Chapter 2
Worker Turnover Across Italian Regions

Chiara Mussida and Francesco Pastore

Abstract This chapter provides prima facie evidence of the geographical distribution of worker turnover within Italian regions as measured based on the longitudinal files of the labour force survey (LFS) for the period 2004–2010. It explains the stylized facts emerging from this enquiry with an interpretation based on the industrial change literature. Industrial turbulence, rather than labour market flexibility, is driving labour turnover within regions, as the correlation with the Lilien (positive) and the Herfindahl (negative) indices, respectively, shows. In other words, industrial change causes greater job destruction and flows into and out of unemployment, while, as also Alfred Marshall noted, the availability of more specialised districts could partly offset the diseconomies of specialisation in terms of greater exposure to external shocks, when the unit of analysis is sufficiently large, as it is in our case (NUTS1 and NUTS2). We also find that, at an individual level, the regional gap in turnover rates is due to regional differences in the gender, age and education attainment of the workforce, as well as the share of temporary work contracts and the size of firms.

Keywords Regional unemployment • Industrial change • Worker turnover • Italian regions

JEL Classification C33, J63, P25, P52, R23

C. Mussida
Department of Economic and Social Sciences, Università Cattolica del Sacro Cuore, via Emilia Parmense, 84, 29122 Piacenza, Italy
e-mail: chiara.mussida@unicatt.it

F. Pastore (✉)
Department of Law, Seconda Università di Napoli, Palazzo Melzi, Piazza Matteotti, 81055 Santa Maria Capua Vetere, Caserta, Italy
e-mail: francesco.pastore@unina2.it

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2.1 Introduction

The literature offers different interpretations of the relationship between worker turnover and unemployment rate, especially at the regional level. A relevant explanation hinges on the so-called Lilien hypothesis, according to which industrial restructuring causing sectoral shifts might explain the high level of turnover of high-unemployment regions. Alternatively, large labour market flows might be the sign of greater labour market flexibility, which is, however, usually associated with efficient labour markets and, thus, relatively lower unemployment, the so-called Krugman hypothesis.

In this chapter, we empirically discriminate between these alternative theoretical hypotheses by exploiting the geographical differentiation of worker turnover and unemployment rates in the case of Italy, by investigating the determinants of labour turnover at a regional level by using the longitudinal files of the LFS data over the period 2004–2010. To our knowledge, this is the first paper to study in a systematic way the geographical relationship between the rate of worker turnover and the rate of unemployment in Italy using LFS data. Until recently, indeed, statistical information on worker turnover based on individual-level survey data was not available. Ferragina and Pastore (2008) suggest that this test constitutes a 'screening device' to distinguish the case when unemployment is due also to some region-specific shock, namely the high degree of worker turnover in high-unemployment regions is caused by industrial restructuring and when it is instead due solely to labour market rigidities.

Note that the policy implications of these alternative hypotheses are partly different, since a low job finding rate in high-unemployment regions essentially suggests the need for supply side policies, whilst a positive relationship between labour market turnover and unemployment requires interventions on the demand side as well.

The empirical evidence available in the literature on this issue is neither large nor unambiguous. The main reason is the limited availability of suitable longitudinal data to measure labour market dynamics at the local level. A number of papers find a positive relationship between worker turnover and the regional unemployment rate (for the UK: Armstrong and Taylor 1985; for Poland: Newell and Pastore 2006; Pastore and Tyrowicz 2012; for Italy: Contini and Trivellato 2005; Naticchioni et al. 2006; Basile et al. 2012), others find no relationship (for a bench of Eastern European countries: Boeri and Scarpetta 1996; WorldBank 2001; Rutkowski 2003; for the UK: Robson 2001).

In addition, the sign of the relationship under scrutiny might change over time, which has never been accounted for earlier. Except for Pastore and Tyrowicz (2012) and Basile et al. (2012), whose data include a panel dimension, previous research was mainly based on analyses of short periods of time, often 1 or 2 years. Although not being panel, the LFS longitudinal data used here covers quite a long period of time.

The purpose of our analysis is twofold. First, we aim at understanding the nature of the relationship between local worker turnovers.[1] Second, based on the nature of the relationship under scrutiny, we aim at understanding the sources of worker turnover and how it differs across regions. We use the micro-dimension of the data to study the determinants of worker turnover at the individual level. This allows us controlling for factors that might be important correlates of worker turnover and unemployment rates at a local level.

The case of Italy is particularly interesting not only because of its well-known and persistent regional unemployment differences but also because it allows comparing the better developed more dynamical regions of the North and the static regions of the South.

One explanation of the geographical differentiation of worker reallocation (WR) and worker turnover (WT) hinges on the differences in the local labour market structure (e.g. OECD 2004). We study the correlation of WT across geographical units not only with the level of industrial turbulence but also with that of unemployment.

We find evidence of a positive relationship between WT, on the one hand, and the unemployment rate across regions, on the other hand. Quite surprisingly, for those who consider WT as a proxy for labour market flexibility, in all the considered years, indeed, the rate of turnover is higher in those regions where also the unemployment rate is higher. The high-unemployment South is the geographical area with the highest WT especially with respect to the North-West.

To examine the possible sources of regional differences in worker turnover, we carry out econometric estimates of the determinants of the WT rate in pooled estimates for the period 2004–2010. In a first attempt, we added control variables for such individual characteristics as age, gender and education, type of occupation, sector of activity (public versus private), firm size and type of labour contract (permanent versus temporary). All the considered explanatory variables play a statistically significant role. Similar to what previously found in Newell and Pastore (1999) with reference to Poland, the youngest age segment shows a highest probability of turnover as compared to the other age groups, with the partial exception of the eldest workers. This latter, indeed, more frequently move to inactivity.

WT reduces with education and age, as expected also based on previous studies (e.g. Naticchioni et al. 2006), with firm size and in the case of workers employed in the public sector. On the other hand, WT increases for temporary workers. In our estimates, we also include indicators of sectoral shifts and industrial concentration as possible sources of worker turnover and of its regional differences. We find that those indicators are quite relevant determinants of worker turnover and of its geographical discrepancies. As to the effect of structural change and economic diversification, we find that WT is positively related to structural change, as measured by the Lilien index, and negatively related to the degree of industrial concentration, as measured by the Herfindahl index. Once we control for these two

[1]The definition of worker turnover, derived from Davis and Haltiwanger (1995), will be given in Sect. 4.1.

factors, we note a reduction of between 21 and 43 % of the unconditional gap across regions in terms of WT.

The chapter proceeds as follows. Section 2.2 offers a survey of the relevant theoretical foundations as well as some available empirical evidence. Section 2.3 implements the descriptive and the econometric analyses. Section 2.4 discusses our findings. Section 2.5 concludes.

2.2 The Theoretical Hypothesis on the Relationship Between Worker Turnover and Unemployment

The Aghion and Blanchard (1994) model and its development by Boeri (2000) can be used as a theoretical framework to think of the way how labour market dynamics, as measured by WT, affects the regional distribution of unemployment.[2] As Ferragina and Pastore (2008) argue, although used to explain national unemployment, this framework might also apply to local labour market differences, provided that regions are separated from each other due to low internal migration, as it is the case of many European countries, including Italy.

The theoretical framework offers three alternative hypotheses on the nature of the relationship between WT and regional unemployment. First, WT could be independent of regional unemployment. According to this hypothesis, the same aggregate shock yields asymmetric effects across regions. High-unemployment regions are such because they have experienced dramatic structural change sometime in the past, with a too high separation rate at the beginning, so that the unemployment rate exceeds its equilibrium level. Only at a later stage, separation rates converge across regions.

Second, worker turnover could positively correlate with regional unemployment. This might happen because in high-unemployment regions, more jobs are destroyed and created at the same time, i.e. each region has a specific rate of structural change, but other hypotheses are also possible, as later discussion will show.

The well-known Krugman (1994) hypothesis could provide an explanation for the third hypothesis, i.e. WT correlates negatively with regional unemployment; greater WT would mean, in fact, a higher degree of labour market flexibility and, therefore, lower frictional and long-term unemployment. In other words, there would be a spatially asymmetric impact of rigid labour market institutions.

The literature shows that the sign of the relationship under consideration might change according to the country considered, the data used and over time. Robson (2001), for instance, finds no correlation between worker reallocation and unemployment across the UK macro-regions in the decade 1984–1994. In the case of new EU members in Eastern Europe, some authors (such as Boeri and Scarpetta 1996; World Bank 2001; Rutkowski 2003) interpret the low rate of monthly worker

[2]For details on the theoretical framework, see Pastore (2012).

turnover computed as based on employment registry data of high-unemployment regions as a consequence of low labour market dynamism.

Garonna and Sica (2000) find a negative association between the Lilien index of structural change and the unemployment rate in Italy: in particular, sectoral and interregional reallocation in Italy would reduce unemployment.

Other studies find evidence that high-unemployment regions are those where the degree of worker turnover is higher. For Poland, Newell and Pastore (2006) use LFS measures of annual gross worker flows and find a correlation coefficient between the job separation rate and the unemployment rate of 0.76, significant at the 1 % level, during the period 1994–1997. Pastore and Tyrowicz (2012) confirm previous findings regarding Poland using employment registry level data relative to the period 2000–2008.

For Italy, Contini and Trivellato (2005) find the highest turnover rate in the traditionally high-unemployment regions of Mezzogiorno. Naticchioni et al. (2006) find similar evidence using the ISFOL data relative to the period 1994–1998. Using Local Labour Systems (LLSs) panel data relative to the years 2004–2008, Basile et al. (2012) also report a strong correlation between worker reallocation and unemployment across LLSs. Sectoral shifts and the degree of specialisation exert a negative role on unemployment dynamics.

Revisiting this issue, Shimer (2007) has recently proposed a new methodology which points to the fact that the evolution of the job finding rate—and not that of the flow into unemployment—would reproduce the cyclicality observed in the unemployment rate. Fujita and Ramey (2009) find that cyclical changes in the separation rate are negatively correlated with changes in productivity and move contemporaneously with them, whereas the job finding rate is positively correlated with and tends to lag after productivity, which is consistent with the Aghion and Blanchard (1994) theoretical framework adopted in this chapter.

The literature also offers some explanations on the sources of WT and its differences across regions. In particular, if WT correlates positively with regional unemployment, as it is the case for Italy, the following explanations are offered. The Lilien hypothesis states that differences in the sources of WT are primarily due to different sectoral shifts across regions.

According to this hypothesis, some sectors/regions experience a permanent reduction in labour demand that causes local unemployment. Lilien (1982) found a positive correlation over time between the aggregate unemployment rate and the cross-industry dispersion of employment growth rates in the USA.

For measuring structural change in the demand for employment, Lilien developed an index that measures the standard deviation of the sectoral growth rate of employment from period $t-1$ to period t. For each region (or geographical area) of the country, the Lilien index is used to measure the rate of industrial or structural change in the demand for labour by means of the variance in industry employment growth.

Most studies in this literature use some variation of the Lilien index: Berg (1994) for Canada, Newell and Pastore (2006) for Poland, Krajnyàk and Sommer (2004) for the Czech Republic and Robson (2009) for the UK.

It is perhaps important to mention that there are sources of industrial turbulence that tend to be transitory and others that are permanent. The former include the opening up to international trade of new competitors and the introduction of new technologies causing some productions to go out of market. Structural and permanent 'weaknesses' of high-unemployment regions, which cause their low competitiveness and attractiveness to investment from abroad, include: (a) low human (Carillo and Zazzaro 2001) and social capital (Bagnasco et al. 2001; Lopolito and Sisto 2007; and references therein) endowment; (b) low effectiveness of public administration and a high rate of corruption (Del Monte and Papagni 2001); (c) high (organised) crime rates (Centorrino et al. 1999; Centorrino and Ofria 2001; Daniele and Marani 2011); (d) industrial dependence on more developed regions; (e) poverty traps (Carillo et al. 2008). All these factors may reduce the competitiveness of firms and cause higher than average mortality rate for firms and, consequently, also a higher degree of job destruction.

To overcome the criticisms against the Lilien index and its variations, research in the field has pursued the aim of finding empirical ways to disentangle sectoral shifts and aggregate disturbances. Among others, Neumann and Topel (1973) elaborate a macroeconomic model where the equilibrium level of unemployment in a region depends on its exposure to the risk of within-industry employment shocks and on their degree of industrial diversity. Their approach has stimulated further research.

Following Neumann and Topel (1973), several authors (e.g. Simon 1988; Simon and Nardinelli 1992; Chiarini and Piselli 2000; Basile et al. 2012) have tried to control for aggregate disturbances including in the estimates some index of industrial concentration, such as the Herfindahl–Hirschman index (HHI).[3]

The rationale is that common shocks may generate asymmetric effects across industries. In fact, regions that are highly specialised in low-sensitive industries are expected to exhibit low vulnerability to aggregate disturbances, and vice versa. The HHI index is often used in the literature as a control variable to measure the impact of aggregate disturbances. It is taken to measure the vulnerability of specific areas (e.g. regions) to aggregate shocks in regressions of the determinants of WT. In detail, if the sign of the HHI is positive, a higher rate of industrial concentration is a positive correlate of the degree of WT and, therefore, of unemployment. Conversely, if the HHI is negative, the correlation between industrial specialisation and unemployment is negative. Different competing hypotheses have been set in the literature to explain the relation between WT and HHI or industrial concentration.

More generally, two alternative hypotheses are in order as to the local impact of aggregate shocks: According to Jacobs (1969), aggregate shocks should hit more the least diversified regions because of what Simon and Nardinelli (1992) called the portfolio effect in the labour market; vice versa, Glaeser et al. (1992) pointed

[3]For details on the HHI index, see Mussida and Pastore (2012).

to Marshallian effects to suggest that more specialised industries might provide higher positive externalities and growth which should absorb the negative effect of aggregate shocks. Marshall (1890) himself noted also that the negative employment effects of aggregate shocks on specialised areas may be reduced in large regions, in which several distinct industries are strongly developed (for surveys of this literature, see, among others, Elhorst 2003; Ferragina and Pastore 2008). In the case of Italy, Basile et al. (2012) find evidence of the portfolio effect using data at a local labour market system level (travel to work areas).

Alternatively, Burgess (1993) assumes that the greater worker reallocation rate in high-unemployment regions is due to the relatively smaller number of job opportunities for unemployed job seekers in low-unemployment regions. In other words, in the latter regions, the unemployed are crowded out by employed job seekers who are encouraged to search for better jobs. Consequently, one would observe a higher rate of worker turnover in high-unemployment regions simply because in these regions, the unemployed who find jobs are a relatively larger number with respect to their peers in low-unemployment regions.

2.3 Methodology and Data

Our sample is extracted from the ISTAT LFS data. This is a rotating panel survey based on the principles set out by the International Labour Organisation (ILO) and on harmonised methodology across most of the countries in the OECD area. The longitudinal component of the survey comprises almost 70,000 individuals per year.[4]

We focus on annual flows over the years 2004–2010 of all the employees aged 15 through 64. We drop individuals over the age of 64 to avoid getting mixed up with retirement issues. We also drop the self-employed, the individuals who were in the army or with missing values for some important variables used in the econometric analysis. We remain with 129,597 observations.

The purpose of our descriptive analysis is to test the alternative hypotheses presented in Sect. 4.1 regarding the nature of the link between local worker turnover and unemployment by looking at unconditional means across regions. Note that in the theoretical literature, worker reallocation is meant in a more general way as a reallocation of workers from a declining to an expanding sector, with or without intervening unemployment spells. The definitions adopted in this chapter are essentially based on Davis and Haltiwanger (1995), and the relevance of such indicators is examined by, among others, Davis et al. (1996), and, for Italy, by Contini (2002) and Naticchioni et al. (2006). Both worker turnover and worker reallocation are measured at the worker level (individual-level data), whilst job turnover and job reallocation are measured at the firm level (firm-level data).

[4]For details, see Discenza and Lucarelli (2009), and ISTAT (2006, 2009).

Being based on individual-level data, our essay studies worker flows. Worker turnover (*WT*) at time t is the number of accessions to employment from unemployment and inactivity plus the number of separations from employment to unemployment and inactivity, respectively. Therefore, *WT* does not include flows between unemployment and inactivity. The *WT* rate is computed by dividing WT by the average employment level (between $t-1$ and t). In our analysis, we calculate *WT* at the geographical level of *NUTS*1 and *NUTS*2, i.e. macro-regions and regions.

The aim of the econometric analysis is to study the relationship between the regional unemployment rate and the rates of WT controlling for a number of variables that could in principle affect the geographical distribution of WT. In other words, after assessing the sign of the above relationship in terms of unconditional means, which we do in the descriptive analysis, we then test its robustness by means of multivariate analysis in a micro-econometric context.

The factors behind the significant geographical imbalances in WT might be many and independent of differences in the degree of structural change. We carry out logit estimates taking as a dependent variable, the fact of having experienced a worker turnover flow in the last year, as defined in the previous section. We pool all the observations over the years 2004–2010. We consider a number of control variables that might explain worker turnover across regions, such as individual characteristics (i.e. gender, age and educational level), the region of residence (three macro-areas of residence, i.e. North-West, North-East and Centre-South), and additional variables that proxy firm size, sector of employment (public/private) and type of labour contract (fixed term or permanent). In order to take into account possible time trends, we also control for the year over which flows are computed by means of yearly dummy variables.

The regional dummies are our variables of interest. We aim to test whether regional differences in WT continue to be there also after introducing a number of control variables which might also explain regional differences in WT. Take, for instance, firm's size which is an indicator of market structure. Differences in the market structure, indeed, might explain differences in worker turnover at the local labour market level; the more competitive is the market structure in the local economy and, therefore, the greater is the share of small-sized firms, the greater is also the degree of worker turnover. More in detail, the available literature, such as OECD (1994), and for Italy Boeri (1996) and Naticchioni et al. (2006), shows that gross flow rates are inversely related to firm size.

The latter contribution finds that in Southern Italy, the share of employment in small and medium-sized firms is higher than in the rest of the country, especially if compared to the North-West. The economic structure of these areas might affect the overall turnover rate. In other words, the higher the share of employment in small firms, the higher will be the flow rates.

Differences in the age of individuals living in different regions might also affect the WT gap. The higher is the proportion of young people living in a region, the greater, ceteris paribus, its degree of turnover is expected to be. A greater concentration of low-education and low-skill workers and a higher share of temporary and informal workers tend also to be associated with a higher probability of WT.

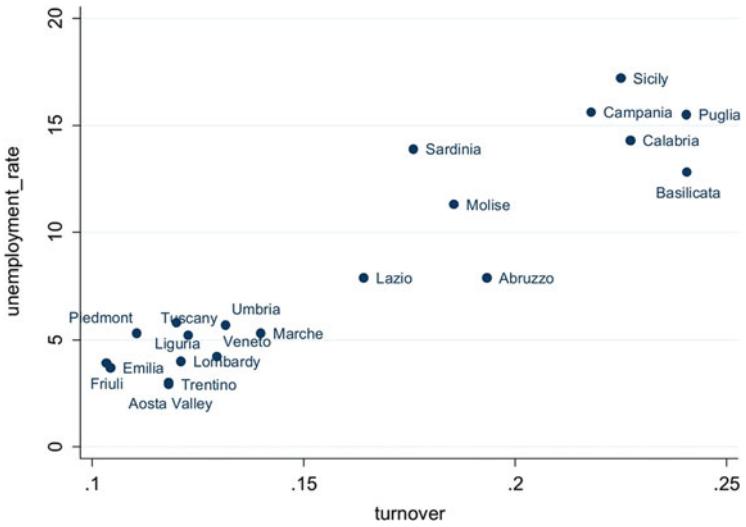

Fig. 2.1 Regional unemployment and worker turnover, 2004–2005

2.4 Findings

2.4.1 Descriptive Analysis

Figures 2.1, 2.2, 2.3, 2.4, 2.5 and 2.6 provide evidence supporting the first hypothesis of Sect. 4.1, i.e. WT correlates positively with regional unemployment, in all the considered years. Figure 2.7 also confirms these findings. The rate of worker turnover is higher in the regions where also the unemployment rate is higher.

In addition, we show that there is also a positive relationship between the regional rate of unemployment and the two components of worker turnover, namely the inflow to (Fig. 2.8) and outflow from (Fig. 2.9) unemployment, as expected considering the long-run equilibrium relationship existing among these two variables.

We indeed find the highest turnover rates in the traditionally high-unemployment regions of the South of Italy (about 22–24 %), namely in Campania, Puglia and Sicily, which exhibit also the highest unemployment rates (about 15–17 %). This pattern is confirmed for the entire period examined. In detail, Campania maintains the highest worker turnover rate for the period 2004–2010, whilst Sicily maintains the highest unemployment rate. The regions of the North of Italy, instead, maintain lower turnover and unemployment rates.

This finding is in line with what Contini and Trivellato (2005) found on LFS data for the decade 1993–2003 and Naticchioni et al. (2006) found on ISFOL data for

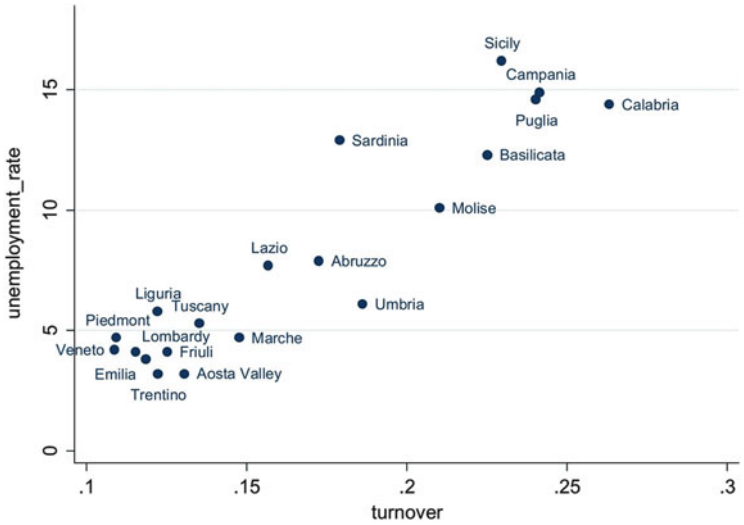

Fig. 2.2 Regional unemployment and worker turnover, 2005–2006

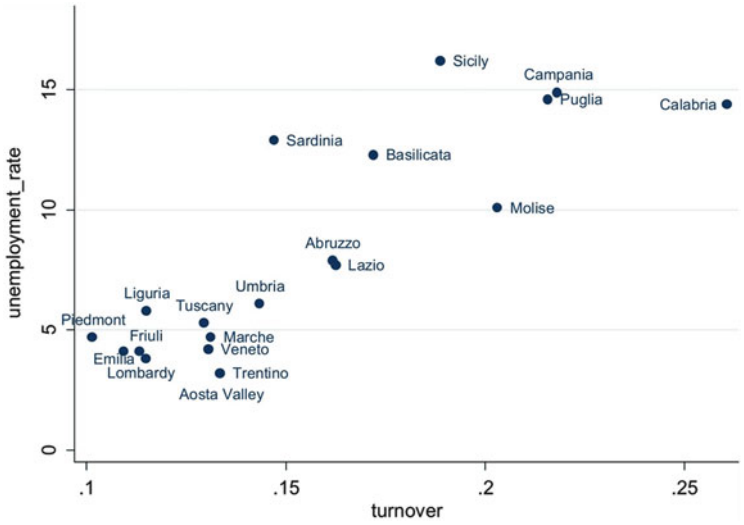

Fig. 2.3 Regional unemployment and worker turnover, 2006–2007

the period 1985–1999. Both these previous research works find a positive relation between worker turnover and regional unemployment.

We also compute the worker turnover, together with its main components of the inflow and outflow rates, at the NUTS1 level (macro-regions). We find that the South is the area with the highest worker turnover rate and of both its components.

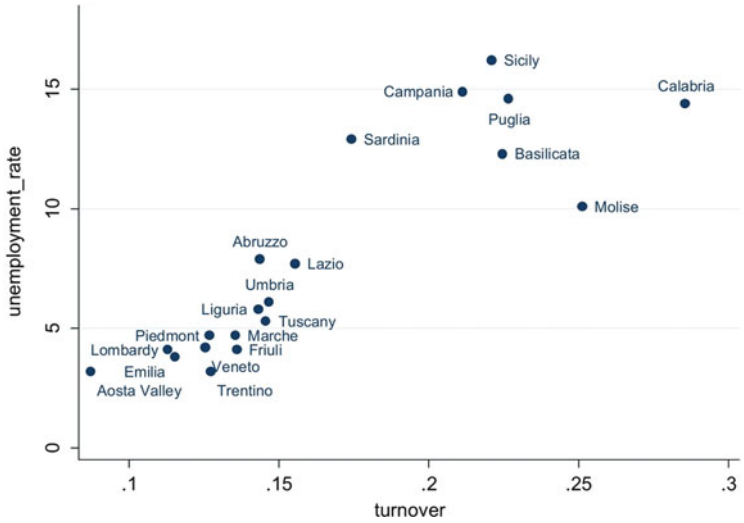

Fig. 2.4 Regional unemployment and worker turnover, 2007–2008

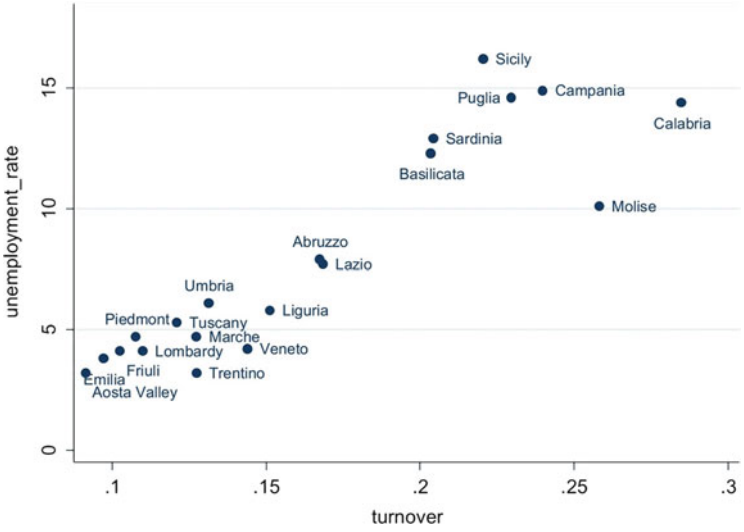

Fig. 2.5 Regional unemployment and worker turnover, 2008–2009

In 2005–2006, the accession and separation rates of the North are half those of the South. In other words, the degree of turnover is higher in the South than in the North, which may mirror the role of temporary work and the precarious nature of work experiences in this area of the country.

WT exceeds 14 % throughout the entire period and is quite stable during the years and independent of the recession, which reached the labour market only at the end

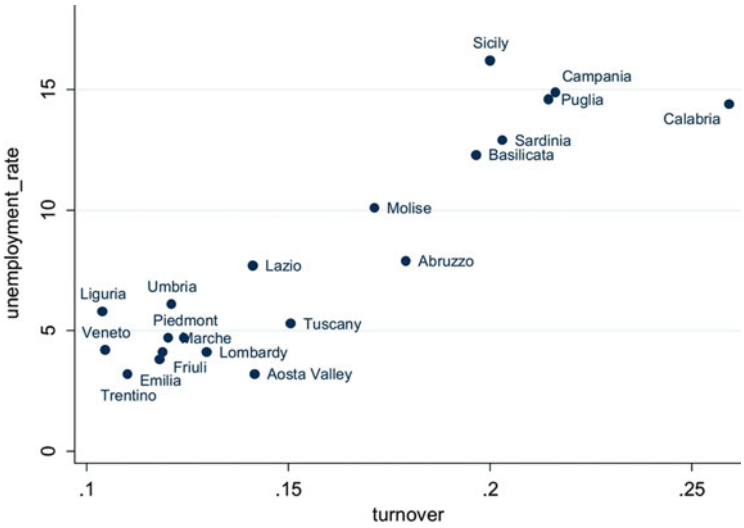

Fig. 2.6 Regional unemployment and worker turnover, 2009–2010

of 2011. As expected, the recession has reduced the accession rates and increased the separation rate from employment. Those two effects cumulate with each other, increasing the unemployment rate, but still only to a small extent, if compared with what has happened in the years after 2011.

2.4.2 Econometric Analysis

To understand the possible sources of WT and the reasons behind the geographical differences, we estimate a simple logistic model of the probability of an individual to experience a change in his or her labour market status in a given year, using pooled data relative to the overall period for which the data is available (2004–2010). Our general hypothesis, discussed at length in Sect. 4.2, is that, ceteris paribus, a greater degree of *WT* is related to a higher incidence of industrial turbulence in the high-unemployment regions, as based on the Lilien hypothesis.

We estimate five different models. Model (1) includes the areas of residence only. Model (2) introduces individual-level control variables, which might also affect WT. The Models (3) and (4) introduce also the Herfindahl and the Lilien index, respectively, our variables of interest.[5] Finally, Model (5) includes all the

[5]The Lilien index is computed by using the STATA command Lilien as explained in Ansari et al. (2014).

Fig. 2.7 Turnover rate by region

explanatory variables together.[6] Following the hypothesis explained above, in fact, it is reasonable to expect that a significant part of WT be explained by industrial change, controlling also for the so-called portfolio effect. In the first exercise, the regional dummies, taking the Centre-South as base category, appear to be significantly different from one another for the overall period. The Centre-South is confirmed to be the area with the highest rate of WT, especially if compared with the North-West of the Country. The gap between Centre-South and North-West is of about 44.1 %. The percentage is a bit lower (around 42.7 %) for the North-East.

In model (2), we add all the other possible sources of WT at an individual level. As noted above, the Centre-South has, to a greater extent than the other regions, most of the characteristics that are generally associated with higher WT. We, therefore, expect that adding control variables should reduce the regional gap in WT observed in unconditional estimates. We find that all the control variables play the expected role on WT, but the ranking of the coefficients of regional dummies

[6]For shortness sake we omit the estimates, which are, however, available upon request.

Fig. 2.8 Inflow Rate by Region

remain partially the same. The Centre-South is again the area with the highest rate of worker turnover. Interestingly, the gap between Centre-South, on the one hand, and North-West and North-East, on the other hand, becomes now very similar. The role of our control variables overall is a slight reduction of about 4 % points (1.5 % points) of the gap in WT between Centre-South and North-West (North-East) of Italy.

Women and the youngest age segment show a higher probability of worker turnover than men and the other age groups. The youngest individuals and women suffer typically of more career interruptions than prime-age workers. The eldest, instead, are more involved in the transitions to preretirement and retirement.

The probability of WT reduces with increasing education and, as expected based on other studies (e.g. Naticchioni et al. 2006), with reducing firm sizes. Lastly and expectedly, worker turnover increases for temporary workers.

To sum up the discussion until now, we find evidence supporting the first hypothesis in all the considered years. We indeed find the highest turnover rates in the traditionally high-unemployment regions of the South of Italy both in

Fig. 2.9 Outflow Rate by Region

unconditional estimates and conditional on several control variables catching the specific characteristics of the geographical units considered.

In model (3) and (4), where we introduce the Herfindahl and the Lilien index, respectively, we find a further reduction in the geographical differential in WT rates. In fact, WT correlates positively with structural change, as measured by the Lilien index, and negatively with the degree of industrial concentration, as measured by the Herfindahl index. Once we control for sectoral shifts and industrial concentration, we note a reduction of between 21 and 43 % of the regional gap in terms of workers' turnover.

The lower than one odds ratio of the Herfindahl index suggests that a higher rate of industrial concentration is a negative correlate of the degree of WT and, therefore, of unemployment; in other words, Marshallian effects would outweigh the portfolio effect. We find higher values of the index and, therefore, a higher degree of industrial concentration in higher employment opportunities regions of the North of Italy than the Centre-South.

Hyclak (1996) also found a negative correlation of the Herfindahl index with the local unemployment rate. Basile et al. (2012) find instead a positive association

between the degree of industrial specialisation and local unemployment, suggesting that the local concentration of firms within the same industry might give rise to a lesser number of employment opportunities to dismissed workers, in addition to being more exposed to sectoral shifts.

How to explain the difference between our finding and that of Basile et al. (2012)? The most likely candidate to an explanation is the fact that we look not at local labour systems but at larger geographical units. In the latter case, as also Marshall noted, the availability of more specialised districts could partly offset the diseconomies of specialisation in terms of greater exposure to external shocks. The higher presence of districts in the North of Italy leads to higher employment and industry concentration as measured by the Herfindahl index. Higher employment concentrations reduce the vulnerability (of industries and consequently of workers) into the North of Italy and therefore, the worker turnover (we indeed find lower rates of turnover in the North compared to the South of Italy) and to a wider extent the reallocation of workers.

2.5 Conclusions

The empirical analysis of this chapter builds on the theoretical model laid down in Aghion and Blanchard (1994) [and more recently in Boeri (2000)] and the applications at a regional level suggested by, among others, Ferragina and Pastore (2008) and Pastore (2012).

The previous literature brings to the fore different hypotheses as to the link between local labour market dynamics—as proxied by the worker turnover rate—and the unemployment rate. There are different theoretical explanations of the link between the local rate of worker turnover and of unemployment. The available empirical studies provide different results according to the period, country and type of data used.

In this chapter, an attempt was made to quantitatively verify the empirical pattern linking worker turnover and the unemployment rate using a rich individual-level dataset, namely the longitudinal files of the Italian LFS encompassing the period 2004–2010.

Pooled estimates of the probability of experiencing a worker turnover suggest a statistically significant and economically large difference across regions at both a NUTS1 and NUTS2 level. In addition, such a geographical gap positively correlates with that in unemployment rates. The rate of worker turnover is highest in the high-unemployment area in Centre-South of Italy.

When we look at the determinants of the regional gap in turnover rates, we find that women, the youngest age segment as well as the least-educated employees experience the highest probability of worker turnover. This latter is also associated with temporary work contracts and small firm size. Due to the greater concentration of young workers in small- and medium-sized enterprises, often holding a temporary contract, in high-unemployment regions, we find that the gap between the Centre-

South and the North-West reduces by 18 % and that with the North-East reduces by 11 %.

More importantly, from the point of view of our theoretical hypotheses, we find that worker turnover across NUTS1 and NUTS2 units correlates positively with structural change, as measured by the Lilien index, and negatively with the degree of industrial concentration, as measured by the Herfindahl index. In summary, this chapter has found that the regional gap in turnover rates is due to the differences between regions in the gender of the workforce, the age and education of the workforce, the share of temporary work contracts, the size of firms, the Herfindahl index of industrial concentration and the Lilien index of structural change.

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Biography

Chiara Mussida received her B.A. and Ph.D. in Economics from Università Cattolica del Sacro Cuore (Piacenza and Milan) in 2005 and 2009, respectively. Between 2006 and 2007, she also studied at the University of Sussex (Brighton, UK), where she obtained a Master of Arts in Development Economics (2007). She also collaborated with national and international research centres. She is an Assistant Professor at the Department of Economic and Social Sciences, Università Cattolica del Sacro Cuore (Piacenza), since December 2012. Her research interests include labour economics and microeconometrics.

Francesco Pastore is an Associate Professor at Department of Law, Seconda Università di Napoli and a research fellow of the IZA of Bonn. In 2013, he qualified as full professor of Economic Policy in the national habilitation system. He is a member of the executive board of the Italian Association of Labour Economists (AIEL) and of the Italian Association of Comparative Economic Studies (AISSEC). He earned a Ph.D. in Economics at the University of Sussex, UK. He has acted as a consultant for the International Labour Office, the United Nations Development Programme and the World Bank, among others.

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