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# Some Unpleasant Labor Arithmetics: A tale of the Spanish 2012 Labor Market Reform

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## Abstract

*The 2008 economic and financial crisis and its posterior EU banking and sovereign debt dimensions highlighted some unresolved structural issues in the Spanish labor market, exacerbating unemployment issues. Duality between permanent and temporary workers, excessive rigidities in wage setting and collective bargaining arrangements and extreme volatility, particularly in employment, stand amongst the most commonly cited structural dysfunctions. This study aims at analyzing the macroeconomic impact of the 2012 labor market reform, aimed at mitigating these institutional flaws and achieving a more efficient and resilient labor market. The analysis looks at three overarching stylized facts: (i) the Wage Curve; (ii) the Beveridge Curve; and (iii) Okun's Law. Overall, the main findings of the econometric approach provide evidence of significant structural gains that are in line with the descriptive analysis. The reform has encouraged wage moderation, reduced labor market frictions and increased the resilience of the labor market to negative shocks. Paradoxically, however, the results also hint to an exacerbation of the duality problem in the labor market. The Spanish experience also shows that a) (unwanted) side effects can potentially limit the effects of a reform, b) early implementation might be the right choice, even during a recessionary period, when reform appetite can be larger and c) support from social partners and national ownership can help specially to absorb the (short run) transition costs.*

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## 1 Introduction

From 1995 to 2007, the Spanish economy enjoyed a long period of strong economic growth that gave rise to a large expansion in the labor market. The unemployment rate fell to historically low levels (8% in 2007). This fall in unemployment was, however, not entirely of a structural nature, as there were some signs of persistent dysfunctions in the labor market, such as its dual structure, with a share of temporary workers above 30%, excessive rigidities in wage setting, especially collective bargaining arrangements, and extreme volatility particularly in employment (the extensive margin of the labor market). With the onset of the economic and financial crisis in 2008, these structural weaknesses were fully revealed, contributing to the sharp increase in the unemployment rate that reached 18% already by the end of 2009 and peaked at 26% in 2013.

This evolution can be partially explained by the growth pattern of the Spanish economy during this period: it mainly relied on the expansion of credit and the dynamism of the construction sector. Nevertheless, in countries experiencing a similar growth pattern, the rise of unemployment was not so intense (Estrada et al., 2009 and Doménech et al. 2016). This suggests that the adjustment to negative shocks in the Spanish labor market was particularly acute via changes in employment instead of hours (the intensive margin) and/or wages. This, together with the countercyclical behaviour exhibited by productivity in Spain, is explained up to a certain extent by the existing labor market institutions (Bentolila et al., 2011): strong protection for insiders would be preventing adjustment to shocks through changes in hour and wages and encouraging procyclical variations mainly in temporary employment that, which in turn, gave rise to counter cyclical productivity

The rise and the persistence of unemployment prompted the Spanish government to implement two labor market reforms in 2010 and 2011, whose scope was quite limited. In 2012, however, a newly elected absolute majority government passed a new reform that introduced more far-reaching changes in labor market institutions.

This chapter aims at analysing the macroeconomic impact of the 2012 labor market reform. It is organized as follows. The first section reviews the labor market reforms enacted during the economic crisis, explaining some political economy issues and describing some of its effects by looking at simple indicators. The second section

focuses on the 2012 reform and goes a step further: it implements a comprehensive econometric analysis, presenting new evidence on its macroeconomic impact. We find evidence suggesting that the reform has encouraged wage moderation, reduced labor market frictions and increased the resilience of the labor market to negative shocks. Paradoxically, however, the results also hint to an exacerbation of the duality problem in the labor market.

## **2 The labor market reforms during the economic crisis**

Since the return to democracy in 1978, there have been several reforms intended to improve the performance of the Spanish labor market. Over the last few years, principally due to the challenges posed by the economic crisis, there have been different attempts to reduce existing inefficiencies. Noteworthy were two reforms of limited scope and impact in 2010 and 2011, followed by a more encompassing one in 2012. This section reviews their main characteristics.

### **2.1 The 2010 and 2011 reforms**

In September 2010 and July 2011, the Government implemented a set of measures intended to: (i) reduce duality in the labor market; (ii) improve efficiency in the matching of jobs and workers; and (iii) enhance firms' internal flexibility and collective bargaining (Wölfl and Mora–Sanguinetti, 2011).

Regarding the first objective, the 2010 reform tried to reduce the gap between dismissal costs for permanent and for temporary contracts. The reform broadened the conditions under which a dismissal could be defined as "fair" (with a severance payment of 20 days' wages per year of seniority, against 45 days' in the case of unfair dismissals) and extended the pool of workers that could be hired under a permanent contract with a reduced unfair severance payment of 33 days' wages per year of seniority. The 2010 reform also implemented some limitations to the use of temporary contracts and raised the compensation paid by the firm at termination of temporary contracts from 8 to 12 days. Such increase was gradual: the compensation would increase one additional day of compensation per year, reaching 12 days in 2015.

Moreover, to improve the efficiency in the matching process, the 2010 reform allowed private agencies to provide placement services (previously only non-profit agencies could do so).

As far as internal flexibility and collective bargaining are concerned, the 2010 labor market reform eased the requirements to opt out from collective agreements. It allowed firms to modify working conditions (such as working hours, shifts and duties) if they reached an agreement with their employees. It also eased the conditions to opt out from wage clauses established at higher level collective agreements (sectorial or regional): an agreement between the company and its employees would be sufficient. In this vein, the 2011 reform gave firm-level collective agreements priority over agreements at higher levels on subjects such as wages and working conditions. However, such priority was *de facto* prevented, since higher level agreements were still allowed to exclude bargaining at company level.

The impact of these reforms was quite limited. The number of fair dismissals rose slightly after the 2010 reform, but this was mainly because the economic crisis made it easier to define dismissals as fair. Likewise, there was no evidence of an increase in permanent hiring (see Conde–Ruiz et al., 2011).

Bentotila et al. (2011) argue that these two reforms were put into place due to the external pressures coming from international financial markets, in the context of the Eurozone sovereign debt crisis. Since neither the Government, nor social partners (trade unions and employers' associations) were fully committed to these reforms, they did not significantly reduce the divide between insiders (workers on a permanent contract) and outsiders (unemployed and workers on a temporary contract). In the same vein, Dolado et al. (2010) argue that duality in the Spanish labor market and the conflict of interests between insiders and outsiders discourage the implementation of reforms that improve labor market flexibility.<sup>1</sup>

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<sup>1</sup> They construct an index to measure the extent to which labor markets reforms that increase labor flexibility would be acceptable. This index, defined as the share of workers on a permanent contract over the total labor force, fell strongly in the earlier nineties, when several labor market reforms that introduced a higher degree of flexibility were accepted by the social partners.

In sum, the 2010 and 2011 reforms aimed at improving the labor market response to shocks, shifting the adjustment mechanism from changes in employment to variations of hours and wages. Both reforms were implemented in a context of a timid recovery after the deep 2008 – 2009 recession. In fact, the Spanish government expected that these reforms would lay the foundations for a solid recovery of employment. However, as the economy entered a double dip recession and macroeconomic conditions deteriorated, after the financial turmoil of the summer of 2011, unemployment began to hike again. In fact, in the summer of 2011, with the Spanish economy under strong financial pressures, the government passed a new package of labor market reforms. Among other measures, it implemented a new training contract for young unemployed and, quite unexpectedly, suspended some of the limitations to the use of temporary contracts that were included in the 2010 reform.

## 2.2 The 2012 reform

After the December 2011 elections, the new majority Government passed a more comprehensive labor market reform already in February 2012. This new reform, although more far-reaching, shared the same main goals than the previous ones; that is, to reduce labor market duality and to improve companies' internal flexibility and enhance collective bargaining.

Regarding labor market duality, the 2012 reform introduced substantial changes in employment protection legislation. First, severance payment for unjustified dismissals was reduced from 45 days per year of seniority (up to 42 months) to 33 days per year of seniority (up to 24 months). Second, the causes of justified dismissal (with a severance payment of 20 days per year of seniority) were further clarified and, to some extent, quantified (for instance, dismissals based on economic reasons are defined as fair if the firm experiences a decline in profits or revenues for three consecutive quarters). Third, the so-called *despido expreso*, a legal procedure that allowed a firm to declare a dismissal as unfair and to pay the severance payment upfront (45 days per year of seniority), was eliminated. Finally, the reform removed the payment of the interim wages between the date of dismissal and the final court ruling if the dismissal was defined as unfair in court.

Regarding collective bargaining, the 2012 labor market reform removed the possibility for higher level agreements to exclude company-level agreements. Therefore, it gave collective agreements at firm level total priority over higher level ones, either sectorial or

regional, as far as wages and working time were concerned. In addition, the indefinite extension of collective agreements in absence of a new agreement (the so called *ultractividad*) was limited to two years. It is worth noting that all workers in Spain are covered by the relevant collective bargain agreement, even if they do not belong to a union. For instance, a collective agreement bargained at a sector or firm-level covers all the workers that belong to a sector or firm. This so-called *eficacia general* principle makes collective bargaining a very powerful instrument. Therefore, any improvement in the structure of collective bargaining should have strong effects on the performance of the labor market.

Furthermore, the 2012 reform implemented new mechanisms of internal flexibility that made easier for firms to opt out from collective agreements: companies can claim economic (such as a decline in sales for two consecutive quarters), technical (such as new working methods or skills required) or production reasons (such as a substantive change in the demand) to opt out from wages' and other working conditions' clauses agreed in higher level collective agreements. Finally, the mandatory requirement for an administrative authorization in cases of working time reductions and for suspending contracts was removed, and the scope of causes that justify them was relaxed to include some generic reasons such as changes in firm's competitiveness, productivity and working methods.

The 2012 reform also included other measures targeted at addressing other shortcomings in the Spanish labor market. For instance, regarding hiring, it extended the length of the training contract (*contrato para la formación*) from 2 to 3 years and raised from 25 to 30 years the maximum age at which a worker can be hired under this contract. It also introduced a new permanent contract for start-ups, aimed at Small and Medium-Sized Enterprises (SMEs), with no severance payment for the first-year trial period. Finally, to improve the matching process, the reform allowed private agencies to run professional training courses (previously this could be done only by firms' and workers' organizations) and allowed private agencies to provide placement services for temporary jobs.

In July 2012, the Government implemented a fiscal adjustment package which also included some measures intended to improve the activation of the unemployed. In



particular, the replacement rate of unemployment benefits was reduced from 60% to 50% after an unemployment spell of six months.

Several factors contributed towards making this reform more far-reaching than the previous ones. On the political economy side, it is worth noting that: (i) the reform was passed by a new Government which enjoyed an absolute majority in both chambers; and (ii) there was a very high external pressure for structural reforms following the economic recession, the accumulation of macroeconomic imbalances (e.g. large current account deficits, loss of productivity vis-à-vis trade partners, highly indebted household sector, etc.) and the perceived weakness of the financial sector, which altogether led to a sharp increase of the sovereign debt risk premium. Moreover, the continuous deterioration of labor market conditions since 2008 eroded the resistance of social partners to further reform efforts, as the share of permanent workers over total labor force declined.

### **2.3 First look at the data: what have we seen so far**

In the previous section, we have summarized the key elements of the 2012 labor market reform. As previously mentioned, the reform had two main objectives: to reduce labor market duality and to enhance collective bargaining and internal flexibility. If the reform was successful in reducing labor market duality we should observe a decline in the share of temporary workers. On the other hand, a better functioning of collective bargaining should give rise to a shift from collective agreements at regional and sectoral level towards agreements at the firm level. In addition, a higher degree of flexibility in labor market institutions, due to lower employment protection, and an improved functioning of collective agreements should shift the adjustment process from quantities (i.e. unemployment) to prices (i.e. wage moderation) and reduce structural unemployment. We should also observe an alignment of wages and productivity growth.

Several papers have already tried to evaluate the size of these effects<sup>2</sup>. Some of the earlier attempts to evaluate the reform were made by the Spanish Ministry of Employment and Social Security (2013) itself and by Izquierdo et al. (2013). The Ministry of Employment and Social Security (2013) estimated a dynamic labor demand equation

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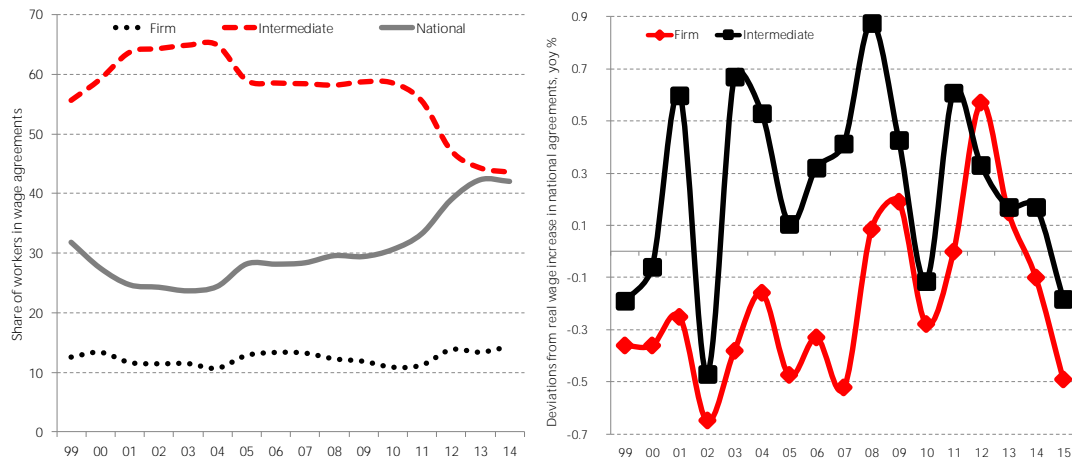
<sup>2</sup> García Pérez and Jansen (2015) provide a comprehensive summary of the main evaluations of the 2012 labor market reform. They also raise further questions about its effects.

and found that the evolution of private employment from the second quarter of 2012 to the first quarter of 2013 was better than forecasted. This study attributed the better than expected evolution of employment to the effects of the reform. Izquierdo et al. (2013) showed that wage moderation increased from the second quarter of 2012 to the second quarter of 2013. To explain this higher wage moderation, they estimated a wage equation and found that the most recent evolution of wages was not explained by the explanatory variables in the wage equation (past inflation, unemployment rate and productivity) and could be attributed to the effects of the labor market reform.

During the summer of 2013, the Spanish government commissioned the OECD to perform an evaluation of the impact the 2012 labor market reform. The report (OECD, 2013) used regression-discontinuity models to evaluate the effects of the reform on labor costs, on labor market flows and on labor market duality. The findings were mainly positive: the reform seemed to have improved internal flexibility, contributed to wage moderation and increased permanent hiring. Regarding wage moderation, the report found that the reform had led to a deceleration of unit labor costs in the business sector of between 1.2 and 1.9 percent. Moreover, it was estimated that the reform increased hiring rates by 8 percent and reduced separation rates by 24 percent. Finally, the results showed that the exit rate from unemployment into a permanent contract increased by 24 percentage points. The IMF (2015) also found that the 2012 reform has contributed to wage moderation and, consequently, it has made the labor market more resilient, reducing job losses following negative shocks to labor demand.

More recent works have attained similar results. On the one hand, Doménech et al. (2016) show preliminary evidence of changes in the adjustment patterns of the labor market: between 2012 and 2013 hours worked per employee and labor costs slowed down, the elasticity of employment to GDP fell and job destruction was less intense than in the first years of the Great Recession, despite the larger fiscal adjustment and the greater financial distress. On the other hand, regarding the duality in the labor market García Pérez and Mestres (2016) find that the reform does not seem to have an aggregate effect on exit rates from employment to unemployment, but it contributed to reduce separation rates for temporary workers employed by SMEs. In the same vein, García Pérez (2016) finds that the reform would have increased exit rate from unemployment towards a permanent employment (from 1.7% to 2.6%) although the exit rate from unemployment towards temporary contracts (11.8%) is still five times higher

than towards permanent ones. A first look at the evolution of the main indicators of the Spanish labor market since 2012 offers some additional insights on the impact of the reform, as two more years have passed since the report was conducted and more observations are now available. Figure 1 looks at the structure of collective bargaining. The left panel shows the distribution of workers between different bargaining levels (company, region and national) and the right panel reflects the agreed wage increases at each level. The share of workers covered by collective agreements at regional level has steadily declined since 2011. However, they have mainly been replaced by agreements at national level, while the prevalence of collectively bargained agreements at company level has slightly increased. These developments are at odds with the expected effects of the reform, but should be welcome interpreting the pre-reform intermediate structure as the less beneficial state. This is because agreements at national and firm level are more likely to be associated to wage moderation due to either internalization of the employment consequences of wage increases or to more competition (see Calmfors and Driffin, 1988). One possible explanation of this paradox is that social partners were negotiating agreements at national level that, although unable to incorporate firm-specific factors, were superior at internalizing their macroeconomic effect (e.g. impact on inflation, productivity growth, exports, etc.). In this sense, the Agreement on Employment and Collective Bargaining 2012–2014 (AECB), which was signed by social partners just before the 2012 reform was passed, defined some guidelines for collective bargaining on key issues such as internal flexibility and established limits of bargained wages growth for this period (0.5% in 2012 and 0.6% in 2013). The AECB 2015–2017 (AECB), signed by social partners in 2015, established new limits of bargained wages growth for this period (1% in 2015 and 1.5% in 2016).

**Figure 1 - Collective bargaining structure**


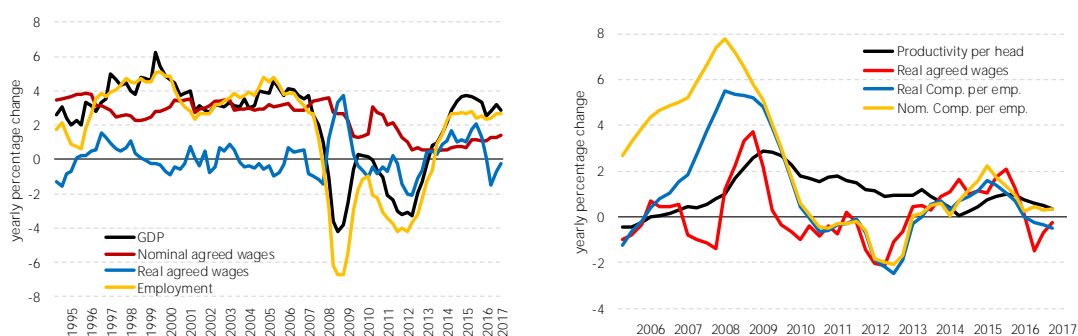
Source: Spanish Ministry of Economy and Competitiveness and authors calculations

On the other hand, small and medium size enterprises may prefer to opt out from some of the working conditions established by higher level agreements, in key issues such as wages and hours, instead of conducting their own negotiating, since it is less burdensome. In 2014 and 2015, almost 65% of the opt-outs from higher level collective agreements referred to wage clauses and 95% of the firms that opted-out had less than 250 workers. (Ministry of Employment and Social Security, 2016) Regarding the differences of agreed wage increases at each level of negotiation, the wage moderation impact achieved at national level by the AECB 2012 -2014 seemed to have faded already: For firm-level agreements, as of 2014 wage increases became again smaller than at national level.

Figure 2 shows further insights in the evolution of agreed wages. While nominal agreed wages have remained almost flat since 2013, real agreed wages have become more responsive to both GDP growth and changes in employment (see left panel): they fell in 2012 as the economy entered in a double dip recession, and started to grow again as the economy recovered. The double dip recession starting in 2009 seems to mask different dynamics in agreed wages and its impact in real variables. The mild decrease in the growth rate of agreed wages in 2009 and 2010 was not enough to prevent a sharp rise in the pace of real wages in 2009 while the economy was entering into a full-scale recession, since the fall in price inflation turned out to be larger and faster than expected by market participants. However, as of 2012 changes in agreed wages and price

developments translated into an evolution of real wages in line with GDP growth, first decreasing during the economic bust and then increasing its pace of growth during the recovery phase. This pro-cyclical response of real wages could be interpreted as consistent with the sequence of the 2012 reform: the increase of labor market flexibility and the improvement of collective bargaining would have made real wages more responsive to cyclical conditions. In fact, the dysfunctionalities of the Spanish labor market became evident at the beginning of the crisis, between 2008 and 2010, when real agreed wages rose even though GDP growth and employment plummeted. However, it should be mentioned that price developments as of 2009 also contributed to ease some pressure wage dynamics, requiring a lower nominal adjustment as inflation remained subdued. Furthermore, the right panel in Figure 2 suggests that neither agreed wages nor compensation per employee have become more responsive to productivity changes.

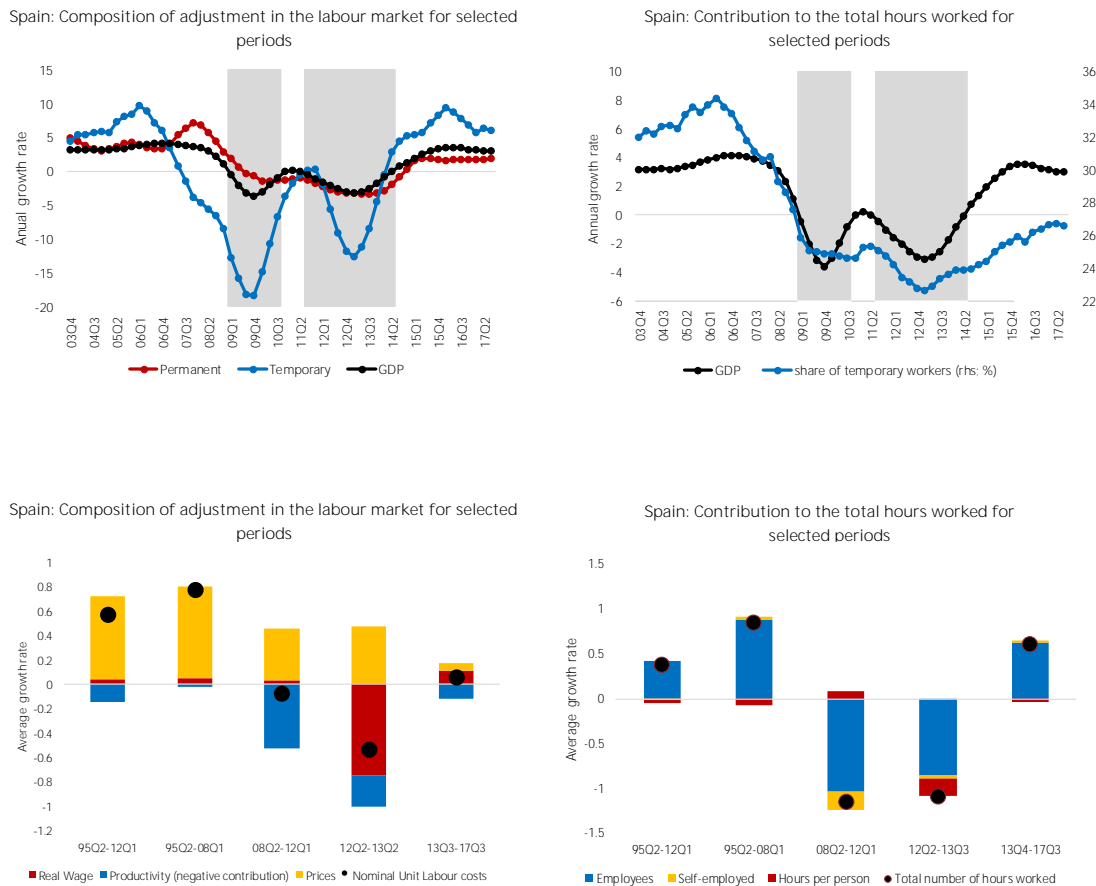
**Figure 2 - Wage, employment and productivity development**



Source: Spanish Ministry of Economy and Competitiveness, Spanish National Institute of Statistics and authors calculations  
 Note: Nominal variables have been deflated using CPI.

As far as permanent/temporary workers duality is concerned, the upper panel of Figure 3 shows that both the number of temporary workers and the share of temporary workers fell strongly in 2012. However, this seems to be explained by cyclical developments: as the economy entered a double dip recession, the burden of the adjustment fell on temporary workers, who were the first to be dismissed. The share of temporary workers started to grow again in 2013, as the economy began to recover. While the share of temporary workers has not reached the pre-crisis level, it seems that a large share of employment is being created via temporary contracts. If this is the case, it would imply that the 2012 reform has not sensibly contributed to remedy the dual structure of the Spanish labor market as temporary workers still bear most of the brunt of the adjustment.

Post-reform data also signals a more balanced adjustment path from the extensive (employment) to the intensive (hours) margin, in particular during the years of negative growth following the reform. The lower left panel of Figure 3 shows the decomposition of the evolution of unit labor costs. Since 1995 and until the 2012 reform, the labor market adjustments to positive shocks were mainly channelled via changes in the price component of wages (i.e. changes in nominal wages not related to changes in productivity or real wages but rather to consumer inflation) and to negative shocks via productivity losses. However, in the post-reform period one third of the adjustment has been made via changes in real wages. Moreover, the lower right panel of Figure 3, which shows the average contribution to changes in total compensation of employees for selected periods, also highlights that after the reform firms started to use the possibility of reducing the number of hours worked rather than the number of workers. In fact, during the recessionary period between 2012q2 (start of the reform) and 2013q3 (end of recession) approximately 20% of the decrease in total compensation of employees is due to a reduction in the average hours worked per person. Nevertheless, it is possible that the impact of the reform was somehow limited due to the duality problem, since temporary contracts cannot easily benefit from measures that tend to improve the intensive margin but rather face adjustment via termination or non-renewal.

**Figure 3 – Duality and shock absorption capacity**


Source: National Statistical Institute

Note: Public administration, Health and Education sector was deducted from total figures. CPI was used as the price component.

This descriptive analysis of the recent evolution of the Spanish labor market shows mixed results: there have been some changes in the structure of collective bargaining which may have encouraged wage moderation, but duality still seems to be a problem which limits the capacity to absorb shocks in a more balanced way. Any assessment of the impact of the reform requires netting out the effects of other factors such as cyclical developments. To do so, the next section presents an econometric analysis of the macroeconomic impact of the reform.

### 3 Estimating the macroeconomic impact of the reform

Despite recent improvements in the Spanish labor market, the still very high unemployment rate remains the key macroeconomic imbalance and an important challenge for the years to come.<sup>3</sup> Looking ahead, an accurate diagnosis of the interplay between the business cycle and the labor market should thus be aimed at understanding whether these improvements are likely to stay in the future (i.e. they can be qualified as structural gains) or are simply due to cyclical developments. In this context, the 2012 labor market reform could, in theory, play a major role in tilting the balance towards making the improvements long-lasting.

To gauge the impact of the reform, this section reviews three stylized facts, providing an overarching view of the connection between the labor market dynamics and the business cycle. First, we look at the Phillips curve, which depicts a negative relation between the change in nominal wages and the rate of unemployment (see Phillips, 1958). Second, we consider the Beveridge curve, which assesses the efficiency of the matching process between jobs and workers, and describes a negative relationship between unemployment and vacancy rates. Third, we estimate an equation for the Okun's law (1962), which vindicates a negative relationship between the change in the unemployment rate and GDP growth.

#### 3.1 Wage developments

As it can be seen in Figure 4, the large reduction in unemployment rates witnessed from 1995 to 2008 was accompanied by a substantial increase in the private sector wage level. Since the beginning of the crisis there has been a deceleration in wage increases (more moderate slope), as unemployment soared (slope turning positive). However, despite the recovery in terms of unemployment which started in mid-2013, wage dynamics have remained subdued. Two other factors were at play since 2012, on top of cyclical developments. First, social partners reached a two-year agreement on wage moderation and in favour of job creation. Second, the 2012 reform, which contained elements oriented towards promoting a better alignment between wages and

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<sup>3</sup> See European Commission (2016) for a recent and detailed diagnosis of the remaining macroeconomic imbalances in the Spanish economy.



productivity, such as higher internal flexibility and decentralization in collective bargaining processes.

The estimation of a wage curve for the Spanish economy helps in depicting potential structural gains due to the reform and singling them out of cyclical dynamics. The wage curve is often considered an alternative to the traditional Phillips curve when representing the negative correlation between unemployment and wages.<sup>4</sup> Wages are considered in levels, however, contrary to the Phillips curve, where wages are set-up in growth rates. The estimated equation relates the private sector nominal wages to its main determinants: (i) prices; (ii) productivity; and (iii) unemployment, as in equation (1).<sup>5</sup> The elasticity of wages to unemployment (a measure of wage flexibility or responsiveness to labor market conditions) amounts to -0.11, in line with previous results for Spain (see Sanromá and Ramos, 2005 for an application to Spanish micro data, and Jimeno and Bentolila (1998) at the regional level).

$$W_t = -2.612 + 0.97^{***}CPI_{t-1} - 0.11^*U_{t-1} + 0.007^{***}\Delta Prod_t + \varepsilon_t, \quad (1)$$

(0.103) (0.024)      (0.059) (0.003)

The evolution of the residuals since the implementation of the reform (see Figure 5) gives an indication of potential structural changes in the wage-unemployment relation. Indeed, persistent negative residuals since 2012 could be a sign of missing elements contributing to wage moderation, such as the labor market reform.<sup>6</sup> To check whether the impact of this additional factor is significant, the regression is augmented with a dummy variable

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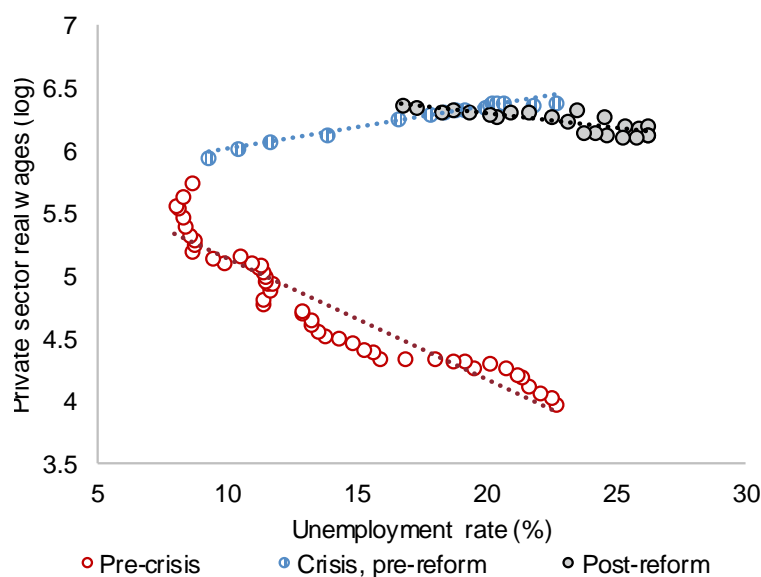
<sup>4</sup> See Blanchflower and Oswald (1994) for the original contribution and Blanchflower and Oswald (2005) for a revamp. See also Whelan (1997) and Whelan (2000).

<sup>5</sup> The estimated relation between wages and unemployment is kept in levels, as Johansen cointegration tests point to the existence of a cointegrating vector between the explanatory variables and the level of nominal wages. Productivity is transformed into year on year differences, meant as a smoothed version of its level, while keeping the same order of integration I(1). \*, \*\* and \*\*\* indicate significance at the 10, 5 and 1% level, respectively. An alternative specification using total economy wages and productivity per worker (in levels) yields similar results and signals that a depletion in wage moderation started in 2017.

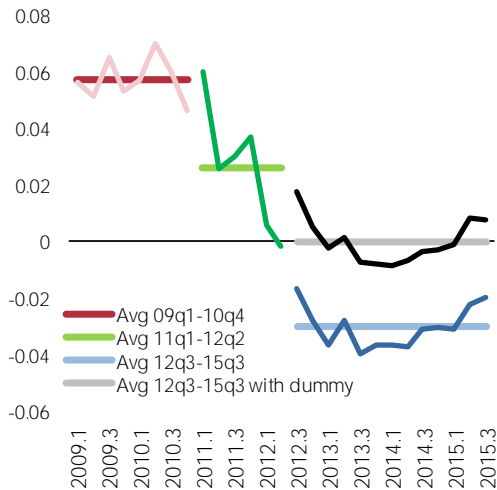
<sup>6</sup> Similar results are found in Izquierdo et al. (2013).

for the post-reform period, which turns out to be significant and negative. Figure 5 shows the residuals obtained from the previous wage equation. In the post reform period the residuals show a negative bias. This indicates that from 2012 to 2015 nominal wages in Spain were lower than the level implied by their main determinants (prices, productivity and employment). As can be seen in Figure 5, this negative bias in the residuals disappears once correcting for the dummy. We also use the above wage equation to forecast nominal wages from 2012, just prior to the reform, onwards. Similarly, in-sample forecasts also reflect the omission bias when the dummy is not considered, as the nominal wage forecast would be consistently higher than observed values (see figure 6).

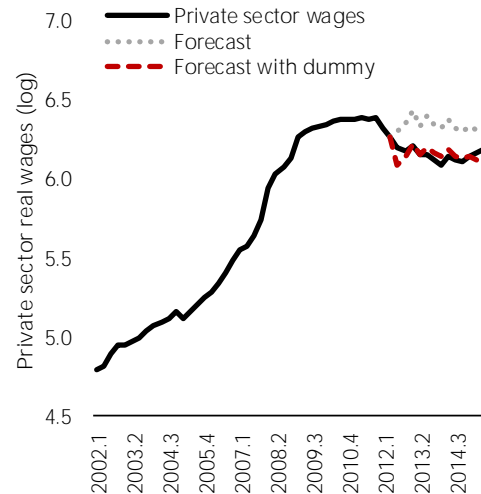
**Figure 4 - Wage curve, 1995Q1-2017Q3**



Source: authors calculations

**Figure 5 - Wage equation residuals**


Source: authors calculations

**Figure 6 - Private sector wages forecast**


### 3.2 Matching efficiency

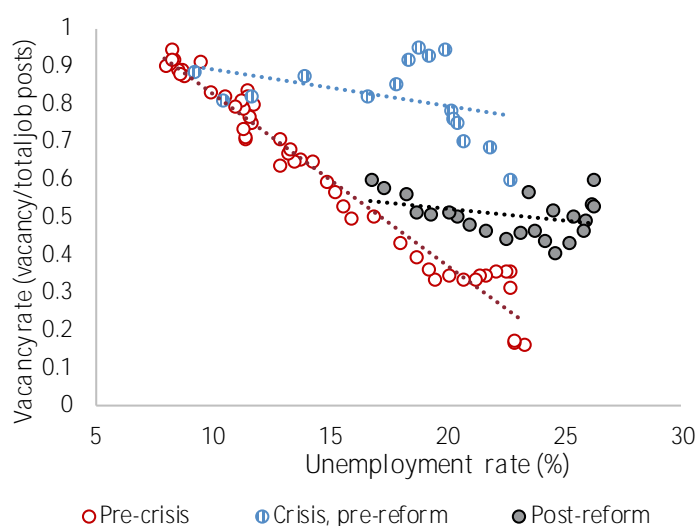
The Beveridge curve (BC) provides a complementary tool to evaluate the extent to which movements in the labor market are of cyclical or of a permanent/structural nature. The theory and the empirical evidence postulate a negative relationship between the unemployment and the vacancy rates, as can be seen in the case of Spain in Figure 7 for the pre-crisis period.

Movements along this curve represent the impact of cyclical conditions. In this vein, the evolution between 1995 and 2007 could be considered of cyclical nature, with higher aggregate demand leading to a larger vacancy rate ( $v$ , defined as the number of posted vacancies over total job post) and ultimately to a lower unemployment rate ( $u$ ) as it became easier to find a job.

Moreover, the position of the BC in the  $(u, v)$  space is typically related to the degree of “frictions” existing in labor market and, more generally, to its institutional setting: the closer the curve to the axes, the lower the percentage of vacant jobs per unemployed worker and - *ceteris paribus* – the lower market “frictions”. With the beginning of the crisis, the curve shifted outwards, potentially signalling an increase in structural unemployment as the matching between new jobs and workers became less efficient. Figure 7 also shows how, since the implementation of the reform, there has been a turnaround in the unemployment-vacancies locus and the curve is shifting inwards,

partially undoing the impact of the crisis and possibly indicating efficiency gains attached to the 2012 labor market reform.<sup>7</sup> Several aspects of the 2012 reform could have had an impact on the efficiency of the matching process between jobs and workers either directly (such as changes in the employment protection legislation and in the placement services regulation) or indirectly, via their effect on wage bargaining process.<sup>8</sup> Bosca et al. (2017) find similar results: the Spanish Beveridge Curve shifted outwards at the beginning of the Great Recession but it started to shift steadily inwards since 2014.

**Figure 7 – Beveridge Curve, 1995q1-2017q3**



Source: authors calculations

Beyond a graphical inspection of the Beveridge curve, we test the statistical significance of the identified structural shifts by estimating the curve for the Spanish economy using quarterly data available since 1980. The specification follows Bonthius et al. (2013). The unemployment rate is regressed on its lagged value, to capture its persistence, on the vacancy rate, on its squared value, to capture the convexity of the curve and potential non-linearities, and on a dummy variable for the crisis, to capture efficiency losses due

<sup>7</sup> The number of vacancies is taken from the Macroeconomic Database of the Spanish Economy (REMSDB) and its construction follows the methodology described in Diaz, A (2007) until 2016q4 and extended until 2017q3 using the growth rate of number of vacancies provided by Eurostat.

<sup>8</sup> See Nickell et al. (2002) for a recollection of the variables expected to influence equilibrium unemployment-vacancy locus.

to, for example, an increase in long-term unemployment or to the heavy sectoral reallocation that took place since 2008. The estimation results (see equation <sup>9</sup> (2)) are in line with Bonthius et al. (2013). The coefficient associated to the lagged dependent variable is large and highly significant, showing the persistent nature of unemployment. The coefficient of the vacancy rate and its squared value show a negative and convex significant relationship with the unemployment rate.

$$U_t = 2.13 - 4.33^{***}Vac_t + 2.87^{***}Vac_t^2 + 0.94^{***}U_{t-1} + 1.09^{***}dummycrisis + \varepsilon_t \quad (2)$$

(0.25) (0.92)      (1.06)      (0.01)      (0.13)

$$U_t = 1.85 - 3.54^{***}Vac_t + 1.99^{***}Vac_t^2 + 0.95^{***}U_{t-1} + 1.43^{***}dummycrisis - 0.94^{***}dummyref + \varepsilon_t \quad (2')$$

(0.24) (0.85)      (0.96)      (0.01)      (0.13)      (0.17)

When the equation is augmented with a dummy variable reflecting the impact of the reform (see equation 2'), as with the estimation of the wage curve, the coefficient associated with the reform dummy is highly significant and negative, possibly reflecting lower market frictions and higher efficiency attributable to the implementation of the reform. In addition, the estimated impact of the crisis becomes stronger.<sup>10</sup>

### 3.3 The cost of reducing unemployment

Overall, a better labor market performance in terms of higher flexibility and more efficient matching between workers and jobs, as evidenced in the previous sections, could potentially be reflected into the employment performance along the cycle. . That is, the impact of the 2012 reform should be reflected in changes in the Okun's curve.

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<sup>9</sup> Note that \*, \*\* and \*\*\* indicate significance at the 10, 5 and 1% level, respectively.

<sup>10</sup> The dummy for the crisis is defined as 1 for every period after 2007q4 while the dummy reform only starts at 2012q3.

Okun's original contribution posited a negative relationship between unemployment and output, suggesting that a 2-3 percent drop in GDP growth was associated with a 1 percent increase in the unemployment rate (Okun, 1962). The version in differences of Okun's curve relates contemporaneous changes in both variables, as in equation (3), where for each change, expressed in percentage points, in real GDP is associated with a proportional change in unemployment, estimated by the coefficient  $\beta$ .<sup>11</sup> Moreover, the ratio  $\left(\frac{-1-\alpha}{\beta}\right)$  reflects the GDP growth rate that is consistent with a 1 pp. drop in the unemployment rate.<sup>12</sup>

$$\Delta U_t = \alpha + \beta \Delta GDP_t + \varepsilon_t, \quad (3)$$

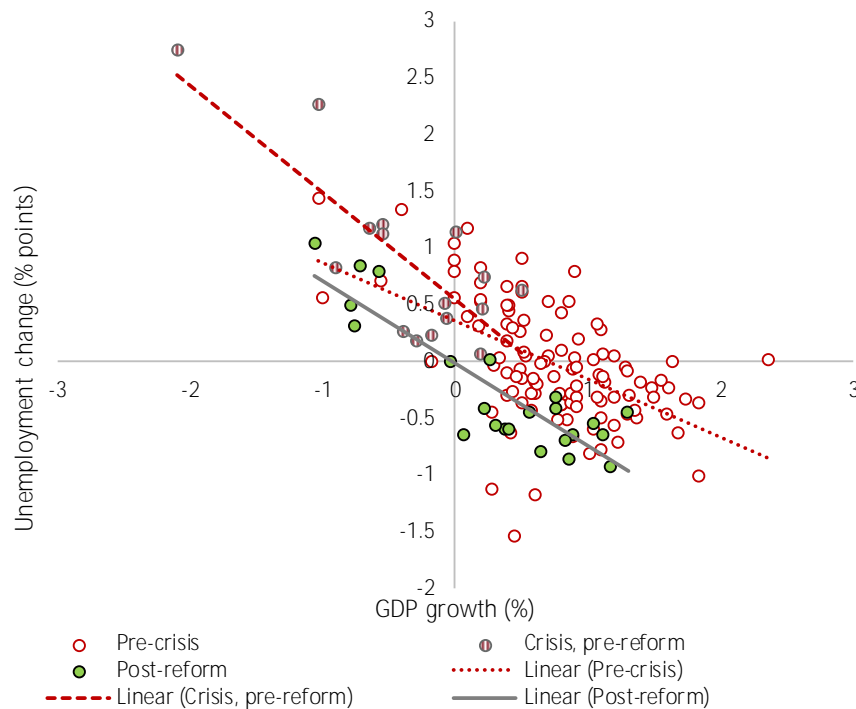
The dynamics depicted by the Okun relationship are represented in Figure 8, in which three different patterns can be identified: (i) pre-crisis (1980-2007); (ii) post-2008 (2008-2012); and (iii) post-reform. With the advent of the crisis, the Okun curve shifts up and becomes steeper, possibly reflecting a higher average unemployment rate and a larger sensibility of unemployment to changes in output than in the pre-crisis period, respectively. The observations following the 2012 reform seem to show, however, a distinct pattern. On the one hand, the constant ( $\alpha$ ) drops and it is lower than in the pre-crisis and (pre-reform) crisis periods. On the other hand, the slope after the reform appears to become flatter, although not enough to reach pre-crisis values.

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<sup>11</sup> The constant  $\alpha$  represents the long-run "trend" growth in the unemployment rate,  $\alpha = -\beta \Delta GDP^*$ , where  $GDP^*$  stands for potential output. Therefore, in the long run, if the GDP grows at its potential rate, unemployment will be constant and equal to its structural rate (provided that the structural rate of unemployment is constant (Ball et al. (2013))).

<sup>12</sup> Similarly,  $\left(\frac{-\alpha}{\beta}\right)$  represents the growth rate that is consistent with a stable unemployment rate (i. e.  $\Delta U_t = 0$ ).

Figure 8 - Okun's Law, 1980Q1-2017Q3



Source: authors calculations

This descriptive examination is complemented with an empirical exercise. To obtain an econometric estimation of the impact of the 2012 reform, a time-varying version of equation (3) is estimated, allowing for the parameters of the relationship to vary over time.<sup>13 14</sup>

<sup>13</sup> The estimation is carried out following Ciapanna and Taboga (2011), who perform Bayesian time-varying estimation, obtaining at the same time the degree of parameter instability and the paths for the parameters (the median path is taken for the purpose of this analysis). Aksoy and Manasse in chapter XX of the book estimate a similar relationship, which specifically relates the change in parameters to the implementation of structural reforms.

<sup>14</sup> As the coefficients estimated from equation (3) might be biased due to endogeneity issues, two alternative specifications were estimated for robustness. In the first case, the lagged values of the changes in unemployment and GDP were included in the equation, yielding similar results. In the second case, it was estimated a model based on GDP and unemployment gaps:  $\Delta(U_t - U_{t-t}^*) = \Delta(U_t - U_{t-t}^*) + \epsilon_t$ , where unemployment and GDP trends were obtained by means of a HP filter. Under this specification, the parameter  $\beta$  also gets larger (in absolute terms) after the reform (except for the last quarter, most probably due to the end point problem usually present in the HP filter).

Results are shown in Figures 9 and 10 for the constant ( $\alpha$ ) and the slope ( $\beta$ ), respectively. The econometric exercise confirms the existence of a parameter instability at the end of sample.<sup>15</sup>

The case for the constant is clear-cut as there is a sudden increase following the crisis, which is more than compensated for in the post-2012 period in the case of the estimation including a dummy variable for the post-reform years. The constant term is traditionally interpreted as depending on structural factors of the economy or institutional features of labor market (see Anderton et al. 2014). Therefore, a sudden drop associated with the reform could be interpreted as a structural improvement associated with it. The slope presents a mirror image, with a break occurring after the crisis as the coefficient almost doubled on average and came back later (albeit not fully recovering pre-crisis values), although in this case, the estimation with and without the reform dummy are mostly in line (they do not present significant differences).

The combined effect of the estimated increase (in absolute terms) in the slope and decrease in the constant implies a reduction of the unemployment-decreasing threshold  $\left(\frac{-\alpha}{\beta}\right)$  in terms of GDP growth. In other words, the post-reform Spanish labor market seems to require lower GDP growth to start reducing unemployment or to prevent unemployment from increasing. The average estimate for the whole sample, the post-2008 and the post-reform period yield striking differences; 2.9%, 2.2% and 1.7% growth of real GDP, respectively. Although positive in principle, a complete interpretation of such a behaviour must not leave aside the evolution of other variables such as composition effects and changes in the elasticity of temporary and permanent employment.

Finally, Okun estimates can be used to focus on the potential impact of the reform on the duality of the labor market. For this purpose, following Ball et al (2013), an employment ( $L_T$ ) version of equation (3) is estimated for both temporary and permanent workers, as in (4) with changes in employment depending on the growth rate of GDP:

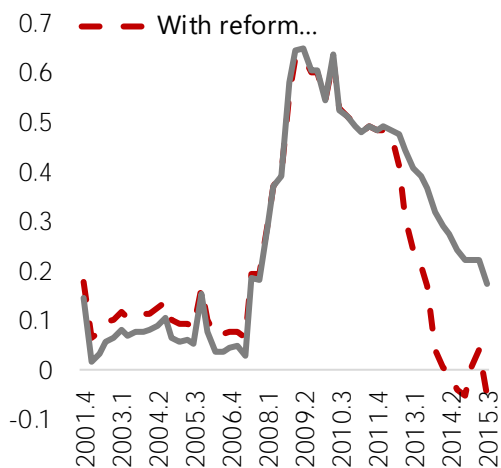
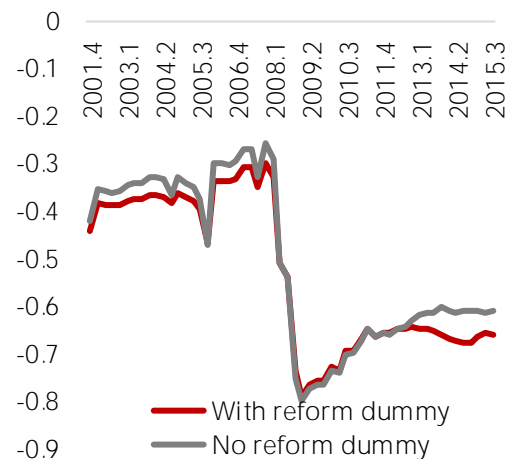
$$\Delta L_t = \alpha_t + \beta_t \Delta GDP_t + \varepsilon_t, \quad (4)$$

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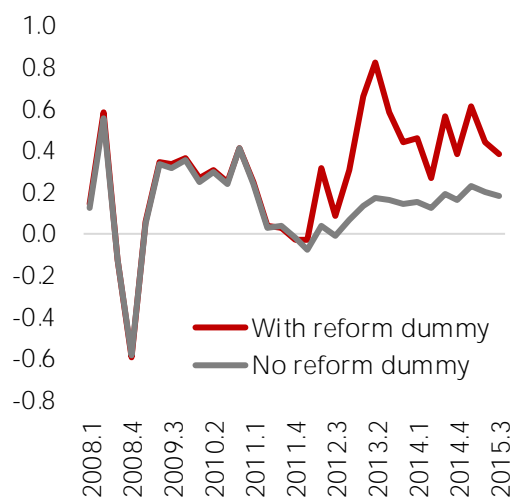
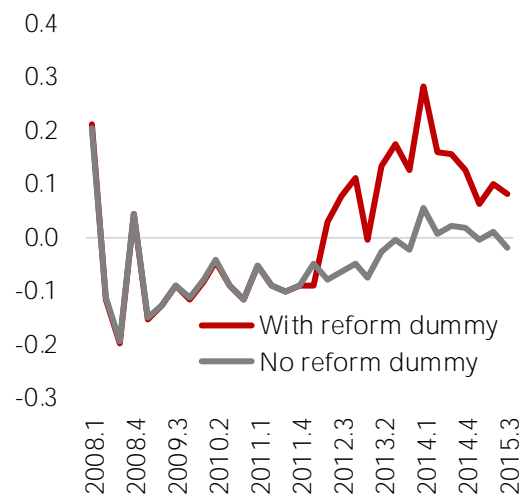
<sup>15</sup> In particular according the stability measures based on the posterior probabilities as defined by Ciapanna and Taboga (2011).



As can be seen in figures 11 and 12, the constant has increased for both types of contracts in the specification including the reform dummy (as a mirror image of the drop in the original Okun's curve). However, the response is significantly larger in the case of temporary workers, whose long-run growth rate experiences a sharp increase.

**Figure 9 – Constant  $\alpha$** 

**Figure 10 – Slope  $\beta$** 


Source: authors calculations

**Figure 11 – Temporary contracts,  $\alpha$** 

**Figure 12 – Permanent contracts,  $\alpha$** 


Source: authors calculations

## 4 Conclusion

The 2008 economic and financial crisis and its posterior EU banking and sovereign debt dimensions highlighted some unresolved structural issues in the Spanish labor market, exacerbating unemployment issues, particularly in its young and long-term components. Duality between permanent and temporary workers, excessive rigidities in wage setting and collective bargaining arrangements and extreme volatility, particularly in employment, stand amongst the most commonly cited structural dysfunctions (Bentolila et al., 2011 and Estrada et al., 2009).

After two reforms of limited scope and impact implemented in 2010 and 2011, the 2012 labor market reform aimed at mitigating these institutional flaws and achieving a more efficient and resilient labor market, focusing particularly on reducing labor market duality and enhancing collective bargaining as well as internal flexibility (Wölfl and Mora-Sanguinetti, 2011 and OECD, 2013).

A bird's eye view of the raw data presents mixed evidence on the impact of the reform. There have been some changes in the structure of collective bargaining that have encouraged wage moderation, but duality still seems to be a problem which limits the capacity to absorb shocks in a more balanced way. Firstly, collective agreements have been on the rise at the national level, at the expense of the intermediate sectoral one. This behaviour was probably influenced by the Agreement on Employment and Collective Bargaining 2012–2014 (AECB) and the easing of opting-out mechanisms, which allowed more flexibility to firms. Nominal wage developments were subdued, particularly at the national level, also favoured by the AECB. Real wages, in turn, have become more responsive to cyclical conditions, despite low inflation conditions. Moreover, it seems that the labor market has shifted towards a more balanced response to negative shocks, via less pressure on the number of employed people and leaving the lion's share of the adjustment to wages and hours. However, it is possible that the impact of the reform in this area has been somehow limited due to the exacerbation of duality. After a strong cyclical correction in 2012, the share of temporary workers started to grow again in 2013, as the economy began to recover, hampering one of the original objectives of the reform. The improvement of the adjustment mechanisms in the labor market should be reflected in a significant fall in the structural unemployment rate estimates. In this vein, the European Commission estimates show a progressive, but

modest, decline in the NAWRU since 2013. However, this evidence must be confirmed by future research.

A robust assessment of the potential macroeconomic impact of the 2012 reform and of the likelihood that these effects will remain (i.e. their structural nature) is also performed via an econometric analysis of three overarching stylised facts: (i) the Wage Curve; (ii) the Beveridge Curve; and (iii) Okun's Law. Overall, the main findings of the econometric approach provide evidence of significant structural gains that are in line with the descriptive analysis. The reform has encouraged wage moderation, reduced labor market frictions and increased the resilience of the labor market to negative shocks. Paradoxically, however, the results also hint to an exacerbation of the duality problem in the labor market. As long as the past lackluster growth of labor productivity reflects this duality, the increase in the creation of temporary contracts relative to permanent ones may have adverse effects on the Spanish rate of productivity growth in the future.

Having said that, the Spanish case can still provide some policy lessons. First, side (unwanted) effects can potentially limit the effects of a reform. The evidence of the Spanish case shows that the reform might have contributed to the exacerbation of duality. Overall, it is possible that the combined effect of reform effectively increased the gap between the cost of hiring temporary and permanent workers, and hence limited its impact. Complementary measures geared towards a decrease of duality, such as those intended to equalize hiring and firing costs of temporary and permanent jobs, especially in relatively low productive jobs, or towards the investment in higher productivity sectors, could amplify the effects of the reform. A second lesson points towards the timing of reforms. Even in a recession, the best policy option might still be to go ahead and implement the institutional changes. Although the reform was introduced in a recessionary period, evidence shows that the implementation of the reform quickly improved the nature of the adjustment process from the extensive to the intensive margin, and hence contributed to decrease dismissals. In addition, as the gap between the growth of the economy and employment creation was reduced by the reform. The latter can be inferred from the evidence that shows that job creation kicked off before the recovery started. In the same vein, the timing of complementary measures also seems to matter, as it shown by the simultaneous implementation of the AECB 2012-2014, which helped to ease wage pressures, giving more time to economic agents to fully internalize the impact of the reform. As regards as political economy is concerned, it is



important to point out that social partners and the civil society in general might be more lenient towards accepting reforms in bad times, while unemployment figures are high and structural deficiencies are more evident. In this vein, national ownership can also help. In Spain, the signature of the AECB 2012-2014 by almost all social partners contributed to its social acceptance, something which was missing in previous reforms, as structural reforms were often perceived by a large part of society as an external imposition.

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