receive a premium no distinct from that of Australian natives.

Lastly, but equally important, this dissertation arguments the use of a comprehensive perspective. Specifically, one that addresses both the start point and the trajectory of integration of immigrants – in relation to the native population.

Chapter one indicates that upon arrival, immigrants are far more overeducated and far less undereducated than natives. By properly accounting for different trajectories of integration among immigrant cohorts, it noted that the degree of overeducation decreases with years of residence, while that of undereducation increases. Distinctly, the effect re undereducation is larger after a policy change.

Chapter two is entirely dedicated to the early incorporation into the labor market of permanent migrants as it has been repeatedly shown that one's initial job sets the trajectory of market integration. It stresses the lesser role

of additional social networks support in the attainment of employment by highly-skilled migrants. It also indicates that said support has no impact on initial downward occupational mobility.

Chapter three notes that upon arrival, natives of non-English speaking countries (NESCs) have on average a lighter body size than Australian natives, and immigrants experience no acculturation re obesity. About wages, it notes that overweight NESCs face a penalty, while overweight Australian natives, as well natives of English-speaking countries(ESCs), a premium. No wage assimilation effect is noted for immigrants, owning largely to the sample characteristics (i.e., high average number of years of residence).

Data Limitations

Like much existing similar work, this dissertation faced data paucity which precluded more detailed accounts and causality favoring conclusions. Out of the data limiting considerations, I discuss in the following the ones I found to have the most significant impact on my work and undoubtedly the work of others in the field on migration. Along with are presented reflections and tentative solutions.

Harmonized European data, such as the EU-LFS, anonymizes information on one's country of birth and country of citizenship. The degree of aggregation is ever changing. This situation renders impossible a clear identification of migrant groups as per a country's policy at a certain point in time. It also makes for noisy comparisons between time periods both within and between countries. Though anonymization helps researchers reap the benefits of 'open data' it also limits the potential of research. A

possible solution, of great use and appeal for scholars, would be to aim for – anonymized at it may be – the provision of information regarding respondents' current visa status.

Reliable estimates of integration heavily depend on the measure for 'number of years of residence'. As such, it is of the essence to identify the exact periods the respondent spent in the country without interruption (i.e., when one first came to live in the country – HILDA formulation - is not the same as when one moved long-term). Though a researcher might make due with a less detailed migration history, there is nothing she can due in the absence of reliable information except produce imprecise estimates. As such, a more careful conceptualization is needed (i.e., construct validity).

Linguistic skills are key in understanding a migrant's ability to navigate the surroundings. Most European level surveys – EU-LFS among - completely discard such information. As such, most European studies suffer from the inability to account for a crucial predictor of integration. On the polar end, there is the scenario in which a variety of related questions are asked, yet a questionable filter item is employed. Such is the case of HILDA. Only those who state that they do not speak English at home are asked to self-asses their spoken English. In this scenario, we are left to speculate as to the exact level of skills of those who speak English at home. Once more, this calls for a more careful conceptualization.

It goes without saying that longitudinal surveys designed to study immigrants are a treasure trove for those working in the field. Often though, such as in the case of LSIA, they include new permanent visa recipients, focusing on Principal Applicants. Consequently, they suffer from diminished representability of aggregate migrant inflows and little data speaking to labor market experiences in the early years after arrival but

before acquiring permanent visa status. Equally often, their longitudinal nature is of limited added value as the period accounted for is short, rendering the use of certain techniques pointless due the little time variance. Lastly, it is unfortunate when similar surveys exist and were run around the same time (Longitudinal Survey of Immigrants to: Australia 1993- 1999- 3 waves, 1999-2002 – 2 waves; Canada – 2000-2005- 3 waves; Longitudinal Immigration Survey: New Zealand: 2005-2009 – 3 waves), yet data access is conditioned on presence and or affiliation to a local institution.

On a final note, it needs be said that a sound policy research article is contingent on access to the actual legislation, in a major international language such as English, and not to second hand materials. Consequently, efforts such as the ones that resulted in the IMPALA database (Beine et al. 2015) and the DEMIG POLICY database (de Haas et al. 2016) are much welcomed.

Future Research

Each chapter puts forward, either directly or indirectly, new directions of research.

Chapter one draws attention to the need for future efforts to disentangle the link between immigration policy regimes and education-occupation mismatch. There are two dimensions one could focus efforts on. First, one could explore the policy variation in the way third country nationals are incorporated into the labor market throughout the EU/EEA. This could be achieved at a global level or by focusing on immigrants hailing from a particular country or region. So far there is only work supporting the expectation that non-EU migrants face greater, yet equal, mismatch throughout the EU (e.g. Nieto et al. 2015, Boll et al. 2016), or EU

enlargement groups (Tijdens and van Klaveren 2012, Visintin et al. 2015). Second, one could exploit the different waves of EU enlargement and the relations between countries (one on one or one with many) before and after these moments. What exists is research addressing A8 nationals and A2 in certain EU15 countries, in post-enlargement context (e.g. Bettin 2012, Campbell 2013). Also in post-enlargement context, there are assessments of how individuals from different EU enlargement groups fare once they migrate within or between groups (Tijdens and van Klaveren 2012, Visintin et al. 2015).

Given the nature of the conducted test, chapter one tackles education-occupation mismatch in the case of first-generation migrants who must entertain this situation. However, it would be of interest to explore mismatch in the case of second-generation migrants, accounting for variation in education systems. A good start is provided by country-level studies exploring various determinants (Schmidt and Jakobsen 2000, Messinis 2008, Byrne and McGuinness 2009, Dahlstedt 2015, Falckle et al. 2016) among which intergenerational transmission (Aradhya et al. 2016), but also by multi-country analyses generically indicating higher mismatch among the second-generation (Tarvid 2012, Tijdens and van Klaveren 2012, Visintin et al. 2015).

Chapter one does not account for discrimination-based explanations. As noted by Campbell (2013), little quantitative literature shows a link between discrimination against immigrants originating from certain countries and education-occupation mismatch. One could try to disentangle employer discrimination from employer preferences in the hiring process. Correspondence testing is a viable option (e.g., Baert and Verhaest 2014). Work on how education-occupation mismatch is perpetuated through workplace discrimination is also warranted (e.g., Battu and Sloane, 2003).

Chapter two focuses on the Montgomery's (1992) model by which one should consider both the direct and indirect impact social networks have on labor market outcomes. It is an application of the derived indirect test of whether a proposed measure of social capital has a causal effect, as advanced by Mouw (2003) and furthered by Krug and Rebien (2012). The test is not critics free (Ao, 2007) or lacks attempts at improvement (Obukhova and Lan 2013). Though often quote, it is rarely implemented in the literature, particularly the migration literature (Mouw 2009). Most often authors make note of it and react to it by proposing robust measures (e.g., Amuedo-Dorantes and Mundra 2007, Kalter and Kogan 2014). It derives then that, whatever the format, sustained efforts should be made to address the issue of spurious social capital. Moreover, these efforts should be supported by data containing detailed measures of social capital.

Both Montgomery (1992) and Mouw (2003) reference wages. We instead address job quality as initial occupational mobility, in an attempt to capture immigrants' experience of entering a different labor environment. Franzen and Hangartner (2006), as well as Krug and Rebien (2012), also consider non-monetary outcomes. Consequently, in this framework there is still work to be done on other job quality measures. Moreover, owning to the nature of our data, our inquiry addresses the case of permanent immigrants. A natural extension would discuss temporary immigrants and, if possible, contrast the two statuses.

Notable, this chapter address a very specific policy setup – one in which immigrant job-seekers can access benefits relatively quickly. It would of interest for future research to pay more attention to the variation in institutional and economic conditions faced by employers, but most importantly by job-seekers groups. This variation impacts not only the

duration of the search, but also the use of networks. Examples of such work, though not specifically addressing immigrants, discuss low-status unemployment (Krug and Rebien 2012), long-term unemployment (Lindsay 2010), the liberalization of the labor recruitment industry (Pellizzari 2010) or a meritocratic system (Chua 2011).

Chapter three opens at least four pathways to contribute to the migration studies literature, but not only. To begin with, this chapter linked immigration and body size to just one labor market outcome – wages – focusing on the male population. In line with Cawley et al. (2009) and Averett et al. (2012) it would of interest to extend the work as to also incorporate a take on: odds of employment, odds of holding a 'white colllar' job and odds of having work limitations. Goes without saying that the female population deserve equal focus.

Second, the HILDA team collected in 2013 waist-to-height ratio (WHtR) information for the first time, as part of the Health Module which is included in the survey every four years. Given data availability and our population of interest we presented associations. Provided WHtR will be once more collected, the possibility of robustness checks presents itself.

Third, one can easily envision work on a variety of socio-economic outcomes which have been already linked to body mass index(BMI) variation, but not to WHtR. To suggest but a few, having in mind HILDA data availability: subjective well-being (e.g., Katsaiti 2012), marriage rates (e.g. Carmault et al. 2008) and transitions into/out of marriage and/or cohabitation (e.g. Sobal and Hanson 2011), spousal occupation prestige (e.g. Conley and Glauber 2006) or family income (e.g. Averett and Korenman 1996). In fact, even employing BMI, there is little work on the listed demographic outcomes in the context of Australia.

Lastly, an evaluation of the Australian Health Requirement re immigration, which uses BMI as a screening tool, would undoubtedly be something to consider.

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