Determinants of the Unemployment Gender Gap: A Comparative Investigation

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Abstract

This paper analyzes the unemployment gender gap using a three-state labor market model, which enables determination of the equilibrium (steady-state) unemployment rate and the contribution of a single transition probability from each state to the unemployment differential between males and females. This investigation falls within a comparative framework in that we apply our methodology to the Italian and UK labor markets. This comparison is relevant in that it considers two diversified institutional contexts: one typical of the so-called Anglo-Saxon model, characterized by more flexible labor market legislations, and the other typical of the continental model, which involves tighter legislative controls and more restrictive institutions. The analysis draws on the Italian and the UK Labor Force Surveys for the period 2004-2013. In addition, we propose an econometric model that enables us to estimate the determinants of the unemployment gender gap to pinpoint the relative role of the individual characteristics and other structural factors that determine it.

Keywords: unemployment gender gap, differentials, multinomial models, steady-state unemployment rate.
JEL classification codes: C21, C41, J16, J31, J71

1 Introduction

The sharp increase in the unemployment rate during the recent economic downturn poses various issues for researchers and policy makers, including the role of structural versus cyclical factors in determining an upturn. In this framework, it is relevant to analyze an old (but still relevant) issue that has been largely understated over the last decade: the role of gender differentials.

It is only recently that the unemployment gender gap, i.e., the difference in male and female unemployment rates, has again started to receive attention, after last being considered as a relevant economic and policy issue in the 1970s and early 1980s. The seminal papers by Martson (1976) and Clark and Summers (1979) are clear examples of that debate, which also included the role of ethnic factors as determinants of structural differences in the US unemployment rate. However, later literature has primarily concentrated on other aspects of gender differentials, e.g.,

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the male-female participation and earning gaps.

Only since the second half of the 2000s has the unemployment gender gap regained the attention it deserves. Recent literature also focuses on international comparisons, highlighting different patterns in OECD economies. The study by Azmat, Guell and Manning (2006) emphasizes different unemployment gender gaps in the European countries and the US using microdata collected from the European Community Household Panel Survey (ECHP) and the Current Population Survey (CPS). Those authors find that in countries where the gap is relatively high (e.g., the Mediterranean countries)—i.e., where the female unemployment rate is significantly higher than that of males—the unemployment problem primarily involves female unemployment. Typically, these countries also have very high youth unemployment rates. In addition, they found that in countries with higher female participation rates and subsequent higher levels of female labor market attachment, the unemployment gap is smaller (e.g., the Anglo-Saxon countries). However, they also emphasized the fact that in many European countries, in particular in southern Europe, this gap has increased despite a rise in the female participation rate in recent decades, thus suggesting that institutional factors can play a crucial role in determining such a persistent gap.

More recently, it has been shown that the gender gap has decreased even more because of the effect of the economic recession, which has primarily affected the male component of the labor force (Sahin et al 2010) due to its impact on the construction and finance industries in which the major component of the workforce is male.

Given this framework, we analyze the unemployment gender gap comparing patterns in Italy and the UK. Our analysis is relevant because these two countries represent different institutional frameworks with different labor institutions and regulations. Italy has a typically southern European labor market, partitioned into segments characterized by significantly different levels of employment protection, and therefore different labor costs. The UK has a typically Anglo-Saxon labor market characterized by less employment protection legislation (Theodossiou and Zangelidis, 2009). It is worth noting that despite these intrinsic differences, both labor markets reveal overall high labor mobility, but that mobility affects the two countries' labor forces in different ways. In particular, there remains a significant unemployment gender gap in the Italian labor market that underlines the disadvantage suffered by the female component of the labor force; although this imbalance has improved in comparison to the situation in the 1980s, female disadvantage remains a structural characteristic in the Italian labor market.

We extend the analysis by Baussola (1985,1988) and Baussola and Mussida (2011, 2014) to provide more detailed and updated evidence of the determinants of labor market flows and their impact on the unemployment gender gap. We provide econometric estimates of the flows, which enable us to highlight their determinants and thus their impact on the unemployment gender gap. The latter issue is affected by the level of human capital, age and other structural variables such as geographical factors. In addition, we propose a decomposition of the gap, which enables us to measure the marginal contribution of each labor market movement (i.e., the contributions of employment, unemployment and inactivity).

Our analysis draws on the Italian and UK Labor Force Surveys (LFS). These data sets must be preferred to the 1990s-era ECHP survey or the more recent European Union Statistics on Income and Living Conditions (EU-SILC) survey because the latter reveal labor market flows only retrospectively. This fact may cause significant measurement errors related to possible misclassification, particularly with respect to unemployment status. Typically, the persistence rate in unemployment, i.e., the percentage of individuals who remain unemployed in a given interval (e.g., a quarter or a year), is significantly higher when calculated using the ECHP or EU-SILC data

than when using the LFS data. The latter, although not immune from possible misclassification, are specifically tailored to measure both labor market stocks and flows, whereas the ECHP and EU-SILC surveys are primarily tailored to investigating households' economic conditions, and thus an individual's labor force status can be derived only indirectly.

The paper proceeds as follows. Section 2 presents the stylized facts of the labor market in Italy and the UK. Section 3 describes the data sets used and discusses the empirical results related to the determinants of labor market flows. Section 4 analyzes the methodological framework adopted for the decomposition of the unemployment gender gap, and the evidence for Italy and the UK. Section 5 concludes the paper.

2 Stylized facts

Before analyzing in more detail the determinants of the unemployment gender gap, it is important to recall the main stylized facts that characterize the labor market in Italy and the UK.

Figures 1 and 2 provide the pattern of the male and female unemployment rate since the beginning of the 1990s (i.e., 1993-2013) in the two countries.[1]

The stylized pattern of male and female unemployment in the two countries implies contrasting evidence in that in Italy, the unemployment rate for women is higher than that of men, whereas the reverse condition applies in the UK. Additionally, the relative values of the unemployment rate show a significant difference between the two labor markets. Interestingly, the condition for men in Italy is better on average than the corresponding condition of men in the UK, although during the recession, Italy's unemployment rate has increased sharply.

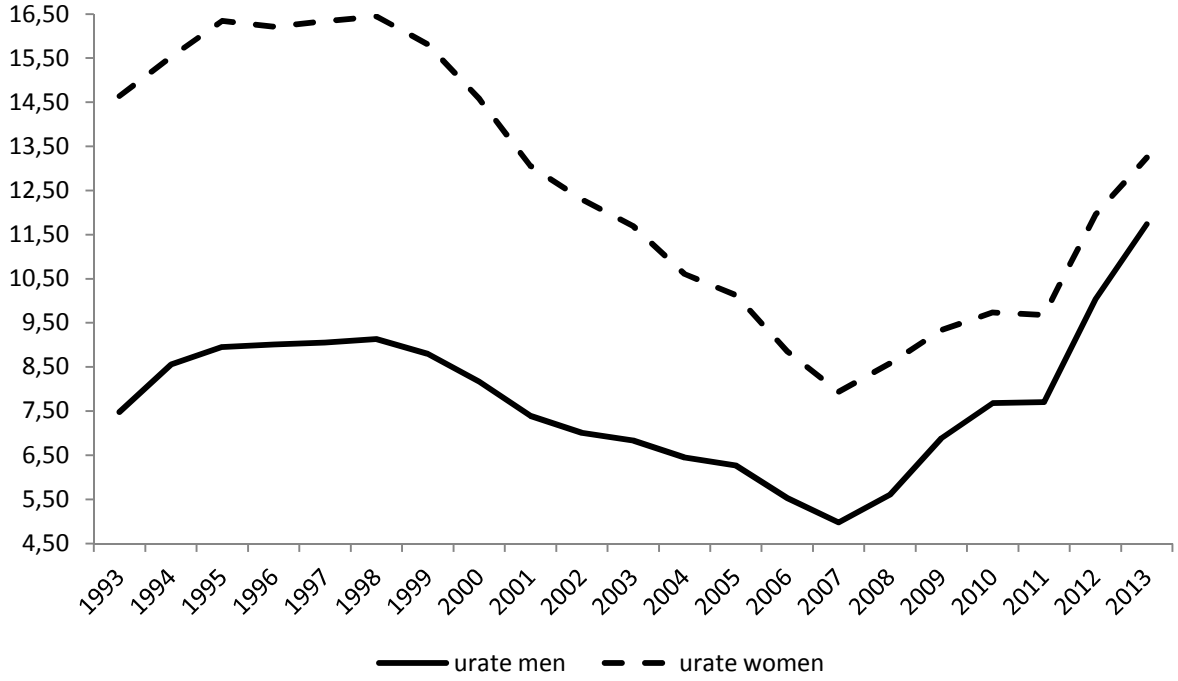
The female unemployment rate in the UK is far below that of Italy; the average rate over the entire period is approximately 5.7% in the UK and approximately 12.5% in Italy.

In both frameworks, the gender gap decreases over time, although this reduction is more significant in Italy. The male-female gap in the UK has decreased from approximately 4.8 percentage points at the beginning of the 1990s to approximately 1.2 percentage points in 2013. The gender gap declined over the last few years in Italy, with the crucial factor being poor macroeconomic conditions due to the great recession, which has dramatically worsened employment opportunities for men. The gender gap in unemployment rates decreased from approximately 7.2 percentage points at the beginning of the 1990s to approximately 1.5 percentage points during the recession (2013).

This different pattern of the female unemployment rate in the two labor markets crucially depends on the sharp difference in female participation rates that we can observe over the same period. In the UK, female participation rates increased from 66.9% at the beginning of the 1990s to approximately 71.7% in 2013, whereas the corresponding figures for Italy increased from 41.9% to 54.4%. This pattern of the participation rate in Italy remains one of the most relevant policy issues for improving overall economic conditions both at the national and regional levels.

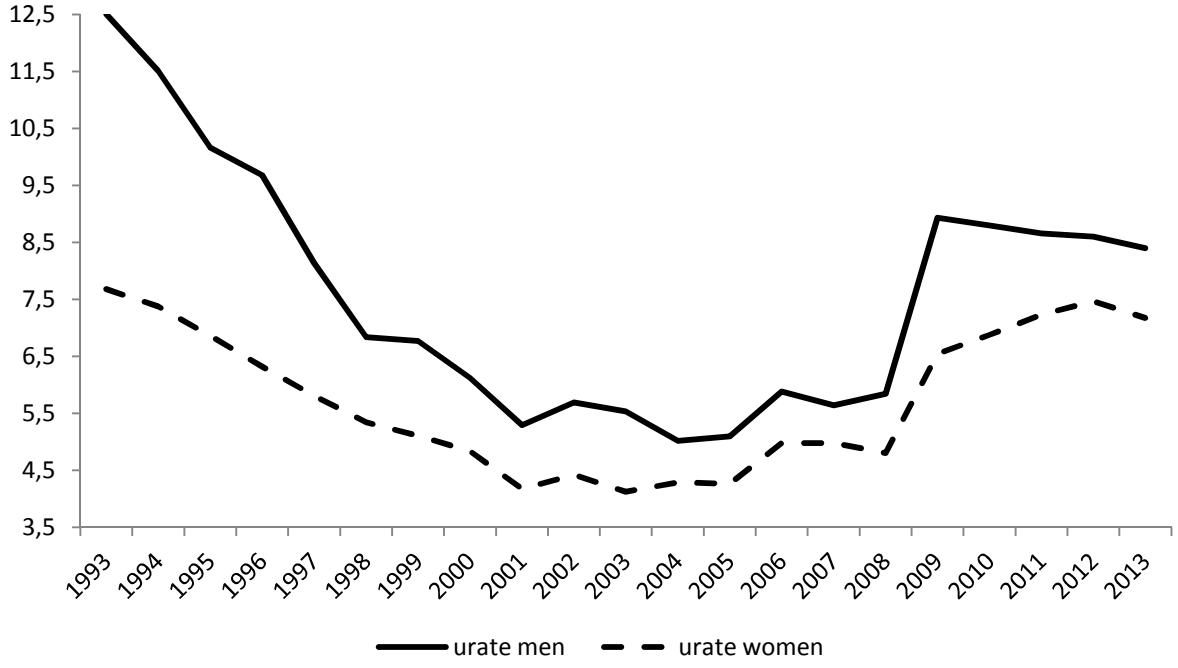
[1] These figures are available on the Internet at http://stats.oecd.org/.

Figure 1. Unemployment differential by gender in Italy, 1993-2013



Source: our elaborations on ISTAT LFS data.

Figure 2. Unemployment differential by gender in the UK, 1993-2013



Source: our elaborations on ONS LFS data.

3 Data

The empirical analyses of the determinants of the unemployment gender gap, i.e., the determinants of the labor market transitions that primarily determine such a gap (Section 3.1) and its decomposition (Section 4), exploit longitudinal data for Italy and the UK provided by the National Institutes of Statistics.

For Italy, we use yearly longitudinal data (2004-2013) derived from the LFS and established by the Italian National Institute of Statistics (ISTAT). Each quarter, the LFS collects information on almost 77,000 households in 1,246 Italian municipalities (representing 200,000 individuals). Technical details on the survey are provided in Appendix Section A-1.[2]

Information on the UK labor market comes from the LFS and developed by the Office for National Statistics (ONS). There, the LFS is a quarterly survey in which households are interviewed for five consecutive quarters. Each quarter, approximately 20% of the sample is replaced. The sample is composed of approximately 41,000 responding UK households per quarter.[3] With the use of proper population weighting procedures, the LFS is intended to represent the entire population of the UK. We therefore use quarterly data averaged over the year.

Nonetheless, one should also consider the fact that multiple (labor market) transitions may occur during the average time span considered (i.e., the year). For this reason, we have used the methodology proposed by Shimer (2012)[4] to correct for multiple transitions that may bias labor market transitions obtained by surveys that are conducted over different time frequencies. For instance, quarterly transitions from the UK LFS are not directly comparable to annual transitions from the Italian LFS. This technique enables to produce transition probabilities consistent with multiple transitions. Because the corrected transition probabilities, as will be explained later in Section 3.3, show the same patterns as the uncorrected transition probabilities, we decided to display only the computation with the uncorrected transitions.[5]

3.1 The determinants of the unemployment gender gap

The empirical results of our analyses of both countries are based on multinomial logit model estimates. We specify a separate model for each labor market state by assuming a simple three-state representation (employment, unemployment, and inactivity) and by assuming independence of the outflows from each of the three labor market states. The dependent variables utr, etr and itr thus refer to the outflows from the states of unemployed, employed and inactive, respectively.

Let $h = 1, \ldots, n$ be the indices for the *h-th* individual in the sample; let us define the conditional individual transition probability from state *a* to state *b* at time *t* as

[2] The most recent changes in the definitions and design of the survey occurred in 2004. The changes, which were primarily dictated by the requirement to adapt the survey to new EU standards, were also intended to respond to the need for increased knowledge and improved survey quality. For a more detailed discussion of the characteristics of the Italian LFS, see ISTAT (2006 and 2009).

[3] Additional details on the LFS are available in the National Statistics website at http://www.ons.gov.uk/ons/search/index.html?newquery=LFS+user+guides.

[4] The technique is used by, among others, Gomes (2012) to compare the quarterly transitions of the UK LFS with the monthly transitions of the US LFS. He corrects the quarterly UK transitions for the bias resulting from the presence of multiple transitions during the quarter.

[5] More generally, the uncorrected and corrected transitions show the same pattern. The computation containing the corrected transition probabilities is available upon request.

$$p_{ab,t(h)} = Pr\left(X_{t,h} = b | X_{t-1,h} = a, z_{t,h}\right) \quad (1)$$

where $X_{t,h}$ is the random variable describing the state of individual h at time t that can take the values l = 0, 1, 2 with 0 being unemployment, 1 employment and 2 the non-labor force; $z_{t,h}$ is a vector that includes individual-level covariates. The values of the covariates are defined at the beginning of the period considered for the transitions. The model for the transition probabilities can be written as follows:

$$p_{ab,t(h)} = \frac{exp\{z_h^t \beta_l\}}{\sum_{l=0}^{2} exp\{z_h^t \beta_l\}} \quad (2)$$

where conventionally, we set β_0 = 0, thus assuming permanence in the initial state as the baseline category. Model parameters are estimated using maximum likelihood.[6]

Typically, labor market transitions have been analyzed using search theory as a benchmark for all microeconometric investigations; Narendranathan and Nickell (1985), for example, develop a model in which unemployment outflows are the result of workers' search activities.

Using a macroeconomic framework, Junankar and Price (1984) and Nickell (1982) estimate the aggregate unemployment inflows and outflows probabilities in the British labor market, whereas Baussola (1988) applies a similar approach to the Italian labor market.

The characteristics of our dataset enable us to establish an econometric framework that combines labor demand and supply factors together with other possible structural determinants to explain employment, unemployment and inactivity outflows and inflows. However, such proxies of labor demand and supply factors are partially limited because, for instance, we do not have unemployment benefit or vacancies estimates.

Explanatory variables may be grouped into supply determinants that reflect individual characteristics related to gender and education, age and area of residence,[7] unemployment duration, and employment-related characteristics such as the sector of employment (whether public or private), the skill level of the job, and whether jobs are characterized by full-time or part-time contracts. We also consider yearly dummy variables to capture time-specific effects related to business cycle variations.

The purpose of our econometrical exercise is twofold. First, we investigate the determinants of labor market flows in Italy and the UK. Second, we examine discrepancies and similarities between specific outflow determinants, particularly the interactions between gender and education and the relevance of age, by comparing the results obtained across countries.

The estimates cover the period 2004-2013. We decided to divide the overall period into two periods—pre-recession and recession—to examine the possible effects of the recent crisis on labor market dynamics. For both Italy and the UK, the pre-recession period is from 2004 to 2008-2009, whereas the recession period is from 2009 to 2013.

Table 1 displays relative-risk ratios (rrr)[8] estimates for the determinants of unemployment outflows by period and country. In Italy, the impact on gendered unemployment was asymmetric.

[6] A detailed technical description of the maximum likelihood method in this context can be found in Gourieroux (1989, chap. 5) and Cameron and Trivedi (2005, chap. 15).

[7] As will be explained below, we introduce specific interactions—i.e. between gender and educational attainment and between age and area of residence—to obtain the joint effect of these characteristics on labor market flows.

[8] The estimated coefficients β of the multinomial logit model are transformed to relative-risk ratios that are $\exp^{(\beta)}$. The exponentiated value of a coefficient is the relative-risk ratio for a unit change in the corresponding variable (risk is measured as the risk of the outcome relative to the base outcome).

This situation is confirmed by our estimates. The relative risk of successful exit from unemployment (λ_{ue}) is higher for males with a tertiary education (by a factor of 1.277) than for highly educated females before the crisis, whereas the rrr is not significant over the recession. In addition, whereas before the crisis, females with a secondary education moved less frequently from unemployment to employment (.810) than did highly educated females, the rrr is not significant during the recession. These findings do offer two suggestions for Italy. First, the crisis affected primarily sectors typically characterized by male employment; second, the role of education in enhancing employment opportunities is weakened over the economic downturn. For the UK, we do not find discrepancies in the interacting impact of gender and education before and during the recession. This finding confirms our observation of the crisis's symmetric impact on male and female unemployment.

Another discrepancy between Italy and the UK refers to the probability of leaving unemployment (for either employment or inactivity) for young people in the age bracket 15-24. Young people living in Southern Italy have fewer employment opportunities and show lower outflows to inactivity (λ_{ue} and λ_{ui}, respectively) compared to Northern individuals in the age bracket 40-54 (the reference category). The opposite is true in the UK. The probabilities of leaving unemployment (successfully or for inactivity) are higher for young people than for those aged 40-54 both before and during the crisis.

That said, the two countries are similar in terms of the impact of unemployment duration. For outflows from unemployment, there is evidence of negative duration dependence, especially for the UK.

The rrr for outflows from employment (Table 2) suggest two discrepancies between countries in terms of gender and education relevance. First, as explained above, the nature of the unemployment gender gap is different, i.e., in Italy, women suffer from higher unemployment rates than men, which contrasts with the situation in the UK. Therefore, males in the UK have higher probabilities of leaving employment than do to females. Second, the impact of gender and education (interacting) on employment outflows is higher in the UK, especially for the male component of the labor force.

Additionally, we find two similarities. First, young people in both countries (and in all geographical areas), especially in Italy, have higher probabilities of losing their job, either moving to unemployment or inactivity compared with individuals in the age bracket 40-54 (living in Northern Italy or in London/the Southeast UK). Finally, job characteristics (e.g., skill level, employment sector and type of contract) have the same impact on employment outflows in both countries. In general, we find lower outflows from employment for white-collar workers in the public sector who have full-time contracts. This finding is in line with our expectations.

Table 3 shows the rrr for inactivity outflows. In general, women in both countries find it more difficult to leave the state of inactivity than do men, especially if they have a low education level (this also emerges in the empirical investigation in Section 4). The role of education in enhancing inactivity outflows seems to be higher in the UK than in Italy both before and during the crisis.

In Italy, we find that young people are also disadvantaged in terms of inactivity outflows (similar to the situation with unemployment outflows) since the recession began. Whereas before the recession, young people had substantial opportunities to leave the state of inactivity, either for employment or unemployment, since the beginning of the recession, the opposite has been true. People in the age bracket 15-24, especially those living in

Southern Italy, show a lower probability than do adults (25 years of age and over) of leaving the state of inactivity. Our findings therefore suggest that women and the young are disadvantaged in Italy, according to the European Commission's definition of that term.[9] Young people and females are typically defined as disadvantaged labor market categories in Italy.[10] The economic downturn has worsened their labor market opportunities.

This contrasts with the UK findings: here, young people have enjoyed higher probabilities of leaving inactivity for both employment and unemployment (λ_{ne} and λ_{nu}, respectively) before and during the recession.

Table 1: Outflows from Unemployment by Gender and Education, Italy and UK, 2004–2013

	λ_{ue}				λ_{ui}			
	Pre Recession[a]		Recession		Pre Recession		Recession	
	IT	UK	IT	UK	IT	UK	IT	UK
gender and education[b] interactions- Reference: female with a degree								
IT: male_primary education; UK: male_below GCSE, male_noqualifications	.761*	.417***	.740**	.451***	.633***	.485***	.725**	.457***
		.302***		.338***		.622***		.617***
IT: male_secondary education; UK: male_GCSE, male_AS A level, male_other higher education below degree	.792**	.445***	.860	.551***	.728***	.637***	.732**	.615***
		.615***		.577***		1.009		.727***
		.634***		.907		.591**		.680***
IT and UK male_tertiary education (degree)	1.277*	.819**	1.176	.830***	.883	.523***	.707**	.465***
IT: female_primary education; UK: female_belowGCSE, female_noqualifications	.535***	.413***	.602***	.375***	1.277**	1.299*	1.379**	1.186*
		.303***		.288***		1.356***		1.194*
IT: female_secondary education; UK: female_GCSE, female_AS A level, female_other higher education below degree	.810**	.496***	.806	.517***	1.153	1.266*	1.232	1.249**
		.627***		.662***		1.448***		1.197**
		.680***		.719***		1.111		1.021
duration of unemployment - Reference: less than 3 month								
3 to 6 months	.712***	.547***	.756***	.649***	.932	.652***	.930	.697***
6 to 12 months	.608***	.396***	.645***	.461***	.902	.585***	1.109	.566***
one to 2 years	.469***	.315***	.464***	.343***	.778***	.605***	.899	.541***
over 2 years	.338***	.141***	.346***	.233***	.851***	.586***	.927	.494***
age and area of residence[c] interactions - Reference: 40-54 in North (London and South East)								
age1524_north (London-South East)	1.186	1.046	.853	1.172*	.653***	1.465***	.762**	1.461***

[9] Disadvantaged workers are defined by European Commission Regulation (EC) No. 2204/2012 of 12 December 2002 on the application of Articles 87 and 88 of the EC Treaty to State aid for employment [article 2] as "any person who belongs to a category which has difficulty entering the labour market without assistance". This definition includes young people, women living in depressed areas, disabled people, migrants and ethnic minorities, long-term unemployed, low-skilled workers, unemployed people over 50, single parents, the formerly convicted, and substance abusers.

[10] Italy is characterized by a labor market in which tightness and flexibility coexist (Baussola and Mussida, 2011; OECD, 2009), and women continue to participate at a disadvantage. This tendency has decreased over the last decade and the participation rate of women has increased. Nonetheless the gender gap in labor force participation remains wide (Addabbo et al., 2012).

age1524_centre (Rest of UK)	1.014	1.230**	.810	1.166*	.732**	1.290**	.797	1.164*
age1524_south	.523***		.520***		.820**		.965	
age2539_north (London-South East)	1.189*	1.009	1.211*	1.127	.633***	1166	.819*	1.018
age2539_centre (Rest of UK)	.800*	1.142**	.881	1.035	.554***	1.181*	.731**	.912
age2539_south	.589***		.694***		.742***		1.053	
age4054_centre (Rest of UK)	1.076	1.038	1.020	1.083	1.019	1.037	1.004	.922
age4054_south	.716***		.721***		1.055		1.294***	
Time dummies- Reference: 2004 (2009)								
2005 (2010)	1.232***	.880***	1.149*	.925*	1.023	.890*	1.215***	.928
2006 (2011)	1.271***	.880***	.983	1.007	1.284***	.925	.961	.918
2007 (2012)	1.298***	.944	.733***	.901*	1.022	.934	1.135	.721***
2008	1.058	.868		1.009	1.094	.975		.847**
constant	2.298***	1.832***	1.806***	1.078**	1.163***	.477***	1.060***	.490***
observations	12,972	21,621	8,812	31,513	12,972	21,621	8,812	31,513

Notes: * Significant at the 10% level; ** significant at the 5% level; *** significant at the 1% level.

(a) We divided the overall period into two time periods, pre and recession, respectively. For both Italy and the UK, the pre-recession period is from 2004 to 2008-2009, whereas the recession period is from 2009 to 2013.

(b) For Italy, educational dummy indicators refer to the highest and successfully completed educational attainment of a person. The educational classification used to build these indicators is the ISCED 97. We have three categories: primary education (none, elementary or lower secondary educational level), secondary education (upper secondary attainment level), and tertiary education (post secondary or tertiary educational level). For the UK we have six levels: 1 "degree or equivalent", 2 "Other higher education below degree", 3 "AS, A-Level or equivalent, 4 "GSCE or equivalent", 5 "Below GCSE", 6 "No qualifications".

(c) For Italy, we have three geographical areas, i.e. North, Centre and South. For the UK we have two geographical areas, i.e. London-South East and the rest of UK.

Table 2: Outflows from Employment by Gender and Education, Italy and UK, 2004–2013

	λ_{eu}				λ_{ei}			
	Pre Recession		Recession		Pre Recession		Recession	
	IT	UK	IT	UK	IT	UK	IT	UK
gender and education interactions - Reference: female with a degree								
IT: male_primary education; UK: male_below GCSE, male_noqualifications	1.081	1.457***	1.326**	1.545***	.863**	.567***	.790**	.559***
		1.953***		2.074***		.915		.877
IT: male_secondary education; UK: male_GCSE, male_AS A level, male_other higher education below degree	.875	1.412***	1.051	1.676***	.683***	.609***	.621	.626***
		1.068		1.405***		.941		.936
		1.023		1.491***		.566***		.494***
IT and UK male_tertiary education (degree)	.715**	1.096	.668***	1.170**	.623***	.648***	.465***	.643***
IT: female_primary education; UK: female_belowGCSE, female_noqualifications	1.119	1.041	1.255*	1.117	1.680***	1.005	1.462***	.891
		1.139		1.175		.990		1.134
IT: female_secondary education; UK: female_GCSE, female_AS A level, female_other higher education below degree	1.109	.908	1.034	1.034	1.147**	.708***	1.116	.759***
		.781**		.920		1.036		1.045
		.725**		1.014		.728***		.878**
skill level of job - Reference: high skill[(a)]								
upper middle level		1.203**		1.227***		1.101**		1.045
lower middle level		1.432***		1.335***		1.231***		1.150**
low level	2.400***	1.928***	2.223***	1.551***	1.701***	1.688***	1.844***	1.342***
Public employment	.531***	.548***	.555***	.585***	.593***	.780***	.699***	.798***

Full-Time employment	.503***	.828***	.582***	.764***	.412***	.308***	.405***	.304***
age and area of residence interactions - Reference: 40-54 in North (London and South East)								
age1524_north (London-South East)	3.117***	1.604***	3.247***	1.140*	1.644***	2.337***	3.677***	2.111***
age1524_centre (Rest of UK)	5.231***	1.671***	4.105***	1.262***	2.137***	2047***	4.817***	1.966***
age1524_south	11.318***		6.835***		4.330***		8.119***	
age2539_north (London-South East)	1.641***	.946	1.491***	.938	.633***	1.337***	1.379***	1.253***
age2539_centre (Rest of UK)	2.497***	.886*	1.663***	.874*	.828***	1.004	1.781***	.946
age2539_south	4.054***		3.090***		1.726***		3.455***	
age4054_centre (Rest of UK)	1.253**	.938	1.063	.922	.690***	.917	1.426***	.809***
age4054_south	1.970***		1.571***		1.306***		2.760***	
Time dummies - Reference: 2004 (2009)[(a)]								
2005 (2010)	.826***	1.062	.924	.905**	.808***	.931*	.946	.962
2006 (2011)	.577***	1.063	1.210***	.876**	.850***	.963	.993	.955
2007 (2012)	.765***	.982	1.374***	.869**	.767***	.963	1.488***	.879**
2008	1.074		1.113***	.790***	1.113***	.918	1.113***	.850**
constant	.013***	.030***	.015***	.052***	.075***	.068***	.034***	.076***
observations	148,489	427,534	81,152	398,995	148,489	427,534	81,152	398,995

Notes: * Significant at the 10% level; ** significant at the 5% level; *** significant at the 1% level.
(a) We have four skill levels of job for the UK: 1 High; 2 Upper Middle; 3 Low; 4 Low. For Italy we have two categories, blue-collar and white collar.

Table 3: Outflows from Inactivity by Gender and Education, Italy and UK, 2004–2013

	λ_{ie}				λ_{iu}			
	Pre Recession		Recession		Pre Recession		Recession	
	IT	UK	IT	UK	IT	UK	IT	UK
gender and education interactions - Reference: female with a degree								
IT: male_primary education; UK: male_below GCSE, male_noqualifications	.639***	.490***	.606***	.390***	.781***	1.690***	1.077	1.466***
		.313***		.238***		1.167		.894
IT: male_secondary education; UK: male_GCSE, male_AS A level, male_other higher education below degree	.849***	.573***	.947	.534***	1.023	1.642***	1.310***	1.496***
		.625***		.595***		1.303***		1.126
		.852		.727**		1.774***		1.959***
IT and UK male_tertiary education (degree)	1.397***	1.221*	1.427***	1.224**	1.151	1.686***	1.615***	1.635***
IT: female_primary education; UK: female_belowGCSE, female_noqualifications	.237***	.318***	.228***	.323***	.450***	1.219*	.476***	1.025
		.244***		.192***		.698***		.585***
IT: female_secondary education; UK: female_GCSE, female_AS A level, female_other higher education below degree	.505***	.473***	.480***	.472***	.701***	1.084	.705***	1.183**
		.667***		.697***		.946		.950
		.764***		.720***		.997		.982
age and area of residence interactions - Reference: 40-54 in North (London and South East)								
age1524_north (London-South East)	2.046***	2.905***	.754***	2.693***	2.195***	1.989***	.635***	1.631***
age1524_centre (Rest of UK)	1.716***	3.631***	.511***	2.713***	2.362***	1.917***	.701***	1.650***
age1524_south	1.335***		.447***		3.926***		.925	
age2539_north (London-South East)	5.394***	1.340***	2.116***	1.161**	5.357***	1.294**	1.804***	1.172**
age2539_centre (Rest of UK)	4.653***	1.201**	1.629***	.947	6.845***	1.216**	2.293***	1.178**

age2539_south	3.002***		1.155**		7.134***		2.023***	
age4054_centre (Rest of UK)	2.220***	.822**	.990	.721***	3.142***	.809**	1.202	.858**
age4054_south	2.067***		.774***		3.405***		1.069	
Time dummies - Reference: 2004 (2009)								
2005 (2010)	1.367***	.937**	1.009	.872***	1.117***	.974	.929	1.082*
2006 (2011)	1.213***	.912***	.958	.890**	.776***	1.129**	1.351***	1.080
2007 (2012)	1.390***	.928*	.547***	.799***	1.098**	1.050	.956	.925
2008	.957	.950		.789***	.874***	1.085**		1.020
constant	.094***	.104***	.255***	.105***	.033***	.033***	.099***	.046***
observations	89,277	101,574	44,131	99,318	89,277	101,574	44,131	99,318

Notes: * Significant at the 10% level; ** significant at the 5% level; *** significant at the 1% level.

3.2 Discussion

Our findings confirm that women and young people are disadvantaged in Italy. This situation contrasts with the findings for the UK, where the young component of the labor force enjoys a higher probability of leaving both unemployment and inactivity.

Overall, the young British population shows a higher participation rate compared to the corresponding population in Italy. This phenomenon is confirmed by the fact that the unemployment rate for people under 24 is approximately 43% in Italy compared with 21% in the UK; however, in terms of unemployment proportion, i.e., the ratio of unemployment to population, the corresponding values for the two countries are 11% and 12%, respectively.

This evidence may be related to the fact that young people in the UK are increasingly involved in full-time education, which may enable them to successfully search for a job in later periods. The share of people aged 15-24 in full-time education increased from 37.3% in 2004 to 42.1% in 2013.[11]

Most young people not in school full time were employed at the end of 2013. Data from the ONS show that approximately 69% of individuals in this category were employed at the end of 2013, whereas 15% were unemployed and the remaining 16% were inactive.[12] The relatively low percentage (especially compared to Italy) of young people not in school or working (inactive) suggests that the phenomenon of "not in employment, education or training" (NEET) is less relevant in Britain than it is in Italy. In 2013, the NEET rate for the population aged 15-24 was 15% in the UK compared to 24% in Italy.[13]

Therefore, youth unemployment is less relevant in the UK than in the rest of Europe Europe, especially in Italy. The youth unemployment rate in the UK was 20.8% in 2013

[11] The ONS data are available online at http://www.ons.gov.uk/ons/search/index.html?newquery=young+people.
[12] For details, see the ONS publication available on the Internet at http://www.ons.gov.uk/ons/rel/lmac/young-people-in-the-labour-market/2014/rpt-young-people.html#tab-How-does-the-UK-compare-with-Europe-.
[13] NEET are young people not in employment, education or training. The age range of the young people included in the definition varies across countries. In the UK, NEET includes young people aged 16 to 24, whereas in Italy the range is from 15 to 29 years of age. Although there is a difference in the age range considered for the definition of NEET, the phenomenon is less important/relevant in the UK than in Italy.

compared to the European average of 23.5% and the Italian rate of 40%.

The UK and Italy represent different institutional frameworks with different labor institutions and regulations. Britain has an institutional context typical of the so-called Anglo-Saxon model, which is characterized by more flexible labor market legislation and subsequently less employment protection legislation. Policy interventions have helped reduce unemployment and long-term unemployment, especially for youth aged 18-24. The New Deal for Young People, for instance, was introduced in 1998 as a key component of the government's welfare-to-work strategy. The scheme was aimed at helping young people find sustainable employment and increasing their long-term employability by offering a number of options for those who do not find a job, such as full-time education or training and work experience through job placement and subsidized employment (Barham et al., 2009). Italy has a typically southern European labor market characterized by the continental model, which involves a more segmented labor market characterized by significantly different levels of employment protection and therefore different labor costs. The use of temporary contracts has increased significantly, particularly for the young labor force. During the economic downturn following the 2008 recession, firms adjusted their employment levels by first making reductions to temporary employment.

Additionally, it should be noted that in Britain, labor market policies have been implemented to increase employment opportunities for those who have left full-time education and are not working. This situation has most likely limited the explosion of dramatic phenomena such as NEET and enabled high student involvement in the labor market, which thus explains the greater opportunities enjoyed by young people and their higher probability of leaving both inactivity and unemployment compared to Italy. In this latter framework, students rarely have temporary employment or internship experience that may enhance their employability by improving the level and quality of their human capital. This situation implies longer periods of both inactivity (as students) and unemployment (when job-hunting) for young people in Italy compared to the UK.

Finally, it is worth emphasizing that successful policies aimed at increasing young labor force participation may rely on the German experience, which represents a best practice within the European Union.

Germany's youth labor market is characterized by high levels of employment and almost no unemployment among those in school. These favorable conditions for young people are primarily due to the presence of established apprenticeships systems or vocational training in secondary education. These systems help young people develop competencies and skills not learned within a formal educational track and therefore help them to leave inactivity quickly and successfully; they also reduce the risk of unemployment.

3.3 Transition probabilities comparison

The previous analysis has emphasized the determinants of the unemployment gender gap and the different impact of those variables in the Italian and British labor markets (Section 3.1). We also calculate the transition probabilities from the aggregate labor market flows, and we apply a technique to correct for possible multiple transition bias.

Tables A1 and A2 in Appendix 1 show the transition probabilities for Italy and the UK implied by aggregate labor market flows from ISTAT and ONS. These probabilities may be derived by

dividing the flows from each labor market state by the corresponding initial stock. As noted by Basawa and Rao (1980), this measure corresponds to the maximum likelihood estimation of the corresponding hazard rate. The labor market is represented by a transition probability matrix for the flows between the labor market states of employment, unemployment and inactivity.[14]

This representation is the familiar first-order, discrete Markovian model, which implies that transition probabilities are independent of the time spent in each state. This phenomenon is equivalent to saying that, for example, the probability of leaving unemployment is not affected by the time that an individual is unemployed. This assumption may be a limitation, particularly when long-term unemployment increases and microeconomic data show the significance of the duration dependence effect. However, the Markovian representation may be thought of as a reasonable approximation of average labor market flows over a relatively long time span.[15]

We are aware of the fact that, as suggested by Shimer (2012) and explained above, multiple transitions may occur within the relevant time span implied by each labor force survey. Indeed, the LFS for Italy and the UK study transitions at different time frequencies (yearly and quarterly, respectively). For this reason and to obtain directly comparable transitions, we have also computed transition probabilities that are consistent with such a methodology.

The results of both the Markovian transitions and those implied by applying this later methodology are shown in Tables A1 and A2 in the Appendix (Markov and Shimer, respectively).[16]

Results show values that are relatively similar. Most importantly, they show a consistent dynamic pattern. In addition, the steady-state unemployment rate derived from the Markovian representation and the multiple transition approach are very close/coincide, therefore suggesting that the methodology we have applied may enable us to decompose the unemployment differential by gender according to the contribution provided by each single transition probability.

We simply refer to the equation showing the male-female unemployment rate decomposition, which enables us to calculate the female and male steady-state unemployment rates (u_f and u_m, respectively) and then to decompose[17] their differentials (Δu) as follows:

$$\Delta u \cong \sum_{k=1}^{6} \frac{1}{2}\left[\frac{du}{d\lambda.m(k)} + \frac{du}{d\lambda.f(k)}\right]\Delta\lambda(k) \qquad (3)$$

where $\lambda(k)$ is the individual (k - *th*) transition probability and the terms in brackets represent the marginal impact of each probability on the steady-state unemployment rate;[18] $\Delta\lambda(k)$ is the difference between female and male $k-th$ transition probability.

[14] For a representation and details on the transition probability matrix, see Baussola and Mussida (2014).

[15] We have also tested for the hypothesis that observations are from a first-order Markov chain, concluding that such a hypothesis cannot be rejected.

[16] For the sake of brevity, we decided to report only the Markov and Shimer transition probabilities for 2006-2007 and 2012-2013, before and during the recession, respectively. Nonetheless, the results for the overall 2004-2013 period are available upon request.

[17] The steady-state unemployment rate decomposition is used by, among others, Barnichon and Figura (2010) and Barnichon and Nekarda (2012).

[18] The impact is computed as a partial derivative of the steady-state unemployment rate with respect to each transition probability , evaluated at the intermediate point between the values of male and female. The value obtained from eq. (3) informs on the impact of each gender difference on transition probabilities for the unemployment rate differential.

4 Unemployment differential decomposition in Italy and UK

In general terms, labor market transition probabilities enable us to measure the relative size of each labor market state and therefore to measure both the unemployment level and its rate. By looking at the transition probability matrix by gender, we can determine both the absolute difference between unemployment rates and the relationship between such transition probabilities, along with differences in the unemployment rate by gender.

This decomposition of the unemployment rate differential may be derived by assuming the steady-state condition, i.e., by assuming that inflows and outflows from all labor market states counterbalance.[19] Under this assumption, we can express the steady-state unemployment rate in terms of transition probabilities. This definition of the steady-state unemployment rate allows us to express variation in the unemployment rate in terms of variations in transition probabilities. In other words, the methodology described enables us to evaluate the marginal impact of each transition probability on the steady-state unemployment rate.

4.1 Results

The analysis of the unemployment gender gap is relevant because Italy and the UK are characterized by different institutional frameworks with diversified labor institutions and regulations.

It is worth noting that despite these different intrinsic characteristics, both labor markets show overall high labor mobility, which, however, affects the labor force in a diversified way. In particular, the Italian labor market continues to present a significant unemployment gender gap, which underlines that the disadvantage of the female component of the labor force, although reduced from what it was during the 1980s, is a structural characteristic of the Italian labor market. The aim of our analyses is to show the similarities and discrepancies between the two countries.

It should be noted, however, that our results contrast with those analyses based on reconstructing unemployment details by using variations in labor market stocks. In particular, Elsby et al. (2012) apply the methodology developed by Shimer (2012) to estimate inflow and outflow hazard rates from and to unemployment using publicly available data from the OECD economies.

This methodology enables Elsby et al. to classify countries in terms of the relevance of inflows and outflows contributions to the unemployment variation. Following their analysis, the Anglo-Saxon countries are characterized by high inflow and outflow hazards, whereas such rates are significantly lower in Continental countries, including Italy. In addition, the outflow rate constitutes the major portion of the variation in unemployment in the Anglo-Saxon countries, while in most European economies, the split between inflow and outflow contributions to unemployment variation is almost equal.

It should be underlined that this result is obtained ignoring the flows from and to inactivity. Thus, the framework derived under such a methodology, which neglects inflows and outflows from inactivity, typically describes, for instance, a tight labor market in Continental Europe, particularly in Italy.

Other studies, including Smith (2011) and Gomes (2012) for the UK, Petrongolo and

[19] In terms of the aforementioned Markov chain representation, this implies the determination of the equilibrium condition (ergodic condition) within such a dynamic system (Basawa and Rao, 1980).

Pissarides (2008) and Silva and Vázquez-Grenno (2013) for France, Spain and other European countries, focus on the contribution of variations in unemployment inflows and outflows to changes in the unemployment stock. They adopt both a two-state and a three-state decomposition and obtain similar results.[20] When they use a three-state decomposition, they find that slightly more than 20% of the fluctuations in unemployment can be attributed to flows between inactivity and the labor force. From the remaining population, the job finding rate is more important than the job separation rate (approximately 60% and 40% of the fluctuations in unemployment, respectively). When they adopt a two-state decomposition, the job separation rate is more important and accounts for approximately 50% of the volatility in unemployment. Their approach is in line with that proposed by Shimer (2012) and includes the extension proposed by Fujita and Ramey (2009).

Conversely, our investigation is based on the aforementioned transition probability matrix approach, which implies a simple Markovian discrete process. Although this representation is not immune from possible drawbacks and bias in the calculated hazard rates (see Section 3.3), it nonetheless implies less stringent assumptions with respect to Elsby et al.'s (2012) approach,[21] because it also considers the flows to and from inactivity.

It is worth recalling, however, that in a more recent study, Elsby et al. (2013) do consider flows to and from inactivity to reassess cyclical fluctuations within the US labor market. Their suggestion is that the contribution of flows between unemployment and inactivity to unemployment variation is significant even when error measurements are taken into consideration, and they account for approximately 1/3 of overall cyclical unemployment movements.

With respect to our results, it can easily be shown that the unemployment gender gap remains a relevant issue within the Italian labor market because the unemployment rate for women is, on average, 2 to 3.3 percentage points higher than that for men (Table A1 in the Appendix). This characteristic is shared with other OECD countries, in particular the Mediterranean economies, as noted in Azmat et al. (2006) and OECD data (OECD, 2007, ch.2).[22]

Instead the gender gap is not relevant in northern European and Anglo-Saxon countries; in particular, the UK shows unemployment rates for men that are higher than those for women, particularly during the recent recession (on average, the unemployment rate for men is 0.8 to 1 percentage points higher than that for women, see Table A2 in the Appendix). The US economy exhibits similar trends in gendered unemployment rates, with a disadvantage to men in the area of unemployment, especially since the economic downturn (Sahin et al,, 2010).

With respect to labor-market transition probabilities, we refer to employment outflows toward unemployment (*eu*) and inactivity (*ei*), permanence in unemployment (*uu*) and outflows from unemployment (*ue* and *ui*). Finally, we consider outflows from inactivity (*ie* and *iu*) and

[20] The values reported by Gomes (2012) are in line with those reported by Petrongolo and Pissarides (2008). Using data from the LFS, they find that in the UK, the job separation rate provides the same contribution to unemployment fluctuations as does the job finding rate.

[21] Elsby et al. (2013) present average unemployment in- and outflow rates across countries that, for example, show unrealistic values for the Italian labor market. Indeed, their estimate for Italy implies an outflow rate of 4.3% and an inflow rate of 0.4%, which—of course—corresponds to an extremely tight labor market. However, in our TPM representation, outflow and inflow rates are far more realistic because, for example, the average outflow rate over the period 2004-2013 is approximately 28.9% and the corresponding inflow rate is approximately 2.2%. With respect to the UK, Elsby et al. (2013) present average unemployment in- and outflow rates of approximately 1% and 13.9%, respectively and therefore unemployment flows halfway between the Anglo-Saxon and the continental European models. Again, our TPM shows more realistic in- and outflow rates of approximately 1.4% and 24.2%, respectively (2004-2013).

[22] OECD data confirm such evidence. They are available at http://stats.oecd.org/Index.aspx?DatasetCode%3DTABLE1.

the probability of successful labor force entry (*pie*).[23] The corrected and uncorrected transition probabilities for Italy and the UK (total and by gender) for a few years of the period analyzed are reported in the Appendix at Tables A1 and A2, respectively.

Table 4: Gender Unemployment rate Differentials, Italy

	λeu	λei	λue	λui	λie	λiu	Diff. Tot(1)	Diff. Tot(2)
				2006-2007				
diff between transition prob. (F-M)	-.0016	.0391	-.0893	.1483	-.0164	-.0052		
du/dλ(k)M	1.5828	.5168	-.0849	-.0572	-.4258	.8783		
du/dλ (k)F	1.524	.6266	-.1204	-.0770	-1.224	2.175		
1/2[du/dλ(k)M +du/ dλ(k)F]	1.553	.5717	-.1026	-.0671	-.8249	1.527		
Unemployment rate difference	-.2469	2.233	.9174	-.9954	1.3503	-.7961	2.463	2.229
	λeu	λei	λue	λui	λie	λiu	Diff. Tot(1)	Diff. Tot(2)
				2012-2013				
diff between transition prob. (F-M)	.0009	.0171	.0042	.1169	-.0176	-.0159		
du/dλ(k)M	2.021	1.098	-.3055	-.1394	-.3488	.6820		
du/dλ (k)F	1.759	1.001	-.2861	-.1233	-1.458	1.104		
1/2[du/dλ(k)M +du/ dλ(k)F]	1.890	1.050	-.2958	-.1314	-.9036	.8931		
Unemployment rate difference	.1846	1.799	-.1240	-1.535	1.589	-1.425	.4881	.8520

(1)Sum of the unemployment rate differences.
(2)Difference between the steady-state unemployment rates.

Table 4 displays the transition probabilities—for 2006-2007 and 2012-2013[24]—used to compute Italy's steady-state unemployment rate. The last two columns report the total difference between genders in the steady-state unemployment rate explained by such probabilities, and the gender gap in the steady-state unemployment rate,[25] respectively. By examining the last rows of each yearly estimate, the contribution of each probability to the gender unemployment gap is evident. It is worth emphasizing the fact that the most relevant flow in determining this gap is *ei*, i.e., the flow from employment to inactivity. This finding strengthens previous evidence provided by Baussola (1985) and Marston (1976) and contrasts with other evidence not based on aggregate labor market flows, which explains unemployment dynamics only in terms of inflows and outflows from unemployment and employment.

The gender gap trend in the steady-state unemployment rate, as reported in the last column of Table 4, is very close to that computed by gender differentials and decreases through the period examined (from 2.2 percentage points in 2006-2007 to 0.85 percentage points in 2012-2013), thus emphasizing the fact that during the recent crisis, the gender gap has decreased. This situation occurred because the economic downturn affected male and female employment asymmetrically. This situation is due to the sectoral characteristics of this crisis, which has affected economic sectors typically characterized by a high male employment rate. These changes have resulted in an increase in male unemployment and therefore in a reduction in the gender gap in unemployment rates.

The condition of women has not improved, but given that male employment has fallen, there

[23] The probability of successful labor force entry is defined as ie/(ie+iu).

[24] For the sake of brevity, we only report the results for 2006-2007 and 2012-2013. Therefore, we show the decomposition before and during the recession. However, the full set of results is available upon request.

has been a reduction in the unemployment gap with respect to men.

The reduction in the gendered unemployment-rate gap is also confirmed by official statistical data (Figures 1 and 2 and Table A1 in the Appendix) and drops from 3.3 percentage points in 2006 to 2 percentage points in 2012. This reduction depends on the increase in the male unemployment rate, which climbed from 5.5% in 2006 to 9.9% in 2012. The female unemployment rate also increased, but with lower rates compared to men (from 8.8% in 2006 to 11.9% in 2012).[26] The lower increase in women's unemployment confirms that a significant discouragement effect exists and crucially affects the female component of the labor force.

Figure 3 displays the official and steady-state unemployment rates by gender in the UK for the period 2006-2012. The gender gap in the UK's unemployment rates shows a disadvantage for the male component of the labor force, in contrast to Italy. The structural characteristics of the labor market are different in the UK and the female component of the labor force has higher employment opportunities compared with their Italian counterparts.

Table 5 shows the gender unemployment rate differential for the UK. Like in Italy, the most relevant flow in determining the unemployment gender gap is *ei*, i.e., the flow from employment to inactivity. Another similarity is that women show lower hazard rates from inactivity to unemployment (*iu*) and employment (*ie*) compared to men.

The gender gap trend in the steady-state unemployment rate, as reported in the last column of Table 5, is close to that computed by gender differentials—especially before the recession—and show little increase during the period.

The gender gap in unemployment, as confirmed by the official statistics, slightly increased from 0.8 percentage points in 2006 to 1.01 percentage points in 2012.[27] Therefore, the recession did not have a relevant impact on the gender unemployment gap in the UK because in contrast to Italy, the economic downturn affected male and female employment almost symmetrically. The impacts of the recession have resulted in an (almost) equal increase in male and female unemployment—i.e., both male and female unemployment rates increased by approximately 2.5 percentage points.[28]

We can summarize the primary discrepancies and similarities between Italy and the UK as follows. In terms of discrepancies, women in the labor force (employed and unemployed) are more favored in the UK, especially in terms of employment opportunities once unemployed. In Italy, in contrast, men have typically been favored at least since the beginning of the recession because the economic downturn affected Italian male and female employment asymmetrically: industries typically characterized by high male employment rate have been significantly affected by the 2008 recession.

In terms of similarities, we refer to inactive women because they are disadvantaged compared to men in that outflow hazard rates from inactivity (*ie* and *iu*) are lower compared to men in both labor markets.

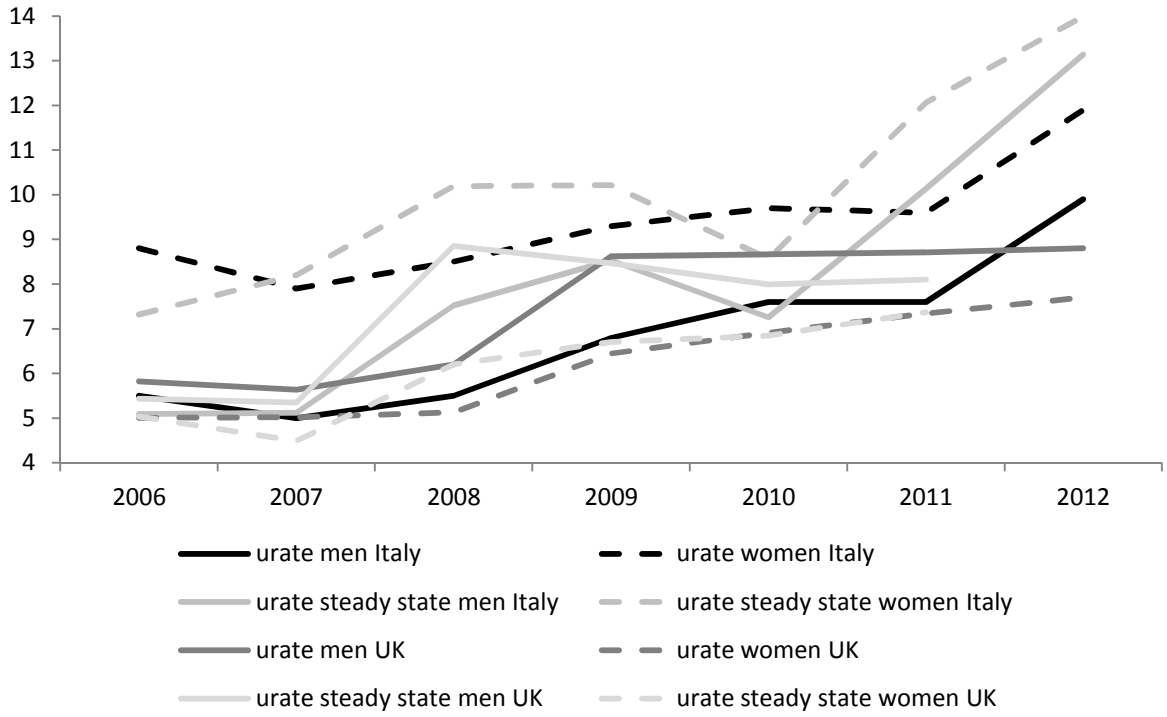
[26] These figures are available at http://epp.eurostat.ec.europa.eu/portal/page/portal/statistics/search_database.
[27] These figures are available at http://www.ons.gov.uk/ons/taxonomy/index.html?nscl=Unemployment+Rates.
[28] The male unemployment rate increased from 5.8% in 2006 to 8.5% in 2012, whereas the rate for women increased from 5% in 2006 to 7.5% in 2012. As a result, the increase (due to the recession) of both genders' unemployment rates was approximately 2.5 percentage points. These figures are available at http://epp.eurostat.ec.europa.eu/portal/page/portal/statistics/search_database.

Table 5: Gender Unemployment rate Differentials, UK

	λeu	λei	λue	λui	λie	λiu	Diff. Tot(1)	Diff. Tot(2)
				2006-2007				
diff between transition prob. (F-M)	-.0021	.0116	.0011	.1028	-.0132	-.0201		
du/dλ(k)M	2.574	1.203	-.1479	-.0788	-.2243	.2558		
du/dλ (k)F	2.169	.8896	-.1150	-.0670	-.3945	.5515		
1/2[du/dλ(k)M +du/ dλ(k)F]	2.371	1.046	-.1315	-.0729	-.3094	.4036		
Unemployment rate difference	-.4785	1.212	-.0141	-.7499	.4085	-.8119	-.4338	-.4004
	λeu	λei	λue	λui	λie	λiu	Diff. Tot(1)	Diff. Tot(2)
				2012-2013				
diff between transition prob. (F-M)	-.0048	.0098	-.0196	.0722	-.0060	-.0234		
du/dλ(k)M	2.967	1.733	-.2432	-.1012	-.3102	.2210		
du/dλ (k)F	2.785	1.443	-.2067	-.0996	-.5569	.5178		
1/2[du/dλ(k)M +du/ dλ(k)F]	2.876	1.588	-.2249	-.1004	-.4336	.3694		
Unemployment rate difference	-1.385	1.563	.4404	-.7243	.2620	-.8649	.1560	-.6691

(1)Sum of the unemployment rate differences.
(2)Difference between the steady-state unemployment rates.

Figure 3:Official and Steady State Unemployment Rates by Gender, Italy and UK, 2006-2012



5 Conclusions

The analysis of the unemployment gender gap is particularly relevant for the Italian and British labor markets. Although these two countries are characterized by different institutional frameworks, both labor markets present high labor mobility overall; however, their labor forces are affected differently. We have proposed a breakdown of the male-female unemployment rate that enables us to pinpoint, from a comparative perspective, the most relevant labor market flows that cause this gender gap.

This analysis suggests that considering inactivity in modeling the labor market flows provides a more precise decomposition of the gender gap because the flows from this status to employment represent a non-negligible component of overall inflows to employment. In this respect, women in both countries show a significantly lower probability of successful entry into the labor force compared to their male counterparts.

Microeconometric estimates confirm this analysis and highlight discrepancies and similarities between the two countries. The 2008 recession has given rise to one discrepancy: we find that the recession's impact on employment in Italy has been asymmetrical because the downturn affected more male than female employment as a result of the sectoral characteristics of the downturn.

In addition, the role of education in enhancing employment opportunities has essentially vanished in Italy, whereas in the UK, the impact of the great recession has been more evenly distributed by gender, and the role of education has not changed. Another significant discrepancy relates to the probability of young people (in the age bracket 15-24) leaving unemployment. Compared to older workers, young people in Italy have fewer employment opportunities and lower outflows from inactivity. In contrast, in the UK, young people show a lower unemployment rate and a higher participation rate, although unemployment proportion—i.e., the ratio of young unemployed to the corresponding population—is not negligible.

The two countries are similar in terms of the impact of unemployment duration. With respect to the outflows from unemployment, there is evidence of negative duration dependence. In addition, women in both countries experience greater difficulty in leaving the state of inactivity than do men.

Our findings therefore suggest that women and the young are disadvantaged in Italy's labor force, thus posing a relevant policy issues that should be addressed to improve the entire country's employment and unemployment conditions.

Appendix

A-1 The Italian LFS

The sampling design of the survey is composed of two stages, with a stratification of the unit at the first stage; the first stage units are municipalities, while the second stage comprises households.

Each household member is interviewed. The main difference between the two stages is that while for families a 2-2-2 rotation scheme is applied, the municipalities surveyed do not change over time.

More specifically, a household was interviewed for two consecutive surveys and, after being excluded from the sample for two quarters, was interviewed for another two consecutive quarters. This is defined as a (2-2-2) rotation scheme.[29]

This rotation system makes it possible to maintain half the sample unchanged in two consecutive quarters and in quarters one year apart. In other words, the scheme implies a 50% overlapping of the theoretical sample to a quarter of the distance, a 25% overlapping to three quarters, a 50% to four quarters, and a 25% to five quarters. Our analyses are based on yearly longitudinal data for the period 2004-2012.

These data are employed both to compute the labour market transitions which determine the steady-state unemployment rate and the related gender differentials, and to estimate the determinants of the labour market transitions which mostly affect such indicators and differentials. This latter investigation is carried out by using the variables described in Appendix Table A-1. The choice of variables was driven both by specific econometric tests and preliminary checks, and by the relevance of the indicators which are widely emphasized in the literature and in the aforementioned descriptive statistics.

Table A1: Transition Probabilities and Unemployment rates by Gender and Year, Italy.

	λeu	λei	λue	λui	λuu	λie	λiu	λpie	u*	urate**
				2006-2007						
				Markov						
M	.0157	.0453	.3497	.3257	.3245	.0513	.0249	.6735	5.09	5.50
F	.0141	.0844	.2603	.4741	.2656	.0349	.0197	.6399	7.32	8.80
T	.0151	.0606	.3022	.4045	.2933	.0409	.0216	.6549	5.97	6.99
				Shimer						
M	.0264	.0435	.5952	.5597		.0460	.0432	.5158	5.09	5.50
F	.0256	.0841	.4883	.8733		.0319	.0368	.4643	7.32	8.80
T	.0264	.0587	.5393	.7200		.0368	.0388	.4866	5.97	6.99
				2012-2013						
				Markov						
M	.0313	.0463	.2381	.2967	.4653	.0563	.0670	.4563	13.14	9.90
F	.0322	.0635	.2422	.4135	.3442	.0387	.0511	.4309	13.98	11.90
T	.0316	.0534	.2396	.3516	.4087	.0454	.0571	.4431	13.44	10.70
				Shimer						
M	.0449	.0436	.3483	.4567		.0483	.1039	.3175	13.14	9.90
F	.0536	.0564	.4126	.7152		.0295	.0891	.2485	13.98	11.90
T	.0484	.0486	.3746	.5672		.0370	.0928	.2849	13.44	10.70

Notes: (*) u is the steady-state unemployment rate, (**) urate is the actual unemployment rate.

[29] For in-depth details on the sampling design, see Discenza and Lucarelli (2009).

Table A2: Transition Probabilities and Unemployment rates by Gender and Year, UK.

	λeu	λei	λue	λui	λuu	λie	λiu	λpie	u*	urate**
					2006-2007					
					Markov					
M	.0132	.0145	.2682	.1486	.5832	.0659	.0578	.5327	5.44	5.82
F	.0112	.0261	.2693	.2514	.4793	.0527	.0377	.5830	5.04	5.01
T	.0122	.0199	.2689	.1937	.5373	.0573	.0446	.5620	5.25	5.45
					Shimer					
M	.0168	.0143	.3473	.2049		.0595	.0803	.4258	5.44	5.82
F	.0154	.0257	.3806	.3718		.0479	.0562	.4599	5.04	5.01
T	.0161	.0195	.3615	.2737		.0519	.0635	.4499	5.25	5.45
					2012-2013					
					Markov					
M	.0165	.0121	.2369	.1224	.6406	.0515	.0723	.4160	7.58	8.47
F	.0117	.0219	.2174	.1946	.5879	.0455	.0489	.4818	6.91	7.46
T	.0142	.0167	.2285	.1535	0.6179	.0477	.0575	.4532	7.28	8.01
					Shimer					
M	.0203	.0117	.2957	.1618		.0433	.0962	.3104	7.58	8.47
F	.0146	.0219	.2807	.2630		.0407	.0666	.3791	6.91	7.46
T	.0177	.0164	.2984	.2038		.0415	.0769	.3506	7.28	8.01

Notes: (*) u is the steady-state unemployment rate, (**) urate is the actual unemployment rate.

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