Three Essays on the Italian Labour Market: The Measurement of Unemployment The Determinants of Registration at the Public Employment Agencies and The Gap between Subjective and Objective Position of Immigrants

IN PARTIAL FULFILLMENT OF THE REQUIREMENTS
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Ilham Ksebi

Department of Economics (DIEC)
University of Genoa
Supervisor: Marco Guerrazzi
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0.1 Acknowledgments

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0.2 Foreword

Despite some signs of economic recovery in the Eurozone, the Italian economy continues to struggle. The high unemployment rates accompanying the recent waves of immigration to Italy warns that the Italian economic situation should be taken seriously. Therefore, the presence of accurate indicators of the labour market performance has become an urgent necessity to enable policymakers to take appropriate procedures.

This dissertation deals with two distinct issues in the Italian labour market. One the one hand, it investigates the phenomenon of the existence of two diverse data sources on unemployment that continuously declares uneven unemployment rates. Those sources for unemployment indicators are the official statistics that conduct by the National Bureau of Statistics (ISTAT), and the administrative records that collect by public employment agencies (Centri per l'Impiego - CPIs). Indeed, various evidence was found on the heterogeneity between the two measures of unemployment (cf. Barbieri et al. 2000; Anastasia and Disar'o, 2005; Guerrazzi, 2012). One the other hand, since immigrant workers, report relatively higher levels of perceived income and job satisfaction than local workers, even if their situation in the labour market, tends to be worse than that of natives (Amit and Chachashvili-Bolotin, 2018). This dissertation provides an investigation of the mentioned phenomenon in the Italian context.

In the first chapter of this dissertation, I will present a study by the title *Measuring unemployment by means of Official Data and Administrative Records: Empirical and Theoretical Perspectives*, that is co-authored by Marco Guerrazzi, and forthcoming in Quaderni di Economia del Lavoro (ISSN: 0390-105X). The mentioned chapter addresses the measurement of unemployment in the Italian regional context. In particular, it retrieves macro data on the Tuscany region to compare the picture of unemployment that emerges by exploring the official statistics and administrative records over the period after the burst of the Great Recession. Besides, it provides a way to reconcile the two measures of unemployment and develop a model that offers a rationale for the coexistence of official and registered job seekers. The empirical results confirm that registered unemployment is higher, more persistent and more concentrated on women than official unemployment. Whereas, the theoretical part allows clarifying some features of observed results, such as increasing the diversity between unemployment indicators during the years of the recession.

The second chapter is by the title *The Registration in Italian Public Employment Agencies: Motivations and Determinants* examines further the issue of measuring unemployment by using self-reported questions in the Italian Labour Force Survey. Accordingly, it matches individuals that declared to have an active registration in employment agencies to their current working status according to the official statistics. Results suggest that only half of the registrants belong to individuals considered unemployed in the official standards. Moreover, this chapter presents some reasons that lie behind the variety be-

tween official and registered unemployment, in particular, the determinants of the decision to register in public employment agencies. It concludes that eligibility for unemployment benefits and participation in vocational training programs substantially affect unemployments decision to register. I wrote part of this paper while I was invited to the Paris School of Economics by Camille Hemet, and it benefited by her useful comments on the primary stages of the empirical design.

Finally, the third chapter is titled *The Gap between Subjective and Objective Position of Immigrants in the Italian Labour Market* uses the Italian Labour force Survey to estimates the gap between subjective work perceptions and objective work status, breaking it down by various dimensions. Results indicate that female immigrants and immigrants from developing countries report higher income and job satisfaction than natives when considering the actual job position. I conducted this paper during my visiting at the Paris School of Economics, and it benefited from the guidance of Andrew Clark.

Chapter 1

Measuring Unemployment by means of Official Data and Administrative Records: Empirical and Theoretical Perspectives

1.1 Overview

This paper addresses the measurement of unemployment in the Italian regional context. Specifically, retrieving data from Tuscany, we compare the picture of unemployment that emerges by exploring official data and administrative records over the period after the burst of the Great Recession. Consistently with previous findings, we find that registered unemployment is higher, more persistent and more concentrated on women than its official measure. Nevertheless, we show that the cyclical behaviour of registered job seekers is similar to the one of official job seekers. Moreover, we provide a way to reconcile the two measures of unemployment. Thereafter, we develop a model that provides a rationale for the coexistence of official and registered job seekers and we explore how it reacts to productivity shocks and its policy implications. Finally, we offer some insights about the desirability of an integrated use of these data.[1]

[1]This chapter is coauthored by Marco Guerrazzi.

1.2 Introduction

From an empirical point of view, in Italy - like in many others developed countries - there are two alternative ways to measure unemployment. On the one hand, the official perspective recommends to retrieve data from the National Bureau of Statistics (ISTAT). Following guidelines defined at the international level by the International Labour Organization (ILO), ISTAT measures unemployment by asking every week to a representative sample of Italian families about their employment status and their labour market attitudes. Specifically, official unemployed people are those that at the time of the interview state: a) to be jobless; b) to have done concrete job search activities during the last four weeks; and c) to be willing to accept a job within two weeks (cf. Battistin et al. 2006). Making inference out of the sample of people that fulfill those requirements, ISTAT provides the 'official' number of job seekers and the harmonized rate of unemployment, i.e., the ratio between people actively looking for a job and the corresponding labour force, at the national, regional and provincial level.

On the other hand, Italian regional administrations handle public employment agencies (Centri per l'Impiego - CPIs) headquartered in each province where jobless individuals can decide - if they want to do it - to register their prompt willingness to work. Consequently, each CPI collects 'administrative' records on jobless people - sometimes called counting customers - that are looking for jobs all around its area of competence no matter their eligibility to claim unemployment benefits. Indeed, in Italy the number of registered unemployed does not coincide and is much wider than the claimant count, i.e., the number of people entitled to receive the job seeker allowance.

At least in principle, the two mentioned statistical sources should catch about the same phenomenon. However, the available empirical evidence reveals that the measure of unemployment provided by ISTAT is quite different from the one retrieved by provincial employment agencies. Specifically, unemployment recorded by CPIs is usually larger than the corresponding official figure (cf. Anastasia and Disarò, 2005; Guerrazzi, 2012). Moreover, the distance observed between the two measures of unemployment goes well beyond the sampling errors inexorably attached to harmonized unemployment (cf. Barbieri et al. 2000).[2]

The factors usually called in to explain the observed discrepancies between official and registered unemployment in Italy are twofold. First, inaccuracies in the updating process of provincial records of job seekers tend to inflate registered unemployment. For instance,

[2]Even if the observed distances are often smaller, the higher incidence of registered unemployment with respect to official - or harmonized - unemployment is a recurring feature that characterizes a number of developed countries such as Germany, Austria, France, Ireland, Finland and the Netherlands (cf. Melis and Lüdeke, 2006; Konle-Seidl and Lüdeke, 2017). By contrast, given the low willingness to register prevailing in rural areas, in China registered unemployment falls short what is perceived as the actual level of unemployment (cf. Knight and Xue, 2006; Wang and Sun, 2014).

it may happen that a worker who starts her own business remains for a while in the provincial registers or it is also possible to find the same person in the archives of two or more CPIs. In addition, provincial records have the tendency to include people that for official statistics are employed or out of the labour force; indeed, workers with minimal jobs as well as people whose job search intensity is unconstructive - or unfulfilling - are not cancelled and often retain their position in the provincial files. The former group collects the so-called claimants in employment, the latter the economically inactive - or unconstructive - searchers. Concretely, claimants in employment are registered job seekers who have worked more than one hour in temporary or subsidized jobs during the week before the interview and therefore are classified as employed according to official criteria. Moreover, unconstructive searchers are registered job seekers whose registration is older than one month and since then they didn't perform any other concrete search activity.[3] When they are not eligible to claim unemployment benefits, it is very likely that these individuals have decided to register in order to claim the set of perquisites that local governments usually recognize to registered job seekers for the mere fact of finding themselves in the provincial files. For example, registered job seekers are exempt from medical bills and they are entitled to receive other benefits for accessing to public utilities such as local transportation and child care. As we will show below, the presence of those two groups of individuals as well as the optionality of registration are able to affect the cyclical properties of registered unemployment.

Considering the distortions recalled above and stressing its administrative dependence, some authors questioned the usefulness of resorting to registered unemployment for the economic analysis of labour market trends (e.g. Fenwick and Denman, 1996). Nonetheless, some scholars argue in favour of an integration among official and administrative statistics on unemployment. For instance, trying to asses 'true' unemployment in Austria, Biffil (1997) maintains that official statistics may well underestimate the labour resources which may be activated by an improvement of economic conditions and the extent of poverty and social discontent. Moreover, exploring UK data where - like in the US and Australia - registered unemployment and the claimant count coincide, Thomas (1998) argues that a reconciliation of official and registered unemployment is necessary to understand the actual dynamics of the labour market. In addition, addressing the evidence of Baltic countries and Montenegro, Hazans (2008) claims that these two statistical sources are both necessary for a comprehensive analysis of the evolution of the employment situation in a given region.

Following the latter research line, in this paper we retrieve data from Tuscany and we compare the pictures of unemployment that emerges by using official data and administrative records over the decade 2008-2017, i.e., the years after the burst of the Great

[3]Among unconstructive searchers we may find individuals in rest unemployment, i.e., workers that have been fired in a given industry that are available to return to work in that industry, and that industry only (cf. Alvarez and Shimer, 2011).

Recession. Consistently with the discrepancies recalled above, we find that registered unemployment is definitely higher, more persistent and more concentrated on women with respect to its official measure. However, despite these heterogeneities, we show that the stock of registered job seekers conveys a cyclical information about the labour market performance that goes in the same direction of the one indicated by official unemployment no matter the non-compulsory character of registration and the simultaneous presence of claimants in employment and unconstructive searchers. Moreover, exploring the corresponding age and gender distributions, we provide a straightforward way to reconcile registered unemployment to ILO unemployment.

Thereafter, we develop a search model in which individuals that fulfill the criteria of official unemployment may coexist with claimants in employment and unconstructive searchers and we explore how that theoretical framework reacts to productivity shocks and we assess its policy implications. To the best of our knowledge, this paper is the first contribution that tries to address official and registered unemployment from an empirical and a theoretical perspective. In addition, aiming at improving the existing statistics on employment hardship, we offer some critical insights about the desirability of an integrated use of these data.

The paper is arranged as follows. Section 2 reports evidence on official and registered unemployment by focusing on their cyclical properties and making an effort to reconcile the two series. Section 3 develops a search model with unconstructive searchers and claimants in employment. Section 4 offers some insight on how to amend and integrate official and administrative data on unemployment. Finally, section 5 concludes.

1.3 Official data versus administrative records

In this section we present some data on unemployment in Tuscany. Being placed in the central part of the country, Tuscany can be taken as a representative area between the relatively low-unemployment Italian regions of the North and high-unemployment regions of the South. Moreover, according to Barbieri et al. (2000), Tuscany is among the regions in which more than 80% of the individuals surveyed for the calculation of official job seekers are actually registered in the archives of the competent CPIs. That percentage of overlapping between official and registered job seekers places Tuscany among the Italian regions in which the updating problems and inconsistencies of provincial files mentioned in the introduction appear less severe.

The observation period covers with quarterly figures the years immediately after the burst of the Great Recession. Specifically, consistently with actual data availability, our observation window is opened in the last quarter of 2008 and is closed in the final quarter of 2017. Within this time span, Tuscany hosted - on average - about 6.7% of the national

active population.[4]

Available data on employment hardship have some limitations that are worth making clear from the beginning. First, official figures on Italian regional unemployment do not allow to distinguish between long-term and short-term unemployment and are silent about the educational achievements on the involved individuals. Moreover, although theoretically possible, disclosed data on registered unemployment do not provide information to detect claimants in employment and unconstructive searchers. Consequently, aware of its variegated composition, we will treat registered unemployment as a unique series like the one of official unemployment.

1.3.1 Time series analysis

The time path of official (on the left) and registered (on the right) job seekers is illustrated in the two panels of figure 1.1.

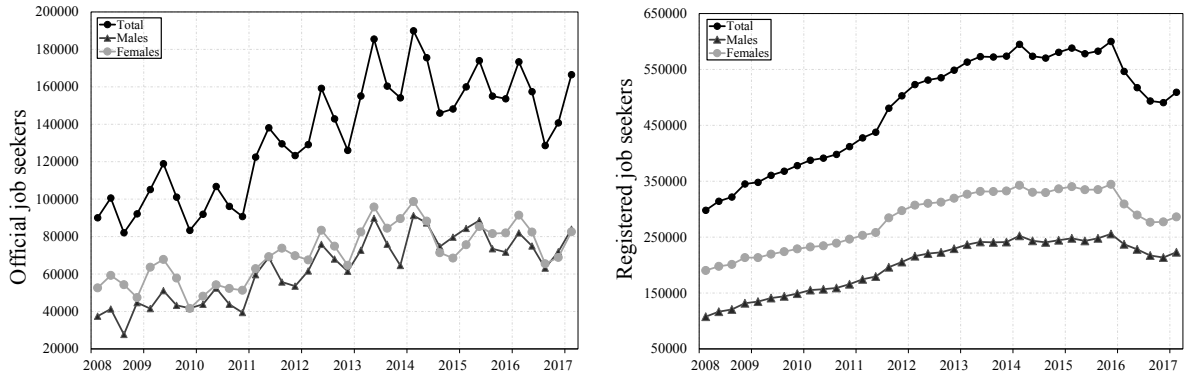

Figure 1.1: Official and registered job seekers

The two diagrams show some regularities that can be summarized as follows. First, all over the concerned period, both series mirror a sharp worsening of labour market prospects for Tuscan workers. Indeed, with the exception of the final part of the observation period, the number of official job seekers as well as the registered one display a definite tendency to rise over time. In this regard, it is worth noting that from 2008 to 2014 the number of official and registered job seekers doubled their respective magnitudes. Second, the number of job seekers registered by Tuscan CPIs is much higher than the number of ILO job seekers estimated by ISTAT. Specifically, the number of registered job seekers is, on average, 3.64 times the figure of official job seekers.[5] Third, while the official measure of

[4]Official (administrative) data can be retrieved by logging at the web page http://dati.istat.it (http://www.regione.toscana.it/osservatorio-regionale-mercato-del-lavoro/consultazione-dati-sil).

[5]Taking the official figures of the labour force in Tuscany, the harmonized unemployment rate has been, on average, 7.88% over the period of analysis whereas the ratio between the stock of registered job seekers and the active population reached 28.51%. In calibrated models, high levels of the unemployment

unemployment displays fluctuations around an increasing trend, the registered reference shows a steady rise with the exception of few quarters only. Obviously, these patterns suggest that registered unemployment is more persistent than official unemployment. In details, taking logs of the two series, the AR(1) coefficient is 0.822 for the official job seekers and 0.986 for the registered ones. Furthermore, the gender gap, i.e., the proportion of female among unemployed people, is higher and more stable for registered job seekers than for official job seekers. Concretely, the percentage of female is, on average, equal to 53.16% within official unemployment and 58.90% for registered unemployment.[6]

The different degree of persistence displayed by the two series raises the issue of how the stocks of official and registered job seekers may react to exogenous shocks (cf. Gil-Alana and Jiang, 2013). In that direction, the two diagrams in figure 1.2 plot the impulse response functions to a normalized one-unit shock in the standard deviation of each series taken in logs (details on the required VAR estimations are available from the authors upon request).

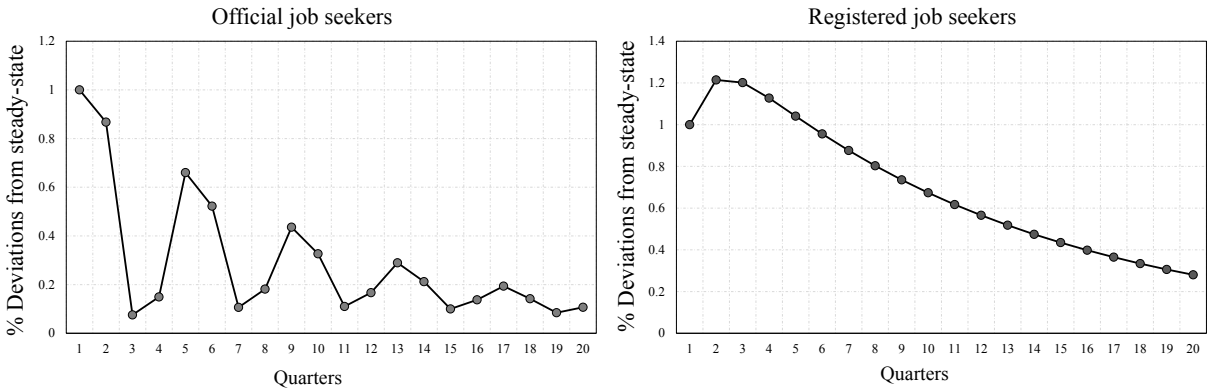

Figure 1.2: Impulse response functions for official and registered job seekers

Even if the two series display the properties of a mean-reversion process, the two panels of figure 1.2 highlight some important differences. Specifically, the diagram on the LHS shows that immediately after the shock official job seekers tend to come back to their equilibrium level by means of dumped oscillations. However, after twenty quarters the series is still 0.10 percentage points above its steady-state. By contrast, the diagram on the RHS shows that registered job seekers overshoot for four quarters the initial value of the shock, then the series starts to converge slowly and monotonically to its equilibrium level. Indeed, after twenty quarters registered job seekers are 0.28 percentage points above their

rate such as the one conveyed by registered job seekers are usually rationalized through the accounting of unconstructive searchers (e.g. Zanetti, 2007)

[6]Among registered job seekers we observe a quite continuous decrease in the percentage of female individuals. By contrast, among official job seekers the percentage of women is almost constant over time.

steady-state level. This finding corroborates the lower persistence of official unemployment conveyed by the different AR(1) coefficients and suggest some insights about the theory that should be used to frame the two measures of unemployment. Indeed, leaving the behaviour of prices and wages to future investigations, ILO unemployment appears more consistent with the natural rate hypothesis according to which unemployment has an inherent tendency to revert towards some special reference (cf. Friedman, 1968). By contrast, registered unemployment seems to replicate the typical features stressed by the hysteresis approach. According to that latter view, shocks that hit the labour market tend to have long-lasting effects so that unemployment can differ from its 'natural' rate for a long time (cf. Blanchard and Summers, 1986).

Looking at the evolution of official and registered job seekers over time, an additional interesting feature of the data illustrated in figure 1.1 is that ratio between the latter and the former series displays a fluctuating path without any prominent trend which is mainly ascribable to the cyclical component of official unemployment. Specifically, as shown in figure 1.3, that multiplier - with few exceptions - has been quite stable all over the period. Indeed, it varied from a minimum values of 3.03 achieved in the first quarter of 2010 to a maximum of 4.54 tipped in the third quarter of 2011.

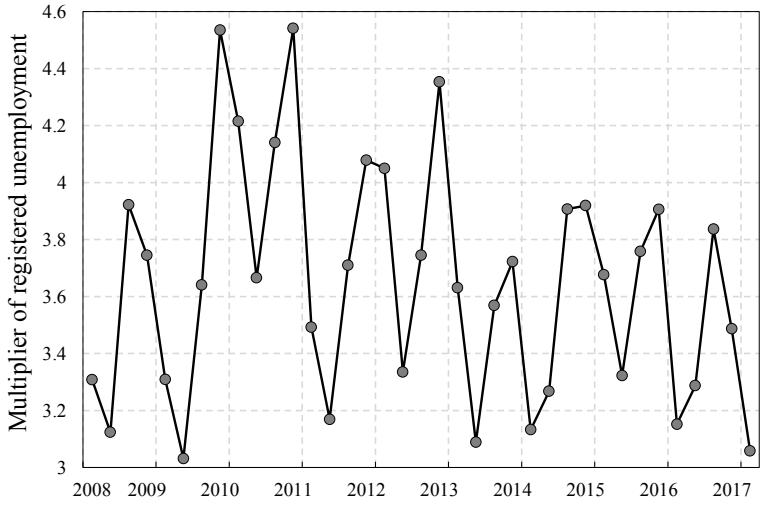

Figure 1.3: The multiplier of registered unemployment

In the next section, we will show that the magnitude of the multiplier illustrated in figure 1.3 may depend on the path of labour productivity as well as on the institutional framework that rules the functioning of the labour market.

1.3.2 Official and registered job seekers

While the higher incidence of females among unemployed individuals is a structural feature of Italian unemployment (cf. Bertola and Garibaldi, 2003), the other peculiarities of the two series illustrated in figure 1.1 deserve a deeper analysis. For this purpose, the two

diagrams of figure 1.4 plot the results of a linear regression between the number of official and registered job seekers (on the left) and the corresponding logarithmic trend deviations (on the right).[7]

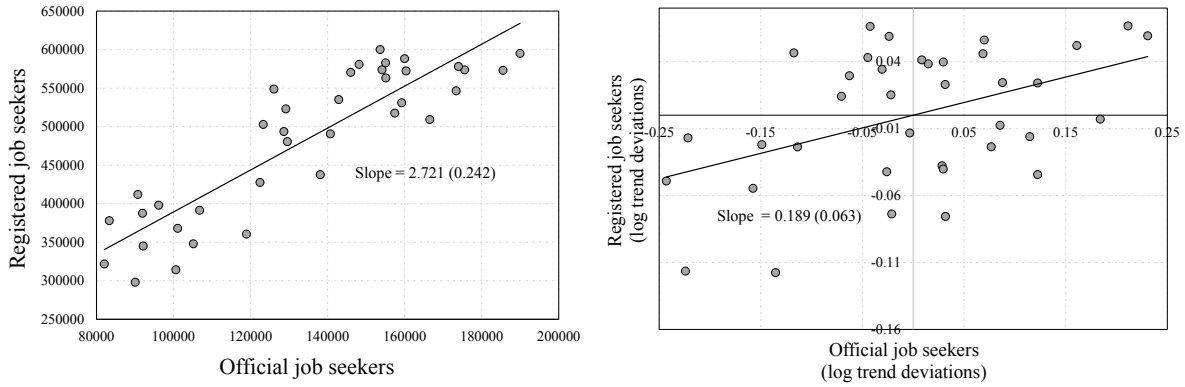

Figure 1.4: Official versus registered job seekers

The left-hand-side panel of figure 1.4 shows that there is a statistically significant positive relation between the number of official and registered job seekers. Indeed, the slope of the regression line between the two series - including the presence of a constant - is 2.72 with a standard error of 0.242 whereas the corresponding value of the R^2 is equal to 78.22%.[8]

The strength of such a relation may rise the reasonable suspicion that those results may be the upshot of a spurious regression. Admittedly, the Great Recession can be considered as the confounding factor that pushed upward ILO and registered unemployment in a joint manner. However, the regression results in the RHS of figure 1.4 reveal the existence of a deeper relation between official and registered job seekers. Specifically, removing the upward trend from the two series, the positive link between the number of official and registered job seekers still survives although with a lower coefficient of determination. Indeed, the slope of the regression line between the two series becomes 0.189 with a standard error of 0.063 and a R^2 of 20.15%.

The interpretation for this result is twofold. On the one hand, registered unemployment conveys a cyclical information about the performance of the labour market that goes in the same direction on the one indicated by official unemployment. In other words, when ILO unemployment is above or below its trend the same holds for registered unemployment. On the other hand, the presence of unconstructive searchers among registered job seekers and the optionality of registration are likely to move official and registered unemployment in opposite directions by providing a rationale for the lower significance of

[7]Here and in the remainder of the paper, trends are taken with the HP filter by setting the smoothing parameter at the conventional quarterly reference of $1,600$.

[8]Qualitatively similar figures are found by Kyriacou et al. (2009) and Litra (2017), respectively in Cyprus and Romania where, however, registered unemployment falls short of official unemployment.

the positive relation between the logarithmic trend deviations plotted in the second panel of figure 1.4. For instance, when official job seekers registered to CPIs quit their search activities they may well remain and enlarge provincial archives but lose their position in the sample of officially unemployed persons. By contrast, it is also possible that lost-standing unconstructive searchers who have lost the benefits of registration begin some different searching activities that allow them to be surveyed as official job seekers. Furthermore, upward movements in ILO job seekers can happen without any movement in registered unemployment as the additional job seekers may decide to avoid registration.

1.3.3 Employment and official/registered job seekers

A confirmation of the cyclical signal conveyed by registered unemployment can be obtained by exploring how employment variations are affected by movements in official and registered job seekers (cf. Thomas, 1998). In this direction, the two panels of figure 1.5 plot the results of two distinct linear regressions: the former between the logarithmic trend deviations of employment and official job seekers (on the left), the latter between the logarithmic trend deviations of employment and registered job seekers (on the right). In both cases, the measure of employment is given by the harmonized one.

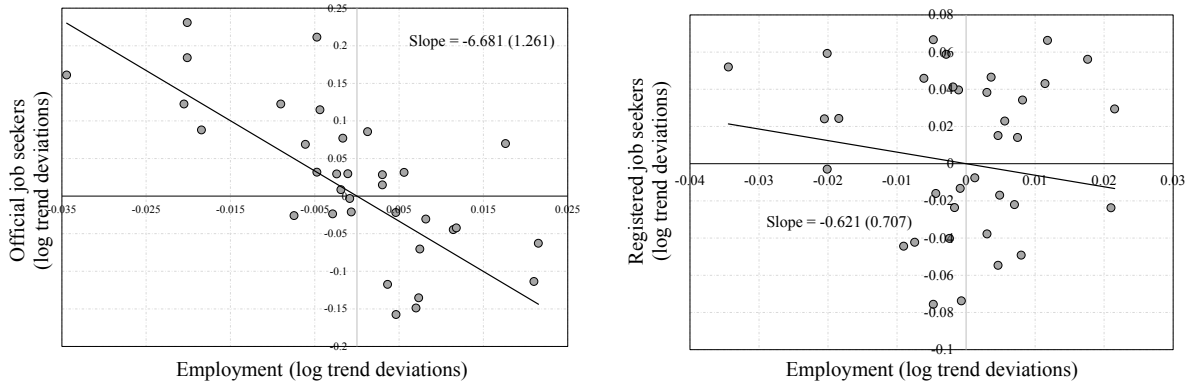

Figure 1.5: Employment versus official and registered job seekers

The two panels of figure 1.5 reveal that official and registered unemployment are both negatively correlated to employment. Specifically, the logarithmic trend deviations of official unemployment move in the opposite direction of the corresponding measure of employment in a significant manner whereas the coefficient that links the logarithmic trend deviations of registered unemployment to employment trend deviation is negative but not statistically significant. The missing significance of the anti-cyclical pattern of registered job seekers can be ascribed to the presence of claimants in employment within the former group as well as to the already mentioned optionality of registration. For instance, upward movements of registered job seekers can go together with a similar movement in ILO employment when those registered individuals obtain minimal jobs

that allow to retain their positions in the provincial archives. Moreover, drops in official employment can happen without any enlargement of registered job seekers when the people who lose their job decide to postpone or avoid registration.

1.3.4 Official job seekers and inflows in registered unemployment

As we stated in the introduction, an issue with Italian registered unemployment is the updating of provincial archives of job seekers (cf. Oliveri, 2009). Consequently, some interesting information may be obtained by analyzing the relation between official unemployment and the inflows in registered unemployment that - by definition - are not affected by updating problems.[9] For this purpose, the two diagrams of figure 1.6 plot the results of a linear regression between the number of official job seekers and the inflows of new job seekers in the provincial archives (on the left) and the corresponding logarithmic trend deviations (on the right).

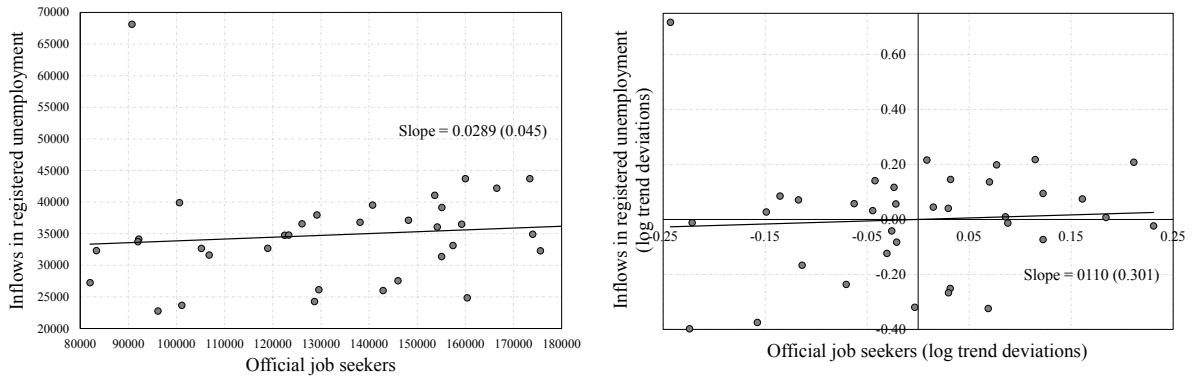

Figure 1.6: Official job seekers versus inflows in registered unemployment

The diagrams in figure 1.6 show that relation between official job seekers and the flow of new registrations is negligible. Indeed, in both cases, i.e., in the estimation in levels as well as in the one run on logarithmic trend deviations, the hypothesis of no correlation cannot be rejected. In other words, the inflows on registered unemployment are about the same no matter the level of ILO unemployment. This result, together with the ones in figures 1.4 and 5, reveals that the stock of registered job seekers retains a cyclical information that is missing from the inflows in registered unemployment.

[9]Inflows into official unemployment are not available at the regional level so that it is not possible to make a comparison between the inflows into the two categories of unemployment.

1.3.5 Age and gender distributions

The different composition of official and registered job seekers becomes apparent when we consider age and gender distributions (cf. Konle-Seidl and Lüdeke, 2017). Unfortunately, existing data on that matter are not homogeneous in the sense that for official and registered job seekers are gathered in different age groups.[10] In order to overcome this problem, we assume a uniform distribution of individuals across each age group and we rearrange the categories of official job seekers consistently with the registered ones. In the four panels of figure 1.7, we plot the corresponding histograms for official (on the left) and registered job seekers (on the right) by having regard for the initial (above) and the final (below) calendar year of our empirical analysis.

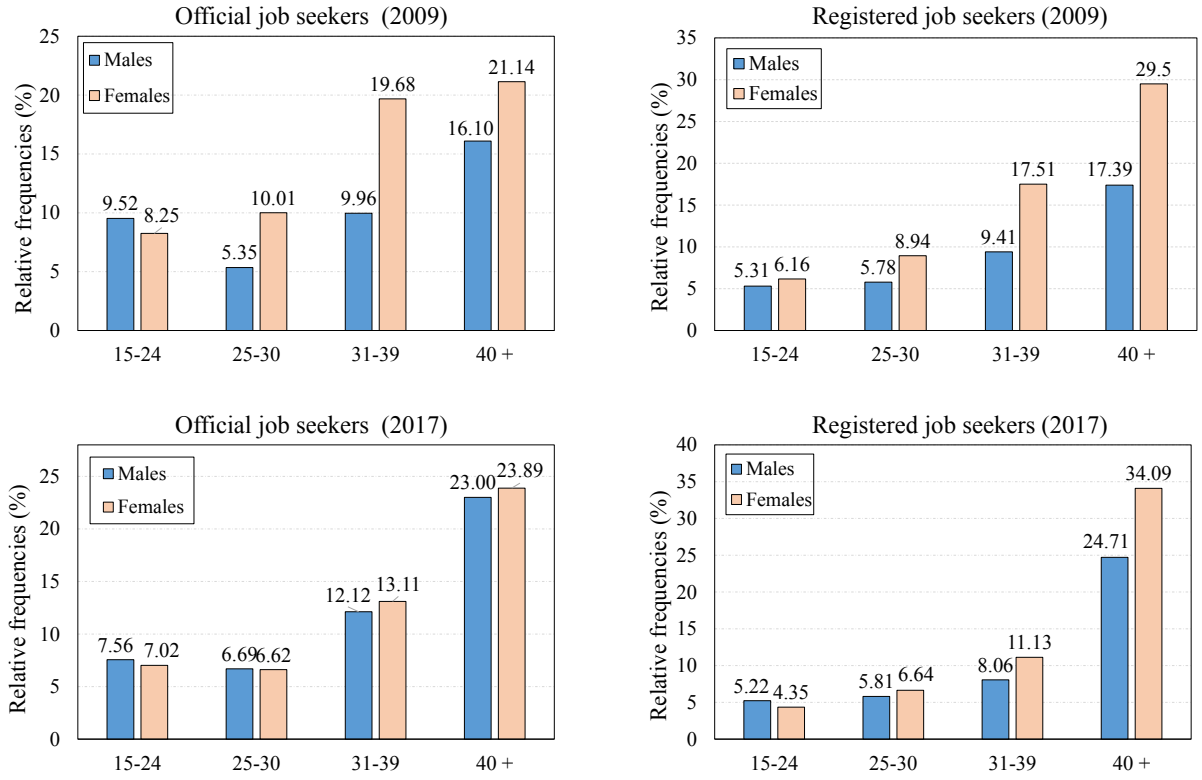

Figure 1.7: Age and gender distribution of official unemployment and registered job seekers

The information conveyed by the four diagrams in figure 1.7 show that the two measures of unemployment display some common traits as well as some heterogeneities. First, starting from middle-aged individuals, the concentration of unemployment tends to increase no matter the series taken into account. However, the relative frequency of registered job seekers has a firm bias in the last age group. Second, the monotonicity of the path of official unemployment is broken by youth individuals, whose incidence is much

[10] Official job seekers are gathered by ISTAT in the following age groups: $15-24$, $25-34$, $35-44$, $45-54$ and 55 and more.

higher with respect to registered unemployment. Third, considering the initial and the final years of observation, we see that both measures of unemployment become more concentrated on females and on individuals aged 40 years or more. Moreover, once again in both series, we observe severe drops among female individuals aged $31-39$ years probably driven by a discouraging effect triggered by the crisis (cf. Addabbo et al., 2011).

The higher incidence of older individuals among registered job seekers corroborates the fact that within this group there are people whose search activity is carried out at low levels. Indeed, in the literature there exists some evidence according to which search intensity is negatively correlated with the age of the involved individuals (cf. Zacher, 2013; Cohen et al., 2011).

1.3.6 Reconciling data

Age and gender distributions can be used to make an attempt to reconciling official and registered unemployment (cf. Kyriacou et al., 2009). Specifically, distinguishing between male and female individuals, the figures of the age distributions of registered job seekers can be exploited to find out a set of weights that brings back registered unemployment to ILO unemployment for each gender and for each age group. This task can be done by estimating a series of constrained least-square models such as

$$\min_{\eta_{i,g}} \sum_{t=2008.4}^{2017.4} \left(U_{H,t} - \eta_{i,g} U_{R,i,t}\right)^2 \qquad i = \{15-24, 25-30, 31-39, 40+\} \qquad g = \{\text{males, females}\}$$

$$\text{s.to}$$

$$0 < \eta_{i,g} < 1$$

where $U_{R,t}$ ($U_{H,t}$) are registered (official) job seekers at time t, whereas i is an index for the age groups indicated in figure 1.7.

The problem above reveals that for each gender and for each age group we are looking for a coefficient $\eta_{i,g}$ constrained between 0 and 1 that minimizes the quadratic distance between official unemployed and a corresponding weighted measure of registered unemployment. It is well known that the solution of constrained-least-squares problems is usually very sensitive to the choice of upper and lower bounds for those coefficients (cf. Ping, 2015). However, taking different bounds for $\eta_{i,g}$ such as the relative frequencies of official unemployment over the measure of the registered one leads only to minor differences in the results.[11]

The estimated values of $\eta_{i,g}$ are shown in table 1.1 (standard errors in parenthesis).

[11] Estimations are run with MAT LAB. Details are available from the authors upon request.

Age group	Males	Females
$15-24$	$0.5431^{***}(0.0126)$	$0.5100^{***}(0.0146)$
$25-30$	$0.2814^{***}(0.0043)$	$0.2631^{***}(0.0059)$
$31-39$	$0.3462^{***}(0.0070)$	$0.2928^{***}(0.0054\ )$
$40+$	$0.2579^{***}(0.0035)$	$0.1861^{***}(\ 0.0032)$

$^{*}p < 0.05,\ ^{*}*p < 0.01,\ ^{*}**p < 0.001$

Table 1.1: Estimated weights for reconciling registered unemployment

The coefficients collected in table 1.1 are very significant. Their importance rely on the fact that - everything else being equal - $1-\eta_{i,g}$ may provide an estimation of the incidence of claimants in employment and unconstructive job seekers in the series of registered job seekers. In details, considering the different age groups and the gender partition, the estimated values of $\eta_{i,g}$ display remarkable divergencies. First, especially for females, the weight of claimants in employment and unconstructive job seekers appears particularly high for individuals aged 40 years or more. Usually, older women are more likely to be in very non-standard employment relationships than males and this can boost the presence of claimants in employment among these individuals. Generally speaking, the incidence of workers with minimal jobs is very sustained among older workers since they are more likely to possess outdated skills or limited information with respect to younger individuals. Sometimes older workers obtain atypical work arrangements, such as working less than 10 hours a week, as a form of pre-retirement and this allows those workers to remain registered in the CPIs records (cf. Riso, 2010).

By contrast, the incidence of claimants in employment and unconstructive job seekers among young individuals is definitely lower. A rationale for that pattern can be found in the eligibility criteria of unemployment benefits that usually rule out people without former work experiences (cf. Crepaldi and Lodovici, 2014). Therefore, younger workers may be lead to declare themselves as unemployed fulfilling the criteria of official statistics, but - at the same time - they may have little incentives to register in the provincial files since they cannot claim unemployment benefits. Furthermore, even if the presence of unconstructive searchers should be negligible among the younger, the retrieved values of $\eta_{i,g}$ may be the signal of a significant share of claimants in employment. Indeed, there is evidence that after the years of crisis atypical employment rose among young individuals, especially for women. In details, employment for people among 15 and 24 years old displayed a tendency to be concentrated in part-time work and the shadow economy (cf. Allmendinger et al. 2013; Riedmann and Fischer, 2014).

In addition, low values of $\eta_{i,g}$ are found even for middle age groups, i.e., for individuals aged $25-30$ and $31-39$ years. Actually, people in those age groups tend to be involved in casual and seasonal work in the sectors of construction, tourism and education. In this regards, Law 160/1988 extended unemployment insurance to cover this type of workers by

introducing ad hoc unemployment benefits with reduced requirements. Seasonal workers who are registered as unemployed enjoy regular support year after year and usually they do not search for alternatives. Being classified as unemployed workers not seeking a job, those workers are exempted from activation measures (cf. Galarneau, 2005).

The results in table 1.1 can be used to plot the reconciled series vis-à-vis official unemployment for both genders.

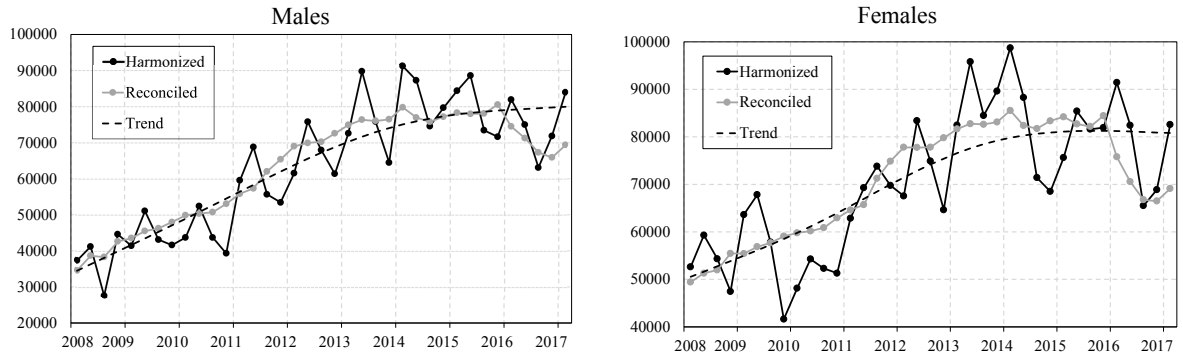

Figure 1.8: Reconciled series and the trend of official job seekers

The two panels of figure 1.8 track the series of official job seekers, its trend and the reconciled series obtained from the procedure described above. Interestingly, the two reconciled series follow a path similar to the corresponding long-run trends of official unemployment. Consequently, given the figures of registered unemployment, the weights in table 1.1 can be used to forecast the expected value of official unemployment. However, there remains some small systematic differences which may be due - at least in part - to structural and procedural changes regarding the provision of unemployment benefits. Specifically, in the third quarter of 2010, 2011, 2013, 2014 and 2015, the reconciled series is comparatively higher than the official series. With the exception of 2009 for males and 2012 for females, this seems to be due to the presence of seasonal employment in the sectors of tourism and catering. As we said above, irrespective of whether or not they are seeking work during the winter months when they are temporarily out of their jobs, those individuals may decide to register in order to claim the job seekers allowance.

1.4 A theoretical model with unconstructive searchers and claimants in employment

Following the lines traced out by Coe and Snower (1997), in this section we develop a static search model in which official and registered unemployment may coexist in equilibrium. For this purpose, we assume that the economy is populated by $L > 0$ risk-neutral individuals that inelastically supply their labour services. Among these not-employed

individuals, a fraction θ, with $0 < \theta < 1$, searches constructively for a job while the remaining $1-\theta$ are labeled as unconstructive searchers. The unconstructive searchers are not willing to work and if they are hired they produce no output. In other words, unconstructive searchers are merely pretending to search in order to qualify for registration and - in this way - gain the unemployment benefit or the perquisites and entitlements recognized to registered job seekers. For sake of simplicity, the value of these benefits is unified in the parameter $b > 0$.[12]

In addition, let us denote N as the level of employment prevailing in the economy. Among these workers, a fraction ξ, with $0 < \xi < 1$, is assumed to be given by claimants in employment, i.e., workers with minimal jobs who retain the right to maintain their position in the administrative archives of job seekers. As it will become clear in a moment, these individuals are engaged in an on-the-job search process aimed at getting an upgrade from a minimal job to a full position which is assumed to provide a higher wage (cf. Krause and Lubik, 2006). For that reason, we will make the hypothesis that there are two types of firms in the economy, i.e., one that posts vacancies for minimal jobs (V_m) and one that posts vacancies for full positions (V_f). Consequently, the total number of vacancies available in the economy will be given by $V_T = V_m + V_f$.

1.4.1 Search for workers, jobs and upgrades

In the model economy, the rate at which workers arrive at a vacancy, the one at which vacancies arrive at a workers and the one at which job upgrades arrive at a claimant in employment are conveyed by Poisson processes. In details, the probability that a vacant full job is matched by a constructive searcher (ε_f) and the probability that a vacant minimal job is matched by a claimant in employment (ε_m) are assumed to be decreasing functions of the respective measure of the labour market tightness. Specifically,

$$\varepsilon_f = \varepsilon_f\left(\frac{\theta L}{V_f}\right) \qquad 0 \leqslant \varepsilon_f(\cdot) \leqslant 1 \tag{1.1}$$

$$\varepsilon_m = \varepsilon_m\left(\frac{\xi N}{V_m}\right) \qquad 0 \leqslant \varepsilon_m(\cdot) \leqslant 1 \tag{1.2}$$

where $\varepsilon_i'(\cdot) > 0$ for $0 < \varepsilon_i(\cdot) < 1$, with $i = \{f, m\}$.

Similarly, the probability that a constructively searching worker finds a job (ρ_f) and the probability that a claimant in employment upgrades (ρ_m) its position are given by

$$\rho_f = \rho_f\left(\frac{V_f}{\theta L}\right) \qquad 0 \leqslant \rho_f(\cdot) \leqslant 1 \tag{1.3}$$

[12] In Italy, unemployment benefits are usually granted to jobless individuals with at least a continued working seniority of one year or more. However, since we deal with a static model, we take b as the common value of the resources given to unemployed people.

$$\rho_m = \rho_m\left(\frac{V_f}{\xi N}\right) \qquad 0 \leqslant \rho_m(\cdot) \leqslant 1 \tag{1.4}$$

where $\rho_i'(\cdot) > 0$ for $0 < \rho_i(\cdot) < 1$, with $i = \{f, m\}$.

Workers with full positions are given by constructive searchers who have found a job. Consequently, the expression in (1.3) conveys the following relation between N and L:

$$(1-\xi)N = L\rho_f\left(\frac{V_f}{\theta L}\right)\theta \tag{1.5}$$

Obviously, eq. (1.5) implies that the official unemployment rate can be written as

$$u_H = 1 - \rho_f\left(\frac{V_f}{\theta L}\right)\theta \tag{1.6}$$

By contrast, assuming that all the official job seekers register themselves in the provincial archives and omitting sampling problems, the level of registered job seekers is given by the sum among official job seekers ($L(1-\rho_f(\cdot)\theta)$), unconstructive searchers ($(1-\theta)L$) and claimants in employment (ξN).[13] Consequently, taking into account the expression in (1.5), the registered unemployment rate is given by

$$u_R = 2 - \theta\left(1 - \left(\frac{\xi}{1-\xi} - 1\right)\rho_f\left(\frac{V_f}{\theta L}\right)\right) \tag{1.7}$$

The expressions in (1.6) and (1.7) reveal that whenever $1 - (\xi/(1-\xi))\rho_f(\cdot)$ is lower than $1/\theta$ - a condition that is always fulfilled - the rate of registered unemployment is strictly higher than the official one. Intuitively, the registered unemployment rate is higher than the official one as long as there are uncostructive searchers ($\theta < 1$) and claimants in employment ($\xi > 0$). Moreover, while the official unemployment rate is constrained between 0 and 1, the same does not hold for the registered one. Obviously, this is due to the fact that the numerator of u_R may collect individuals that according to official criteria are classified as employed or out of the labour force (cf. Battistin et al. 2006).

The equations (1.6) and (1.7) allow also the derivation of the multiplier of registered unemployment, i.e., the ratio between registered and official job seekers. In details,

$$M(\theta, \xi) = 1 + \frac{1 - \theta\left(1 - \frac{\xi}{1-\xi}\rho_f\left(\frac{V_f}{\theta L}\right)\right)}{1 - \rho_f\left(\frac{V_f}{\theta L}\right)\theta} \tag{1.9}$$

Whenever $1/\theta$ is higher than $1 - (\xi/(1-\xi))\rho_f(\cdot)$, an hypothesis which is always verified according to the assumption set forth above, the multiplier of registered unemployment is higher than 1 as shown by figure 1.3. Obviously, this is the same condition

[13] Assuming that only a fixed fraction of official job seekers register themselves to a CPI does not alter the results achieved in this section.

under which u_R is higher than u_H. From an empirical point of view, the theoretical expression for $M(\cdot)$ should be somehow related to the inverse of the $\eta_{i,g}$ coefficients whose estimations are collected in table 1.1.

Eq. (1.9) reveals that $M(\cdot)$ depends - inter alia - on θ and ξ. The expression and sign of the respective derivatives are given by

$$\frac{\partial M(\theta,\xi)}{\partial \theta} = -\frac{1+\rho_f\left(\frac{V_f}{\theta L}\right)\left(1-e_{\rho_f}\right)\left(1-\theta+\frac{\xi}{1-\xi}\left(1+\rho_f\left(\frac{V_f}{\theta L}\right)\theta\right)\right)}{\left(1-\rho_f\left(\frac{V_f}{\theta L}\right)\theta\right)^2} \tag{1.10}$$

$$\frac{\partial M(\theta,\xi)}{\partial \xi} = \frac{\theta\rho_f\left(\frac{V_f}{\theta L}\right)}{(1-\xi)^2\left(1-\rho_f\left(\frac{V_f}{\theta L}\right)\theta\right)} > 0 \tag{1.11}$$

where $e_{\rho_f} \equiv \partial\rho_f(\cdot)/\partial(V_f/\theta L)(V_f/\theta L)/\rho_f(\cdot)$ is the elasticity of matching with respect to labour market tightness for full positions.

As long as e_{ρ_f} is lower than one, an hypothesis for which there is a robust circumstantial evidence abroad as well as in the Italian context (cf. Petrongolo and Pissarides, 2001; Cardullo and Guerrazzi, 2016), (10) shows that the multiplier of registered unemployment over official unemployment is a decreasing function of the fraction of constructive searchers. By contrast, according to (1.11), $M(\cdot)$ is an increasing function of the share of claimants in employment.

1.4.2 Supply of vacancies

As we stated above, there are two types of firms that post different types of vacancies. On the one hand, a worker employed in a full position generates a real revenue equal to $a > 0$ and receives a real wage equal w. Under the assumption that employers who supply a vacancy for a full position have to pay the fixed cost $\kappa > 0$, the expected profit for a firm that post full positions is given by

$$\pi_f = \varepsilon_f\left(\frac{\theta L}{V_f}\right)(a-w) - \kappa \tag{1.12}$$

On the other hand, minimal jobs are assumed to be a smaller-scale version of full positions. In other words, minimal jobs yield less to employers, are associated to lower wage payments and imply lower search cost.[14] The latter feature of minimal jobs is due to the fact that claimants in employment are usually directed to firms with the help of the CPI in which they registered. Consequently, the expected profit for a firm that post minimal jobs can be written as

[14]Implicitly, we are assuming that jobs are perfectly divisible at level of firms. Such an assumption is consistent with a production technology characterized by constant returns to scale.

$$\pi_m = \alpha \left(\varepsilon_m \left(\frac{\xi N}{V_m} \right) (a - w) - \kappa \right) \qquad 0 < \alpha < 1 \tag{1.13}$$

Under free entry, both types of vacancies are supplied until the associated expected profit is driven to zero, i.e., $\pi_f = \pi_m = 0$. Therefore, eq.s (1.12) and (1.13) imply that each type of vacancy is equal to

$$V_f = \frac{\theta L}{\varepsilon_f^{-1} \left(\frac{\kappa}{a-w} \right)} \tag{1.14}$$

$$V_m = \frac{\xi N}{\varepsilon_m^{-1} \left(\frac{\kappa}{a-w} \right)} \tag{1.15}$$

Since ε_i, with $i = \{f, m\}$, are supposed to be increasing functions of their respective arguments, it follows that both types of vacancies are decreasing (increasing) functions of the real wage and search costs (individual worker's productivity).

1.4.3 Wage determination

The real wage w earned by workers is assumed to be the outcome of a Nash bargaining process. On the one hand, the fallback position of workers is given by the unemployment benefit b that also proxies the array of perquisites assigned to registered job seekers. On the other hand, the fallback position of employers is assumed to be given by marginal firing costs that, for the sake of simplicity, are proportional to the real wage according to the parameter $\phi \in (0, 1)$ (cf. Coe and Snower, 1997). Consequently, under the assumption that the bargaining power of workers (employers) is given by μ $(1 - \mu)$, the Nash maximandum can be written as:

$$\max_w (w - b)^{\mu} (a - (1 - \phi) w)^{1-\mu} \tag{1.16}$$

The expression in (1.16) implies that the bargained wage is equal to

$$w^* = \frac{a\mu + b(1 - \mu)(1 - \phi)}{1 - \phi} \tag{1.17}$$

Eq. (1.17) reveals that the wage earned by workers increases with the productivity of the individual employee, with the amount of firing costs and with the level of unemployment benefits. Moreover, as long as $(a - (1 - \phi) b) / (1 - \phi) > 0$ - a condition that fits the hypothesis made above on the parameters' model - w is an increasing function of the bargaining power of workers.

1.4.4 Unconstructive searchers and claimants in employment

The equilibrium fraction of unconstructive searchers $(1 - \theta^*)$ and the one of claimants in employment (ξ^*) are found by assessing two distinct non-arbitrage conditions according

to which the expected value of the search activities carried out, respectively, by official job seekers and workers employed in minimal jobs must be equal to the value of payments received by the two categories of workers.

On the one hand, suppose that individuals are heterogeneous in terms of their search costs and $s_f(\theta)$, with $s'_f(\cdot) > 0$ for all $\theta \in (0,1)$, is a continuous function that conveys the cumulative distribution of constructive job search costs. Consequently, ordering job searchers in terms of their individual search costs from the lowest to the highest, $s_f(\theta)$ represents also the search cost of the marginal constructive searcher out of the proportion θ of the labour force ordered in such a manner (cf. Coe and Snower, 1997). Thereafter, in equilibrium, the marginal searcher must be indifferent between constructive and unconstructive search, so that

$$\rho_f\left(\frac{V_f^*}{\theta^* L}\right) w^* + \left(1 - \rho_f\left(\frac{V_f^*}{\theta^* L}\right)\right) b - s_f(\theta^*) = b \tag{1.18}$$

where $V_f^* = \theta^* L / \varepsilon_f^{-1}(\kappa/(a - w^*))$.

Solving eq. (1.18) for θ by taking into account the results in (1.14) and (1.17), we find the equilibrium fraction of constructive job seekers:

$$\theta^* = s_f^{-1}\left(\frac{\mu(a - b(1-\phi))\rho_f(\varpi)}{1-\phi}\right) \tag{1.19}$$

where $\varpi_f \equiv 1/\varepsilon_f^{-1}(\kappa(1-\phi)/((1-\phi)(a + b(1-\mu)) - a\mu))$. Obviously, $1 - \theta^*$ is the equilibrium fraction of uncontructive job seekers that - by hypothesis - register themselves to CPIs.

In the other hand, but in a similar manner, claimants in employment must be indifferent between searching (constructively) for a full position and keeping their minimal job, so that

$$\rho_m\left(\frac{V_f^*}{\xi^* N^*}\right) w^* + \left(1 - \rho_m\left(\frac{V_f^*}{\xi^* N^*}\right)\right) \alpha w^* - s_m(\xi^*) = \alpha w^* \tag{1.20}$$

where $N^* = L\theta^* \rho_f \left(V_f^*/\theta^* L\right)/(1 - \xi^*)$, $V_m^* = \xi^* N^* / \varepsilon_m^{-1}(\kappa/(a - w^*))$ whereas $s_m(\xi)$, with $s'_m(\cdot) > 0$ for all $\xi \in (0,1)$, is the cumulative distribution of on-the-job search costs, whereas ξ is the fraction of employed searchers ordered from lowest to highest in terms of their individual search costs.

Taking into account the results in (1.15) and (1.17), eq. (1.20) can be solved for ξ to find the equilibrium fraction of claimants in employment:

$$\xi^* = s_m^{-1}\left(\frac{(1-\alpha)\rho_m(\varpi_m)(a\mu + b(1-\mu)(1-\phi))}{1-\phi}\right) \tag{1.21}$$

where $\varpi_m \equiv 1/\varepsilon_m^{-1}(\kappa(1-\phi)/((1-\phi)(a + b(1-\mu)) - a\mu))$.

1.4.5 Productivity shocks and policy implications

The expressions in (1.19) and (1.21) reveal that the fraction of unconstructive searchers and the one of claimants in employment prevailing in equilibrium depends on the different model's parameters. Consequently, it becomes possible to asses how productivity shocks and policy interventions aimed at modifying the underlying institutional setting of the labour market may affect the theoretical figures of official and registered unemployment.

First, aiming at exploring the effects triggered by a downturn or by an upturn on unconstructive searchers and claimants in employment, we begin by assessing how θ^* and ξ^* are influenced by variations in labour productivity. Actually, in a supply-driven model like the one developed above, expansions (recessions) can be portrayed by increases (reductions) in the value of a. The respective derivatives are given by

$$\frac{\partial \theta^*}{\partial a} = \mu \sigma_f^* \left(\frac{\rho_f(\cdot)}{1-\phi} + \frac{\kappa \rho_f'(\cdot)\left(a - b\left(1-\phi\right)\right)\left(1-\phi-\mu\right)}{\left(\Omega \varepsilon_f^{-1}(\cdot)\right)^2} \right) \tag{1.22}$$

$$\frac{\partial \xi^*}{\partial a} = \left(1-\alpha\right)\sigma_m^* \left(\frac{\mu \rho_m(\cdot)}{1-\phi} + \frac{\kappa\left(a\mu + b\left(1-\mu\right)\left(1-\phi\right)\right)\left(1-\phi-\mu\right)\rho_m'(\cdot)}{\left(\Omega \varepsilon_m^{-1}(\cdot)\right)^2} \right) \tag{1.23}$$

where $\sigma_f^* \equiv \partial s_f^{-1}(\cdot)/\partial \theta^*$, $\sigma_m^* \equiv \partial s_m^{-1}(\cdot)/\partial \xi^*$ and $\Omega \equiv \left(1-\phi\right)\left(a + b\left(1-\mu\right)\right) - a\mu$.

The sign of (1.22) and (1.23) crucially depends on the term $1-\phi-\mu$. Namely, $\partial\theta^*/\partial a \gtrless 0$ and $\partial\xi^*/\partial a \gtrless 0$ if and only if $1-\phi-\mu \gtrless 0$. Interestingly, according to (1.12), (1.13) and (1.17), such a condition is satisfied when profits move in the same direction of labour productivity. Consequently, we can state that whenever there is a positive (negative) productivity shock the equilibrium fraction of constrictive job seekers as well as the one of claimants in employment tend to increase (decrease). Comparing those results with the path of the multiplier illustrated in figure 1.3 and recalling the analytical results in (1.10) and (1.11), we notice that in the aftermath of the two major recessive impulses that hit the Italian economy the effects driven by variations of a on θ^* dominated the ones on ξ^* by signaling a discouraging effect triggered by the adverse economic conditions. Actually, the peaks of the multiplier seem to be achieved at the two deeps of the recessions in 2009 and 2012.

From a policy point of view, an intriguing issue that our model allows to address is the way in which official and registered unemployment react to variations in the perquisites and entitlements recognized to job seekers that we denoted by b. Specifically, deriving θ^* and ξ^* with respect to that parameter leads to

$$\frac{\partial \theta^*}{\partial b} = \mu \sigma_f^* \left(\frac{\kappa\left(a - b\left(1-\phi\right)\right)\left(1-\phi\right)\left(1-\mu\right)\rho_f'(\cdot)}{\left(\Omega \varepsilon_f^{-1}(\cdot)\right)^2} - \rho_f(\cdot) \right) \tag{1.24}$$

$$\frac{\partial \xi^*}{\partial b} = \left(1-\alpha\right)\left(1-\mu\right)\sigma_m^* \left(\frac{\kappa\left(1-\phi\right)\left(a\mu + b\left(1-\mu\right)\left(1-\phi\right)\right)\rho_m'(\cdot)}{\left(\Omega \varepsilon_m^{-1}(\cdot)\right)^2} + \rho_m(\cdot) \right) > 0 \tag{1.25}$$

On the one hand, according to (1.24) and increase in b has two counterbalancing effects on the equilibrium fraction of constructive searchers: (i) a bargaining effect given the first term in brackets that leads to an increase in θ^* and (ii) a moral hazard effect given by the second one that, on the contrary, leads to a reduction in θ^*. Intuitively, the bargaining effect works through the positive relation between the negotiated wage and b conveyed by eq. (1.17). Consequently, the higher the wage, the higher the incentives to search in a constructive manner. The functioning of the moral hazard effect is more intuitive. Indeed, an increase (reduction) in the entitlements recognized to job seekers reduces (increases) the incentives to search constructively. Interestingly, when workers have complete market power ($\mu = 1$), the bargaining effect disappears and we have only the moral hazard effect. Furthermore, when workers have no market power ($\mu = 0$), unemployment benefits have no effect on θ^*. On the other hand, (1.25) shows that the effect of b on the equilibrium fraction of claimants in employment is definitely positive. As we recalled above, the wage equation in (1.17) provides a positive relationship between w^* and b. Thereafter, the higher the wage, the higher the incentives to look constructively for job upgrades.

Whenever the wage is assumed to be the outcome of negotiations between workers and firms, labour market deregulation is usually modeled as a reduction of the bargaining power of workers (cf. Blanchard and Giavazzi, 2003). The effect of variations in μ on θ^* and ξ^* are conveyed by

$$\frac{\partial \theta^*}{\partial \mu} = \left(a - b\left(1-\phi\right)\right)\sigma_f^* \left(\rho_f\left(\cdot\right) + \frac{\mu\left(\left(1-\phi\right)b + a\right)\rho_f'\left(\cdot\right)}{\left(\Omega\varepsilon_f^{-1}\left(\cdot\right)\right)^2} \right) > 0 \tag{1.26}$$

$$\frac{\partial \xi^*}{\partial \mu} = A\left(\frac{\left(a - b\left(1-\phi\right)\right)\rho_m\left(\cdot\right)}{1-\phi} - \frac{\kappa\left(a\mu + b\left(1-\mu\right)\left(1-\phi\right)\right)\left(a + b\left(1-\phi\right)\right)\rho_m'\left(\cdot\right)}{\left(\Omega\varepsilon_m^{-1}\left(\cdot\right)\right)^2} \right) \tag{1.27}$$

where $A \equiv \left(1-\alpha\right)\sigma_m^*$.

According to eq. (1.26), the equilibrium fraction of constructive searchers is positively affected by the bargaining power of workers. This result is driven by the fact that the equilibrium wage conveyed by eq. (1.17) is an increasing function of μ. Therefore, the higher the wage, the higher the incentives to search constructively for a job. By contrast, as revealed by eq. (1.27), the effect of the bargaining power of workers on claimants in employment is not straightforward. In addition to the positive effect driven by μ on w^*, there is also a counterbalancing negative effect due to the fact that when the wage increases firms have the incentive to post less vacancies, in this case for minimal jobs.

Looking at marginal firing costs born by employers, our model allows also to stress the way in which official and registered job seekers responds to variations in the parameter ϕ. In details, deriving θ^* and ξ^* with respect to ϕ leads to

$$\frac{\partial \theta^*}{\partial \phi} = a\mu\sigma_f^* \left(\frac{\rho_f\left(\cdot\right)}{\left(1-\phi\right)^2} - \frac{\kappa\mu\left(a - b\left(1-\phi\right)\right)\rho_f'\left(\cdot\right)}{\left(\Omega\varepsilon_f^{-1}\left(\cdot\right)\right)^2} \right) \tag{1.28}$$

$$\frac{\partial \xi^*}{\partial \phi} = -B\left(\frac{\left(a\mu + 2b\left(1-\mu\right)\left(1-\phi\right)\right)\rho_m\left(\cdot\right)}{1-\phi} + \frac{a\kappa\mu\left(a\mu + b\left(1-\mu\right)\left(1-\phi\right)\right)\rho'_m\left(\cdot\right)}{\left(\Omega\varepsilon_m^{-1}\left(.\right)\right)^2}\right) < 0 \tag{1.29}$$

where $B \equiv \left(1-\alpha\right)\sigma_m^*/\left(1-\phi\right)$.

Eq. (1.28) shows that the effect of ϕ on the equilibrium fraction of constructive searchers is uncertain. On the one hand, recalling some results achieved in models with insiders and outsiders, higher firing costs allow employed workers to extract a higher share of the rent generated by the underlying employment relationship (cf. Lindbeck and Snower, 1989). Thus, as conveyed by eq. (1.17), there is a positive link between ϕ and w^* and we already know that a higher wage leads individuals to search constructively for jobs. In the other hand, higher wages discourage firms from opening new vacancy and this leads to a reduction of θ^*. Interestingly, the effect of ϕ on θ^* disappears when workers have no bargaining power ($\mu = 0$). Furthermore, confirming a path that we have somehow see above, the incentives that drive employers to post minimal jobs go in the same direction of the incentives that drive claimants in employment to search for job upgrade. In fact, eq.(1.29) shows that ξ^* is negatively related to ϕ. In other words, higher marginal firing costs leads employer to post lower vacancies for minimal jobs, and this reduce the willingness of workers to search for job upgrades.

Considering the bargaining power of workers and firing costs born by firms, the period covered by our empirical analysis encloses a wave of labour marker deregulation labeled as Job Act (cf. Law 183/2014 and D.Lgs 23/2015). Indeed, starting in 2014 the Italian government ratified some interventions aimed at increasing labour market flexibility and reducing firing costs. The main novelties of the Job Act are the availability of contracts with increasing protection instead of the traditional permanent contract and the abolition of the prohibition of firing workers without a cause (cf. Antonioli and Pini, 2014; Catalano and Pezzolla, 2017; Sestito and Viviano, 2016).

According to eq.s $(1.26) - (1.29)$, our model does not have unambiguous predictions for the effects triggered by changes in μ and ϕ. However, the available empirical evidence illustrated in figures 1.1 and 1.3 shows a general reduction of unemployment together with mild values of the multiplier. Such a pattern may suggest that the positive effect triggered by lower firing cost on the fraction of constructive searchers offset the corresponding negative effect triggered on θ^* by the reduction of μ. Moreover, since a fraction of minimal jobs likely became full jobs for the availability of contracts with increasing protection, it appears reasonable to assume that the negative effect on ξ^* triggered by the reduction of μ outweighed the corresponding positive effect as well as the positive effect triggered by the reduction of ϕ on the percentage of claimants in employment.

Concerning the fixed cost of vacancy posting, it plays a role as well in influencing the equilibrium fraction of constructive searchers and claimants in employment conveyed in the following expressions:

$$\frac{\partial \theta^*}{\partial \kappa} = -\frac{\sigma_f^* \mu \left(a - b\left(1-\phi\right)\right) \rho_f'\left(\cdot\right)}{\Omega \left(\varepsilon_f^{-1}\left(\cdot\right)\right)^2} < 0 \tag{1.30}$$

$$\frac{\partial \xi^*}{\partial \kappa} = -\frac{\sigma_m^* \left(1-\alpha\right)\left(a\mu + b\left(1-\mu\right)\left(1-\phi\right)\right) \rho_m'\left(\cdot\right)}{\Omega \left(\varepsilon_m^{-1}\left(\cdot\right)\right)^2} < 0 \tag{1.31}$$

Eq.s (1.30) and (1.31) straightforwardly suggest that the higher the value of κ, the lower the incentives to post vacancies, no matter the type. Therefore, the lower the incentives to search constructively for full jobs and job upgrades.

From a policy perspective, the parameter κ can be taken as a proxy of the recruitment efficiency of CPIs. Consequently, an increase (reduction) in matching efficiency of CPIs, i.e., a reduction (increase) of κ does not have an univocal effect on the multiplier of registered unemployment since it leads to a reduction (increase) of unconstructive searchers but an increase (decrease) in claimants in employment.

Finally, the fraction of claimants in employment also depends on the distance between full and minimum job conveyed by the parameter α. The respective derivative can be written as follows:

$$\frac{\partial \xi^*}{\partial \alpha} = -\sigma_m^* \left(a\mu + b\left(1-\mu\right)\left(1-\phi\right)\right) \rho_m\left(\cdot\right) < 0 \tag{1.32}$$

Eq. (1.32) reveals that the lower the distance between minimal and full jobs, the lower the fraction of claimants in employment.

1.5 Official and registered unemployment: Why do we need both?

Unemployment statistics are essential in identifying policy targets in labour market, setting normative standards for actions, choosing among strategic options, assisting in making policy decisions and controlling their effectiveness. Official and registered unemployment seek to grasp the shortage of work, but they are derived in a different way. As we notice in section 2, this leads to marked divergences among them and some flaw can be detected in both statistics. On the one hand, official unemployment is measured via sample surveys so it is potentially subject to errors due to heterogeneities among people with different characteristics and mis-classification errors in the self-reported labour force status (cf. Feng and Hu, 2013). In addition, as argued by Summers (1982), ILO unemployment can be biased by sampling, seasonal-adjustment and sampling-variability errors. Even the quality of interviewers' work may be questioned in official statistics (cf. Hazans, 2008). On the other hand, registered data are affected by the national legislation that provides the eligibility criteria for registration and to claim unemployment benefits. These criteria define a sort of participation constraint that may be unrelated to employment hardship and ineffective in avoiding the moral hazard of potential applicants.

In other words, jobless individuals who experience problems in submitting the required documents to the CPI are automatically ruled out from registered statistics. Conversely, people entitled to receive the benefits granted by registration can register themselves even if they are not actively seeking for jobs.

Likewise, both statistics are used in different ways. On the one side, official unemployment is mainly used for international comparisons, the analysis of long-term and medium-term trends in the labour market, the analysis of labour market position of different socio-demographic groups, the analysis of labour market flows, the analysis of job search activities and for the estimation of the size of the labour force. On the other side, registered unemployment is mainly used for the analysis of short-term trends, to forecast labour supply and labour demand in certain occupations and in certain municipalities, to calculate the seasonally-adjusted unemployment rate and to calibrate weights implemented to generalize the results of the labour force survey to the whole population. Therefore, it may be important to exploit both data to overcome the limitations outlined above and - at the same time - gather a wider idea about the unemployment situation in a given region.

The public discussion on Italian unemployment is often characterized by the debate on the reliability and the possible underestimation underlying official figures. In this regard, arguing in favour of a broader definition of unemployment, some scholars suggested to supplement the official measure of job seekers by taking into account the share of the labour force covered by social safety valves (e.g. Cingano et al. 2010; Olivieri and Paccagnella, 2012). By contrast, there is broad consensus on the view that provincial records on job seekers are heavily inflated (cf. Anastasia and Disarò, 2005).

From the point of view of employment and income policies, the accurate determination of the number of people that need intervention is essential in order to calibrate the amount of resources to be allocated and, at a later stage, evaluating their effectiveness. In this direction, the possibilities of cross-country comparison allowed by official data are certainly indispensable. However, from a quantitative perspective and considering the always-mentioned reforms of social safety valves and the recent debate on the guaranteed minimum income, the possible under-reporting problems associated with official labour market surveys deserve to be taken in serious consideration (cf. Budlender, 2011). There are empirical studies developed with a number of methodologies that suggest a broader definition of unemployment with respect to the one implemented to retrieve official statistics (cf. Battistin et al. 2006; Brandolini et al. 2004). Such a definition would lead to include all the jobless individuals who declared a) to be immediately available to start a job and b) carried out some concrete search activities without any restriction for the period in which the latter has been actually performed. In this way, it is very likely that some registered job seekers not surveyed by ISTAT as officially unemployed would be fairly considered for retrieving the real magnitude of involuntary unemployed workers as well as the quantity of labour actually supplied in the economy under scrutiny.

In this view, administrative records on job seekers seem to constitute the proper reference to integrate and amend official figures on unemployment (cf. Chernyshev, 2001; Anastasia et al. 2015). For instance, aiming at amending the available measures of unemployment, Burchard and Le Grand (2002), propose a methodological approach to address the problem of the existence of voluntary unemployment. Obviously, people that voluntarily decide to be unemployed should not be considered for grasping the measure of actual employment hardship. The method implemented by Burchard and Le Grand (2002) is based on controlling for various constraints on people's decisions that can affect their employment situation. These constraints are introduced sequentially according to the extent to which they can be regarded beyond individual control. Such a procedure allows to estimate the predicted probability of being employed and when such a probability is above a certain threshold for a jobless individual, the individual herself should be considered as voluntary unemployed and not considered in unemployment statistics.

In the perspective of integration, Jones and Riddell (1999) suggest an empirical procedure to assess whether people out of the labour force such as registered unconstructive searchers may deserve to be considered as genuinely unemployed. As we noticed in section 2, in the Italian context this can be quantitatively important especially for non-young persons. Estimating the transition probabilities of a Markovian model in which different labour force states are taken into account, Jones and Riddell (1999) find that a significant share of non-searching individuals that desire to have a job is behaviourally similar to the individuals that fulfill the criteria of official unemployment. Consequently, such a share of individuals should be considered to evaluate the amount of under-utilization of labour in the economy and the extent of frictional and structural mismatch.

Again on the way of integration, some attention should be paid also to registered claimants in employment that hold very precarious positions. For instance, Thomas (1998) argues that claimants in employment have a dynamic behaviour which is very close to official unemployment so that a fraction of them should be taken into account to evaluate the real extent of actual unemployment.

Furthermore, considering the possibilities of updating and the quantity of information that could be gathered by CPIs, administrative archives could be exploited to build longitudinal databases. Thereafter, those panels of data should be used to monitor the dynamics of unemployment and to evaluate the effectiveness of policy aimed at bringing people into employment. However, as argued by Trivellato (2003, 2006), more than an integration among official data and administrative records, the most sensible thing to do would be the creation of a national information system of labour - or a national labour accounting system - with the task to organize and process data coming from different statistical sources. Within the European context, Italian authorities had repeatedly committed themselves to ensure that all public administrations endowed with competencies in labor market issues should become able to develop statistical indicators for implementing and controlling active policy interventions. Unfortunately, these ambitious projects,

announced several times, have not yet been realized.

1.6 Concluding remarks

This paper addresses some issues concerning the measurement of unemployment in the Italian regional context. Specifically, retrieving data from Tuscany, we compare the picture of unemployment that emerges by exploring official data released by ISTAT and administrative records collected by regional CPIs over the last ten years on a quarterly basis.

From an empirical point of view, consistently with previous findings, we find that registered unemployment is higher, more persistent and more concentrated on women than its official measure (cf. Barbieri et al. 2000; Anastasia and Disarò, 2005; Guerrazzi, 2012). However, despite these heterogeneities, we show that the stock of registered job seekers conveys a cyclical information about labour market performance that goes in the same direction of the one indicated by official unemployment. Specifically, we show that official and registered unemployed tend to move together along the cycle and are both negatively correlated to regional employment. By contrast, we give evidence that such a cyclical information is missing from the inflows into registered unemployment. Moreover, we provide an empirical procedure to reconcile registered unemployment to official unemployment that is fairly able to replicate the long-run trend of the latter.

Thereafter, we develop a search model that provides a rationale for the coexistence of official and registered job seekers by deriving the analytical expression of the multiplier of registered unemployment, i.e., the ratio between registered and official job seekers. A comparative statics analysis carried out within our theoretical framework allows to clarify some features of observed data such as the increase of the multiplier observed after the two recent recession waves as well as some of the (un)employment effects of the labour market deregulation triggered by the Job Act. In details, recessions appear to be followed by an increase of unconstructive searchers whereas the Job Act seems to have lead to a reduction of claimants in employment and a contemporaneous increase of constructive searchers (cf. Antonioli and Pini, 2014; Catalano and Pezzolla, 2017; Sestito and Viviano, 2016).

Finally, we offer some insights on how to integrate and amend official and administrative data on unemployment. Specifically, we suggest the advisability to rule out voluntary unemployment, the need to consider a fraction of unconstructive searchers and claimant in employment as genuinely unemployed and the importance to build longitudinal data on jobless individuals to monitor unemployment with more details (cf. Burchard and Le Grand, 2002; Jones and Riddell, 1999; Trivellato, 2003, 2006).

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Chapter 2

The Registration in Italian Public Employment Agencies: Motivations and Determinants

2.1 Overview

In this paper, I investigate some issues related to the measure of unemployment by using microdata from the Italian labour force survey. First, by cross-checking registered individuals in public employment agencies and official unemployment, I show that only 50% of the formers are unemployed according to official criteria. Moreover, I analyse some of the reasons that lie behind the heterogeneity between official and registered unemployment with a special focus on the determinants of the decision to register in public employment agency to search for work. By using a probability model, I show that the eligibility for unemployment benefits and the participation to vocational training programs substantially affect the decision to register.

2.2 Introduction

Consistently to the pattern observed in other developed countries, in Italy there are significant differences between unemployment levels that official statistics declare and those that administrative records report. Official or harmonised data on unemployment are collected by the Italian National Institute of Statistics (ISTAT) whereas administrative or registered records on unemployment are the stock of enrolled unemployed individuals in Public Employment Agencies (PEA).

Typically, registered unemployment in Italy exceeds by three times the unemployment declared by ISTAT. For example, Barbieri et al. (2001) find that registered unemployment is higher than official unemployment by $1,1$ million individuals. Anastasia and Disarò

(2005) compare individuals registered in PEAs with official unemployment in the Region of Veneto and conclude that only 35% of PEAs' customers can be considered as unemployed by official statistics. Guerrazzi (2012) makes a comparison between official statistic with administrative records in the Province of Pisa and finds that registered unemployment is 3.57 times the official figure. More recently, Guerrazzi and Ksebi (2018) shows that administrative unemployment is 3.64 times the official unemployment all over the Region of Tuscany and provide a model to explain the magnitude of such a multiplier.

The unemployment rate is an essential indicator of a country's economic performance and its population's well being. Therefore, the issue of measuring unemployment received considerable attention in the literature. Along these lines, Kyriacou et al. (2009) claim that registered unemployment is way higher than official unemployment in Cyprus. Similarly, Hwang (2010) argues that official statistics underestimate the real unemployment rate in Korea by comparing LFS-based unemployment to several administrative data sources. In contrast, Wang and Sun (2014) using survey's data conclude that registered unemployment is lower than official unemployment in China. Furthermore, Konle-Seidl and Ludeke (2017) investigate discrepancies between registered unemployment and internationally harmonized unemployment in a comparative view in ten selected EU-countries and they find that registered unemployment is lower than official unemployment in Sweden, Spain whereas the opposite holds in Austria, Finland, France, Germany, Ireland, Netherlands and Poland.

Generally speaking, many countries suffer from inaccessibility to a reliable indicator of the unemployment rate. Furthermore, the step that precedes correcting unemployment statistics is understanding the reasons behind the heterogeneity between the two main sources of statistics on unemployment. The latter typically attributes to reasons classified into two broad categories: methodological and behavioural economic reasons. One the one hand, the methodological reasons are essentially three. First, sampling errors in official statistics. In other words, since official statistics are gathered via sample survey, so they potentially subject to sampling errors due to the heterogeneities among people with different characteristics and misclassification errors in the self-reported labour force status (cf. Xu, 2012). Second, administrative records have updating issues that occur when individuals remain in administrative statistics even after they start working or stop searching for a job (cf. Olivieri, 2009). Finally, there exists a mismatch in the unemployment definition adopted by official statistics and registered records. Therefore, a major share of the differences in unemployment indicators attributes to the classification adopted to distribute individuals in unemployment, employment and inactivity (cf. Brandolin et al., 2004).

On the other hand, the behavioural economics perspective points out that the effect of cognitive biases and behavioural barriers on the registration decision in PEAs may alter the gap between official and registered unemployment. For example, the eligibility criteria for unemployment benefits usually rule out people without former work experiences (cf.

Crepaldi et al., 2014). In fact, in many Western European countries more than half of individuals eligible for social assistance do not receive it (cf. Bouckaert and Schokkaert, 2011; Bruckmeier and Wiemers, 2011; Amétépé, 2012; Domingo and Pucci, 2014; Dubois and Ludwinek, 2014). Eligible unemployed leaves unemployment benefits for many reasons such as incomplete information regarding benefits and eligibility, transaction costs, and registration complexity (cf. Currie 2004; Bhargava and Manoli, 2012). In addition, it is worth noting the lack of knowledge about services provided by PEAs (cf. Wang and Sun 2014).

Italian employment agencies are decentralised to Regions (Regioni – NUTS2), while the everyday running of the public employment services, in turn, is decentralised to Provinces (Province – NUTS3) (cf. European Comission (EC), 2016). For this reason, there may be some geographical differences in classifying individuals into employed and unemployed, in the sense that employment agencies' definitions of unemployment may be inconsistent among each other. Additionally, administrative unemployment lacks essential information about unemployment features that may be useful in investigating detailed aspects of the heterogeneities between unemployment statistics such as unemployment duration, previous work experience, etc. Consequently, administrative data on unemployment are not available at the country level. For the reasons mentioned above, it has been a common practice to compare administrative to harmonised statistics using two distinct methods. On the one hand, using macro data considering single areas within the country (cf. Anastasia and Disarò, 2005; Guerazzi 2012; Guerrazzi and Ksebi 2018). On the other hand, studies on the country level using self-reported answers from the LFS survey that include questions about enrolling in employment agencies (cf. Barbieri et al., 2001).

Following the latter research line, this paper contributes to the existing literature on measuring unemployment in two ways. On the one hand, it uses the latest published LFS figures to conduct a cross-check on administrative unemployment with official statistics. Consistently with the previous studies recalled above, I find that only 50% of registered unemployment can be defined as unemployed according to official statistics. Additionally, only 26% of unemployed individuals used a PEA as a part of their searching strategy. On the other hand, the present paper explores the sources of the discrepancy between statistics on unemployment with an emphasis on the determinants underlying the decision of officially unemployed individuals to enroll in PEAs. In this regards, I find that attending qualification courses encouraged unemployment registration, as found by Wang and Sun, (2005); indeed, it is highly possible that following vocational training courses increase individuals' information about PEAs' services thus encourage registration. Furthermore, I find that heterogeneity in the determinants of registration among unemployed with previous work experience (PWE) and among unemployed without PWE and this suggests that the eligibility for unemployment benefits alter the likelihood of relying on PEAs.

The plan of the paper is the following. Section 2 provides the background concerning

official and registered unemployment. Section 3 represents data and descriptive statistics. Section 4 examines the determinants of registering in a PEA. Finally, Section 5 concludes.

2.3 Background

The official statistic relies on general guidelines set by the International Labour Organization (ILO) aimed at classifying individuals into three categories: employment, unemployment and inactive or "out of labour force". Konle-Seidl and Lüdeke (2017) argues that ILO classification for labour market segments are very strict and barely reflects reality as there are individuals situated in between employment and unemployment and in between unemployment and inactivity. For example, ILO considers who works for paid employment for at least one hour during a reference period as an employed, which may not reflect the actual situation of job-seekers.

On the one side, official unemployment includes all individuals within the working-age that – during a reference period – were: *i*) jobless; *ii*) available to work; and *iii*) actively seeking a job. Inactive or "out of the labour force" are individuals that are neither employed nor unemployed. On the other side, registered unemployment is simply the count of individuals that are registered as job-seekers in public employment agencies (PEAs). A PEA is a public institution where people enrol to claim unemployment benefits and get job-search assistance. In Italy, PEAs are named as "centri per l'impiego". The activity of PEAs is designed in order to combine visitors autonomous retrieval of information with assistance from professional job counselors. Enrolling in Italian PEAs and counseling interviews are free of charge. The fruition of PEA services is conditional on being available to work. From a statistical point of view, data gathered by PEAs is mainly useful for analysis of short-term trends, such as forecasting labour supply and demand in certain occupations, calculating the seasonally-adjusted unemployment rate. On the contrary, official statistics are helpful in long term analysis and across countries comparisons.

2.4 Data and descriptive statistics

The analysis in this paper relies on the cross-section microdata of the Italian Labour Force Survey (LFS) from the first quarter of 2008 until the second quarter of 2019. The LFS is one of the most important statistical sources about the Italian labour market, and it carried out every quarter by ISTAT. Participant names are randomly extracted from population lists containing the names of all families residing in the municipality and then contacted to participate. Interviewees' answers are used to compile data on employment, unemployment and inactivity. Employed individuals reply to various questions about their current and previous work background. Individuals without a job provide information on the aspects behind their labour situation in addition to past work activities information.

Furthermore, the LFS is the only survey that collects job-searching intensity indicators. In addition to the rich individual and demographic variables and the large sample provided. A section oriented to all participants is dedicated to information on employment services and employment agencies where participants are asked detailed questions about their contact with PEAs. Therefore, employed individuals can supply information about the role of government employment agencies in finding their actual occupations.

Looking at a sample of newly employed individuals that were searching for work through a PEA the year before the interview, data suggest that only 6.3% of them matched to their current positions through an employment agency. In fact, in the last decade, there have been an intense debate about the effectiveness of the Italian public employment services (cf. Barbieri et al., 2001; Naticchioni and Loriga, 2011). Table 2.1 allows the comparison between the characteristics of individuals and their current positions'

	Jobs found by PEA	Jobs found without PEA
Observations	3,365	49,555
i) Workers charactiristics		
Gender (Male)	54%	53%
Nationality (Italians)	94%	90%
Age class		
15-24	9%	12%
25-34	19%	30%
35-44	25.57%	30%
45-54	30%	21%
Education		
High school or less	53%	46%
Diploma 2-3 years	10%	9%
Diploma 4 years or less	37%	44%
ii) Jobs characteristics		
Part-time jobs	39%	38%
Weekly working hours (part time)		
Mean	31.55	31.89
SD	12.44	10.29
Determinant work agreement %	75.38	60.01

Table 2.1: Characteristics of jobs matched by PEAs versus other jobs

	Jobs found by PEA	Jobs found without PEA
Monthly wage in Euros		
Mean	829	850
SD	356	395
Company size		
Small less than 10	30%	48%
Large more than 50	21%	14%
Occupations classification		
Mean	4.1	4.4
SD	1.9	1.9
Sector		
Agriculture, forestry and fishing	16%	6%
Industry	8%	11%
Construction	9%	12%
Trade	8%	12%
Hotels and restaurants	7%	13%
Transport and storage	4%	7%
Information and communication services	3%	3%
Financial and insurance activities	1%	1%
Real estate activities, business, entrepreneurial	11%	11%
Public administration, social insurance	13%	2%
Education, health and other social services	14%	10%
Other collective and personal services	7%	12%
Standard errors in parentheses $^{*}p < 0.05$, $^{*}*p < 0.01$, $^{*}**p < 0.001$		

(Continues) Table 2.1: Characteristics of jobs matched by PEAs versus other jobs

that are matched to jobs through PEAs, versus individuals that found their jobs using other searching methods. In comparison, there are no fundamental differences among both groups regarding payment, working hours, company size and occupations classification[1]. However, some heterogeneity seems to arise in workers' age and working sector. Employed through PAEs tend to be more contracted around older age groups. Moreover, jobs provided by PEAs are characterized by relating mostly to the public sector, such as agriculture, public administration, social insurance, education, health and other social services. Furthermore, jobs in hotels and restaurants and professions related to trade and other collective and personal services appear to be matched more frequently

[1]The International Standard Classification of Occupations (ISCO) is an ILO classification structure for organizing information on labour and jobs. It is part of the international family of economic and social classifications of the United Nations. The current version, known as ISCO-08, was published in 2008 and is the fourth iteration, following ISCO-58, ISCO-68 and ISCO-88 (cf. International Labour Office, 2012).

out of PEAs. Lastly, the most effective PEA appears to be in the Lazio region, followed by Tuscany, see figure 2.1. The effectiveness of PEAs is calculated as the fraction of employed individuals that have found a job through a PEA of all employed individuals that were unemployed one month before the interview.

Figure 2.1: PEA effectiveness by region

2.4.1 Public employment agencies' users

In this section, multiple cross-checks will be conducted between a group of registered unemployment and its components of official labour market segments to uncover some sources of the discrepancy between official and registered statistics. As mentioned earlier, registered unemployment is the stock of enrolled individuals in public employment agencies to search for employment. In Italy, registered individuals in PAEs may remain in the unemployment archives for years and at the same time have no contacts with a PEA in recent job search. Therefore, it would not be appropriate to define all individuals that declare enrolling in a PEA as registered unemployment. Additionally, the 14th International Conference of Labour Statisticians specified that the registration in PEA should be considered an active step to seek work only when it is for the purpose of obtaining a job offer, as opposed to cases where registration is merely an administrative requirement for the receipt of certain social benefits (cf. Hussmanns, 2007). Consequently, I argue that it is possible to establish a more appropriate group of registered unemployment by using

active registrations in the month before the interview. Accordingly, a group of registered unemployment will be conducted by using the combination of two questions: 1) In the previous month, were you enrolled in a PEA, or was your registration still valid? 2) Have you registered in PEA to search for a job? Individuals that have answered yes for both question are considered among the sample of registered unemployment.

Furthermore, the LFS reports the current labour status for interviewed persons broken down by eight segments, defined as follows:

1. Employed;
2. Jobseeker, with previous work experience, ex-worker;
3. Jobseeker, without previous work experience, ex-inactive;
4. Jobseeker, without previous work experience;
5. Inactive, not actively searching but available;
6. Inactive, searching but not available;
7. Inactive, not searching but available;
8. Inactive, not searching and not available;

Status 1 represents the employment group (ILO/LFS employment). Status 2 {4 represent unemployment (ILO/LFS unemployment). Whereas, status 5{8 is the non-participation group (ILO/LFS inactivity).

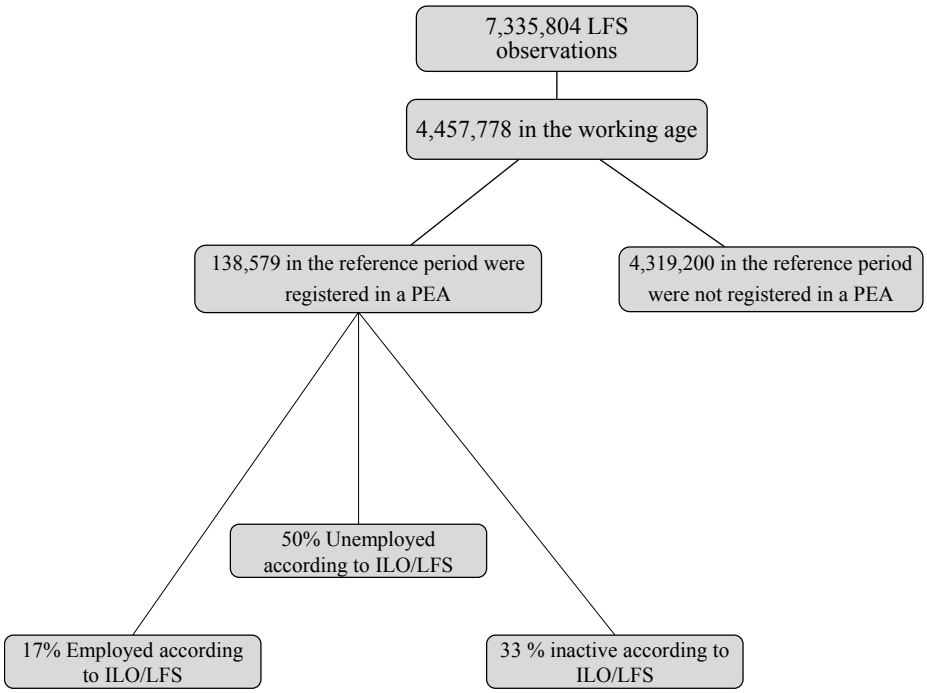

Figure 2.2: Registered unemployment by ILO/LFS labour status

Registered unemployment tend to include individuals that classified employment, unemployment, and inactive according to official statistics. The diagram in figure 2.2 il-

lustrates the group of registered unemployment broken down by the primary ILO/LFS labour status. The full LFS sample all over the period of study includes information about 7, 335, 804 individuals. Only 4, 457, 778 of the sample are in the working-age, and 138, 579 of them have an active registration in a PEA in the month before the interview; thus they are the registered unemployment group. Moreover, 17% of PEAs' registered individuals are classified as employed in LFS sample, whereas 33% are inactive. However, only 50% of registrations belong to officially unemployed individuals. figure 2.3 displays a cross-check of enrolled individuals in PEAs and their labour market status in the ILO/LFS

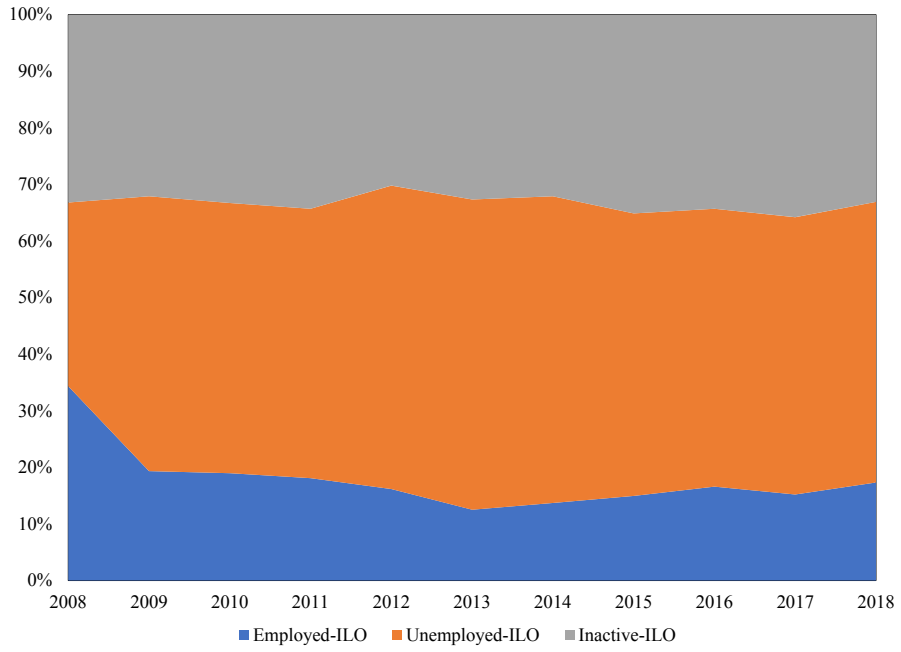

Figure 2.3: Patterns of PEAs use

standards between 2008 and 2018. Over the observation period, a decrease in the number of ILO employment is shown among the registered unemployment segment. In particular, in 2008 the fraction of employed individuals among the registered unemployment group was around 20% rather than 15% of total registrations in 2018. Those registered jobseekers are working, registered in the employment agencies as unemployed, available to work, but violated ILO definition for unemployment by stating that they had worked at least one hour in the day before the interview. Indeed, 43% of ILO employment that are registered in PEAs are part-time workers. Additionally, employment agencies support workers that are searching for another job. Consequently, those workers may not be included among the administrative unemployment count even if they are registered. In fact, 33% of the ILO employment that are registered in PEAs stated that they are searching for another job. Furthermore, around 33% of registered individuals are defined by ILO as inactive people. Persons that are registered in employment agencies but are outside the labour force includes, among others, full-time students, people engaged in household

or family duties full time, and retired individuals. In this regard, Coe and Snower (1997) define inactive individuals that register in PEAs as unconstructive jobseekers, not willing to work; they are merely pretending to search for qualifying for unemployment benefits.

Moreover, in 2008 ILO/unemployed individuals formed less than 40% of the PEAs registrations. However, this fraction reached almost 50% by the end of 2018. That to say that official unemployment became slightly closer to registered unemployment during the last decade. Barbieri et al. (2000) have documented that between 1992 and 1999, only 40% of registered unemployed were unemployed according to the official standards. This improvement is probably due to the public employment services reforms in 1997, 2000, and 2003 (cf. Naticchioni and Loriga, 2011). Notwithstanding, a 50% level of congruence between registered and official unemployment is still meagre.

Unemployed individuals enrol in a PEA to ask for assistance in finding a job or for other reasons. However, many job seekers decide not to use an agency's support. Scholars record that unemployment span has a positive influence on PEAs' use (cf. Wang and Sun, 2014; Gregg and Wadsworth, 1996) and a high rate of employment agencies use recorded among younger individuals (cf. Kuhn and Skuterud, 2000). Additionally, Wang and Sun (2014) add that awareness of government training programs encourages unemployed cohorts to register. Table 2.2 allows us to compare registered unemployment to unregistered unemployment. Only 26% of officially unemployed individuals

	Unregistered in PEA	**Registered in PEA**	**T-test**
Observations	190,121	68,781	
Gender (Male)	51.19%	54.33%	
Previous work experience			
YES	71%	82%	
Independent	16.24%	9.51%	
Age class			
15-24	22.35%	19.67%	
25-34	28.66%	25.64%	
35-44	23.82%	26.06%	
45-54	18.05%	21.24%	
Duration of unemployment			
Mean	23.07	17.24	-5.83^{***}
SD	32.40	24.45	
N. of job hunting methods			
Mean	3.16	3.71	0.55^{***}
SD	1.64	1.76	

Table 2.2: Registered unemployment versus unregistered unemployment

	Unregistered in PEA	Registered in PEA
Qualification course (In the past)	10.75%	14.97 %
Education		
Middle school or less	44%	45%
Diploma 2-3 years	7%	9%
Diploma 4-5 years or more	48%	46%
Occupations classification		
Mean	3.26	2.73
SD	2.56	2.31
Sector		
Agriculture, forestry and fishing	5.41%	4.44%
Industry	9.62%	12.9%
Construction	16.16%	18.54%
Trade	14.15%	14.42%
Hotels and restaurants	14.53%	13.2%
Transport and storage	7.24%	7.22%
Information and communication services	2.63%	2.06%
Financial and insurance activities	1.05%	0.83%
Real estate activities, business, entrepreneurial	9.35%	8.97%
Public administration, social insurance	2.05%	2.09%
Education, health and other social services	6.47%	5.62%
Other collective and personal services	11.33%	9.71%

(Continues) Table 2.2: Registered unemployment versus unregistered unemployment

were registered as unemployed in a PEA. In addition, a higher registration rates among individuals with previous work experience were found, especially dependent workers, as well as among older people, and low education segments. Moreover, registered unemployed seem to have less unemployment duration that unregistered unemployment, the test of the difference in means suggest that this difference is almost six months[2]. The variation in unemployment duration implies that unemployed individuals, on average, register in the first six months of their unemployment spell. Moreover, a slight difference was observed in the occupations classification[3] between registered and unregistered unemployment.

Furthermore, 15% of the registered group has attended qualification courses in the past, whereas this fraction is lower among unregistered unemployed. Therefore, attending formation courses is expected to have a positive correlation with the registration decision. Moreover, a search intensity indicator was calculated as the number of methods that the interviewed individuals were using – excluding enrolling in a PEA – for seeking a

[2]T-test is significant at 0.001 with a value of 6.2

[3]T-test is significant at 0.001 with a value of 0.52

job. The minimum value of the search intensity indicator is 0 whereas the maximum is 10. The search intensity indicator tells us that unregistered unemployed seem to hunt job opportunities intensively just as registered unemployment. The previous indicator suggests that unemployed persons avoid registration in employment agencies not because they are less committed to finding a job, but probably because they do not believe in employment agencies' effectiveness. A proper probability model will be run in the next section to test hypotheses launched in this section.

2.5 The probability of registration

2.5.1 Empirical design

In this section, a probability model will be run to test the likelihood of registration in a PEA for the i-th unemployed individual according to official statistics as an attempt to understand the factors that encourage/discourage official unemployment decision to enroll in PEAs. The detection of the determinants of registration may form an essential step in the path of improving official and registered unemployment comparability.

Let Y_i be the binary choice variable that takes value 1 if the person is registered and 0 otherwise in the year before the interview. The basic model is of the form

$$P(Y_i = 1|X_i) = F(a + b'X_i) \tag{2.1}$$

where a and b are vectors of unknown parameters and X_i a vector of determinants whereas F denotes the cumulative standard normal distribution.

The independent variables in equation (2.1) belong to three broad categories: i) individual characteristics; ii) labour market indicators; iii) behavioral patterns based on individuals' access and knowledge of governmental programs. A more detailed explanation of the independent variables is required and is as follows. Individual characteristics collect four variables: migration status, education, age, and marital status. Those variables are essential to predict the registration decision because these factors directly affect the labour supply behaviour and often age relates to the eligibility of unemployment benefits based on the length of previous work experiences. Labour market variables consist of three groups: job searching intensity indicator which is expressed as the number of methods that the job seeker is using to hunt occupation, unemployment pressure indicator represented by the unemployment duration in months, and information about the previous job – if applicable – such as occupations classification and job sector. Lastly, the behavioural patterns for registration differ drastically on an individual's knowledge of governmental programs consequently participated in government-provided qualifications courses in the past in an indicator to test the behavioural pattern since it should alter individual's information about the services provided by PEAs and thus it is expected to

boost the likelihood of registration within an employment agency as stated by Wang and Sun (2014).

The registration at a PEA is rewarding from several aspects as it delivers benefits such as personnel management, training and other job searching assistance, in addition to the possibility to claim unemployment benefits. Therefore, individuals' decision in PEAs' enrolling is expected to alter dramatically depending on whether or not they are eligible for the payment of the unemployment insurance. In Italy, if the unemployed person has never contributed in the past to the social insurance system through a previous occupation, then he cannot claim financial unemployment support. Therefore, I claim that it would be proper to use previous work experience (PWE) as a proxy for the eligibility. In other words, unemployed individuals with previous work experience include eligible and ineligible candidates for unemployment benefits. On the contrary, unemployed people without PWE are definitely ineligible for unemployment financial support. Therefore, instead of entering PWE as a variable dummy, I would run the regression in equation (2.1) in two steps. First, using the sample of unemployed without PWE that are not eligible for unemployment benefits (model A). Second, using unemployed with PWE (model B). Finally, year, survey year, survey quarter, and region fixed effects will be added, and the marginal effects of the independent variables will be extracted to ensure the robustness of the analysis.

2.5.2 Results and discussion

The results of the marginal effects of the two probability models are illustrated in table 2.3. The dependent variables in both columns are whether the unemployed individual is registered with an PEA or not. The left column (model A), consists of unemployed individuals without PWE, thus, they are not qualified to claim unemployment insurance. Whereas, the right column (model B) contains individuals with previous work experience. In both models (A and B), immigrants seem to have a lower probability in PAEs' registration than Italians. Precisely, model A suggests that an unemployed immigrant in Italy have a 14% less likelihood to register in an PEA than Italian. This results may be driven by the fact that PEAs in Italy do not provide copies of its instructions in foreign languages. Therefore, the immigrant may find it complicated to enroll in a PEA to ask for assistance in finding a job. In fact, the unemployed foreign registration probability becomes slightly closer to an Italian citizen in model B when individuals have PWE, an explanation for this might be that the immigrant would apply extra effort to understand the registration mechanism if he is eligible for unemployment support. Age as well shows a different pattern in both models. The age effect among not eligible individuals is not clear, however, the age effect is evidently positive and progressive in model B. An explanation for this might be the positive correlation between age and years of working experience which alter the value of

	Without PWE (A)	With PWE (B)
i) Individual characteristics		
Gender (Male)	0.62 (0.00)	-1.9***(0.00)
Nationality (Italian)	14.2***(0.00)	10.2***(0.00)
Age 25-34	0.14 (0.00)	3.96***(0.00)
Age 35-44	02.67*(0.01)	5.97***(0.00)
Age 55-64	3.97*(0.01)	6.74***(0.00)
Age 55-64	0.71 (0.03)	7.78***(0.00)
Education (base: high school or less)		
Diploma 2-3 years	5.04***(0.01)	1.73**(0.00)
Diploma 4 years or less	0.0495*** (0.00)	-0.86*(0.00)
Marital status		
Married	4.94***(0.01)	2.32***(0.00)
Separated or Divorced	4.49**(0.02)	0.79(0.00)
Widowed	-2.84 (0.04)	0.68(0.01)
ii) Labour market indicators		
N. of searching methods (base: 3+)		
"0"	25.2***(0.05)	12.7***(0.02)
"1"	-13.7***(0.00)	-10.3***(0.00)
"2"	-9.85***(0.00)	-5.66***(0.00)
Unemployment spell (base: less than a month)		
From one to three months	10.3***(0.02)	6.61***(0.00)
From three to six months	21***(0.02)	7.05***(0.00)
From six months to a year	24.8***(0.02)	8.02***(0.00)
More than a year	31.3***(0.02)	7.10***(0.00)
Previous work information		
Occupations classification (base: Service-sales)		
Professional		-11.7***(0.00)
Technicians and associate professionals		-3.98***(0.00)

Table 2.3: The marginal effects of the registration probability in PEAs

	Without PWE (A)	With PWE (B)
Office occupations		2.62***(0.00)
Skilled agricultural, forestry and fishery workers		-0.46(0.00)
Plant and machine operators, and assemblers		2.89***(0.00)
Office occupations		2.62***(0.00)
Plant and machine operators, and assemblers		2.89***(0.00)
Elementary occupations		2.91***(0.00)
Sector (base: other personal services)		
Agriculture, forestry and fishing		-1.68(0.00)
Industry		5.97***(0.00)
Construction		3.5***(0.00)
Trade		0.9(0.00)
Hotels and restaurants		0.93(0.00)
Transport and storage		3.69**(0.01)
Information and communication services		0.39(0.01)
Financial and insurance activities		1.74(0.01)
Real estate activities, business, entrepreneurial		2.54***(0.00)
Public administration, social insurance		5.41***(0.01)
Education, health and other social services		3.56***(0.00)
i) Behavioural variable		
Qualifications course participation in the past	16.2***(0.01)	9.12***(0.00)
Year, region, and survey quarter fixed effect	YES	YES
Observations	20159	48896

$^{*}p < 0.05$, $^{*}*p < 0.01$, $^{*}**p < 0.001$

Standard errors in parentheses

(Continues) Table 2.3: The marginal effects of the registration probability in PEAs (%)

unemployment benefits that a person can ask and thus boost the registration likelihood as found by Crepaldi et al., (2014). A u-shaped pattern is found among educational segments in both models, with a maximum registration probability among first-level university graduates. Marital status has a more clear pattern among individuals that are

without PWE. Married and divorced individuals have from 4% to 5% higher probability of registering than unemployed that are single. An explanation for this might be the increasing responsibility that might create pressure to find a job as sooner as possible. As for the labour market indicator in table 2.4, the job search intensity indicator suggests that using other searching method lowers the probability to register in PEAs. Accordingly, unemployed person that actively searching for a job using several searching methods they do not necessarily consider enrolling in PAE as an option. For example, individuals with PWE that do not use any searching method they have registration probability that is 25% than individuals that uses more than three job searching methods. This means PAEs (customers) they mostly count only on the PEA to find them an occupation.

The duration of unemployment is negatively related to the enrollment decision in PEAs in both models: the longer the unemployment spell, the less is the probability of enrolling in PEAs subsequently.

Finally, qualifications courses that have been followed in the past – as expected – rises the registration probability by 16.2% for unemployed individuals without PWE, whereas, unemployed with PWE have 9.12% higher probability of registering than individuals that did not follow training course. This result is in line with the finding by Wang and Sun (2014) that they conclude that the vocational training provided by public authorities raise the awareness of the services and programs provided by PEAs, thus, boost the registration likelihood.

2.6 Concluding remarks

This paper used a large sample of the LFS to investigate some issues related to measuring unemployment in the Italian context. First, by using self-reported questions about registration in Public Employment Agencies (PEAs), I constructed a group of individuals with active registrations, and I compared it to their labour status according to official statistics. I found that 17% of registered unemployment was employed according to official statistics, whereas 33% were out of the labour force and only 50% of the registered individuals were classified unemployed in the official standards. Besides, I found that only 26% of unemployed individuals in official statistics were using a PEA as part of their job-search strategy.

Further, I investigated the sources of the heterogeneity between official and registered unemployment, in particular, the determinants of an unemployed decision to enroll in a PEA. By conducting a model for the registration probability for individuals that are without previous work experience (PWE) so illegible for unemployment benefits, and another model for individuals without PWE so may or may not be eligible. I found that personal characteristics and labour market variables significantly differed between individuals with and without PWE, which confirms that eligibility for unemployment benefits alters the

registration decision. Moreover, I found that participation in qualification courses in the past has a positive influence on the unemployed person decision in using a PEA as part of job searching strategy, as it raises the awareness of the agencies' services.

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Chapter 3

Are they Over Satisfied? The Gap between Subjective and Objective Position of Immigrants in the Italian Labour Market

3.1 Overview

By objective standards, the situation of immigrants in the labour market tends to be worse than that of natives. Yet some subgroups of the immigrant population report relatively higher levels of perceived income and job satisfaction than native-born workers. This paper investigates this matter in two steps using a large sample of workers from the Italian Labour Force Survey. First, the determinants of objective labour market position and subjective work perceptions are assessed separately, particularly from the perspective of gender and migration status but also taking into account other personal characteristics of workers and labour market variables. Second, this paper estimates the gap between subjective work perceptions and objective work status, breaking it down by various dimensions. Results indicate that female immigrants and immigrants from developing countries report higher income and job satisfaction than natives when considering the actual job position.[1]

3.2 Introduction

Over the past decades, European countries have received a significant inflow of immigrants. According to Eurostat, the total number of people living in an EU Member State

[1]This work is supported by a public grant overseen by the French National Research Agency (ANR-18-CE22-0013-01).

with citizenship of a non-member country on 1 January 2018 was 22.3 million, representing 4.4% of the EU-28 population. As shown in figure 3.1, the largest share of recent population growth in Europe is due to immigration. In fact, in the absence of a net inflow of migrants, the size of the European population would have fallen by one per cent between 2000 and 2015 instead of growing by two per cent (UN, 2017). Economic research on migration provides clear evidence that immigrants have a positive impact on unskilled native workers' achievements in the labour market. For example, newcomers can affect the wages, employment, and occupational mobility of natives (cf. Foged and Peri, 2016), mainly due to an increase in productivity and competitiveness (cf. Borjas, 1990). For the reasons just mentioned, combined with Europe's ageing population problem, the labour-market performance of immigrants in their host country is a crucial issue that needs to be studied in depth.

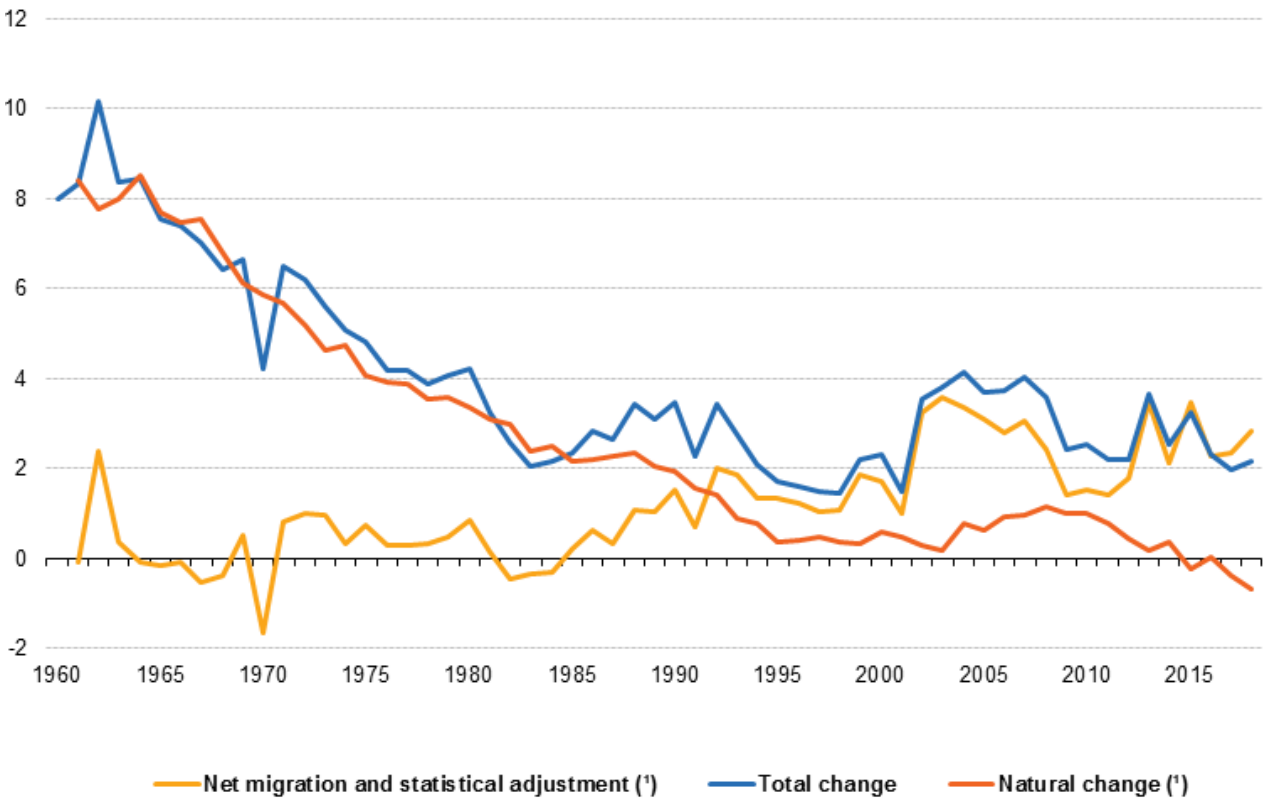

Figure 3.1: Population change by component (annual rates), EU-28 1960-2018,Source: Eurostat (online data code: demo_gind)

Through work, an individual can achieve financial independence, thus acquiring more freedom. Additionally, work gives individuals a chance to find purpose by committing to something essential; it also makes them feel valued (cf. Blomberg et al., 2008). Moreover, correlation, multiple regression, and canonical correlation analyses all point to a positive relationship between job satisfaction and job performance (cf. Pincus, 1986).

Researchers have therefore started to analyse the subjective parameters associated with an individual's position in the labour market, such as job satisfaction and its determinants. Women thus tend to report higher job satisfaction than men (cf. Clark, 1997). Glenn and Weaver (1982) attempted to explain this finding by suggesting that women's educational attainment is lower than men's on average, which may lower their expectations and increase their relative job satisfaction as a result. Ross and Reskin (1992) confirmed that education and job satisfaction are positively correlated for highly educated individuals. Meanwhile, Benin and Nienstedt (1985) explored other factors related to job satisfaction and provided evidence of the positive correlation between marital happiness and job satisfaction. Besides, company size has been found to be inversely related to job satisfaction (cf. Worthy, 1950; Baumgartel and Sobol, 1959; Talacchi, 1960). Job satisfaction has also been shown to be negatively correlated with age until 31, after which it starts increasing again with age, as stated by Clark et al. (1996). Additionally, migration scholars have studied immigrant satisfaction from various perspectives. Controlling for personal characteristics, immigrants have been found to have either lower life satisfaction (cf. Graham and Markowitz, 2011; Otrachshenko and Popova, 2014; Chindarkar, 2014) or higher life satisfaction than natives (cf. Bartram, 2013). However, their overall life satisfaction decreases as the duration of stay in the destination country increases (cf. Obućina, 2013). Likewise, several investigations have been made into job satisfaction among immigrants (cf. Jong et al., 2002; Van Praag et al. 2010; Amit and Riss, 2014; Kifle et al., 2016). Immigrant job satisfaction is directly related to ethnic identity (cf. Valdivia and Flores, 2012). However, these prominent studies fail to address whether job (dis)satisfaction is a direct result of the worker's actual position in the labour market, or whether it is merely a matter of high (or low) expectations.

In parallel, a large body of studies have addressed the determinants of labour-market achievements from an objective perspective. For instance, Altonji and Blank (1999) provide evidence of a gender wage gap in favour of men. Several migration scholars have found the position of immigrants in the host labour market to be worse than the native-born population's position (cf. De Beijl, 2000; Kaas and Manger,2012; Kingston et al., PJ, 2015; Nicodemo and Ramos, 2012). Additionally, the country of origin has been shown to have a crucial impact on immigrants' labour market outcomes (Moore and Amey, 2002; Barrett and Duffy, 2008). However, Bloom and Gunderson (1991) and Kogan (2003) have implied that immigrants' labour market position significantly improves as the duration of their stay in the host country increases. Looking at the issue from the perspective of gender, Semyonov and Gorodzeisky (2005) point out that female immigrants' labour-market position tends to be worse than male immigrants'. However, generally speaking, only few investigations have been made into the determinants of subjective work perceptions, linking them directly to individuals' actual position in the labour market. Amit and Bolotin (2018) have introduced the idea of a mismatch between subjective work perceptions and objective labour-market position among immigrants in the Israeli context. They find

that women and immigrants from disadvantaged ethnic groups were more satisfied in the labour-market considering their actual position in it.

This paper contributes to the literature on job and income satisfaction and the labour-market integration of immigrants in three ways. First, it creates a subjective work index (SWI) to capture job and income satisfaction, as well as an objective work index (OWI) to represent income and actual labour-market position. Second, it investigates the determinants of objective and subjective work indices among workers in the Italian labour market from the perspectives of gender and migration. Third, this paper estimates the gap between SWI and OWI and addresses the determinants of this subjective gap. It concludes with three key findings. First, it provides evidence that the actual labour-market position of immigrants is worse than that of the native-born population, especially among females and immigrants from developing countries (except for the China). Second, female immigrants are shown to be more satisfied with their position than either male immigrants or native-born Italian women. Third, on average, female immigrants' and immigrants from developing countries' assessment of their work situation tends to be further from their actual position relative to native workers, except for the Albanians, Moroccans, and Chinese. The rest of this paper is organized as follows: section 2 outlines the specifications of the Italian case; section 3 describes the data and method used to carry out this study; section 4 presents the results of the study; and section 5 is the conclusion.

3.3 The Italian case

Italy's transformation from an emigration country to a major destination for international immigration has been swift, particularly over the last 30 years (cf. Calavita, 2005). This phenomenon is due not only to the country's porous borders and proximity to the southern shore of the Mediterranean, but also to the demands of the Italian economic system and its yearly quota system for the admission of foreign nationals for work purposes. In Italy, immigrants are recognized as a necessary workforce in different areas and professions, although they are still not acknowledged as an essential element of society. They tend to work in the agricultural and service sectors rather than in industry. Furthermore, female employment in services is an essential feature of the Italian immigration structure. Female immigrants mostly work as cleaners, domestic workers and in the area of elderly care services (cf. Pugliese, 2011). The largest share of immigrants come from North Africa, with the remaining migration inflows originating mainly from Eastern Europe. Africans immigrants have the fewest career prospects compared to Eastern European and Asian workers, and most of them have seasonal or temporary jobs or switch between legal and illegal employment (cf. Venturini and Villosio, 2008). Nevertheless, the vast majority of immigrants entering Italy are not at risk of becoming unemployed. Indeed, the gap in the unemployment rate between new immigrants and native workers is low

or insignificant (cf. Reyneri and Fullin, 2008; Jean et al., 2011). However, according to Fullin and Reyneri (2011), immigrants are disadvantaged as regards the jobs they hold in the Italian labour market, especially when taking into account educational attainment. In other words, immigrants obtain low-skilled jobs fairly easily but have difficulty getting non-manual jobs. Another characteristic of immigrants in Italy is their ability to replace local workers (Reyneri, 2004). For example, the rising labour force participation of better-educated young women appears to be creating demand for foreign workers to take the hardest, lowest-paid jobs, such as housework, childcare and, above all, eldercare. This situation, combined with a steadily ageing population in recent decades, has contributed to an increase in demand for labour in the sector (cf. Domingo et al., 2007; Ambrosini, 2001).

3.4 Method

This paper uses cross-sectional quarterly data from the Italian Labour Force Survey (LFS) conducted by the National Bureau of Statistics (ISTAT) from the first quarter of 2008 to the last quarter of 2018. The Italian LFS provides information on a random sample of 6,129,706 individuals of working age, of whom 36% are working. The data includes information on income, occupation classification, job and income satisfaction, as well as rich demographic and economic variables. Individuals were contacted to participate after their names were randomly extracted from the population lists containing the names of all families residing in the municipality. The information collected was used to compile data on employment and unemployment. Employed individuals were asked about their job and the characteristics of their professional activity. Table 3.1 presents further information on usable observations.

	Italian	**Immigrant**	**Male**	**Female**	**Total**
Observations (N1)	6,402,423	377,677	3,176,034	3,604,066	6,780,100
In working age (N2)	5,779,464	350,242	2,878,690	3,251,016	6,129,706
Working	35%	61%	46%	27%	36%
Unemployed	6%	7%	10%	4%	6%
Out of labour force	59%	32%	44%	69%	57%
Working sample (N3)	1,997,776	215,225	1,331,131	881,870	2,213,001

Table 3.1: Description of the sample

3.5 Variables and analyses

This section introduces three dependent variables: an objective work index, a subjective work index, and the subjective gap. Subjective and objective work indices were com-

puted by borrowing from the technique used by Amit and Chachashvili-Bolotin (2018) to calculate their subjective and actual integration indices in the labour market. The objective work index (OWI) represents the actual job positions held by interviewees in the labour market, and it was calculated as a mean of two variables: income and occupation classification. Income was measured by asking the following question: What was your net salary last month, for all jobs combined? Answers were organized in 10 categories ranging from 1 to 10, where 1 was identified as the lowest income and 10 as the highest income in comparison to others in the sample. Occupation classification was also scaled from 1 to 10, "1" being the lowest-ranking jobs and "10" the highest-ranking ones based on the Italian Standard Classification of Occupations 2011 (CP2011). CP2011 is a four-level hierarchically structured classification that covers all jobs in the world, categorizing them into 10 major groups. Starting from 2011, Istat has adopted the classification of professions CP2011, the result of updating the previous version (CP2001) and adapting to the innovations introduced by the International Standard Classification of Occupations - Isco08 (see appendix A). The highest category was omitted due to lack of observations.

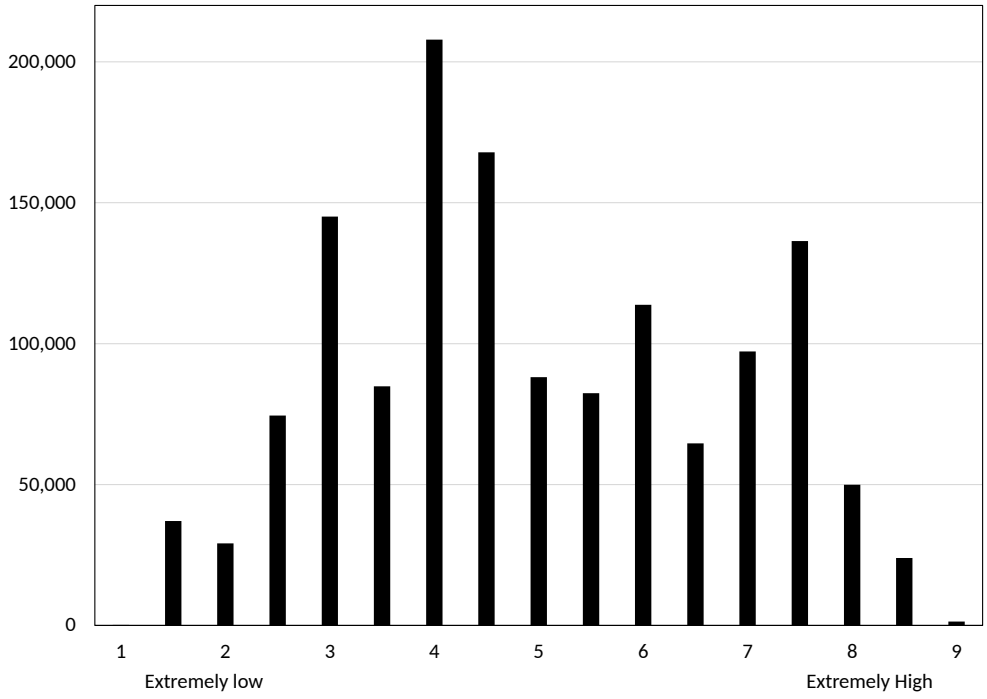

Figure 3.2: Objective work index distribution

As shown in figure 3.2, the objective work index has an approximately normal distribution, concentrated around a mean of 5. However, the value of the standard deviation is 1.78, which points to a noticeable inequality in the sample.

The second dependent variable in our analysis is the subjective work index (SWI), which provides information on workers' income and job satisfaction. Accordingly, the SWI was measured by asking two questions: (a) How satisfied are you with your income?

(b) How satisfied are you with your current job? Answers ranged from 1 to 10, where "1" was identified as "not satisfied at all" and "10" as "completely satisfied". I have omitted all occurrences of the answer "10" as it is an extreme response, which may cast doubt on its reliability. Consequently, the subjective work index only ranges from 1 to 9. The distribution of workers' SWI index is illustrated in figure 3.3.

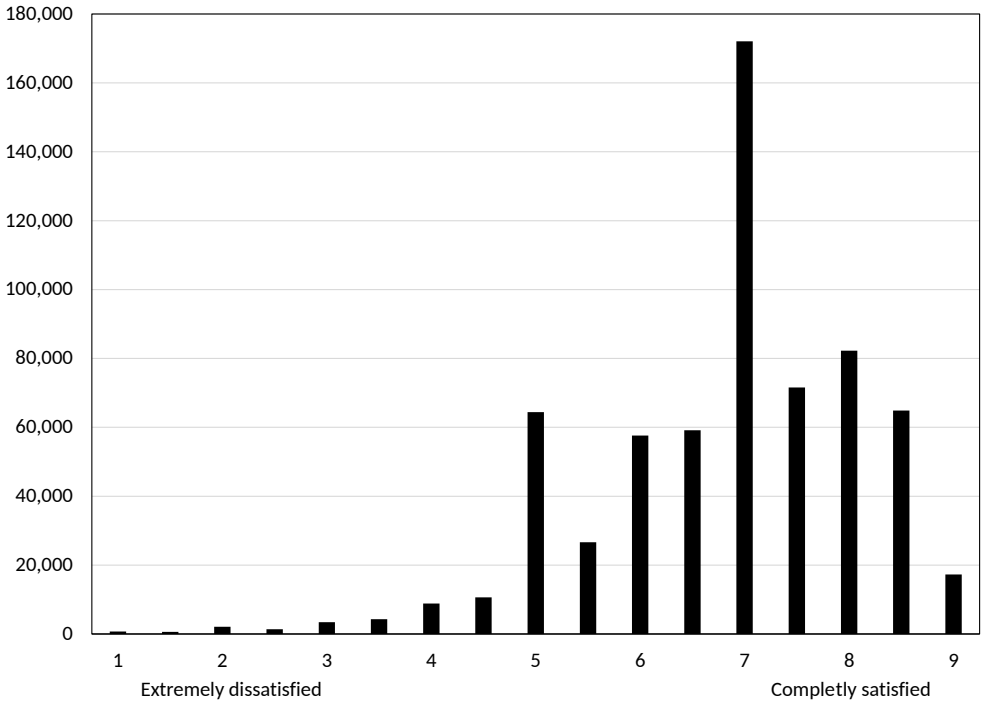

Figure 3.3: Subjective work index distribution

According to these data, workers in Italy seem to be generally satisfied with their work and income, as shown by the SWI mean of 6.8. The reported standard deviation is 1.2. Figure 3.4 represents the share of immigrants and native-born Italians in each of the objective and subjective work indices. As shown in figure 3.4, the objective index appears to be lower for immigrants than for locals. However, the SWI shows no sign of a divergence between immigrants and native-born Italians.

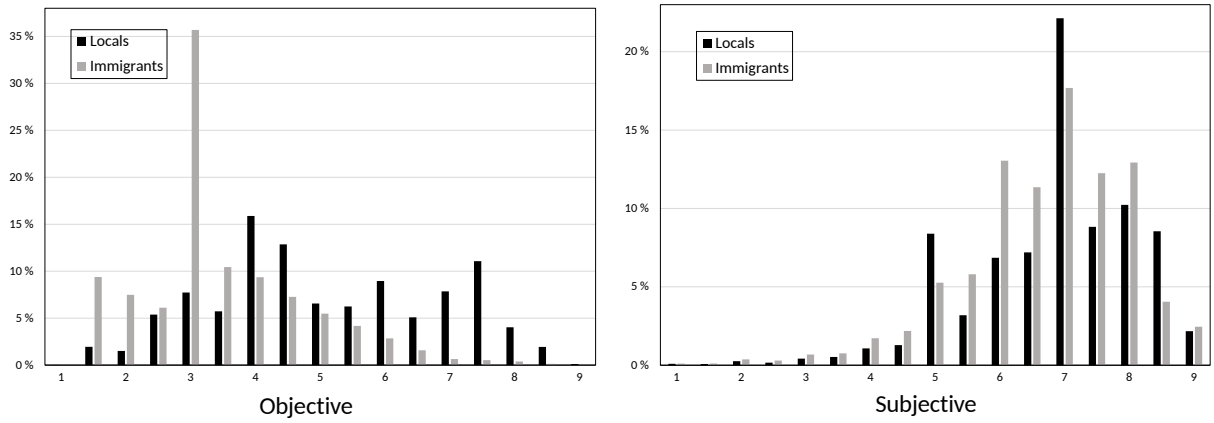

Figure 3.4: Subjective and objective variables by migration status (proportions)

Finally, the third variable is the subjective gap (SG), which measures the disparity between workers' feelings about their job and their actual position in the labour market. It is computed by subtracting the objective work index from the subjective work index (SWI-OWI=SG). The distribution of the subjective gap is illustrated in figure 3.5.

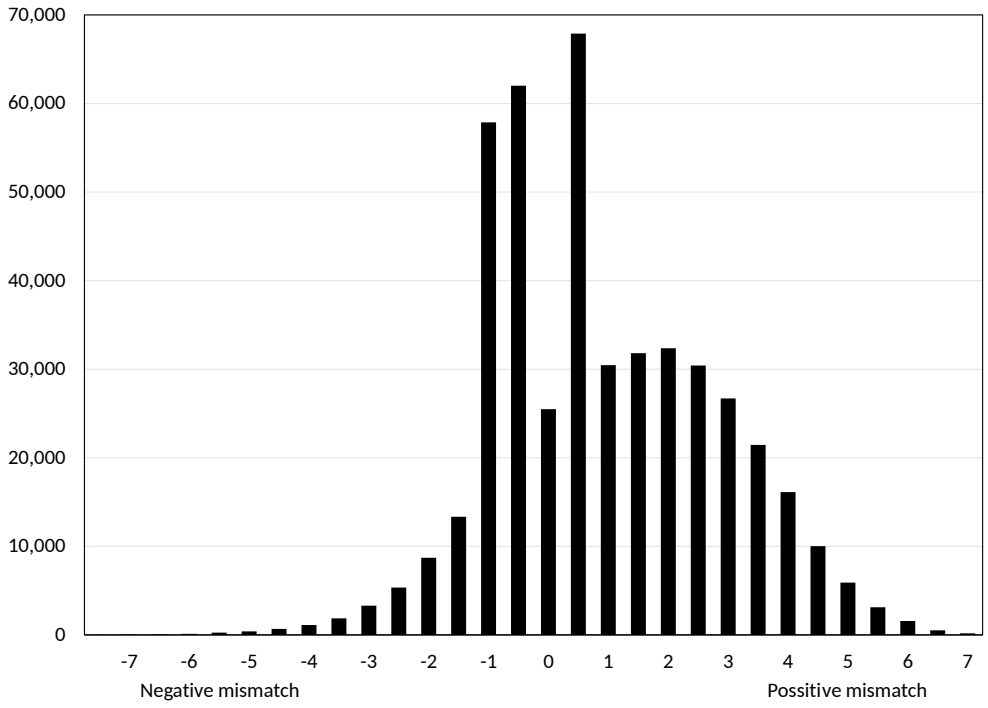

Figure 3.5: The subjective gap distribution

The subjective gap variable ranges from -8 to 8 with a positive mean of 1.39. When an individual's subjective gap is positive, it indicates that their SWI is higher than their OWI. In other words, the mean of their level of satisfaction with work and income is

higher than the mean of their actual income and occupation classification, and vice versa for a negative subjective gap.

Table 3.2 presents the means and standard deviations of the OWI, SWI, SG, as well as their components. As far as the OWI is concerned, significant differences in average

		Italians	Immigrants	t-test	Males	Females	t-test
Income classification	Mean	4.87	2.92	1.94***	4.92	4.35	0.57***
	SD	2.59	2.24	–	2.66	2.54	–
Job classification	Mean	5.52	4.17	1.35***	5.14	5.78	0.64***
	SD	1.95	1.42	–	2.02	1.77	–
Objective parameter	Mean	4.58	3.43	1.67***	4.84	5.05	0.20***
	SD	2.27	1.28	–	1.77	1.79	–
Income satisfaction	Mean	6.34	6.41	0.06***	6.19	6.59	0.40***
	SD	1.71	1.50	–	1.80	1.47	–
Job satisfaction	Mean	7.34	7.00	0.34***	7.31	7.32	0.012***
	SD	1.35	1.35	–	1.38	1.31	–
Subjective parameter	Mean	6.83	6.68	0.15***	6.81	6.85	0.041***
	SD	1.28	1.27	–	1.34	1.17	–
The subjective gap	Mean	1.20	3.15	1.95***	1.24	1.56	0.31***
	SD	1.82	1.63	–	1.76	2.02	–
Education	Mean	4.5	3.93	0.55***	4.62	4.29	0.09***
(Scale from 1 t o 6)	SD	1.18	1.28	–	1.18	1.2	–
Age	Mean	45.16	41.21	3.81***	44.77	44.73	0.80***
	SD	10.79	10.28	–	10.62	10.95	–
Years of immigration	Mean	–	14.96	–	14.47	15.41	0.11***
	SD	–	6.28	–	5.98	6.52	–
Employer size	Mean	3.22	2.19	1.34***	3.22	2.98	0.23***
(Scale from 1 t o 6)	SD	1.91	1.68	–	1.92	1.90	–

Table 3.2: Means and standard deviations

income and job classification were found between immigrants and locals, which means that the objective work index varies by migration status. The data seems to indicate that immigrants' actual labour market position tends to be worse than locals'. In contrast, while gender differences were also detected in the OWI, they were found to be less pronounced.

Rows 4 to 6 tabulate income and job satisfaction as well as the SWI. The data suggests that there are no significant differences in average income satisfaction between immigrants and locals. However, job satisfaction was found to be slightly higher among immigrants than among native-born Italians. We also see a slight difference in income satisfaction across gender. Finally, as shown in row 7, there is a significant difference in the subjective

gap between immigrants and locals. In other words, immigrants seem to be more satisfied than locals with their actual position in the labour market.

In summary, this section leads me to put forth the following hypothesis: the OWI shows high heterogeneity in favor of locals. However, no significant differences were detected in the SWI. In other words, despite the fact that immigrants' actual labour market position appears to be worse, both immigrants and locals seem to have the same level of satisfaction. Therefore, it is now necessary to test the existence of a proper relationship between the dependent variables and the different identity groups, using a formal significance test to assess the linearity of this relationship. These tests aim to control for other characteristics and factors that may affect the objective and subjective work indices. The hypothesis is tested using an Ordinary Least Squares method (OLS), in three steps as follows:

$$Y_i = BX_i + e_i \tag{3.1}$$

In equation (3.1) , dependent variable Y_i represents the respective expected outcome of the SWI, OWI, and SG separately, while B is the coefficient of each control variable X_i. The analysis was conducted in four stages. The control variables introduced in the first stage are key to understanding the labour market integration of immigrants. They all appear in the literature on migration and can be divided into work- and non-work-related categories. Non-work-specific determinants include general demographic and migration-related factors expressed statistically, such as gender, migration status, age, age-squared, education, marital status, and years since migration. Work-specific determinants include employer size and the type of working contract. Fixed effect controls, such as region and year-quarter fixed effects, are used to ensure the robustness of the analysis. For instance, let us assume that an individual k has a characteristic X_i such that BX_i=2. Then the expected mean of the dependent variable for individual k is twice as high as for an individual that does not have the characteristic in question. In the second stage, I introduce a dummy for the interaction between being a woman and an immigrant, to check whether the gender effect is stronger than the migration effect. In the third stage, I insert a dummy variable representing the level of development of the country of origin in order to determine the impact of being an immigrant from a developing country on the dependent variables. Finally, in the fourth stage, I introduce dummies that included candidates coming from the nine most common foreign nationalities of immigrants living in Italy to evaluate the impact of being an immigrant from a specific country on the variables of interest.The complete analysis is repeated for each dependent variable – the SWI, the OWI, and the SG. Multivariate regression results are reported in the next section.

3.6 Results

3.6.1 Objective work index

The first part of the analysis consists in testing the determinants of the objective work index. Table 3.3 displays the results of OLS regressions in which the Objective work index

Objective	(1)	(2)	(3)	(4)
Immigrant	-1.05***(0.01)	-0.90***(0.02)	-0.57***(0.03)	-0.61***(0.03)
Gender (Female)	-0.30***(0.00)	−0.08***(0.00)	-0.27***(0.01)	-0.08***(0.01)
Elementary degree	-0.59***(0.03)	−0.49***(0.03)	-0.58***(0.03)	-0.45***(0.03)
Middle School diploma	0.02(0.03)	0.04(0.03)	0.04(0.03)	-0.12***(0.03)
Diploma 2-3 years	0.53***(0.03)	0.54***(0.03)	0.54***(0.03)	0.61***(0.03)
Diploma 4-5 years	1.30***(0.03)	1.32***(0.03)	1.32***(0.03)	1.25***(0.03)
University degree	2.54***(0.03)	2.56***(0.03)	2.55***(0.03)	2.30***(0.03)
Full-time job	1.66***(0.00)	1.66***(0.01)	1.66***(0.00)	1.56***(0.00)
Age	0.09***(0.00)	0.09***(0.00)	0.09***(0.00)	0.08***(0.00)
Age^2	-0.68***(0.02)	-0.68***(0.02)	-0.68***(0.02)	-0.68***(0.02)
Married	0.27***(0.01)	0.27***(0.01)	0.27***(0.00)	0.21***(0.00)
Separated or divorced	0.05***(0.01)	0.05***(0.01)	0.06***(0.00)	0.01***(0.00)
Widower	-0.12***(0.02)	-0.10***(0.02)	-0.1***(0.02)	-0.01***(0.02)
Years since migration/100	-0.55***(0.00)	-0.82***(0.00)	-0.76***(0.00)	-0.56***(0.00)
Employer size				
Between 10 and 15	0.18***(0.01)	0.17***(0.01)	0.17***(0.01)	0.18***(0.00)
Between 16 and 19	0.34***(0.01)	0.33***(0.01)	0.33***(0.01)	0.44***(0.00)
Between 20 and 49	0.30***(0.01)	0.29***(0.01)	0.3***(0.01)	0.58***(0.01)
Between 50 and 249	0.46***(0.01)	0.45***(0.01)	0.45***(0.01)	0.45***(0.01)
250 and more	0.69***(0.01)	0.69***(0.01)	0.69***(0.00)	0.69***(0.00)
Female*Immigrant		-0.26***(0.01)	-0.27***(0.01)	-0.31***(0.01)

Table 3.3: Objective work index regressions

Objective	(1)	(2)	(3)	(4)
Developing			-0.35***(0.02)	-0.2***(0.03)
Country of origin				
Albania				0.22***(0.02)
Moldova				-0.16***(0.03)
Romania				-0.05**(0.02)
Morocco				0.08**(0.03)
Ukraine				-0.4***(0.03)
China				0.88***(0.03)
Philippine				-0.72***(0.03)
Ecuador				-0.11**(0.04)
Poland				-0.28***(0.04)
Region fixed effect	YES	YES	YES	YES
Year/quarter fixed effect	YES	YES	YES	YES
Observations	423546	423546	423546	446880

Standard errors in parentheses $^{*}p < 0.05$, $^{*}*p < 0.01$, $^{*}**p < 0.001$

(Continues) Table 3.3: Objective work index regressions

is the dependent variable. Column 1 shows that being an immigrant lowers the expected mean of the OWI by 1 degree compared to locals. The expected mean of the OWI is also 0.3 time lower for women than for men. High education, full-time job, and marriage dummies all increase the expected OWI, in accordance with what is found in the literature (cf. Ionescu and Cuza, 2012; Green and Riddell, 2001; Brown and Medoff, 1989). Age has a relatively low impact on the objective work index, whereas age-squared is negatively associated with it. This only means that age only affects the objective parameter after a certain age. As shown in column 2, female immigrants have a lower OWI than Italian women (-0.26). The developing country dummy is associated with an OWI that is 0.35 lower compared to immigrants from developed countries. Finally, the country of origin dummies -except Albania, Morocco, and China- all associated with relatively low OWI comparing to other immigrants and native-born Italians.

3.6.2 Subjective work index

Table 3.4 displays the results of OLS regressions in which the subjective work index is the dependent variable. Column 1 shows that immigrants seem to be less satisfied than natives with their position in the labour market, as their SWI is lower by 0.7. Education, marriage, and a full-time job are found to be positively associated with the subjective work index. As shown in column 2, female immigrants are slightly more satisfied with their position in the labour market than Italian women. Altogether, the results in Tables 3.3 and 3.4

demonstrate that past research has made significant strides towards our understanding of the factors influencing an individual's objective and subjective work indices. Our results are in line with the literature that shows that immigrants suffer more in the labour market and register lower levels of satisfaction than locals. But this work has added value in that it provides evidence of the higher satisfaction with the labour market reported by female immigrants relative to native women. It also shows that immigrants from developing countries report the same level of satisfaction as locals even after extending the test for countries of origin.

Subjective	(1)	(2)	(3)	(4)
Immigrant	-0.17***(0.02)	-0.25***(0.02)	-0.26***(0.03)	-0.15***(0.03)
Gender (Female)	0.06***(0.00)	0.05***(0.01)	0.05***(0.01)	0.03***(0.00)
Elementary degree	0.28***(0.04)	0.27***(0.03)	0.27***(0.03)	0.11***(0.03)
Middle School diploma	0.34***(0.03)	0.34***(0.03)	0.33***(0.03)	0.19***(0.03)
Diploma 2-3 years	0.41***(0.03)	0.41***(0.03)	0.406***(0.03)	0.27***(0.03)
Diploma 4-5 years	0.44***(0.03)	0.43***(0.03)	0.43***(0.03)	0.33***(0.03)
University degree	0.44***(0.03)	0.43***(0.03)	0.43***(0.03)	0.35***(0.03)
Full-time job	0.36***(0.00)	0.36***(0.01)	0.36	0.32***(0.00)
Age	-0.00*(0.00)	-0.00*(0.00)	-0.00385*(0.00)	-0.00**(0.00)
Age^2	-0.06**(0.02)	-0.06**(0.02)	-0.0570**(0.02)	-0.04***(0.01)
Married	0.16***(0.01)	0.16***(0.00)	0.16***(0.01)	0.17***(0.00)
Separated or divorced	0.06***(0.01)	0.05***(0.00)	0.05***(0.01)	0.00***(0.00)
Widower	0.19***(0.02)	0.19***(0.01)	0.19***(0.01)	0.12***(0.00)
Years since migration/100	0.49***(0.00)	0.56***(0.00)	0.57***(0.00)	0.46***(0.00)
Employer size				
Between 10 and 15	0.06***(0.00)	0.06***(0.00)	0.0637***(0.01)	0.09***(0.00)
Between 16 and 19	0.09***(0.00)	0.09***(0.00)	0.09***(0.01)	0.11***(0.01)
Between 20 and 49	0.08***(0.01)	0.08***(0.01)	0.08***(0.01)	0.1***(0.01)
Between 50 and 249	0.09***(0.01)	0.09***(0.00)	0.09***(0.01)	0.1***(0.01)

Table 3.4: Subjective work index regressions

Subjective	(1)	(2)	(3)	(3)
250 and more	0.09***(0.00)	0.09***(0.00)	0.09***(0.01)	0.09***(0.01)
Female*Immigrant		0.13***(0.01)	0.130***(0.01)	0.04***(0.01)
Developing			0.02(0.02)	-0.04(0.03)
Country of origin				
Albania				-0.02(0.02)
Moldova				0.09***(0.03)
Romania				0.12***(0.02)
Morocco				-0.22***(0.02)
Ukraine				0.21***(0.02)
China				0.07*(0.03)
Philippine				0.09***(0.03)
Ecuador				0.06(0.04)
Poland				-0.09*(0.04)
Region fixed effect	YES	YES	YES	YES
Year/quarter fixed effect	YES	YES	YES	YES
Observations	449182	449182	449182	448343

Standard errors in parentheses $^{*}p < 0.05$, $^{*} * p < 0.01$, $^{*} * *p < 0.001$

(Continues) Table 3.4: Subjective work index regressions

3.6.3 The subjective gap

The subjective gap is a variable representing the disparity between a worker's assessment of their position in the labour market and their actual job position. If the difference between the subjective perceptions and objective position is negative, it means the individual is less satisfied with their position in the labour market than they should be. Conversely, if the subjective gap is positive, then the individual's subjective assessment of their job is higher than it should be. I estimated equation (3.1) with the subjective gap as a dependent variable. The subjective gap variable ranges from -8 to +8. When the

The subjective gap	(1)	(2)	(3)	(4)
Immigrant	0.83***(0.02)	0.63***(0.02)	0.29***(0.03)	0.49***(0.04)
Gender (Female)	0.36***(0.00)	0.32***(0.00)5	0.31***(0.00)	0.17***(0.00)
Elementary degree	0.89***(0.04)	0.88***(0.0)	0.87***(0.04)	0.65***(0.04)

Table 3.5: The subjective gap regressions

The subjective gap	(1)	(2)	(3)	(4)
Middle School diploma	0.36***(0.04)	0.33***(0.04)	0.33***(0.04)	0.17***(0.04)
Diploma 2-3 years	-0.0827(0.0424)	-0.10*(0.04)	-0.10*(0.04)	-0.25***(0.04)
Diploma 4-5 years	-0.82***(0.04)	-0.85***(0.04)	-0.85***(0.04)	-0.84***(0.04)
University degree	-2.08***(0.04)	-2.10***(0.04)	-2.10***(0.04)	-1.94***(0.04)
Full-time job	-1.24***(0.00)	-1.24***(0.00)	-1.24***(0.01)	-1.19***(0.00)
Age	-0.09***(0.00)	-0.09***(0.00)	-0.09***(0.00)	-0.09***(0.02)
Age^2	0.65***(0.02)	0.66***(0.02)	0.65***(0.02)	0.67***(0.02)
Married	-0.09***(0.01)	-0.09***(0.00)	-0.09***(0.01)	-0.08***(0.00)
Separated or divorced	0.00(0.01)	0.00(0.01)	0.00(0.01)	-0.019***(0.01)
Widower	0.30***(0.02)	0.29***(0.02)	0.28***(0.02)	0.19***(0.02)
Years since migration/100	1.05***(0.00)	1.24***(0.00)	1.39***(0.00)	-0.16***(0.00)
Employer size				
Between 10 and 15	-0.22***(0.01)	-0.21***(0.01)	-0.21***(0.01)	-0.16***(0.00)
Between 16 and 19	-0.36***(0.01)	-0.35***(0.01)	-0.35***(0.01)	-0.31***(0.00)
Between 20 and 49	-0.34***(0.01)	-0.33***(0.01)	-0.33***(0.01)	-0.27***(0.01)
Between 50 and 249	-0.48***(0.01)	-0.48***(0.01)	-0.48***(0.01)	-0.44***(0.00)
250 and more	-0.72***(0.01)	-0.71***(0.01)	-0.71***(0.01)	-0.62***(0.01)
Female*Immigrant		0.37***(0.02)	0.39***(0.02)	0.29***(0.01)
Developing			0.33***(0.03)	0.18***(0.03)
Country of origin				
Albania				-0.25***(0.03)
Moldova				0.25***(0.04)
Romania				0.14***(0.02)
Morocco				-0.29***(0.03)
Ukraine				0.56***(0.03)
China				-0.77***(0.05)
Philippine				0.78***(0.04)
Ecuador				0.16***(0.05)

(Continues) Table 3.5: The subjective gap regressions

The subjective gap	(1)	(2)	(3)	(4)
Poland				$0.16^{***}(0.06)$
Region fixed effect	YES	YES	YES	YES
Year/quarter fixed effect	YES	YES	YES	YES
Observations	407186	407186	407186	368674

Standard errors in parentheses $^{*}p < 0.05$, $^{*}*p < 0.01$, $^{*}**p < 0.001$

(Continues) Table 3.5: The subjective gap regressions

coefficient is positive, it means that the control variable is associated with a positive difference between the SWI and OWI, whereas a negative coefficient indicates that the tested control variable is responsible for a SWI that is lower than the OWI. The coefficients in column 1 of table 3.5 suggest that the SG is higher for immigrants than for native-born Italians (0.83) and for women than for men (0.36). In other words, the gap between the SWI and OWI is wider for immigrants and for women than for locals and for males respectively. High education, a full-time job, and employer size are all associated with a reduction in the subjective gap. Age-squared widens the expected gap, which means that the SG is positively correlated with age only after a certain age. As shown in column 2 of table 3.5, the SG is wider for female immigrants than for native-born women. The developing country dummy in column 3 suggests that the mean of the subjective gap is higher (0.33) for immigrants from developing countries than for immigrants from developed countries or for locals. Finally, dummies of the country of origin confirm that immigrants from the most common foreign nationalities in Italy also have a higher subjective gap than other immigrants or locals except for Albania, Marrocco, and china that are all associated with negative subjective gap.

3.6.4 Robustness checks

In this section, I run several checks to ensure the robustness of the analysis. The first robustness check illustrated in tables 3.6 and 3.7 replicates the subjective gap analysis for 2014 and 2018 respectively. The results remain unchanged, which means that there is no variation depending on the period selected. Second, I run the subjective gap regressions using an ordered probability model, as it is incorrect to treat ordinal satisfaction data as though they were cardinal (cf. Bryman & Carmer, 1990). Table 3.8 confirms the robustness of the analysis as the results remain the same despite the use of a different method. Third, I borrow the mismatch technique from Amit and Chachashvili-Bolotin (2018) to compute the subjective gap in a different way. The new subjective mismatch variable is dichotomous: "1" indicates a positive subjective mismatch while "0" represents a negative subjective mismatch. A positive subjective mismatch is defined as the respondent's SWI being at least half a standard deviation above their OWI. In contrast,

a negative subjective mismatch is defined as the respondent's SWI being at least half a standard deviation below their OWI. I run a probability model using the subjective mismatch variable in order to measure the probability of being positively matched (1) vs being negatively matched (0). Table 3.9 displays the mismatch regression results, which are in line with the results of the subjective gap regressions. Finally, I run the same analyses using the gap between income satisfaction and actual income(table 3.10), and between work satisfaction and job satisfaction(table 3.11). The results, however, remain identical to the findings of the subjective gap analysis.

The subjective gap 2014	(1)	(2)	(3)	(4)
Immigrant	0.87***(0.05)	0.56***(0.05)	0.19*(0.08)	0.32***(0.09)
Gender (Female)	0.71***(0.01)	0.66***(0.01)	0.65***(0.01)	0.49***(0.00)
Age	-0.09***(0.00)	-0.09***(0.00)	-0.09***(0.00)	-0.08***(0.00)
Age^2	0.56***(0.05)	0.57***(0.05)	0.57***(0.05)	0.56***(0.04)
Elementary degree	0.91***(0.09)	0.90***(0.09)	0.89***(0.09)	0.62***(0.09)
Middle School diploma	0.37***(0.08)	0.34***(0.08)	0.34***(0.08)	0.14(0.08)
Diploma 2-3 years	-0.09(0.09)	-0.12(0.09)	-0.121(0.0888)	-0.27***(0.09)
Diploma 4-5 years	-0.89***(0.08)	-0.92***(0.08)	-0.91***(0.08)	-0.95***(0.08)
University degree	-2.21***(0.08)	-2.24***(0.08)	-2.23***(0.08)	-2.09***(0.08)
Married	-0.09***(0.01)	-0.08***(0.01)	-0.08***(0.01)	-0.06***(0.02)
Separated or divorced	-0.05*(0.02)	-0.06*(0.02)	-0.05*(0.02)	-0.06*(0.03)
Widower	0.28***(0.05)	0.26***(0.05)	0.25***(0.05)	0.17**(0.05)
Employer size				
Between 10 and 15	-0.37***(0.02)	-0.36***(0.02)	-0.35***(0.02)	-0.28***(0.02)
Between 16 and 19	-0.53***(0.01)	-0.52***(0.01)	-0.52***(0.01)	-0.47***(0.02)
Between 20 and 49	-0.49***(0.03)	-0.48***(0.03)	-0.47***(0.03)	-0.44***(0.01)
Between 50 and 249	-0.66***(0.02)	-0.65***(0.01)	-0.65***(0.02)	-0.61***(0.02)
250 and more	-0.92***(0.02)	-0.91***(0.02)	-0.91***(0.02)	-0.84***(0.00)
Years since migration/100	1.22***(0.00)	1.58***(0.00)	1.75***(0.00)	0.01**(0.01)

Table 3.6: Robustness check-The subjective gap regressions (2014)

The subjective gap 2014	(1)	(2)	(3)	(4)
Female*Immigrant		0.51***(0.03)	0.52***(0.04)	0.41***(0.04)
Developing			0.37***(0.06)	0.17*(0.08)
Country of origin				
Albania				-0.36***(0.07)
Moldova				0.38***(0.09)
Romania				0.07(0.05)
Morocco				-0.43***(0.07)
Ukraine				0.56***(0.08)
China				-0.97***(0.13)
Philippine				1.16***(0.08)
Ecuador				0.24*(0.11)
Poland				0.00
Region fixed effect	YES	YES	YES	YES
Quarter fixed effect	YES	YES	YES	YES
Observations	92258	92258	92258	87236

Standard errors in parentheses $^{*}p < 0.05$, $^{*}*p < 0.01$, $^{*}**p < 0.001$

(Continues) Table 3.6: Robustness check-The subjective gap regressions (2014)

The subjective gap 2018	(1)	(2)	(3)	(4)
Immigrant	0.67***(0.06)	0.47***(0.07)	0.38***(0.08)	0.45***(0.08)
Gender (Female)	0.67***(0.01)	0.63***(0.01)	0.50***(0.01)	0.51***(0.01)
Age	-0.09***(0.00)	-0.09***(0.00)	-0.08***(0.00)	-0.07***(0.00)
Age^2	0.62***(0.06)	0.62***(0.06)	0.50***(0.05)	0.49***(0.05)
Elementary degree	0.93***(0.13)	0.93***(0.13)	0.66***(0.09)	0.61***(0.09)
Middle School diploma	0.26*(0.12)	0.25*(0.12)	0.16(0.08)	0.08***(0.08)
Diploma 2-3 years	-0.24***(0.09)	-0.24*(0.12)	-0.25*(0.12)	-0.35***(0.08)
Diploma 4-5 years	-0.95***(0.12)	-0.97***(0.12)	-0.97***(0.12)	-0.94***(0.08)
University degree	-2.26***(0.12)	-2.28***(0.12)	-2.27***(0.12)	-2.14***(0.08)
Married	-0.05**(0.02)	-0.05*(0.02)	-0.05*(0.02)	-0.06***(0.02)

Table 3.7: Robustness check-The subjective gap regressions (2018)

The subjective gap 2018	(1)	(2)	(3)	(4)
Separated or divorced	-0.02(0.03)	0.05(0.03)	0.0566(0.0326)	-0.03***(0.02)
Widower	0.27***(0.07)	0.39***(0.07)	0.39***(0.07)	0.2***(0.05)
Employer size				
Between 10 and 15	-0.28***(0.03)	-0.30***(0.03)	-0.30***(0.03)	-0.26**(0.02)
Between 16 and 19	-0.50***(0.02)	-0.49***(0.02)	-0.49***(0.02)	-0.45***(0.02)
Between 20 and 49	-0.51***(0.04)	-0.49***(0.04)	-0.50***(0.04)	-0.39***(0.03)
Between 50 and 249	-0.66***(0.02)	-0.65***(0.02)	-0.61***(0.02)	-0.6***(0.02)
250 and more	-0.93***(0.02)	-0.93***(0.02)	- -0.81***(0.02)	-0.8***(0.02)
Years since migration/100	1.6***(0.00)	2.02***(0.00)	0.01**(0.00)	0.02**(0.00)
Female*Immigrant		0.36***(0.05)	0.31***(0.04)	0.23***(0.04)
Developing			0.21*(0.06)	0.17*(0.07)
Country of origin				
Albania				-0.28***(0.07)
Moldova				-0.02(0.09)
Romania				-0.02(0.05)
Morocco				-0.38***(0.08)
Ukraine				0.57***(0.08)
China				-0.67***(0.1)
Philippine				0.84***(0.09)
Ecuador				0.27*(0.12)
Poland				-0.11***(0.14)
Region fixed effect	YES	YES	YES	YES
Quarter fixed effect	YES	YES	YES	YES
Observations	73888	73888	73888	73888

Standard errors in parentheses $^{*}p < 0.05$, $^{*}*p < 0.01$, $^{*}**p < 0.001$

(Continues) Table 3.7: Robustness check-The subjective gap regressions (2018)

The subjective gap	(1)	(2)	(3)	(4)
Immigrant	0.45***(0.01)	0.32***(0.01)	0.15***(0.02)	0.28***(0.02)
Gender (Female)	0.37***(0.00)	0.34***(0.00)	0.34***(0.00)	0.29***(0.04)
Age	-0.05***(0.00)	-0.05***(0.00)	-0.05***(0.00)	-0.05***(0.02)
Age^2	0.34***(0.01)	0.34***(0.01)	0.34***(0.01)	0.39***(0.02)
Elementary degree	0.50***(0.02)	0.49***(0.02)	0.49***(0.02)	0.42***(0.02)
Middle School diploma	0.17***(0.02)	0.16***(0.02)	0.16***(0.02)	0.08***(0.02)
Diploma 2-3 years	-0.07**(0.02)	-0.08***(0.02)	-0.08***(0.02)	-0.16***(0.02)
Diploma 4-5 years	-0.48***(0.02)	-0.50***(0.02)	-0.50***(0.02)	-0.54***(0.02)
University degree	-1.18***(0.02)	-1.20***(0.02)	-1.20***(0.02)	-1.21***(0.02)
Married	-0.03***(0.00)	-0.02***(0.00)	-0.02***(0.00)	-0.02***(0.02)
Separated or divorced	0.01(0.00)	0.01(0.00)	0.00(0.00)	0.00
Widower	0.17***(0.01)	0.16***(0.01)	0.16***(0.01)	0.12***(0.02)
Employer size				
Between 10 and 15	-0.18***(0.00)	-0.17***(0.00)	-0.17***(0.00)	-0.16***(0.00)
Between 16 and 19	-0.28***(0.00)	-0.27***(0.00)	-0.27***(0.00)	-0.28***(0.00)
Between 20 and 49	-0.26***(0.00)	-0.25***(0.00)	-0.25***(0.00)	-0.25***(0.00)
Between 50 and 249	-0.36***(0.00)	-0.36***(0.00)	-0.36***(0.00)	-0.37***(0.00)
250 and more	-0.50***(0.00)	-0.49***(0.00)	-0.49***(0.00)	-0.5***(0.00)
Years since migration/100	0.68***(0.00)	0.69***(0.00)	0.67***(0.00)	0.67***(0.00)
Female*Immigrant		0.24***(0.01)	0.24***(0.01)	0.22***(0.00)
Developing			0.17***(0.01)	0.092***(0.00)
Country of origin				
Albania				-0.18***(0.02)
Moldova				0.13***(0.02)
Romania				0.03***(0.02)
Morocco				-0.18***(0.02)

Table 3.8: Robustness check-The subjective gap ordered probability regressions

The subjective gap	(1)	(2)	(3)	(4)
Ukraine				0.31***(0.02)
China				-0.44***(0.03)
Philippine				0.57***(0.02)
Ecuador				0.18***(0.02)
Poland				0.05***(0.02)
Region fixed effect	YES	YES	YES	YES
Year/quarter fixed effect	YES	YES	YES	YES
Observations	407186	407186	407186	368674

Standard errors in parentheses $^{*}p < 0.05$, $^{*}*p < 0.01$, $^{*}**p < 0.001$

(Continues) Table 3.8: Robustness check-The subjective gap ordered probability regressions

The subjective mismatch	(1)	(2)	(3)	(4)
Immigrant	1.23***(0.03)	1.13***(0.03)	0.71***(0.04)	0.58***(0.0
Gender (Female)	0.53***(0.00)	0.52***(0.00)	0.52***(0.00)	0.71***(0.0
Age	-0.05***(0.00)	-0.05***(0.00)	-0.05***(0.00)	-0.08***(0.0
Age^2	0.18***(0.02)	0.18***(0.024)	0.17***(0.02)	0.49***(0.0
Elementary degree	0.23***(0.05)	0.22***(0.05)	0.23***(0.05)	0.16***(0.0
Middle School diploma	-0.09(0.05)	-0.10*(0.05)	-0.10*(0.05)	-0.21***(0.0
Diploma 2-3 years	-0.20***(0.05)	-0.21***(0.05)	-0.20***(0.05)	-0.39***(0.0
Diploma 4-5 years	-0.59***(0.05)	-0.61***(0.05)	-0.60***(0.05)	-0.9***(0.0
University degree	-1.50***(0.05)	-1.52***(0.05)	-1.51***(0.05)	-1.9***(0.0)
Married	-0.19***(0.01)	-0.18***(0.00)	-0.18***(0.01)	-0.26***(0.0
Separated or divorced	-0.09***(0.01)	-0.09***(0.01)	-0.09***(0.01)	-0.16***(0.0
Widower	0.06*(0.02)	0.05*(0.02)	0.04(0.02)	-0.04(0.0
Employer size				
Between 10 and 15	0.65***(0.01)	0.66***(0.01)	0.65***(0.01)	0.55***(0.0)
Between 16 and 19	0.85***(0.01)	0.85***(0.01)	0.85***(0.01)	0.58***(0.0)
Between 20 and 49	0.77***(0.01)	0.77***(0.01)	0.77***(0.01)	0.58***(0.0)

Table 3.9: Robustness check-The subjective mismatch probability regressions

The subjective mismatch	(1)	(2)	(3)	(4)
Between 50 and 249	0.79***(0.00)	0.79***(0.00)	0.79***(0.00)	0.45***(0.0
250 and more	0.60***(0.01)	0.60***(0.01)	0.60***(0.01)	0.19***(0.0)
Years since migration/100	-1.15***(0.00)	-1.04***(0.00)	-0.81***(0.00)	-0.66***(0.0
Female*Immigrant		0.17***(0.02)	0.19***(0.02)	0.02***(0.0)
Developing			0.44***(0.03)	0.7***(0.0
Country of origin				
Albania				-0.14***(0.04)
Moldova				0.46***(0.06)
Romania				0.07*(0.03)
Morocco				-0.02***(0.05)
Ukraine				1.07***(0.07)
China				-2.04***(0.04)
Philippine				1.09***(0.08)
Ecuador				0.39***(0.08)
Poland				0.88***(0.08)
Region fixed effect	YES	YES	YES	YES
Year/quarter fixed effect	YES	YES	YES	YES
Observations	275784	275784	275784	290861

Standard errors in parentheses $^{*}p < 0.05$, $^{*}*p < 0.01$, $^{*}**p < 0.001$

(Continues) Table 3.9: Robustness check-The subjective mismatch probability regressions

Income satisfaction gap	(1)	(2)	(3)	(4)
Immigrant	1.13***(0.02)	1.01***(0.03)	0.71***(0.04)	0.77***(0.04)
Gender (Female)	1.11***(0.00)	1.09***(0.00)	1.09***(0.00)	0.90***(0.07)
Elementary degree	0.55***(0.05)	0.54***(0.05)	0.54***(0.05)	0.39***(0.04)
Middle School diploma	0.06(0.05)	0.04(0.05)	0.0460(0.0532)	-0.06(0.04)
Diploma 2-3 years	-0.29***(0.05)	-0.30***(0.05)	-0.30***(0.05)	-0.41***(0.04)
Diploma 4-5 years	-0.77***(0.05)	-0.78***(0.05)	-0.78***(0.05)	-0.75***(0.04)
University degree	-1.86***(0.05)	-1.87***(0.05)	-1.87***(0.05)	-1.64***(0.04)

Table 3.10: Robustness check-Income satisfaction gap regressions

Income satisfaction gap	(1)	(2)	(3)	(4)
Full-time job	-2.4***(0.00)	-2.41***(0.00)	-2.41***(0.00)	-2.36***(0.04)
Age	-0.19***(0.00)	-0.19***(0.00)	-0.19***(0.00)	-0.17***(0.00)
Age^2	1.58***(0.02)	1.58***(0.02)	1.58***(0.02)	1.52***(0.00)
Married	-0.34***(0.00)	-0.34***(0.00)	-0.34***(0.00)	-0.31***(0.02)
Separated or divorced	-0.20***(0.01)	-0.21***(0.01)	-0.21***(0.01)	-0.18***(0.00)
Widower	0.12***(0.03)	0.11***(0.03)	0.11***(0.03)	0.10***(0.01)
Years since migration/100	-0.37*(0.00)	-0.25(0.00)	-0.12(0.00)	-0.17(0.00)
Employer size				
Between 10 and 15	-0.28***(0.01)	-0.27***(0.01)	-0.28***(0.01)	-0.27***(0.01)
Between 16 and 19	-0.57***(0.01)	-0.56***(0.01)	-0.56***(0.01)	-0.56***(0.01)
Between 20 and 49	-0.44***(0.01)	-0.43***(0.02)	-0.43***(0.01)	-0.41***(0.01)
Between 50 and 249	-0.83***(0.01)	-0.82***(0.01)	-0.82***(0.01)	-0.82***(0.00)
250 and more	-1.25***(0.01)	-1.25***(0.01)	-1.25***(0.01)	-1.17***(0.01)
Female*Immigrant		0.22***(0.02)	0.23***(0.02)	0.15***(0.02)
Developing			0.30***(0.03)	0.07***(0.04)
Country of origin				
Albania				-0.3***(0.03)
Moldova				0.22***(0.04)
Romania				0.12***(0.04)
Morocco				-0.25***(0.02)
Ukraine				0.78***(0.04)
China				-0.39***(0.04)
Philippine				0.71***(0.06)
Ecuador				-0.01(0.06)
Poland				0.06(0.07)
Fixed effects	YES	YES	YES	YES
Observations	409900	409900	409900	405282

Standard errors in parentheses $^{*}p < 0.05$, $^{**}p < 0.01$, $^{***}p < 0.001$

(Continues) Table 3.10: Robustness check-Income satisfaction gap regressions

Job satisfaction gap	(1)	(2)	(3)	(4)
Immigrant	0.67***(0.02)	0.39***(0.03)	0.02(0.04)	0.04(0.04)
Gender (Female)	-0.32***(0.00)	-0.37***(0.01)	-0.37***(0.00)	-0.39***(0.00)
Elementary degree	1.10***(0.05)	1.09***(0.05)	1.08***(0.05)	0.90***(0.04)
Middle School diploma	0.54***(0.04)	0.51***(0.05)	0.51***(0.05)	0.32***(0.04)
Diploma 2-3 years	0.11*(0.05)	0.08(0.05)	0.08(0.05)	-0.1*(0.04)
Diploma 4-5 years	-0.89***(0.04)	-0.92***(0.04)	-0.92***(0.05)	-1.06***(0.04)
University degree	-2.29***(0.05)	-2.32***(0.05)	-2.31***(0.05)	-2.44***(0.04)
Full-time job	-0.03***(0.00)	-0.03***(0.01)	-0.03***(0.01)	-0.09***(0.00)
Age	-0.00*(0.00)	-0.00**(0.00)	-0.00**(0.00)	0.00
Age^2	-0.27***(0.02)	-0.26***(0.02)	-0.27***(0.02)	-0.28***(0.02)
Married	0.14***(0.00)	0.15***(0.00)	0.15***(0.00)	0.09***(0.00)
Separated or divorced	0.18***(0.01)	0.17***(0.01)	0.17***(0.01)	0.07***(0.01)
Widower	0.46***(0.02)	0.44***(0.02)	0.43***(0.02)	0.27***(0.02)
Years since migration	2.06***(0.00)	2.32***(0.00)	2.50***(0.00)	02.36***(0.00)
Employer size				
Between 10 and 15	-0.07***(0.01)	-0.05***(0.01)	-0.05***(0.01)	0.00***(0.01)
Between 16 and 19	-0.01(0.01)	-0.01(0.01)	-0.00654(0.01)	0.03***(0.00)
Between 20 and 49	-0.11***(0.01)	-0.09***(0.01)	-0.09***(0.01)	-0.04***(0.01)
Between 50 and 249	0.02*(0.00)	0.03***(0.00)	0.03***(0.00)	0.06***(0.00)
250 and more	-0.02(0.01)	-0.01(0.01)	-0.01(0.01)	0.01(0.00)
Female*Immigrant		0.50***(0.02)	0.51***(0.02)	0.31***(0.01)
Developing			0.37***(0.03)	0.43***(0.03)

Table 3.11: Robustness check-Job satisfaction gap regressions

Job satisfaction gap	(1)	(2)	(3)	(4)
Country of origin				
Albania				-0.17***(0.03)
Moldova				0.35***(0.04)
Romania				0.22***(0.02)
Morocco				-0.37***(0.03)
Ukraine				0.49***(0.03)
China				-1.53***(0.04)
Philippine				0.94***(0.04)
Ecuador				0.37***(0.05)
Poland				0.42***(0.06)
Fxed effects	YES	YES	YES	YES
Observations	459371	459371	459371	459371

Standard errors in parentheses $^{*}p < 0.05$, $^{*}*p < 0.01$, $^{*}**p < 0.001$

(Continues) Table 3.11: Robustness check-Job satisfaction gap regressions

3.7 Concluding remarks

In this paper, I have used the cross-sectional Italian Labour Force Survey (LFS) to explore the determinants of workers' objective and subjective work indices as well as the gap between them in the Italian labour market. The objective work index (OWI) was calculated as the average of workers' income and job classification, while the subjective work index (SWI) was measured as the mean of their self-reported job and income satisfaction. Based on this, I calculated the subjective gap (SG), which is the difference between the subjective and objective work indices. A positive subjective gap was defined as a positive difference between the SWI and OWI, indicating that the individual's level of work and income satisfaction is higher than their actual income and occupation classification. Conversely, a negative subjective gap meant that an individual's OWI was higher than their SWI. Although previous studies have investigated the determinants of objective and subjective work indices separately, they have never done so jointly. There is one exception, a study conducted using the Israeli CBS Social Survey to compare the subjective perceptions and actual position of workers in the labour market, from the perspectives of gender, migration and the different ethnic groups in Israel (cf. Amit and Chachashvili-Bolotin, 2018). However, the present paper is distinctive in that it computes the subjective gap by subtracting the objective work index from the subjective work index and focuses on female immigrants and immigrants from developing countries in the Italian labour market.

I used an Ordinary Least Squares method that allowed me to assess the respective influence of various endogenous characteristics on the OWI, SWI and SG. Overall, I found a significant difference in the objective work index between immigrants and native-

born Italians. In particular, female immigrants and immigrants from developing countries (except for China) seem to suffer the most in the Italian labour market as compared to locals. However, no significant differences were found in the subjective work index between immigrants from developing countries and native-born Italians. Female immigrants are an exception, they seemed to be slightly more satisfied with their income and profession relative to other immigrants and locals. Furthermore, I found that immigrants have a positive subjective gap which is higher than native-born Italians' subjective gap. This may be explained by the fact that immigrants tend to have lower expectations than native Italians, and may, therefore, declare the same level of satisfaction as them despite holding lower positions in the labour market. The subjective gap is particularly wide among female immigrants and immigrants from developing countries.

The country of origin dummies lists immigrants from Albania, Morocco, and China as an exception of the subjective gap results. Job and income satisfaction are not only a function of wealth or expectations. Subjective considerations can enter the utility function in important ways. For instance, perceived discrimination affects job satisfaction (Ensher et al., 2001). Ethnic hierarchy is an indicator of a relevant amount of taste-based discrimination (Zschirnt and Ruedin 2016). The literature on immigrants discrimination in the Italian labour market has provided evidence that the nationalities mentioned above are the most suffering from discrimination in the Italian labour market. First- and second-generation Moroccans and Chinese are the most discriminated (Busetta et al., 2018). Furthermore, Moroccan and Albanian candidates, as they come from Muslim countries, could be even more discriminated for religious reasons connected to Islamophobia. Moroccans and Albanians are largely hostile following the 9/11 terrorist attack and subsequent events. People‘ of Islamic faith' had the most negative image as a result of news stories about robberies, assaults and frauds (King and Mai 2002). As a consequence, the relative low subjective gap among Albanian, Moroccans and Chinese compare to other immigrants and locals may be a result of personal considerations related to the perceived discrimination in the workplace.

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Appendices

Appendix A

The Italian official classification of occupations

CP2011 is the Italian Official Classification of Occupations created by ISTAT. 2011 indicates the year in which the current version was adopted. Occupations classifications are a fundamental tool in the collection of statistical data on the labour market.

A.1 The structuring of CP2011:

Following the Recommendation of the European Commission of 29 October 2009 on the use of the international standard classification of occupations (ISCO-08) (2009/824 / CE)[1], CP2011 has been structured in a similar way to ISCO International Standard Classification of Occupations version 08. ISCO is the classification of professions created and managed by the ILO and is the one most used internationally.CP2011 contains nine major occupation groups as follows:

A.1.1 Legislators, entrepreneurs and top management: The first major group includes management professions that are responsible for defining the policies and political, social and economic structures of the communities, organizations or businesses in which they operate. The level of knowledge required by the professions of this grouping is not always identifiable in a particular degree of formal education. The tasks of this group are to define and formulate government policies, laws and norms at a central and local level.

A.1.2 Intellectual, scientific and highly specialized professions: The occupations included in this group require a high level of theoretical knowledge to analyze and represent, in specific disciplinary areas, complex situations and problems, define possible solutions and take the related decisions. This level of knowledge is acquired through the completion of II level or post-university university education courses or learning paths,

[1]The international standard classification of occupations (ISCO) is an ILO classification structure for organizing information on labour and jobs. It is part of the international family of economic and social classifications of the United Nations. The current version, known as ISCO-08, was published in 2008 and is the fourth iteration, following ISCO-58, ISCO-68 and ISCO-88 (cf. International Labour Office, 2012).

even non-formal, of equal complexity.

A.1.3 Technical professions: The third major group includes professions that require technical knowledge to select and operationally apply protocols and procedures in production or service activities. The level of knowledge required by the professions included in this group is acquired through the completion of secondary, post-secondary or university level I courses, or learning paths, even non-formal, of equal complexity.

A.1.4 Executive professions in office work: This group includes the professions that are dedicated to executive office work, carrying out tasks related to the reception, processing, production and storage of information. The tasks envisaged do not require management and personnel coordination functions. The common denominator of these professions is, therefore, the processing of information. These activities generally require basic knowledge similar to that acquired by completing the compulsory schooling or a short cycle of upper secondary education or, again, a professional qualification or work experience.

A.1.5 Qualified professions in commercial activities and services: The fifth major group classifies the commercial occupations, reception, and services, recreational and family support services, personal care, maintenance of public order, and protection of people and property. These activities generally require basic knowledge comparable to those acquired by completing the compulsory schooling or short cycle of upper secondary education or, professional qualification or through work experience.

A.1.6 Skilled agricultural, forestry and fishery workers: The sixth major group includes manual professions that require experience and technical knowledge of materials, tools and processes to extract or work minerals; to build, repair or maintain artefacts, objects and machines; for agricultural, hunting and fishing production; to work and transform food and agricultural products destined for final consumption. These activities generally require basic knowledge similar to that acquired by completing the compulsory schooling or a short cycle of upper secondary education or, professional qualification or through work experience.

A.1.7 Plant and machine operators, and assemblers: The seventh major group includes the professions that control the functioning of industrial machines and automated or robotic processing plants; feed assembly and series production plants; they drive vehicles, mobile or lifting machinery. These activities generally require basic knowledge similar to that acquired by completing the compulsory schooling or a professional qualification or through work experience.

A.1.8 Elementary occupations: The eighth major group includes professions that require simple and repetitive activities, for which it is not necessary to complete a particular educational path and which may involve the use of hand tools, the use of physical strength and a limited autonomy of judgment and initiative in carrying out the tasks. These professions carry out itinerant activities and unskilled manual work in agriculture, construction and industrial production; manual labour and executive support in-office ac-

tivities, production services, education and health services; concierge and room cleaning tasks.

A.1.9 Armed forces occupation: The ninth major group includes the professions carried out within the Armed Forces (Army, Navy, Air Force and police) which guarantee the territorial and political integrity of the nation and its security in times of peace and war. The peculiarity of this grouping, which is not enclosed professions united by similar work activities but by membership in the same social context of work, makes it stranger is for the hierarchical classification.

Appendix B

Variables and definitions

Immigrant dummy respondent does not have the Italian nationality

Developing country dummy respondent is an immigrant and comes from developing country

Female dummy respondent is female

Elementary degree respondent has achieved elementary education at most

Middle School diploma respondent at least has a middle school diploma

Diploma 2-3 years respondent at least has a diploma in 2-3 years

Diploma 4-5 years respondent at least has a diploma in 4-5 years

University degree respondent at least has a university degree

Full-time job Respondent has a full-time job

Age age of respondent at the date of the interview

Married respondent is Married

Separated or divorced respondent is separated or divorced

Widower respondent is a widower

Years since migration number of years since the respondent came to Italy for the first time

Between 10 and 15 respondent works in a place where there are 10 to 15 workers

Between 16 and 19 respondent works in a place where there are 16 to 19 workers

Between 20 and 49 respondent works in a place where there are 20 to 49 workers

Between 50 and 249 respondent works in a place where there are 50 to 249 workers

250 and more respondent works in a place where there are more than 250 workers

Female*Immigrant respondent is a female immigrant

Albania dummy respondent comes from Albania

Romania dummy respondent comes from Romania

Morocco dummy respondent comes from Morocco

Ukraine dummy respondent comes from Ukraine

China dummy respondent comes from China

Philippine dummy respondent comes from Philippine

Ecuador dummy respondent comes from Ecuador

Poland dummy respondent comes from Poland