Do the Institutional Features of the Labour Market Provide a Norm for Determining the Okun's Coefficient? A Cross-country Analysis

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Abstract

Mainly asserted by the experts, there is a common acceptance that the combination of the institutional features of the labour markets play a crucial role to determine if countries are more volatile in terms of creating and destroying employment. As a continuation of the previous assortment I tried to find out if there is any cross-country empirical relationship which relates the institutional features with the Okun's coefficient. After estimate the Okun's coefficients and carry out an analysis of correlation for different explanatory variables, this paper extract the conclusion that the institutional features show a not-so-clear and straightforward correlation for the different market labour features such as the EPL or the temporality, but in an indirect way by explaining the agents adaptability to the status-quo changes when facing the shocks.

Proporcionen una Norma les Característiques del Mercat de Treball per Determinar el Coeficient d'Okun?

És el mercat laboral suec, amb la seva estricte _EPL_, capaç de reaccionar menys als xocs externs? O és una economia dual més flexible en termes de creació i destrucció d'ocupació que una economia pro-mercat com Nova Zelanda? Els costos de mà d'obra realment importen quan una economia presenta una estructura rígida en termes d'EPL? És el rigor de l'EPL la raó per la qual els mercats regulats són més estables o és la seva flexibilitat en termes d'ajust dels salaris o la mitjana d'hores treballades pels treballadors?

Ençà que va començar la crisi al 2008, la greu situació dels diferents mercats laborals, amb unes taxes d'atur desorbitades i amb una agreujant dificultat per incrementar l'ocupació, ha fet començar altre cop la discussió de quin marc institucional pot permetre a un país tenir una evolució més estable del seu mercat laboral davant els canvis.

Cada país presenta les seves pròpies característiques institucionals en els seus respectius mercats de treball i aquesta és la raó per la qual des de 2008 s'han produït evolucions diferents dels mercats de treball. Alguns països han demostrat ser més flexible en termes de creació i destrucció d'ocupació, mentre que altres han demostrat un complex rigidesa capaç de reduir la velocitat de destrucció d'ocupació a més de suavitzar-la. El tema que es tracta d'abordar en aquest treball és determinar si hi ha alguna relació empírica entre les característiques institucionals dels mercats de treball i els coeficients d'Okun per a diferents països? Aquesta qüestió s'aborda per tal de donar una resposta aproximada de quines característiques són significativament més rellevant per determinar la volatilitat de la desocupació.

Aquest treball ha intentant esbrinar si les institucions del mercat de treball ajuden a determinar si un país presenta més volatilitat en el seu mercat de treball i que aquesta causalitat es repeteix per diferents països. Així doncs, mitjançant el càlcul dels coeficients d'Okun per diferents països i realitzant l'anàlisi per diferents variables explicatives del mercat de treball s'ha volgut comprovar si hi ha alguna relació empírica per explicar la variació dels coeficients d'Okun per països amb diferents estructura institucional. La conclusió obtinguda de l'anàlisi és que no és palpable una relació directa amb les variables que s'han assumit com explicatives, però si de manera indirecta si s'observa com les institucions afecten a la conducta dels diferents agents del mercat.

Paraules clau: Protecció de la legislació laboural , la flexiguretat, les polítiques d'activació, la llei d'Okun, Hodrick i Prescott filtre, treball ajust de l'entrada, flexibilitat, volatilitat, característiques institucionals

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I.INTRODUCTION

One of the most discussed topics by the experts in the labour market nowadays is about how would be the ideal labour market a country should have, whether one labour market where firms may hire and fire more easily in a more pro-liberal scheme or a market where high strictness of dismissal that impose difficulties and costs to firms at the time to carry out layoffs entailing some rigidity in the adjustment and less volatility of the unemployment rate.

One might expect that countries with higher employment protection legislation and strong unions, which means that firm has more difficulties to fire workers, would present more stability in the long run and countries with a more liberal system would be more volatile. However, looking at the evolution of the different labour markets, one may easily realize that the combination of the different variables is what determine the performance of the labour market, as well as how the agents adapt to the established regulation, since can be seen performances like the Spanish one that despite having a high EPL for permanent employees, the lower strictness of dismissal for temporary, made of Spain the most volatile market of the OECD countries, or the ones more proper to more liberal countries that turns out to be much more stable than some regulated markets.

In order to give an answer to that, this paper tries to address the issue if the institutional schemes of each country affect the volatility of their respective labour markets and therefore to provide an indication of which is the most preferable institutional scheme. One way to estimate the volatility is establishing the relationship between the changes in the unemployment rate with respect the change of the output from its potential level, what is known as the Okun's law. Once the regression is estimated, the coefficient of the output gap, which would be compress between 0 and 1 is the slope of the curve, which in other words means the volatility of the unemployment rate for a unitary change in the output.

In order to avoid any misleading at the time to compare among countries, I would select 6 countries which are utterly different in terms of their respective institutional features. For instance, for the employment protection legislation, some countries may present higher values than others which means that firms are able to fire labour more easily in some countries than in others, as a consequence of that and in general terms, this would entail that the country with lower strictness of dismissal to have a higher slope, which means that the unemployment rate is more volatile with regard the output gap. The simple explanation to support that behaviour is because at the minimum signal of decreasing profits the firm

which have lower strictness will prone to fire labour since it is not that costly as it would be in another country with higher strictness of dismissal, in such case, firms and institutions themselves contemplate alternatives procedures, such as reducing the hours worked, which is the case of Germany.

Of course, this is an example to explain what the relationship is I am trying to forecast, but as is shown in the following pages, the issue will not be as easy as it seems since the volatility will depend on the interaction of the different important labour market features which compose its institutional framework and how the agents adapt to them or better said, how are let the agents adapt to the shocks.

Once I have carried out the estimation of the coefficients, I will plot the regressions to help to verify if the institutional features might be significant at the time to explain the result of the coefficient, which indeed they are implicitly. But the regressions are estimated by establishing the relationship between the unemployment rate and the output gap, not the institutional changes, fact that could make us not to obtain a well-establish correlation, moreover since most of the coefficients have been calculated from a long run time series, some countries present similar coefficients that may induce to the conclusion that there is no relation among them.

In the methodology, I will explain what are the criteria I followed in order to select the countries, and moreover why I have selected those institutional features by taking a proper look to the theory. After that, I carry out the regressions for the different countries, taking into account which methodology fits better to obtain the coefficient and also for some countries as Spain or Germany, break de series due to sharp changes in their respective institutional framework of the labour market.

Once obtained the coefficient for my 6 different countries (7 if I count Spain before 1984 as another country). I regress the coefficients against different explicative variables of the labour market to check out if there is some norm that provide some rule to explain the Okun's coefficients.

After all, I would like to thanks my Thesis professor, Esteve Sanromà, for all the help he has provided me in terms of providing literature, as well as advice for performing the thesis.

II.METHODOLOGY

In this section, apart from explaining which methodology I am going to use in order to derive the Okun's curve with its so-explicative coefficient, I explain the variables I have taken into account with the objective of selecting countries which labour market institutions ensured them different performance in their respective labour markets. It is understood for different performances, whether in an economy the fluctuations in the labour market are more dynamic or not, in other words, if they create and destroy employment easily or on the contrary, their institutional scheme ensure them the stability in the long run by applying higher strictness of dismissal and pro-adjustment hours contracts. Those variables are the Employment protection legislation, temporality, adjustment of the labour input, activation policies and passives measures.

Denmark, Sweden, Germany, New Zealand, United States and Spain are the countries selected to find out if there is any empirical relationship between the institutional framework of their labour markets and its unemployment rate fluctuation. The data of the variables considered in order to select these countries has been extracted from the OECD Statistics, more precisely, the OECD employment outlook and the labour statistics.

2.1 Selection of the variables
2.1.1 Employment protection legislation

Figure 1: Employment protection legislation

Protection of regular workers against individual and collective dismissals, 2013
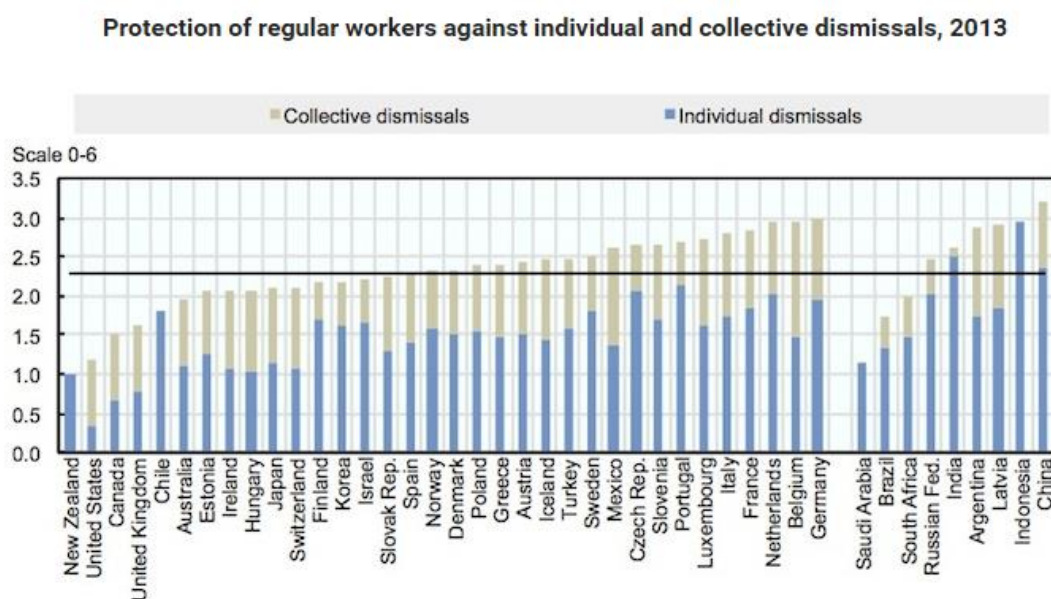
Source: OECD Labour Statistics: Employment Protection Legislation

In the figure 1 pointed within a range between 1 and 6 (from less to more strictness) it is plotted the different level of strictness of the OECD members countries. As the main issue of this paper is to dictate a final outlook of which is the type of labour market preferable, in order to select them, we used the variables which are the key to explain the functioning of the different markets. One of them is the EPL, employment protection legislation. The strictness of employment protection might be relevant to differentiate the selected countries and even crucial going in pair with other relevant variables such as unions which turns out in a determined behaviour of a labour market.

In the upturns, firms are not likely to present problems with it since they do not fire workers. However, in the downturns, strictness in indefinite contracts may induce to a bigger problem since the firm should have to pay a high firing cost and fulfil a determined level of bureaucracy which may cause the firm go to bankruptcy, causing the negative effect from not shifting labour from the declining sector to the ones appearing in the scene.

The EPL in the temporary employees is as well significantly relevant because as a result of the oil crisis many governments decided to increase the flexibility of the labour markets by introducing the temporality, but this turns out to be in a double edge gun, since countries with disparity between the strictness of dismissal of temporary and infinite employees have seen how its unemployment rates reached high levels in the 2008 crisis and also in previous crisis.

Figure 2: Strictness of dismissal for temporary employment
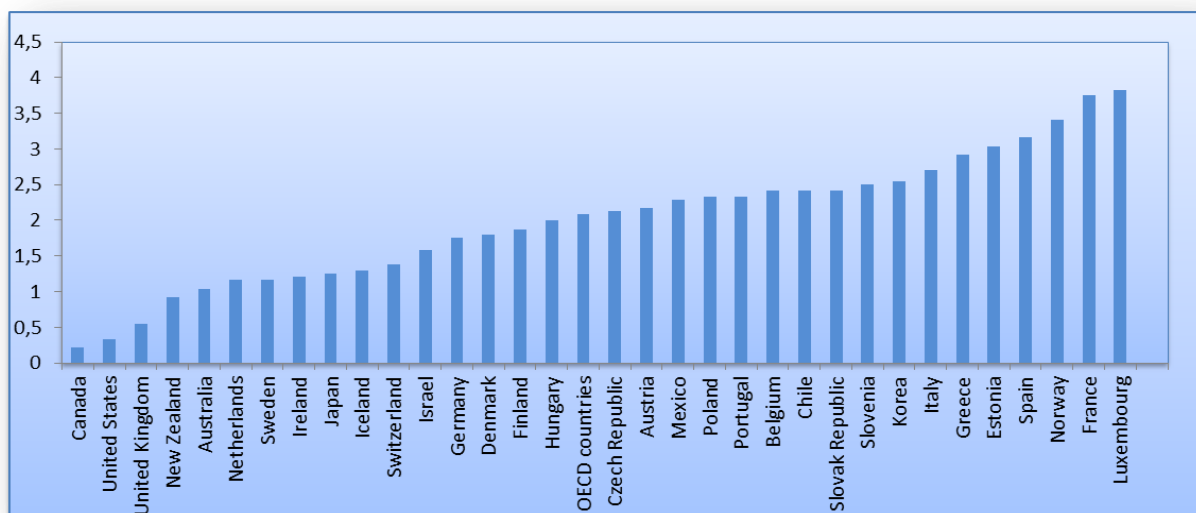
Source: OECD Labour statistics

As a matter of fact, the employment protection legislation for temporary employees does not specifically implies that the country with higher value close to 6 will not present temporal workers in its economy, since this indicator built by the OECD labour experts establish an starting point conditions of which would be the ideal contractual scheme for the temporary workers, and at the minimum institutional drift from this conditions make the value change considerably. Conditions such as that only the enterprises with more than 50 employees may employ temporary workers or that the job carried out by the person employed must be specifically temporary.

As a consequence of that, the best way to know not only which are the countries that present a lower strictness of dismissal for temporary workers is the temporary employment rate .It also helps to know which one of them maintain a dual scheme of its labour market, where the strictness of dismissal for the temporary worker is lower than the one for permanent workers, in such case, it makes the labour market more volatile and increase the labour input adjustment in persons in downturns as well as in upturns.

Figure 3: Temporary rate of employment
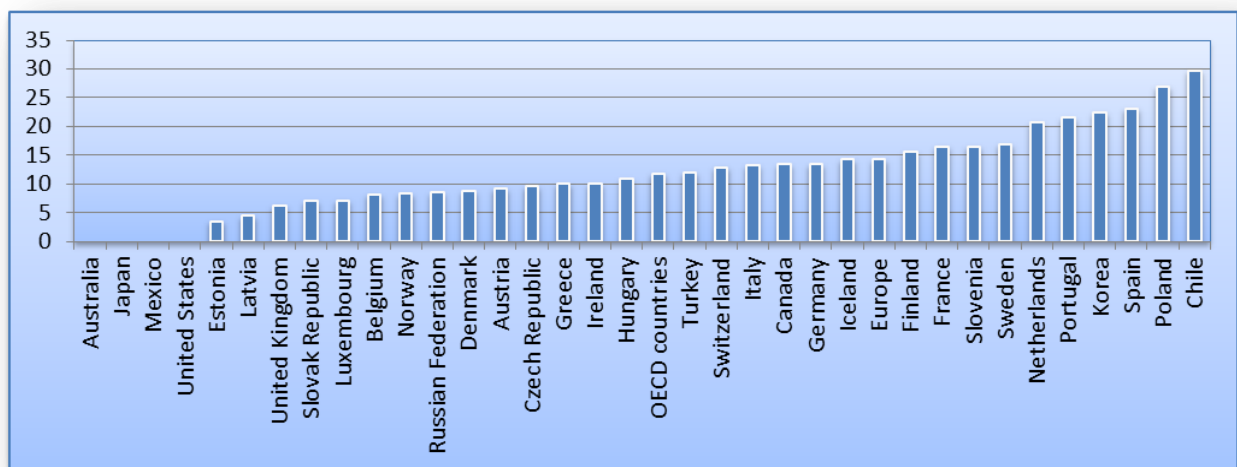
Source: OECD Labour Statistics

The labour market statistics of the OECD regarding the cost of hiring a worker is also taken into account, even if it is included in the dismissal strictness, it provides us with the idea of which economies pay higher labour cost, because in those countries the temporary employment may play a principal role in the evolution of the labour market and the adjustment of labour due to a shock can be faster and painful. To sum up, the EPL is an important variable to take into account when analysing for behavioural differences in the labour market. When studying this variable there is clear finding to say that for itself, is not

as relevant as it is when combined with other institutional features. The slope of our estimations will depend on the institutional scheme and its relation with the others. Countries presenting higher strictness of dismissal do not have necessarily present lower slope indicating that the labour market fluctuations are more stable in terms of destroying and creating employment. Since higher strictness of dismissal mixed up with lower strictness of dismissal of the temporary labour might make the firms have preferences for the temporary labour, which in the end, is less costly to fire, conditioning the industrial structural of an economy and of course, the stability of the labour market, which is the case of Spain. Or could be facing a labour market where the strictness of dismissal is one of the higher of the OECD like in Sweden, but the strong trade union membership and coverage make even both types of labour hard to adjust easily, fact that make its labour performance much more stable. Without doubt, it is worthy trying to find out if there is any relationship with the EPL and the coefficient, not only for the EPL by itself but when combined with other variables.

2.1.2 Labour input adjustment

Figure 4: Adjustment of total labour input relative to output change- decomposed between hours and persons
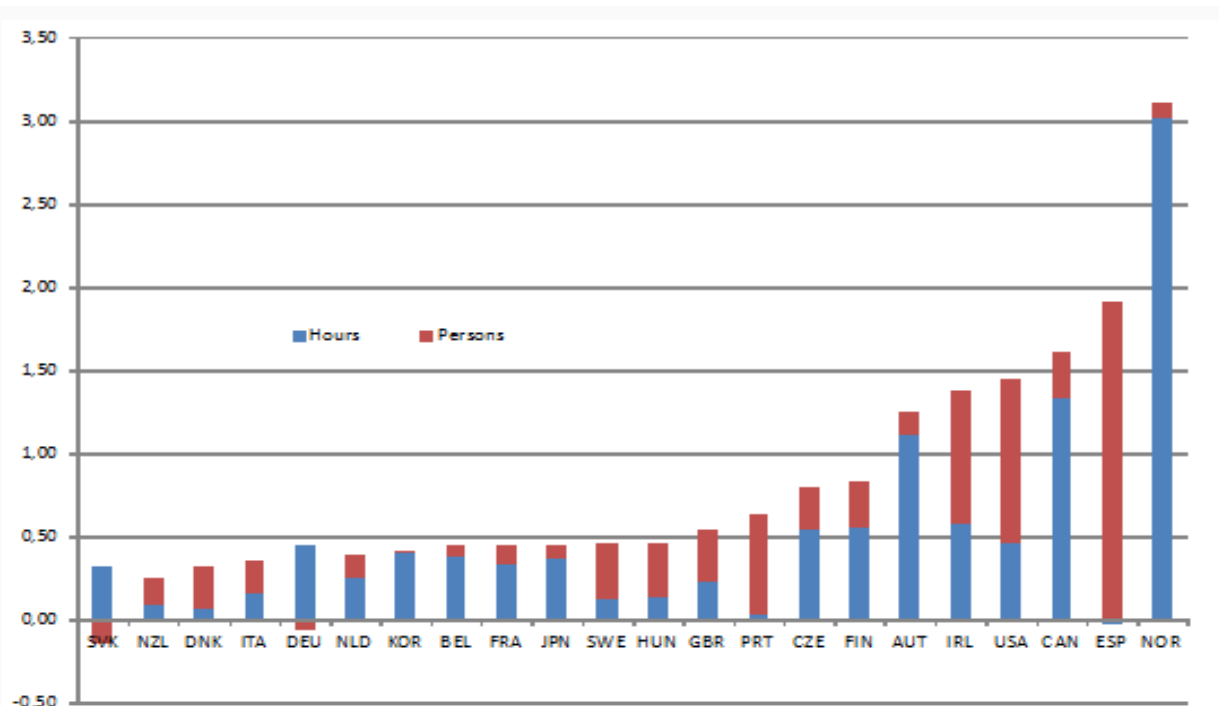
Note: Change measured from peak to trough during the 2008-09 recession (quarterly data). Total change in labour input is decomposed into changes in hours per worker and number of employees. Data source: OECD (2010)

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In the previous figure can be observed relevant information which provides us with a lot of analytical explanation of which economies present higher slope at the time to estimate the Okun's coefficients. The institutional features may cause the labour market have more or less volatility, but in the end, it turns out to be just a matter of an interaction between the worker and the firm.

First of all, firms when assessing their future profits, decide to hire or not labour, regardless the type of industry where the firm will be localized, which might be conditioned for the different firing cost (EPL) for temporary or permanent workers. Depending on the disparity of the EPL between both types of labour, one economy could be more prone to focus on developing sectors based in temporal labour if that is less costly and less difficulty to fire, and assuming that the temporary employment is formed mainly by unskilled labour; firms do not hoard this labour in the downturns since is somewhat redundant by the type of sector they are concentrated, where the firms do not invest formation in them. As a consequence of that, we find more volatility in those countries where there is high temporary employment and there are disparities between both EPL.

In figure 4 is plotted the desegregation between the adjustment through persons and hours of the relative change in labour with respect the change in output. Here there is clear evidence of which countries are more likely to be stable in the long run and those which are not.

This variable also extends to the issue of which is the industrial structure of the economy. Depending on the EPL regulation of a labour market, this one might promote the development in certain industries where firms need to invest in high-skilled workers and carry out formation programs.

It is straightforward to see how countries which present a free market scheme or have disparity between their EPL have adjusted in the extensive margin, through firing persons. Whereas countries which a much more economic structure based on high quality labour, a well-designed welfare systems, as well as, efficient protective systems, present an adjustment of the output through the intensive margin, which means reducing hours worked.

2.1.3 Activation and passive (insurance) measures

Table 1: Amount of money spent by unemployed in activation policies and passive measures

Country	PES and administration	Training	Employment incentives	Sheltered and supported employment and rehabilitation	Direct job creation	Start-up incentives	Out-of-work income maintenance and support	Early retirement	Total	Active measures (10-70)	Categories 20-70 only	Passive measures (80-90)
Austria	2.595	6.612	537	410	760	76	17.019	1.925	29.934	10.990	8.395	18.944
Belgium	2.158	1.542	2.335	1.437	725	23	14.242	6.969	29.431	8.220	6.062	21.211
Canada	1.390	1.123	50	178	179	83	7.866	29	11.134	3.239	1.849	7.895
Chile	63.741	96.593	0	0	90.895	0	566.319	0	817.547	251.229	187.487	566.319
Czech Republic	11.562	1.283	2.182	9.769	1.876	213	25.100	0	51.984	26.884	15.322	25.100
Denmark	29.888	61.305	32.842	51.007	0	0	119.058	22.736	316.834	175.041	145.153	141.793
Estonia	211	421	58	0	3	33	1.109	0	1.835	726	516	1.109
Finland	1.474	4.789	1.405	949	822	126	12.867	647	23.080	9.566	8.092	13.514
France	1.801	2.442	199	667	950	318	10.299	38	16.713	6.377	4.576	10.336
Germany	4.097	2.683	401	345	382	417	11.182	591	20.099	8.325	4.228	11.774
Hungary	72.012	2.084	77.598	0	278.430	3.199	249.436	0	682.759	433.323	361.311	249.436
Italy	622	862	1.047	0	28	83	8.926	463	12.031	2.642	2.020	9.389
Japan	82.345	84.661	107.353	0	72.722	0	559.887	0	906.968	347.081	264.736	559.887
Korea	332.654	1.108.988	618.867	650.999	1.851.658	341.768	4.609.771	0	9.514.704	4.904.934	4.572.280	4.609.771
Mexico	93	404	57	0	0	60	13	0	627	614	521	13
Netherlands	3.820	1.316	345	5.265	627	0	22.319	0	33.691	11.372	7.552	22.319
New Zealand	1.257	1.639	142	655	3	5	4.795	0	8.496	3.701	2.444	4.795
Portugal	218	539	137	25	41	2	3.159	132	4.254	962	744	3.292
Slovak Republic	126	2	152	92	17	91	483	339	1.302	480	355	821
Slovenia	373	167	125	0	226	173	3.294	0	4.357	1.064	691	3.294
Sweden	27.000	8.124	57.821	23.239	0	1.226	57.928	0	175.339	117.410	90.410	57.928
Switzerland	3.451	5.200	1.893	6.852	0	134	18.016	0	35.545	17.529	14.078	18.016
United States	434	483	75	373	64	0	5.365	0	6.985	1.620	1.186	5.365

Source: Own elaboration from OECD labour Statistics; **Note**: Categories (10-70) includes form PES and administration till start-up incentives inclusive. (20-70) includes training till start-up incentives and passive measures (80-90) is composed by the out-of-work income maintenance and support and early retirement

Apart from the ELP, another variable which may play a crucial role in the differentiation of the labour markets is the market programs carried out by the government, the passive such as the unemployment insurance and the activation policies. The fact why we think this variable is important is because the activation policies are a key feature of the triangle of the flexicurity of countries such as Denmark, which according to the experts, it have helped them achieve an outstanding performance in its labour market thanks on its dynamic system with a high rate of job finding.

- **Activation policies**

I strongly think the activation policies have much to do to explain the labour market volatility in an economy. The activation policies are determinant to achieve a higher activation rate which may induce a fast job creation. Those types of policies have shown incredibly effective at the time to increase the intensity of the job searching by establishing a closer control of the unemployed population. The main function of these policies is to elaborate a connection between the unemployed population and the vacant, so that the time of job searching is delayed the minimum time possible and also reduced the lack of intensification of the job searched caused by a generous unemployment benefits. A clear example of these characteristic policies is Denmark or Sweden, as we can see in the table; both countries present a high expenditure by person unemployed, in the case of Denmark, is a much more dynamic market where the strictness of dismissal is quite low but it compensate it with a high rate of activation by ensuring a rapid match between both parties by providing training and new formation, while in Sweden, it focuses in government occupation programs and providing employment incentives.

Countries presenting a liberal scheme in its institutional frameworks, as well as in its labour market do not need to design such policies since its unregulated market facilitate the adjustment by the market itself, since in these countries the government do not spend neither in activation policies nor unemployment insurance is not that high, the unemployed population is in some way on their own and intensify the job search once they got unemployed since there is no unemployment benefit available or at least not as much as other countries with a more important welfare system.

- **Passive measures**

Including all the safety net that a worker receives form the employment agency, the passive measures for unemployed population may be a relevant variable as the activation policies. I partly belief that jointly with the activation policies, the unemployment benefits or how generous are they as well as how long they are given might be important to explain certain degree of volatility in the labour market. Having a system were the unemployment insurance is very generous might cause the worker retard the job searching, which means a loss of intensification that entails a mismatch between the unemployed and the vacant. Obviously, this effect can be mitigated by having a well- designed activation policy. However, it is clear that this variable is less important when talking about an economy where firms do not destroy employment, but hoard it, fact that depends mostly of the type of labour and the industrial structure of an economy.

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2.2 Selected countries

- **Denmark**

The EPL of Denmark is 2.3 (for both individual and collective summed up), which is the OECD average value of strictness. Denmark individual dismissal strictness is lower, around 1.5 and the underlying reason of why this low index can be found in the economic structure of the Danish productive system, because there are plenty of small firms for which it is quite costly to maintain the high strict labour protection. Denmark is an economy which labour market presents quite high dynamics in its evolution since they are primarily defined as a "flexisecure" market, with a very high activation rate as well as separations, having high unemployment reduce search incentives and therefore in order to compensate the effect a well design of activation policies are needed in order to deal with the moral hazard and promote the job searching. In Denmark, the longer the individuals are unemployed the more intensive become the activation, even getting to the full-time level, moreover, the youth individuals got to be activated after three months of being unemployed on average, whereas in other economies, where there is little prevention and few activations measures and it is more difficulty to prevent the moral hazard and provide the correct incentive.

Its flexicurity triangle (lower strictness of dismissal, generous safety net and activation policies) has made Denmark achieve an outstanding performance of its labour market. A market where you find the so-needed nowadays dynamics in terms of labour adjustment that in combination with a well design activation policies ends up in a low unemployment rate and a high activation rate.

Nevertheless, recent studies have proven that the effectiveness of the activation policies has declined during the previous crisis, creating a mass of unemployment which has become structural. Furthermore, as we can observe in figure 4, Denmark during the crisis, with the output decreasing and the demand shrinking, most firms took the decision of adjusting in the extensive margin and fire people rather than adjusting hours. This gave us evidences of how the small firms, which represent a quite important part of the economy, over-hire labour in the upturn since this has not a cost that high and as a consequence of that they tend to overestimate its expectations of output production, creating more jobs, which would not be hired if they had to consider another scenario less optimistic.

To sum up, the Danish labour market, stands as the regulated market with more dynamics of the countries selected and showing a not so high volatility as can be expected from a flexible market.

- **Spain**

The basic characteristics of the Spanish Labour market are typically characteristic of a labour market with a high disparity between the temporary labour and the permanent one. It never had the same coefficient or headway in the labour market. Before 1984, Spain presented a structure based on a labour market with high firing cost and powerful unions and a reduced level of temporary employment, but after the oil crisis, the government in a desperate attempt to tackle the unemployment introduced the temporary contracts. Fact that has conditioned the great distresses the Spanish labour market has suffered until now, worsened by the deficit of social agents coordination. The EPL has in some measure affected the type of industry that developed in Spain. Then, there is a clear differentiation between the evolution of the labour market before and after 1984. Two regressions will be determined and applied at the analysis that this paper tries to provide a final remark. There are papers defending that this situation have changed after the great recession, which rose the unemployment rate to the 25%, from the 12% (supposed to be structural) in 2006.

The measures that the government applied, reduced the disparity between the two EPL (temporary and permanent labour), but it continues to be less costly to hire a temporary worker in the long run and besides that, they carried out measures to impulse the wage moderation, which do not affect to the slope of the Okun's coefficient but I does so by closeting the tendency line to the origin, which means that the output needed in order to decrease the unemployment rate has decreased, once it is taken into account the active population growth and the compensation per worker (see De Cea & Dolado 2013). I do not dispose of information of which is the amount, or the money budget for activation policies for Spain, but they are clearly insufficient to maintain a high activation rate, since the separations are clearly higher than the recruitment in all the downturns since 1984 due to the high rigidity of the working and pay conditions, as a consequence of that there is a high mismatch between the vacant and the unemployed.

- **Sweden**

Sweden presents a slightly higher value around 2.5 (with both collective and individual strictness of dismissal). Even though its value is not that high, the empowered unions and its

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high firing cost around the average of the OECD countries have made Sweden to be much dependent of the temporary job than partner's countries. The classic market which government activation policies and the temporary job with very low level of strictness of dismissal as well as hiring; have been proven as the main cause of employment creation in the Swedish economy, since the permanent employment is quite rigid in terms of being dismiss but at the same time flexible when it has to adapt to a new scenario. Sweden is a very particular case but it is worth studying it because as a labour market with high EPL and temporality, where the strictness of dismissal is lower in the temporary employment, I should expect a high rate of unemployment during a long period after the crisis.

But, the Swedish system itself, with its high EPL in the permanent contracts and strong trade unions, has made of the indefinite employment as labour very hard to get rid of it, and the temporality is not that high when compared with other countries with disparity in its EPL and it concentrates the younger population with unqualified skills.

There is some sort of activation policies, but as opposite to the Denmark ones, which are mostly destined to the training and employment incentives for the firms, are focus on provide job in the government programs. Although Sweden present the characteristics of a volatile labour market, the pressure carried out by the unions and the negotiation power of the workers, has made of Sweden preserve a relative stable evolution in the long run.

- **New Zealand**

New Zealand, jointly with the United States is the country with the lower index of strictness employment dismissal of the total OECD countries. First of all, New Zealand does not have collective dismissal since the liberalization process engaged in 1984, with the labour reform which established that the contractual agreement had to be done by an individual bargaining process between the individual and the employer, so that new contracts were more adapted to the necessity of the firm and not to a legislation which could prevent the reallocation of workers due to burdensome firing cost imposed.

The New Zealand Index is around 1, quite higher if compared with United States, which value is around 0.3. This country has been selected because even though it is supposed to be a flexible economy, the rapid job creation and the dynamics of this labour market will stand as an alternative of a stabilized unemployment rate with respect the output growth than an economy presenting a higher strictness of dismissal. Furthermore, since the agreement is established between the employer and the employee, the durability is also stipulated.

- **United States**

Even though one might think that the United States is the most flexible economy of the OECD, when estimating the Okun's coefficient, it turns out to be around the average of the OECD, with a value close to 0.5. As New Zealand, United States lack of an institutional framework and firms enjoy of an unregulated market which have to fulfil few dispositions, but those not even increase the cost of the labour.

Presenting a bit of strictness in the collective dismissal does not entail any prevention for the labour market to adjust automatically, but, if we look at the figure 4 of how the decrease in output is adjusted, whether the intensive margin or the extensive, approximately half of it was adjusted in the intensive margin, revelling one of the most important characteristics, which is that a very relevant part of the industrial structure is based on high-value industries, where the firms go ahead with important investments in human capital, investments that they do not want to lose due to a downturn and therefore hoard the labour by adjusting in the intensive margin with the hours worked.

- **Germany**

Germany stands as the OECD country with the highest strictness in employment dismissals. As a completely opposite country from the ones mentioned before, Germany presents a very high Index, the underlying reason of why is the system is the complex protection system designed for the infinite contracts employment. Furthermore, the firing costs are exceedingly high in infinite contracts in comparison with the temporal ones. Germany has always been in the intensive margin of adjustments by hours and not by persons, the main explanation for that is the strictness EPL of which the German infinite employees enjoy, which avoids firms over-hiring labour in the upturns in their own firms and reduces the volatility of the labour market. Creating long term job tenures and facing the shocks by adjusting the hours worked and not employees. This is why I selected this country because it is a clear example of the jobless recovery, where the output grow but not necessarily the employment since there are other mechanism in motion and the labour market is indistinctly to the others economies less volatile.

Germany employment adjustment was done almost all in the intensive margin. Having the highest EPL in the OECD and one of the lowest unemployment rate in Europe, would stand as the best alternative of labour market, where the temporality is focused on the youth unskilled labour force and where the structure of the economy preceding the labour market is vital, based on high value added industries, with complex system of synergies among

investigation centers and companies. What is relevant at a time to study the German labour market is to consider the relevancy of its institutions at the time to explain the lower unemployment rate (see Boeri and Bruecker 2011, OECD 2010). These institutions defend a short-time work system that guarantees a more stable fluctuation of the labour force since it reinforces the idea of adjusting employment by hours and not by persons and make firms refrain from layoffs, moreover, the employment agency is able to reimburse the 60 or 70% of the part of the wage the employees are not obtaining. Under this system, a firm which may be facing some financial difficulties might apply to the employment agency in order to carry out a package whereby the firm in problems may adjust the hours worked, as well as the pay in proportion. There is evidence which demonstrates that this system leaded to a more adjustment in the intensive margin throughout reducing hours and less in the extensive one (see Abraham and Houseman), entailing then a more output growth required since once the situation gets better and the expectations improve, there will be a recover in the hours worked not in employment. The firm may be able to adjust the hours worked by each employee, and of course pay wages in accordance with the hours worked. Furthermore, in recent search (see Burda and Hunt 2011) is shown evidence of another reason which might be relevant to explain the economic miracle. During the 2005/07 export growth boom, the German firms did not hire much workers as it was expected and the underlying reason of that is the expectations the firms made about the context of the economy was that the boom would have not last long, and indeed they asserted well. Then, as we have seen previously, in contrast with the Denmark or New Zealand firms, the ones located in German measured the profitability of hiring a worker assuming a scenario where the boom would not last very long.

Figure 5: German manufacturing firms' business assessment
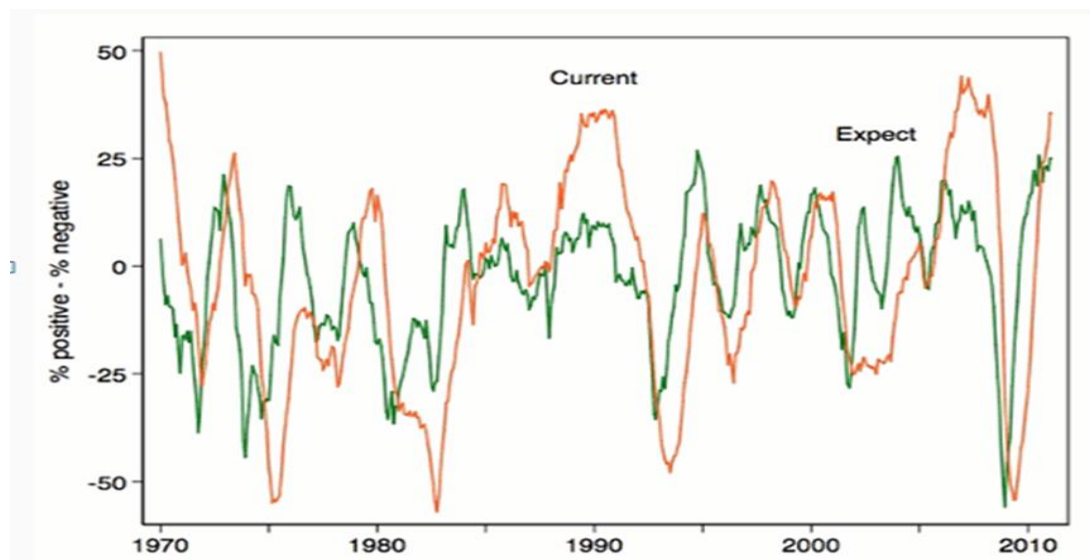
Source: VoxEU working paper

The countries have been selected with detail, taking a look at the Employment Protection Legislation, government expenditure in activation policies, as well as passive measures and although it has not been included in the explanation, I took a look at the coverage rate of the trade union (from OECD), I chose edge countries, some with a very high EPL others with non-existent or residual and others presenting medium values, the same happens with the EPL for temporary workers. The procedure have a simple explanation , which is that in order to check out if there is any sort of relationship between the Okun coefficients and the institutional features, there have been selected economies with different labour markets features and different evolutions, but as well different labour markets with not so different evolutions though. The extreme cases, which have already been revealed in previous investigation papers, are Spain and Japan (Japan not included in the regression). The rest of the OECD countries present values around 0.5 with slight differences among each other.

2.3 Estimations of the Okun's coefficients

2.3.1 Review of the theory

In 1962, the economist and mathematic Arthur Okun established an empirical relationship between the unemployment rate and the output growth of an economy. According to the author, assuming a natural unemployment rate, as well as for the output, deviations from the potential output may end up causing the shifting of the unemployment rate. The affirmation of the Okun's law is supported by the textbook, where and economy facing a downturn and having high unemployment, by stimulating its demand, would create employment in the short run, initiating a virtuous circle.

There are some critics that go against the belief of the fulfilment of the Okun's law. Some studies with international data establish that Okun law is unstable in some countries, where fails and overestimate the augment of the unemployment. Furthermore, since USA is one of the countries I estimated, might be important to mention that some observers have proven Okun law misleading when assessing the fall of the employment in the last three recessions, in the short run and defend that there was a jobless recovery because the unemployment rate did not fall as much as the Okun law predicted. And the most recent critic is that the last recession has broken the rule and it is no longer useful as a macroeconomic tool.

However, the Okun theory is valid in the long run, like it is affirmed in Ball et al_2013 OkunLawFitat50 (IMF working paper). This paper provides evidence that the Okun law is stable for USA and many OECD countries in the long run.

The same IMF paper commented previously refuse the affirmation of Knotek 2007, author that defend that there was a change of origin in the recession that were not included when estimating the rule. However, by carrying out the estimations with dummy variables for the recessions, the authors of the paper prove that there is any significant change of the coefficients

De Cea & Dolado provides a different view. In their study, by assuming a CRS production function, derive a well-founded labour demand, which depends on the wages growth and the active population. They derive the output thresholds in order to boost employment or stabilize unemployment, obtaining result such as that Spain after the reforms imposed by the government would only require some rate of growth higher than 1.2% in order to create employment. However, this is not exactly a law, since what these authors do is assume the evolution of the values of wages, active population as well as productivity, which are variables that are relevant to explain the distance from the origin to the vortex. These authors do not take as assumed in the short run the evolution of the wages, active population or productivity, just the contrary of the other methods that estimate and unique Okun curve; this is what they call the black-box.

Generally, the most important drawback of the Okun law is that the institutional features of each economy are different, and some may find more difficulties at the time to boost employment, whereas they destroy it rapidly. From this affirmation is done one of the most reliable critics to the curve, that does not fit well the mismatch between the unemployed and the job, and other frictions that cause more drawbacks at the time to make increase the employment.

 The interpretation of the curve is straightforward to define since in the end it turns out to be a macroeconomic tools that provides us a coefficient indicating how the unemployment rate shift, in which degree, when the output growth in a time period is higher or lower than the potential one. With a coefficient of 0.5 would mean that the unemployment rate shifts halve of the same variation of the output. So, the value of the Okun's coefficient, the closer to 1, the more volatile is an economy because the meaning of that is that the output deviations from the output trend has a higher effect on the unemployment rate.

2.3.2 Estimation procedure

The method used for the estimation of the Okun coefficient is as follows:

1) First, I estimate the potential values, which is the trend, for the unemployment and the output. In order to achieve that, we filter the variables with the Hodrick and Prescott filter. I try other filters for the problem of estimation of the edges, but I found no significant differences. The problem of the HP filter is that, the estimations of the trend might be affected by larger deviations in the extreme, like the one we have during the Great Recession. Even though is not accepted for some economist, we might find the trend estimations plausible because as we have seen during the crisis, in most countries , especially in the European ones, the connection between workers and jobs has been affected, with the consequent increase of the natural unemployment rate and have also reduce the potential growth of each economy. On the other hand we smooth the series with a parameter lambda equal to 100. I chose this value because is the most common used for annual data, I also try lambda equal to 1000 but I does not improve the fit of the model.

2) Treatment of the data: Once extracted the smooth trend, I take logarithm for the output values and take the difference (The series of the variables are taken in level, even though there are some complications when assuming the natural rate of the unemployment or the trend of the output it provides more significance power to the sample), for the unemployment rate only differences are taken since the value is already in percentage.

3) Using the Gretl Statistical program we carry out the estimations, the coefficient associated to the output gap is the Okun coefficient which is compress between 0 and 1. We also look at the R squared to check out the fit of the model as well as the F statistic for the global significance of the model.

The Data used has been obtained from Ameco Database, the series of Gross Domestic Product, constant prices and unemployment rate. The series is from 1960 up to 2013.
Notice that, when facing possible structural changes in the series such those in Spain or Germany because of institutional reforms that represented a great change in the evolution of the labour market two estimations are regressed accordingly with each period.

Importantly, I break the series for Spain for before and after 1984, year where the Spanish government implemented the reform of the "Pactos de la Moncloa", from which the most important institutional drift was the appearance of the temporary contracts. Furthermore, I divide the sample for Germany to check out if the Kartz reforms influenced the Okun's coefficient.

Taking a look at the data obtained from Ameco, the unemployment rate for most countries is very low in the early 60s and 70s, countries such as Denmark or New Zealand present very low unemployment rate variation from 1960 to 1980. Therefore I decided to carry out the estimations from 1960 to 2013 and from 1980 to 2013. As I mentioned before, this might be important because the unusual stability of the unemployment rate regardless the output growth could bias the estimation of the coefficient.

Another complication comes out for Germany, the reason why I chose the Ameco database is because would let me obtain data from 1960, but the series for Germany is divided between West Germany before 1990 and Germany after that date. As a solution, the data Of Germany has been extracted from the OECD database.

Once I obtained the coefficients I carry out a cross-country analysis to find out if there is any correlation between the Okun coefficient and the institutional features as explicative variables for the behaviour of the labour market, but not necessarily are specific features, since I include some performance variable to check out for correlation as well.

III. RESULTS

- **Spain:**

Output 1: Spain before 1984

```
Modelo 1: MCO, usando las observaciones 1960-1983 (T = 24)
Variable dependiente: u_change

             Coeficiente  Desv. Típica  Estadístico t  Valor p
  --------------------------------------------------------------
   gdp_gap    -0.294660     0.0636142      -4.632       0.0001  ***

Media de la vble. dep.  0.000000   D.T. de la vble. dep.   0.009249
Suma de cuad. residuos  0.001018   D.T. de la regresión    0.006653
R-cuadrado              0.482626   R-cuadrado corregido    0.482626
F(1, 23)                21.45523   Valor p (de F)          0.000116
Log-verosimilitud       86.76069   Criterio de Akaike     -171.5214
Criterio de Schwarz    -170.3433   Crit. de Hannan-Quinn  -171.2089
rho                     0.273316   Durbin-Watson           1.364831
```

The coefficient associated the output gap is -0.29, and the R squared is 0.46. I realized we might have a problem of robustness since during all the period the unemployment rate keep itself very stable but from 1980 onwards there is a rapid increase. However, since assuming the same unemployment rate increase and the same output negative growth of 1975 yields a similar coefficient I decided to keep the slump of the 1980 in the regression.
The coefficient is quite possible since the Spanish labour market was composed by an unique powerful union and very high firing cost, around 41 days per year worked.
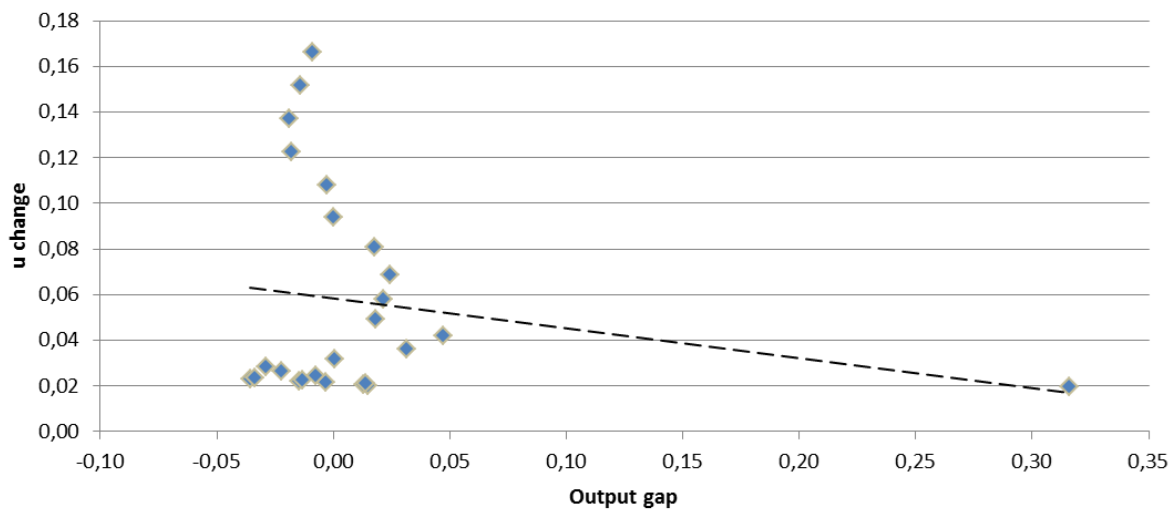
Output 2: Spain after 1984

```
Modelo 1: MCO, usando las observaciones 1985-2013 (T = 29)
Variable dependiente: u_change

             Coeficiente  Desv. Típica  Estadístico t  Valor p
  --------------------------------------------------------------
   gdp_gap    -0.727943     0.0890672      -8.173      6.76e-09 ***

Media de la vble. dep.  0.000000   D.T. de la vble. dep.   0.023098
Suma de cuad. residuos  0.004412   D.T. de la regresión    0.012553
R-cuadrado              0.704633   R-cuadrado corregido    0.704633
F(1, 28)                66.79728   Valor p (de F)          6.76e-09
Log-verosimilitud       86.31506   Criterio de Akaike     -170.6301
Criterio de Schwarz    -169.2628   Crit. de Hannan-Quinn  -170.2019
rho                     0.591429   Durbin-Watson           0.789748
```

The following output is for Spain after 1984 until 2013, as we can see it's a completely different situation from the one previous the assigned date. The model shows a higher explicative power as well a higher coefficient, which is what we expected, a value around -0.73. I check out for stability dividing the two subsamples by two. In the first range I found some instability in the first range compress between 1960 and 1984 but no proof of instability in the other section of the series, the more volatile

Figure 6: Okun's curve for Spain, 1960 to 1984

Figure 7: Okun's curve for Spain, 1984 to 2013
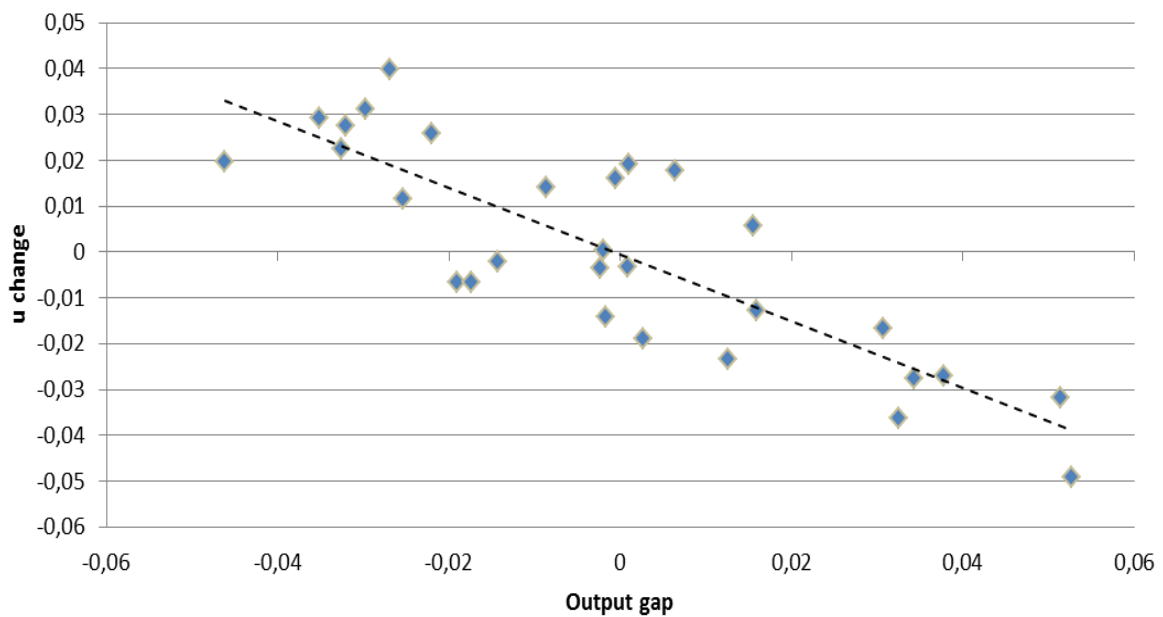
- **New Zealand**:

For New Zealand, I estimated the Okun coefficient by taking the series since 1980 to 2013. The explanation of why I take such an action is due to from 1960 to the 80s, New Zealand's unemployment rate hardly change 2 percentage points and remained lower than 1% until 1977.
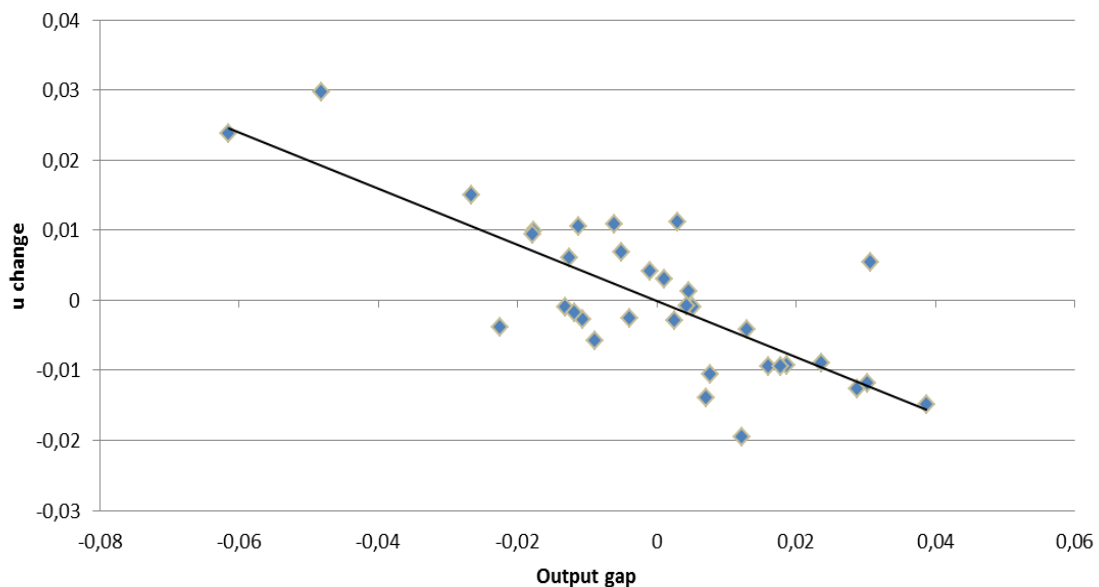
Output 3: New Zealand

```
Modelo 1: MCO, usando las observaciones 1980-2013 (T = 34)
Variable dependiente: u_change

                Coeficiente   Desv. Típica   Estadístico t   Valor p
      ----------------------------------------------------------------
  gdp_gap      -0.400121       0.0568483         -7.038       4.71e-08 ***

Media de la vble. dep.   0.000000    D.T. de la vble. dep.    0.011003
Suma de cuad. residuos   0.001597    D.T. de la regresión     0.006957
R-cuadrado               0.600189    R-cuadrado corregido     0.600189
F(1, 33)                49.53898    Valor p (de F)            4.71e-08
Log-verosimilitud       121.1753    Criterio de Akaike      -240.3506
Criterio de Schwarz    -238.8243    Crit. de Hannan-Quinn   -239.8301
rho                      0.122684    Durbin-Watson            1.649337
```

The regression yields a coefficient of -0.40. The model is globally significant and the R squared is around 0.60 which is an acceptable fit of the model.

Figure 8: Okun's law for New Zealand, 1980 to 2013

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- **Denmark:**

I estimate the Okun's law with a temporal series that compress from 1980 to 2013
The results are a coefficient lower than 0.5 which is what I expected taking a look at the evolution of the unemployment rate for the series.
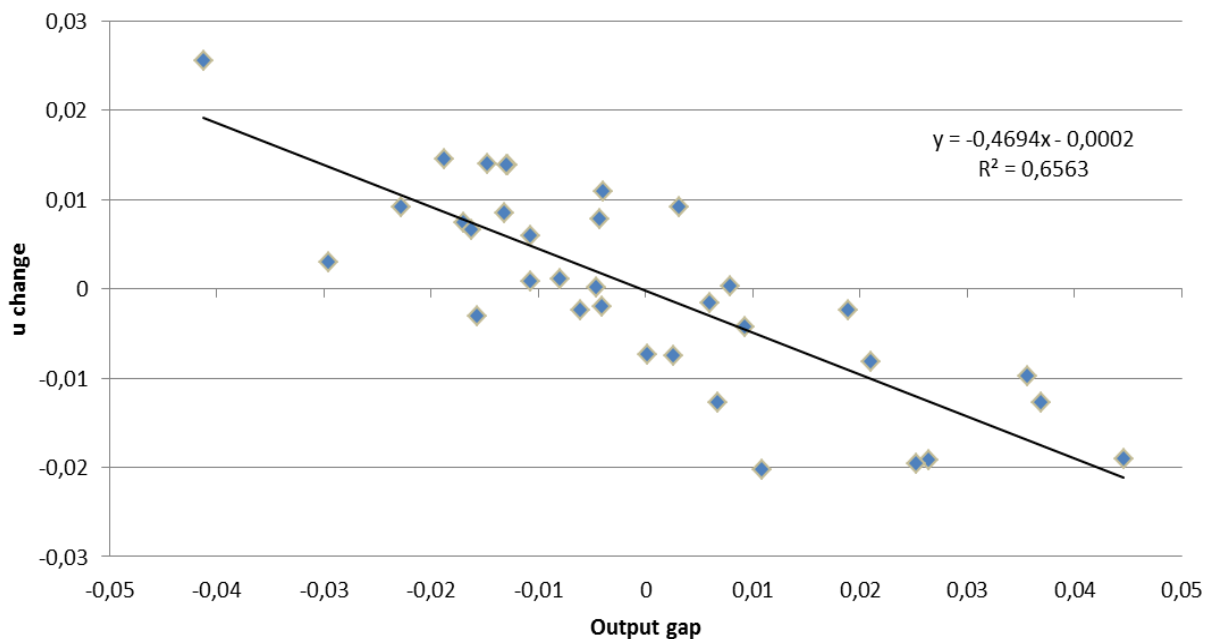
Output 4: Denmark

```
Modelo 1: MCO, usando las observaciones 1980-2013 (T = 34)
Variable dependiente: u_change

                Coeficiente   Desv. Típica   Estadístico t   Valor p
         -------------------------------------------------------------
   gdp_gap      -0.469224       0.0591340        -7.935       3.76e-09 ***

Media de la vble. dep.   0.000000   D.T. de la vble. dep.   0.011266
Suma de cuad. residuos   0.001440   D.T. de la regresión    0.006606
R-cuadrado               0.656118   R-cuadrado corregido    0.656118
F(1, 33)                 62.96302   Valor p (de F)          3.76e-09
Log-verosimilitud        122.9342   Criterio de Akaike     -243.8683
Criterio de Schwarz     -242.3420   Crit. de Hannan-Quinn  -243.3478
rho                      0.433120   Durbin-Watson           0.962496
```

Figure 9: Okun's curve for Denmark

The coefficient is -0.47 and the R squared of 0.65 imply a good fit of the model, although is not that high as Spain (1984-2013), which is one of the highest of the total sample.

- **Sweden:**

Output 5: Sweden

```
Modelo 1: MCO, usando las observaciones 1980-2013 (T = 34)
Variable dependiente: u_change

              Coeficiente   Desv. Típica   Estadístico t   Valor p
     -----------------------------------------------------------------
     gdp_gap    -0.453329      0.0602144       -7.529       1.17e-08 ***

Media de la vble. dep.   0.000000   D.T. de la vble. dep.    0.013493
Suma de cuad. residuos   0.002211   D.T. de la regresión     0.008185
R-cuadrado               0.632023   R-cuadrado corregido     0.632023
F(1, 33)                 56.67950   Valor p (de F)           1.17e-08
Log-verosimilitud        115.6478   Criterio de Akaike      -229.2956
Criterio de Schwarz     -227.7692   Crit. de Hannan-Quinn   -228.7751
rho                      0.613643   Durbin-Watson            0.768825
```

For Sweden I considered to estimate the Okun's coefficient for the period 1960-1980, but the low unemployment rate in the 60s and earlier 70, as well as its little variability, move downwards the Okun coefficient when I included the period 1960-1980. Therefore I decided to estimate from 1980 onwards.

The coefficient yielded is -0.45, and the R squared is 0.63, which is higher than the 0.60 of the 1960-2013 regression.

Figure 10: Okun's curve for Sweden

$y = -0,4535x - 0,0002$
$R^2 = 0,6323$
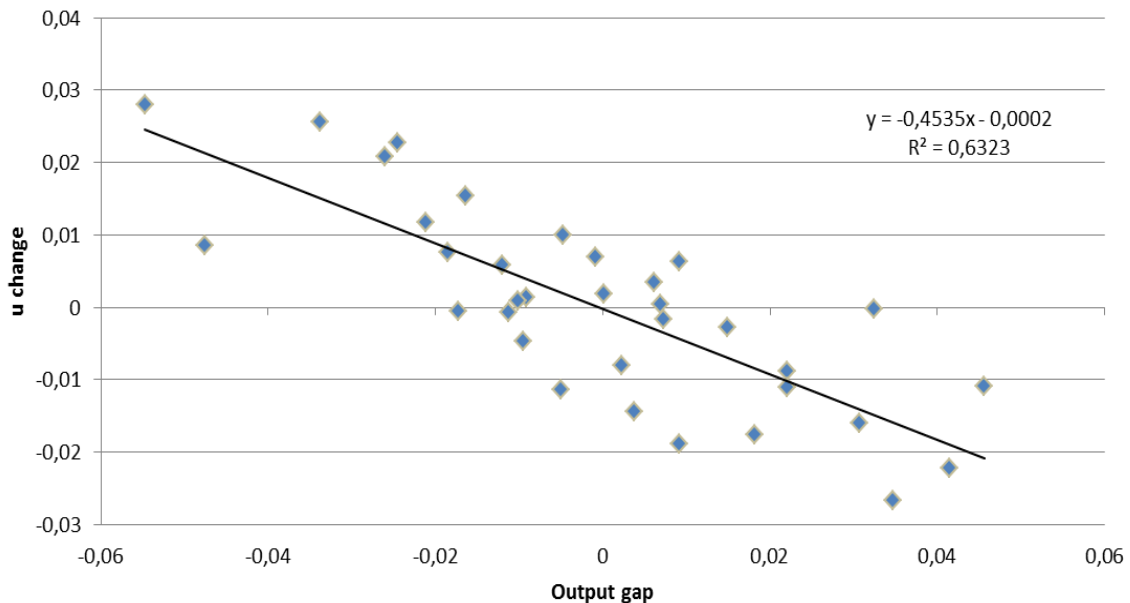
- **Germany:**

In the German case, I considered to break the series at the point where the government introduced a wide array of flexibility measure, the reforms named the Kartz reform. But there are no significant differences and the evolution of the unemployment rate does not change drastically in the sense it does not turn out to be more volatile as in the Spanish case.
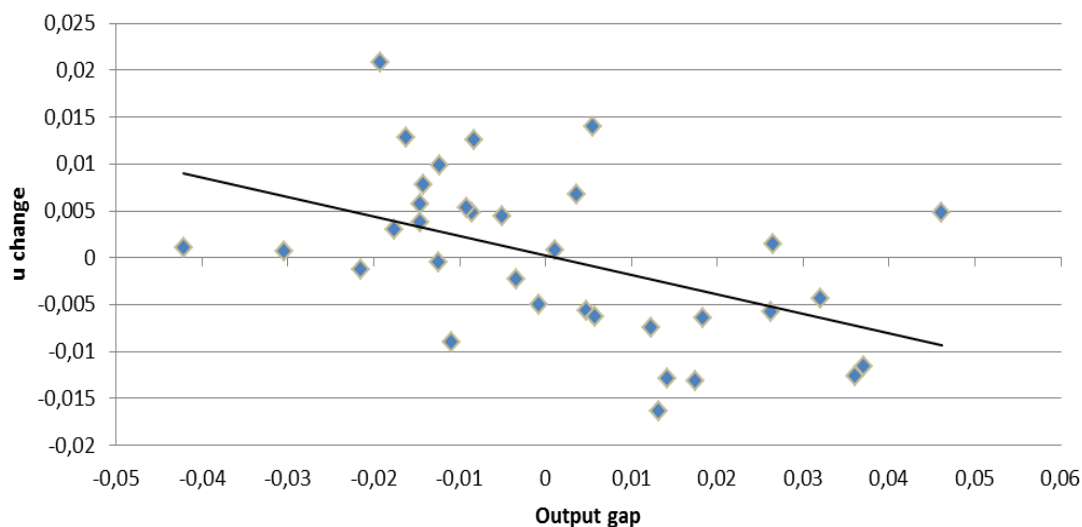
Output 6: Germany

```
Modelo 1: MCO, usando las observaciones 1980-2013 (T = 34)
Variable dependiente: u_change

              Coeficiente   Desv. Típica   Estadístico t   Valor p
    ---------------------------------------------------------------
    gdp_gap    -0.263604      0.0664014        -3.970      0.0004  ***

Media de la vble. dep.   0.000000   D.T. de la vble. dep.    0.008767
Suma de cuad. residuos   0.001717   D.T. de la regresión     0.007212
R-cuadrado               0.323212   R-cuadrado corregido     0.323212
F(1, 33)                15.75975    Valor p (de F)           0.000366
Log-verosimilitud       119.9503    Criterio de Akaike      -237.9007
Criterio de Schwarz    -236.3743    Crit. de Hannan-Quinn   -237.3802
rho                      0.690624    Durbin-Watson            0.615237
```

The Gretl output yields an estimation which r squared is the lowest, with only 0.33. The coefficient is -0.23, value which is somewhat realistic if I take into consideration that the main adjustment of employment per change of total output was done almost everything by hours, at least, in the last slump of 2008-2009 (see figure 4).

Figure 11: Okun's curve for Germany from 1980 onwards

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- **United States:**

Output 7: United States

```
Modelo 1: MCO, usando las observaciones 1960-2014 (T = 55)
Variable dependiente: u_change

            Coeficiente   Desv. Típica   Estadístico t    Valor p
      -------------------------------------------------------------
  gdp_gap      -0.467748      0.0335794         -13.93    1.61e-019 ***

Media de la vble. dep.  0.000000   D.T. de la vble. dep.   0.010228
Suma de cuad. residuos  0.001230   D.T. de la regresión    0.004772
R-cuadrado              0.782288   R-cuadrado corregido    0.782288
F(1, 54)              194.0339     Valor p (de F)          1.61e-19
Log-verosimilitud     216.4352     Criterio de Akaike    -430.8704
Criterio de Schwarz  -428.8630     Crit. de Hannan-Quinn -430.0941
rho                     0.476027   Durbin-Watson           1.023823
```

As I commented previously, since the Ameco database provided me with data separating West Germany and Germany, in this case I extracted the data from the OECD Statistics.

Until now the Okun's law for USA has been the regression that has fitted best of all. With an R squared nearly 0.8, and the coefficient is -0.46.

Figure 12: Okun's law for USA, 1960 to 2013
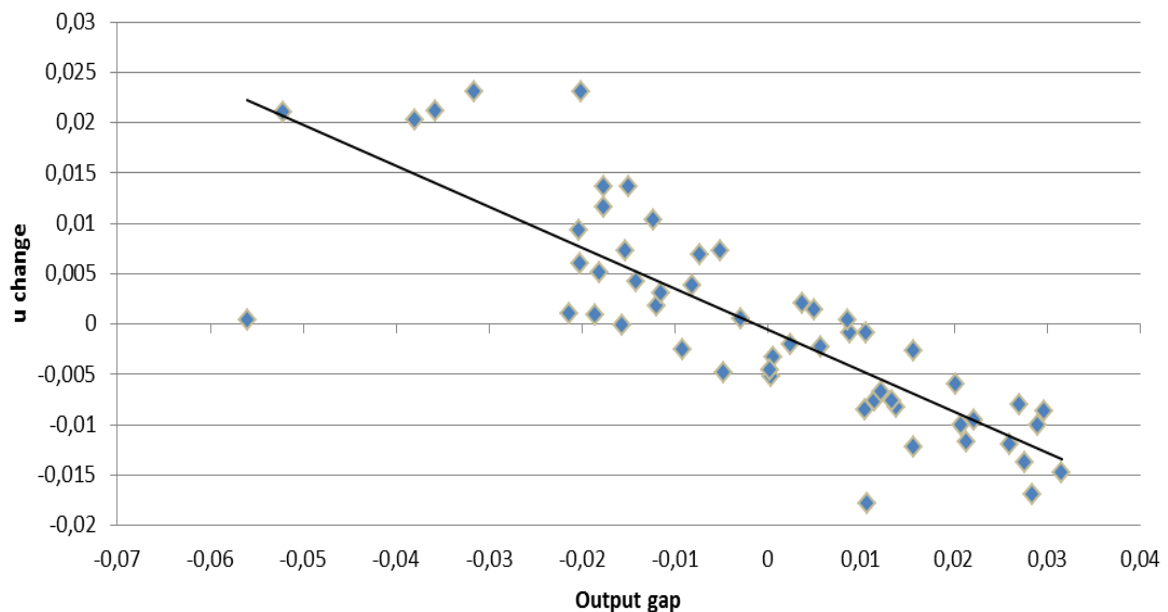
I do not consider starting in 1980 as the other countries since USA have neither structural breaks nor important labour market reforms that might have affected the evolution of its labour market.

In the following table are written the coefficients, the adjusted R squared, as well as the standard deviation. The result I obtained were the ones expected when firstly I carry out an analysis of which characteristics have each labour market for those economies. Furthermore, by taking a look at the evolution of the unemployment rate, we also find quite possible the values yield by the regressions.

Table 2: Results of the regressions

Countries	β	Adjusted R^2	Observations	Standard deviation
Spain before 1984	-0,29	0,48	24	0,0636
Spain after 1984	-0,72	0,7	29	0,089
New Zealand	-0,40	0,60	34	0,057
Denmark	-0,46	0,65	34	0,059
Sweden	-0,45	0,63	34	0,060
Germany	-0,26	0,32	34	0,066
United States	-0,46	0,78	55	0,033

Source: Own elaboration from Gretl outputs

All the regressions yield an R squared superior than 0.3. Countries such as Spain after 1984, New Zealand, Denmark, Sweden and the United States the R squared is higher than 0.6, whereas Spain before 1984 and Germany are lower. In the next section, I am plotting the different explanatory variables against the values of the β of which I suspect could have some sort of relationship at the time to explain or determine the Okun's coefficients.

Even though it is clear there is a cause-consequence effect of these variables over the Okun's coefficient, sometimes it's difficult to find a clear empirical relationship for the different variables when the Okun's coefficients themselves are determined by the interaction and the effects among the different features of the labour market rather than a consequence of a single variable.

IV.EXPLANATORY VARIABLES FOR CROSS-COUNTRY ANALYSIS OF THE OKUN'S COEFFICIENTS

Table 3: Explanatory variables for each country considered to have some relationship

| Countries	Employment Protection lesgislation (individual dismissal)	Employment Protection lesgislation (individual and collective dismissal)	Temporary employment (2013)	Percentage of the employment destroyed (temporary) over the total[1]	Employment adjustment (hours vs persons)(during 2008-2009 recesion)	Time destroying employment (in years)[2]
Spain before 1984	2,8	3,0	8	5	20	1
Spain after 1984	1,95	2,28	23	59	100	5
New Zealand	1,41	1,01	3*	-	60	1
Denmark	2,10	2,32	9	5	80	4
Sweden	2,52	2,52	17	49	60	3
Germany	2,72	2,98	13	12	0	4
United States	0,49	1,17	5*	20	60	3

1. From the total dependent employment. Each countriy haver their own time lenght
2. Germany (2001-2004); Spain (2008-2013); Sweden (2008-2010); Denmark (2008-2012)
* no available data, the rate are asingned considering the last year available, which for United States is 1995

4.1 Employment protection legislation (EPL)

**Figure 13:** Regression of the EPL against the Okun's coefficients
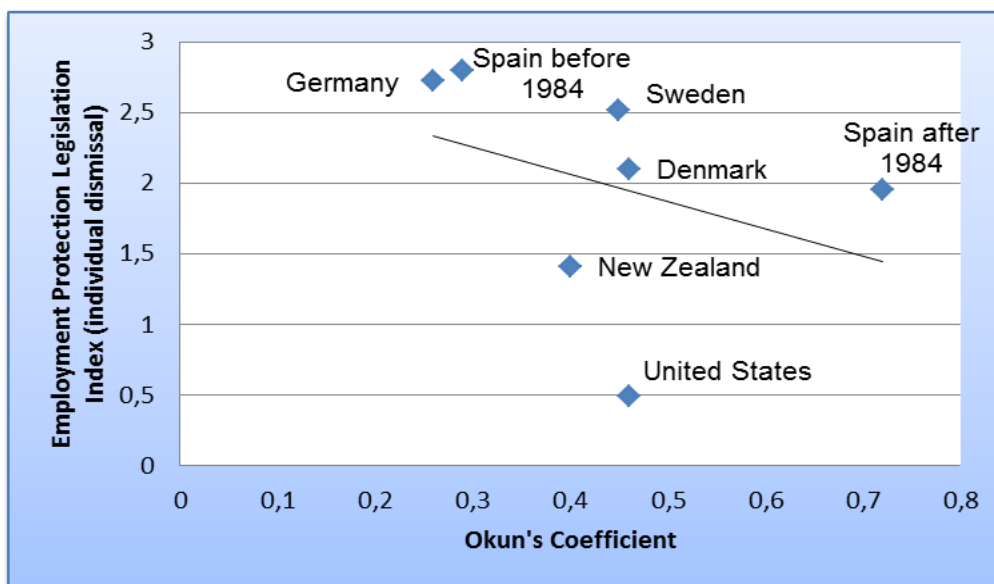
Even though there is a clear relationship in a theoretical aspect, we also find some empirical relationship, even though is not that well defined, because for Spain (after 1984) even having a high EPL for individual dismissal, as the temporary contract present lower difficulties as well as lower cost for dismissal, its labour market is quite volatile since the structure and the evolution of the labour market are quite dependent of the temporary labour, which represents the 23% of the total employment.

Whereas for the case of Germany and Spanish economy before 1984 are clear. Germany, for the contractual system which promotes adjusts the employment by hours and Spain for the existence of high EPL and for the absence or low participation of the temporary labour. Apart from Spain, for the selected countries, we find evidence that, the lower the EPL, the higher the Okun's coefficient and therefore the volatility of the labour markets. Nevertheless, the assertion mentioned before cannot be applied for New Zealand and the United States, since those countries, even though having a very low EPL, are placed in the centre of the regression, entailing that the causality is not seen when including unregulated economies.

4.2 Temporary employment rate

Figure 14: Regression of the temporary employment against the coefficients
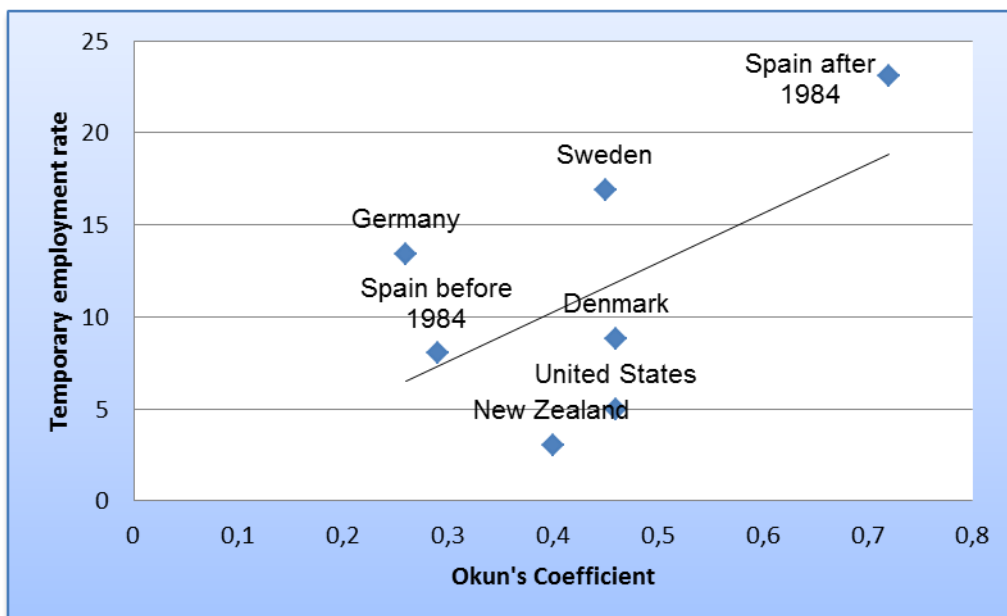
As I commented when I was analysing the countries that I had selected, the rate of the temporary employment was the best way to measure the EPL of temporary employment as well as its representation over the total employment. Therefore, I decided to test if there is any relationship.

As we can see in the graph, countries such as Germany, presenting a 13% of temporality stands as the country with lower volatile of the unemployment rate for output deviations from the potential rate, but as I commented previously, this is cause for other reasons, such as the contractual scheme applied by the general employment agency. The same happens for Sweden, even though having a high temporality rate, its Okun's coefficients is similar to those of Denmark or New Zealand. As a conclusion, for the selected countries, there is no clear empirical evidence that establish the lower the temporary employment rate, the lower the Okun's coefficient. However, there is indirectly some sort of relationship since the volatility cause of the temporary job will depend exclusively from two aspects. First, the disparity between the EPL for permanent and temporary workers and also will depend on the unions strength.

Figure 11: Radial chart for the Employment protection legislation, temporary employment rate and the Okun's coefficient
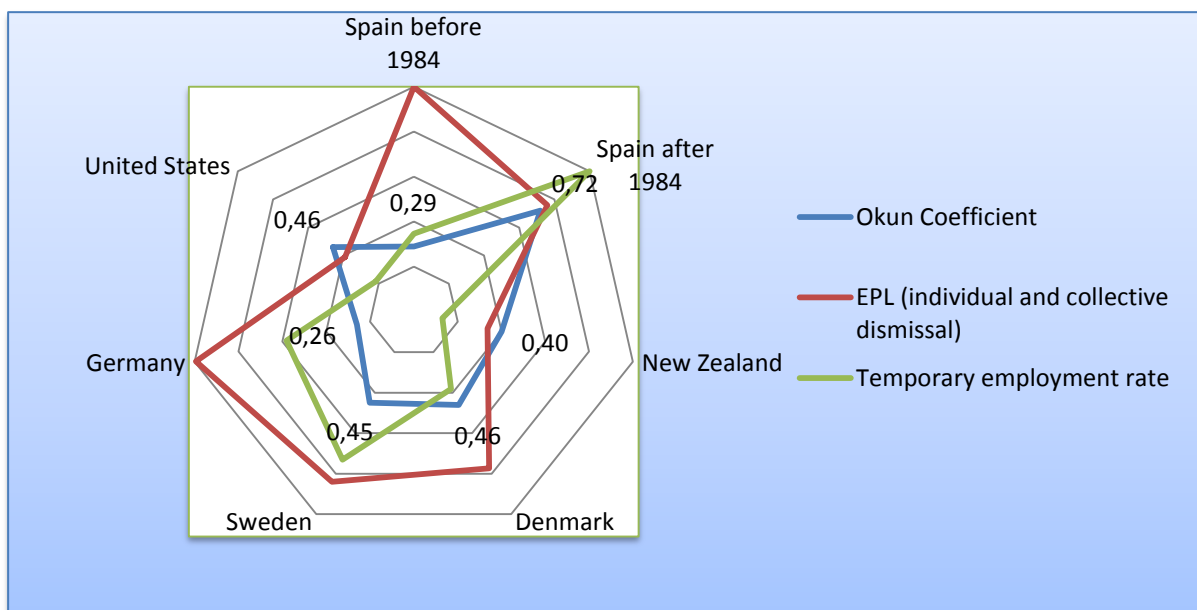

Source: OECD Employment Statistics and coefficients obtained from Gretl

The previous chart is another way to show how the economies such Germany, Sweden or Denmark, where the higher EPL, implies lower Okun's coefficient, only and only if this is not accompanied with high temporality fact caused by the disparity between the firing cost of both types of labour.

4.3 Percentage of the employment destroyed (temporary) over the total

Figure 16: Regression percentage of the employment destroyed (temporary) over the total against the Okun's coefficients
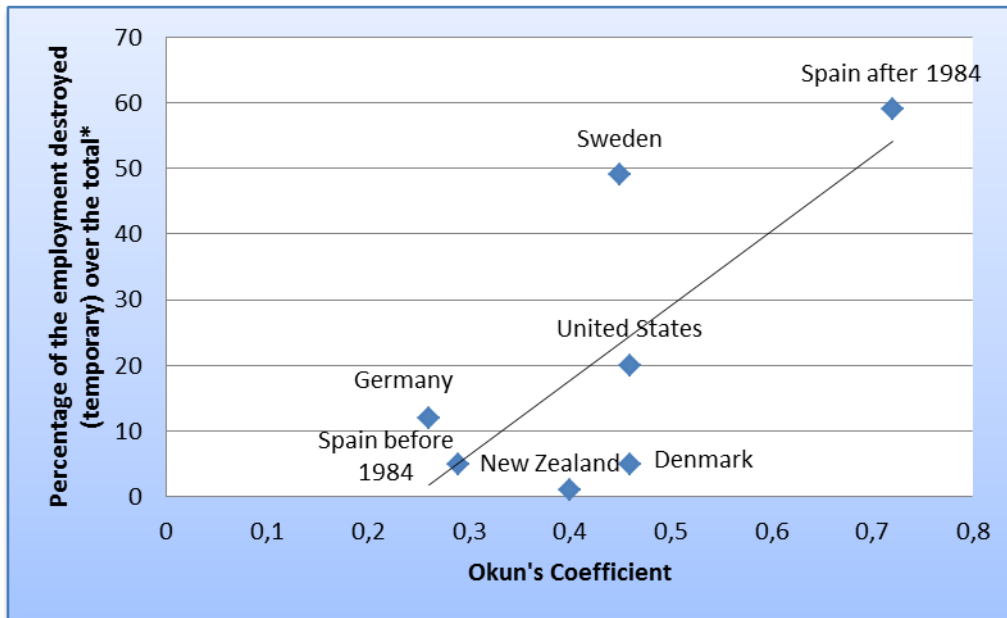

The previous graph regress the Okun's coefficient for the percentage of the employment destroyed that was temporary during the slumps that each economy suffered. The periods and the years of employment reduction are specified in the legend of the table.

As can be observed, I find some evidence that address the issue of some sort of correlation which establishes that the higher is the percentage of the total employment destroyed that is temporary the higher is the Okun's coefficient. One might thing that this is rather a consequence and not an explanatory variable, but since the temporality is cause by the interaction of the different features of the labour market such as the EPL, unions or the lack of regulation as well, that simply make the temporary labour less costly for some industries and therefore detach labour when there is a shock that affects the economy.

4.4 Employment adjustment by reducing persons

This variable is expressed as the proportion of the output change that was adjusted through employment and not by hours in the slump of 2008-2009, the variable have been design from the same data used in the graph 5 with the OECD Database (2010).

Figure 17: Regression of the percentage of the adjustment in persons with respect the total labour input adjustment against the Okun's coefficient
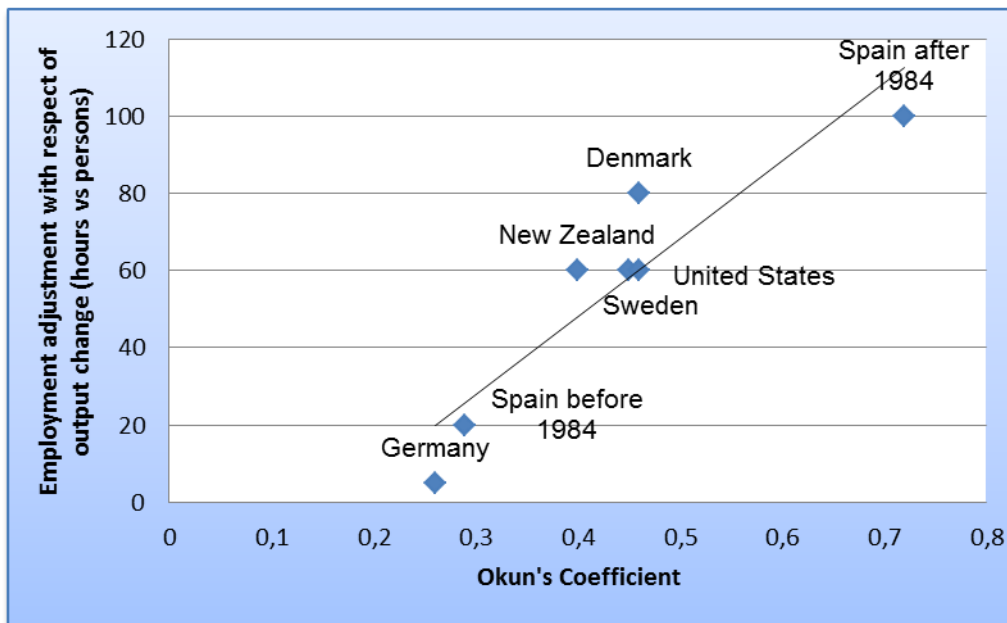

This variable turns out to be the most explicative of the Okun's coefficients, since it provide a generous explanation for more and less volatility, which indeed, as the variable remarks, is the effect of the jobless recovery. Germany, with its contractual scheme, jointly its industrial structure which promotes human capital investment is the one with lower coefficient, on the contrary Spain, which entire adjustment was through labour is the one at the top.

There must be some confusion in determining what is first, if the EPL disparity conditioned the creation of a certain type of industry, and according to the type of industry developed, if it requires more abilities or skills in particular for the labour hired then a system in which the adjustment is carry out more by hours than in persons is more likely to be implemented and in motion. Whereas, could be as well that the lack of such contractual scheme have limited for an excessive regulation, may have cause difficulties at the time of creating jobs in certain industries.

4.6 Length of the slump

Figure 18: Regression of the length of the slump against the Okun's coefficients
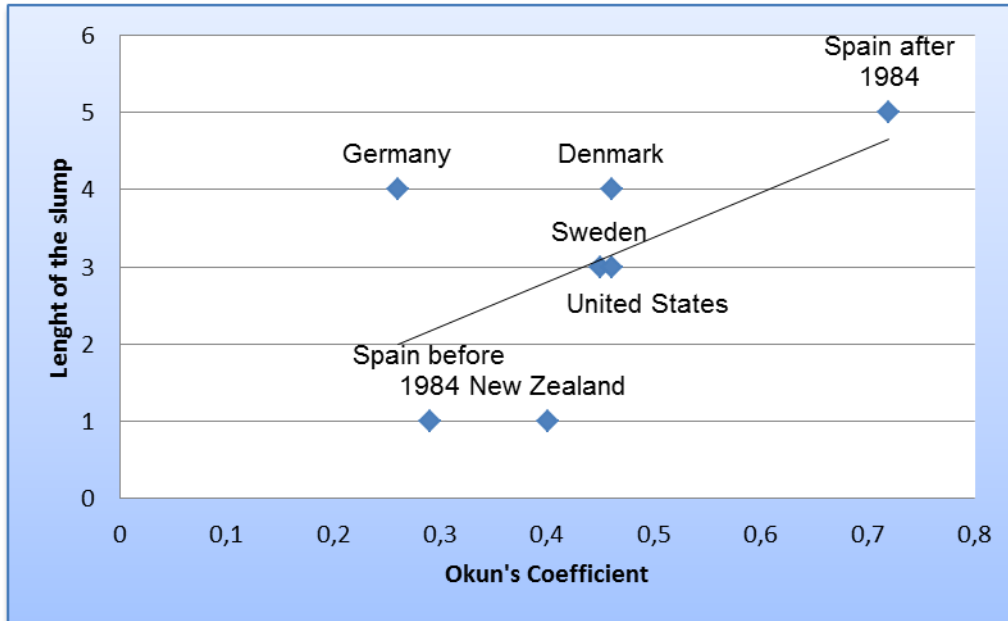
Each economy presents its own period of recession, Germany from 2001 to 2004, Spain, Denmark and Sweden during the Great Recession and each of them had their own cause and affectability of the economy. However, the previous graph shows how the economies where recession lasted for more time are placed in the centre of the graph and at the top right corner, presenting higher Okun's coefficient. However, for the German case we may find some exception since in its slump were destroyed more than 1 million jobs (half of it in the period 2003-2004). I found this explanatory variable the one less correlated with the Okun's coefficient, since it has to be taken into account the intensity of the employment destruction. In the case for the Spanish economy, there was a sharp destruction during the first three years, whereas in Germany the peak of destruction is focused in one year length. For New Zealand, its slumps never last more than 1 year, but maybe is a question of less affectability of the global economy slumps.

V.CONCLUSION

Even though the final analyses do not provide highly significant results of correlation, part due to the small sample we are treating and besides that, the difficulty at the time to measure the effect of the combination of the different employment regulation in an economy, I might say that, indeed, the institutional features help at the time to analyse cross-country Okun's coefficients deviations.

In the country sample I have selected, I made a distinction by key elements that make them perform differently from the rest. Germany, the adjustment through hours promoted by the general employment agency; New Zealand, for letting the employer and the employee decide its contractual agreement through a particular bargaining process between both of them; Denmark, the flexicurity; Sweden; its strong unions and low labour mobility ;United States and Spain

At first sight, there has to be done a distinction among the more pro-market economies and those who present a higher regulated markets. When taking a look at the countries around the average values, may be found regulated economies, even though these are regulated in order to facilitate the matchmaking of the market, as the case in Denmark, but economies such as New Zealand present similar values as well, determining that, at the time to carry out a cross-country analysis, since they are not likely to present features in common, cannot be compared analysing the same variables.

However, I found out that not for having low EPL, countries will have higher Okun's coefficients since pro-market economies of our sample shows coefficients similar to those of Sweden or Denmark. Nevertheless, for labour markets which are regulated, I confirm a light correlation between the EPL and the Okun's coefficients, but that as well as the pro market economies, can be explained by other factors in combination with the EPL, as have been exposed in this paper.

Table 4: Explanatory table

Okun's coefficient (volatilty)	Low Regulation (Pro-Market)		Regulated	
High (0,70-1)		Low temporality Unexistant or very low EPL Self-adjustment of the labor market Stable evolution in the long run. Shocks do not last a long period of time	Spain after 1984	Disparity between EPL of permanent and temporary employment Low union participation
Medium (0,30-0,70)	United States New Zealand		Denmark Sweden	Denmark: high activation rate; low EPL for individual dismissal. Sweden: Rigid market, high EPL (collective and individual), strong trade unions
Low (0-0,30)			Spain before 1984 Germany	Spain: High EPL; absence of temporality; strong union Germany: High EPL; adjustment through hours more extended, and industrial structure conditioned

The trade unions also play a crucial role in affecting how the institutional features determine the Okun's coefficients. Unions strengthen the bargaining power of workers and support them with expertise bargaining procedures that ensure them adequate wages as well as other insurance, moreover, the decisions or regulation applied by unions are applicable to all the workers. I find this as an explanation as why Sweden, even though presenting the characteristics of an economy which labour market should be more volatile, yield an Okun's coefficient of 0.46. The key issue is the Sweden responsiveness to the shocks. The coverage rate for Sweden is one of the highest in Europe, as well as the participation, that make of Sweden one of the most unionist countries in the world.

Sweden presents a quite centralized wage bargaining system, or at least, this is adequately coordinated with the other institutions responsible for bargaining procedures. One might think that as a consequence of that, Sweden would be one of the countries with more rigid wages, but the some experts assert that the Swedish wages are sensible to output growth, at least much sensible as a liberal economy, like United States, around 0.5. This imply that unions do not oppose to reduce wages in order to keep employment active and avoid a sharp increase of the unemployed population, which is what happens in Spain, as a consequence of the rigidity of wages to the cycle. Therefore, the Spanish firms face a rigid system where the unique solution is detaching the temporal labour. Then, The Swedish system guarantee the stability by letting more flexibility in the adjustment of wages making the Swedish economy less affected by shocks. I found a similar explanation for Germany

when studying its temporality rate. The temporary employment for Germany is concentrated among the youth population and the unskilled ones, like in Sweden. Then, the minijobs clearly create some sort of instability but do not overtake the flexibility of the hour's adjustment that ensures the stability of the labour market.

Previous papers confirm the explanation, German firms are less likely to layoffs since it is costly to adjust labour in Germany (high EPL) than for instance in the United States. Therefore in the short run, German firms are carry out labour input adjustment through reducing hours, whereas in United States, is through workers (see Labour Adjustment under Different Institutional Structures: A Case Study of Germany and the United States Upjohn Institute Staff Working Paper 94-26 Susan N. Houseman and Katharine G. Abraham)

Furthermore, in an event of a downturn, layoffs are also delayed for the previous notification the firm has to do and moreover the negotiation of the social plan (in case of collective dismissal). By reducing the average hours worked by worker and reattributing only the hours maintain, complemented with wages adjustment is the main characteristic that explain the low Okun coefficient of the German economy. Without asserting if the industrial structure of the country is first of all determined by the labour market features, which indeed it is in certain degree. The same industrial or sector development may influence in the type of labour that is created. Investment in human capital entails hoarding this kind of labour in the downturns, since it turns to be more costly in terms of the investment in formation of the worker. On the contrary, the Danish labour market leaves to its social partners the responsibilities of negotiation of the labour conditions at a minor level and with independency. Then, the employer's organization and the trade unions are the main institutions upon pay and working conditions are stablished and they are left to the self-regulation. However, since this would entail a high flexibility of the labour market at the time to adapt to a new situation when a shock may affect the economy, the fact that Denmark has a low EPL, make firms not to have so high adjustment cost through persons and deter adjustment through average hours worked. Nevertheless, it is compensated with the huge amount budget for activation policies that compensate the rapid destruction of employment with an effective match between unemployed and the vacant job.

The conclusion of this work is that the institutions do not stablish a so clear straightforward relationship between them and the Okun's coefficient. On the face on it, and having plotted the regressions, can be confirmed that indeed some of them do have some sort of correlation, but this correlation is done in an indirect way, which is the adaptability of the agents to the shocks. On the face of it, the employment protection index is significant to

explain the Okun's coefficient, but it is in fact, for how affect the behaviour of the agents or how those, firms and workers, take their decisions. With high EPL, firms have higher cost when they adjust labour input in the extensive margin, therefore the will fire less in the short run. Then it might be said that having high EPL is associated with a low Okun coefficient. However, this rule do not fulfil for all countries, since regulated market do not precisely need of a high EPL to be less volatile, but more flexibility in the pay and working conditions, that somewhat can be granted by trade unions which task is ensure the correct adjustment of wages or hours in order to keep away massive layoffs.

The same rule can be applied for the temporality, even though presenting low strictness of dismissal, firm will not only appeal to hire this kind of labour since they can apply the measures commented by establishing arrangements between the social partners.
Those are the reasons why countries such as New Zealand or United States present almost the same Okun's coefficient than Sweden or Denmark, with an EPL inexistent and all the bargaining procedures left to a simple negotiation among employers and employees, they proven to be as stable as the regulated European economies and as flexible at the time to modify working conditions as the European countries.

The Okun's curves estimated for Spain validate once more the conclusion. Previous to 1984, the Spanish labour market was characterized by high firing cost (around 40 days per year worker), strong union in defence of the labour conditions and very empowered in terms of negotiation procedures. Therefore, the regression yields a low coefficient. After the 80's reform, the evolution change drastically, the Spanish labour market turned out the most volatile one in the world (in terms of the Okun's coefficient). The disparity between both EPL (permanent and temporary workers) turn the scales in favour of the temporary workers, fact that jointly some measures during the 90s, make of Spain the third country with higher temporary work rate of the OECD countries. Apart from that, the rigidity of wages to the cycles due to the disavowal of the unions to modify the assigned labour conditions establish in the collective agreements exacerbate the shocks, since firms do not find for themselves any other option than to fire the temporary ones, having previously hired them, conditioning the type of industries that have developed as well.

So in the end, and as I have asserted before, the rigidity when adapting to the new labour conditions during or after a shock is directly influenced by the labour market institutions and provides an explanation of why such coefficients.

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