The Labour Market Impact of the Financial Crises: A "Comparative Approach"

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Abstract and Structure of the Paper[**]

The paper focuses on several aspects of the complex impact of financial crises on labour market performance. The first section is dedicated to present and discus new evidences about the impact of past financial crises on (un)employment rates. In fact, last financial crisis presented significant peculiarities with respect to past crises but some key characteristics and timing of the consequences on labour market can be learn also from past experiences. In the second section some very-recent descriptive statistics, regarding the impact of last crisis in the European labour markets, are discussed. In the third section the regional labour market impact is investigated for EU-27 (un)employment rates and Russian youth unemployment. So, this paper adopt a "comparative approach" - *lato sensu* - for investigating the complex impact of financial crises on labour market performance, i.e. referring to comparison (i) over time (between the impact of past and last financial crises) and between countries (especially EU-27); (ii) comparison between age classes and gender (especially focusing on young people); (iii) comparison between EU-27 regions and between Russian regions. A multifaceted picture emerged from the empirical investigations, with relevant policy implications.

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1. Introduction

The last financial crisis started in the United States in 2007 with the "subprime crisis" and then, because of the global diffusion of sophisticated financial instruments (such as derivatives), quickly propagated to the banking sector and financial system of many countries. In the Fall of 2008, the extending disruptions in the working of banks and credit systems, the confidence crisis (with huge drops in the stock markets), the deterioration of expectations led to the initial real effects (decrease in production and income, reductions in consumption and investment, fall of the international trade). All this caused the so-called "Great Recession", the biggest recession since the "Great Depression". The crisis has persisted in 2009, with widespread consequences on economic and labour market performance in all countries around the world. It should be noted a remarkable shift (at the beginning of 2010) - more pronounced in some countries than others - from a financial crisis in the private sector to a fiscal (sovereign debt) crisis, because of large increases in public deficits, mainly as a consequences of GDP and revenue declines accompanied by an increase in public expenditures. As for the impact on labour market it was pronounced, persistent in many cases, and with significant differences between countries, regions, sectors, age classes, etc.

This paper focuses on several aspects of the complex impact of past and last financial crises on labour market performance. The first part is dedicated, after a recall a part of the relevant literature, to discus old and new statistical evidences and econometric results about the impact of some past financial crises on the labour market. In fact, last financial crisis surely presents significant peculiarities with respect to past crises but the key characteristics and timing of some consequences on labour market can be learn also from past experiences. In the second part the paper discuss some very-recent descriptive statistics regarding the labour market impact of last crisis. In the third section the regional (sub-national) impact on (un)employment and youth unemployment is investigated, respectively, for EU-27 countries and Russia. So, this paper adopt a "comparative approach" - lato sensu - for investigating the complex impact of financial crises on labour market performance indicators.

A multifaceted picture emerged, with relevant policy implications that are briefly presented in the final section.

2. The Labour Market Impact of Past Financial Crises

A first point to be considered refers to the definition of "financial crises". In fact, national financial crises (without significant external effects) are very different - in a worldwide perspective - from international financial crises. According to Bordo (2006) and Reinhart and Rogoff (2008a and 2008b), there were the following eight episodes of major international financial crisis since 1870: (i) in 1873 German and Austrian stock markets collapsed with effects on the rest of Europe and Americas; (ii) in 1890 a debt crisis involved Latin America (especially Argentina); (iii) in 1907 a fall in copper prices caused financial panic in the US with effects on Europe, Latin America and Asia; (iv) in 1929 with a stock market crash in US started the well known "Great Depression"; (v) in 1981-82 a Latin American debt crisis began producing a decade-long debt crisis across developing economies; (vi) in 1991-92 real estate and equity price bubbles burst in

Scandinavia and Japan, while in Europe the ERM entered into crisis; (vii) in 1997-98 the Asian and Russian crises; (viii) finally, in 2007-08 the worst financial crisis (after 1929) started in US.

As for this kind of "major international crises" this paper present few evidences regarding the "Great Depression", and especially its labour market impact, in the United States (1929-1935)[1]. As showed in Table 1, as a consequence of the financial crisis started in 1929 and the consequent huge GDP decline (favoured by largely inadequate economic policies), the unemployment rapidly increased in the following three years and persisted at a very high level for several years after the economic recovery. In particular, the number of unemployed persons, starting from a level of 1.5 millions in 1929, reaches the top in 1933 (almost 13 millions) and persisted over the 10 millions for two more years; and the unemployment rate increased from 3.2% in 1929 up to 24.9% in 1933, remaining over the 20% in 1934 and 1935.

Table 1 – The "Great Depression": United States (1929-1935)

Year	GDP[1]	Δ % GDP	Unemployment (in millions)	Unemployment rate	Employment (in millions)	Δ% Employment	Banking defaults
1929	100.0		1.5	3.2	46.2		659
1930	90.1	-9.9	4.3	8.7	44.2	-4.4	1,350
1931	83.2	-7.7	8.0	15.9	41.3	-6.5	2,293
1932	70.8	-14.8	12.1	23.6	38.0	-7.9	1,453
1933	69.5	-1.9	12.8	24.9	38.1	0.0	4,000
1934	75.8	9.0	11.3	21.7	40.8	7.2	57
1935	83.3	9.9	10.6	20.1	41.7	2.1	34

Legend: (1) GDP = GDP level in real terms (1929=100).
Source: elaborations on data from Historical Statistics - US Department of Commerce, 1975 (GDP at price 1958: series F 3; Unemployment: D 85; Unemployment rate: D 86, Employment: D 5) and Board of Governors of the Federal Reserve System, Banking and Monetary Statistics, 1943, p. 283 (number of banks with suspended activity).

So, the labour market impact of 1929 financial crisis (and the "Great Depression") was remarkable and persistent. It is not surprising that, according to a large literature, the financial crises produced increases in unemployment (World Bank, 2008), although with significant cross countries differences. For example, some national level studies (e.g., the cases of Indonesia and Mexico) showed that a reduced increase in unemployment can be explained by a reduction in working hours (Beegle et al. 1999) and a higher wages flexibility. Especially in developing countries, sectoral and regional reallocation of labour are usually important (e.g. workers move back to agriculture, i.e. from urban to rural area), including movements into informal sector. Other empirical evidences on past financial crises (and generally on economic downturns) suggests that young (e.g. World Bank, 2007), old (e.g. OECD, 1998), unskilled, female workers as well as migrants are particularly vulnerable and are more likely to bear the brunt of rising unemployment. A large theoretical and empirical literature suggests that when the unemployment rate tends to rise significantly it usually persist at the high level for several years after a (financial) shock. One of the key explanations refer to the fact that long spells without employment negatively affect individual "human capital" making more

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[1] As for some of the different interpretations of the "Great Depression", see Romer (1990), Friedman and Schwartz (1963), Bernanke (1983 and 2000).

difficult for the long-term unemployed to find jobs. So, the hysteresis effects generally tend to increase the "structural unemployment rate" (e.g. Blanchard and Wolfers, 2000; Bassanini and Duval, 2006; Nickell et al., 2005). It should be noted that recent literature on the real impact of financial crises emphasizes the medium term effects (e.g. IMF, 2009; Furceri and Mourougane, 2009; Boyd et al., 2005; Cerra and Saxena, 2008).

Verick (2009) considers the effects on unemployment of the past "Big 5 Crises" (Spain 1977, Norway 1987, Finland 1991, Sweden 1991, and Japan 1992) in order to better investigate the impact of the recent crisis on the labour market, especially on young men and women. The author argues that young people are hit hardest and the impact persist long after the economy is growing again and the size and persistence of the impact on youth unemployment depend on (i) the degree of economic contraction, (ii) the sectoral composition of employment prior to the crisis and (iii) the institutional structures (including school-to-work-transition institutions). In particular, Verick (2009) further confirms that - during and after a severe recession - young people find increasingly difficult to both acquire a job as a new entrant in the labour market, especially as a consequence of hiring freezes, and to remain employed, since they are more likely to be laid off than workers with more seniority. So, the youth unemployment rates are more sensitive to the business cycle than witnessed for adult (OECD, 2008).

It should be also noted that there were a large number of financial crises without a "global" nature. Honohan and Laeven (2005) and Laeven and Valencia (2008) produced a database with the following definitions - at country level - of financial crises: (i) "systemic banking crises": when a country's corporate and financial sector experiences a large number of defaults and financial institutions and corporations face great difficulties repaying contracts on time[2]; (ii) "non-systemic banking crises": crises limited to a small number of banks; (iii)) "currency crises": defined as a nominal depreciation of the currency of at least 30 percent that is also at least 10 percent increase in the rate of depreciation compared to the previous year; (iv) "sovereign debt crises": defined as when a sovereign default to private lending or debt is rescheduled.

First of all, it should be recalled that, the overall and specific impact on labour market of a crisis is usually different across (and within) countries depending on many factors, such as: (i) the economic structure, (ii) the institutional framework and (iii) the policymakers response at different levels. The previous factors affect, in the first place, the size and the degree of (in)stability of the relationship between economic growth (or output decline) and unemployment rate, i.e. the so-called "Okun's coefficients".

By adopting the above four definitions of financial crises, very recent and ongoing researches (Bartolucci, Choudhry, Marelli and Signorelli, 2011; Choudhry, Marelli and Signorelli, 2010a, 2010b and 2011) investigated - for a very large set of countries - the impact of past financial crises (period 1980-2005) on several key variables of the labour market performance (total unemployment and employment rates; youth unemployment rate; female unemployment and participation rates). In this paper some key econometric results are briefly presented, with reference to the impact on total and youth unemployment. In both cases - although with different sizes - it results that: (i) financial crises' impact is statistically significant and the expected sign; (ii) the impact is more remarkable and significant for high-income countries; (iii) the

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[2] As a result, non-performing loans increase sharply and all or most of the aggregate banking system capital is exhausted.

persistence of adverse effects lasts till five years after the onset of crisis, however the most adverse effects are found in second and third year after the crisis. The main econometric results for total unemployment rate are presented in Table 2.

Table 2 - The impact of financial crises on total unemployment rate

Dependent variable: Total Unemployment Rate

Variables		Model 1	Model 2	Model 3	Model 4	Model 5
Capital stock per worker	Coefficient	-0.015*	-0.020***	-0.023***	-0.025***	-0.025***
	Robust SE	0.009	0.006	0.006	0.006	0.007
Inflation	Coefficient	-0.01	-0.008	-0.008	-0.005	-0.002
	Robust SE	0.007	0.007	0.007	0.007	0.007
Foreign direct Investment	Coefficient	-0.072***	-0.070**	-0.069**	-0.069**	-0.060**
	Robust SE	0.022	0.032	0.032	0.032	0.028
Openness	Coefficient	-7.039***	-7.032***	-6.747***	-6.479***	-6.110***
	Robust SE	0.788	0.902	0.904	0.893	0.95
Financial Crisis	Coefficient	0.754***				
	Robust SE	0.222				
Financial Crisis (-1)	Coefficient		1.222***			
	Robust SE		0.211			
Financial Crisis (-2)	Coefficient			1.166***		
	Robust SE			0.205		
Financial Crisis (-3)	Coefficient				0.920***	
	Robust SE				0.202	
Financial Crisis (-5)	Coefficient					0.427**
	Robust SE					0.212
Constant	Coefficient	10.598***	10.436***	10.678***	10.588***	10.389***
	Robust SE	0.619	0.781	0.797	0.811	0.84
No of observations		860	835	811	782	719
Number of countries		61	61	61	61	61
R-Square		0.116	0.156	0.158	0.15	0.122
Wald-chi2		98.83***	98.594***	105.599***	95.230***	60.383***

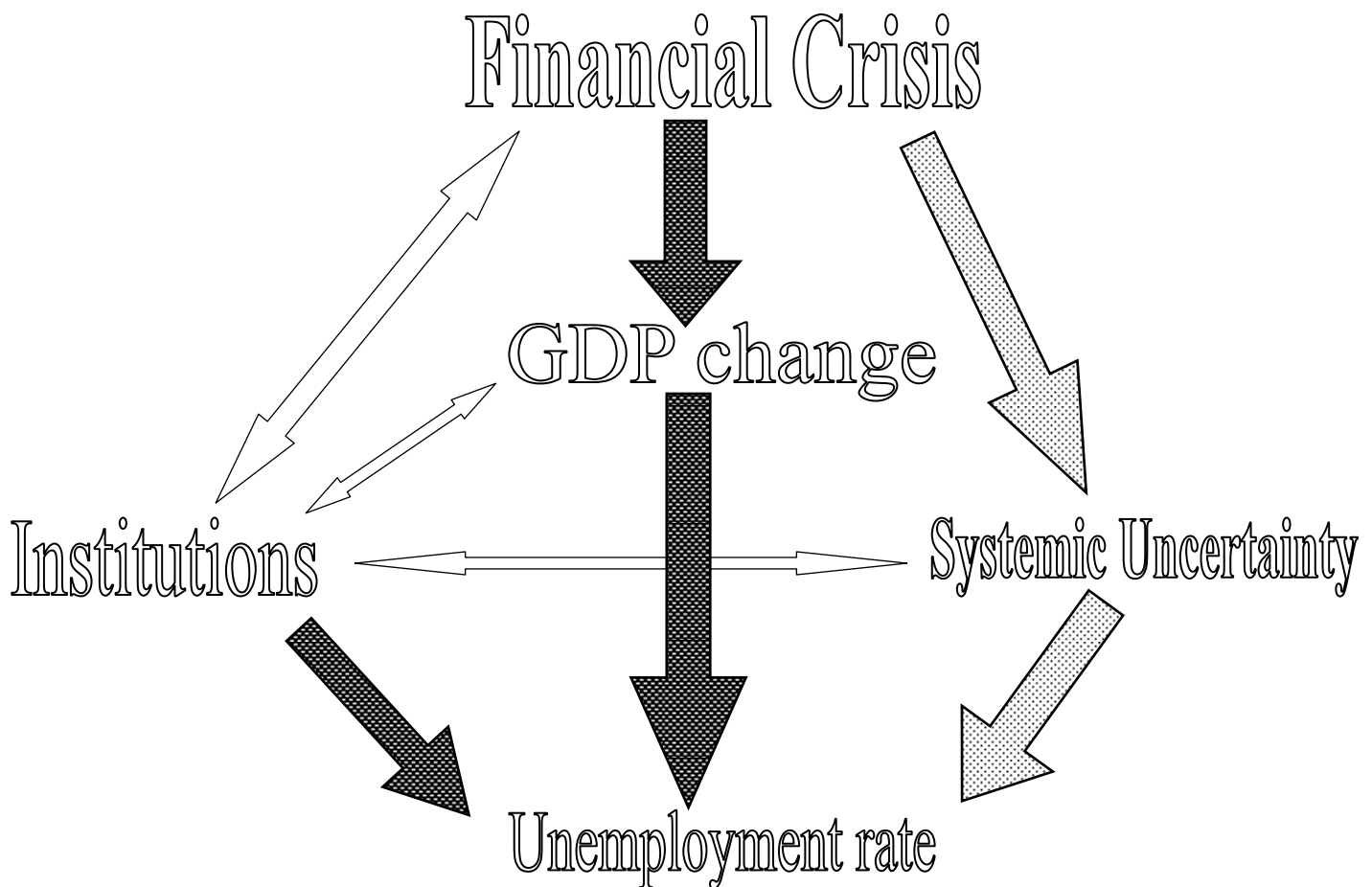Note: * Significant at 10%, ** significant at 5 %, *** significant at 1 %

Considering the complex relationship between unemployment, employment and participation rates[3], it should be noted that - especially during and after a crisis - the increase in (youth and total) unemployment rates can undervalue the negative impact due to the probable decrease in the (youth and total) participation rates. This is the well known "discouragement effect" (usually more relevant for women) that produces a reduction of the actual labour force and - especially in the case of young people - can partly consist in an increase in the duration of "education".

A promising line of research (Bartolucci, Choudhry, Marelli and Signorelli, 2011) try to verify if there is an additional effect on unemployment rate - with respect to that passing through GDP growth declines (i.e. Okun's Law) - arising as a consequence of the financial crisis, due to an increase in the degree of uncertainty. Uncertainty is a persisting characteristic of the functioning of the economic systems and conditioning the behavior of economic agents. As for the huge literature I just recall the following two ground-breaking studies: (i) Knight (1921) distinction between risk and uncertainty and (ii) Keynes (1936)

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[3] See, for example, Perugini and Signorelli (2004 and 2007).

"weight of argument" (and the liquidity preference). In addition, more recent researches focus on the decisions of "bounded" rational agents, the effect of uncertainty on investment decisions, the effect of sunk costs on labour demand, etc[4]. In my view the financial crises can have deep effects on labour markets - not only because of the consequent recessions (the fall in production reduces labour demand) - but also due to the rise in "systemic uncertainty" that can further reduce labour demand and increase unemployment. In fact, econometric results[5] showed that in several cases there is an additional negative impact of financial crises on labour market performance (unemployment rates) with respect to GDP changes effect (Okun's Law) and taking into account of country-specific characteristics (like "labour market institutions"), different lags and also phenomena of inertia and persistence. In Figure 1 this new approach - highlighting the role of changes in the degree of systemic uncertainty - is presented, within a more general framework.

Figure 1 - Financial crises and unemployment: the role of systemic uncertainty

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[4] See Bernanke (1983), Pindyck (1991) and Dixit and Pindyck (1993).

[5] In order to find evidence of the "uncertainty effect", Bartolucci-Choudhry-Marelli-Signorelli (2011) formulated an operational model which belongs to the family of linear Mixed-Effects Models and implemented an Expectation-Maximization algorithm for its estimation. In particular they first consider a model in which: (i) the "persistence" in the dynamics of unemployment rate is captured by including autocorrelated error terms; (ii) the lagged effect of GDP dynamics on labour market indicators (e.g., due to labour "institutions" and labour hoarding strategies) is captured by the lagged values of GDP changes; (iii) the existence of cross country "institutional and structural" differences is controlled by the adoption of country-specific parameters. Then, they include, in the model dummy variables for the different types of crisis (Banking, Currency, and Debt), so as to measure the additional impact on the unemployment rate.

In other terms, a financial crisis can affect the firms' behavior - in addition to the changes due to GDP decline - and the (desired and actual) labour demand can further decline due to much more uncertain expectations[6]. In Table 3 is presented the expected increase of the percentage unemployment rate, under different scenarios, corresponding to different GDP percentage increases and presence/absence of a financial crisis (systemic banking crisis).

Table 3 - Simulations of the additional (uncertainty) impact of a financial crisis on unemployment rate

Scenarios	GDP growth rate								
	-5%	-4%	-3%	-2%	-1%	0	+1%	+2%	+3%
	changes of the percentage of unemployment rate								
A) without a Financial crises	1.27	1.10	**0.92**	0.74	0.57	0.39	0.23	0.07	-0.09
B) with a Systemic Banking crisis (Lag 0)	1.72	1.54	**1.36**	1.18	1.01	0.83	0.67	0.51	0.35
C) with a Systemic Banking crisis (Lag 1)	1.95	1.77	**1.59**	1.41	1.24	1.06	0.90	0.74	0.58
D) with a Systemic Banking crisis (Lag 0 and Lag 1)	2.39	2.21	**2.03**	1.86	1.68	1.50	1.34	1.18	1.02

Note: Lag 1 considers the impact of a financial crisis with one year lag.

For example, in the case of a GDP decline at 3% (column in bold) the Okun's coefficient (that also consider lags on GDP impact, country specific parameters, cyclical asymmetries, etc.) showed an increase of unemployment rate by 0.92 in absence of a financial crisis, while the increase resulted significantly higher in presence of a systemic banking crisis (e.g. 2.03, jointly considering one and two lags in the timing of the impact).

Finally, it is possible summarize that - according several results - past financial crises produced a negative and persistent effect on labour market performance and the impact is (i) more pronounced on young people, (ii) depending on the different "institutional framework" and (iii) additional with respect to what explained by "Okun's Law" and institutions due to the probable effect of an increase in degree of systemic uncertainty.

3. The Labour Market Impact of the Last Financial Crisis

The last financial crisis began at the end of 2007 and its deepest impact on financial markets (with Lehman Brothers default) was in September 2008. The deepest fall in production was reached in the first half of 2009. The real effects of financial crises are usually lagged and the labour market effects are normally more lagged. Moreover, not only such effects have been delayed, but they have been significantly heterogeneous, differing across countries and regions. The intensity of the reaction depends upon various

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[6] See also Signorelli (1997). A possible additional effects to be investigated refers to the increase of uncertainty that negatively affects the propensity to consume (due to a higher desired saving to address a more uncertain future); so, also trough this channel, a financial crisis can influence the GDP dynamics.

factors (e.g. country reliance on international trade, dependence on natural resources, financial liberalization of banking system, fiscal resources at government disposal, and so on).

In a world perspective, the labour market impact resulted also in an extension of gender inequality and poverty: e.g. in developing economies, the initial decline in textile and agricultural exports has caused an increase in unemployment among women, together with a rise in female workers share in informal sectors and vulnerable (low paid) jobs. According to ILO data and forecasts, the overall unemployment rate (UR) increased worldwide in 2009 and 2010, although with remarkable differences among the world regions. Highest levels (and increases) of UR have been reported in developed economies, the EU and the other countries of Europe (e.g. ILO, 2010a and 2010b). However, it should be noted that "working poverty" dramatically increased in many regions, especially South East Asia and the Pacific, South Asia, North Africa, and Sub Sahara Africa (Table 4).

Table 4 - Labour market impact in world regions

	Unemployment rate				Employment growth			Working poor**		
	2007	2008	2009*	2010*	2000-07	2008	2009*	2007	2008	2009*
World	5.7	5.8	6.6	6.5	1.8	1.4	0.7	21	21.2	24.8
Developed Economies and European Union	5.7	6.0	8.4	8.9	0.8	0.6	-2.5			
Central and South Eastern Europe	8.3	8.3	10.3	10.1	1.3	0.7	-2.2	4.6	4.0	5.3
East Asia	3.8	4.3	4.4	4.3	1.2	0.3	0.9	10.5	11.0	12.6
South East Asia and the Pacific	5.4	5.3	5.6	5.6	1.9	2	1.7	20.9	23.3	27.8
South Asia	5	4.8	5.1	4.9	2.3	2.4	2.2	46.6	45.5	53.5
Latin America and the Caribbean	7.0	7.0	8.2	8.0	2.6	2.2	0.2	6.8	6.6	8.5
Middle East	9.3	9.2	9.4	9.3	3.6	2.2	3.7	8.9	8.1	10.4
North Africa	10.1	10	10.5	10.6	3.3	2.6	2.4	11.2	13.7	15.6
Sub Sahara Africa	8.0	8.0	8.2	8.1	2.9	2.9	2.8	58.9	58.6	63.5

Note: * preliminary estimates (2009) and projections (2010) under "central" scenario.
   ** Working Poor (below USD 1.25, share in total employment).
Source: ILO (2010).

As for labour market impact in developed countries, the different employment adjustments depend also on institutional frameworks and labour hoarding phenomena: (i) in the most 'flexible' countries, such as the United States, Ireland, the Baltic states and also Spain (in the latter case because of the huge number of temporary contracts), employment has been cut rapidly and deeply, helping to maintain labour productivity, but at cost of the high increases in unemployment; (ii) on the opposite side, some other countries (like Germany, Japan, the Netherlands, Denmark and Italy) experimented less remarkable employment effects, also thanks to more significant labour hoarding practices, working hour adjustments and specific policy measures. IMF (2009) partly explains the mentioned heterogeneity by considering the multifaceted dimensions of labour market flexibility (employment protection legislation, the types of wage-bargaining arrangements, the level and duration of unemployment benefits, the diffusion of temporary contracts). The stronger employment response in low EPL economies, relative to medium/high EPL economies, is consistent

with the literature suggesting that employment protection reduces both inflows to and outflows from employment. For medium/high EPL countries, the reduction in employment after the last crisis has been similar to that during previous cycles despite substantially bigger GDP declines, confirming the above mentioned higher degree of labour hoarding. However, in some of these countries, the labour market response has been just delayed and may (comparatively) deteriorate in the medium run. In other terms in some countries there is a high risk of persistence (i.e. rise in structural unemployment).

In the case of some developed economies (especially those directly affected by the crisis or more export oriented), the impact was mainly in sectors with a higher presence of male employment (for instance constructions and manufacturing), producing a different gender impact with respect to past crises (European Commission, 2009). So, considering the developed countries, it should be noted that the relation between output fall and unemployment rise is not one-to-one: the biggest output reductions have been recorded in Japan, Germany, and Italy (export-oriented countries), despite the financial crisis harmed initially the US, the UK, Ireland, Spain. In the latter – most flexible – countries the labour market impact has been greatest. In other countries, the impact on labour demand has been reduced or nil (Germany, Italy, Japan and the Netherands). In other terms, it is interesting to note that the ranking of countries in terms of labour market impact is closer to the ranking according to the timing and intensity of the initial impact of the financial crisis rather than to the one concerning other real effects (on production, income, etc.). A possible explanation is that labour-hoarding practices are more common in countries specialised in industrial activities, where income-support policies are also more effective, because a gradual – although sluggish – return to previous production levels is more likely. For example, in Germany, unemployment has not increased also thanks to a reduction of average hours worked, while working volume changed strongly (decline in overtime, short-time working schemes, employer-initiated reductions in working time implemented within existing collective agreements or subsidised short-hour work); in Italy the fall in output has been accompanied by labour-hoarding practices (also thanks to income support for workers maintaining job contracts at reduced working-time) – with consequent reductions in productivity – and by falls in labour supply (the "discouraged worker effect").

The impact on labour has been deep also in countries where the overall macroeconomic stability was low, such as some EU, transition and developing countries.

It should be also noted that, within Europe, the last "job shock" hit both "Western" and "Eastern" countries in a generally impressive way, but this happened after almost two decades of quite different trends in labour market performance. In fact, "old EU" countries - especially since mid 1990s - experimented a significant net job creation accompanied by low productivity growth (moving towards an extensive model of growth), while "new EU countries" shifted, quite abruptly (during the first years of "transitional recession")[7], from an "extensive model" (under central planning) with high (male and female) employment rates - and low and stagnant productivity - to a more "intensive model of growth", first loosing jobs and gradually increasing

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[7] See Marelli and Signorelli (2010a).

productivity. So, as for Eastern European countries, the job shock after the last crisis is the second one (the previous shock occurred in the first years of transition) in less than a generation.

Concerning current and future developments, total unemployment rates reached top rates in 2010, but in some EU countries even in 2011 (Table 5). As for the next years, it is likely, similarly to past crises, a certain degree of persistence, due to 'hysteresis' effects (upward shift in the 'structural unemployment'). Persistence and hysteresis will largely depend on the robustness of the recovery, also related to the adoption of macroeconomic policies; in the world as a whole recovery has been satisfactory, thanks to the pushing up of the emerging economies. In the EU, on the contrary, has been generally feeble also because of the new uncertainty scenario caused by the 'sovereign debt' crisis.

Table 5 – Total Unemployment rates

	1991–2000	2001–2010	2004	2005	2006	2007	2008	2009	2010	2011*	2012*
Belgium	8.5	7.8	8.4	8.5	8.3	7.5	7.0	7.9	8.3	7.9	7.8
Germany	7.8	8.8	9.8	11.2	10.3	8.7	7.5	7.8	7.1	6.4	6.0
Estonia	-	9.7	9.7	7.9	5.9	4.7	5.5	13.8	16.9	13.0	11.5
Ireland	11.1	6.3	4.5	4.4	4.5	4.6	6.3	11.9	13.7	14.6	14.0
Greece	9.5	9.8	10.5	9.9	8.9	8.3	7.7	9.5	12.6	15.2	15.3
Spain	15.7	11.9	10.6	9.2	8.5	8.3	11.3	18.0	20.1	20.6	20.2
France	10.6	8.9	9.3	9.3	9.2	8.4	7.8	9.5	9.7	9.5	9.2
Italy	10.4	7.8	8.0	7.7	6.8	6.1	6.7	7.8	8.4	8.4	8.2
Cyprus	-	4.6	4.7	5.3	4.6	4.0	3.6	5.3	6.5	6.3	5.6
Luxembourg	2.5	4.1	5.0	4.6	4.6	4.2	4.9	5.1	4.5	4.4	4.2
Malta	5.7	7.1	7.4	7.2	7.1	6.4	5.9	7.0	6.8	6.8	6.7
Netherlands	5.1	4.0	5.1	5.3	4.4	3.6	3.1	3.7	4.5	4.2	4.0
Austria	3.9	4.4	4.9	5.2	4.8	4.4	3.8	4.8	4.4	4.3	4.2
Portugal	5.5	7.4	6.7	7.7	7.8	8.1	7.7	9.6	11.0	12.3	13.0
Slovenia	-	6.1	6.3	6.5	6.0	4.9	4.4	5.9	7.3	8.2	8.0
Slovakia	-	15.1	18.2	16.3	13.4	11.1	9.5	12.0	14.4	14.0	13.3
Finland	12.5	8.2	8.8	8.4	7.7	6.9	6.4	6.2	8.4	7.9	7.4
Euro area (17)	-	8.7	9.0	9.1	8.5	7.6	7.6	9.6	10.1	10.0	9.7
Bulgaria	-	11.2	12.1	10.1	9.0	6.9	5.6	6.8	10.2	9.4	8.5
Czech Republic	-	7.0	8.3	7.9	7.2	5.3	4.4	6.7	7.3	6.8	6.4
Denmark	6.6	4.9	5.5	4.8	3.9	3.8	3.3	6.0	7.4	7.1	6.7
Latvia	12.7	11.1	10.4	8.9	6.8	6.0	7.5	17.1	18.7	17.2	15.8
Lithuania	7.5	10.9	11.4	8.3	5.6	4.3	5.8	13.7	17.8	15.5	12.7
Hungary	-	7.5	6.1	7.2	7.5	7.4	7.8	10.0	11.2	11.0	9.3
Poland	-	14.3	19.0	17.8	13.9	9.6	7.1	8.2	9.6	9.3	8.8
Romania	-	7.1	8.1	7.2	7.3	6.4	5.8	6.9	7.3	7.2	6.8
Sweden	7.6	7.0	7.4	7.7	7.1	6.1	6.2	8.3	8.4	7.6	7.2
U.K.	7.9	5.6	4.7	4.8	5.4	5.3	5.6	7.6	7.8	8.0	7.8
EU-27	9.2 **	8.6	9.1	9.0	8.2	7.2	7.1	9.0	9.6	9.5	9.1
United States	5.6	6.1	5.5	5.1	4.6	4.6	5.8	9.3	9.6	8.6	8.1
Japan	3.3	4.7	4.7	4.4	4.1	3.9	4.0	5.1	5.1	4.9	4.8

Source: European Commission - Spring Forecasts (May 2011). * forecasts ** EU-15.

Considering the more recent "crisis years"[8], the total unemployment rate in EU-27 increased from 7.1 in 2007 to 9.0% in 2009, reached a climax in 2010 (9.6) and it is expected to persist over 9% in 2011 and 2012. The differences between countries resulted particularly significant. The highest values are experimented (2010) and expected (2012) in Spain (respectively 20.1 and 20.2), Latvia (18.7 and 15.8), Lithuania (17.8 and 12.7), Estonia (16.9 and 11.5), Greece (12.6 and 15.3), Ireland (13.7 and 14.0), Slovakia

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[8] In the next Tables data generally refers to the period after the launch of the European Employment Strategy (1997).

(14.4 and 13.3) and Portugal (11.0 and 13.0). On the opposite, the lowest rates resulted (2010) and are expected (2012) in the Netherlands (4.5 and 4.0), Austria (4.4 and 4.2) and Germany (7.1 and 6.0)[9].

A similar total unemployment rate can be the result of very different composition between short-term and long-term unemployment rates. The recent increase in long-term unemployment rates (LTUR) highlight that a part of the cyclical unemployment is becoming structural unemployment in many countries (Table 6).

Table 6 – Long-Term Unemployment rates

	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
Belgium	5.4	5.6	4.8	3.7	3.2	3.7	3.7	4.1	4.4	4.2	3.8	3.3	3.5	4.1
Bulgaria	-	-	-	9.4	12.1	12	9	7.2	6	5	4.1	2.9	3	4.8
Czech Republic	-	2	3.2	4.2	4.2	3.7	3.8	4.2	4.2	3.9	2.8	2.2	2	3
Denmark	1.5	1.3	1.1	0.9	0.9	0.9	1.1	1.2	1.1	0.8	0.6	0.4	0.5	1.4
Germany	4.7	4.7	4.2	3.8	3.8	4	4.6	5.5	5.9	5.8	4.9	4	3.5	3.4
Estonia	-	4.2	5	6.3	6.1	5.4	4.6	5	4.2	2.9	2.3	1.7	3.8	7.7
Ireland	5.6	3.9	2.4	1.6	1.3	1.3	1.5	1.6	1.5	1.4	1.3	1.7	3.4	6.7
Greece	5.3	5.8	6.5	6.2	5.5	5.3	5.3	5.6	5.1	4.8	4.1	3.6	3.9	5.7
Spain	8.7	7.5	5.7	4.6	3.7	3.7	3.7	3.4	2.2	1.8	1.7	2	4.3	7.3
France	4.6	4.5	4.1	3.5	2.9	3	3.5	3.8	3.8	3.9	3.4	2.9	3.4	3.9
Italy	7.3	6.8	6.7	6.3	5.7	5.1	4.9	4	3.9	3.4	2.9	3.1	3.5	4.1
Cyprus	-	-	-	1.2	0.8	0.8	1	1.2	1.2	0.9	0.7	0.5	0.6	1.3
Latvia	-	7.9	7.6	7.9	7.2	5.5	4.4	4.6	4.1	2.5	1.6	1.9	4.6	8.4
Lithuania	-	7.5	5.3	8	9.3	7.2	6	5.8	4.3	2.5	1.4	1.2	3.2	7.4
Luxembourg	0.9	0.9	0.8	0.5	0.5	0.7	1	1	1.2	1.4	1.2	1.6	1.2	1.3
Hungary	4.5	4.2	3.3	3.1	2.6	2.5	2.4	2.7	3.2	3.4	3.4	3.6	4.2	5.5
Malta	:	:	:	4.5	3.7	3.2	3.2	3.4	3.3	2.8	2.6	2.5	3	3.2
Netherlands	2.6	1.7	1.3	0.8	0.7	0.8	1.2	1.7	2.1	1.9	1.4	1.1	0.9	1.2
Austria	1.3	1.3	1.2	1	0.9	1.1	1.1	1.4	1.3	1.3	1.2	0.9	1	1.1
Poland	5	4.7	5.8	7.4	9.2	10.9	11	10.3	10.3	7.8	4.9	2.4	2.5	3
Portugal	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Romania	-	-	3.1	3.8	3.4	4.6	4.3	4.8	4	4.2	3.2	2.4	2.2	2.5
Slovenia	3.5	3.3	3.3	4.1	3.7	3.5	3.5	3.2	3.1	2.9	2.2	1.9	1.8	3.2
Slovakia	-	6.5	7.8	10.3	11.3	12.2	11.4	11.8	11.7	10.2	8.3	6.6	6.5	9.2
Finland	4.9	4.1	3	2.8	2.5	2.3	2.3	2.1	2.2	1.9	1.6	1.2	1.4	2
Sweden	3.1	2.6	1.9	1.4	1.2	1.2	1.2	1.4	1	1	0.9	0.8	1.1	1.5
United Kingdom	2.5	1.9	1.7	1.4	1.3	1.1	1.1	1	1	1.2	1.3	1.4	1.9	2.5
EU-27	-	-	-	4	3.9	4	4.1	4.2	4.1	3.7	3.1	2.6	3	3.9

Source: Eurostat online database

In 2010 the LTUR resulted particularly high in Slovakia (9.2), Latvia (8.4), Estonia (7.7), Lithuania (7.4), Spain (7.3) and Ireland (6.7). The trend in the period 2008-2010 was particularly negative for Lithuania (from 1.2 to 7.4), Estonia (from 1.7 to 7.7), Latvia (from 1.9 to 8.4), Ireland (from 1.7 to 6.7), Spain (from 2 to 7.3), Slovakia (from 6.6 to 9.2) and Greece (from 3.6 to 5.7). On average the increase of LTUR in EU-27 countries was from 2.6 in 2008 to 3.9 in 2010.

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[9] It should be noted that, outside Europe, Japan - notwithstanding the increase in 2009 - maintained a very low unemployment rate (5.1 in 2010 and 4.8 in 2012).

Considering the formal relationship between employment and unemployment rates, it is possible to show how the use of the UR alone can lead to paradoxical pitfalls in evaluating (and comparing) labour market performances (across countries and over time). The employment rate may be defined as the complement to one of the unemployment rate (divided by 100) multiplied by the participation rate[10]:

$$ER = \frac{E \times 100}{P20_{20-64}} = \left(\frac{LF - U}{LF} \right) \times \frac{LF \times 100}{P_{20-64}} = \left(1 - \frac{UR}{100} \right) \times PR$$

In a simple dynamic perspective, it is easy to show that the change in employment rate is compatible with different dynamics of unemployment rate, participation rate, employment and working-age population.

Starting from previous equation, the unemployment rate may be defined as the complement to one of the ratio between employment rate and participation rate (the result multiplied by 100):

$$UR = \left(1 - \frac{ER}{PR} \right) \times 100$$

It is easy to show that a reduction in unemployment rate is necessarily accompanied by a per cent increase in the employment rate higher than the per cent increase in the participation rate, i.e., the increase in employment is greater than the increase in the labour force. Obviously, a reduction in unemployment rate is also compatible with a reduction in employment (or per cent ER) if the latter is lower, in absolute terms, than the reduction in labour force (or per cent PR). Following some of the above considerations, in this paper the employment rate is adopted in addition to the traditional labour market performance indicator (unemployment rate).

The ER (calculate on 20-64 population) – the key labour market performance indicator of the European Employment Strategy (EES) and the strategy for "Europe 2020" (the objective now is to reach the 75% by 2020) – declined in EU-27 from 70.4 in 2008 to 68.6 in 2010, with remarkable differences between countries (Table 7). The highest declines in ER (percentage points) - starting from different level in 2008 compared to 2010 - occurred in Latvia (-10.8), Estonia (-10.3), Ireland (-7.2), Spain (-5.8), Lithuania (-5.6) and Bulgaria (-5.3). On EU-27 average the decline was at -1.8 (from 70.4 to 68.6). Outside Europe, the US decline in employment rate, differently from Japan, has been particular pronounced (from 75.3 in 2007 to 70.5 in 2010). As for the compared ER in 2010, particularly high levels occurred in Sweden (78.7), Netherlands (76.8), Denmark (76.1), Austria (74.9), UK (73.6) and - outside Europe - Japan (74.7); while the worst performer countries resulted Hungary (60.4), Italy (61.1), Spain (62.5), Romania (63.3) and Greece (64.0).

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[10] Where: LF = Labour force = employment (E) + unemployment (U); UR = Unemployment rate = unemployment x 100 / labour force; ER = Employment rate = employment x 100 / population 20-64 (P_{20-64}); PR = Participation rate = labour force x 100 / population 20-64.

Table 7 – Employment rates (20-64)

	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
Belgium	62.1	62.7	64.5	65.8	65	65	64.7	65.6	66.5	66.5	67.7	68	67.1	67.6
Bulgaria	-	-	-	55.3	54.8	55.8	58	60.1	61.9	65.1	68.4	70.7	68.8	65.4
Czech Republic	-	73.4	71.5	71	71.2	71.6	70.7	70.1	70.7	71.2	72	72.4	70.9	70.4
Denmark	76.4	76.8	77.7	78	78.3	77.7	77.3	77.6	78	79.4	79.2	79.8	77.8	76.1
Germany	66.9	67.2	68.3	68.8	69.1	68.8	68.4	68.8	69.9	71.6	73.4	74.6	74.8	74.9
Estonia	-	71.2	68.5	67.4	67.8	69.2	70	70.6	72	75.8	76.8	77	69.9	66.7
Ireland	63.6	66.3	68.8	70.4	71.1	70.7	70.6	71.5	72.6	73.4	73.8	72.3	66.7	64.9
Greece	60.5	61.3	61.4	61.9	61.5	62.5	63.6	64	64.6	65.7	66	66.5	65.8	64
Spain	54.2	55.9	58.3	60.7	62.1	62.7	64	65.2	67.2	68.7	69.5	68.3	63.7	62.5
France	65.2	65.8	66.6	67.8	68.5	68.7	69.7	69.6	69.4	69.4	69.9	70.4	69.5	69.2
Italy	55.1	55.7	56.4	57.4	58.5	59.4	60	61.5	61.6	62.5	62.8	63	61.7	61.1
Cyprus	-	-	-	72.3	74.1	75.1	75.4	74.9	74.4	75.8	76.8	76.5	75.7	75.4
Latvia	-	65.4	64.5	63.5	65.1	67	68.9	69.3	70.4	73.5	75.2	75.8	67.1	65
Lithuania	-	68.2	67.8	65.6	64.2	67.2	68.9	69	70.6	71.6	72.9	72	67.2	64.4
Luxembourg	64.4	64.9	66.2	67.4	67.7	68.2	67.2	67.7	69	69.1	69.6	68.8	70.4	70.7
Hungary	58	58.8	60.6	61.2	61.3	61.4	62.4	62.1	62.2	62.6	62.6	61.9	60.5	60.4
Malta	-	-	-	57.2	57.2	57.7	57.8	57.9	57.9	57.6	58.5	59.1	58.7	59.9
Netherlands	70.9	72.2	73.5	74.3	75.4	75.8	75.2	74.9	75.1	76.3	77.8	78.9	78.8	76.8
Austria	70.6	70.7	71.4	71.4	71.5	71.8	72	70.8	71.7	73.2	74.4	75.1	74.7	74.9
Poland	65.3	65.4	63.9	61	59.4	57.4	57.1	57.3	58.3	60.1	62.7	65	64.9	64.6
Portugal	70.9	72.2	72.6	73.5	73.9	73.6	72.9	72.6	72.3	72.7	72.6	73.1	71.2	70.5
Romania	71.7	70.4	69.4	69.1	68.3	63.3	63.7	63.5	63.6	64.8	64.4	64.4	63.5	63.3
Slovenia	68	68.6	68.1	68.5	69.4	69	68.1	70.4	71.1	71.5	72.4	73	71.9	70.3
Slovakia	-	67.4	65	63.5	63.5	63.6	64.8	63.7	64.5	66	67.2	68.8	66.4	64.6
Finland	67.9	69.2	70.8	71.6	72.6	72.6	72.2	72.2	73	73.9	74.8	75.8	73.5	73
Sweden	74.6	75.3	76.5	77.7	78.7	78.5	77.9	77.4	78.1	78.8	80.1	80.4	78.3	78.7
United Kingdom	72.6	73.2	73.8	74	74.4	74.5	74.7	75	75.2	75.2	75.2	75.2	73.9	73.6
EU-27	65.1	65.5	66.2	66.6	66.9	66.7	67	67.4	68.1	69.1	70	70.4	69.1	68.6
United States	76.5	76.7	76.9	76.9	76.1	75	74.5	74.5	74.8	75.3	75.3	74.5	71.3	70.5
Japan	75.5	74.8	74.1	74	73.8	73.1	73.2	73.4	73.9	74.5	75.3	75.3	74.5	74.7

Source: Eurostat online database

The impact of the crisis has been differentiated not only across countries, but also between the various segments of the labour market.

As already recalled, Antonopoulos (2009) suggests that with global recession there will be an increase in gender disparity and poverty among women in developing economies; on the contrary, in the case of some developed economies, the last crisis mainly affected sectors with a higher presence of male employment. In any case, the gender specific impact of the crisis cannot be ignored. This impact comes on top of long-term gender specific inequalities in labour markets, that of course are highly different in world countries and regions, also because of the various "norms" about role of men and women in economy and society (Sperl, 2009)[11].

As for young people, the literature on the impact of last financial crises is still quite scarce (Choudhry, Marelli and Signorelli, 2011; Demidova and Signorelli 2011a and 2011b). Scarpetta, Sonnet and Manfredi

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[11] The smaller impact of the crisis on women in some regions or countries (especially some EU countries, like Italy) reflects - in addition to sectoral and international specialisation of individual countries - also a more intense "discouragement effect" among women.

(2010) highlight that the crisis exacerbated the structural problems that affect the transition from school to work. The labour hoarding practices, especially in countries with the highest EPL on "permanent contracts", favour adult segments and can further increase the size and duration of the impact of the crisis on youth unemployment. Generally, "education matters" and the consequences of a crisis are usually more serious for low-skilled youth, already in great difficulties in good times. According to Quintini and Manfredi (2009) the crisis is pushing more and more youth, even those who have performed well in good times, into the group of "poorly-integrated new entrants" and possibly in to the group of "youth left behind". In particular, Scarpetta et al. (2010) highlighted the risk to have a "lost generation" and the need to adopt effective (active and passive) labour policies and better STWT institutions for minimizing the increase in the number of youth losing effective contact with labour market and permanently damaging their employment prospects. O'Higgins (2011b) extensively investigates the impact of the economic and financial crisis and the policy response on youth employment in the European Union. In particular, he argues that it is not so much that more young people are affected, but that young people are more affected, by the crisis. In other terms, young people tend to be harder hit than adults by recessions, but the problem is not just that young people's unemployment rate rise more than adult rates during a recession. According to O'Higgins (2011b) the main point is that young people who are caught by the crisis are more vulnerable to its effects than are adults and that these effects are likely to be more long-lasting for young people[12].

As showed in Table 8, youth unemployment is a dramatic problem in many European countries also in normal times; in addition, it is frequently associated with low participation rates: many young people are "left behind" and are often trapped in a condition of "neither in employment nor in education or training" (the so-called NEET group). In 2010 the youth unemployment rate ranges from the minimum values of the Netherlands, Austria and Germany (respectively 8.7, 8.8 and 9.9) and the maximum of Spain (41.6). Extremely high youth unemployment rates in 2010 have been experimented in the Baltic States (over 30%), Slovakia (33.6), Greece (32.9) and Italy (27.8). The average increase in the period 2008-2010 was remarkable in several countries and generalised (with the only exception of Germany). Considering a longer period (1998-2010) for the EU-27 aggregate, there was a steady situation till 2005, then an improvement in 2006-07 – prior to the global crisis – and finally a jump from the 15.5% (2007-8) to the 20.8% in 2010.

It is interesting to investigate if the increased youth unemployment rates reflect the general bad economic situation – as shown by the total unemployment rates – or instead a peculiar negative trend concerning young people. Table A1 in Appendix shows for the EU-27 countries the ratios between the youth unemployment rates (15-24 years) and the total unemployment rates (all ages). A first observation is that – for EU as a whole – there was not in the last decade any improvement in the relative position of young people, despite the European Employment Strategy and Lisbon's Agenda goals. The ratio has been pretty close to 2 and it has been slightly deteriorating even before the crisis. In other words, young people face a double risk, compared to general population, of being unemployed. The real figure is probably higher,

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[12] He finally argues that although the youth unemployment rate provides crucial information on the labour market situation of young people, it is also important to look at what is happening to other indicators to gain some understanding of what are the likely consequences of a crisis.

because the "discouraged worker effect" is more likely for the young, who can opt to continue the education or simply to live with their families (avoiding to implement robust search efforts if unable to find a job).

Table 8 – Unemployment rate of young people (15-24 years)

	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
Belgium	**22.1**	**21**	16.7	16.8	17.7	**21.8**	**21.2**	**21.5**	**20.5**	**18.8**	**18**	**21.9**	**22.4**
Bulgaria			**33.7**	**38.8**	**37**	**28.2**	**25.8**	**22.3**	**19.5**	15.1	12.7	16.2	**23.2**
Czech Republic	12.8	17.7	**17.8**	17.3	16.9	**18.6**	**21**	**19.2**	**17.5**	10.7	9.9	16.6	18.3
Denmark	7.3	9.1	6.2	8.3	7.4	9.2	8.2	8.6	7.7	7.9	7.6	11.2	13.8
Germany	9.8	8.9	8.5	7.8	9.3	11.0	13.0	15.5	13.7	11.9	10.5	11.2	9.9
Estonia			**24.4**	**23.2**	17.6	**20.6**	**21.7**	15.9	12	10	12	**27.5**	**32.9**
Ireland	11.3	8.5	6.7	7.2	8.4	8.7	8.7	8.6	8.6	8.9	13.3	**24.2**	**27.5**
Greece	**29.9**	**31.5**	**29.1**	**28**	**26.8**	**26.8**	**26.9**	**26**	**25.2**	**22.9**	**22.1**	**25.8**	**32.9**
Spain	**33.1**	**27.3**	**24.3**	**23.2**	**24.2**	**24.6**	**23.9**	**19.7**	**17.9**	**18.2**	**24.6**	**37.8**	**41.6**
France	**25.1**	**22.9**	**19.6**	**18.9**	**19.3**	**19.2**	**20.6**	**21.1**	**22.1**	**19.6**	**19.1**	**22.8**	**22.5**
Italy	**29.9**	**28.7**	**27**	**24.1**	**23.1**	**23.7**	**23.5**	**23.9**	**21.7**	**20.3**	**21.2**	**25.4**	**27.8**
Cyprus			10.1	8.1	8.1	8.9	10.5	13	10.5	10.1	8.8	13.8	16.7
Latvia	**26.8**	**23.6**	**21.4**	**22.9**	**22**	18	18.1	13.6	12.2	10.7	13.1	**33.6**	**34.5**
Lithuania	**25.5**	**26.4**	**30.6**	**30.9**	**22.4**	**25.1**	**22.7**	15.7	9.8	8.2	13.4	**29.2**	**35.1**
Luxembourg	6.9	6.9	6.6	6.2	7	11.2	16.4	14.3	15.8	**15.6**	**17.3**	17.2	14.2
Hungary	15	12.6	12.4	11.3	12.7	13.4	15.5	**19.4**	**19.1**	**18**	**19.9**	**26.5**	**26.6**
Malta			13.7	**18.8**	17.1	17.2	16.8	16.2	16.5	13.8	11.9	14.4	13.0
Netherlands	7.6	6.8	5.7	4.5	5	6.3	8	8.2	6.6	5.9	5.3	6.6	8.7
Austria	6.4	5.4	5.3	5.8	6.7	8.1	9.7	10.3	9.1	8.7	8	10	8.8
Poland	**22.5**	**30.1**	**35.1**	**39.5**	**42.5**	**41.9**	**39.6**	**36.9**	**29.8**	**21.7**	**17.3**	**20.6**	**23.7**
Portugal	10.4	8.8	8.6	9.4	11.6	14.5	15.3	16.1	16.3	**16.6**	**16.4**	**20**	**22.4**
Romania		**20.4**	**20**	18.6	23.2	19.6	21.9	20.2	21.4	20.1	18.6	20.8	22.1
Slovenia	17.8	17.6	16.3	**17.8**	16.5	17.3	16.1	15.9	13.9	10.1	10.4	13.6	14.7
Slovakia	**25.1**	**33.8**	**36.9**	**39.2**	**37.7**	**33.4**	**33.1**	**30.1**	**26.6**	**20.3**	**19**	**27.3**	**33.6**
Finland	**23.5**	**21.4**	**21.4**	**19.8**	**21**	**21.8**	**20.7**	**20.1**	**18.7**	**16.5**	**16.5**	**21.5**	**21.4**
Sweden	16.1	12.3	10.5	14.9	16.3	17.3	**20.4**	**22.5**	**21.5**	**19.1**	**20**	**25**	**25.2**
United Kingdom	13.1	12.7	12.2	11.7	12	12.2	12.1	12.8	14	14.3	15	19.1	19.6
EU-27*	*18.4*	*17.8*	*18.3*	*17.3*	*17.9*	*18.1*	*18.6*	*18.6*	*17.3*	*15.5*	*15.5*	*19.8*	*20.8*

Note: *EU-25 for 1998 and 1999. In bold the values higher than the EU average.
Source: Eurostat on-line data base

If figures for individual countries are examined, the striking observation is that higher-than-average ratios can be found for the same countries with higher-than-average unemployment rates (the bold cells in Table 8 roughly correspond to the bold cells in Table A1). The clearest exceptions are provided by Spain and by the Baltic states, where the ratios are close to the European average (which is around 2) and the huge unemployment rates – that we have emphasized before – are also a consequence of the awful labour market situation. On the other hand, the labour market exhibits specific problems concerning young people – with youth/total ratios around or close to 3 – in Italy, Greece, some new EU member States, in the Belgium-Luxembourg-France zone and, rather surprisingly, also in Sweden as well as the UK.

Another ongoing line of research (Marelli, Signorelli and Tyrowicz, 2010) analyzed the short-term joint dynamics of productivity and employment during the economic down cycles in the EU economies and US over the past 20 years. Disentangling the shift in labour demand into a change of employment-

productivity schedule and a movement along it, this research focuses on the last 2-3 crises, highlighting the peculiarities of the last recession. In particular, during the last crisis the reduction in employment associated with an increase in labour productivity has been observed in the US economy, Hungary and, to a greater extent, Spain. As is well known, Denmark, Finland and the Netherlands are characterised by highly innovative labour market institutions, including the advanced flexicurity instruments (especially Denmark and the Netherlands) and additional, quasi-automatic stabilisers (as in the case of the Finish Employment Fund). In the past, these countries were able to maintain employment constant or even with a moderate growth, subsequent to the business cycle peak. The exceptional scale of employment adjustment in Finland – but also in Denmark – seems to suggest that the current shock experienced by these economies has been indeed strong and clearly raised the question of the relative importance of internal flexibility (working time adjustment and wage flexibility at firm level) with respect to external flexibility (EPL, hiring and firing rules). In Germany, France and Italy prevailed the maintenance of employment (with working time reductions), even at the expense of productivity. Another group consists of countries where adverse huge employment adjustment was accompanied by a decrease in productivity. This group comprises the three Baltic countries – the most heavily hit EU economies. In fact, Estonia, Latvia and Lithuania experienced a two-digit reduction in GDP, which is by far the largest crisis since the onset of the economic transition; as a consequence of fairly flexible labour markets, the impact on employment has also been considerable.

A general result[13] is that during the last crisis, there was in most countries (both advanced and emerging) a much bigger (negative) impact on productivity (per worker), suggesting that labour hoarding and internal flexibility have been much higher (on average) during the last recession.

4. The Sub-National Labour Market Impact of the Crisis in EU-27 and Russia
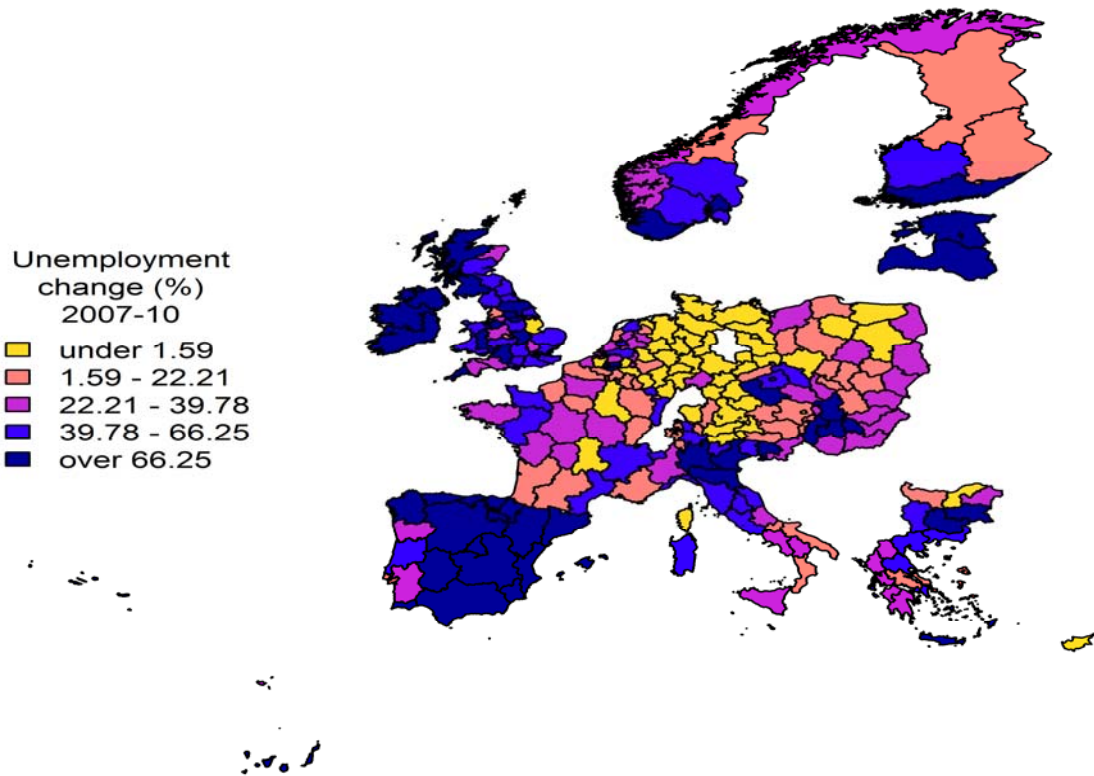
In this section the regional (sub-national) impact of the crisis is investigated with reference to EU-27 countries and Russia. The regional dimension of unemployment has been analysed since the work of Blanchard and Katz (1992). Regional unemployment differentials are wide and persistent, and low unemployment regions tend to cluster close to each other. Moreover, such differentials show a clear and persistent core-periphery pattern (European Commission, 2002), since high and persistent unemployment is concentrated in peripheral regions. In the European context, especially in some countries (like Italy), persistent regional differences exist (e.g. Perugini and Signorelli 2004, 2007 and 2010a). In addition, regional labour market impacts of the last crisis have been heterogeneous (Figure 3). They have been normally deeper in areas specialized in construction (which, in the previous decade, was one of the most dynamic sectors, at least in some countries) and also – during the general fall of production of 2009 – in many manufacturing activities.

Spatial linkages between regions have been shown to be important in the past in affecting the performance of regional economic systems and labour markets. Many studies have discussed the importance

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[13] Also the IMF (2009) investigates the different employment adjustments and labour hoarding phenomena with respect to previous crises.

of such links, both from a theoretical viewpoint (e.g., in a neoclassical, factor-mobility perspective, or within a new economic geography framework) and from an empirical viewpoint, employing varying econometric techniques, such as (spatial) dynamic panel or spatial VAR models.

Figure 3 - Unemployment change in European regions during last crisis (2007 vs 2010)

Source: Marelli, Patuelli and Signorelli (2011).

In particular, the existence, persistence and evolution of the regional differences in the labour market performance have been largely studied, especially in recent literature (e.g., Perugini and Signorelli, 2010a) However, the growing literature investigating the labour market impact of the last crisis regarded - until now - especially the national level, while the regional analyses have been extremely rare (e.g., Demidova and Signorelli 2011a and 2011b). In particular, in Marelli, Patuelli and Signorelli (2011) the regional labour market impact of last crisis is assessed in the European context by taking into account of the potential effects of (i) the previous regional (un)employment dynamics, (ii) the sectoral composition and (iii) some structural characteristics of the labour markets. Some descriptive statistics for the 271 NUTS-2 regions of EU-27 highlighted that the recent regional changes in (un)employment tend to (partly) cluster on a national base, but many exceptions clearly emerged. In addition, while the disparity for all EU-27 regions has decreased both in the years preceding the crisis (2004–08) and in the crisis's year (2009), the coefficient of variation (CV) increased in many countries in the years preceding the crisis, showing the predominance of between-country reduction in disparities. On the contrary, the fall of CV in the real crisis year (2009) is much more generalized: the reason is that during the crisis all regions suffered, but in particular the previous best-

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performing regions[14]. Applying appropriate diagnostic tests to our basic OLS model, Marelli, Patuelli and Signorelli (2011) found the presence of either unobserved and spatially correlated relevant explanatory variables or significant spatial spillovers. By taking spatial autocorrelation into account, a 'trend reversal', that is, an inverse relation between the pre- and post-crisis labour market performance, clearly emerged, with highly significant parameters. In addition, sectoral specialization and some characteristics of the labour market (such as long-term unemployment or reliance on temporary workers) seem to have conditioned the regional reactions to the crisis. A further investigation – based on GWR-spatial filtering techniques – confirmed the 'trend reversal' for unemployment model, while a 'trend continuation' emerged (on average) for employment. The results confirm the need to appropriately investigate the complexity and heterogeneity of regional labour market dynamics and to take into account spatial linkages.

A last line of research (Demidova and Signorelli 2011a and 2011b) investigates sub-national level for Russia and the "young segment", considering also the impact of the 1998 and 2008 crises. First of all, Kapelyushnikov et al. (2011), in order to explain the high stability of the aggregate employment (and unemployment) level over time, established a link between inefficient enforcement and the emergence of compensating institutional arrangements on the one side and the unusually broad implementation of flexible working time and flexible pay on the other side. In fact, a characteristic of the Russian labour market is that employment (and unemployment) has always been relatively stable despite a sequence of relevant economic shocks. As a consequence of this persisting characteristic, since the early stage of transition, some authors start talking about "the Russian way" (Layard and Richter, 1995). Kapelyushnikov et al. (2011) find a key explanation on the prevalence of flexible working time and flexible pay that make possible to offset pressures on the labour market (during a crisis) without a drastic readjustment of employment. The authors argue that flexible working hours and pay are not the prerogatives of the Russian labour market; what distinguish Russia is the persistence, depth and scale of these phenomena and their institutional embeddedness. In other terms, Kapelyushnikov et al. (2011) argue that the current model of labour relations in Russia is a combination of very stringent formal rules embodied in the Labour Code and the great variety of informal arrangements that make it feasible to 'soften' these rules or circumvent them altogether. So, external shocks are absorbed by means of high "internal flexibility" (shortening working hours) and wage flexibility. The key importance of "internal flexibility" during a crisis has been already stressed in Demidova and Signorelli (2011a). It should be noted that also according to previous studies, law implementation has been extremely flawed in Russia (e.g. ILO, 1997; Feige, 1997; Vishnevskaya and Kapelyushnikov, 2007), favouring the creation of a vacuum of formal regulations and the diffusion of informal rules. Preliminary evidences on the impact of last crisis seem to partly confirm the high stability of employment (and unemployment) level(s).

Considering 75 Russian regions[15] for the period 2000-2009, Demidova and Signorelli (2011b) estimated the determinants of regional youth unemployment rate and the ratio of youth and total regional unemployment rate, using a very large set of regional variables. In the following Tables 9 and Table 10 some

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[14] In other terms, a recent negative correlation between change in unemployment rate and CV emerged.
[15] For some of the 82 Russian regions there are lacks of data and, so, only 75 regions have been considered.

key descriptive evidences are presented. It is confirmed a ratio of youth and total unemployment rates higher than one (1.47 in 2009) and a wide range in the regional youth unemployment rates (from a minimum of 4.2% to a maximum of 27.8%, in 2009).

Table 9 - Comparison of Youth and Total Unemployment Rate

	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009
Mean for Total unemployment rate	11.77	10.02	8.85	9.29	8.85	8.19	7.75	6.7	7.31	9.16
Mean for Ratio of youth and total unemployment rate	1.35	1.37	1.34	1.35	1.19	1.38	1.43	1.45	1.41	1.47

Source: Signorelli and Demidova (2011b) elaboration on ROSSTAT data

Table 10 - Descriptive Statistics for Youth Unemployment Rate

	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009
Mean	15.84	13.53	11.68	12.49	10.5	11.1	10.99	9.48	10.06	13.18
Median	14.93	12.67	10.58	12.46	9.61	9.88	10.37	8.66	9.35	12.74
Min	4.9	3.42	2.59	1.68	2.5	1.4	2.44	2.06	1.26	4.2
Max	33.71	31.85	26.48	31.91	26.46	30.29	29.74	27.56	24.91	27.86
Coef.Var.	0.36	0.36	0.38	0.42	0.48	0.44	0.48	0.52	0.43	0.27

Source: Demidova and Signorelli (2011b) elaboration on ROSSTAT data

Descriptive statistics and lowess regression highlight a strong linear positive relationship of youth and total unemployment rate.

In addition, as suggested by Figure 4 and demonstrated in Table 11 (Moran's index for 2000 - 2009), the unemployment rate (both total and youth) of Russian regions present a clear spatial correlation.

Table 11 - Dynamics of Moran's Spatial Correlation Index for youth unemployment

2000	2001	2002	2003	2004	2005	2006	2007	2008	2009
0.306***	0.306***	0.249***	0.307***	0.41***	0.201**	0.332 ***	0.431***	0.372***	0.318***

Source: Demidova and Signorelli (2011b) elaboration on ROSSTAT data
Note: *** - significant at 1%, ** - significant at 5%, * - significant at 10%
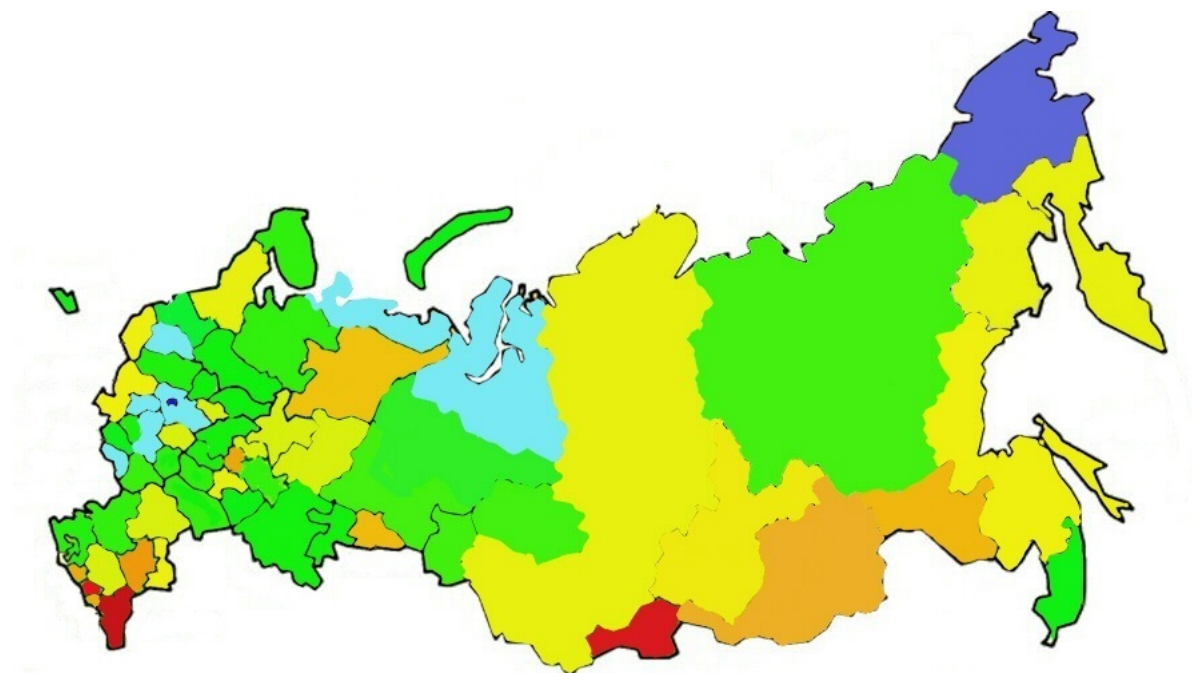
In particular, the results in the Table 11 suggest a positive (and persisting over time) spatial correlation in the "youth unemployment rates" for the bordering regions and negative distance spatial correlation[16].

According to Demidova and Signorelli (2011a and 2011b), the last crisis, differently from 1998 crisis, resulted statistically significant in its impact on youth unemployment rate (and the ratio youth/total) but the size of the impact resulted quite low. In addition, many and many variables showed a clearly significant impact. Youth unemployment rates are persistently higher than total (or adult) unemployment rates and a clearcut spatial dependence (negative for distance and positive for bordering regions) emerged. The first point confirm the importance of the topic (also in "good times" and not only during and after a crisis) and also suggest that if potential labour market weaknesses are left free to unfold, the price to be paid will be high for a long period of time; the other side of the coin is that policy efforts aimed at increasing labour market performance, if successful, may be able to produce durable outcomes, and this time pattern of

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[16] These results suggest the inclusion of spatial lags of dependent variable in all the models. Considering that these variables are endogenous, Demidova and Signorelli (2011b) adopted the Arellano-Bond Dynamic Panel GMM estimators.

benefits should be carefully considered when assessing the present costs of policy interventions. The second point (spatial autocorrelation), indicates that supra-regional aspects do matter in shaping labour market performance and that policy design should carefully consider the true spatial extent and interactions which take place at regional level.

Figure 4 - Youth unemployment in Russian regions (2009)

Source: Demidova and Signorelli (2011b) elaboration on ROSSTAT data
Note: Blue color corresponds the level of the youthl unemployment less 5%, light blue – 5-10%, green – 10-13%, yellow – 13-15%, orange – 15-20%, red – more than 20%.

In particular, it should be especially noted that (i) a higher level of regional economic development is able to improve the relative situation in terms of youth unemployment (and its ratio with total unemployment rate); (ii) demographic, migration and family conditions can be important factor affecting both regional youth unemployment rate and its ratio with total unemployment rate; (iii) regional openness and export/import can significantly affect youth unemployment (and its ratio with total unemployment rate).

So, both the EU-27 context and the Russian case confirm the high complexity and heterogeneity of the impact of last financial (and real) crisis on the regional (sub-national) labour markets.

5. Final Remarks and Policy Implications

A first clear result evidenced in this paper - with statistical and econometric evidences based on past crises - is that the impact of financial crises on labour market performance is normally considerable and (partly) persistent and - in addition - it goes beyond "Okun's Law" and the role of different "institutional framework", due to the increase of systemic uncertainty. In fact, during financial crises the degree of uncertainty normally increases and it can become a further channel of negative impact on labour demand. In

other terms, the macroeconomic and social costs of financial crises - especially in terms of labour market performance - go well beyond their impact passing through GDP decline. So, a first key policy implication is that the policymakers should be well aware of all the consequences of financial crises, not only for their direct effects on labour markets (passing through the output changes), but also for a probable additional effect due to the increase in the degree of systemic uncertainty.

It should be highlighted that - differently from the huge inadequacy of the macroeconomic policies in the 1929 financial crisis - concerning the last financial crisis (started in US in 2007) and Great Recession, macro-economic policies – including easy monetary policies and packages of "fiscal stimuli" (e.g. the Obama package in the US) – have been fundamental, in 2008-09, in reducing the degree of uncertainty and limiting the labour market impact. However, uncertainty is still playing a key role in some world regions, also because recovery has been feeble (except for China, India and other emerging countries). In Europe, additional uncertainty elements are caused by the sovereign debt crises and, from this point of view, measures to increase the credibility of macroeconomic policies are strongly needed.

However, notwithstanding the above macroeconomic countercyclical policies for addressing the last financial crisis and recession, in most regions and countries of the world, employment growth has strongly decelerated or declined (with increases in working poverty) and unemployment has generally risen. The impact was deeper on the weakest sections of the labour market[17], especially young people (who are the first segment generally hurt because of the less stable jobs and, especially for the new entrants, as a consequence of "labour hoarding" phenomena regarding adult workers in a situation of low labour demand), with a widespread increase in vulnerable employment as well. The worst effects of the crisis are probably felt in 2009-2011 because of the mentioned lags between the financial crisis, the initial real effects (on production and income) and the subsequent effects on labour demand (that in the short run are less sizeable due to labour hoarding practices); however, the negative impact on unemployment is likely to (partially) further persist over time, in several countries, because of hysteresis effects and sovereign debt crisis and difficulties. This is particularly manifest in developed countries (especially Eurozone), while some developing countries suffer much more for some persistence in terms of working poverty.

In developed countries public policies in response to the crisis have generally followed three key approaches: (i) very active monetary policies for addressing the increase and the instability of demand for money (liquidity); (ii) significant fiscal stimuli to sustain, through government expenditures, consumption, aggregate demand and production; (iii) "passive" labour market policies, to sustain the income of the unemployed (or workers risking to be fired). The first policy was largely appropriate and realized with a good international coordination. As to the second policy approach, the timing and characteristics of the exit strategies will be crucial, although a rapid reduction in public deficits is required by the fiscal stance of many EU countries (in fact, the risk concerning sovereign debts significantly increased - since early 2010 - in several EU countries). As for the third policy strategy, more effective "active" labour policies need to better

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[17] It should be highlighted that women have mostly suffered by a fall in participation rates (that in some countries were quite low even before the crisis). A fight against the different forms of women segregation and discrimination – i.e. all forms of gender gaps – but especially a support for women work (also through appropriate public services) is what is needed to counteract the long-run effects of the crisis.

accompany the "passive" ones for reducing the risk of persistent increase in (structural) unemployment. Appropriate "active" policies are even more required, especially in countries where youth performance was awful even before the crisis[18]. Apart from reforms in the labour market institutions and industrial relations system aiming – in the context of flexible labour markets and cooperative industrial relations – at ensuring less uncertain and unstable "employment paths" for young people and overcoming the "dualism" in labour markets (that is typical of some countries, especially in Southern Europe), more specific "structural" reforms are needed in other spheres. In particular, better STWT institutions, more efficient placement services, more adequate training activities, etc. are absolutely required; as for the "educational system", in some countries, a gradual shift from a "sequential and rigid" system towards the "dual and flexible" system seems appropriate. Otherwise the "NEET generation" will continue to expand, with tremendous economic and social consequences. However, as highlighted by the Russian case, a quite general but important policy implication is that it does not exists a simple and single policy intervention able to significantly improve the youth labour market performance (in absolute and relative terms), but it is necessary a complex and large set of macro and micro economic, institutional and labour policies able to favour a sustainable economic and social development favorable for young people.

According to evidences and results presented in this paper, the European countries that have been the most able to cope with the labour market problems, in general, and to keep under control the rise of youth unemployment, in particular, are localised in central Europe: Germany, Austria and the Netherlands. In particular, the German case, also favored by the "dual" educational system (with a key role of apprenticeship contract), high R&D investment and a competitive manufacturing sector, shows how it is possible - in a cooperative and participative system of industrial relations - to benefit from internal flexibility measures (managing working time) and also wage flexibility, to safeguard both employment levels (during recessions) and human capital investments, thus creating some of the conditions for a better economic recovery. In addition, the analysis on jointly employment-productivity dynamics highlighted that "external flexibility" measures with "internal flexibility" practices offers greater chances for swift recovery of satisfactory labour market performances without penalizing the productivity dynamics.

Notwithstanding the previous general results, it is also crucial to careful design instruments in response to the actually observed processes, suited to the structural and institutional (initial) characteristics of each country and region. In this respect the regional (sub-national) investigations presented in this paper were particularly important - not only because of the European multilevel policy design that often decentralized some key labour market policies - but also for evidencing the role of spatial correlations and time persistency in addition to the very large set of variables that affect the regional labour market performance.

In conclusion it should be recalled that - especially in Europe - the degree of systemic uncertainty is still high because recovery – after the Great Recession – has been feeble so far, with the addition of uncertainty elements caused by the sovereign debt crises. So, especially for the European context, the different levels of

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[18] In fact, as for young people, this paper highlighted that the youth unemployment problem is a long-lasting issue, since youth UR have been persistently higher than total UR – normally at least double and three times higher in some EU countries (and they probably underestimate the real figures because of "discouraged worker" and other effects) – even in "normal" economic times, e.g. in the last decade before the global crisis.

government have the difficult task to act for (i) increasing the credibility of sound macroeconomic policies – thus lessening uncertainty –, without weakening the economic growth; (ii) improve the potential and actual GDP growth by adopting structural policies and institutional innovations, and (iii) reducing structural unemployment with specific active labour market policies implemented at the regional levels. The realization of the above objectives - really urgent for Europe and the survival of Eurozone - can be favored by a well-designed European financial instrument ("Eurobonds") together with more effective European constraints on the national public finance accounts.

Finally, the last crisis highlighted the need for a better "regulatory system" and governance at world level, in order to reduce the risk of future financial crises, with the related huge economic and social costs, due to both economic recession and higher systemic uncertainty.

References

Antonopoulos R. (2009), "The Current Economic and Financial Crisis: A Gender Perspective", Working paper, 562, United Nation Development Program.

Arpaia A. and N. Curci (2010), "EU Labour Market Behaviour During the Great Recession", *European Economy*, Economic Papers 405.

Bartolucci F., Choudhry M. T., Marelli E. and Signorelli M. (2011), "Financial Crises and Unemployment: Beyond the Okun's Law", WP presented at Sixteenth World Congress of the International Economic Association, (Tsinghua University, Beijing, China, July 4-8 2011).

Bassanini A. and Duval R. (2006), "The Determinants of Unemployment across OECD Countries: Reassessing the Role of Policies and Institutions", OECD Economic Studies, 42, 7–86.

Beegle K., Frankenberg E. and Thomas D. (1999), "Measuring Change in Indonesia. Labor and Population Program", Working Paper Series, 99–07, RAND, Santa Monica, CA.

Bernanke B. (1983), "Irreversibility, Uncertainty and Cyclical Investment", *Quarterly Journal of Economics*, 85-106.

Bernanke B. S. (2000), *Essays on the Great Depression*, Princeton University Press, Princeton.

Blanchard O. and Wolfers J. (2000), "The Role of Shocks and Institutions in the Rise of European Unemployment: The Aggregate Evidence", *The Economic Journal*, 110, pp. 1–33.

Blanchard O.J. and L.F. Katz (1992), "Regional evolutions", *Brooking Papers on Economic Activities*, 1: 1–75.

Bordo M. (2006), "Sudden Stops, Financial Crises, and Original Sin in Emerging Countries: Déjà Vu?", *NBER Working Paper*, 12393.

Boyd J.H., Kwak S. and Smith B. (2005), "The Real Output Losses Associated with Modern Banking Crises", *Journal of Money, Credit and Banking*, 37, 6, 977–99.

Cerra V. and Saxena S.C. (2008), "Growth Dynamics: The Myth of Economic Recovery", *American Economic Review*, 98, n. 1.

Choudhry M.T., Marelli E. and Signorelli M. (2010a), "Financial Crises and Labour Market Performance", *International Atlantic Economic Conference*, Prague, 24-27 March 2010.

Choudhry M. T. , Marelli E. and Signorelli M. (2010b), "Financial Crises and Unemployment Dynamics: the Gender Impact" WP presented at *EACES Conference* "Comparing Responses to Global Instability", University of Tartu, Estonia, 26-28 August 2010.

Choudhry M. T., Marelli E. and Signorelli M. (2011), "Youth Unemployment and the Impact of Financial Crises", *International Journal of Manpower*, forthcoming.

Demidova O. and Signorelli M., (2011a), "The Impact of Crises on Youth Unemployment of Russian Regions: An Empirical Analyses", *China-USA Business Review*, vol. 10, n. 7, 491-507.

Demidova O., Signorelli M. (2011b), "Determinants of Youth Unemployment in Russian Regions", WP presented at EACES-AISRe Conference, Turin, September 15-17.

Dixit A. and Pindyck R. (1993), *Investment under Uncertainty*, Princeton University Press, Princeton.

European Commission (2009a), *Economic Forecast*, November, Brussels.

European Commission (2009b), *Employment in Europe 2009*, November, Brussels.

Eurostat (several years), online database.

Feige, E.L. (1997), "Underground activity and institutional change: productive, protective and predatory behaviour in transition economies", in Nelson, J. M., Tilly, C., Walker, L. (Eds), *Transforming Post-Communist Political Economies*, National Academy Press, Washington, D.C, pp.21-33.

Friedman M. and Schwartz A. J. (1963), *A Monetary History of the United States, 1867-1960*, Princeton University Press, Princeton.

Furceri D. and Mourougane A. (2009), "The Effect of Financial Crises on Potential Output: New Empirical Evidence from OECD countries", OECD Economics Department Working Paper, 699, Paris.

Genda Y., Pazienza M. G. and Signorelli M. (2001), "Labour Market Performance and Job Creation", in *Comparing Economic Systems: Italy and Japan*, A. Boltho, A. Vercelli e H. Yoshikawa (eds.), Palgrave/Macmillan, London and New York.

Holscher J., Marelli E. and Signorelli M. (2010), "China and India in the Global Economy", *Economic Systems*, n. 3.

Honohan P. and Laeven, L.A. (2005), *Systemic Financial Distress: Containment and Resolution*, Cambridge University Press, Cambridge (UK).

ILO (2009a), *Global Employment Trends for Women*, Geneva, March.

ILO (2009b), "KILM9 - Youth unemployment" in *Key Indicators of the Labour Market (KILM)*, Sixth Edition, Geneva, September.

ILO (2010a), *Global Employment Trends*, International Labour Organization, Geneva, January.

ILO (2010b), *Global Employment Trends for Youth. Special issue on the impact of global economic crisis on youth*, International Labour Organization, Geneva, August.

IMF (2009), *World Economic Outlook. Sustaining the Recovery*, Washington, October.

IMF (2010), *World Economic Outlook. Rebalancing Growth*, Washington, April.

Kapelyushnikov R. (2011b) How to measure EPL stringency for Russia: a comment : Working paper WP3/2011/02 [Text] / R. I. Kapelyushnikov ; Higher School of Economics. — Moscow: Publishing House of the Higher School of Economics, 2011. — 20 p. — 150 copies. (In Russian)

Kapelyushnikov R., Kuznetsov A. and Kuznetsova O. (2011), "Market Institutions and the Russian Labour Market Performance", Paper proposed for International Workshop, 10-11 November, Perugia.

Keynes J.M. (1936), *The General Theory of Employment, Interest and Money*, Macmillan, London.

Kinght F.H. (1921), *Risk, Uncertainty and Profit*, Houghton and Mifflin, Boston.

Laeven L.A. and Valencia F. (2008), "Systemic Banking Crises: A New Database", *IMF Working Paper*, 224, Washington, DC.

Marelli E. and Signorelli M. (2010a), "Employment, Productivity and Models of Growth in the EU", *International Journal of Manpower*, v. 31, n. 7, 732-54.

Marelli E. and M. Signorelli (2010b), "Institutional, nominal and real convergence in Europe", *Banks and Bank Systems*, v. 5, n. 2 (cont.), 41-57.

Marelli E. and M. Signorelli (2010c), "Transition, Regional Features, Growth and Labour Market Dynamics", in F.E. Caroleo and F. Pastore (eds.), *The Labour Market Impact of the EU Enlargement*, Physica-Verlag, Berlin Heidelberg, pp. 99-147.

Marelli E. and Signorelli M. (eds.) (2010d), *Economic Growth and Structural Features of Transition*, Palgrave Macmillan, London and New York.

Marelli E. and Signorelli M. (2011a), "Youth Unemployment Before and After the Crisis", in *Productivity, Investment in Human Capital and the Challenge of Youth Employment: Comparative Developments and Global Responses*, M. Tiraboschi (Ed.), Cambridge Scholars, Cambridge.

Marelli E. and Signorelli M. (2011b), "China and India: Openness, Trade and Effects on Economic Growth", *European Journal of Comparative Economics*, 1.

Marelli E., Patuelli R. and Signorelli m. (2011) "Regional Unemployment in the EU before and after the Global Crisis", paper to be presented at EACES-AISRe Conference, Turin, September 15-17.

Marelli E., Signorelli M. and Tyrowicz J. (2010), "Crises and Joint Employment-Productivity Dynamics: A Comparative Perspective for European Countries", *National Bank of Poland Working Paper Series*, Warsaw.

Nickell S., Nunziata L. and Ochel W. (2005), "Unemployment in the OECD since the 1960s: What Do We Know?", *The Economic Journal*, 115, 500, 1–27.

O'Higgins N. (2010), "The impact of the economic and financial crisis on youth employment: Measures for labour market recovery in the European Union, Canada and the United States", *Employment Working Paper* No. 70, ILO, Geneva.

O'Higgins, N. (2011a). "Italy and the global financial and economic crisis," forthcoming in Vaughan-Whitehead, D. (ed.) *Inequality in the World of Work: The Effects of the Crisis* (Cheltenham, Edward Elgar).

O'Higgins N. (2011b), "The Impact of the Economic and Financial Crisis and the Policy Response on Youth Employment in the European Union", Paper proposed for International Workshop Perugia, November 10-11.

OECD (1998), *Maintaining Prosperity in an Ageing Society*, Paris.

OECD (2008), *Employment Outlook*, Paris.

OECD (2009), *Employment Outlook*, Paris.

OECD (2009), *Tackling the Jobs Crisis. Helping Youth to Get a Firm Foothold in the Labour Market*, Paris.

Okun A.M. (1962), "Potential GNP: Its Measurement and Significance," in *Proceedings of the Business and Economic Statistics Section*, American Statistical Association, Washington, D.C., pp. 98-103.

Overman H. and D. Puga (2002) "Unemployment Clusters across European Regions and Countries," *Economic Policy*, 34, 117-47.

Perugini C. and Signorelli M. (2004): "Employment Performance and Convergence in the European Countries and Regions", *European Journal of Comparative Economics*, n. 2.

Perugini C. and Signorelli M. (2007), "Labour Market Performance Differentials and Dynamics in EU-15 Countries and Regions", *European Journal of Comparative Economics*, n. 2.

Perugini C. and Signorelli M. (2010a), "Youth Labour Market Performance in European Regions", *Economic Change and Restructuring*, n. 2, 151-185.

Perugini C. and Signorelli M. (2010b), "Youth Unemployment in Transition Countries and Regions" in E. Marelli and M. Signorelli (eds.), op. cit.

Pindyck R. (1991), "Irreversibility, Uncertainty and Investment", *Journal of Economic Literature*, September.

Quintini G. and Manfredi T. (2009), "Going Separate Ways? School-to-Work Transitions in the United States and Europe", *OECD Social, Employment and Migration Working Paper*, n. 90, Paris.

Reinhart C. and Rogoff K. (2008a), "This Time Is Different: A Panoramic View of Eight Centuries of Financial Crises", *NBER Working Paper*, 13882.

Reinhart C. and Rogoff K. (2008b), "Banking Crises: An Equal Opportunity Menace", *NBER Working Paper*, 14587.

Reinhart C. and Rogoff K. (2009), "The Aftermath of Financial Crises", *NBER Working Paper*, n. 14656.

Romer C.(1990), "The Great Crash and the onset of the Great Depression", *Quarterly Journal of Economics*", 105, 597-624.

Ryan P. (2001), "The school-to-work transition: a cross-national perspective", *Journal of Economic Literature* 39(1): 34-92.

Scarpetta S., Sonnet A. and Manfredi T. (2010), "Rising Youth Unemployment During the Crisis: How to Prevent negative Long-Term Consequences on a Generation?", *OECD Social, Employment and Migration Working Papers*, n. 6, Paris, April.

Sciulli D. and Signorelli M. (2011), "University-to-Work Transitions: An Empirical Analysis on Perugia Graduates", *European Journal of Higher Education*, n. 1.

Signorelli M. (1997), "Uncertainty. Flexibility Gap and Labour Demand in the Italian Economy", *Labour*, 11, 1, 141-175.

Signorelli M. (2005), "Growth and Employment: Comparative Performance, Convergences and Co-movements", *Economic Department Working Paper*, n.8, University of Perugia.

Signorelli M. (2008), "Employment and Unemployment in a Multilevel Regional Perspective", in M. Petricioli (ed.), *Mediterranean Europe*, P.I.E. Peter Lang, Bruxelles.

Sperl L. (2009), "The Crisis and its Consequences for Women", Development and Transition, 13, United Nation Programme and London School of Economics and Political Science.

Vercelli A. (2002), "Uncertainty, Rationality and Learning: A Keynesian Perspective", in Dow S. C. and Hillard J. (edited by), *Keynes, Uncertainty and the Global Economy. Beyond Keynes*, Volume Two, Edward Elgar, Cheltenham (UK) and Northampton, MA (USA).

Verick S. (2009), "Who Is Hit Hardest during a Financial Crisis? The Vulnerability of Young Men and Women to Unemployment in an Economic Downturn", *IZA Discussion Papers*, n. 4359, August.

Vishnevskaya, N., and Kapelyushnikov, R. (2007), "Infrorsment trudovogo zakonodastel'stva v Rossii", Working paper No.3, Working paper series "Problems of Labour Market", Moscow State University-Higher School of Economics, Moscow.

World Bank (2007), *World Development Report 2007: Development and the Next Generation*, Washington (DC).

World Bank (2008), *Labor Market Programs that Make a Difference in a Time of Crisis,* HDNSP.

World Bank (2010), *Global Economic Prospects. 2010 Foresees Long Road to Economic Recovery*,Washington.

Appendix

Table A1 – Ratios of youth unemployment rate vs. total unemployment rate

	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009
Belgium	**2.4**	**2.5**	**2.4**	**2.5**	**2.4**	**2.7**	**2.5**	**2.5**	**2.5**	**2.5**	**2.6**	**2.8**
Bulgaria			**2.1**	2.0	2.0	**2.1**	**2.1**	**2.2**	**2.2**	2.2	**2.3**	**2.4**
Czech Republic	2.0	**2.1**	2.0	**2.2**	**2.3**	**2.4**	**2.5**	**2.4**	**2.4**	2.0	**2.3**	**2.5**
Denmark	1.5	1.8	1.4	1.8	1.6	1.7	1.5	1.8	2.0	2.1	**2.3**	1.9
Germany	1.0	1.0	1.0	1.0	1.1	1.1	1.2	1.3	1.3	1.3	1.4	1.4
Estonia			1.8	1.8	1.7	**2.1**	**2.2**	2.0	2.0	2.1	2.2	2.0
Ireland	1.5	1.5	1.6	1.8	1.9	1.9	1.9	2.0	1.9	1.9	2.1	2.1
Greece	**2.8**	**2.6**	**2.6**	**2.6**	**2.6**	**2.8**	**2.6**	**2.6**	**2.8**	**2.8**	**2.9**	**2.7**
Spain	**2.2**	**2.2**	**2.2**	**2.3**	**2.2**	**2.2**	**2.3**	2.1	2.1	2.2	2.2	2.1
France	**2.3**	**2.2**	**2.2**	**2.3**	**2.2**	**2.1**	**2.2**	**2.3**	**2.4**	**2.3**	**2.4**	**2.5**
Italy	**2.6**	**2.6**	**2.7**	**2.6**	**2.7**	**2.8**	**2.9**	**3.1**	**3.2**	**3.3**	**3.2**	**3.2**
Cyprus			**2.1**	**2.1**	**2.3**	**2.2**	**2.2**	**2.5**	**2.3**	**2.5**	**2.4**	**2.6**
Latvia	1.9	1.7	1.6	1.8	1.8	1.7	1.7	1.5	1.8	1.8	1.7	2.0
Lithuania	1.9	1.9	1.9	1.9	1.7	2.0	2.0	1.9	1.8	1.9	**2.3**	2.1
Luxembourg	**2.6**	**2.9**	**3.0**	**3.3**	**2.7**	**2.9**	**3.3**	**3.1**	**3.4**	**3.7**	**3.5**	**3.2**
Hungary	1.8	1.8	1.9	2.0	**2.2**	**2.3**	**2.5**	**2.7**	**2.5**	**2.4**	**2.6**	**2.7**
Malta			2.0	**2.5**	**2.3**	**2.3**	**2.3**	**2.3**	**2.3**	2.2	2.0	2.1
Netherlands	2.0	**2.1**	2.0	2.0	1.8	1.7	1.7	1.7	1.7	1.8	1.9	1.9
Austria	1.4	1.4	1.5	1.6	1.6	1.9	2.0	2.0	1.9	2.0	2.1	2.1
Poland	**2.2**	**2.2**	**2.2**	**2.2**	**2.1**	**2.1**	**2.1**	2.1	2.1	**2.3**	**2.4**	**2.5**
Portugal	**2.1**	2.0	**2.2**	**2.3**	**2.3**	**2.3**	**2.3**	2.1	2.1	2.0	2.1	2.1
Romania		**2.9**	**2.7**	**2.7**	**2.7**	**2.8**	**2.7**	**2.8**	**2.9**	**3.1**	**3.2**	**3.0**
Slovenia	**2.4**	**2.4**	**2.4**	**2.9**	**2.6**	**2.6**	**2.6**	**2.4**	**2.3**	2.1	**2.4**	**2.3**
Slovakia	2.0	**2.1**	2.0	2.0	2.0	1.9	1.8	1.8	2.0	1.8	2.0	**2.3**
Finland	**2.1**	**2.1**	**2.2**	**2.2**	**2.3**	**2.4**	**2.4**	**2.4**	**2.4**	**2.4**	**2.6**	**2.6**
Sweden	2.0	1.8	1.9	**2.6**	**2.7**	**2.6**	**2.8**	**3.0**	**3.1**	**3.1**	**3.2**	**3.0**
United Kingdom	**2.1**	**2.2**	**2.3**	**2.3**	**2.4**	**2.4**	**2.6**	**2.7**	**2.6**	**2.7**	**2.7**	**2.5**
EU (27 countries)	*2.0*	*2.0*	*2.0*	*2.0*	*2.0*	*2.0*	*2.0*	*2.1*	*2.1*	*2.2*	*2.2*	*2.2*

Source: Eurostat on-line data base

Note: *EU-25 for 1998 and 1999. In bold the ratios higher than the EU average.