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Immigrant Labour in the Context of Demographic Change, Youth Unemployment and Job Mismatches: The Case of Italy

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Thesis Abstract

This thesis explores the impact of immigrant labour inflow on labour market segmentation in Italy. In particular, it explores the potential of immigrant labour to resolve challenges caused by a demographic transition and a shrinking workforce in Italy as well as relative shortages of labour and skill mismatches in the labour market. This question is of relevance because: Italy on the one hand has the largest share of ageing population amongst European countries with 22.6% aged 65 and older¹, while on the other, it faces the challenge of high youth unemployment with 32% of population between 15 and 25 being out of the work force in 2018². Further, the country has witnessed a spike in immigrant labour with foreign residents in Italy amounting to as much as 11%³ of the total population in 2021. In this context, massive immigrant labour inflow is seen as a potential solution to supplementing a diminishing working age population and thereby increasing the working age population ratio and the population size in general. It is also seen as a means of filling in gaps in the labour market caused by labour shortages due to skill mismatches and task preferences of native workers in sectors of the Italian economy.

The study has found that even when foreign-born workers in the Italian labour market have similar characteristics with regard to educational level, gender, place of residence and age group they are unlikely to compete with Italian workers for jobs. Rather, they occupy very different sectors from an occupational perspective within the Italian labour market. Foreign born workers on an average tend to perform tasks demanding hard physical labour while native workers tend to specialize in tasks of a sedentary nature that require higher level of skills and formal training. The study and analysis in this thesis taken together point to the possibility of immigrant labour being a potential and promising means to resolve the problems faced by an economy with an increasingly ageing workforce and with large scale skill mismatches. Further, the contribution of immigrant labour could be seen as a likely means of avoiding a slump in growth rates of the economy and thereby maintain the standard of living of the entire population.

¹ [https://ec.europa.eu/eurostat/statistics-explained/index.php?title=File:Population age structure by major age groups, 2008 and 2018 \(%25 of the total population\).png](https://ec.europa.eu/eurostat/statistics-explained/index.php?title=File:Population_age_structure_by_major_age_groups,_2008_and_2018_(%25_of_the_total_population).png)

² [https://ec.europa.eu/eurostat/statistics-explained/index.php?title=File:Youth unemployment figures, 2008-2018 \(%25\) T1.png](https://ec.europa.eu/eurostat/statistics-explained/index.php?title=File:Youth_unemployment_figures,_2008-2018_(%25)_T1.png)

³ [European Demographic Datasheet 2022 \(populationeurope.org\)](https://populationeurope.org/)

Keywords: Demographic change, Immigration, Labour markets, Skills, Mismatches, Human capital, Employment.

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Chapter One: Introduction and Motivation

Immigration and technological progress are two engines of economic growth in the 21st century western economies. Hence, the attraction of valuable human capital and skills is central to continued economic success of these economies. The thesis explores the impact of immigrant labour inflow on labour market segmentation in Italy. This question is of relevance because: Italy on the one hand has the largest share of ageing population amongst European countries with 22.6% aged 65 and older⁴, while on the other, it faces the challenge of high youth unemployment with 32% of population between 15 and 25 being out of the work force in 2018⁵. Further, the country has witnessed a spike in immigrant labour with foreign residents in Italy amounting to as much as 11 % of the total population in 2021⁶.

In this context, massive immigrant labour inflow is seen as a potential solution to supplement a diminishing working age population and thereby increasing the working age population ratio and population size in general. It is also seen as a means of filling in gaps in the labour market caused by labour shortages due to skill mismatches and task preferences of native workers in sectors of the Italian economy.

Thesis Backdrop

Until the twentieth century, the roots of inequality across the globe lay largely in the transition from agricultural to industrial societies. This resulted in new class structures as well as a re-distribution of income between capital and labour (Pianta, 2016). The 21st century, however, saw the emergence of finance as a dominating force in most economies and reshaped capital accumulation and patterns of distribution of income and wealth. As a result, firms engaged in international production experienced greater competition and unequal economic fortunes. Unlike in the past where the forces shaping inequality were largely rooted in the distribution of income within national economies, today, they were determined, to a significant extent by global processes. These included increased cross-border flows of capitals, goods, workers and

⁴ [https://ec.europa.eu/eurostat/statistics-explained/index.php?title=File:Population age structure by major age groups, 2008 and 2018 \(%25 of the total population\).png](https://ec.europa.eu/eurostat/statistics-explained/index.php?title=File:Population_age_structure_by_major_age_groups,_2008_and_2018_(%25_of_the_total_population).png)

⁵ [https://ec.europa.eu/eurostat/statistics-explained/index.php?title=File:Youth unemployment figures, 2008-2018 \(%25\) T1.png](https://ec.europa.eu/eurostat/statistics-explained/index.php?title=File:Youth_unemployment_figures,_2008-2018_(%25)_T1.png)

⁶ [European Demographic Datasheet 2022 \(populationeurope.org\)](https://populationeurope.org/)

knowledge; the expansion of finance; the rise and fall of industries and specialisations; international production by multinational firms; wage setting influenced by distant locations and so on. Labour markets have become increasingly segmented and workers began to be divided by gender, white and blue collars, knowledge and manual workers, permanent and temporary employees, local and migrant labour (Franzini & Pianta, 2016).

A trend that is increasingly marking western industrialized labour markets is a growing and perhaps irreversible presence of immigrant labour. This presence could be attributed to economic disparities or wage-income differentials between wealthier western economies and poorer developing countries; an ageing domestic labour force in western economies and abundant supply of young working age population in developing countries; the rising participation of women; besides political crisis in many countries leading to an inflow of refugees.

The thesis explores the segmentation of tasks performed by immigrants and natives at work. To do this it takes the aid of two theoretical frameworks - the Demographic transition theory and the concept of skill-mismatches. While the former throws light on the difference between the share of working age population in the wealthy, industrialized and ageing western economies as compared to the poorer and younger low income countries, the latter serves as an explanation to why immigrants are likely to fill in for skill gaps and relative shortages of labour in the economy.

Chapter Plan

Chapter 2 lays out the context within which immigration in the 21st century has occurred both from a global and Italian perspective. In Part I, it explores the demographic transition that has occurred in the Western industrialized nations – marked by a fall in birth rates, a rise in life expectancy and an increasingly ageing working age population. It also discusses the growing challenge of a heavy old-age dependency ratio in Western nations which affects growth rates. It explores the possibility of immigration being a potential solution to address the growing shortage of working age population and a slump in productivity. Further it discusses the potential of immigration in increasing the female participation rates. Part II of the chapter explores the impact of immigration on the Italian labour market. It lays out the context within which immigration occurred. It also lays out the debates surrounding immigration and the presence of immigrant labour both from literature across the globe and in the context of Italy in particular.

Chapter 3 discusses the issue of massive skill and job mismatches in the Italian labour market and the presence of Relative shortages of labour. It highlights the presence of the ‘NEET’ population in the Italian labour market- youth who are not in education, employment or training. In other words – it makes a commentary on the fact that the Italian labour market has a considerable presence of young and valuable native labour that is outside the workforce for no advantageous reason except that they are unable to find work suitable to their skill level. The chapter further delves into literature on Job search models, the Beveridge curve and the relationship between immigration and labour productivity. The paper has a significant contribution in that it suggests that immigrant labour is likely to be better matched to jobs in the Italian labour market than the native population and that many vacant job posts in the Italian job market are in fact better suited for the immigrant population (and rejected by the native population). There is therefore a need to create jobs more suited for the native population. Further, immigration could be a means of improving skill matches at an aggregate level and thereby the productivity of the economy and workers as a whole.

Chapter 4 attempts at identifying ‘foreign tasks’ in the Italian context. By foreign tasks, one means tasks and skills that are used largely by the foreign-born workforce in the Italian labour market. The study uses the term task and skill interchangeably. The study is an attempt at understanding if there is a systematic difference in the nature of skill and task requirements and levels that demarcates the foreign-born workforce from the native workforce when they have the similar characteristics. The study finds that even when foreign-born workers have similar characteristics with regard to educational level, gender, place of residence and age, they are unlikely to compete with Italian workers for jobs. Rather, they occupy very different sectors from an occupational perspective within the Italian labour market. Foreign born workers tend to perform tasks demanding hard physical labour while native workers tend to specialize in tasks of a sedentary nature

Thesis Relevance and Contribution

This thesis is primarily concerned with understanding the economic impact of an increasing pool of immigrant labour in the Italian labour market. Immigration’s effects on economic growth is one of the key factors that determine whether immigration boosts the well-being of the host society (Vittori et al, 2019). If the growth rate of per-capita income increases thanks to immigrants,

the standard of living of the general population can rise. At the empirical level demographic changes and immigration have been well recorded and known. Literature has suggested that a decreasing working age population and shortages of labour in many essential sectors can impact the labour market outcomes in terms of efficiency. Massive immigrant labour inflow therefore is seen as a potential solution to supplementing a diminishing working age population and thereby increasing the working age population ratio and population size in general. Hence a study of the underlying linkages between these changes and their dynamics is interesting and a useful addition to the existing body of knowledge.

The three chapters together come to describe a labour market that is ageing, segmented and with the prevalence of large-scale unemployment and skill mismatches among the native youth. My analysis in Chapter 4 clearly shows that there is a striking difference in the nature of tasks performed by foreign-born and native workers in Italy. Indeed, this points to the possibility that immigrant labour could be seen as a potential means to resolve the aforementioned concerns of an ageing workforce and large-scale skill mismatches commented on Chapter 2 and 3. Further, the contribution of immigrant labour could be seen as a likely means to avoid a slump in growth rates of the economy and thereby maintain the standard of living.

Conclusion

Italian society is rapidly transforming in the 21st century to becoming a multi-racial and multi-cultural on the one hand while at the same time dealing with problems related to ageing and youth unemployment on the other. The labour market is increasingly tapping into foreign-born potential as a means of sustaining the Italian economy especially when native workers are unwilling to accept certain types of jobs.

The study makes a case for immigrant labour being a potential means to avoid the economic consequences caused by demographic changes and large scale skill mismatches. It is however also important to keep in mind that this transformation is likely to bring with it a new set of sociological challenges connected with the integration immigrants and their children given that immigration is a reality and perhaps a necessary means to sustain the Italian economy. While strategically it may be useful to think as immigrant labour as having the potential to fill 'gaps' in the labour market, it is also important that concerted efforts be made from a humanitarian point of view for greater

integration and upward mobility of immigrant workers and their children as immigration continues to be a growing reality in the 21st century Italian society and state.

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Chapter Two

Demographic change, Labour Market Segregation and the Need for an Expanded Working Age Population: Global and Italian Perspectives

Abstract

This paper lays out the context within which immigration in the 21st century has occurred both from a global and Italian perspective. It explores the concept of the demographic transition that has occurred in the Western industrialized nations – marked by a fall in birth rates, a rise in life expectancy and an increasingly ageing working age population. It also discusses the growing challenge of a heavy old-age dependency ratio in Western nations which affects growth rates. It explores the possibility of immigration being a potential solution to address the growing shortage of working age population and a slump in productivity. Further it discusses the potential of immigration in increasing the female participation rates. Finally, the chapter discusses the impact of immigration on the Italian labour market and in particular lays out the regional dimensions of immigrant inflows. It lays out the context within which immigration occurred. It also lays out the debates surrounding immigration and the presence of immigrant labour both from literature across the globe and in the context of Italy in particular.

Keywords: Demographic change, ageing, labour market segmentation, immigration

Part I: Demographic Change and Labour Market Segmentation: A Global Overview

Introduction

The labour market in Europe has transformed in the 21st century with European economies increasingly confronted with the complexities of dealing with an ageing domestic workforce coupled with an abundant supply of young skilled and relatively inexpensive labour from overseas (Reher, 2011; Lee, 2003). Concurrently, these demographic changes have been accompanied by an increase in work complexities and processes because of globalization and technological development (Wadsworth, 2015). Further, the growing economic disparities between the industrialized world and underdeveloped countries and decreased costs of transportation have caused a spurt in immigration over the past few decades (Rephann & Holm, 2004). With almost 1

in 5 persons in Europe aged over 65 in 2017 according to Eurostat data⁷, European firms are increasingly faced with the dilemma on how to balance their need for skilled labour along with ensuring that their hiring policies keep up with the uncertain political attitude towards recruitment of foreign workers. Prior research has mainly examined how economic and social development have impacted demographic change (Reher, 2011; Lee, 2003; Dyson, 2001). Through my research I wish to highlight the potential impacts that immigration can have on addressing issues related to a shortage of working age population as well as relative shortages of labour faced in sectors of the Italian economy.

In Part 1 of this paper, I elaborate on the global context within where differences between the stages of demographic change in poorer countries and richer countries has contributed to the possibility of abundant working age population in one compensating for the shortfall in the other. I also elaborate on how labour market segmentation and the different position that native workers and immigrants occupy in the labour market allows immigrants to fill gaps in the labour market. Since the

In Part II I lay out a brief history of the process of immigration in Italy and its contextuality. I finally

Theoretical Underpinnings

This thesis primarily bases its research on two theories: the Demographic transition theory and the concept of skill-mismatches.

(a) The Demographic Transition Theory

The Demographic transition theory explains how western economies have transitioned to a phase of low birth rates, low death rates and an increasingly predominantly ageing population while younger countries in Asia and Africa have a much larger share of working-age productive population.

According to the Demographic transition theory, most populations fall under three phases (Lee, 2003; Kirk, 1996). In the pre-transition phase, one witnesses high fertility and high mortality.

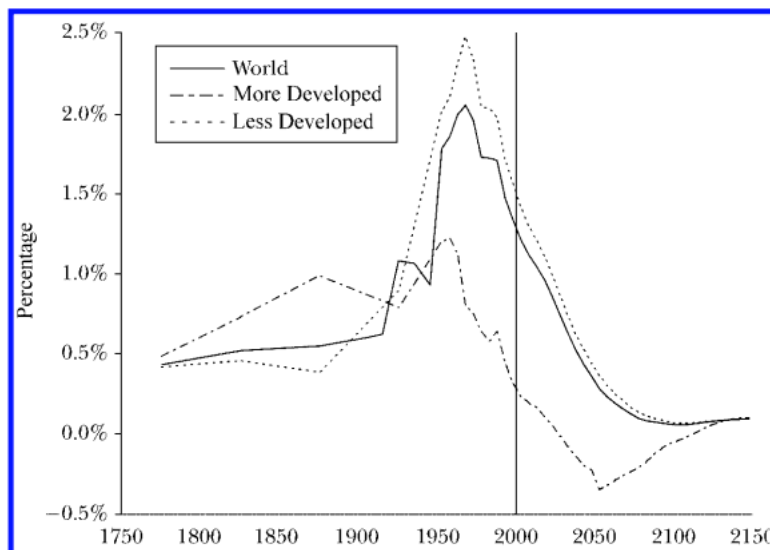
⁷ <https://ec.europa.eu/eurostat/web/products-eurostat-news/-/DDN-20180508-1> (Old age dependency ratio =19.4%)

Therefore, little population growth occurs. During the transition phase, there occurs rapid population growth resulting from lowered mortality levels (in particular infant and child mortality) and increased life expectancy (Reher, 2011; Reher, 1996; Lee, 2003). The final phase, i.e., the post transition phase is marked by a low fertility level, an increase in the proportion of elderly population to total population as well as a longer life span (Lee, 2003).

The process of demographic transition is said to have taken place first in Europe around the 1800s with declining mortality followed by a brief phase of rapid population growth and then a steady phase of declining fertility that continues till this date (Lee 2019; Reher, 2011; Dyson, 2001). However, in many low-income parts of the world, the decline in mortality began in the early twentieth century and accelerated after World War two with declines in fertility levels beginning to take place only recently. As a result, a bulk of the working age population in the world resides in these countries while Europe's share of working age population continues to decline rapidly (Hirschman, 2005, Reher, 2011; Lee, 2003).

Figure 1: Population Growth Rates, 1750-2150

Population Growth Rates, 1750–2150



Source: Lee, Ronald (2003)

A defining attribute of modern welfare states is the transfer of income from the working age population to the dependent elderly. As the ratio of elderly to the working age population

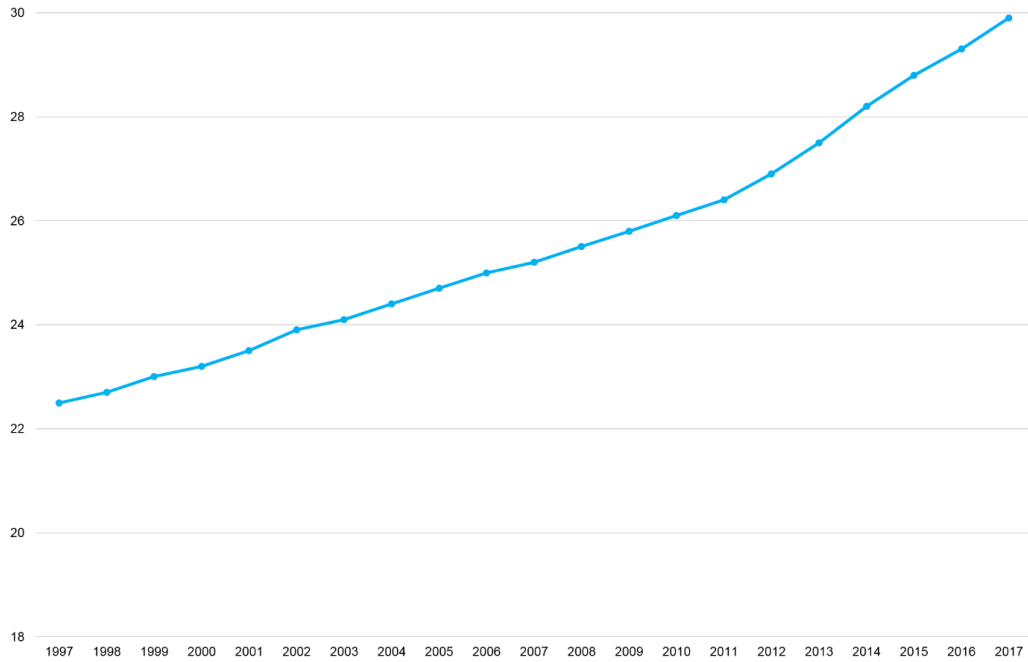
increases, the average cost (tax) per working adult will increase, putting additional pressures on the fiscal system of modern welfare states (Hirschman, 2005).

In the case of Europe (EU), currently, one in 6 people in Europe aged over 65 (Eurostat data, 2018). For the year 2018, EU had an Old Age Dependency Ratio of 31% (World Bank, 2018). Projections such as those made by Eurostat for years 2080 and 2100 suggest that working age population will continue to shrink while the share of old age population will continue to rise. The population growth due to natural change (the balance between the live births and deaths) has declined from 0.8 percent in the 1960s to essentially zero. In 2015, the EU saw a natural population decline for the first time at least since 1960s (Batsaikhan et al, 2018).

In Europe, the reasons for concerns are: low growth rates and productivity, the threat to the solvency of pension systems, especially unfunded pay-as-you-go state systems; the expenditure of resources for the medical and physical care of a growing elderly population, with a correspondingly diminishing relative or even absolute size of the workforce (Coleman, 2011, Lee, 2003, Reher, 2011).

Figure 2: The Growing Old-Age Dependency Ratio in Europe

Old-age dependency ratio in the EU*, 1997-2017 (%)

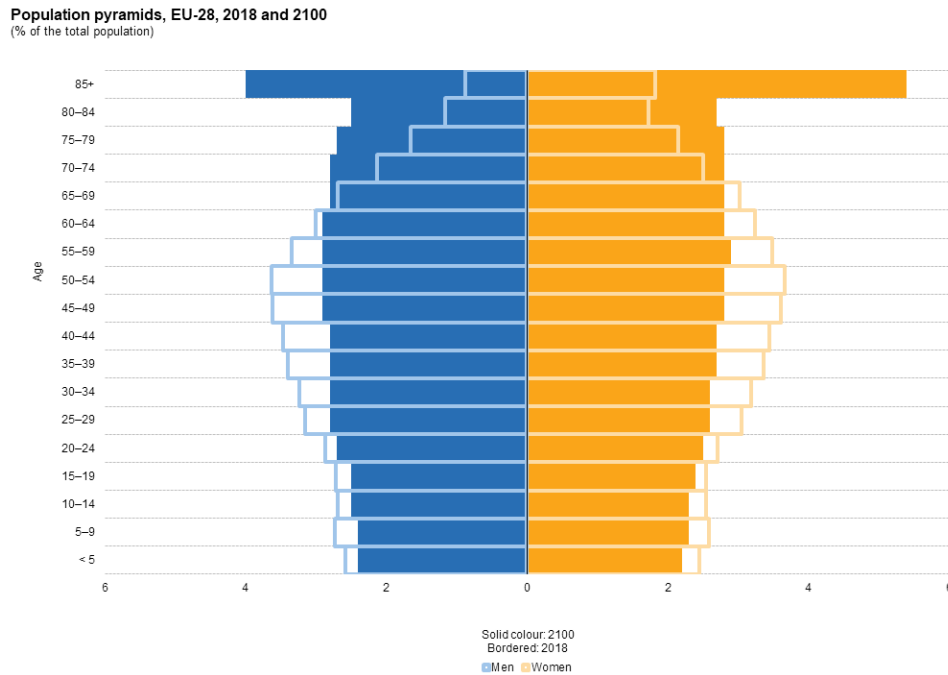


* 1997-2000: EU excluding Croatia

ec.europa.eu/eurostat 

Source: Eurostat data

Figure 3: European Population structure (2018 & projected 2100)



Note: 2018: provisional. 2100: projections (EUROPOP2018).
Source: Eurostat (online data codes: demo_pjangroup and proj_18np)

eurostat

Source: Eurostat

The Population Pyramid presented in Figure 3 shows that currently the population in EU peaks at the 50-54 age group. However, in coming years the working age population is likely to be dominated by smaller age-group cohorts requiring to support a larger chunk of old age population.

In the Italian context, the demographic transition is a cause for concern for the labour market and its productivity. Golini & Bartolomeo (2009) identify two reasons for this.

- (i) Rapid population ageing would imply a strong reduction in GDP as it tends to lower the working age population ratio. This reduction can be moderated by some (endogenous) mechanisms.

- (ii) Very low fertility is expected to have an impact on the working age population ratio leading to an inability of young workers to support an increasingly large dependent elderly population.

Faggian & Brunow (2018) identify three possible ways of addressing the issue of concerns regarding the Demographic transition, an ageing native population and need for expanding the working age of the population.

1. Increase in labour force participation of women (or other underrepresented minorities);
2. Increase of the retirement age;
3. Changes in immigration laws, in particular with regard to labour oriented immigration.

This thesis is primarily concerned with the third, i.e., an increasing pool of immigrant labour. In this context, massive immigrant labour inflow is seen as a potential solution to supplement diminishing working age population and thereby increasing the working age population ratio and population size in general.

(b) Skill mismatches and relative shortages of labour

Mismatches in the labour market are often attributed to the co-existence of a labour supply unable to satisfy demand for it in the given labour markets, on the one hand, with an excess of labour supply potentially available in the same markets on the other. It often signals a misalignment between the skills workers are endowed with and the requirements for the available jobs in the economy Frey and Livaraghi (1996) define mismatch as supply being unable to meet the demand in a certain type of work to such an extent that unemployment and vacancies occur simultaneously. Empirical use of the concept of mismatch presumes that jobs and workers can be differentiated according to certain characteristics, particularly skills and geographical location. Geographical mismatches occur where there is a limited amount of mobility among workers. In the case of migration movements, the skill mismatch assumes importance since it is found where certain jobs cannot be taken by people lacking specific skill, where workers are unable to acquire fresh ability in a short time or where workers are reluctant to take jobs needing some specific skill which they do not possess.

According to Brunello and Wruuck (2021), a persistent misalignment between the demand and the supply of skills can have drastic consequences on individuals, firms, and economies. For individuals, skill imbalances can be a source of job and life dissatisfaction, with serious wage penalties especially for overqualified employees. For companies, the suboptimal use of individuals' skills can negatively affect productivity and their ability to implement new products, services, or technologies. At the aggregate level, skill mismatch may hamper economic growth and competitiveness, leading to a high level of structural unemployment.

The Driving Forces of Immigration

Immigration and technological progress are the engines of economic growth. Hence, the attraction of human capital and skills is central to continued economic success. According to Giovanni Peri⁸, there are three global driving forces in the increase in migration flows from country of origin to country of destination, which for a large part are from less developed to more developed countries. These are:

1. Economic disparities or wage-income differentials between country of destination and country of origin.
2. The demographic force with differences seen in a large working age population in the sending country and a smaller share of working age population in the receiving country
3. The demand for labour in certain sectors and occupation in the receiving country especially given an ageing western economy and a larger share of women joining the labour force. Personal housekeeping services and elderly care are an example of this type of job.

International Migration and Host Country Labour Markets

This research is focused on the impact of foreign migrant labour on the host country labour markets. The UN multilingual dictionary defines "migration" as a form of spatial mobility between one geographical unit and another, involving a permanent change of residence. Therefore, migration involves the aspects of (a) Change of residence and; (b) Crossing of a pre-defined

⁸ [\(89\) Giovanni Peri on the Economic Impacts of Global Migration - YouTube](#)

administrative boundary. Migration in other words involves two areas: Place of origin and place of destination. Further, migrations are either voluntary or involuntary (in other words forced).

Many scholars have stressed the positive impact of migration on national economies. According to Peri⁹, the impact of immigration on labour markets can be described in a number of ways. The older approach asserts that immigrants are workers (labour). They reduce the marginal productivity of labour in the short run. In the long run, capital adjusts and there is no effect on the wages.

A newer approach on the other hand sees labour as being differentiated by skills and immigration changes specific skill supply across cells. It is focused on relative supplies and elasticities (static).

Finally, according to a third approach, there are some specific dimensions of skills that are characteristic of international migrants (Manual-Communication). Immigrants specialize while native and firms adjust. Hence, there is imperfect substitution.

Immigrants therefore are over-represented in skills that are internationally transferrable: These include Manual and quantitative tasks. Peri goes on to assert that in the case of the United States for instance, the less educated immigrants have largely specialized in manually intensive jobs -in agriculture, construction, personal housekeeping services. Native workers on the other hand because of their higher schooling have progressively moved to more cognitive intensive jobs and shunned manual intensive jobs because of their long hours, inflexible schedules and routine tasks. Immigrant specialization in these occupations has therefore filled a void. In fact, it has upgraded of native to more skill intensive occupations. Manual jobs are in high demand because they have to be performed locally and they fulfill the needs of a wealthier and ageing host country population.

Immigration and Its Benefits

Immigration's effects on economic growth is one of the key factors that determine whether immigration boosts the well-being of the host society (Vittori et al, 2019). If the growth rate of per-capita income increases thanks to immigrants, the standard of living of the general population

⁹ [\(89\) Giovanni Peri on the Economic Impacts of Global Migration - YouTube](#)

can rise. At the aggregate level, Immigrants are likely to reduce labour shortages in sectors of the economy where local workers are unwilling to participate. As immigrants participate in these sectors local workers have the freedom to upskill.

Further, the labour force participation rate of women has been positively impacted by the flow of low-skilled immigrants. The flow of low-skilled immigrants has responded to demand for low-wage part-time jobs typically occupied by female natives in the form of unpaid domestic labour, thereby allowing them to enter the labour market (Batsaikhan et al, 2018).

Part 2: The Italian Labour Market in the Context of Immigration:

Immigration into Italy: Context and Process

In 1998 the Italian government passed a law introducing a quota system for foreign workers, with the possibility of sponsoring their entry, admitting the interest of the economic system in receiving a certain number of immigrants¹⁰. While immigration to Italy for work related purposes began from the late 1970s onwards, this was the first formal state led acknowledgement for its need in a country with a highly educated and increasingly ageing native population. Formerly a country that had witnessed net out- migration, it had increasingly become clear that Italy would now assume the role of a host country for immigrants who wished to improve their economic prospects by finding a place in the Italian labour market. In this sense, Italy had assumed a more advanced position in the European context, which was still largely earmarked, at least formally, by political closure toward labour immigration (Ambrosini, 2001).

In the early years of immigration, the south of Italy was an attractive destination for immigrants both for reasons of geographical proximity from sending countries and because it was seen as a place of seasonal and temporary activity by immigrants. Further, there was less institutional control and the presence of large sectors of the informal or hidden economy. By the second half of the 1980s, the idea prevailed that northern regions offered better occupational opportunities and these occupations were more likely to be regular and equal to those of Italian workers. The inclusion of immigrants into factories in the blue-collar labour force was a new phenomenon witnessed during this period. This process consolidated in the 1990s, rapidly

1. See Turco-Napolitano Law (n.40/1998)

surpassing, in terms of numbers, the other main sector of regular inclusion, domestic labour (Ambrosini, 2001).

In the 80s the most important flows were from Africa and Asia, mainly Morocco, Tunisia, and the Philippines, while in the 90s, the initial waves of immigrants were joined by large flows from the Eastern European countries, specifically the former Yugoslavia, Romania and Albania (Venturni & Villosio, 2004).

By 2019, there were as many as 5.3 million foreign citizens legally residing in the country and amounting to 9% of the country's total resident population. The most numerous national groups were Romanian (23% of all immigrants), Albanian (8.4%) and Moroccan (8%). The top 5 regions for foreign residents were Lombardy (11.7 % of the total population), Lazio (11.6 %), Emilia-Romagna (12.3 %), Veneto (10.2%) and Piedmont (9.8 %) (Caritas Migrantes, 2019).

It is interesting to note that immigrant employment has benefited to a great extent at a time when the Italian economy has experienced its longest slowdown in the post-war period with national employment unable to recover. According to Abella et al (1995), this confirms the hypothesis of a greater flexibility and adaptability of immigrant workers to certain requirements on the demand side, especially in the less qualified and less stable sectors of the market: jobs identified in the literature as three D's: dirty, dangerous, demanding. In other words, the assimilation of immigrants in the Italian labour market is made easier by their characteristics which complement the natives' ones, i.e., they are younger and less educated both of which are important qualities in an aging and educated society (Accetturo & Infante, 2009; Ambrosini, 2001).

The labour market sectors which immigrants tend to enter are Mediterranean agriculture, small companies, low urban services, small construction jobs, and domestic work. Immigrants find work in these sectors in response to dearth of national labour for those types of jobs and working conditions (Ambrosini, 2001; Venturni & Villosio, 2004). In that sense, it is a case of labour "not explicitly requested but more and more needed by labour demand" with family or ethnic networks and migrant chains playing a big role in the migration process (Ambrosini, 2001).

Demographic Structure and the Need for Immigrant Labour in Italy

The latest population statistic projected by Italy's statistical institute ISTAT in year 2021¹¹ confirm a potential demographic crisis scenario. A decreasing population from 59.2 million as of January 1, 2021 to 57.9 million in 2030, to 54.2 million in 2050 and 47.7 million in 2070 is projected. The ratio between individuals of working age (15-64 years) and not (0-14 and 65 years and over) will grow from about 3 to 2 in 2021 to about 1 to 1 in 2050. Further, there is likely to be a demographic crisis of territories where a population decline is expected in 4 out of 5 municipalities within 10 years and in 9 out of 10 rural municipalities. The number of families is expected to grow but with an ever smaller mean number of members. Fewer couples with children and more without. By 2041, only 1 in 4 families are likely to be made up of children while more than 1 in 5 are likely to be childless. Further, while in 2021 the share of single people aged 65 and over represents half of those living alone, in 2041 it would reach 60%. Projections show a scenario in which the incidence of men and women aged 65 and over in single-member families as a whole increases substantially, so that in 2042 men would make up 42.5% and women 72.2% of them. In this context, migratory flows are likely to counterbalance the negative natural dynamics.

Table 1 provides a snapshot of the current and project demographic structure of Italy.

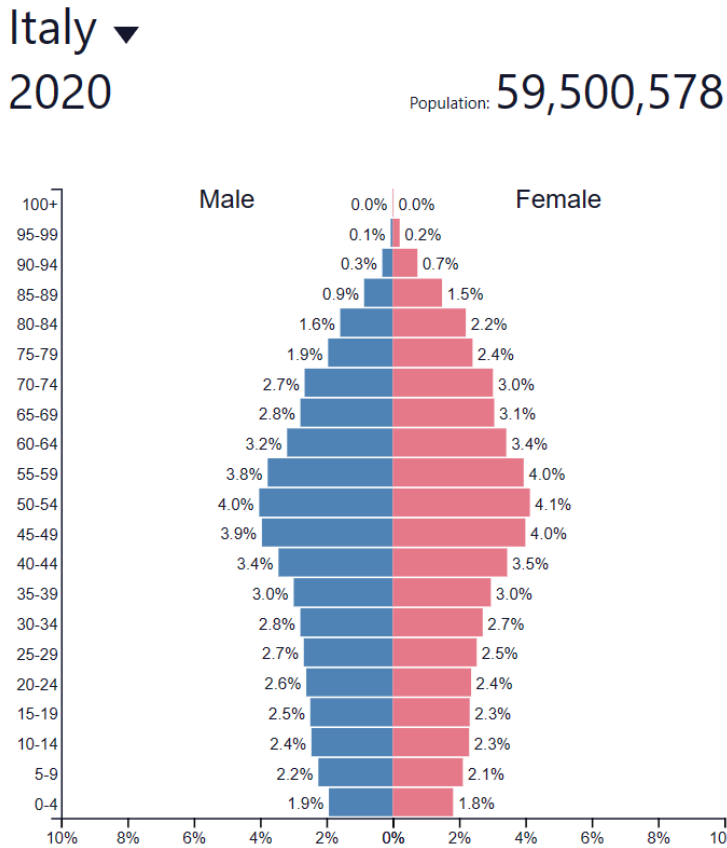
Table 1: The Demographic profile of Italy and the impact of immigration

Population (millions)	Proportion of foreign-born population (%)	Old-age dependency ratio 65+/20-64 (%)	Projected change in working age population (%)	Projected change in working age population - Zero migration (%)	Total fertility rate (TFR)	Change in TFR
1.1.2021	1.1.2021	1.1.2021	2020 to 2060	2020 to 2060	2020	2010 to 2020
59.2	11	40	-27	-36	1.24	-0.20

Data Source: European Demographic Data sheet 2022

¹¹ [REPORT-PREVISIONI-DEMOGRAFICHE-2021.pdf \(istat.it\)](#)

Figure 4: Population pyramid of Italy for 2020



Source: PopulationPyramid.net (Data: ISTAT)

The Population Pyramid presented in Figure 4 shows that currently the population in Italy peaks at the 50-54 age group. However, in coming years the working age population is likely to be dominated by smaller age-group cohorts requiring to support a larger chunk of old age population.

Immigrant Role in Elderly Care and Native Female Labour Market Participation

The increase in survival among the elderly, many of whom live alone is likely to lead to a future increase in care needs. According to Del Boca & Venturini (2014), in the last few decades, demographic and economic changes have modified both the demand for elderly care and the availability of unpaid family-care work. Population ageing has increased the demand for elderly care, while the growth of women employment has reduced the supply of family members' unpaid care. While female immigration previously contributed to a profound change in the traditional

model of family care, especially in respect of elderly care, immigrant women have started to complement/substitute the caring activities of women in the family and insufficient public services since the 1990s in Italy. Therefore, foreign labour not only serves for its contribution to the agriculture sector, in construction and industry, but is also fundamental in the family sector, favouring the participation of skilled Italian women in the labour market.

The Labour Market Impact of Immigration In Italy

The debate regarding the effect of immigrants on the labour market has been polarized. On the one hand, many domestic workers fear the competition that immigrants in the labour market pose. On the other, there is a strong demand for labour, which is often not matched by a supply of native workers (Venturnini & Vilosio, 2004).

The debates most conspicuous in literature regarding immigrant participation in foreign labour markets can be broadly divided into three: (1) Do immigrants pose a threat to natives in their ability to find jobs; (2) Does immigrant participation impact native wages and; (3) How much does the market recognize the human capital immigrants bring with them. All the three debates are closely related.

According to Romagnoli (2017), migrants in Italy are complements more than substitutes for low skilled native workers and many low-skilled workers help boost the productivity of low-skilled native workers. Further, the presence of foreign workers is essential because it compensates the strong erosion of employment base in several labour market sectors whose demand may not be met by native workers even at higher wages.

Guintella (2012), found that in Italy immigration reduces natives' likelihood of working nonstandard hours but that it does not significantly affect employment and hours worked. Further, while the reduction in native nonstandard hours is significant across the main demographic subgroups, there does not seem to be a significant effect on high-skilled workers, highly specialized white collars, self-employed and in sectors in which immigrants have less of presence such as the public sector or financial sector.

In their study titled "Labour Market Effects of Immigration: An Empirical Analysis Based on Italian Data" (2004), Alessandra Venturini and Claudia Vilosio investigated the question of whether Italians and immigrants compete for the same jobs. They found that for new Italian job

seekers the share of foreign workers has either no effect or has a complementary effect on the probability of finding a job. The study found some evidence of competition between foreign and native workers in manufacturing in the North of Italy in part because of level of education, but on the whole, they found little evidence to associate increased immigration with unemployment of native workers.

Gavosto, Venturini, Villosio (1999) show that a high share of foreign workers in the labour market is associated with an increase in native blue collar workers' wages for period 1990-95. According to them this complementary effect can be attributed to the imperfect matching of skills with firms with immigrants filling the gap and allowing small companies to expand production otherwise constrained by labour supply.

Venturini & Villosio (2008) in their study of labour market assimilation of wage and employment outcomes for foreign workers in Italy found that foreigners do not assimilate from an employment perspective with a differential in employment and wage between foreign and native workers being found even upon entrance and the gap increasing over time. The general pattern for foreign workers appears to be a fragmented career either being confined to seasonal or temporary jobs or alternating between legal and illegal employment. Therefore, longer their presence in the host labour market does not lead to their wage and employment profiles 'catching up' with those of native workers.

Peri and Sparber (2009), found that for the United States, immigrants with little educational attainment had a comparative advantage in manual and physical tasks, while natives of similar levels of education had a comparative advantage in communication and language- intensive tasks. Native- and foreign-born workers specialize accordingly. When immigration generates large increases in manual task supply, the relative compensation paid to communication skills rises, thereby rewarding natives who progressively move to language- intensive jobs.

Cattaneo, Fioro and Peri (2013) found that native Europeans are more likely to upgrade their occupations to one associated with higher skills and better pay, when a larger number of immigrants enter their labour market. As a consequence of this upward mobility their income increases or stays the same in response to immigration. They find no evidence of an increased likelihood to leave employment or to leave the region of residence.

Antonio Accetturo and Luigi Infante (2009) in their study on the portability of immigrants' human capital in the host country found that the return on schooling in terms of wages in the labour market is positive but considerably lower than the one estimated for natives. Further, they show that the low return on education cannot be attributed to a signaling problem of actual skill level to the employers and the reasons lie elsewhere.

Similarly, Ottaviano, & Peri's (2012) research from the United States finds that even when foreign-born workers have similar characteristics with regard to educational level, gender and experience they are still imperfect substitutes for native workers. They cite three reasons for this:

First, immigrants are a selected group from their population having skills, motivations and tastes setting them apart from natives. Second, they have culture-specific skills (e.g., cooking, crafting, soccer playing etc.) as well as limits (knowledge of language or local culture), creating comparative advantages in some jobs and disadvantages in others. Finally, new immigrants tend to work disproportionately in those occupations where foreign-born are already over-represented implying stronger wage competition (substitution) in those jobs compared to other jobs primarily held by natives. They conclude that since services of different occupations are imperfectly substitutable it implies imperfect substitutability between natives and foreign-born even in the same education-experience group.

This study in Chapter 4 attempts at understanding if a similar result as observed by Ottaviano & Peri's (2012) in the United States can be observed in the Italian context. In other words, do differences in skills and tasks performed between immigrants and natives remain when they possess similar characteristics with regard to Gender, Education level, Region and Age. A consistent difference in the nature of skills and tasks employed at work by immigrants and natives is likely to indicate that immigrants and natives occupy different places from an occupational perspective within the Italian labour market.

Conclusion

This paper lays out the context within which immigration in the 21st century has occurred both from a global and Italian perspective. It explores the concept of the demographic transition that has occurred in the Western industrialized nations – marked by a fall in birth rates, a rise in life expectancy and an increasingly ageing working age population. It also discusses the growing

challenge of a heavy old-age dependency ratio in Western nations which affects growth rates. It explores the possibility of immigration being a potential solution to address the growing shortage of working age population and a slump in productivity. Further it discusses the role of immigration in elderly care and increasing the female participation rates. Finally, the chapter discusses the impact of immigration on the Italian labour market. It also lays out the debates surrounding immigration and the presence of immigrant labour both from literature across the globe and in the context of Italy in particular.

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Chapter 3

Does Immigration Make the Italian Labour Market Efficient? The Impact of Immigration on Job Matching and Labour Market Efficiency.

Abstract

This paper is primarily concerned with the possible impact that immigration has had on aggregate mismatches in the Italian labour market. Through my research, I attempt to explore the probable effect that the entrance of immigrants into the Italian labour force is likely to have on filling vacant posts in the Italian labour market. In other words, have immigrants made the labour market more efficient by ensuring that those looking for jobs are better matched with vacant posts? This is a relevant question because Italy is characterised by the phenomenon of Relative labour shortages- a situation where high unemployment (in particular, high youth unemployment) and vacancies co-exist making the labour market inefficient to meet the demands of native workers looking to be employed in the labour market. Further an increased overall matching of workers as a result of immigration would mean that the labour market as a whole is more productive. In other words, immigration has an overall positive impact on the health of the economy.

The paper has a significant contribution in that a possible increase in labour market efficiency as a result of inflow of immigrants in a region could suggest that many vacant job posts in the Italian job market are in fact better suited for the immigrant population (and rejected by the native population) and there is a need to create jobs more suited for the native population.

Introduction

Italy in recent years has gone through several years of economic recession that has left profound wounds on its economy, especially with regard to the state of employment. Young individuals and people living in southern Italy are the categories most adversely affected by these labour market outcomes. The unemployment rate, specifically, the long-term has increased markedly since the 2008 global recession. It reached double digits in 2012 and has seen little improvement since then. There are of course marked regional and demographic variations with regard to unemployment (Adda, J. et al, 2017).

There are however, two interesting contradictions that the Italian labour market displays – (a) the rapid growth of immigrant labour force at a time when the Italian economy has experienced its longest slowdown in the post-war period with national employment unable to recover (b) the refusal of many Italians especially the youth to take up jobs even when vacant jobs are available.

According to Abella et al (1995), this confirms the hypothesis of a greater flexibility and adaptability of immigrant workers to certain requirements on the demand side, especially in the less qualified and less stable sectors of the market. Immigrants tend to enter into jobs identified in the literature as three D's: dirty, dangerous, demanding. In other words, the assimilation of immigrants in the Italian labour market is made easier by their characteristics which complement the natives' ones, i.e., they are younger and less educated both of which are important qualities in an aging and educated society (Accetturo & Infante, 2009; Ambrosini, 2001).

This paper suggests that the growth of immigrant workers is likely to improve labour market efficiency, i.e., the ability of the job market to match available jobs to workers willing to work in a situation where many native workers refuse to take up jobs despite their availability in the labour market.

Unemployment and Refusal to Take Up Jobs

Problems over the refusal of jobs by young people began to make themselves felt in Italy during the 70s. Research on the labour market in the Lombard Po Valley showed that even as early as the 60s many young people living in rural areas were refusing to work in agriculture and were instead seeking jobs in industry located elsewhere. Research on female labour carried out during the 60s and early 70s also brought to light the fact that young women living in towns in Italy were to an increasing extent refusing jobs as domestic servants, because of the hard conditions and low social status (that of a servant) which their own social and institutional environments attributed to this work. Refusal to take certain jobs assumed importance as an explanation of labour shortages when unemployment among young people, as revealed by official statistics, began to reach alarming proportions (Frey & Livraghi, 1996).

According to Romagnoli (2017), migrants in Italy are complements more than substitutes for low skilled native workers and many low-skilled workers help boost the productivity of low-skilled native workers. Further, the presence of foreign workers is essential because it compensates

the strong erosion of employment base in several labour market sectors whose demand may not be met by native workers even at higher wages.

According to Del Buca & Venturini (2014), while the presence of migrants was initially limited to low-skilled jobs in the industrial, construction and agricultural sectors, it subsequently expanded to the family services sector, where elderly care is now monopolized by foreign women workers, with the availability of immigrant caregivers crowding out the alternative solutions that were in place. This employment sector is relatively heterogenous given that it includes simple housekeeping works, as well as more complex care work among old and sick persons. Further, Italy's ageing problem and the lack of sufficient and affordable private and public residential structures have created a demand for substitutes to allow Italian women to work outside the home. At present, a large share of welfare services is provided by foreign citizens in the private residences of needy persons or in public and private residential structures. Therefore, foreign labour not only serves for its contribution to the agriculture sector, in construction and industry, but is also fundamental in the family sector, favouring the participation of skilled Italian women in the labour market.

Similarly, Cattaneo, Fioro and Peri (2013) found that native Europeans are more likely to upgrade their occupations to one associated with higher skills and better pay, when a larger number of immigrants enter their labour market. As a consequence of this upward mobility their income increases or stays the same in response to immigration. They find no evidence of an increased likelihood to leave employment or to leave the region of residence.

According to Frey & Livraghi (1996), the refusal of jobs by young people is generally expressed in two forms:

(a) The first consists in acceptance of any job but in a fortuitous and temporary manner and without personal involvement, in the belief that the accessible jobs do not entail a working identity. According to some authors such as Romagnoli (1984), it is not a case of actual refusal but rather a lack of any feeling for the value of work.

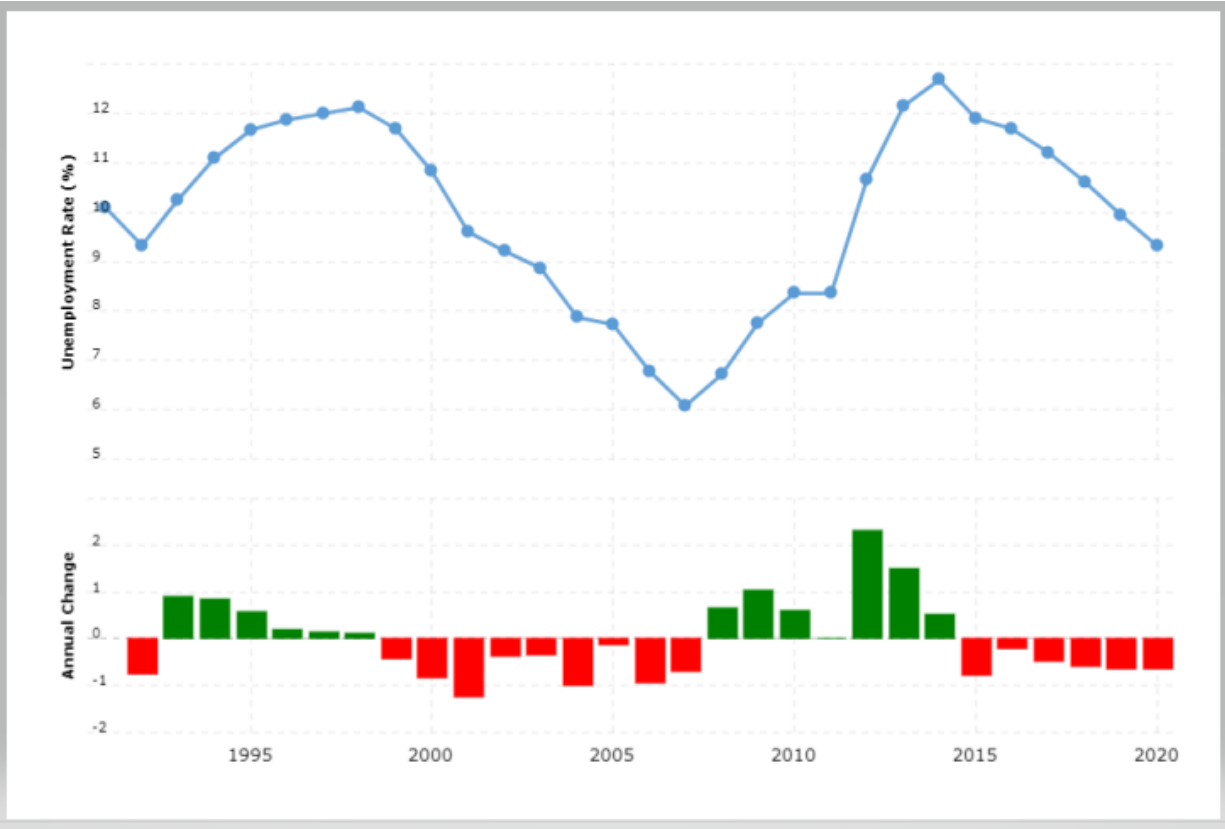
(b) Preference by many young people of both sexes – especially those who benefit from better education early in the 60s – for non-manual work and for jobs mainly in services. According to Frey and Livraghi (1996), manual work, in addition to generally commanding lower wages than

brain work, is believed to offer few chances of self-realization, a condition which surveys on young people showed as being of considerable importance in the first half of the 80s, especially by those coming from fairly well-off families.

According to them, in the 80s there were at least two Italian labour market phenomena that gave out signals of triggering migration inflows: (i) shortages of native labour; (ii) the readiness of Italian firms to hire non-EU immigrants on terms worse than those prevailing in the domestic labour market.

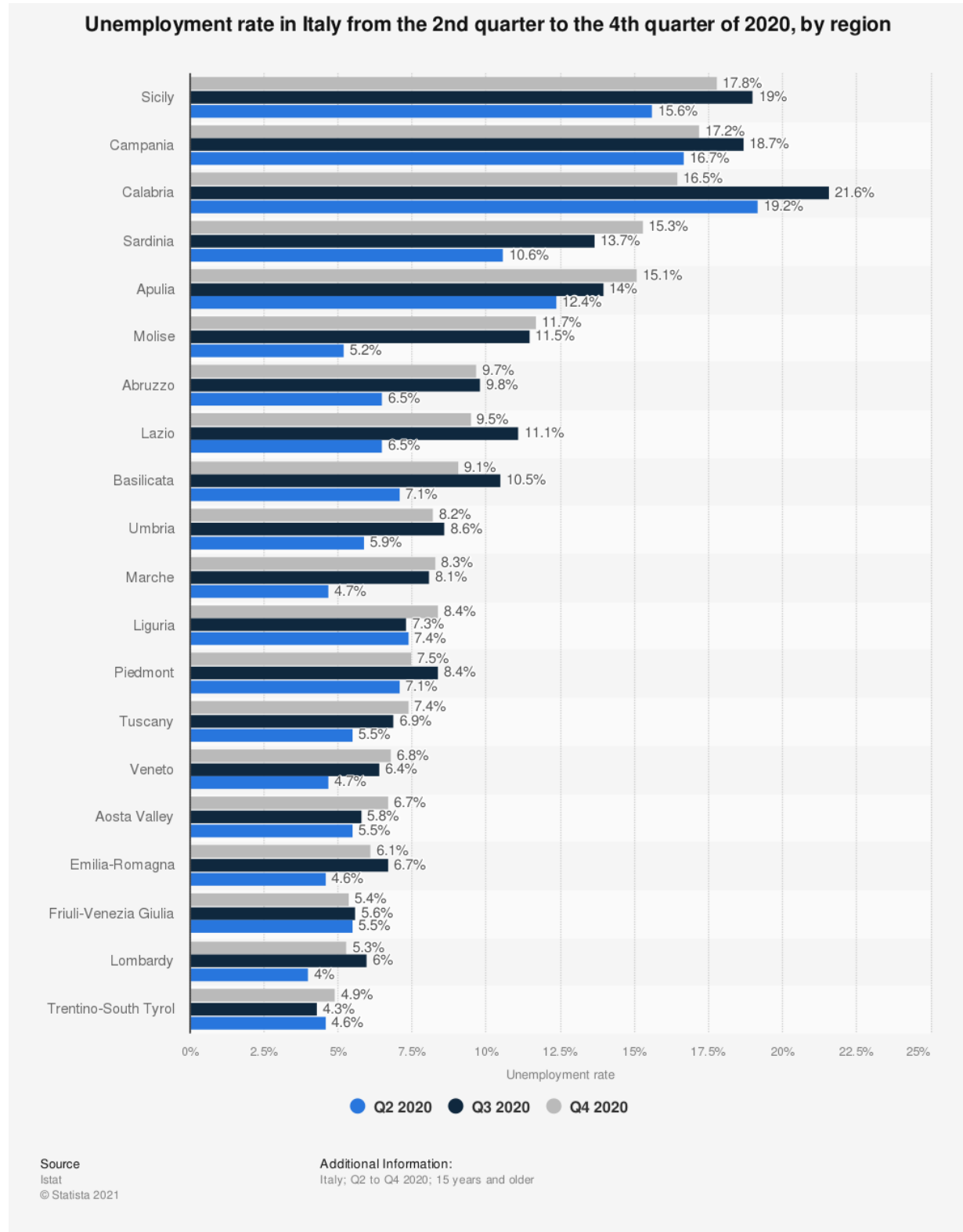
Figure 1: Unemployment in Italy (1995-2020)

Unemployment in Italy (1995-2020)



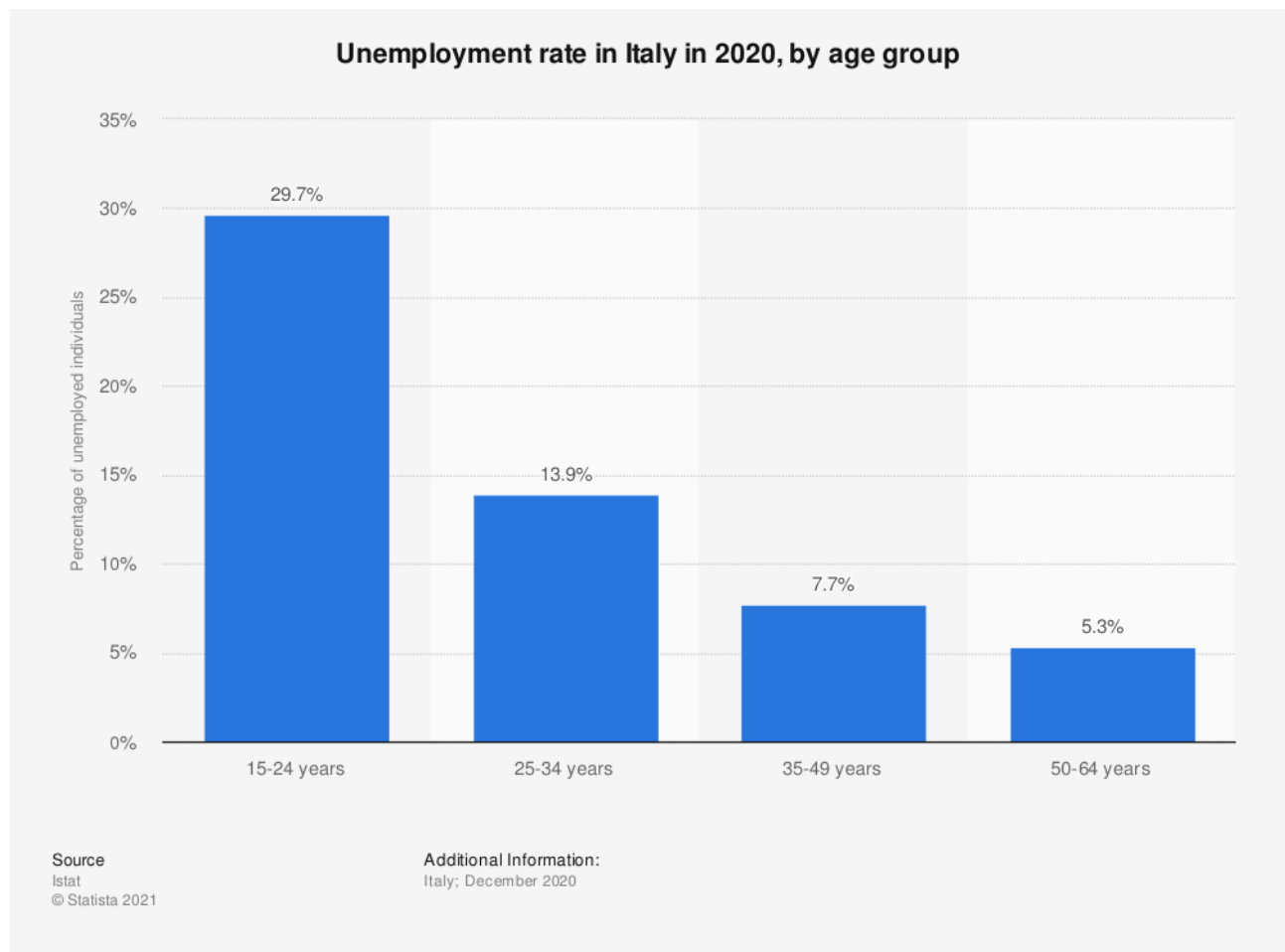
Source: World Bank

Figure 2: Unemployment in Italy from 2nd quarter to the 4th quarter, 2020, by region



Source: ISTAT & Statistica 2021

Figure 3: Unemployment rate Italy, 2020, by region



Source: ISTAT & Statistica 2021

Youth Unemployment: The ‘NEET’ population

Italy in recent years has also seen a significant share in its ‘NEET’ population. The NEET are youth who are neither employed nor in education or training. These individuals are vulnerable in terms of labour market prospects, as they are neither increasing their human capital through education nor acquiring work experience in the key years immediately following completion of education. For years 2012-2015, as many as 33.6 percent of the youth aged between 20 and 24, and 34.6 percent of those aged between 25 and 29 belong to the NEET category. By contrast, the share of NEET is lower (about 12 percent) among the 15-19 age group. This is a likely sign of poor school-to-work transition at both the high school and the college level. In the South about 37

percent of the youth aged 15 to 29 are in the NEET, compared to about 20 percent in the North. Since the share of young individuals in education is almost the same in the three regions (about 40 percent), the gap across macro areas must be accounted for in large part by individuals who do not enter the labor force once their education is completed. Thus, the school-to-work transition seems to be more inefficient in the South than in the North (Adda et al, 2017)

Skill Mismatch and Relative Shortages of Labour

Mismatches in the labour market are often attributed to the co-existence of a labour supply unable to satisfy demand for it in the given labour markets, on the one hand, with an excess of labour supply potentially available in the same markets on the other. It often signals a misalignment between the skills workers are endowed with and the requirements for the available jobs in the economy. Frey and Livaraghi (1996) define mismatch as supply being unable to meet the demand in a certain type of work to such an extent that unemployment and vacancies occur simultaneously. Empirical use of the concept of mismatch presumes that jobs and workers can be differentiated according to certain characteristics, particularly skills and geographical location. Geographical mismatches occur where there is a limited amount of mobility among workers. In the case of migration movements, the skill mismatch assumes importance since it is found where certain jobs cannot be taken by people lacking specific skill, where workers are unable to acquire fresh ability in a short time or where workers are reluctant to take jobs needing some specific skill which they do not possess.

From a micro perspective, skill mismatch is a feature of the single job-worker pair, and therefore refers to employed workers only. More specifically, a mismatch arises when a worker possesses a level of skills that is either higher (over-skilled) or lower (under-skilled) than that required for the job. If one considers educational attainments rather than actual skills, then one speaks of qualification mismatch (Monti & Pellizzari, 2016).

Skill Mismatches in Italy

Recent analysis reveals that mismatch is a pervasive phenomenon in Europe, and particularly relevant in Italy. The international comparison reveals that Italy ranks high in terms of both under-skilling and over-skilling. The labour market has been unable to match the demand for and supply of skills effectively (Adalet McGowan and and Andrews, 2017). The task of

matching skills in the labour market has been exacerbated by several factors, usually called megatrends. These affect the demand and the supply for skills. Further, technological change, digitalization, automation, globalization, demographic changes and crises like COVID-19 are changing the world of work and the demand for skills at a fast pace (Cedefop, 2022¹²). These trends are creating pressure for people to develop the right skills, as well as to use them more effectively and to continue upskilling throughout life. This dynamism of both skill demand and supply has led to severe and persistent skill imbalances.

Effects of Skill and Job Mismatches

According to Brunello and Wruuck (2021), a persistent misalignment between the demand and the supply of skills can have drastic consequences on individuals, firms, and economies. For individuals, skill imbalances can be a source of job and life dissatisfaction, with serious wage penalties especially for overqualified employees. For companies, the suboptimal use of individuals' skills can negatively affect productivity and their ability to implement new products, services, or technologies. Finally, at the aggregate level, skill mismatch may hamper economic growth and competitiveness, leading to a high level of structural unemployment.

Aggregate Mismatches and Labour Shortages

This research is primarily concerned with the possible impact that aggregate mismatches can have on the Italian labour market. A rich strand of studies adopts a more macro concept of mismatch. Aggregate mismatch is defined as the existence of alternative allocations of workers, often meaning both employed and non-employed workers, to jobs, both filled and vacant, that could improve productivity compared to the existing equilibrium. A labour shortage is a specific type of aggregate mismatch. It is the discrepancy between the characteristics of available vacancies and those of unemployed workers in a specific occupation, industry or geographical area. In particular, a labour shortage arises when the number of available vacancies exceeds the number of qualified candidates (Monti & Pellizzari, 2016).

¹² [Strengthening skills systems in times of transition \(europa.eu\)](https://europa.eu/eurostat/tgm/table.do?tab=table&init=1&language=en&code=sdg_8_4_1)

Aggregate Effects of Skill Mismatches

According to Brunello & Wruuck (2021), by distorting the optimal allocation of resources, skill shortages and mismatch are expected to reduce average productivity. Further, the negative relationship between skill mismatch and average productivity operates mainly via two channels: (a) lower within-firm productivity and (b) a less efficient allocation of labour resources across firms. A higher skill mismatch is associated with lower productivity because of a less efficient allocation of resources across firms. As a result of a mismatch, the more productive firms find it difficult to attract skilled labour and gain market shares at the expense of less productive firms.

Brunello & Wruuck (2021) also assert that skill mismatches affect the ability of the market to adjust to unemployment shocks and thereby effect the aggregate outcomes of the economy. When skill mismatch is minimal, a labour market is likely to re-adjust relatively quickly, *ceteris paribus*. It just has to sort out the unemployment-vacancy inefficiency. However, when skill mismatch is widespread, then while the market is trying to match workers with jobs on the one hand, it is also trying to get better matches for skill mismatched workers at the same time. This sorting is likely to take much longer as search costs are likely to be higher.

Skill mismatch can also have likely consequences on wage inequality. Slonimczyk (2009) has found that in the United States, a substantial part of the observed increase in wage dispersion (11% for men and 32 % for women during 1973-2002) can be attributed to increases in over-qualification rates and premia.

Mavromaras et al. (2007), attempt to quantify the costs of skill mismatch in terms of Gross Domestic Product (GDP). They proxy the individual productivity loss with the estimated wage penalty associated with over-skilling, and multiply this penalty by the number of over-skilled workers by educational attainment level, concluding that the costs of over-skilling in Australia amounts to about 2.6% of the GDP in 2005.

Vandeplass & Thum-Thyessen's empirical analysis of Skill Mismatch and Productivity in the EU suggests a negative relationship between macro-economic skill mismatch and labour productivity and – as a sign of a buoyant economy - a positive relationship between skills shortages and labour productivity. With regard to on-the-job skills mismatch, their data confirms earlier findings from the economic literature: when comparing a mismatched with a well-matched worker

within the same occupation, overqualification raises and underqualification reduces productivity. When comparing a mismatched with a well-matched worker within the same qualification level, overqualification reduces and underqualification increases productivity.

Therefore, prior economic literature has clearly pointed towards a relationship between better skill matches and increased productivity.

Job Search Models

In the 1970s a range of theories under the group of Job search theory became popular as an alternative to the standard neo-classical labour supply theory. Unlike the neo-classical theories that did not allow for unemployment, i.e., where individuals actively sought work but were unable to find it, these theories, acknowledged that looking for a job is a dynamic sequential process. Individuals have to decide when to stop this process under conditions of uncertainty and imperfect information. Although the share of labour income in more developed countries has decreased in recent years, labour still represents the main means of support to most households. Therefore, the strength of job search models is its recognition of the fact that choosing the ‘right’ job remains one of the most important lifetime decisions individuals have to make (Faggian, 2014).

Since the 1970s, job search theory has been refined with the most fundamental development being the ‘matching function’ allowing job seekers and firms to interact. The importance of the Matching theory was recognised by awarding the 2010 Nobel Prize to Peter Diamond, Dale Mortensen and Christopher Pissarides.

Matching theory is based on a “matching function” whose simplest form is

$$M = m(U, V)$$

where $m(\cdot)$ is a certain functional relationship, U is the number of unemployed workers looking for job, V is the number of vacancies advertised by firms, and M is the number of matches between the two sets. The matching function is assumed to have constant returns to scale so that on average an unemployed worker finds a job in a unit period length with probability

$$\frac{m(U, V)}{U} = m(1, \theta) \equiv \alpha(\theta)$$

and a vacancy is filled with probability

$$\frac{m(U, V)}{V} = \frac{m(U, V) U}{U V} \equiv \frac{\alpha(\theta)}{\theta}$$

The parameter $\theta = \frac{v}{u}$ is a measure of “labor market tightness.” Every time there is a “match” between a vacancy and a job seeker, a surplus is formed (relative to the situation in which they remained “unmatched”). This surplus is split through a Nash bargaining process. A high value of θ means that it is easy for a job seeker to find a new job. In other words, job seekers are in a relatively strong position compared to firms offering the jobs. In its simplest version, the model assumes that both firms and workers are homogenous, each firm consists of a single job, and there is a unit measure of workers (Faggian, 2014).

Lucarelli (2011) observes that job vacancy data has largely been used in literature to measure the effects of friction in job matching on unemployment with the matching function often being assumed to be a Cobb-Douglas production function with stocks of vacancies and unemployment as input and the number of hirings per period as output. The function is in form:

$$m_t = M(u_t, v_t) = \mu u_t^a v_t^b$$

where μ , a and b are positive constants. In this equation, u_t represents the number of unemployed job seekers in the economy at a given time t and v_t is the number of vacant jobs firms are trying to fill. The number of new relationships (matches) created (per unit of time) is given by m_t .

The Relationship between Productivity and Vacancies

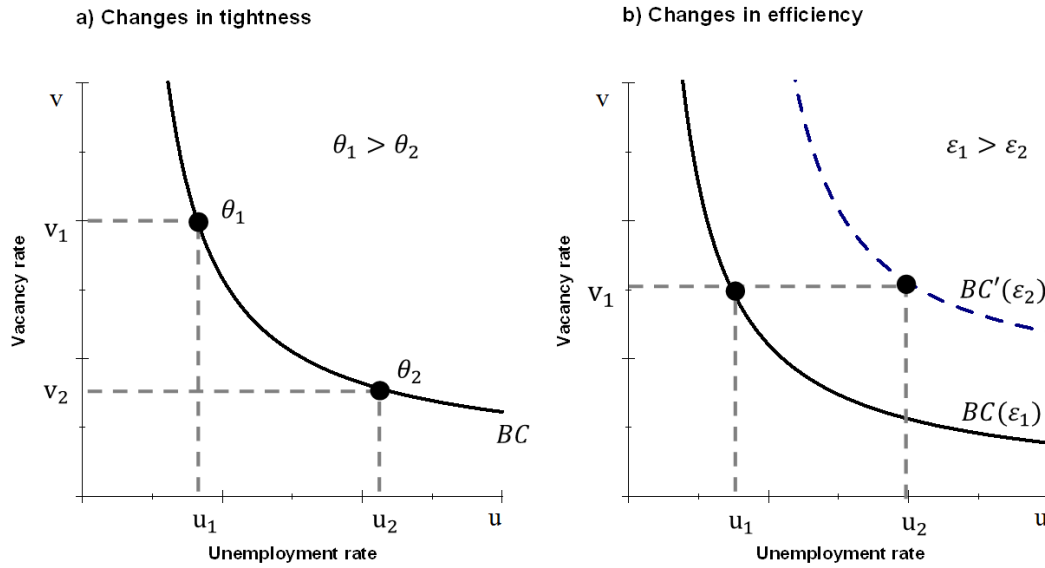
Increases in labour productivity lead to high vacancies, since firms have incentive to open more vacancies. They also lead to low unemployment that characterize a tight labour market, since unemployed workers find jobs more quickly. An increase in labour productivity relative to the recruitment cost to advertise a job vacancy, makes unemployment relatively expensive and vacancies relatively cheap, so that the market pushes towards vacancy substitutions, and the increased job creation decreases the unemployment rate, moving the economy along a downward sloping Beveridge curve (Girogio & Giannini, 2011).

The Beveridge Curve

The theoretical framework for this chapter is based on the Beveridge curve. The underlying intuition behind the negatively sloped Production frontier is that as vacancies (vacant job positions) increase, the number of people unemployed decreases. The isoquants of the Production frontier capture the relationship between job vacancy rate and unemployment. The job finding rate can be described by a quantitative margin (tightness) and a qualitative margin (efficiency). The quantitative margin is the level of market tightness (vacancy – unemployment ratio), while the qualitative margin is related to the efficiency of the matching process. A higher position on the production frontier suggests a tighter labour market as there are fewer vacant positions as compared to people looking for a job. In other words, job seekers are in a relatively strong position compared to firms offering the jobs. A higher production function on the other hand suggests a less efficient labour market since it could suggest that for the same level of unemployment there are more vacant posts in the job market or vice-versa.

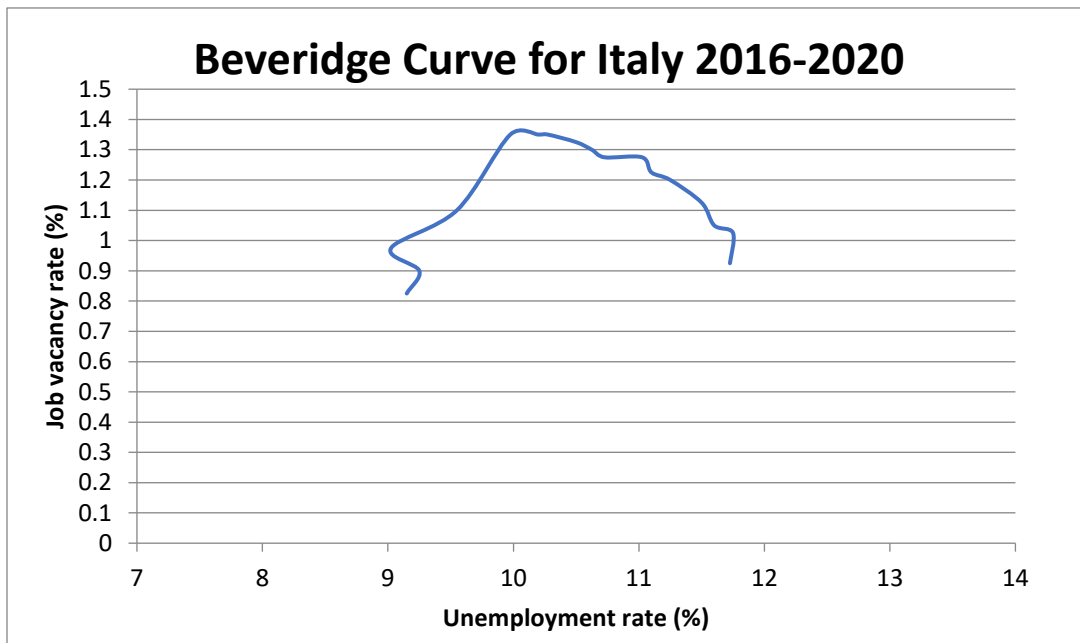
Figure 4 illustrates the main concepts associated with the Beveridge curve. Movements in the vacancy-unemployment space are usually related to labour market tightness and labour market efficiency. Labour market tightness, θ , is defined as the ratio of vacancies to unemployment and captures movements along the curve. Matching efficiency, ε , relates to the number of people that find jobs given a certain level of the vacancy-unemployment ratio (Consolo, AD & Da Silva, 2019).

Figure 4: Changes in labour market tightness (a) and labour market efficiency (b) on the Beveridge Curve



Source: Consolo, AD & Da Silva (2019)

Figure 5: Beveridge Curve for Italy 2016-2020



Data Source: ISTAT

Skill Imbalances and the Presence of Immigrant Workers

According to Foged et al (2022), a large set of manual, low-paid jobs that are hard to mechanize and offshore in sectors such as retail, personal safety, food and housekeeping services have experienced continued employment growth in developed countries. While traditionally young and less educated individuals supplied labour for these jobs, their number and willingness to do these jobs at current wages in rich countries has been rapidly decreasing. Recently arrived, young immigrants are therefore a natural group to address this mismatch, if policies could be designed to facilitate their employment in these jobs.

Further, the quick and efficient matching of new immigrants to these jobs would have two major positive effects. First, faster employment would reduce the fiscal burden of immigrants. Second, employment in jobs experiencing a high level of unfilled vacancies would reduce any competition effects on natives and increase immigrants' complementarity with them, as their entry in the labour market would fill needs not met by native workers (Foged et al, 2022).

Immigration, job mismatches and productivity

Literature has shown that migrants in Italy are complements more than substitutes for low skilled native workers. Many low-skilled workers help boost the productivity of low-skilled native workers. Besides, the presence of foreign workers is essential because it compensates the strong erosion of employment base in several labour market sectors whose demand are unable to be met by native workers even at higher wages.

Literature also speaks of a high level of mismatch between native skills and the demands of the job market especially amongst the youth. This accounts for a high number of 'NEET' population – youth who are not in employment, education or training. Or in other words, youth who are not productive for the economy.

Given that there is a negative relationship between skill mismatch and average productivity and that a higher level of skill matching could improve productivity as compared to the existing equilibrium, it is likely that immigration could have a positive impact on productivity of the economy as a whole since immigrants are likely to be better matched to the demands of the job market. One would however, need to assess their impact with a more rigorous quantitative study.

Conclusion and Scope for Further Research

Chapter 3 discusses the issue of massive skill and job mismatches in the Italian labour market and the presence of Relative shortages of labour. It highlights the presence of the ‘NEET’ population in the Italian labour market- youth who are not in education, employment or training. In other words – it makes a commentary on the fact that the Italian labour market has a considerable presence of young and valuable native labour that is outside the workforce for no advantageous reason except that they are unable to find work suitable to their skill level. The chapter further delves into literature on Job search models, the Beveridge curve and the relationship between immigration and labour productivity. The paper has a significant contribution in that it suggests that immigrant labour is likely to be better matched to jobs in the Italian labour market than the native population and that many vacant job posts in the Italian job market are in fact better suited for the immigrant population (and rejected by the native population). In other words, it is necessary to create jobs more suited for the native population.

Immigration can also be seen as a means of filling in gaps in the labour market caused by labour shortages due to skill mismatches and task preferences of native workers in sectors of the Italian economy. Migration is a potential solution to offset the problem of skill/job mismatches in the Italian labour market as immigrants are likely to be better suited to the jobs rejected by native workers. Given that a better matched labour market at an aggregate level is also a more productive, immigrant labour can be said to improve labour productivity of the economy as a whole.

This paper was originally conceptualised to study that impact of immigrant inflow on filling vacant posts at a regional level in Italy. Given the literature on large scale skill mismatches among native workers despite the presence of available jobs, the intention was to study whether the available jobs in the region are better suited for immigrants than natives. In other words, do immigrants make the labour market more efficient given that their presence is likely to improve the job matching prospects for the population as a whole. For this an Instrumental variable approach was to be used to assess the effect that inward migration to the regions in Italy has had on the vacancy rate using unemployment as the dependent variable and the original distribution of country-of-origin flows of migrants as an instrument. The methodology intended to be used was that of Shift- Share Instruments. With the hope of addressing the endogeneity of the location choices of new immigrants, inflows at an aggregate level are typically combined with the lagged

geographic distribution of immigrants to create an instrument (Altonji and Card, 1991, Card, 2001, Jaegar et al, 2018).

The Model intended to be used is presented below:

Full regression model

$$\ln V_{RT} = \alpha + \tau_t + \beta \ln U_{RT} + \gamma \ln \text{inMig}_{RT} + \varepsilon_{RE}$$

where: V= Vacancies

t= Year

U= Unemployment

inMig= In migration into the region

RE= Region

The Instrumental variable can be described as

$$\ln IV_{ZE} = \sum \text{MIG}_{ct} \cdot \frac{\text{STOCK}_{RC1990}}{\sum \text{STOCK}_{RC1990}}$$

where:

The instrumental variable is $\ln IV_{ZE}$

Flow of migrants from country i to Italy is MIG_{ct}

Stock of migrants in region i in 1990 was STOCK_{RC1990}

The data on Unemployment and regional in-migration comes from ISTAT while the data on vacancies is derived from 'lightcast' a company involved in the collection, processing, and classifying of EU data for online job postings

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Chapter 4

Do Immigrants and Natives Perform Different Tasks at Work? Exploring the Concentration of Tasks and Skills Of Immigrants and Natives In Italy For The Year 2018¹³

Abstract

This study attempts at identifying ‘foreign tasks’ in the Italian context. By foreign tasks, one means tasks and skills that are used largely by the foreign-born workforce in the Italian labour market. The study uses the term task and skill interchangeably. In other words, this is an attempt at understanding if there is a systematic difference in the nature of skill and task requirements and levels that demarcates the foreign-born workforce from the native workforce when they have the same characteristics with regard to Gender, Education level, Region and Age. The study uses Heckman’s sample selection model with skills as the dependent variable to identify skills in the labour market for which being foreign born makes a substantial impact. Since skills possessed are closely related to nature of work, identifying foreign skills would also give us a sense of the nature of work that foreign born workers engage in.

The study finds that even when foreign-born workers have similar characteristics with regard to educational level, gender, place of residence, they are unlikely to compete with Italian workers for jobs. Rather, they occupy very different sectors from an occupational perspective within the Italian labour market. Foreign born workers tend to perform tasks demanding hard physical labour. On the other hand, they tend to be at a disadvantage when it comes to performing tasks requiring a higher level of skills and training. Native workers tend to specialize in tasks of a sedentary nature that require greater use of intellect over physical labour and use of inter-personal skills. Values concerned with self- actualization at work seem to be more relevant for native workers than for foreign born workers. Native workers tend to be at an advantage in performing tasks allowing for a supervisory role, coordination, leadership or a level of autonomy or independence. In other words, while native workers specialize in performing tasks that allow them to supervise or have a degree of autonomy in the way they perform those tasks, foreign born

¹³ The paper was conceptualized and the stata do files for the paper were written by my supervisor Giovanni Marin

workers tend to perform tasks requiring supervision and that allow for less autonomy in the way they are performed.

Keywords: Ageing, Immigration, Labour markets, Skills, Tasks

Introduction

The impact of immigration on native populations has been widely studied in the past. While some studies have covered the impact of immigrants on job prospects of natives (Accetturo & Infante, 2009, Romagnoli, 2017; Venturnini & Vilosio, 2004), others have focused on its impact on native wages (Ottaviano & Peri, 2006; Friedberg & Hunt, 1995; Borjas, Friedman and Katz, 1997; Gavosto, Venturini, Villosio, 1999). This paper is different in the sense that it seeks to understand the impact of immigration on skill/task concentration of immigrants as opposed to native workers employed in the Italian context. By skill/task concentration among foreign born and natives workers one means skills utilized or tasks performed in employment in the labour market rather than skills possessed. In other words, this paper seeks to answer the question, is there a systematic difference in the nature of tasks performed demarcating the foreign born workforce from the native workforce employed in the Italian labour market even when they have similar characteristics with regard to Gender, Age, Educational level and Region? The study uses the terms tasks and skills interchangeably.

The dataset used for analysis in this study is one where ISTAT's Labour force survey data for 2018 is merged with the Task Italia dataset assessing ranking of task related skills based on nature of employment from Italy for the same year. The data is merged by matching the 'isco-08 codes' for the two data sets. By 'isco-08 code', one means the International Labour Organization (ILO) classification of work tasks designated as the International Standard Classification of Occupations (ISCO) in year 2008. By matching the two datasets, we get to understand the nature and extent of skills employed at work by those included in ISTAT's Labour force survey in 2018.

Literature Review

This paper seeks to answer the question - is there a systematic difference in the nature of tasks performed demarcating the foreign-born workforce from the native workforce employed in the Italian labour market even when they have similar characteristics with regard to Gender, Age, Educational level and Region? The study uses the terms tasks and skills interchangeably.

According to Giovanni Peri¹⁴, there are three global driving forces in the increase in migration flows from country of origin to country of destination, which for a large part are from less developed to more developed countries. These are:

1. The wage-income differential
2. The demographic force with differences seen in a large working age population in the sending country and a smaller share of working age population in the receiving country
3. The demand for labour in certain sectors and occupation in the receiving country. With an ageing labour force, women joining the labour force and an educated domestic population, the labour market may see a greater demand for manual and physical occupations (such as childcare, factory workers), but supply is likely to shrink within the local population.

This paper primarily seeks to examine the third of these three driving forces. Peri and Sparber (2009), found that for the United States, immigrants with little educational attainment had a comparative advantage in manual and physical tasks, while natives of similar levels of education had a comparative advantage in communication and language- intensive tasks. Native- and foreign-born workers specialize accordingly. When immigration generates large increases in manual task supply, the relative compensation paid to communication skills rises, thereby rewarding natives who progressively move to language- intensive jobs.

According to Foged et al (2022), a large set of manual, low-paid jobs that are hard to mechanize and offshore in sectors such as retail, personal safety, food and housekeeping services have experienced continued employment growth in developed countries. These need to be performed locally. While traditionally young and less educated native workers supplied labour for these jobs, their number and willingness to do these jobs at current wages in rich countries has been rapidly decreasing. Recently arrived, young immigrants are therefore a natural group to address this mismatch, if policies could be designed to facilitate their employment in these jobs.

Cattaneo, Fioro and Peri (2013) found that native Europeans are more likely to upgrade their occupations to one associated with higher skills and better pay, when a larger number of immigrants enter their labour market. As a consequence of this upward mobility their income

¹⁴ ¹⁴ [\(89\) Giovanni Peri on the Economic Impacts of Global Migration - YouTube](#)

increases or stays the same in response to immigration. They find no evidence of an increased likelihood to leave employment or to leave the region of residence.

Similarly, Ottaviano, & Peri's (2012) research from the United States finds that even when foreign-born workers have similar characteristics with regard to educational level, gender and experience they are still imperfect substitutes for native workers. They cite three reasons for this:

First, immigrants are a selected group from their population having skills, motivations and tastes setting them apart from natives. Second, they have culture-specific skills (e.g., cooking, crafting, soccer playing etc.) as well as limits (knowledge of language or local culture), creating comparative advantages in some jobs and disadvantages in others. Finally, new immigrants tend to work disproportionately in those occupations where foreign-born are already over-represented implying stronger wage competition (substitution) in those jobs compared to other jobs primarily held by natives. They conclude that since services of different occupations are imperfectly substitutable it implies imperfect substitutability between natives and foreign-born even in the same education-experience group.

This study seeks to understand if a similar result as observed by Ottaviano & Peri's (2012) in the United States can be observed in the Italian context. In other words, do differences in skills and tasks performed between immigrants and natives remain when they possess similar characteristics with regard to Gender, Education level, Region and Age. A consistent difference in the nature of skills and tasks employed at work by immigrants and natives is likely to indicate that immigrants and natives occupy different places from an occupational perspective within the Italian labour market.

Tasks and Skills: What They Entail

In this research skills and tasks are used interchangeably. According to the definition provided by OECD (2017), skills refers to both cognitive and non-cognitive abilities and to abilities that are specific to a particular job, occupation or sector (technical skills).

Cognitive skills entail the ability to understand complex ideas, adapt effectively to the environment, learn from experience, engage in various forms of reasoning and overcome obstacles by taking thought. They include literacy, numeracy and the ability to solve abstract problems (Brunello & Wruck, 2021) .

Non-cognitive skills are characteristics across multiple domains (social, emotional, behavioural) not included under cognitive skills, such as work habits, behavioural traits, and physical characteristics (Brunello & Wruck, 2021).

Finally, technical skills are combinations of cognitive and non-cognitive skills used to accomplish specific tasks (Margoli, 2014; Brunello & Wruck, 2021). These combinations could include manual skills. While skills are multi-dimensional, their measurement focuses on selected dimensions, mainly due to data limitations.

Methodology

Data

The dataset used for this study is prepared by merging ISTAT’s Cross sectional labour force survey data for year 2018 with the Task Italia database on tasks and skills from Italy for year 2013.

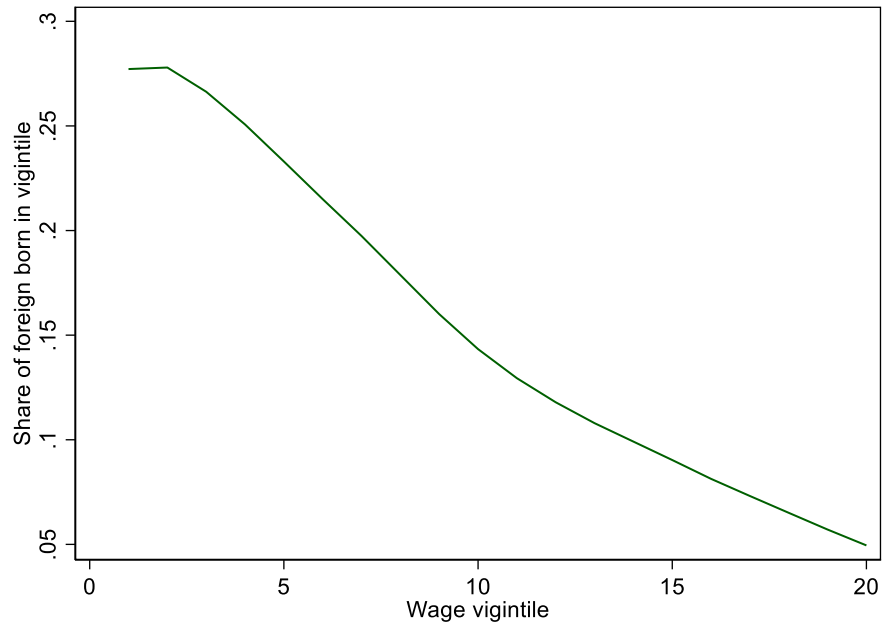
The ISTAT Labour force survey of the National Institute for Statistics provides one with the demographic profile of the Italian labour force including information on the occupations of individuals covered by the survey. In this analysis, quarterly datasets of the cross-sectional labour force survey data for 2018 are appended to get a single larger dataset consisting of all four quarters for the year. The sample size consists of 3,74,790 individuals with Italians being 91.17% of the sample. Table 1 and Graph 1,2 and 3 provide us with summary statistics of the data under consideration.

Table 1: Summary statistics of Italian and foreign born by gender

Place of birth	Number of observations	Percentage	Male percentage	Female percentage
Foreign born	33,100	8.83 %	7.96 %	9.62 %
Italian	341,690	91.17 %	92.04 %	90.38 %

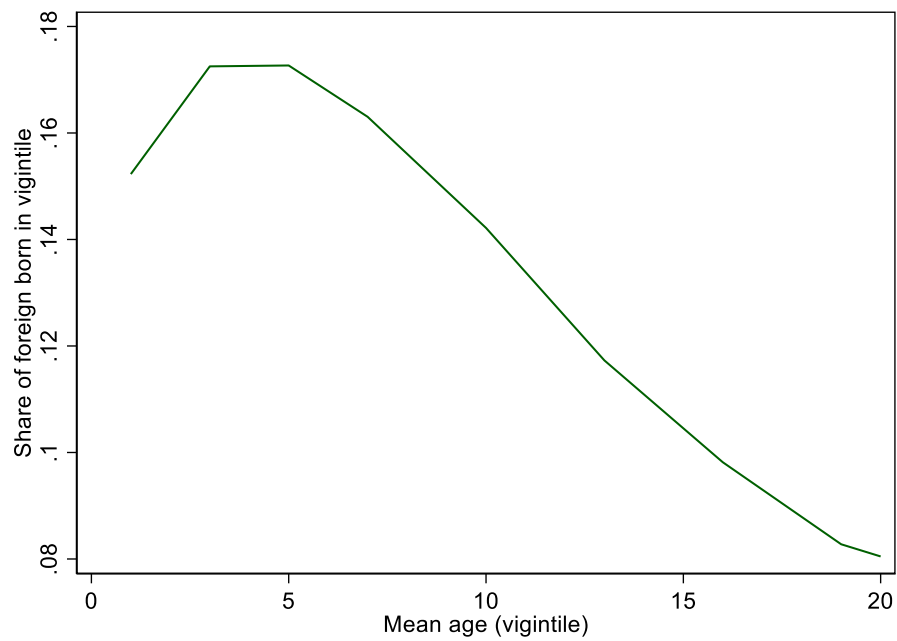
Source: ISTAT Labour Force Survey, 2018

Graph 1: Share of foreign born by wage vigintile



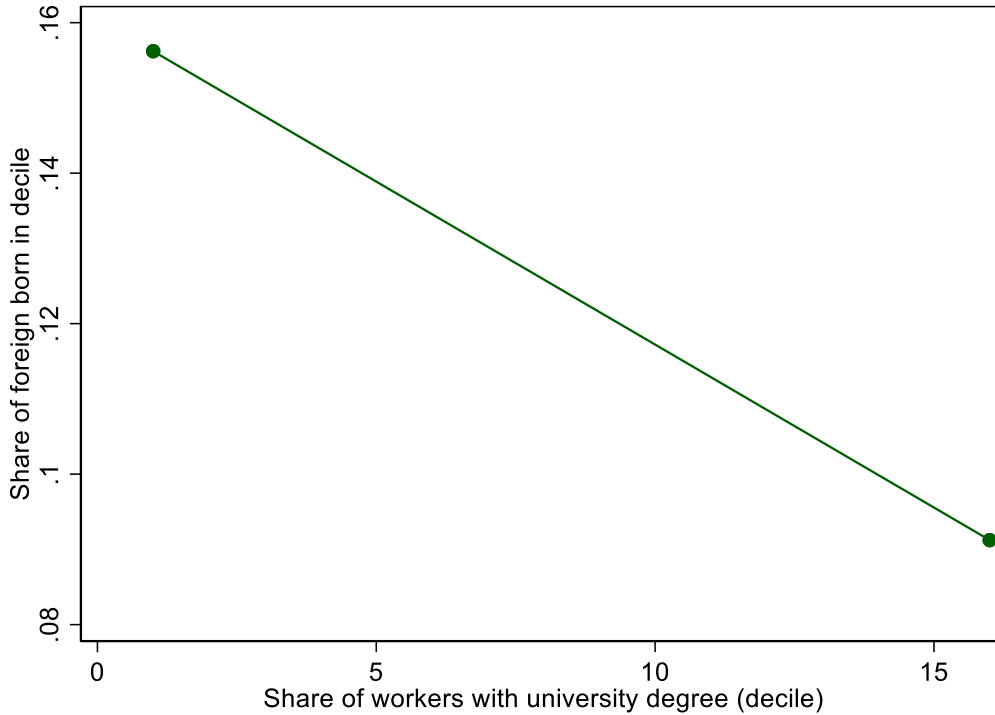
Source: ISTAT Labour Force Survey, 2018

Graph 2: Share of foreign born by mean age



Source: ISTAT Labour Force Survey, 2018

Graph 3: Share of foreign born by university degree attainment



Source: ISTAT Labour Force Survey, 2018

The Task Italia database is a sample survey on professions, carried out jointly by INAPP and ISTAT. The survey describes all the existing professions in the Italian labour market landscape including those operating in private companies, those present in the context of institutions and public structures, and those operating autonomously. The answers are provided directly by workers who carry out the profession under investigation.

The conceptual framework of reference for the survey and the taxonomies of variables used are borrowed from US model of the Occupational Information Network (O*Net). In this survey, workers across professions are asked to rank the use of 'tasks' based on the extent of their use in their profession. By tasks in this survey, one means - Information on the knowledge necessary for the carrying out the profession; Information on the skills necessary for the performance of the profession; Information on the attitudes necessary for the performance of the profession; Values required by the profession and; Information on working conditions amongst others. A large

number of responses in our data have been ranked by the scales of importance and level, from 1 being not important to 5 being of absolute importance. The survey aggregates the extent of performance of a task/skill for each of the professions listed according to the scales provided.

In our analysis we match ISTAT’s Cross sectional Labour force survey data for 2018 with the TASK ITALIA database by matching the ‘isco-08 codes’ for the two data sets. By isco-08 code, one means the International Labour Organization (ILO) classification of work tasks designated as the International Standard Classification of Occupations (ISCO) in year 2008. By matching the two datasets, we get to understand the nature and extent to which a particular task is performed by an individual. Once we match the two datasets, we standardize the scales for each of the skills so that the values fall between 0 and 1. Table 2 provides a list of top 10 and bottom 10 tasks/skills performed at work by foreign born workers for the entire sample by mean comparison when the labour force survey data is matched with the Task Italia database.

Table 2: Top 10 and bottom 10 tasks performed by foreign born workers for entire sample

Top 10 tasks performed by foreign born workers for entire sample		Bottom 10 tasks performed by foreign born workers for entire sample	
Task	Mean	Task	Mean
Extent Flexibility	.7892046	Documenting/Recording Information	-.8502494
Dynamic Flexibility	.7522449	Communicating with Persons Outside Organization	-.8182642
Trunk Strength	.7010976	Letters and Memos	-.8156506
Gross Body Coordination	.6889598	Electronic Mail	-.7988998
Static Strength	.6788287	Written Comprehension	-.7970295
Dynamic Strength	.6667449	Written Expression	-.7759734
Handling and Moving Objects	.6653029	Provide Consultation and advice to Others	-.7758506
Stamina	.6604215	Interacting With Computers	-.7669474
Spend Time Keeping or Regaining Balance	.6541882	Reading Comprehension	-.7662247
Performing General Physical Activities	.6490767	Writing	-.7661693

Our analysis attempts at understanding if there is a consistent difference in the kinds of skills employed or tasks performed by natives and foreign-born workers in the jobs they occupy when they have exactly the same characteristics with regard to age, gender, educational levels and region. To do this, we use the cell matching method where those entries with the same characteristics with regard to gender, age-group (0-14, 15-19, 20-24, 25-29, 30-34, 35-39, 40-44,

44-49, 50-54, 55-59, 60-64, 65-69, 70-74, 75 +), educational level (No education; Elementary school; Middle school; High school; High school Diploma 2-3 years, High school Diploma 4-5 years, University degree) and region (North, Central and South) are matched. Entries that can be matched are given a cell-code to identify the group to which they belong and entries that do not find a match are eliminated from analysis. The cell matching helps us to observe any foreign-bias when the characteristics with regard to gender, age, educational level and region are the same. One would expect that those with similar characteristics would perform similar tasks or employ similar skills at work.

Table 3 uses data in its raw form as well as the case matching method to identify the top 10 occupations for which foreign born workers tend to specialize in the Italian labour market. We borrow trade economics literature's revealed comparative advantage method (Balassa index) to identify these occupations. A Balassa index >1 reveals a comparative advantage. We find that case matching tends to reduce the magnitude of specialization revealed when using raw data.

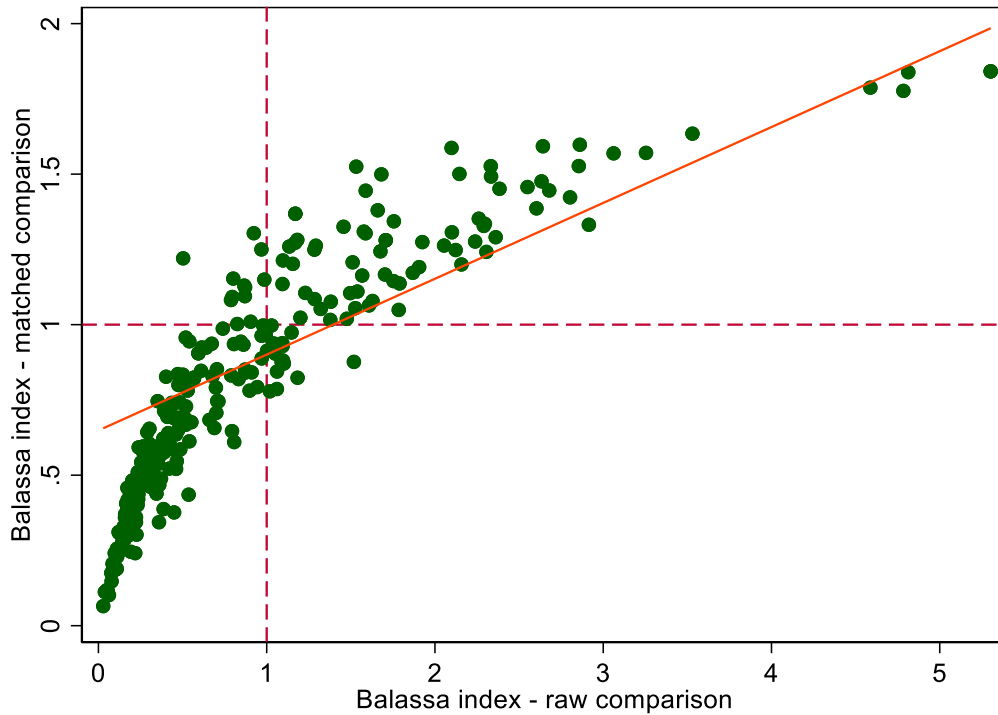
Table 3: Balassa Index of top 10 foreign born specialized occupation by raw data and cell matching method

Occupation	Raw Balassa Index	Occupation	Matched Balassa Index
Domestic, hotel and office cleaners	5.303016	Domestic, hotel and office cleaners	1.841559
Sheet-metal workers	4.813209	Sheet-metal workers	1.838806
Car, taxi and van drivers	4.784028	Car, taxi and van drivers	1.776669
Personal care workers in health service	4.587.951	Plastic products machine operators	1.634491
Miners and quarriers	3.254.351	Other stationary plant and machine	1.597711
Rubber products machine operators	3.061.892	Building frame and related trades	1.592698
Pre-press technicians	2.855.045	Plasterers	1.587149
Chemical products plant and machine	2.802.985	Miners and quarriers	1.570588
Locomotive engine drivers	2.679.274	Rubber products machine operators	1.569166
Building frame and related trades	2.641.678	Pre-press technicians	1.526945

Graph 4 illustrates the correlation between the Balassa index for specialization in occupations for foreign born workers with raw data and the case matching method. We find some cases of divergence (second and third quadrant) where task specialization of foreign-born workers changes when they are matched. This suggests that while in general matching for characteristics

does not impact task specialization between foreign born and native workers, there are some exceptions when it does.

Graph 4



Source: ISTAT Labour Force Survey, 2018

Model

Once the cells are matched, we run our regression model with skills/tasks as the dependent variable to identify if there are any noticeable differences between foreign-born and natives in possession of a skill even when they share the same cell code, i.e. have the same characteristics. In our data we do not observe the skills of the workers. We observe the occupations from which we can infer the skills of those employed in the occupation with the help of the Task Italia database.

While our data can tell us about the differences in skills between native- and foreign-born workers who are participating in the labour force and are employed, we do not have information about the differences between the two groups among those who are not in the workforce or do not work. That is to say, while there is likely to be a difference in the skills of those outside the

workforce, the data is unable to account for the difference between the skills of Italians and foreign-born workers in that group.

A simple OLS estimate will give us the information on difference between foreign born workers and Italian born workers on the use of a skill at work for those currently employed. In other words, a simple OLS gives us the following information on the expected value of a skill:

$$E(\text{Skill}_j|\text{FB},\text{X},\text{Em})-E(\text{Skill}_j|\text{IT},\text{X},\text{Em})= E(\text{Skill}_j|\text{FB},\text{X},\text{Em}) \cdot \frac{\text{Em}^{\text{FB}}}{\text{Em}^{\text{FB}}+\text{NEm}^{\text{FB}}} - E(\text{Skill}_j|\text{IT},\text{X},\text{Em}) \cdot \frac{\text{Em}^{\text{IT}}}{\text{Em}^{\text{IT}}+\text{NEm}^{\text{IT}}}$$

where:

Skill_j is the skill under consideration

FB is Foreign born

X is the observable under consideration

Em is being employed

Em^{FB} is employed foreign born

NEm^{FB} is not employed foreign born

Em^{IT} is employed Italian.

NEm^{IT} is not employed Italian

However, the bias that remains is the skills of those outside the workforce. It is biased because the gap in this group is not random and depends on the latent skills possessed. We observe the actual labour market outcome from the above but we do not observe all skills from all potential occupations. That is to say, when we focus only the above, we cannot observe what is driving people from outside the workforce to the workforce or vice versa. For instance, it is likely that while those in one group given their level of skills are unable to find work, the other despite having skills that can help them find a place in the labour market choose to stay away. There is a strong likelihood that the skills of Italian and foreign-born workers currently outside the workforce are very different. Further, job search models tell us that unemployment and its duration are not negligible and looking for a job is a dynamic sequential process with individuals having to decide when to stop this process under conditions of uncertainty and imperfect information (Faggian, 2014).

The bias in our model can be described as:

$$E(\text{Skill}_j | \text{FB}, X, \text{NEm}) \cdot \frac{\text{NEm}^{\text{FB}}}{\text{Em}^{\text{FB}} + \text{NEm}^{\text{FB}}} - E(\text{Skill}_j | \text{IT}, X, \text{NEm}) \cdot \frac{\text{NEm}^{\text{IT}}}{\text{Em}^{\text{IT}} + \text{NEm}^{\text{IT}}}$$

To account for this bias, we use the Heckman selection model in our analysis. It is important to account for this bias in our opinion because the reasons for staying away from the workforce is likely to be different for natives and foreign-born workers.

The Heckman method is used to correct selection bias from non-randomly selected samples. Selection bias is the bias introduced by the selection of individuals, groups, or data for analysis in such a way that proper randomization is not achieved, thereby ensuring that the sample obtained is not representative of the population intended to be analyzed. As a result there is likely to be a violation of the Gauss–Markov assumption of zero correlation between independent variables and the error term¹⁵. The correction of selection bias is achieved by explicitly modelling the individual sampling probability of each observation (the so-called selection equation) together with the conditional expectation of the dependent variable (the so-called outcome equation)¹⁶.

The Heckman model comes in two stages. In the first stage, we formulate a model based on the the probability of being employed. The specification for this relationship is a probit regression of the form:

$$\text{Pr}(\text{Emp}=1) = \phi(X'\beta + Z'\gamma + \delta \text{FB}') \quad (1)$$

where: X is our cell match group to which our observation belongs

Z is the number of family members (identification restriction observation)

FB is the dummy variable for being foreign born.

In the second stage, we correct for self-selection by incorporating a transformation of these predicted individual probabilities as an additional explanatory variable. The Heckman error

¹⁵Amemiya, Takeshi (1985). *Advanced Econometrics*. Cambridge: Harvard University Press. pp. 366–368. ISBN 0-674-005600.

¹⁶Achen, Christopher H. (1986). *"Estimating Treatment Effects in Quasi-Experiments : The Case of Censored Data"*. *The Statistical Analysis of Quasi-Experiments*. Berkeley: University of California Press. pp. 97–137. [ISBN 0-520-04723-0](#).

correction (λ Inverted Mills Ratio, IMR) obtained from (1) is introduced in the assimilation equation which results in (II):

$$y = \alpha FB + X'\theta + \lambda IMR \quad (2)$$

where: y represents task under consideration

The coefficient we get for **FB** is an aggregation of the coefficients we get for the different cell match groups for a particular skill using the number of foreign born in each cell match as the weight.

Results

The analysis considers only results that are significant at ** $p < 0.01$ with $|\beta| > 0.25$ as threshold to consider being foreign having an impact on the performance of task/skill. We present two tables below one listing skills where foreign born workers are specialized into (+ve β) and the other where native workers tend to be at an advantage (-ve β).

Table 4: Foreign skills

Task	Beta	Scale
Spatial Orientation	.3086218	Importance
Manual Dexterity	.418107	Importance
Finger Dexterity	.3940127	Importance
Multilimb Coordination	.4089409	Importance
Speed of Limb Movement	.44456	Importance
Static Strength	.5066319	Importance
Explosive Strength	.4571625	Importance
Dynamic Strength	.517285	Importance
Trunk Strength	.5384589	Importance
Stamina	.5255702	Importance
Extent Flexibility	.6119436	Importance
Dynamic Flexibility	.5901501	Importance
Gross Body Coordination	.5259075	Importance
Gross Body Equilibrium	.5063013	Importance
Speech Recognition	.256251	Importance
Problem Sensitivity	.2701241	Level
Inductive Reasoning	.3509059	Level
Information Ordering	.431852	Level
Category Flexibility	.429671	Level
Number Facility	.3803134	Level
Memorization	.4600345	Level
Speed of Closure	.2807091	Level
Flexibility of Closure	.4376609	Level
Perceptual Speed	.3612303	Level
Performing General Physical Activities	.4792663	Importance
Handling and Moving Objects	.4448834	Importance
Exposed to Minor Burns, Cuts, Bites, or Stings	.2701241	Context and abilities
Spend Time Standing	.3509059	Context and abilities
Spend Time Climbing Ladders, Scaffolds, or Poles	.431852	Context and abilities
Spend Time Walking and Running	.429671	Context and abilities
Spend Time Kneeling, Crouching, Stooping, or Crawling	.3803134	Context and abilities
Spend Time Keeping or Regaining Balance	.4600345	Context and abilities
Spend Time Using Your Hands to Handle, Control, or Feel Objects, Tools, or Controls	.2807091	Context and abilities
Spend Time Bending or Twisting the Body	.4376609	Context and abilities
Spend Time Making Repetitive Motions	.3612303	Context and abilities

** $p < 0.01$ with $|\beta| > 0.25$

Table 5: Non- foreign skills (Native skills)

Task	Beta	Scale
Administration and Management	-.4534463	Importance
Clerical	-.5089613	Importance
Economics and Accounting	-.4220559	Importance
Sales and Marketing	-.3070665	Importance
Personnel and Human Resources	-.4094464	Importance
Computers and Electronics	-.4440877	Importance
Mathematics	-.4775161	Importance
Education and Training	-.2654371	Importance
English Language	-.4225136	Importance
Foreign Language	-.3855134	Importance
Law and Government	-.461612	Importance
Telecommunications	-.3095765	Importance
Communications and Media	-.3436166	Importance
Reading Comprehension	-.5443714	Importance
Active Listening	-.3430551	Importance
Writing	-.5345111	Importance
Speaking	-.5098181	Importance
Mathematics	-.5051345	Importance
Science	-.3627705	Importance
Critical Thinking	-.4355697	Importance
Active Learning	-.4321847	Importance
Learning Strategies	-.4109286	Importance
Monitoring	-.4275524	Importance
Understanding others	-.4110241	Importance
Adaptability/Flexibility	-.5071591	Importance
Instructing	-.421728	Importance
Complex Problem Solving	-.4149905	Importance
Operations Analysis	-.3705732	Importance
Technology Design	-.2416867	Importance
Systems Analysis	-.2578347	Importance
Systems Evaluation	-.2807761	Importance
Judgment and Decision Making	-.4590544	Importance
Management of Financial Resources	-.3682684	Importance
Management of Personnel Resources	-.4323376	Level
Speaking	-.6271126	Level
Mathematics	-.3790261	Importance
Listening	-.28505	Importance
Written Comprehension	-.5775671	Importance
Oral Expression	-.4571191	Importance

** p<0.01 with $|\beta| > 0.25$

Table 6: Non- foreign skills (Native skills)

Task	Beta	Scale
Category Flexibility	-.3274859	Importance
Written Expression	-.5426869	Importance
Ideation	-.4374581	Importance
Originality	-.4203516	Importance
Information Ordering	-.3089614	Importance
Mathematical Reasoning	-.4255374	Importance
Number Facility	-.4705874	Importance
Memorization	-.3819019	Importance
Speed of Closure	-.5200429	Importance
Flexibility of Closure	-.4464643	Importance
Perceptual Speed	-.3914121	Importance
Selective Attention	-.2662452	Importance
Speech Clarity	-.3766439	Level
Deductive Reasoning	-.4529758	Level
Visualization	-.5586333	Level
Selective Attention	-.461952	Level
Time Sharing	-.4453504	Level
Arm-Hand Steadiness	-.4784905	Level
Job satisfaction	-.4569206	Context and abilities
Constantly occupied with work	-.4380099	Context and abilities
Good working environment	-.5424667	Context and abilities
Giving directions to others	-.524129	Context and abilities
Appreciation at work	-.4450187	Context and abilities
Work autonomy	-.4163601	Context and abilities
Initiative	-.4475363	Context and abilities
Leadership	-.4338575	Context and abilities
Cooperation	-.3601597	Context and abilities
Innovation	-.3696461	Context and abilities

** $p < 0.01$ with $|\beta| > 0.25$

Table 7: Non- foreign skills (Native skills)

Task	Beta	Scale
Evaluating Information to Determine Compliance with Standards	-.5494616	Importance
Analyzing Data or Information	-.516732	Importance
Making Decisions and Solving Problems	-.5259779	Importance
Thinking Creatively	-.3432412	Importance
Updating and Using Relevant Knowledge	-.5673729	Importance
Developing Objectives and Strategies	-.466822	Importance
Scheduling Work and Activities	-.3627546	Importance
Organizing, Planning, and Prioritizing Work	-.2960645	Importance
Controlling Machines and Processes	-.5568305	Importance
Drafting, Laying Out, and Specifying Technical Devices, Parts, and Equipment	-.3955275	Importance
Documenting/Recording Information	-.6384192	Importance
Interpreting the Meaning of Information for Others	-.5007037	Importance
Analytical Thinking	-.4756867	Context and abilities
Getting Information	-.4814034	Importance
Identifying Objects, Actions, and Events	-.4853491	Importance
Judging the Qualities of Things, Services, or People	-.475733	Importance
Processing Information	-.5981726	Importance

** p<0.01 with $|\beta| > 0.25$

Table 8: Non- foreign skills (Native skills)

Task	Beta	Scale
Selling or Influencing Others	-.2633136	Importance
Resolving Conflicts and Negotiating with Others	-.4494599	Importance
Performing for or Working Directly with the Public	-.3255806	Importance
Coordinating the Work and Activities of Others	-.4857815	Importance
Developing and Building Teams	-.4952492	Importance
Training and Teaching Others	-.3834578	Importance
Guiding, Directing, and Motivating Subordinates	-.4181832	Importance
Coaching and Developing Others	-.3965991	Importance
Provide Consultation and Advice to Others	-.5823311	Importance
Performing Administrative Activities	-.4373799	Importance
Staffing Organizational Units	-.3041991	Importance
Monitoring and Controlling Resources	-.3459865	Importance
Face-to-Face Discussions	-.4502943	Context and abilities
Public Speaking	-.3183964	Context and abilities
Telephone	-.5082599	Context and abilities
Electronic Mail	-.590546	Context and abilities
Letters and Memos	-.6018173	Context and abilities
Interaction with external clients or with public	-.5398275	Context and abilities
Coordinating the Work and Activities of Others	-.4738263	Context and abilities
Deal With Unpleasant or Angry People	-.4381297	Context and abilities
Spend Time Sitting	-.4529758	Context and abilities
Impact of Decisions on Co-workers or Company Results	-.5586333	Context and abilities
Frequency of Decision Making	-.461952	Context and abilities
Freedom to Make Decisions	-.4453504	Context and abilities
Structured versus Unstructured Work	-.4784905	Context and abilities

** $p < 0.01$ with $|\beta| > 0.25$

Analysis and Discussion

This study uses Heckman selection model with tasks/skills as the dependent variable to identify skills in the labour market for which being foreign born makes a substantial impact. In other words, this paper seeks to answer the question, is there a systematic difference in skill concentration and levels that demarcates the foreign-born workforce from the native workforce employed in the Italian labour market even when they have similar characteristics with regard to Gender, Age, Educational level and Region? By skill concentration among foreigners and natives, we mean skills utilized in employment in the labour market rather than skills possessed.

Our results show that there are many skills for which being foreign born is positively biased. In general, it appears that foreign born workers tend to perform tasks demanding hard physical labour which may even require the individual to endure hazardous work conditions (Spend Time Climbing Ladders, Scaffolds, or Poles; Spend Time Kneeling, Crouching, Stooping; Exposed to Minor Burns, Cuts, Bites, or Stings etc.). On the other hand, foreign born workers tend to be at a disadvantage when it comes to performing tasks requiring a higher level of training such as the use of computers or jobs that have comfortable work settings (sitting etc.). The tasks listed under context and abilities reveal that native workers tend to specialize in tasks of a sedentary nature that require greater use of intellect over physical labour (Example: Analyzing Data or Information, Updating and Using Relevant Knowledge, Face-to-Face Discussions; Telephone; Letters and Memos; Electronic Mail). Further, native workers tend to specialize in tasks requiring greater level of inter-personal skills and human relations training (Example: Developing and Building Teams; Coordinating the Work and Activities of Others; Guiding, Directing, and Motivating Subordinates etc.).

Values concerned with self- actualisation at work (Job satisfaction; Good working environment; Appreciation at work) seem to be more relevant for native workers than for foreign born workers. In other words, native workers tend to have an advantage in demanding work environments that increase their levels of self-efficacy.

Further, native workers tend to be at an advantage in performing tasks allowing for a supervisory role, coordination, leadership or a level of autonomy or independence (Making Decisions and Solving Problems; Thinking Creatively; Giving directions to others; Cooperation; Initiative, Leadership). In other words, while native workers are at an advantage in performing

tasks that allow them to supervise or have a degree of autonomy in the way they perform tasks, foreign born workers tend to perform tasks requiring supervision and that allow for less autonomy in the way they are performed.

It is therefore unlikely that foreign born workers and Italian workers in general compete for jobs. Rather, it seems they occupy very different sectors from an occupational perspective within the Italian labour market. Further, this research also proves that Ottaviano, & Peri's (2006) observation from the United States that even when foreign-born workers have similar characteristics with regard to educational level, gender and experience they are still imperfect substitutes for native workers is hold true even in the Italian context.

Limitations and future research

This study reveals that even when foreign-born workers have similar characteristics with regard to educational level, gender, place of residence and age group they are still imperfect substitutes for native workers since they occupy very different sectors from an occupational perspective within the Italian labour market. However, there are many different national groups within foreign-born workers with many groups specializing in particular tasks. There is a need to study the relative skill strengths of national groups that constitute foreign born workers. Further, this study focuses only on the year 2018. Since immigration has occurred over the years since the 1970s, it would be interesting to look at how the skill concentration of foreign-born workers have transformed over the years. Finally, since the job prospects and location of industries varies throughout Italy, one has to map the skills of foreign-born workers by region and sector to get a greater understanding of the specificities of skills performed by them.

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Appendix 1 (Chapter 4)

Analysis of Data Merging ISTAT's Labour force survey data 2018 with O*net data

The dataset used for analysis in this study is one where ISTAT's Labour force survey data for 2018 is merged with O*net data assessing ranking of task related skills based on nature of employment from the United States for the same year. The data is merged by matching the 'isco-08 codes' for the two data sets. By 'isco-08 code', one means the International Labour Organization (ILO) classification of work tasks designated as the International Standard Classification of Occupations (ISCO) in year 2008. By matching the two datasets, we get to understand the nature and extent of skills employed at work by those included in ISTAT's Labour force survey in 2018.

The dataset used for this study is prepared by merging ISTAT's Cross sectional labour force survey data for year 2018 with the O*NET database on tasks and skills from the United States.

ISTAT Labour force survey provides one with the demographic profile of the Italian labour force. In this analysis, quarterly datasets of the cross-sectional labour force survey data for 2018 are appended to get a single larger dataset consisting of all four quarters for the year. Table 1 and Graph 1,2,3 and 4 in the appendix provide us with summary statistics of the data under consideration.

The O*NET¹⁷ database contains a rich set of variables that describe work and worker characteristics, including skill requirements. The skill types are assessed under three scales: Importance (IM), Context (CK), Level (LV). Skill types include: Abilities (IM, LV), Interests (IM, LV), Knowledge (IM, LV), Skills (IM, LV), Work activities (IM, LV), Work context (VK), Work style (IM), Work values (IM, LV) *. The level and importance scales each have a different range of possible scores. Ratings on Level were collected on a 0-7 scale, and ratings on Importance were collected on a 1-5 scale.

Methodology

¹⁷ [O*NET OnLine Help: Scales, Ratings, and Standardized Scores \(ononline.org\)](https://ononline.org/)

In our analysis we match ISTAT's Cross sectional Labour force survey data for 2018 with the O*NET database by matching the 'isco-08 codes' for the two data sets. By isco-08 code, one means the International Labour Organization (ILO) classification of work tasks designated as the International Standard Classification of Occupations (ISCO) in year 2008. By matching the two datasets, we get to understand the nature and extent to which a particular skill is utilized by an individual. In our analysis, we attempt at understanding if there is a consistent difference in the kinds of skills employed by natives and immigrants in the jobs they occupy.

In this research the Ordinary Least squares (OLS) approach is used to identify if there are O*Net tasks and skills for which there is a noticeable foreign-bias. The research is based on the assumption that skills required for a task in the United States is exactly the same as the skills required for a task in Italy. By skills in this context, one means - abilities, interests, knowledge, skills, work activities and work context in a job. We get information on nature and extent of skills required

The analysis only considers data for jobs listed under the 'isco code' in which both Italian and foreign workers are involved, i.e., jobs for which there is no entry for either Italian or foreign worker gets eliminated from the analysis.

There are two models that we considered in this analysis:

Model 1: Without cell match

In the first level of analysis, a simple OLS model without controls is used to identify foreign bias in the importance, level or context of a particular skill. The regression is modeled as:

$$Y_i = \beta FB_i$$

where Y_i is the skill under consideration and FB_i is the dummy variable for foreign born. This model gives us the raw impact of being foreign born without any controls. We run this model across skills to identify those skills with a clear foreign-bias.

Model 2: With the cell matching method, those entries with the same characteristics with regard to gender, age-group (0-14, 15-19, 20-24, 25-29, 30-34, 35-39, 40-44, 44-49, 50-54, 55-59, 60-64, 65-69, 70-74, 75 +), educational level (No education; Elementary school; Middle school; High

school; High school Diploma 2-3 years, High school Diploma 4-5 years, University degree) and region (North, Central and South) are matched. Entries that can be matched are given a cell-code to identify the group to which they belong and entries that do not find a match are eliminated from analysis. The cell matching helps us to observe any foreign-bias when the characteristics with regard to gender, age, educational level and region are the same. One would expect that those with similar characteristics would share similar skills as well.

Once the cells are matched an OLS regression is run with skills as the dependent variable to identify if there are any noticeable differences between foreign-born and natives in possession of a skill even when they share the same cell code, i.e. have the same characteristics. The regression is modeled as:

$$Y_i = \beta FB_i$$

where FB_i is the dummy variable for foreign born. This OLS model is used to identify the 'foreign-bias' in the specific O*NET item. The coefficient we get for FB_i is an aggregation of the coefficients we get for the different cell match groups for a particular skill using the number of foreign born in each cell match as the weight.

Section 5: Results

The analysis for both Model 1 and Model 2 considers only results that are significant at ** $p < 0.01$ with $\beta > 0.25$ as threshold to consider being foreign having an impact on the skill. The tables for Model 1 and Model 2 provide a sample of skills for which a foreign bias (negative or positive was observed). We find that moving from Model 1 to Model 2 where the cells are matched, reduces the magnitude of coefficients. This is likely to indicate that matching characteristics of Age, Gender, Region and Educational level reduces the extent of differences in skill employed at work, but there still remain considerable differences between natives and foreign born individuals in the nature of skills employed at work nonetheless. We find that in general

Scale	Skill	Model 1	Model 2
Importance	Abilities - Multilimb coordination	.4276902	.3609723
Level	Abilities - Multilimb coordination	.620822	.3648161

Importance	Abilities - Static strength	.4123372	.3843214
Level	Abilities - Static strength	.6695082	.4010545
Importance	Work activities - Controlling machines and processes	.4741572	.3770525
Level	Work activities - Controlling machines and processes	.6500764	.348236
Importance	Work activities - Interacting with computers	-.4559405	-.3388826
Level	Work activities - Interacting with computers	-.4344583	-.2775446
Context	Work context - Electronic Mail	-.6052819	-.341727
Context	Work context - Deal With External Customers	-.293025	-.3142898
Context	Work context - Indoors, Environmentally Controlled	-.3720398	-.3351757
Context	Work context - Exposed to Contaminants	.3595066	.3595066
Context	Work context - Cramped Work Space, Awkward Positions	.3049201	.3049201
Context	Work context - Exposed to Hazardous Conditions	.2691236	.2691236
Context	Work context - Exposed to Minor Burns, Cuts, Bites, or Stings	.3152696	.3152696
Context	Work context - Spend Time Sitting	-.3153756	-.3153756

Context	Work context - Spend Time Standing	.3087159	.3087159
Context	Work context - Spend Time Walking and Running	.4603043	.4603043
Context	Work context - Wear Common Protective or Safety Equipment such as Safety Shoes,	.4063568	4063568

** p<0.01

Analysis and Discussion

This study uses simple linear regression models with skills as the dependent variable to identify skills in the labour market for which being foreign born makes a substantial impact. In other words, this paper seeks to answer the question, is there a systematic difference in skill concentration and levels that demarcates the foreign-born workforce from the native workforce employed in the Italian labour market even when they have similar characteristics with regard to Gender, Age, Educational level and Region? By skill concentration among foreigners and natives, we mean skills utilized in employment in the labour market rather than skills possessed.

Our results show that there are many skills for which being foreign born is positively biased. In general, it appears that foreign born workers tend to use skills required in jobs demanding hard physical labour which may even require the individual to endure hazardous work conditions. On the other hand, foreign born workers tend to be at a disadvantage when it comes to jobs requiring a higher level of skills and training such as the use of computers or jobs that have comfortable work settings (indoors, sitting etc.). This shows that foreign born workers and Italian workers in general do not compete for jobs. Rather, they occupy very different sectors from an occupational perspective within the Italian labour market. Further, this research also proves that Ottaviano, & Peri's (2006) observation from the United States that even when foreign-born workers have similar characteristics with regard to educational level, gender and experience they are still imperfect substitutes for native workers is hold true even in the Italian context.

This also explains growth of immigrant labour at a time of general slowdown of Italian economy.

Chapter 5: Final Conclusions and future scope of research

This thesis has been an attempt at exploring the impact of immigrant labour inflow on labour market segmentation in Italy. In particular, it explores the potential of immigrant labour to resolve challenges caused by the demographic transition and shrinking workforce in Italy as well as relative shortages of labour and skill mismatches at an aggregate level in the labour market. The question is of relevance because: Italy on the one hand has the largest share of ageing population amongst European countries with 22.6% aged 65 and older¹⁸, while on the other, it faces the challenge of high youth unemployment with 32% of population between 15 and 25 being out of the work force in 2018¹⁹. Further, the country has witnessed a spike in immigrant labour with foreign residents in Italy amounting to as much as 11 % of the total population in 2021.

While Chapter 2 set the context within which immigration in the 21st century has occurred both from a global and Italian perspective. It explored the concept of the demographic transition that has occurred in the Western industrialized and the growing challenge of a heavy old-age dependency ratio in Western nations which affects growth rates. It explored the possibility of immigration being a potential solution to address the growing shortage of working age population and a slump in productivity. Finally, the chapter discussed the impact of immigration on the Italian labour market

Chapter 3 explored the possible effect that the entrance of immigrants into the Italian labour force is likely to have on filling vacant posts in the Italian labour market. The research is primarily concerned with the possible impact that aggregate mismatches is likely to have on the Italian labour market. Finally in chapter 3, I explored using regression analysis the differences in the nature of tasks performed by natives and immigrants. The Chapter has found that since immigrants tend to engage in jobs that native workers refuse and there is a direct link between greater skill mismatches

¹⁸ [https://ec.europa.eu/eurostat/statistics-explained/index.php?title=File:Population_age_structure_by_major_age_groups,_2008_and_2018_\(%25_of_the_total_population\).png](https://ec.europa.eu/eurostat/statistics-explained/index.php?title=File:Population_age_structure_by_major_age_groups,_2008_and_2018_(%25_of_the_total_population).png)

¹⁹ [https://ec.europa.eu/eurostat/statistics-explained/index.php?title=File:Youth_unemployment_figures,_2008-2018_\(%25\)_T1.png](https://ec.europa.eu/eurostat/statistics-explained/index.php?title=File:Youth_unemployment_figures,_2008-2018_(%25)_T1.png)

and productivity at an aggregate level, immigration is likely to have a positive impact on the productivity of the economy and labour market.

The three chapters together come to describe a labour market that is ageing, segmented and afflicted by large-scale mismatches and youth unemployment. Taken together, my analysis in chapter 3 clearly shows that there is a difference in the nature of tasks performed by foreign-born and native workers in Italy. Indeed, this points to the possibility that immigrant labour could be seen as a potential means to resolve the aforementioned concerns of an ageing workforce and large-scale skill mismatches commented on Chapter 2 and 3. Further, the contribution of immigrant labour could be seen as a likely means to avoid a slump in growth rates of the economy and thereby maintain the standard of living.