LUISS Guido Carli
LIBERA UNIVERSITA' INTERNAZIONALE DEGLI STUDI SOCIALI

Dipartimento di Economia e Finanza

Cattedra di Economics and Business major in Business Management

Labour Market Convergence or Divergence across the Euro Area.

RELATORE: Prof. Giovanna Vallanti

CANDIDATO: Lorenzo Lupini

MATRICOLA: 159651

ANNO ACCADEMICO: 2012/2013

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To my family and all my friends

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1. Introduction

The aim of this thesis is to find an empirical evidence whether, in the last twenty years, there has been a process of convergence or divergence across the European Union's labour market and link such findings with labour market institutions' changes and developments. Since the majority of European State, namely 17, has adopted the Euro as a common currency, monetary coordination implies also policy coordination, especially in the field of the labour market. We will try to explain how the monetary union changed the European labour market and if promoted convergence, both in economic and political terms. It is beyond any doubt that the financial and sovereign debt crisis deeply influenced the process of convergence or divergence, so we will try to estimate such effect. The first part of the thesis is aimed to empirically quantify the process of convergence or divergence mainly using three variables: the unemployment rate, the employment rate and the participation rate. The second part is focused on the institutions that shape the labour market. We will focus on employment protection legislation, unemployment benefits and active labour market policies. We will try to explain how institutions can influence labour market's efficiency.

The idea of an unified Europe can be dated back to the 50s. After the great devastation suffered after the Second World War, the need of a unified and peaceful Europe was widespread, but such a beautiful idea had poor implementation. There were attempts of integration, such as the Snake after the collapse of Bretton Wood agreements, but the implementation was poor. After thirty years Jacques Delors took a stake and proposed a unified Europe in the monetary field. Many troubles came, but in 1992 the Maastricht Treaty, which stated the criteria to be followed in order to

enter in the monetary union, was ratified by twelve member state and the Euro Area became real the first of March 2002, when the Euro notes and coins were introduced. It is beyond any doubt that the Maastricht criteria and the monetary union profoundly shaped both the labour market across Europe and the national labour market institutions. The never ending debate about whether the Eurozone is an optimum currency area is strictly linked with the matter we are going to analyze. In fact one of the criterion used to establish whether a certain zone is an optimum currency area is the Mundell one. The Mundell criterion states that labour mobility across the region is vital; this include the possibility of travelling without restriction, the lack of emotional and cultural barriers as well as institutional ones. Clearly, under this point of view, the Eurozone is not an optimum currency area since labour market institution are deeply different across the region and emotional and cultural barriers do exist. It is worth to take into consideration this fact in order to explain the process of convergence or divergence.

The variables we will take into consideration while talking exclusively about the labour market are: the unemployment rate, the employment rate and the participation rate.

The unemployment rate is commonly defined as the ratio between who is currently unemployed and the total working age population. To be unemployed means to not have a work, but actively searching for it. All those people aged between 15 and 65 are considered into the definition of working age population. The age span varies across different regions, but the 15-65 one is commonly used in most OECD countries. There exist various theories about forms of unemployment: the Keynesian or cyclical one, which states that unemployment's fluctuation are deemed to wide economical cycles. Since adverse shocks cause the demand of good to decrease along with the demand for workers, and since wage are sticky, at least in the short run, the supply of labour is greater than the demand of labour, creating unemployment. The frictional unemployment arises when a worker actively or passively becomes unemployed and searched for a job or is transitioning to another one. Since demand

and supply rarely are perfectly matched, so even if there is a vacant job a worker may lack the skills for such job, frictional unemployment arises. The third main theories of unemployment in the structural one: labour market rigidities, cultural and physical barriers and workers' conditions create a mismatch between the number of vacancies and the workers searching for job. The number of vacancies may be equal or even greater than the number of unemployed, but the factors previously listed prevent the labour market to reach an equilibrium. There are many criticism to the definition of the unemployment rate, for example it does not take into consideration the discouraged workers, which are outside the definition of unemployed, the underemployed or early retirements, but, for our purpose, such critiques are not important.

The employment rate is defined as the ratio between the portion of the population who is currently employed and the total working age population. Being employed means doing any kind of work or business or having a job, but not performing it temporarily due to illness, vacation, health problems and so on.

The participation rate is defined as the ratio between the labour force and, once again, the total working age population. The labour force is equal to the sum of who is currently unemployed and who is employed.

Dealing with the institutions which shape labour market we can annoverate three main policies adopted by governments: employment protection legislation, unemployment benefits and active labour market policies.

Employment protection legislation, commonly referred as EPL, includes a wide range of measures concerning hiring practices as well as firing one.

Unemployment benefits are, usually, one of the most important items of the welfare spending. The government tries to compensate the physical and emotional impact of losing a job by transferring a certain amount of money to unemployed workers. The criteria of eligibility to such benefits varies across states since unemployment benefits usually mirror cultural and labour market specific characteristics.

Active labour market policies (ALMPs) are those measures aimed at facilitating the comeback of an unemployed person in the labour market. The span of ALMPs varies

from training programmes, to public employment and subsidized work. It is beyond any doubt that in ALMPs the government plays a great and active role, so this explains why ALMPs varies substantially across countries.

2. Europe and Labour Mobility

2.1 Is Europe an OCA?

Actually the Euro Area includes 17 member states. In the light of the current crisis, euroscepticism took solid bases to grow, and the very existence of the Euro is at stake, at least for a significant number of people. The main issue is that the Euro Area hardly fits the widely accepted criteria used to qualify a certain region as optimum currency area (hereafter OCA). Clearly the introduction of the Euro brought many advantages to the European economy: for example financial integration and trade rose significantly. In fact trade rose by something like 5 to 10%, on average, among intra-euro area. Dealing with financial market, the introduction of Euro increased both FDI (Foreign Direct Investments) flows, nearly by 7%, and cross-border mergers and acquisitions (M&As), particularly in the manufacturing sector. Moreover the Euro Area can deal with external shocks and developments in a more efficient way, since member states achieved a certain degree of policy coordination which minimizes the risk of speculative attacks, as happened in the 90s. Furthermore Euro, along with the Maastricht criteria, ensured convergence in interest and inflation rate, at least during the before crisis period. Lastly, the prominent role of the Euro reduced international transaction costs and gained investors' confidence, becoming a key currency for world-wide financial operations.

But the Euro Area faced also huge costs, mainly embodied in the term *eurosclerosis*: high unemployment, slow job creation, low participation rate and overall economic performance underlined the need for further integration and structural reforms.

Further costs can be detected, for example member states gave up the control of their monetary policies in favor of the ECB, namely renouncing to the ability to shape economic cycle with money emission or withdrawn, one of the most used instruments in the past.

This small and general review of the benefits and costs associated with the introduction of the Euro is significant in assessing if the Euro Zone is an OCA. Now we are going to examine one by one the criteria, focusing on the labour mobility one.

- Wages and Prices flexibility: wages and prices are clearly not flexible in the Euro Area. In most of the member states wage costs are rising and, unfortunately, this also negatively affects the employment rate;
- Sufficient Size and Openness of the National Economy (McKinnon criterion): most of the European economies are small and open, so domestic prices are independent on the exchange rate, thus monetary policy cannot affect competitiveness. So Europe satisfies this criterion;
- Existence of Positive Shocks and Correlation among Countries: the more correlated the countries are the more efficient the monetary policy will be. Even if convergence is taking place, the Euro Area presents highly diversified economies. The crisis abruptly interrupted the process of convergence, but empirical effort has been underlined.
- Political Reasons for Currency Integration: the introduction of Euro ensured and promoted free movements of capitals, goods and persons, so acted as new impulse for integrating the Single Market. The final aim is creating a politically unified Europe and, under this view, the Euro do makes sense.
- Production Diversification (Kenen criterion): since European member states production is heterogeneous, the Euro Area satisfies this criterion;
- Fiscal Transfers: clearly the Euro Area is totally lacking any kind of fiscal transfers. Only the SGP ensures a certain degree of discipline, but only as a prevention tool, totally useless in presence of asymmetric shocks, since forbids any bailout;

- Labour Market Mobility (Mundell criterion): the poor score achieved by the Euro Area under this criterion reflects its labour market conditions. Bad performances, rigidities and both cultural and emotional barriers, prevent factors of production mobility, especially human capital.

2.2 European Labour Mobility Issue

The whole Euro Area, as all the other western economies, is facing two huge problems: a demographic change, namely an aging population resulting into a decline of the labour force, and a split labour market, characterized by high unemployment for unskilled workers and excess demand for highly skilled workers. Such factors are worsening the condition of the labour market since migration across Europe has been declining over the past years. Even if 2.9% of the world population is consider migrants, only few are considered economic migrants, so actively participating to the host country labour market.

There are many issues regarding migrants: unskilled migration represents a challenge. The fact that many unskilled immigrants try to enter the borders of Europe will, if the trend continues, create an excess supply of native unskilled workers, resulting in increasing unemployment. Even the migration of skilled workers represents an issue. Since all the advanced economies are experiencing an excess demand for skilled workers, due to technological improvements and aging population. Unfortunately European policies on immigrants are heterogeneous and poorly implemented. It is not a matter of coincidence that a phenomenon as the brain drain is persistent and substantial, occupying a huge part of academic debate. Human capital is the most valuable resource for an economy, so Europe must take a stake and try to attract as many as possible skilled workers. Clearly, harmonizing skilled and unskilled workers represents another tasks. The required productivity mix might stop the increasing lack of hiring unskilled workers, given the absence of skilled one. This loophole self sustaining mechanism can only deteriorate the poor performances of the European labour market. Moreover if labour mobility is not restored or, better, created for the

first time, trade or capital mobility might take its place. In fact low costs labour is a vital element in competitiveness and trade. Moreover the recent trend of virtual migrations can only worse the current situation: companies are more and more likely to outsource their workforce going global, so Europe could be cut out even without any real migration of the foreign workforce. Last but not least challenge that the Euro Area must face is represented by the fact that, as stated before, the majority of immigrants are not available for the labour market since they come as asylum seekers or for family reunification purposes, thereby missing both opportunities for work, at least initially, and incentives.

The poor performances of the Euro Area labour market could be explained looking at physical and emotional barriers. The decision to move is deeply affected by economic factors, for example differences in earnings, unemployment rate, degree of social protection and cost of living. Costs are deemed to rise accordingly with distance, due to asymmetry of information about the distant labour market. Clearly, also the cost of moving do matters, both materially, foregone earnings and travel expenses for example, and psychologically, separation from native place, family and friends. Moreover, older people expect lower and lower benefits from migration, so the likelihood of moving is inversely related with age. Highly educated people are more likely to move, since higher education means higher ability to fill the information asymmetry gap. Ethnical and family issues play a fundamental role. Most immigrants move according to a network of ethnical relationships, mainly migrating into established clusters. Both cultural and economic similarities between host country and receiver play a great role in moving decisions: the assimilation into the labour force is more if the two countries are experiencing similar economic development and, for example, share the same language. Probably the most important obstacle to labour mobility is human capital transferability. The lower the transferability, the greater is the earnings gap between natives and immigrants, given the same level of ability.

The Euro Area labour market presents is highly fragmented in terms of economics performance, in fact a two speed Europe emerged even more dramatically after the

crisis, and in terms of welfare systems. The aging population clearly is not inclined towards migrations and cultural barriers do exist, in fact the European Union has 23 official languages. Such characteristics can only deteriorate the labor mobility, preventing Europe from achieving a good score under the Mundell criterion.

The malfunctioning of the Euro Area labour market has not been ignored by the European institutions, in fact part of the action and development plan launched in 2000, the Lisbon Agenda or Lisbon Strategy, was also concerned about the labour market. The object was to render the EU "the most competitive and dynamic knowledge-based economy in the world capable of sustainable economic growth with more and better jobs and greater social cohesion". The Lisbon Strategy stated that both employment and economic policies should be aimed at raising the employment rate as close as possible to 70% of the total labour force and increasing the employment rate for women to more than 60%. Such objectives had to be implemented through an harmonization of national policies. Increase productivity, mobilize the stock of migrants and implement new and more effective integration policies were the tools through which member states were supposed to intervene in the labour market. Clearly the Lisbon Agenda did not achieve its goals, but the European Commission proposed another long-term strategy in 2010, namely the Europe 2020, with similar aims and a special focus on national and European policies coordination.

3. Empirical Studies on Convergence or Divergence in the Euro Area

We will going to focus mainly on two papers, which cover the time span 1990-2012, the one of our interest. "Welfare Systems and Labor Market in Europe: What convergence before and after EMU?" mainly deals with the process of approximation of different institutional settings linked to the labour market before the introduction of the Euro.

"Patterns of Convergence and Divergence in Euro Area" deals with the most recent economic trend experienced across the Euro Area, highlighting the huge impact of the current global crisis.

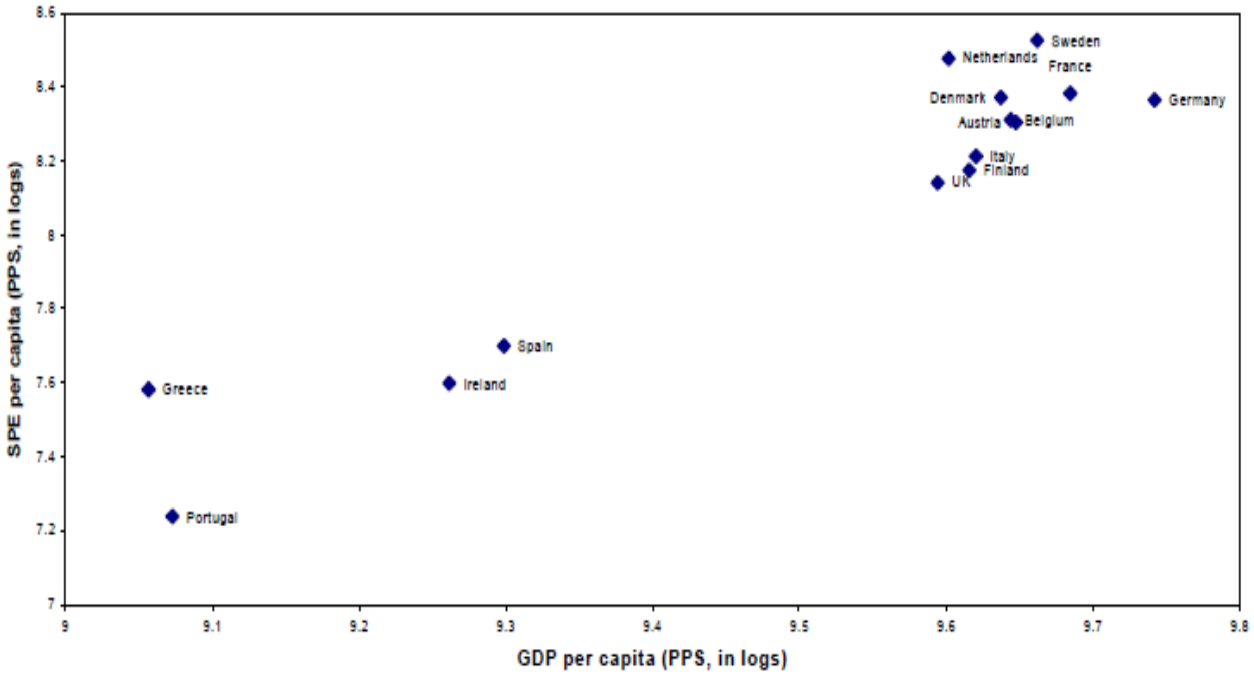
3.1 Convergence or Divergence before the Introduction of the Euro

The European Union is composed by many countries, namely 27. Even if the number of member States might not seem huge, neither hard to handle, the strong history and heterogeneity both in social and economic terms of the different countries is the reason why many Welfare States exist. Such widespread difference makes the investigation of processes of convergence or divergence worth to be done, since, in order to achieve a perfect currency area, labour market institutions have to be coordinated, ensuring a better response to asymmetric shocks.

Welfare policies are vital for the very existence of a country. They aim at ensuring the population against "social risks", promoting equality and social cohesion. Welfare policies usually reach the population via transfers, in cash or in kind, and are usually financed through progressive taxation. Social policies are commonly divided according to their ultimate goals: combating social exclusion, reducing overall inequality and increasing gains from labour market participation. Different goals are typical of different countries, for example Scandinavian countries' welfare systems are grounded on reducing inequality, while the Bismarckian tradition is focused on increasing the rewards from labour.

Investigating the process of convergence, or lack of that, we firstly examine the amount of resources or public expenditure devoted to social protection.

Social protection expenditures (SPE) per capita and GDP per capita
1990



Social protection expenditures (SPE) per capita and GDP per capita
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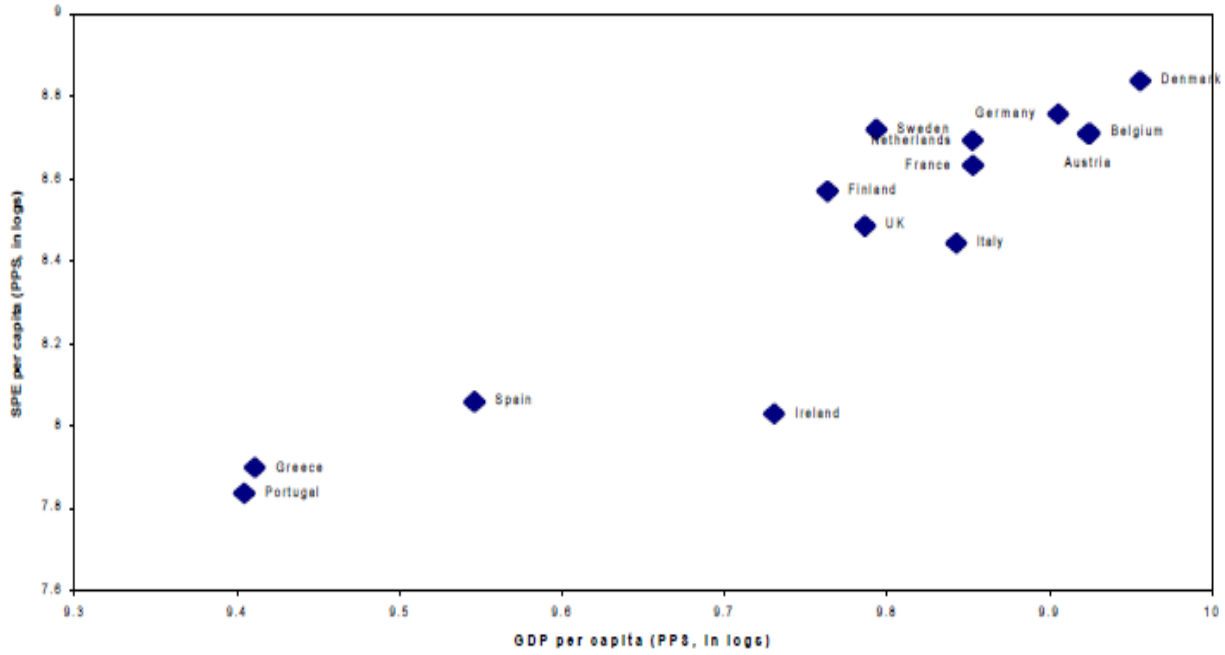


The graph relates social expenditure per capita with GDP per capita. We can easily see that the amount of resources devoted to social expenditure varies significantly across Europe: clearly exists a relationship between social protection expenditures per capita and GDP per capita in term of richness. Richer countries devote an higher amount of resources to social protection. Even if gross social expenditure is not the best indicator, since taxation is not harmonized and varies significantly, the graph shows a convergence across Europe in terms of increasing social expenditure per capita. In fact, between 1990 and 1996, all the countries increased the amount of resources devoted to social expenditure. Usually about one third of the GDP is reserved to social expenditures. Under the name social expenditure we can annoverate a number of different channels through which the real economy is affected. As to 1996, all countries allocated the largest share of social expenditures to survivor and retirement age benefits, around 12% of GDP. The only exception is Ireland. Clearly such convergence is partly deemed to a widespread process of aging population. The next biggest part of social expenditure embodies health care and sickness, reaping about 7% of total GDP. The dispersion is low, ranging from a minimum of 5.1% in Denmark to a maximum of 8.5% in France and Germany. Unemployment benefits, the most used institution in the labour market, account for 2.3% of GDP, but the divergence is high: Greece spent only 1% of its GDP, while Denmark about 4.5%. This mixed trend of convergence and divergence mirrors significant differences on welfare state and population needs.

Composition of Social Protection Expenditures in the EU15, 1996

	Belgium	Denmark	Germany	Greece	Spain	France	Ireland	Italy	Netherlands	Austria	Portugal	Finland	Sweden	UK	EU15
% total expenditure															
Sickness/Health Care	25.8	17.7	29.7	26.3	29.14	28.9	34.3	21.5	28.3	25.2	33	21.4	22	25.4	27
Disability	6.2	10.7	7.3	8.6	7.8	6.1	4.8	7	15.3	8.1	11.6	14.6	12	12.2	8.5
Old-age	32.2	38.8	39.2	41.2	41	36.9	20	54.2	32.9	38	36	30	36.4	34.8	39.2
Survivors	11	0.1	1.9	7.8	4.3	6.6	6.1	11.7	5.5	10.5	7.3	3.9	2.5	5.3	5.4
Family and children	8	12.4	9.4	8.3	2	8.7	12.8	3.6	4.4	11	5.6	12.5	10.5	8.7	8
Unemployment	14.5	13.8	9.6	4.3	14.5	8.1	16.7	1.9	12	5.7	5.8	13.9	10.3	5.8	8.4
Housing		2.4	0.6	2.4	0.5	3	3.3	0	1.2	0.3	0	1.3	3.2	7.2	2
Social exclusion	2.3	4.1	2.3	1.1	0.8	1.7	2	0	0.4	1.2	0.6	2.3	3.1	0.7	0.5
% GDP															
Sickness/Health Care	7.3	5.8	8.7	5.9	6.4	8.5	6.2	5.1	8.3	7.2	6.4	6.7	7.5	6.8	7.4
Disability	1.8	3.5	2.2	1.9	1.7	1.8	0.9	1.7	4.5	2.3	2.2	4.6	4.1	3.2	2.3
Old-age	9.1	12.7	11.5	9.2	9	10.8	3.6	12.9	9.7	10.9	6.9	9.4	12.5	9.3	10.8
Survivors	3.1	0	0.6	1.8	0.9	1.9	1.1	2.8	1.6	3	1.4	1.2	0.9	1.4	1.5
Family and children	2.2	4.1	2.8	1.9	0.4	2.5	2.3	0.9	1.3	3.1	1.1	3.9	3.6	2.3	2.2
Unemployment	4.1	4.5	2.8	1	3.2	2.4	3	0.5	3.5	1.6	1.1	4.3	3.5	1.6	2.3
Housing		0.8	0.2	0.5	0.1	0.9	0.6	0	0.3	0.1	0	0.4	1.1	1.9	0.6
Social exclusion	0.7	1.3	0.7	0.2	0.2	0.5	0.4	0	0.1	0.3	0.1	0.7	1.1	0.2	0.4
Total	28.3	32.7	29.5	22.4	21.9	29.3	18.1	23.9	29.3	28.5	19.2	31.2	34.3	26.7	27.5

Source: EUROSTAT (1999).

As stated before, combating social exclusion is considered to be the goal of welfare policies. Social assistance schemes are significantly heterogeneous across Europe. For example in the UK they reap 4.3% of the GDP, while on the other extreme we can annoverate Greece, Finland, Portugal and Belgium. The implementation of social assistance varies among countries as the expenditure does. In fact in the UK, social assistance is run exclusively at national level, while in Austria is completely decentralized. Continental Europe implements a mix between national and local levels. Clearly there is no convergence in combating social exclusion.

Regarding reducing overall inequality, there are many factors to be taken into consideration. First, we have to consider the size of households in Europe, since households are the main target of welfare systems. Secondly, both the incidence of poverty and the magnitude of it have a great role in shaping the structure of social protection systems. Finally, the effectiveness of social policies in reducing inequalities is performed through measurement of change in income distribution.

Household formation is significantly heterogeneous across the Europe; such dissimilarity is mainly given by social and cultural factor, for example single person households are more frequent in northern Europe rather than in southern.

Disposable income is a good proxy for the incidence and the magnitude of poverty. Under such assumption, a three levels Europe emerge: Nordic countries present the lowest levels of inequality, the Southern ones along with Ireland the highest and the rest is squarely in the middle.

The fact that households composition is significantly different across Europe, as well as income distribution, impacts the effectiveness of social transfers. In relatively rich countries, transfers are obviously more substantial, due to high living costs. It is not a coincidence that social transfers effects are larger in Belgium or France rather than in Greece or Portugal. Clearly no convergence can be highlighted.

Dealing with increasing rewards from participating in the labour market, the aim is to improve working conditions, ensuring them against business cycle and adverse labour market conditions. The role of labour market institutions in crucial in shaping rewards, in fact the market is affected through wage setting procedures, employment protection policies, unemployment benefits and active labour market policies.

Wage setting practices differ across Europe. For example trade union density started from a minimum of 9% in France to 91% in Sweden during the 90s. Collective bargaining agreement are, in contrast, very high in all countries, with a minimum in the UK (47%). Clearly collective bargaining is the prevalent wage setting mechanism, but the degree of centralization varies. For example, corporatist countries like Austria are characterised by an high level of centralization and coordination, while in the UK the trend is opposed. Many countries set a minimum wage to all sectors, wages and regions, while others prefer sectoral agreements.

Employment protection patterns are heterogeneous, spanning from different degree of strictness: in fact temporary and fixed-term contracts are widely spread where employment protection is stricter, for example in Italy. Part-time employment also differs across countries, Southern Europe is characterised by extreme low levels of part-time employment, while in Nordic countries the opposite situation occurs. In fact in the Netherlands almost 40% of workers have part-time contracts.

Also unemployment benefits are quite heterogeneous: Italy and Greece have increased their generosity, converging to Europe wide levels. Coverage rates span from almost 100% of the unemployed workers in the Netherlands, Belgium and Finland to 40-45% in Spain and Portugal.

The increasing trend on active labour market policies expenditures during the 90s did not result into a lower degree of heterogeneity, since ALMPs are deeply affected by local labour market conditions and preferences.

The divergence of labour market trends during the 90s is mainly due to the fact that welfare systems are deeply heterogeneous, since reflect regional history and

characteristics. The Nordic tradition, typical of Sweden, Finland, the Netherlands and Denmark, is based on full employment and universal welfare provision. Such welfare states are characterised by very low income inequality and considerable unemployment benefits. ALMPs play a great role too. Nordic countries devote about one third of their GDP to social expenditures.

Continental welfare states are derived from the Bismarckian tradition. Income inequalities are present but not significant. Unemployment benefits are high as well as minimum wages, since centralization is high. ALMPs use is aligned with EU average. Social policies expenditures account for 27-30% of GDP.

The Anglo-Saxon countries, namely UK and Ireland, are characterised by high income inequalities, but large participation to social protection schemes. Unemployment benefits are low as well as employment protection. By far, the Anglo-Saxon model is the most liberal system in Europe, deeply influenced by the US one.

Southern welfare states are the more recent, presenting high income inequalities, high employment protection and very few ALMPs. Social policies expenditures are the lowest in Europe, about one fourth of GDP.

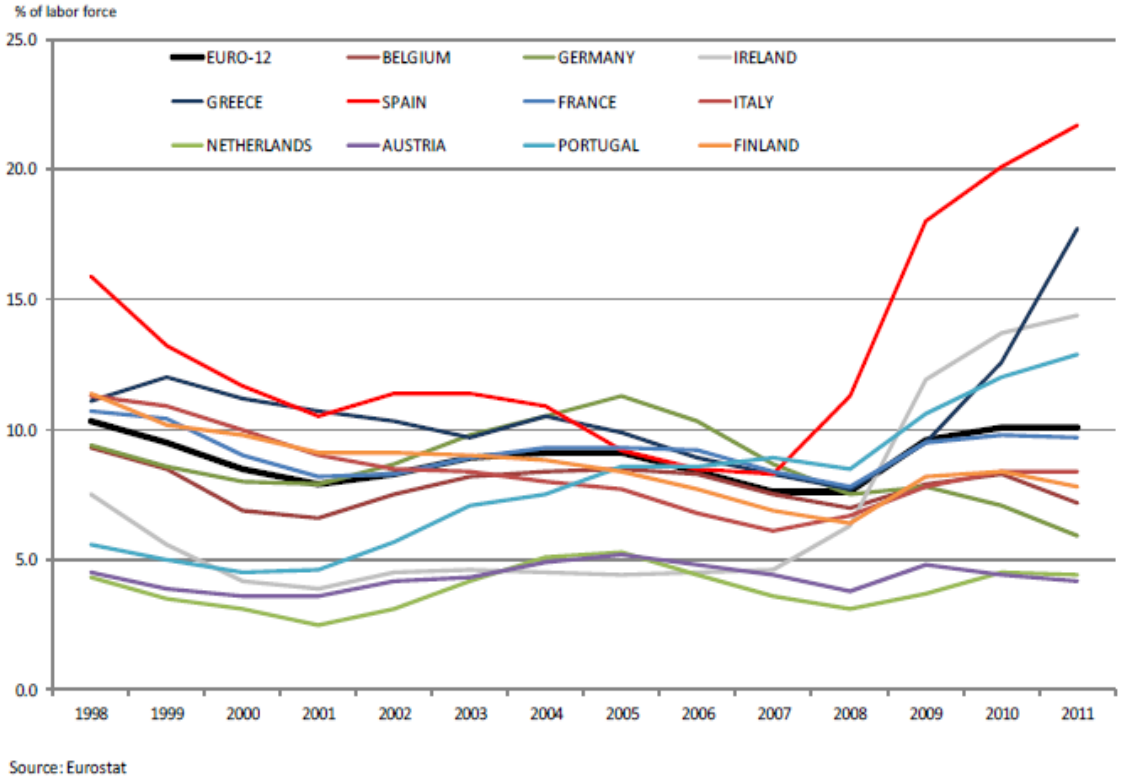
The interesting fact is that Nordic and Continental welfare state experienced during the 90s a sort of convergence, clustering around comparable economic and labour market performance, while Southern and Anglo-Saxon systems did not.

The debate around labour market outcome was pivotal during the end of the 90s. In fact all the future members of the Euro Area experienced a certain degree of convergence given by the Maastricht Treaty's requirements. Labour market seems not following this path of convergence, even if good ideas were put in place. For example, in 1997 the Extraordinary European Council on Employment proposed four pillars: improving employability, developing entrepreneurship, encouraging adaptability, strengthening equal opportunities policies. Those pillars underlined the fact that the poor performances of the labour market were mainly due to structural problems. Recognizing a problem is just the first step towards the elimination of it, but poor structural remedies were adopted.

In conclusion EU welfare systems converged to an higher level of social expenditures during the 90s. This might seems ambiguous since the Maastricht criteria were pushing down government spending, but the faster economics growth and the presence of other sources of budget permitted such trend. The wide increase in social protection expenditure was not mirrored by a convergence in the composition of social expenditure. In fact during the period 1990-1996 there is no clear trend in reduction of heterogeneity across models.

3.2 Convergence or Divergence after the Introduction of the Euro

As to August 2012, the Euro Area presented an unemployment rate equal to 11.4%, four percentage point greater than the minimum achieved in 2008 since the start of EMU. Clearly, 11.4% is not a good performance, but in light of the current crisis is neither the worst one. What should cause concern is the fact that the unemployment rate in the Euro Area ranged from a minimum of 4.5% in Austria to a maximum of 25.1% in Spain. Such terrible statistics reflects the never-ending problem of labour mobility and poor fiscal union across the Euro Area. Analyzing the unemployment trend during the period 1998-2011, a clear phenomenon of convergence both in absolute terms and cyclical patterns. The graph shows such process: until 2001 the unemployment rate decreased in the Euro-12, followed by an increase during the 2001-2004, then it went down again until 2008, when the crisis hit the real economy, creating almost in every country an increase in the unemployment rate. Clearly the introduction of the Euro resulted in a process of convergence, but the crisis, and the subsequent significant divergence, highlighted the poor ability to face asymmetric shocks and the scarce labour mobility. Germany and Austria experienced an evident decrease in the unemployment rate, while Spain and Greece reached skyrocketing figures.



Evolution of the Unemployment Rate in the Euro Area Countries

The gradual but significant reduction in heterogeneity experienced during the first 9 years of monetary union was completely destroyed after 2008, in fact the dispersion stepped back to 1998 levels.

The effect of the recession are better explained computing the following regression. Regressing the change in unemployment between 1998 and 2011 to the employment rate in 1998 we obtain the following result:

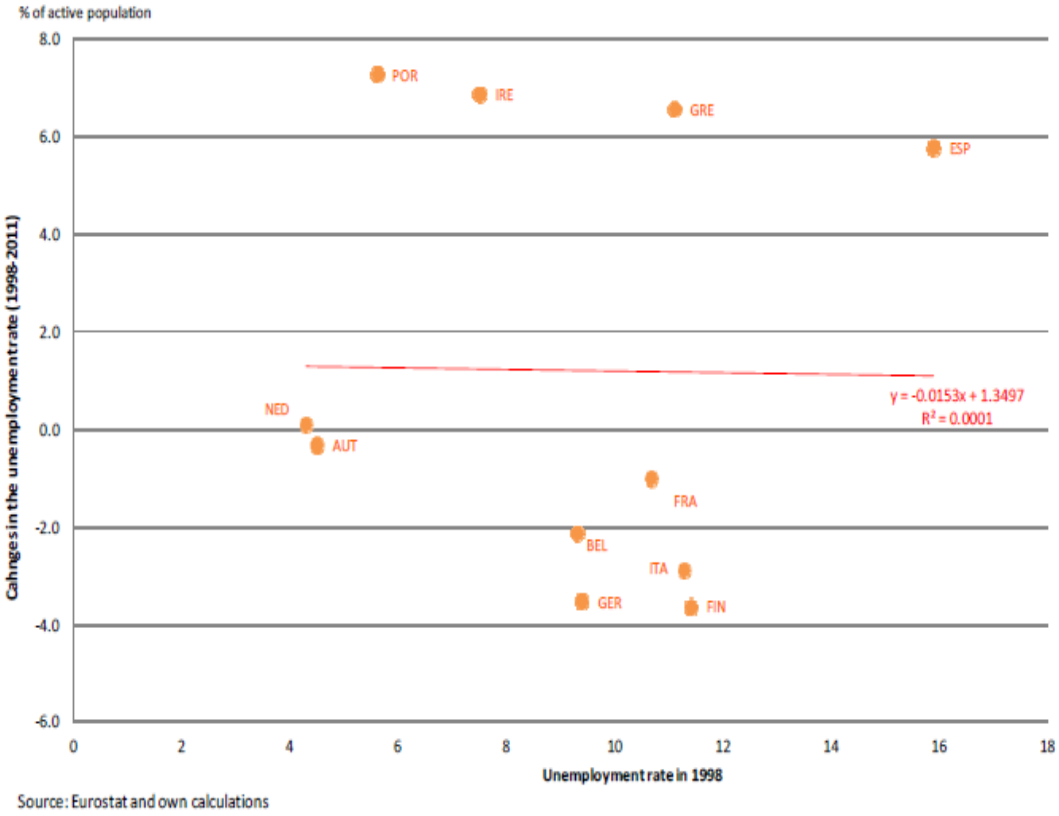
$$\Delta u_{11|98} = \underset{(4.18)}{1.35} - \underset{(0.43)}{0.015}\, u_{98}$$

Clearly there no evidence of convergence, the β coefficient is even not significant.

Computing the same regression, but ending it in 2007, namely isolating the "crisis" effect, we experience another result:

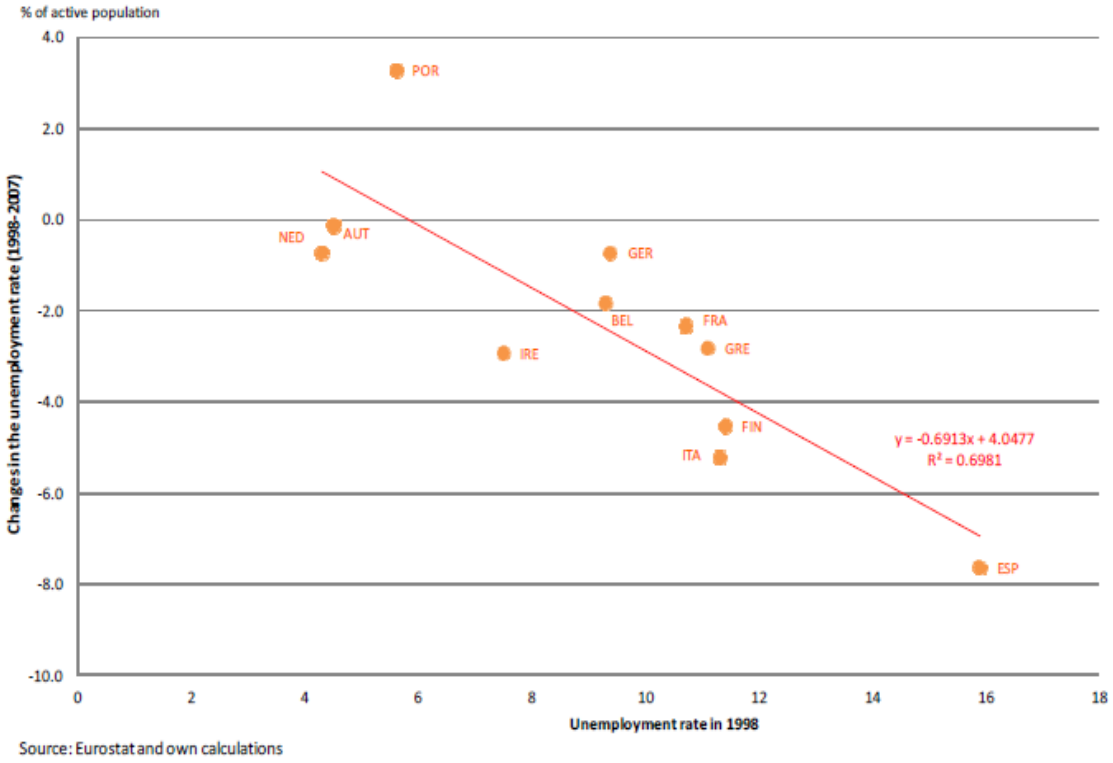
$$\Delta u_{07|98} = \underset{(1.48)}{4.05} - \underset{(0.15)}{0.69}^{*} u_{98}$$

The β coefficient is strongly significant, highlighting a process of convergence. The effect of the crisis are clearer comparing the graph of the two regressions.



Source: Eurostat and own calculations

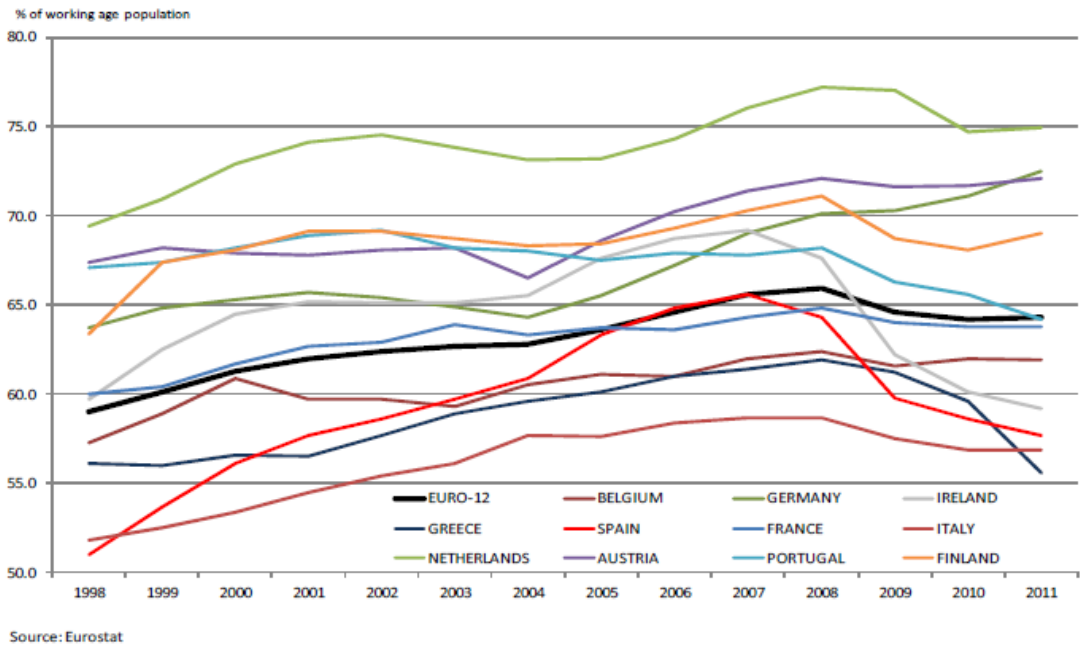
Convergence of Unemployment Rates: 1998-2011



Convergence of Unemployment Rates: 1998-2007

Graphs also show a reversal fortune: the countries which achieved best performances until 2007, namely Ireland, Greece, Portugal and Spain, had the worst possible reaction to the crisis.

Focusing on the employment rate, another key variable in studying labour market, findings are similar to those achieved analyzing the unemployment rate. The employment rate during the second quarter of 2012 averaged at 68.3% in the Euro Area. Once again the gap between virtuous and "sinful" countries is enormous: the Netherlands displayed an employment rate equal to 77.2%, while Greece employed merely 55.7% of its total workforce. The evolution of the employment mirrors the one of the unemployment rate, in fact data shows a limited, but sensible convergence in the early years after the introduction of the Euro, reversed in 2005.

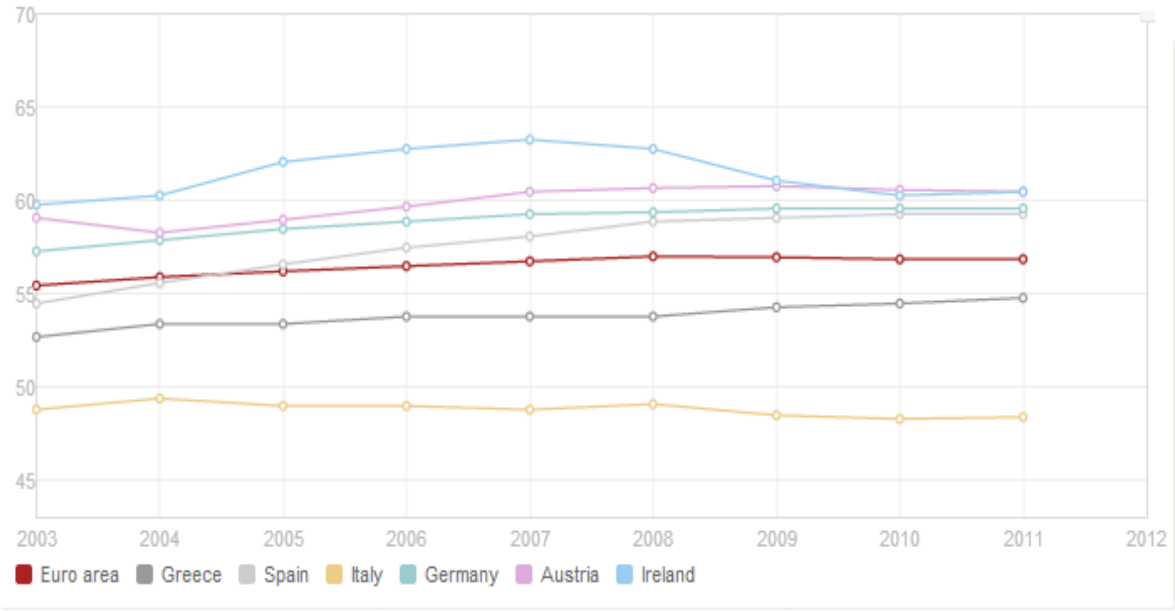


Evolution of the Employment Rate in the Euro Area Countries (1998-2011)

Even if the convergence process stopped in 2005, the effect of the crisis can be easily identified also regarding the employment rate. The graph also highlights the fact that countries like Spain and Greece suffered the greatest decrease in unemployment in the aftermath of the crisis, while Austria and Germany continued along a positive trend. Clearly there is a negative correlation between employment and unemployment rate, especially during the crisis period. There is an observation which is worth to make: the employment rate in 2011 is well above the level experienced in 1998, in net contrast with the unemployment rate in the same two years. Exceptions are Greece, Portugal and Ireland, where the employment rate was greater in the pre-monetary period.

Dealing with participation rate, there is a clear trend of convergence during the first years after the introduction of the Euro, once again stopped in the aftermath of the crisis, but with effects definitively less catastrophic with respect to unemployment or employment rate. In fact the participation rate across Euro Area increased from 55.5% of the total labour force in 2003 to 57% in 2008, then, when

the crisis hit the real economy, declined only of 0.1 percentage point. It is worth to note that countries reacted in a significant heterogeneous way. For example Ireland experienced an above average and increasing participation rate during the period 2003-2008, but it was the worst performer in the light of the crisis, with a decline of 2.3% from 2008 to 2011. On the other hand Germany increased its participation rate during the entire period 2003-2011, starting from 57.3% reaching 59.6% of the total work force.

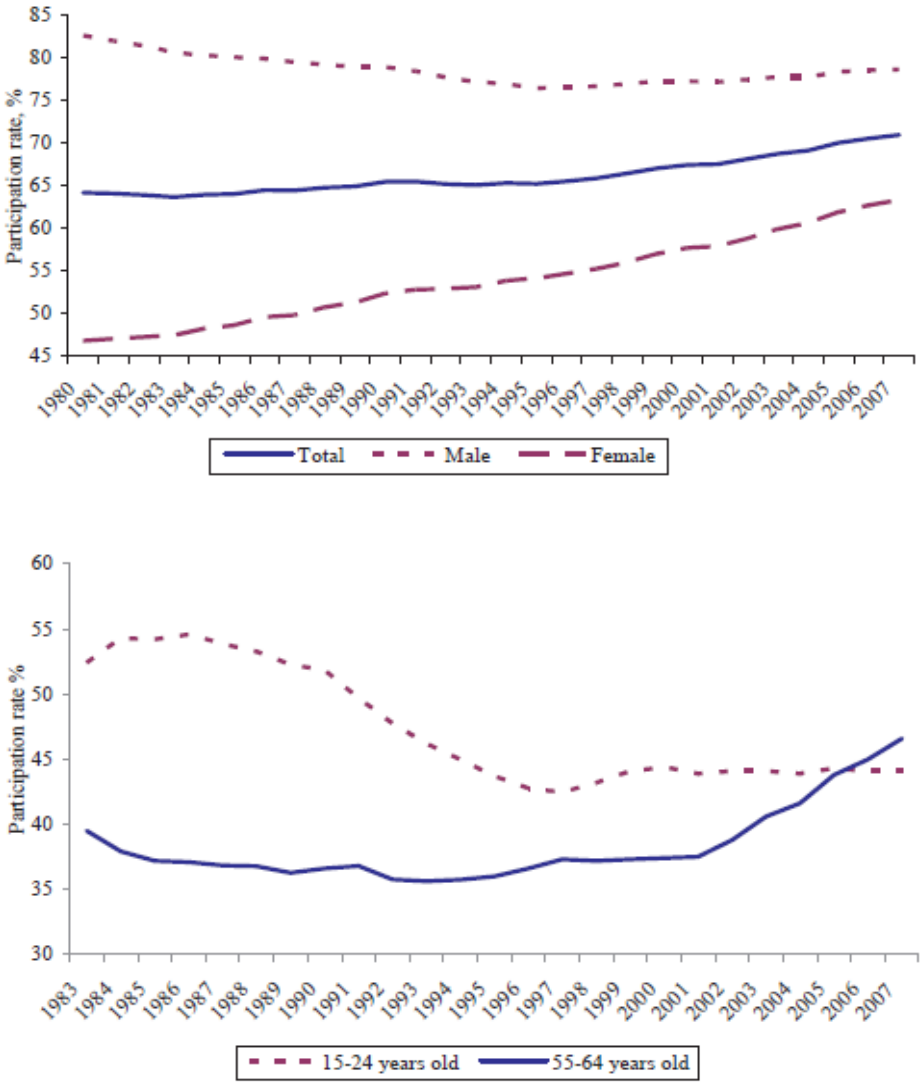


Participation Rate evolution for selected countries
SOURCE: data.worldbank.org

It is also worth analyzing how the participation rate has evolved for cohort groups, based on gender and age. Data stops in 2007, so there is no interference of the crisis. During the last 30 years women participation increased steadily and significantly, while the men one decreased mirroring women's trend. Such pattern is mainly due to a change in society, reflecting the process of emancipation of women.

Comparing the participation rate between age groups, there is a clear and scaring phenomena. Workers aged between 15 and 24 participation sharply declined during the 90s, stabilizing around 43% after the introduction of the Euro. On the other hand, workers aged between 55 and 64 increased their participation rate both during the 90s and the new millennium. Those findings are aligned with the phenomena of aging population across Europe and the increasing disparity between who is already employed and who is not, reflecting labour market rigidities.

Participation rates by worker groups in the euro area (EA12)



Sources: EU LFS (Eurostat), OECD

4. *Labour Market Institutions*

Since the convergence, or more precisely divergence process, has been already analyzed, the actual aim is to find a reason why the Euro Area reacted in an heterogeneous way with respect to the global crisis. Such different reactions to the recession cannot be explained only focusing on the theory of asymmetric reaction to shock or focusing on the poor score under the optimum currency area theory. As

Blachard already pointed out in 1999, the role of labour market institutions had a huge impact on the high level of unemployment registered in Europe. The rigidity of the Euro Area labour market, at least for some countries, along with the tremendous gravity of the crisis can explain the strong after 2008 divergence.
First we have to examine what are the labour market institutions most commonly used by governments.

4.1 Employment protection legislation

Employment protection legislation, hereafter EPL, is a set of laws and proceedings followed in case of dismissals of previously employed workers. EPL covers a wide range of procedures, from legal restrictions to dismissals to compensation for laid off workers. Moreover EPL sets precise instructions to be followed in both collective and individual layoffs. EPL should not be considered as legislation between workers and employers, since, often, a third party must intervene: in fact is not unusual that a court is called to rule on layoffs in order to assess legal validity. The composition of EPL can be summarized in two main elements: a tax and a transfer. The tax component is a sum of money given to workers by employers, a sort of wage. The transfer component is a tax paid to third parties. It is composed by severance payments, namely a sum of money given to the worker from the firm in case of firm-initiated layoff, and advance notice, a period of time given to workers between notification of firing and realization of it. The latter two elements are referred to legal minima, which are applied to all employment relationships. Moreover EPL covers a number of administrative procedures to be followed in case of layoffs. Individual and collective dismissals are commonly distinguished, with individual layoffs further divided in economic and disciplinary dismissals. EPL covers economic dismissals. Dealing with collective layoffs, once authorized employers face lower transfers with respect to firing individually each workers, but collective dismissals are heavily regulated, resulting into high procedure and administrative costs.

Across country comparison are difficult to perform, due to the heterogeneity of EPL. Following the OECD instructions, comparisons are carried on through three indicators: the rigidity of firing regulations for permanent contract workers, the degree of rigidity for workers under temporary contracts and the rigidity for collective dismissals.

Using such indicators, we have obtained a table which highlights EPL rigidities for several OECD countries. The following table summarizes those findings.

Strictness of Employment Protection: OECD Index

	Overall		Regular		Temporary		Collective	
	Late 1980s	2003	Late 1980s	2003	Late 1980s	2003	Late 1980s	2003
Australia	0.9	1.2	1.0	1.5	0.9	0.9	2.9	2.9
Austria	2.2	1.9	2.9	2.4	1.5	1.5	3.3	3.3
Belgium	3.2	2.2	1.7	1.7	4.6	2.6	4.1	4.1
Canada	0.8	0.8	1.3	1.3	0.3	0.3	2.9	2.9
Czech Republic	–	1.9	–	3.3	–	0.5	2.1	2.1
Denmark	2.3	1.4	1.5	1.5	3.1	1.4	3.9	3.9
Finland	2.3	2.0	2.8	2.2	1.9	1.9	2.6	2.6
France	2.7	3.0	2.3	2.5	3.1	3.6	2.1	2.1
Germany	3.2	2.2	2.6	2.7	3.8	1.8	3.5	3.8
Greece	3.6	2.8	2.5	2.4	4.8	3.3	3.3	3.3
Hungary	–	1.5	–	1.9	–	1.1	2.9	2.9
Ireland	0.9	1.1	1.6	1.6	0.3	0.6	2.4	2.4
Italy	3.6	1.9	1.8	1.8	5.4	2.1	4.9	4.9
Japan	2.1	1.8	2.4	2.4	1.8	1.3	1.5	1.5
Korea	–	2.0	–	2.4	–	1.7	1.9	1.9
Mexico	–	3.1	–	2.3	–	4.0	3.8	3.8
Netherlands	2.7	2.1	3.1	3.1	2.4	1.2	3.0	3.0
New Zealand	–	1.5	–	1.7	–	1.3	0.4	0.4
Norway	2.9	2.6	2.3	2.3	3.5	2.9	2.9	2.9
Poland	–	1.7	–	2.2	–	1.3	4.1	4.1
Portugal	4.1	3.5	4.8	4.3	3.4	2.8	3.6	3.6
Slovak Republic	–	1.9	–	3.5	–	0.4	3.3	2.5
Spain	3.8	3.1	3.9	2.6	3.8	3.5	3.1	3.1
Sweden	3.5	2.2	2.9	2.9	4.1	1.6	4.5	4.5
Switzerland	1.1	1.1	1.2	1.2	1.1	1.1	3.9	3.9
Turkey	–	3.7	–	2.6	–	4.9	1.6	2.4
United Kingdom	0.6	0.7	0.9	1.1	0.3	0.4	2.9	2.9
United States	0.2	0.2	0.2	0.2	0.3	0.3	2.9	2.9

Source: OECD (2004b).
Notes: Higher numbers denote stricter EPL regimes. All subindexes are normalized in the 0–6 range.

The time span is huge, highlighting structural changes rather than business cycle adjustments. Figures show that differences across countries are significant. Secondly, regular workers EPL's strictness rarely changed during the period, while significantly decreased for temporary workers. Such change was mainly due to a dual-track reform

strategy, rendering more and more easy margin adjustment with respect to business cycles. Margin workers, the ones with temporary and fixed-term contracts, saw their protection and bargaining power steadily decreasing with respect to regular workers. Countries with rigid EPL on temporary workers, for example Spain, Portugal, Italy and Greece, are those who greatly suffered in terms of unemployment increase in the aftermath of the crisis, especially looking at youth unemployment, a real plague in those countries.

EPL is particularly influential for labour market performance. In fact, the tax components of EPL could be avoided by employers simply not reducing employment levels. This fact affects directly the hiring of new workers, since employers have to take into account future cash flows. The effects of EPL on employment and unemployment rate are ambiguous: what really matters are the effects on job creation and destruction at the margin. It is clear that stricter EPL tax is translated into less job creation and destruction and longer unemployment duration. EPL has also a strong impact on wage setting procedures: those who already have a job are more protected if EPL tax is high so they possess more bargaining power, while job seekers see their bargaining power falling. At the same time EPL tax strictness reduces wages, since unemployed workers know that employers are reluctant to hire, due to future costs. So the impact of EPL tax on wages is U-shaped, positively correlated for low levels of EPL, while negatively correlated for high level of EPL, due to job re-employment uncertainty. It is also worth to highlight that insiders are more protected with high EPL tax, facing lower dismissals risk.

The following table summarizes a number of empirical studies about the effect of EPL on employment and unemployment flows and stocks, even if the latter are not correlated with EPL, which impacts mainly hiring and dismissals. Discrepancies in findings are explained by interaction of EPL with other labour market institutions and errors on empirical data collection.

The Effects of Employment Protection on the Labor Market: Empirical Results

	Stocks		Flows	
Author(s)	Employment	Unemployment	Employment	Unemployment
Emerson (1988)	?	?	–	–
Bertola (1990)	?	?	?	–
Lazear (1990)	–	+		
Grubb and Wells (1993)	–			
Garibaldi, Koening, and Pissarides (1994)	?	?	?	–
Addison and Grosso (1996)	?	?		
Jackman, Layard, and Nickell (1996)	?	?	–	–
Gregg and Manning (1997)	?	?		–
Boeri (1999)	?	?	+	–
Di Tella and McCulloch (1998)	–	+		
OECD (1998)	?	?	?	–
Kugler and StPaul (2000)			+	–
Belot and van Ours (2001)		–		
Nickell, Nunziata, and Ochel (2005)	?	?		

Given those results, what is the optimal level EPL? Clearly workers are risk averse and always choose a job opportunity with lower earnings variability, while employers can insure their business against downturns investing in capital markets, simply diversifying their portfolio. EPL acts as insurance for workers, but a full insurance causes labour market distortion. For example disciplinary layoffs might be more difficult, promoting opportunistic and hazardous behavior. There is an optimal level of EPL, but it is hard to quantify, since across countries differences and interactions with other institutions are significantly important.

Clearly the aim of EPL is protecting workers, but, surprisingly, stricter EPL is negatively perceived by workers, increasing their concerns about job security, see, for example, Southern Europe. A possible explanation is that EPL covers a small fraction of workers, making the others worse off: workers with permanent contracts are more protected, so the risk is beared by those with temporary and collaboration contracts.

Another explanation is that in case of strict EPL job loss is less likely, which, in turns, is translated into higher costs and longer unemployment in case of dismissals.

4.2 Unemployment Benefits

Unemployment benefits, hereafter UBs, are those procedures aimed at protecting individual workers against the uninsurable labour market risk. Opposed to EPL, UBs provide an income to workers experiencing unemployment. UBs are usually characterized by two key dimension: the eligibility component, which are the norms ruling about the access to unemployment benefits, and the entitlement component, namely the rules about the duration of the replacement income. For example, dismissed workers with short unemployment usually are provided with an unemployment insurance (UI), namely an income proportional to the last wage earned, with the entitlement varying according to past contribution. On the other hand, UBs given to job loser with longer unemployment are independent of previous contributions. Unemployment assistance (UA) is usually given at a flat rate, with a maximum duration not related to the span of the contribution period.

Across country comparison are difficult to be performed since taxation is not harmonized in EU-15 and UBs schemes are heterogeneous, as well as their generosity. Computing UB coverage using the European Community Household Panel we can highlight differences in generosity. The first column of the following table displays a summary of UB generosity, the second column shows the coverage rates of UBs, namely the percentage of individual who were unemployed and were beneficiaries of UBs. The third column presents an adjusted measure summary of the two previous columns. Clearly, The Southern Europe offers the lowest level of generosity with respect to the Euro Area average, considering also eligibility and entitlement requirements. It is beyond any doubt that UB pattern across Europe all heterogeneous and such differences are, at least in part, resulting in poor labour market performances.

Adjusting the OECD Generosity Measure by UB Coverage

Country	Unadjusted OECD generosity measure (a)	Coverage of UBs[1] (b)(%)	Adjusted, (a)*(b)
Austria	0.82	31.5	25.8
Belgium	0.82	38.5	31.5
Denmark	0.85	50.9	43.3
Finland	0.82	34.8	28.5
France	0.74	43.5	32.0
Germany	0.83	29.6	24.7
Greece	0.38	13.0	4.9
Ireland	0.88	25.8	22.8
Italy	0.18	34.1	6.1
Netherlands	0.54	52.9	28.6
Portugal	0.39	41.2	16.2
Spain	0.48	36.5	17.6

Sources: OECD, *Benefits and Wages*, various issues, for the data on net replacement rates. Our estimates of the coverage rate are based on the European Community Household Panel.

[1]Coverage is the fraction of LFS unemployed declaring that they were receiving unemployment benefits. The fourth column is the product of the numbers in the second and third columns.

Empirical effects of UBs are strong. For example, the effect of UBs on reservation wage, the lowest wage rate which a worker is willing to accept a certain job, is a positive elasticity with respect to the level of UBs UBs also deeply affect unemployment duration, since, generally, positively correlated. Unemployment is expected to rise as UBs become more generous, but this effect is mitigated imposing limits on the duration of the benefits. Regarding the relationship between unemployment and UBs generosity there is a debate which is still taking place: in fact many scholars advocate a reverse causality, governments adopt more generous benefits if unemployment is high. Usually the causality runs the other way around.

UBs schemes are usually financed through payroll taxes and implemented by governments. This fact resolves the adverse selection problem, but nothing change for the moral hazard problem. In fact unemployment is higher where benefits are more generous for this reason, namely workers are not so afraid of job loss since UBs cover their situation, without incurring in insurance expenses. This fact negatively impact

labour market outcome, since workers are less competitive and productive since more protected. Given those facts, an optimal structure regarding UBs has been found. UBs insurance against job loss must not be complete, avoiding strong moral hazard effect, but workers must face part of the risk by themselves. Moreover, since human capital depreciates during the duration of the unemployment, UBs must be flat and open-ended. Finally, UBs must be perfectly coordinated with active labour market policies in order to achieve a smooth reintegration of dismissed workers.

4.3 Active Labour Market Policies

Active Labour Market Policies, hereafter ALMPs, are aimed at ensuring the correct functioning of the labour market, enhancing mobility and adjustment. Practically ALMPs are aimed at deploying dismissed workers, trying to smooth labour market imperfections arising from unemployment benefits and welfare schemes. The most important functions of ALMPs are four, namely: raising output and welfare employing unemployed or letting them increase their human capital (training), maintaining the status quo of the labour force promoting competition for vacant job, helping to reallocate labour between different sectors, and alleviating the problem of moral hazard. ALMPs affect the real economy through four channels: training, subsidized employment, public employment, hereafter PESs, and activation. Training is the process by which unemployed, those at risk of unemployment and employed augment their human capital. Subsidized employment consists in measures which are put in place in order to promote or provide employment among unemployed workers or prioritized groups. Subsidized employment takes also the form of wage subsidies paid to private business, for the same reasons stated previously. PESs range from counseling to vocational guidance and unemployment benefits management. Activation means providing incentives for job seekers through benefit sanctions or mandatory participation in training courses or subsidized employment. The main drawback of ALMPs is that workers currently engaged in training or job creation programs reduce their effort in searching new job.

The following table summarizes across country comparison between OECD countries. The importance of ALMPs in a given country is measured by the fraction of workers participating in ALMPs with respect to the labour force and, secondly, the resources spent on ALMPs as percentage of GDP.

Active Labor Market Policies: Participation (Percentage of Labor Force), Public Expenditures (Percentage of GDP), and Sanction Rates (Percentage of Unemployment)

	Active labor market policies						
	Labor force involved (%)	Public expenditures (percentage of GDP)					Sanction rates
		Total	Training	PES	Job creation	Other	
Australia	1.8	0.45	0.04	0.26	0.08	0.07	3.3
Austria	–	0.62	0.33	0.17	0.04	0.08	–
Belgium	7.0	1.08	0.20	0.23	0.39	0.26	0.8
Canada	2.5	0.32	0.08	0.16	0.02	0.06	6.1
Czech Republic	1.2	0.25	0.01	0.12	0.03	0.11	–
Denmark	5.2	1.74	0.51	0.32	–	–	2.1
Finland	3.7	0.89	0.37	0.20	0.07	0.25	10.2
France	3.6	0.90	0.29	0.25	0.18	0.18	–
Germany	4.7	0.97	0.25	0.35	0.10	0.27	1.1
Greece	–	–	0.03	–	–	–	–
Hungary	–	0.29	0.04	0.09	0.06	0.10	–
Ireland	3.6	0.63	0.24	0.12	0.21	0.06	–
Italy	–	0.54	0.20	0.08	0.01	0.25	–
Japan	–	0.25	0.04	0.19	–	–	0.02
Korea	–	0.13	0.04	0.03	0.01	0.05	–
Luxembourg	–	0.52	0.13	0.06	0.13	0.20	–
Mexico	–	0.02	0.01	–	0.01	–	–
Netherlands	4.2	1.33	0.13	0.49	0.18	0.53	36.0
New Zealand	1.9	0.39	0.17	0.12	0.01	0.09	0.4
Norway	2.7	0.75	0.37	0.12	0.07	0.19	7.3
Poland	–	0.43	0.10	0.07	0.03	0.23	–
Portugal	–	0.69	0.29	0.17	0.03	0.20	–
Slovak Republic	5.5	–	0.02	–	0.06	–	–
Spain	–	0.78	0.17	0.13	0.09	0.39	–
Sweden	4.4	1.32	0.34	0.23	–	–	0.6
Switzerland	2.5	0.76	0.29	0.14	–	–	38.5
United Kingdom	–	0.49	0.09	0.38	0.01	0.01	5.5
United States	–	0.13	0.05	0.03	0.01	0.04	35.4

Sources: OECD (2006a); Boone and Van Ours (2004); Grubb (2000).

Notes: Active labor market expenditures: 2005; sanctions and benefit refusals for behavior during benefit periods as a percentage of the average stock of benefit claimants, 1997–1998. The numbers refer to sanctions for labor market behavior conditions (not to administrative infractions).

Cross country differences are significant both in labour force involved, in the percentage of expenditures with respect to GDP and in the composition of such expenditures. For example Italy spend on 0.54% of its GDP while Denmark devotes 1.74% of its GDP.

Empirical evidences show that ALMPs' effects on job finding are not significant and rather small. As stated before, workers have less stimula to find a new job if engaged in ALMPs, this effect is called locked-in, moreover training programme might be misleading if unemployed workers are brought back to work at the expense of another worker.

Given that ALMPs have some significant drawbacks and must be implemented carefully, their importance is beyond any doubt. In fact UBs create disincentive for workers to find another job, but ALMPs try to face this problem. For this reason UBs and ALMPs are positively correlated, in fact governments with high spending in UBs usually have high expenditures also on ALMPs. ALMPs are aimed at avoiding unemployment trap, inactivity trap, and, above all, preventing workers under longer unemployment spell from losing their skills.

5. My Own Empirical Research on Convergence or Divergence in the Euro Area 1980-2011

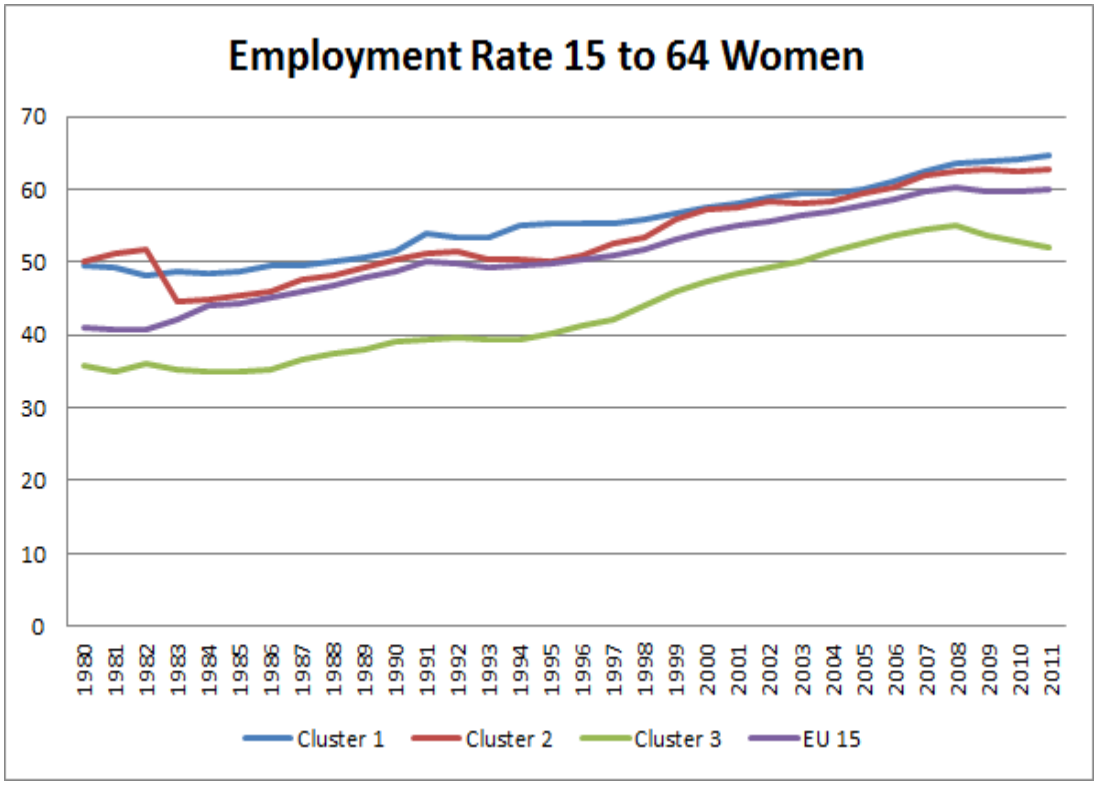
The following part is composed of two sections, one dealing with the empirical patterns of convergence or divergence in the labour market, while the second part is based on regressions which aim at highlighting the effect on the employment and participation rate of the introduction of the Euro and the eventual convergence.

The variable used are: the employment rate, the participation rate, the EPL strictness, the expenditure with respect to GDP on training programmes, the most important components of ALMPs, and the expenditure with respect to GDP on UBs. Both for employment and participation rate, the age span considered is from 15 to 64 and a

significant attention has been put on the segment of women, highlighting their process of emancipation. The unemployment rate has not been considered since cyclical, significantly sensible to business cycle, so not truly useful as indicator of convergence or divergence.
All the data are retrieved from the OECD statistics section.

5.1 Convergence or Divergence?

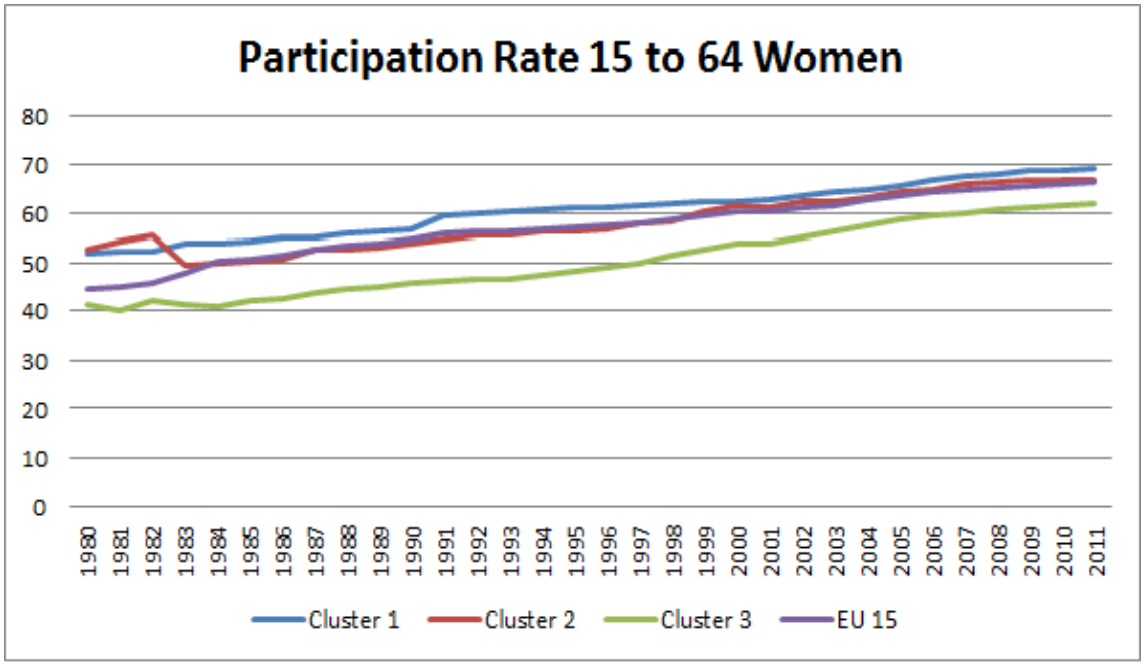
In order to create graphs clear and understandable, I have grouped the fifteen European Countries where the Euro was originally introduced in three main clusters. Clusters has been constructed following criteria of similarity both in economic performances and welfare system characteristics. Cluster 1 is composed by Austria, Germany and France. Germany and France are, in a way, the engine of the Euro Area and the Austrian economy is almost a proxy of the German one, so the association is straightforward. Cluster 2 is composed by Benelux countries, historically similar, and Finland, which share with Benelux countries welfare preferences. Cluster 3 is composed by the laggards, namely Greece, Ireland, Italy, Portugal and Spain.



SOURCE: OECD STATISTICS

Clearly the process of convergence can be easily identified. All the three clusters have improved their performances regarding employment rate for women, particularly after the year 1998, when the euro members' exchange rate were pegged, in order to introduce the Euro. Those countries that started at lower levels of employment, namely those belonging to cluster 3, faced the fastest growth, closing the initial gap, so converging to cluster 1 and 2 performances. As discovered in the previous section[1] the 2008 crisis significantly changed the pattern of convergence, particularly for Cluster 3, reflecting poor labour market performances and an incapacity to face shocks. Taking both male and female, the graph does not change.

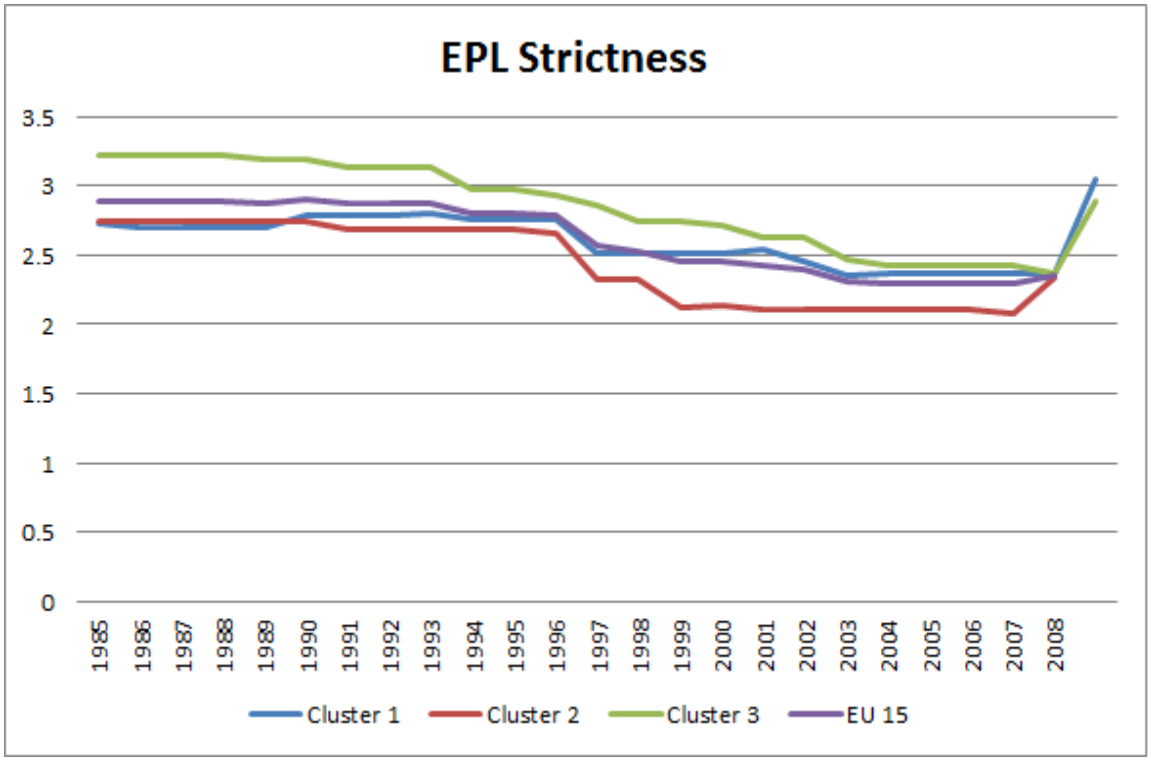
[1] 3.2 Convergence or Divergence after the introduction of the Euro, page 20



SOURCE: OECD STATISTICS

Also the participation rate for female present a pattern of convergence, particularly strong after 1998. The crisis seems not have affected significantly the process of convergence. Once again the graph including also male presents no dissimilarities. It is worth nothing that Cluster 3 performed particularly well under both employment and participation rate, witnessing a strong process of convergence, since all those countries started at levels well under the European average.

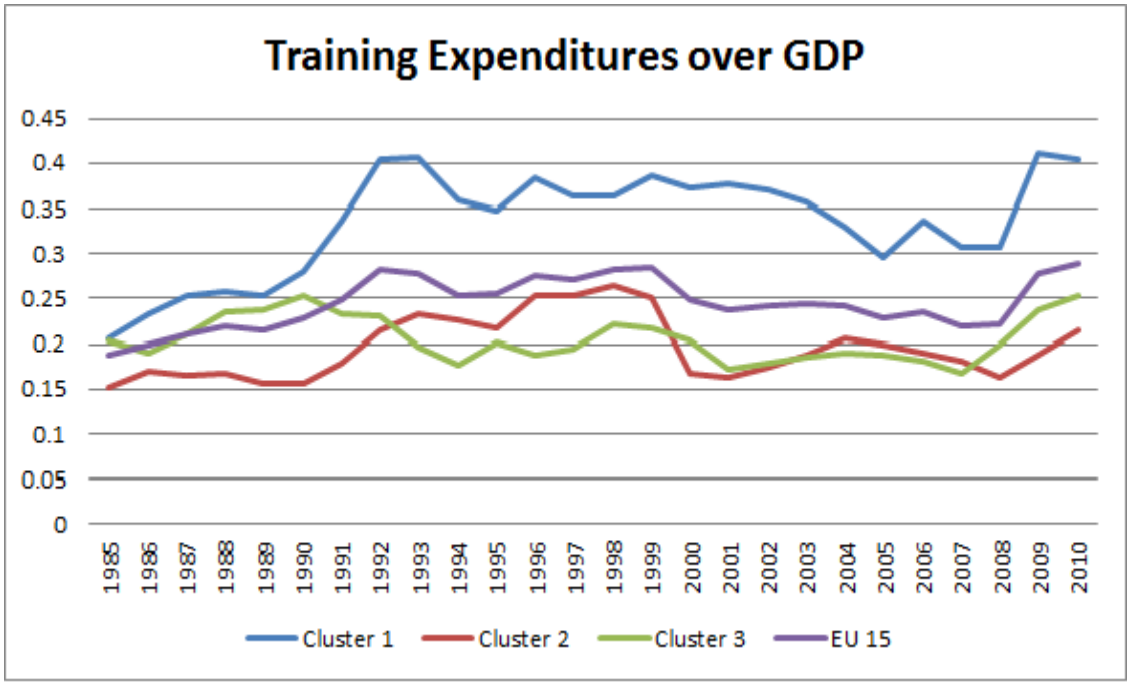
Rather than performances in terms of employment and participation rate, what really signals the process of convergence is the approximation of labour market institutions. Clearly is difficult to establish a single factor which witnesses convergence or lack of thereof regarding labour market institutions.



SOURCE: OECD STATISTICS

For example, EPL convergence has been measured in terms of strictness, namely strictness on dismissals and use of temporary contracts, since EPL is undoubtedly one of the most important labour market institutions with strong effect on unemployment and employment. The graph shows a clear process of convergence towards a less rigid labour market. As easily imaginable cluster 3 started with higher levels of strictness. The convergence pattern, once again, is stronger during the second part of the 90s, witnessing the alignment of labour market policies due to the Maastricht Treaty. The reduction is particularly strong for cluster 2. Even if the data do not cover the period after the crisis, so its aftermath, it is clear that the financial crisis deeply affected the effort made during the past 20 years. It is also worth noting that clusters, differently from employment and participation rate, reacted all in the same way to the crisis, namely augmenting their EPL strictness.

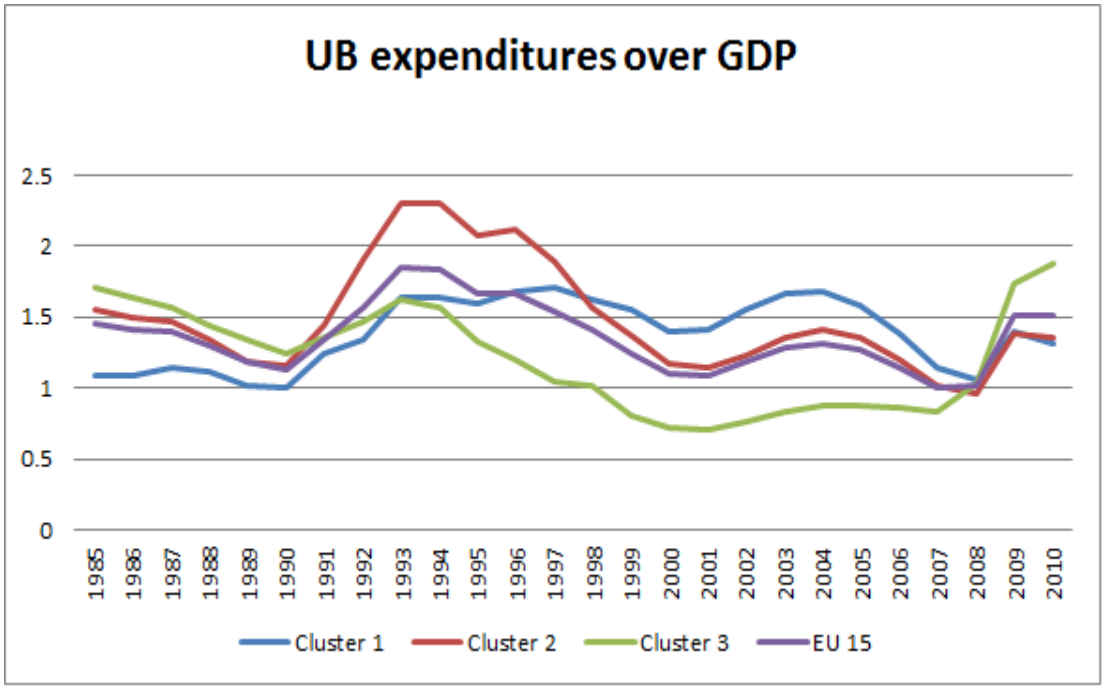
Since there were no indicators of strictness for ALMPs and UBs , in order to highlight a pattern of convergence, expenditures over GDP has been selected, even if not a perfect proxy.



SOURCE: OECD STATISTICS

Dealing with ALMPs, the training component has been chosen as a proxy since significant in all countries and for its economic importance. There is no evidence of convergence. The curves are sclerotic and no alignment is present. A convergence pattern can be identified in the aftermath of the crisis, since all the three cluster increased their expenditures on training, in order to restore the correct functioning of the market. The convergence is in the trend and not in the level of expenditures, which still are heterogeneous, reflecting cultural and political preferences. Cluster 1 invests the biggest part of GDP in training or retraining workers, while cluster 3's countries use this kind of government intervention on labour market rarely.

Differently from ALMPs, UBs present a clear trend of convergence. From the nineties onwards all the three clusters significantly reduced their expenditure on UBs, mirroring a general reduction in the generosity of UBs, in order to restore the correct functioning of the labour market. This trend is particularly strong for cluster 3. Once again the crisis inverted the process of convergence, obliging the clusters to raise their expenditures on UBs to sustain unemployed workers. The after crisis increase is particularly strong for cluster 3 countries



SOURCE: OECD STATISTICS

It is worth to point out that all the Euro Area countries reacted in the same way in the aftermath of the crisis considering labour market institutions: all the three clusters made the EPL more strict, increased their expenditures in ALMPs and UBs, but performances in terms of employment, unemployment and participation rate were deeply different. This means that even if there has been an approximation in labour market policies, national labour markets are deeply different, so the same policy does not produces the same effect, even if oriented towards the same trend.

5.2 Regressions

The following part aims at demonstrating the convergence process highlighted by the previous graphs is supported by an empirical econometric model. The model has been constructed using as dependent variable the rate of change between the employment or participation rate and the main independent variable is the starting rate of employment or participation rate. In economics, convergence means progressively eliminating the gap between the selected benchmark. Many other

variables has been introduced, so the following part is constructed as a legend in order to make things clearer.

Legend:

- e15to64_D: rate of change of the employment for both male and female aged between 15 to 64 with respect to the previous year.
- pr15to64_D: rate of change of the participation for both male and female aged between 15 to 64 with respect to the previous year.
- e15to64w_D: rate of change of the employment for female aged between 15 to 64 with respect to the previous year.
- pr15to64w_D: rate of change of the participation for female aged between 15 to 64 with respect to the previous year.
- e15to640: employment rate at the starting observation year, 1980 where data were available.
- pr15to640: participation rate at the starting observation year, 1980 where data were available.
- e15to64w0: employment rate for women at the starting observation year, 1980 where data were available.
- pr15to64w0: participation rate for women at the starting observation year, 1980 where data were available.
- eplstrictness: variable indicating the strictness of EPL, measured as strictness on dismissals and use of temporary contracts.
- trainingexpgdp: variable indicating the level of expenditures of a given country on training with respect to its GDP.
- ubexpgdp: variable indicating the level of expenditures of a given country on UBs with respect to its GDP.
- cty_code: variable indicating the country.
- Unif: dummy variable, which assumes value 1 if the year is 1998 or subsequent. The variable aims at identifying the introduction of the Euro.
- Unif_E0: interaction term between Unif and e15to640.
- Unif_PR0: interaction term between Unif and pr15to640.

- Unif_EW0: interaction term between Unif and e15to64w0.
- Unif_PRW0: interaction term between Unif and pr15to64w0.
- Y_1 to Y_{32}: dummy variables assuming value 1 if the year taken into consideration is the one in the pedix.

Using this variables, four regressions has been performed. In STATA the command xtreg, re has been used, since the data set was a panel data and the error term needed to be randomized. I decided to omit the all the single coefficients of the dummy variables representing the years for practical reasons. The results are the following.

$$\underset{}{\text{e15to64\_D} = 0.8568} \underset{(1.1776)}{- 0.0499} \underset{(0.01655)}{\text{e15to640}} + \underset{(0\ .02061)}{0.0226\ \text{Unif\_E0}} \underset{(0.10617)}{- 0.1130\ \text{eplstrictness}} -$$

$$\underset{(0.67200)}{0.2066\ \text{trainingexpgdp}} \underset{(0.09897)}{- 0.0403\ \text{ubexpgdp}} + \beta\ Y_1 \text{ to } Y_{32} + ru_i$$

The regression dealing with the employment rate considering the age span 15 to 64 highlights a clear trend of convergence. In fact the rate of change for the employment is negatively correlated with the initial employment rate. This means that those countries which started with lower level of employment experienced a faster growth, namely converging toward those with higher initial. The coefficient is significant, so the effect is reliable. The regression R2 is 0.3211.

$$\underset{}{\text{e15to64w\_D} = 0.7639} \underset{(0.8473)}{- 0.0378} \underset{(0.00868\ )}{\text{e15to64w0}} + \underset{(0.01103)}{0.0199\ \text{Unif\_EW0}} \underset{(0.09789)}{- 0.1422\ \text{eplstrictness}} -$$

$$\underset{(0.62083)}{0.22567\ \text{trainingexpgdp}} \underset{(0.09318)}{- 0.02827\ \text{ubexpgdp}} + \beta\ Y_1 \text{ to } Y_{32} + ru_i$$

Performing the same regression, but considering only the female segment, the effect of the initial employment rate on the rate of change is negative. Those countries which started with higher level of employment among women experienced a slower growth, while laggards converged to higher level more fastly. This highlights a clear

process of convergence, since the coefficient is statistically different from zero, so the effect is significant. The R2 is 0.30.

$$\underset{}{pr15to64\_D} = \underset{(0.99894)}{1.0504} - \underset{(0.01375)}{0.0275}\ pr15to640 + \underset{(0.01710)}{0.0157}\ Unif\_PR0 - \underset{(0.0768)}{0.0433}\ eplstrictness$$
$$- \underset{(0.50152)}{0.54625}\ trainingexpgdp + \underset{(0.07184)}{0.0732468}\ ubexpgdp + \beta\ Y_1 \text{ to } Y_{32} + ru_i$$

The participation rate of change is negatively correlated with the initial participation rate, which, clearly, is a symptom of convergence. Those countries which started with lower level of participation rate experience a strongest convergence towards those starting at higher level. Since pr15to640 is statistically significant from zero, the effect on pr15to64_D is reliable. The R^2 is approximately 0.187.

$$\underset{}{pr15to64w\_D} = \underset{(0.81812)}{1.211} - \underset{(0.00822)}{0.0300}\ pr15to64w0 + \underset{(0.01047)}{0.0095}\ Unif\_PRW0 - \underset{(0.0953572)}{0.0016}\ eplstrictness$$
$$- \underset{(0.60962)}{0.163017}\ trainingexpgdp + \underset{(0.09051)}{0.132037}\ ubexpgdp + \beta\ Y_1 \text{ to } Y_{32} + rui$$

The participation rate of change considering only women is negatively correlated with the initial participation rate, still considering only women. This means that those countries that were poor performer in women's participation rate experienced the strongest process of convergence towards those who started at higher level of participation. The variable pr15to64w0 is statistically different from zero, so the effect is significant. The R^2 is 0.2095.

It is worth to point out that the interaction variable, namely the one signaling the introduction of the Euro, is not statistically different from zero in all the four regression. This implies that the introduction of the Euro did not provide a strong acceleration in terms of convergence.

Conclusions

As demonstrated both by academic papers and by manipulating OECD data, the future members of the Euro Area experienced a strong process of convergence regarding labour market variables during the 90s. Even if welfare system were and still are deeply heterogeneous, a path of convergence can be identified, especially in reducing EPL strictness and diminishing UBs generosity. Employment, unemployment and participation rate showed a clear process of convergence, particularly during the second part of the 90s, in light of the Maastricht criteria. It is beyond any doubt that the convergence process has been promoted by business cycle and the approximation of the economies at European level, but such process is surely grounded on the willingness of the member state to create strong European economy, so seeking to eliminate differences and promoting common factors. As demonstrated by the regressions the variable witnessing the introduction of the Euro is not significant, so there is no acceleration in convergence explained only by the common currency. But, even if the coefficient is not statistically different from zero, the introduction of the Euro had a psychological effect on member state. Sharing the same same currency means sharing a common destiny, so approximating economic performances and seeking to create an OCA. Unfortunately the introduction of the Euro mirrored convergence across countries until the global crisis hit the real economy. The strong and huge impact of the crisis is clear looking at the data. The absence of fiscal transfers at EU level and the profound differences across member state did not disturbed the honeymoon until the crisis affected the economy. The crisis reversed the process of convergence in labour market variables, notwithstanding the fact member states adopted similar strategies in labour market institutions. Clearly member states' structural differences strongly emerged and affected labour market outcome in the aftermath of the crisis.

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