Dynamic and Performance of the Italian Labour Market

Carlo Lucarelli[a*], Chiara Mussida[b]

[a] *ISTAT, Dipartimento per le Statistiche Sociali e Ambientali, Servizio Istruzione, Formazione e Lavoro*

[b] *Dipartimento di Scienze Economiche e Sociali, Università Cattolica del Sacro Cuore, Piacenza*

Abstract

Gross labour market flows confirm flaws in the conventional wisdom that the Italian economy is characterised by an inflexible and tight labour market and the evidence that the Italian labour market is quite active is also confirmed by the analysis proposed here. The exercise is aimed at measuring the overall dynamics that characterize a labour market, at national level and at a smaller area level. The peculiarity of the labour market, particularly highlighted by the indicators proposed here, is once again evident where some segments of the population (women and young people) pay not only the effects of the crisis but also the deeper structural weakness of the Italian economic system.

mail: `calucare@istat.it` (C. Lucarelli), `chiara.mussida@unicatt.it` (C. Mussida).

1   Introduction

The need for data on the labour market flows has increased markedly in recent years. Data on labour market flows are available from long time but the emphasis in understanding the reasons of the recent economic crisis puts the longitudinal data as one of the most relevant sources of information to investigate trends and to carry-out in depth investigations of the labour market.

The wider range of available information allows suggesting more effective policies and the reform of the labour market remains one of the most important points of the governments agenda in many countries and now, as never before, there is awareness that a framework without a longitudinal perspective is partial and, in many cases, misleading.

For example, it is becoming increasingly important the relationship between the two components of the active population (employed and unemployed) with the inactivity, especially with its component more attached to the labour force (grey zone of inactivity). The transitions among the states or conditions cannot be inferred through an estimation based solely on aggregate data on the stocks but must be studied using longitudinal data.

Longitudinal data on the labour force survey (LFS) are designed to overcome these barriers. This paper, unlike many other works in the literature, is not focused on flows involving a specific labour status but aims to provide a measure of the overall dynamics.

The analysis of the overall dynamics allows understanding the mobility which is hidden under the framework proposed by cross-sectional data that traditionally only allow considering growths or decreases (changes) of the labour market states but being able to say almost anything about how they were determined.

The analysis of the labour market flows inspired a substantial literature. Longitudinal studies are proposed by the pioneering works of Blumen et al. (1955), Hall (1972) and Marston (1976). The publications of the estimates of the labour market flows are available

in Italy since the early 70's (ISTAT, 1974).

The analysis of flows primarily focused on the state of employment and many works addressed issues related to worker (and job) reallocation and worker (and job) turnover, also considering the components of hiring and separations and their implications on the overall labour market. Specific theoretical works on these issues are Blanchard and Diamond (1990), Davis and Haltiwanger (1992), Mortensen (1970).

Other relevant contributions on these topics are Bachmann (2005) and Bellman et al. (2011) for Germany, Anderson and Meyer (1994), Davis et al. (2006) for the US, Hamermesh et al. (1996) for The Netherlands, Abowd et al. (1999) for France. In Italy, Trivellato et al. (2005) address the issue of mobility in both sides of employment and unemployment pointing to a measure of the overall mobility for a time–period of 25 years (1979-2003).

Many studies show how changes in the level of unemployment are strongly related to inflows and outflows from unemployment as well as the already mentioned Blanchard and Diamond (1990) or Elsby et al. (2011). This latter is a comparative study of the labour market of fourteen OECD countries. It is found that the effect of flows varies significantly among countries, much more in Anglo-Saxon and Nordic countries with respect to Continental European economies (these differences are also documented in the work of Blanchard and Wolfers, 2001). Moreover, ascertained this relationship, several proposals were to provide a measure of how much the observed variation in the unemployment within each country can be accounted for by variation in the inflow and the outflow rates from unemployment (e.g. Elsby et al., 2009; Petrongolo and Pissarides, 2008).

All the mentioned works allow getting just a hint on how a dynamic view of the labour market is increasingly important in understanding trends and evolutions of the phenomena. This paper is inspired by all these contributions.

The last renewal of the LFS in 2004 (ISTAT, 2006) allows obtaining more reliable longitudinal estimates than in the past not only on the worker turnover but also related to the churning (e.g. Davis and Haltiwanger, 1999; Burgess et al., 2000) and for all the movements within the state of employment that in the previous versions of the survey could not be detected or led to unreliable estimates.

This paper proceeds as follows. Section 2 describes the indicators and offers a descriptive analysis detailed also at the geographical level. Section 3 describes the data and the samples, the econometric model and the related results. Section 4 concludes.

2 The Indicators of Dynamic and Performance

This section is organized as follows. Subsection 2.1 offers a description of the indicators of dynamic and performance, whilst Subsection 2.2 measures the dynamic and performance of the Italian labour market both at the national level and also at a more detailed geographical level (area of residence and region).

2.1 Description

The grid of the indicators of dynamic and performance is displayed into the Appendix Figure A-1. We used data from the ISTAT LFS for the period 2004-2011.[1]

The starting points of these assessments are the movements of the active population (from 15 to 64 years of age) between the main labour states or macro-conditions. In addition, we evaluate the character of the employment, micro–conditions, for each individual which makes movements within this labour market state.

The labour market macro-conditions are employment, unemployment, grey zone of

---

[1]Data for the last couple of years are still provisional.

inactivity and hard inactivity.[2]

The grey zone includes the inactive which show a certain degree of attachment to the labour market, since they would accept a work whether offered under certain conditions. The hard inactive, instead, do not search for a job and are not available to work.

The decomposition of the inactivity is primarily due to the increased interest of the international institutions for areas that show strong attachment to the labour market (IS-TAT, 2005), but that are often ignored by the official statistics. Recently, indeed, Eurostat provided estimates of supplementary indicators of the labour market related to some of the groups that belong to the grey zone (Eurostat, 2011).

The twelve-months transition from a macro-condition and/or micro-condition to another is recorded by an indicator of dynamic and estimated in terms of performance by another indicator.

The indicator of dynamic is 0 or 1 depending on the absence or presence of movement from one macro(micro)-condition to another. The assessment of the type of change, which arises from the transition between conditions, is collected by the performance indicator that is much higher in absolute value the greater is the distance between the conditions.

The indicator of performance ranges from -3 to 3 where the two extremes indicate the worst and the best conditions, respectively (-3 for the movements from employment to hard inactivity, +3 vice versa). For the oldest age group examined, both the dynamic and the performance indicators are subjected to rise due to the transition from active participation to the hard inactivity for retirement related issues.

In the case of permanence within macro(micro)-conditions the dynamic indicator does not change (always 0), whilst the performance indicator takes the positive score +1 for

---

[2]The grey zone includes those who are seeking for a work despite not having taken active job-searching actions during the previous four weeks, those who are seeking for a job but not immediately available to accept one within the next two weeks, and those who are not searching for a job but would be available to take one if it was offered them.

those who remain into the state of employment, and the negative value -1 for those who persist in the macro-conditions of unemployment or inactivity. Although the unemployed search for a job and are available to start working (which is not true for the inactive), they lie outside of the employment sphere, so they are marked with a negative score.

Besides concerning the movements between macro-conditions, an overall assessment of the dynamics needs also to take into account the transitions within the labour aggregates. In what follows we focus on the movements within the state of employment. Indeed, many movements, which involve the occupation of individuals after one year, might imply changes of the type or character of the job.

We analyse movements among the professional status of employee, self–employed, and "collaboratori".[3] In addition, we consider changes of the working time, part-time or full-time, of the duration of the contract, whether permanent or fixed-term, and of the sector of economic activity.[4]

Changes in the condition at the end of the period compared to 12 months before causes the increase of the dynamic indicator that grows the higher is the number of movements through the various type of contract (for example, for individuals in the state of employment between time t and time t +1, which moves from a fixed-term to a permanent contract and from full-time to part-time work the indicator will be 2).

2.2   Geographical differentials

In this section we aim at measuring the overall dynamics that characterize the Italian labour market, looking at its geographical details, both at the geographical area of resi-

---

[3]"Collaboratori" includes "collaborazioni coordinate e continuative" "collaboratori a progetto" and "collaboratori occasionali".

[4]We do consider twelve sectors of economic activity. We used the ATECO classification of economic activity to build these indicators. This allows evaluating the transitions of the employed among different sectors of economic activity.

dence level and at the regional level. The geographical differentials represent a structural feature of the Italian labour market. For instance, Bertola and Garibaldi (2003) found evidence of geographical differences in unemployment. Sizeable geographical gaps are also found in Italian employment rates.[5] In addition, we are going to assess the performance of each movement, whether it is positive or negative. The former refers to improvements in the labour market conditions (e.g. access to the labour force, transitions from unemployment to employment, permanence into the state of employment), whilst the latter leads to worse labour market states.

Table 1: Indicators of Dynamic by geographical area of residence, 2004–2011. *Percentage values*

	2004-2005		2005-2006		2006-2007		2007-2008		2008-2009		2009-2010		2010-2011	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
North	.27	.50	.21	.46	.23	.47	.26	.49	.22	.45	.21	.44	.24	.47
North-West	.27	.51	.20	.44	.23	.47	.25	.48	.21	.45	.21	.44	.23	.46
North-East	.27	.50	.23	.49	.23	.47	.26	.49	.22	.46	.21	.44	.24	.48
Centre	.32	.53	.25	.49	.28	.51	.31	.53	.26	.49	.25	.48	.29	.51
South	.34	.52	.33	.51	.33	.50	.33	.51	.31	.49	.28	.47	.30	.48
Italy	.30	.51	.26	.49	.28	.49	.29	.51	.26	.48	.24	.46	.27	.48

Source: Author's calculations using longitudinal ISTAT 2004/2011 LFS data.

Table 2: Indicators of Performance by geographical area of residence, 2004–2011. *Percentage values*

	2004-2005		2005-2006		2006-2007		2007-2008		2008-2009		2009-2010		2010-2011	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
North	.29	1.15	.32	1.14	.32	1.14	.35	1.15	.33	1.13	.30	1.13	.32	1.13
North-West	.29	1.14	.31	1.14	.32	1.14	.33	1.15	.32	1.12	.29	1.14	.30	1.12
North-East	.30	1.16	.34	1.14	.32	1.15	.37	1.15	.34	1.14	.31	1.12	.33	1.13
Centre	.20	1.19	.28	1.16	.22	1.18	.30	1.17	.27	1.17	.22	1.17	.26	1.16
South	-.01	1.19	.04	1.20	.05	1.20	.05	1.20	.01	1.19	-.01	1.18	-.04	1.16
Italy	.17	1.18	.21	1.17	.20	1.18	.23	1.18	.21	1.17	.18	1.16	.18	1.16

Source: Author's calculations using longitudinal ISTAT 2004/2011 LFS data.

Tables 1 and 2 reports the indicators of dynamic and performance by geographical

---

[5]The Italian employment rate for the population aged 25-54 was 78.8% in the North, 75.3% in the Centre, and 56.8% in the South of Italy in 2005. These figures are available in the Internet at http://epp.eurostat.ec.europa.eu/portal/page/portal/eurostat/home.

area of residence. More precisely, we refer to the first level of disaggregation, NUTS1, corresponding to the macro-region.[6]

The economic downturn has produced an overall slowdown of the dynamic which drops from 0.29, from the period 2007-2008 to 0.26 one year later and 0.24 in 2009-2010. Only in the last couple of years, there seems to be a stop of the negative trend.

The South is the most dynamic geographical area. This may seem quite surprising if we consider the structural features of the economy of the southern regions. The South of Italy is indeed characterized both by an extensive industrial delocalization and by the wide presence of the public administration that are fields which usually do not stand out for dynamic. In fact, the high dynamic of the South is primarily due both to transitions between the states of unemployment and inactivity and to movements among temporary and precarious employment contracts. Nonetheless, these "bad" transitions are confirmed by the performance indicator which remained the lowest of the Country for the overall time period, especially during the last couple of years (-.4).

The North is less dynamic - without relevant differences between East and West - taking lower values for the dynamic indicator, whilst the Centre shows intermediate values. Even in these contexts, the crisis leads to a reduction in the value of the indicator. In terms of performance, instead, the North and the Centre are very close to each other even though the Centre appears to suffer more of the effects of the recession.

The values of the indicators show interesting insights. The trends of the dynamic indicators show that during the expansion (from 2004 to 2008) the Italian labour market is much more dynamic than in recession (from 2008 onwards). The rise of the employment creates more opportunities of job-to-job movements (churning), whilst with the downturn

---

[6]This is the acronym of "Nomenclatura delle unità territoriali statistiche". NUTS1 is the first level of geographical disaggregation of Eurostat. Italian NUTS1 classification includes four areas: North-West (Piemonte, Valle d'Aosta, Lombardia and Liguria), North-East (Trentino Alto Adige, Veneto, Friuli Venezia Giulia and Emilia Romagna), Centre (Toscana, Umbria, Marche and Lazio), and South (Abruzzo, Molise, Campania, Puglia, Basilicata, Calabria, Sicilia and Sardegna).

prevails uncertainty with lower job opportunities that lead, to a greater extent, the people to keep a less risky behaviour and to maintain their work.

The performance indicator reaches its peak in 2007-2008 and decreases during the recession, however, returning to the levels of 2004-2005. Thus, if we consider only this indicator it does not seem that the recession has worsened the situation of the labour market. In any case, if we consider also the dynamic indicator, which as mentioned above suffers a reduction in recent years, we are in a much more static scenario. Moreover, the greatest impact of the recession are recorded in the first year (2008-2009) and in the subsequent years both the dynamic and performance are affected from a severely compromised framework and further deterioration compared to that situation must necessarily take into account the starting point.

Table 3: Indicators of Dynamic by region, 2004–2011. *Percentage values*

	2004-2005		2005-2006		2006-2007		2007-2008		2008-2009		2009-2010		2010-2011	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Piedmont	.25	.49	.20	.43	.21	.46	.25	.48	.21	.45	.21	.44	.24	.46
A.Valley	.22	.45	.24	.48	.24	.47	.25	.50	.23	.50	.22	.44	.19	.43
Lombardy	.28	.51	.20	.44	.24	.47	.25	.49	.21	.45	.22	.45	.23	.46
Trentino	.25	.49	.24	.50	.24	.48	.27	.51	.23	.47	.20	.44	.27	.50
Veneto	.29	.51	.22	.49	.24	.48	.27	.50	.23	.46	.22	.44	.26	.48
Friuli	.22	.46	.21	.49	.21	.45	.27	.49	.25	.50	.25	.51	.23	.46
Liguria	.31	.54	.24	.48	.23	.45	.24	.47	.23	.46	.21	.44	.22	.46
Emilia	.26	.50	.23	.49	.23	.46	.26	.48	.19	.43	.18	.41	.23	.47
Tuscany	.28	.52	.24	.48	.25	.50	.30	.52	.25	.48	.25	.49	.27	.50
Umbria	.32	.54	.26	.48	.28	.54	.30	.55	.26	.51	.22	.45	.29	.51
Marche	.28	.50	.25	.49	.26	.47	.27	.49	.23	.47	.22	.45	.23	.46
Lazio	.35	.55	.26	.49	.31	.53	.32	.54	.28	.49	.27	.48	.32	53
Abruzzo	.32	.53	.31	.51	.29	.49	.29	.51	.28	.51	.26	.47	.25	.45
Molise	.28	.48	.29	.48	.30	.50	.31	.49	.33	.51	.23	.43	.31	.48
Campania	.35	.52	.33	.51	.35	.50	.32	.50	.30	.49	.27	.47	.29	.47
Apulia	.31	.50	.30	.48	.32	.50	.33	.52	.32	.50	.28	.47	.29	.48
Basilicata	.35	.52	.34	.51	.31	.50	.33	.52	.31	.49	.29	.47	.27	.47
Calabria	.35	.51	.35	.51	.38	.54	.37	.52	.33	.49	.33	.50	.33	.50
Sicily	.35	.52	.35	.54	.33	.50	.35	.52	.29	.47	.27	.47	.31	.49
Sardinia	.34	.53	.28	.50	.28	.48	.32	.51	.32	.51	.28	.46	.31	.52
Italy	.30	.51	.26	.49	.28	.49	.29	.51	.26	.48	.24	.46	.27	.48

Source: Author's calculations using longitudinal ISTAT 2004/2011 LFS data.

Another outstanding feature emerges from the calculation of indicators on regional basis (Tables 3 and 4). Some regions show inconsistent behaviour with respect to the

Table 4: Indicators of Performance by region, 2004–2011. *Percentage values*

	2004-2005		2005-2006		2006-2007		2007-2008		2008-2009		2009-2010		2010-2011	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Piedmont	.29	1.13	.30	1.13	.29	1.12	.31	1.16	.33	1.09	.27	1.14	.27	1.54
A.Valley	.33	1.11	.31	1.18	.35	1.20	.40	1.10	.38	1.11	.39	1.18	.37	1.10
Lombardy	.31	1.15	.31	1.13	.35	1.14	.35	1.14	.33	1.13	.31	1.14	.31	1.11
Trentino	.31	1.18	.31	1.19	.34	1.19	.31	1.18	.35	1.16	.33	1.13	.39	1.15
Veneto	.27	1.18	.31	1.14	.30	1.17	.39	1.14	.31	1.19	.33	1.12	.32	1.15
Friuli	.27	1.12	.30	1.16	.25	1.16	.29	1.20	.31	1.14	.26	1.15	.33	1.13
Liguria	.19	1.15	.27	1.17	.22	1.16	.26	1.16	.21	1.15	.26	1.11	.31	1.11
Emilia	.34	1.14	.40	1.13	.35	1.12	.39	1.14	.39	1.07	.31	1.11	.34	1.12
Tuscany	.27	1.17	.32	1.13	.26	1.17	.35	1.18	.35	1.13	.25	1.20	.28	1.15
Umbria	.21	1.16	.29	1.20	.21	1.18	.38	1.16	.26	1.16	.30	1.13	.27	1.17
Marche	.24	1.16	.39	1.14	.30	1.14	.27	1.14	.25	1.12	.25	1.13	.26	1.09
Lazio	.15	1.21	.22	1.18	.17	1.21	.27	1.18	.23	1.20	.18	1.17	.24	1.18
Abruzzo	.13	1.22	.21	1.22	.21	1.21	.29	1.18	.21	1.16	.12	1.18	.25	1.15
Molise	.03	1.20	.18	1.17	.07	1.20	.14	1.24	.09	.25	.13	1.15	.14	1.20
Campania	-.02	1.20	-.01	1.21	.03	1.21	.02	1.20	-.01	1.19	-.03	1.19	-.11	1.14
Apulia	-.03	1.18	.04	1.20	.06	1.21	.02	1.20	.02	1.20	-.02	1.18	-.05	1.18
Basilicata	.02	1.22	.11	1.22	.07	1.18	.11	1.22	.07	1.20	.02	1.20	.01	1.17
Calabria	-.05	1.19	.00	1.22	-.03	1.24	-.01	1.24	-.01	1.22	.00	1.18	-.06	1.19
Sicily	-.03	1.19	.02	1.18	.02	1.17	.03	1.19	-.04	1.15	-.09	1.15	-.07	1.15
Sardinia	.06	1.17	.09	1.17	.16	1.16	.16	1.18	.06	1.19	.11	1.16	.08	1.17
Italy	.17	1.18	.21	1.17	.20	1.18	.23	1.18	.21	1.17	.18	1.16	.18	1.16

Source: Author's calculations using longitudinal ISTAT 2004/2011 LFS data.

areas to which they belong. For example, Liguria, which is included in North-West, tends to have a behaviour close to the regions belonging to the Centre especially in terms of performance. Lazio, which belongs to the Centre, differs from the other regions of the area since it has a dynamic profile similar to the one of the Southern regions and a performance in the middle between Central and South and very close to the one of Abruzzo (that is also geographically contiguous).

Hence, according to these observations, labour markets are not perfectly delimited by the NUTS1 classification. For instance Lazio, which has an employment structure strongly characterized by the public administration, in many cases tends to be closer to the regions of the South rather than the ones of the Centre.

3 The Econometric Analysis

The purpose of this section is threefold. First, it describes data and samples. The second part sketches the econometric model. The third part offers the estimates of the determinants of dynamic and performance both before and during the crisis.

3.1 Data and Sample

Our sample is extracted from ISTAT LFS data. It is a rotating panel survey based on the principles set out by the *International Labour Organization* (ILO) and on harmonized methodology across most of the countries in the OECD area.[7] The longitudinal component of the survey comprises almost 70,000 individuals per year.[8]

We analyze the time periods 2004–2008 and 2008–2011, before and during the economic downturn, respectively. In order to examine the dynamic and the performance of (almost) the overall labour force we include in our analysis individuals over the age of 15 and under the age of 64. We drop individuals over the age of 64 to avoid to get mixed up with retirement issue. We also drop individuals who were in army or with missing values for some variables used in the econometric analysis.

Considering all the individuals in the labour force, 196,967 and 141,597 observations remain over the periods 2004–2008 and 2008–2011, respectively.

Table 5 displays descriptive statistics by time period of the variables used in the econometric analysis for both labour market dynamic and performance. The dependent variables, dynamic and performance, are dummy variables for the presence/absence of labour market dynamic and the related performance (positive or negative/poor), respectively.

Eights gender and education interactions are included in the model specification. The

---

[7]For a detailed description of the survey see Gazzelloni (2006) and ISTAT (2009).
[8]For technical details on the survey, see Discenza and Lucarelli (2009).

Table 5: Summary Statistics of the Covariates by Time Period

	2004-2008		2008-2011	
	Mean	St. Dev	Mean	St. Dev
Dynamic	.257	437	.234	.424
Performance	.546	.498	.539	.499
Gender and Education interaction[a]				
Male None, lower primary	.066	.248	.052	.222
Male Lower secondary	.196	.397	.196	.397
Male Secondary	.184	.388	.189	.392
Male Post secondary or tertiary	.044	.206	.050	.217
Female None, lower primary	.096	.295	.077	.267
Female Lower secondary	.171	.377	.176	.380
Female Secondary	.190	.392	.196	.397
Female Post secondary or tertiary	.052	.223	.064	.245
Age				
[15, 24]	.158	.365	.153	.360
[25, 34]	.182	.385	.165	.371
[35, 44]	.237	.425	.237	.425
[45, 54]	.215	.411	.228	.420
[55, 64]	.207	.405	.217	.412
Area of residence				
North	.448	.497	.447	.497
Centre	.145	.352	.158	.365
South	.407	.491	.395	.489
Italian[b]	.975	.155	.940	.238
Family status				
Single	.060	.238	.081	.272
Married with children	.485	.500	.463	.499
Married without children	.144	.351	.157	.364
Child with parents	.266	.442	.249	.433
Child of single parent	.030	.172	.034	.181
Observations	196,967		141,597	

[a] Educational indicators refer to the highest and successfully completed educational attainment of a person. We used the ISCED-97 educational classification to build these indicators.

[b] "Italian" is a dummy indicator equal to one if the individual has an Italian citizenship.

Source: Author's calculations using longitudinal ISTAT 2004/2011 LFS data.

ISTAT LFS distinguished between education completed in the lower primary stage, lower secondary, secondary and post secondary or tertiary education. In our samples women are slightly more educated than men, especially during the crisis period: 6.4% of the women had a post secondary or tertiary education against 5% of men. Around 70% of the sample has a lower secondary or secondary education and it is equally distributed among genders.

We distinguished between five age groups: very young (15-24 years old), young (25-34), middle aged (35-44 years old), and older (45-54 and 55-64 years old).

Three indicators control for the geographical area of residence and split Italy in North, Centre, and South. Around 85% of the sample is equally distributed in the North and South of Italy, while the remainder lives in the Centre. A dummy indicator for the citizenship tries to capture the effect of being Italian citizens on the labour market dynamic and the related performance.

Finally, a set of indicators are used for the family status. Around half of the sample is married with children and almost 25% are child living with their parents. Only 15% are married without children, and the remainder (around 10% of the sample) are single or child of single parents.

3.2 The Econometric Model

In what follows we analyse both the probability of making a labour market transition and the one of positive labour market performance by using probit models specifications. The estimates are carried out on the total working age population.[9]

For binary outcome data the dependent variable y takes one of two values. We let $y = 1$ with probability p, and $y = 0$ with probability $1 - p$. In our investigations y equals

_____

[9]The working age population includes individuals aged from 15 to 64. Since the LFS renewal of 2004, the ISTAT also includes in the computation of the unemployment rate the age brackets [65; 74]. We exclude this latter age group to avoid to get mixed with (early)retirement issues.

1 for the presence of a dynamic and 0 otherwise in the first set, whilst y equals 1 if the performance improves and 0 otherwise.

A probit model is formed by parameterizing the probability p to depend on a regressor vector x and a $K \times 1$ parameter vector β. It is single-index form model with conditional probability given by

$$p_i \equiv Pr[y_i = 1|x] = F(x_i'\beta), \tag{1}$$

where $F(.)$ is a specified function. To ensure that $0 \leq y \leq 1$ it is natural to specify $F(.)$ to be a cumulative distribution function. The probit model assumes that $F(.)$ is the standard normal cumulative distribution function (such as for the error, which is standard normal distributed) and specifies the conditional probability as

$$p = \Phi(x'\beta) = \int_{-\infty}^{x'\beta} \phi(z)dz, \tag{2}$$

where $\Phi(.)$ is the standard normal cumulative distribution function, with derivative $\phi(z) = (1/\sqrt{2\pi})exp(-z^2/2)$, which is the standard normal density function. Model parameters are estimated using Maximum Likelihood (ML). The ML first–order conditions are that

$$\sum_{i=1}^{N} w_i(y_i - \Phi(x_i'B))x_i = 0, \tag{3}$$

where the weight $w_i = \phi(x_i'B)/[\Phi(x_i'B)(1 - \Phi(x_i'B))]$ varies across observations. The probit model marginal effects are $\partial p_i/\partial x_{ij} = \phi(x_i'B)\beta_j = \phi(\Phi^{-1}(p_i))\beta_j$, where $p_i = \Phi(x_i'B)$.[10]

In what follows, the regressor vectors x for both batteries of estimates includes indi-

---

[10]For more details on probit models, see Cameron and Trivedi (2005).

vidual and household–level characteristics which exert an impact on the chances of moving between different labour market states and on the related performance, respectively.

3.3 Estimation Results

Table 6 displays the effects of the covariates on the probabilities of moving between different labour market states (dynamic) and of a positive labour market performace before and during the economic crisis, respectively. We also carried out Wald tests for the equality of coefficients for the two periods.

Highly educated women seem more dynamic compared to women with lower educational level and to men, with the partial exception of the low educated. The tests for the equality of coefficients for gender and education interactions do suggest that gender differences are wider during the recession and highly educated men, unlike the pre-recession period, seem less dynamic than women and lower educated men. The level of education significantly affects performance and those with higher educational qualifications, regardless of gender, have more chances to achieve better labour market positions than those who have studied less. In general, men do show a better labour market performance compared to women, expecially the low educated ones.

Young of both gender are more dynamic than the oldest individuals in the labour market, and this effect is exacerbated during the recent recession. This is in line with expectation. In terms of performance, more mature workers (from 25 to 54 years of age) do show better labour market perspectives compared to both youngest and oldest individuals.[11]

People living in the North of Italy are less dynamic and do perform well compared to

---

[11]In general, more mature workers do perform better than younger in the labour market. The latter do find difficulties in their first labour market approach. In addition the very young (aged between 15 and 24 years) are frequently involved in education. The advantage of mature compared to oldest is instead primarily due to pre-retirement issues. It is important to account for all those effects when interpreting our results.

Table 6: Coefficient Estimates of the Covariates for Labour Market Dynamics and Performance by Time Period

| | Dynamic | | | | Performance | | | |
| | 2004-2008 | | 2008-2011 | | 2004-2008 | | 2008-2011 | |
Variables	Coeff.	S.E.	Coeff.	S.E.	Coeff.	S.E.	Coeff.	S.E.
Gender and Education interaction – Reference: Female with tertiary education								
Male None, lower primary	-.001	.019	-.023	.023	-.092***	.018	-.214***	.022
Male Lower secondary	-.182***	.015	-.186***	.016	.188***	.015	.073***	.016
Male Secondary	-.156***	.015	-.166***	.016	.430***	.015	.348***	.016
Male Post secondary or tertiary	-.128***	.019	-.216***	.022	.581***	.021	.510***	.022
Female None, lower primary	-.087***	.018	-.152***	.021	-1.038***	.018	-1.118***	.022
Female Lower secondary	-.027*	.015	-.038**	.022	-.634***	.015	-.727***	.016
Female Secondary	.027*	.015	.026*	.016	-.184***	.015	-.251***	.016
Age – Reference: [15, 24]								
[25, 34]	.112***	.011	.171***	.014	.735***	.011	.738***	.014
[35, 44]	-.129***	.013	-.023*	.015	.897***	.013	.934***	.016
[45, 54]	-.257***	.014	-.136***	.016	.796***	.014	.874***	.016
[55, 64]	-.502***	.015	-.316***	.018	-.316***	.015	-.150***	.017
Area of residence – Reference: North								
Centre	.126***	.009	.126***	.010	-.123***	.009	-.119***	.010
South	.268***	.007	.247***	.008	-.344***	.007	-.380***	.008
Italian	-.307***	.016	-.227***	.015	.074***	.017	.078***	.015
Role in the household – Reference: Child with parents								
Single	-.139***	.015	-.220***	.017	.390***	.016	.444***	.017
Married with children	-.132***	.010	-.176***	.012	.316***	.011	.367***	.012
Married without children	-.193**	.012	-.219***	.015	.262***	.013	.316***	.015
Child of single parent	-.015	.020	-.057**	.023	.501***	.020	.535***	.023
Log-likelihood	-108,989.19		-75,755.96		-106,998.36		-77,445.13	
N	196,967		141,597		196,967		141,597	

Notes: * Significant at the 10% level; ** significant at the 5% level; *** significant at the 1% level.
Source: Author's calculations using longitudinal ISTAT 2004/2011 LFS data.

people living in the Centre and (expecially) in the South. The non-national component of the population has a more dynamic labour market behaviour compared to the Italians. The economic downturn do increased those movements. However in both periods the dynamics of the foreigners are associated to worse labour market performance with respect to the national component.

Child with parents are more dynamic and have a worse performance compared to the other household status in both the time periods.

The estimation exercises therefore allow defining the profile of the dynamic individual in the labour market. To sum up, the more dynamic individual is a highly educated women, young (not only very young, but also aged between 25 and 34 years), and living in the South of Italy. The performance of the dynamic individuals are worse compared to the less mobile. Those characteristics are exacerbated by the economic downturn.

4 Conclusions

Gross labour market flows confirm flaws in the conventional wisdom that the Italian economy is characterised by an inflexible and tight labour market and the evidence that the Italian labour market is quite active is also confirmed by the analysis we carried out. The exercise proposed here aimed at measuring the overall dynamics that characterize a labour market, at national level and at a smaller area level.

The criticality of the labour market, particularly highlighted by the indicator of performance, is once again evident. Women and the youth component of the population appear to be highly penalized in this context, especially during the recession. In fact, compared to the other population groups and despite their higher levels of the dynamic indicator, they do show poor labour market performance. This is due to their difficulties both for the access to the labour market (e.g., they frequently find temporary and precarious employment) and for the exits from the state of employment (e.g. they often move directly to inactivity). Those tendencies are exacerbated by the recession.

What emerges from the results of our model is very tight to a "liquid" labour market definition (Franzini and Raitano, 2012) where "... most of the workers and the youngest - move among different labour states by alternating periods with standard job contracts and atypical periods, which are often not supported by adequate social subsidies ... ".

Appendix

Figure A-1: The Indicators of Dynamic and Performance

Transition	Dynamic	Performance	Persistence	Dynamic	Performance
Macro-conditions					
employed - unemployed	1	-1	employed	0	1
employed - grey zone	1	-2			
employed - hard inactivity	1	-3			
unemployed - employed	1	1	unemployed	0	-1
unemployed - grey zone	1	-1			
unemployed - hard inactivity	1	-2			
grey zone - employed	1	2	grey zone	0	-1
grey zone - unemployed	1	1			
grey zone - hard inactivity	1	-1			
hard inactivity - employed	1	3	hard inactivity	0	-1
hard inactivity - unemployed	1	2			
hard inactivity - grey zone	1	1			
Micro-conditions of Employment					
permanent - fixed-term	1	-2	permanent	0	0
fixed term - permanent	1	1	fixed-term	0	-1
full-time - part-time	1	-1	full-time	0	0
part-time - full-time	1	1	part-time	0	0
employee - self-employed	1	0	employee	0	0
employee - "collaboratori"	1	-1			
self-employed - employee	1	0	self-employed	0	0
self-employed - "collaboratori"	1	-1			
"collaboratori" - employee	1	1	"collaboratori"	0	-1
"collaboratori" - self-employed	1	1			
movements among sectors of economic activity	1	0	sector of economic activity	0	0

19

References

Abowd, J., P. Corbel, and F. Kramarz, "The Entry And Exit Of Workers And The Growth Of Employment: An Analysis Of French Establishments," *The Review of Economics and Statistics*, 1999, *81*, 170–187.

Anderson, P. and B. Meyer, "The extent and consequences of job turnover," *Brookings Papers: Microeconomics*, 1994.

Bachmann, R., "Labour Market Dynamics in Germany: Hirings, Separations, and Job-to-job Transitions over the Business Cycle," 2005. SPB 649 Discussion Paper 2005-045.

Bellman, L., H. Gerner, and R. Upward, "Job and Worker Turnover in German Establishments," 2011. IZA Discussion Paper No. 6081.

Bertola, G. and P. Garibaldi, "The Structure and History of Italian Unemployment," 2003. CESifo Working Paper No. 907, Munich.

Blanchard, O. and J. Wolfers, "The Role of Shocks and Institutions in the Rise of European Unemployment: the aggregate evidence," *Economic Journal*, 2001, pp. C1–C33.

— **and P. Diamond**, "The Cyclical Behavior of the Gross Flows of U.S. Workers," *Brookings Papers on Economic Activity*, 1990, *2*, 85–155.

Blumen, I., M. Kogan, and P.J. McCarthy, "The Industrial Mobility of Labor as a Probability Process," *Cornell Studies in Industrial and Labor Relations*, 1955, *6.*

Burgess, L., J. Lane, and D. Stevens, "Job Flows, Worker Flows, and Churning," *Journal of Labor Economics*, 2000, *18* (3), 473–502.

Cameron, A.C. and P.K. Trivedi, *Microeconometrics: Methods and Applications*, Cambridge University Press, 2005.

Davis, S. and J. Haltiwanger, "Gross Job Creation, Gross Job Destruction, and Employment Reallocation," *The Quarterly Journal of Economics*, 1992, *107* (3), 819–863.

— **and** — , "Gross job flows," in "Handbook of Labor Economics," Elsevier Science, 1999, pp. 2711–2805.

— , **J. Faberman, and J. Haltiwanger**, "The Flow Approach to Labor Markets: New Data Sources and Micro-Macro Links," *Journal of Economic Perspectives*, 2006, *20* (3), 3–26.

Discenza, A.R. and C. Lucarelli, "Dati longitudinali a 12 mesi di distanza - Aspetti metodologici," 2009. ISTAT, Nota metodologica allegata alla diffusione dei file MFR, Dicembre 2009, Roma.

Elsby, M., B. Hobijn, and A. Sahin, "Unemployment Dynamics in the OECD," 2011. Federal Reserve Bank of San Francisco, Working Paper No. 2009-04.

— , **R. Michaels, and G.Solon**, "The Ins and Outs of Cyclical Unemployment," *American Economic Journal: Macroeconomics*, 2009, *1*, 84–110.

Eurostat, *8.5 million underemployed part-time workers in the EU-27 in 2010: 3 new Eurostat indicators to supplement the unemployment rate* 2011. Statistics in focus, 56/2011, Luxembourg.

Franzini, M. and M. Raitano, "Rigido, flessibile o "liquido"? Il mercato del lavoro e il rischio di riforme inutili," 2012. Available online at http://www.nelmerito.com.

Gazzelloni, S., "La rilevazione sulle forze di lavoro: contenuti, metodologie, organizzazione," 2006. ISTAT - Metodi e Norme n. 32 - 2006 - Roma.

Hall, R.E., "Turnover in the Labour Force," *Brookings Papers on Economic Activities*, 1972, *3* (2), 709–764.

Hamermesh, D., W. Hassink, and J.C. Van Ours, "Job turnover and labor turnover: a taxonomy of employment dynamics," *Annales D'Economies et de Statistique*, 1996, *41/42*, 21–40.

ISTAT, "Forze di lavoro e flussi di popolazione," 1974. Supplemento al Bollettino Mensile di Statistica, N.5 - Maggio, Roma.

___ , *Rapporto Annuale. La situazione del Paese nel 2004* 2005.

___ , *La rilevazione sulle forze di lavoro: contenuti, metodologie, organizzazione.* 2006.

___ , "Forze di Lavoro - Media 2008," 2009. Annuari, Roma.

Marston, S.T., "Employment Instability and High Unemployment Rates," *Brookings Papers on Economic Activity*, 1976, (1).

Mortensen, D., "A Theory of Wage and Employment Dynamics," in "Microeconomic Foundations of Employment and Inflation Theory," W.W. Norton and Company Inc., 1970.

Petrongolo, B. and C.A. Pissarides, "Ins and Outs of European Unemployment,," *American Economic Review*, 2008, *98* (2).

Trivellato, U., F. Bassi, A. Discenza, and A. Giraldo, "Transizioni e Mobilità nel mercato del lavoro italiano, 1979-2003," in "Eppur si Muove. Dinamiche e persistenze nel mercato del lavoro italiano," il Mulino, 2005.