

# **Disgrace or Miracle: Studying the effects of the 2012 Spanish Labor Reform**

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*The Spanish labor market has presented long-term problems since its transition to democracy that put end to the dictatorship period of the country. Multiples reforms have been taken by governments on the left and right side of the political spectrum, but problems of long-term unemployment, high ratios of temporary jobs, and high levels of unemployment rates are still present on the southern European economy. The 2012 labor reform has been claimed to be one of the most disruptive, maybe because at the time where was implemented, one of the darkest eras for all Europe since the Second World War (until the Coronavirus pandemic that is underway), or maybe because of Spain's bet on a more flexible labor market. Changes were made, results are observable, disentangling the weight of the 2012 reform on the pattern observed is the objective of the paper. An RDD analysis is applied in order to clarify the effects of the reform on unemployment and temporary contracts. The main conclusion is that trying to give all the credit to the reform is non-sense taking into account the multiple reforms underway in Spain and Europe during those challenging times. Disgrace or Miracle? Between black and white, there are a lot of grays in the color palette.*

## 1. Introduction

Unemployment triggers important economic and social costs. As Sanromá (2012) paper mentions, it is worth mentioning the loss of rent, production, or citizens' quality of life caused by the lack of use of disposable human resources. From a macroeconomic point of view, it can be said that an increase of unemployment is translated into a decrease of the real output with respect to the potential output situation, with all the negative effects that this situation provokes on aggregate welfare. Unemployment also deteriorates the quality of bank balances and public accounts, not to talk about the social cost of an increase of inequality on rent distribution and the uprising discrimination of the most harmed groups of the society (Sanromá, 2012). To all these effects I must add the negative consequences on natality, social cohesion, or even national security. It is for all these different arguments that studying the effects of labor market reforms is of prime importance in the field of policy economy.

From a global point of view, I must highlight that the world's economy has been subjected to the unprecedented forces of accelerated technological process and growing globalization. This has led many advanced economies to try to adjust their labor market institutions (Bentolila, et.al., 2012). In order to do it, many countries have introduced labor market flexibility at the margin, increasing the opportunities to other (non-conventional) forms of employment, through temporary and part-time contracts. All this situation, together with the high rates of coverage of collective bargaining and unionization of workers prevailing in most of the developed countries, has exacerbated the insider-outsider divide in the labor market in most of the developed economies, and Spain is no different (Bentolila, et.al., 2012).

But before focusing on the main effects of labor flexibilization found in the literature, I must define better what the insider-outsider framework is all about. First of all, insiders can be defined as workers with permanent contracts who enjoy significant protections from either dismissal or the unilateral introduction by employers of major changes in their working conditions (Dubin, 2012). It should be noted that not all the employed workers should be considered as insiders but only does who hold permanent labor contracts subject to high unemployment protection (Bentolila, et.al., 2012). In line with this, the outsiders are not just potential workers that in a specific moment are unemployed, it must also be taken into account workers with temporary contracts where their protection against dismissal and their in-work conditions can be defined as precarious. The persistence of an exceptionally intricate structure of collective bargaining, that has encouraged adjustment through employment levels rather than through internal flexibility, has only been possible because of the defence against all problems affecting the labor market by a strong coalition of employer organizations, unionists, labor relations specialists (both within and outside the public administration), and permanent workers with long tenure (Dubin, 2012). All this process and derived problems had been observable in Spain for years, where the precariousness on working conditions, especially for outsiders, the huge rates of unemployment and the quick increase of it during harsh times, have been defining facts of the labor market in the southern European country.

To sum up, the insider-outsider framework has generated a huge difference in terms of certainty and security between the two types of workers, being the last group the ones paying the higher costs when bad times had come around. This situation has been prolonging for years due to a law framework not favourable to temporary workers, and

by the lack of defence of syndicates and social agents, that always has been on the side of the insiders. Just taking into account the interest of the insiders, and thus disregarding the interests of outsiders about wages and working conditions can exacerbate the problem of persistent unemployment (Bentolila, et.al., 2012) which is yet another main feature of the Spanish labor market.

But not all the problems regarding the differences between permanent and temporary contract workers are essentially caused by the social background of the countries, there are also some economics intuitions that explain the insiders-outsiders framework. Labor productivity and real wages are strongly countercyclical, in part due to employment composition effects derived from the high incidence of temporary contracts. These contracts are typically associated with low wage/productivity jobs which are easily created in expansions and quickly destroyed in downturns (Bentolila, et.al., 2012).

Now I turn the attention to the main effects labor market flexibilization has had on the insiders-outsiders framework. Empirics enable us to differentiate two contradictory effects of this policy, which can be classified as negative and positive sides of labor market flexibilization, like De Lange et.al. (2012) explained. The negative side of flexible employment is that people can get stuck in unstable jobs, which can imply a bad situation for subsequent career development. The positive side, instead, argues that flexible employment offers individuals the opportunity to participate in the labor market, so using these temporary jobs as a step towards permanent employment. Applying this intuition to my case of study, I will expect, and in fact, I found as will be shown in Section 5, that employment got boosted i.e. unemployment decreased, but it could be greatly explained by an increase of temporary contracts. So, the 2012 labor reform could have had accomplished one of his objectives, reducing unemployment, but did not put solution to the huge duality of the market, in fact, could have even exacerbated it.

Labor market flexibilization affects in a disproportionally way those who already find themselves in a poor position in the labor market i.e. labor market entrants with low, or even without, qualification (De Lange, et.al., 2012). The most socially deprived groups, especially young workers, are the victims of this flexibilization, and the already existing social inequalities are aggravated as the stock of precarious labor market position increases.

The best way to sum up the two-side effect of labor market flexibilization is this definition in (De Lange, et.al., 2012) paper "*Compared to standard employment, a flexible job is associated with employment uncertainty, while, compared to unemployment, it offers at least certainty as well as the opportunity to obtain work experience*".

Nevertheless, it must be remarked that the relationship of the duality in the labor market (insiders-outsiders framework) and the labor market flexibilization it is not unidirectional, it must be considered as a feedback mechanism. Garcia-Perez et.al., (2019) found that dual labor markets are partly the result of introducing labor market flexibility by increasing the use of non-standard employment contracts rather than adapting the regulation of regular contracts. So, instead of alleviating the insiders-outsiders framework problem, labor market flexibilization has seemed to be exacerbated it even more. This is one of the things I will try to assess regarding the Spanish labor reform of 2012, which, in fact, was a labor flexibilization reform. The reform tried to decrease the privileges of insiders in order to increase the flexibilization of the labor market, and give more tools to firms in order to adapt to the different economic situation, but this mechanism did not necessarily translate in a reduction of duality, instead, it could have boosted it.

However, Spain was not the only country introducing measures to liberalize the labor market, such types of policies had been implemented in different European countries during years in order to achieve more flexibilization in the labor market. For example, the Lithuanian government began a liberalization of his labor market in 2003 to guarantee what they called "European standards". For that reason, their government took measures such as a reduction in the cost of deferral to decrease the high level of unemployment that the economy presented during that time, despite the criticism of syndicates that claimed that such measures would have a negative impact in the security of workers i.e. the labor market stability (Beck and Woolfson, 2003).

Moreover, Amable (2014) assessed the effects of labor market rigidities and employment protection in the French framework. He found that rigidity on labor market institutions is responsible for high levels of unemployment whereas employment protection legislation drives dualism in the labor market. So, he stated that reducing the wedge of dismissal costs between permanent and temporary workers has potential beneficial effects on unemployment. He also remarks that the level of temporary contracts is not just a cause of the labor market legislation, it also reflects some characteristics of the labor market and the industrial framework of the economy.

Barbieri and Scherer (2009) analyse the so-called partial and targeted deregulation of the Italian labor market that was focused on the temporary employment relations for particular groups in the labor market, outsiders, whereas left the standard employment, insiders, unchanged. They argued that this type of labor market flexibilization triggers less-stable jobs and lower wages and that due to the particularities of the Italian employment protections, the reform can reduce social entitlements for young people. So, the objective of the deregulation was to create new job opportunities and then reduce unemployment, but the real effects that have been observed in Italy show that traditional and secure jobs have been substituted by cheaper and precarious employment increasing dualism on the labor market.

All these findings are perfectly applicable to the Spanish case scenario, but the particular characteristics of each country must not be disregarded when assessing labor market policies. The loss of employment in the Spanish economy during the Great Recession went far away from what would have corresponded to the GDP fall and the sinking of the construction sector (Sanromá, 2012). The reasons that explain the Spanish exceptionality are the limited wage flexibility and the huge external flexibility i.e. the adjustment to the economic situation through dismissals, as a cause of temporary contracts. On the one side, the scarce wage flexibility incapacitated the accommodation of the salaries evolution to productivity and also to react sufficiently to changes in the unemployment rate. On the other hand, the excessive external flexibility generated great volatility in employment, and also has a dual effect, because it is basically centred on temporary contracts i.e. the adjustment of firms' templates is translated into a higher rate of dismissal of people with temporary contracts compare with workers with a permanent contract (Sanromá, 2012). But the ultimate causes of this imbalance between adjustment mechanisms resided on the peculiarity of the Spanish labor regulations. Concretely, in the collective bargaining model and the radically opposed regulation of both types of contracts, permanent vs. temporary (Sanromá, 2012). All these features of the Spanish labor market tried to be modified or affected by the 2012 labor reform reducing the difference in the costs of dismissal between insiders and outsiders in order to boost wage flexibility, but any aspect of the reform attempted to reduce the external flexibility, which led to a more precarious market and unstable jobs, as I would show later on in the thesis.

As Bentolila et.al. (2012) pointed out “*The fact that productivity is countercyclical and that wages and hours worked do not adjust in the aftermath of negative shocks to the Spanish economy are, to a large extent, the consequences of the institutional framework of the Spanish labor market*”. All the problems that the Spanish labor market, and the economy of the country as a whole, presented, were trying to be solved, or at least alleviated, with the flexibilization of the market through the 2012 labor reform, that I will analyse on the upcoming pages.

So, this thesis will add a deeper study on the effects of labor market flexibilization on the main literature throughout the Spanish case during one of the most difficult economic periods in the post-dictatorship era of the country (maybe until the recent Coronavirus crisis we are currently on). The novelty of this thesis with respect to the literature is the use of an RDD approach in order to retrieve the causal effect of such a disruptive reform and clarify the real effects on two of the main indexes of the labor market. I will use the date of implementation of the labor reform as the cutoff point with the objective of assessing if the probabilities of being unemployed or having a temporary contract varied depending on which side of the threshold we found ourselves. It will be so important to have into account all the disruptive policies and reforms introduced during the European Debt Crisis, since Spain’s austerity measures boosted by Angela’s Merkel Germany until the ESM financial aid program impulse by Europe. Thus, the effects of the labor reform should be interpreted in the unique context where they were introduced, so attributing all the consequences observable after the implementation of the reform to it, is just a misleading conclusion. The main result is that, if the policy had an effect, was just on the level of unemployment and not of great magnitude, whereas the objective of reducing the duality of the Spanish labor market was far from being accomplished.

The structure of the paper will look as follows. In section 2 an overview of the Spanish labor market is presented, focusing on the structural characteristics of it and the effects that the Great Recession had on the crucial variables that define the *health* of the market. Then, in the following section, I will present the main features of the 2012 labor reform, how the economic experts valued it at those times, and which effects have been found in the literature. In section 4, I offer an explanation of the methodology followed throughout the paper to retrieve the causal effect, of such a disruptive reform, on the number of temporary contracts and unemployed people, using a Regression Discontinuity Design (RDD) where I take the second quarter of 2012 (when the labor reform is implemented) as the cutoff point. Finally, in section 5 the main results of the paper will be presented, and section 6 concludes.

## **2. Overview of the Spanish Labor Market**

In the period previous to the financial crisis of 2008, two crucial factors supported employment growth in the Spanish economy. Firstly, the fall in interest rates provoked by Spain’s entrance to the Economic and Monetary Union (EMU), and more generally, by a pervasive relaxation in the conditions of access to credit (Bentolila, et.al., 2012) that triggered a considerable expansion of it. Secondly, the arrival of a very large inflow of immigrants, attracted by the growing specialization in low value-added jobs (such as tourism, construction, personal services...) by the Spanish economy, was an important factor that explained the employment growth during the pre-crisis times (Bentolila, et.al., 2012). But these factors could not assure an indefinite growth in employment. Furthermore, factor productivity and labor growth were exceptionally low, and important distortions in the product markets and domestic labor persisted, so that deteriorated

competitiveness significantly. These effects, summed with the huge increase in private sector indebtedness, led to the Spanish economy being increasingly dependent on external financing (Bentolila, et.al., 2012). The Spanish economy reached a current account deficit of 10% of GDP in 2007, which carried the country to a vulnerable situation in the financial crisis that was yet to come.

Once the financial crisis shock hit Spain in late 2007, it did it with such an unprecedented force that makes it quite difficult to compare with other developed countries and with other eras. The unemployment rate in Spain always has been permanently among the highest in the OECD but it has also experienced staggering swings during the years, even when good times were going on (Bentolila, et.al., 2012). But what was observed during the Great Recession was unparalleled. Aggregate employment fell by around 15%, which is equivalent to three million jobs, between the first quarters of 2008 and 2012. Spanish unemployment, reached a 26.6% rate in the fourth quarter of 2012, holding the record in the EU and almost doing it too among OECD countries (Baviera, 2013). However, there are other two statistics that are even more (negatively) extraordinary. Long-term unemployment, which is defined as those unemployed for more than 12 months, as a share of all unemployment rose from 19.1% in the fourth quarter of 2007 to 50.4% in the third quarter of 2013 (OECD, 2013). Furthermore, youth unemployment set yet another record when it reached a 56.5% rate in November 2012 (Baviera, 2013).

As (Baviera, 2013) explained, and as I mentioned in the introduction, a large part of the devastating impact of the financial crisis on unemployment can be attributed to the existence of a large number of workers with fixed-term contracts (insiders) as well as to the vulnerability of the residential construction sector to economic downturns.

But despite the massive increase in unemployment, the wage component of unit labor costs in the business sector was slow to adjust. It did not decline in the first four years of the crisis, and its level at the end of 2011 was above that at the onset of the crisis (OECD, 2013). This pattern is greatly explained by the scarce internal flexibilization imposed by the significant protection of insiders, that despite the financial crisis, did not see their working conditions too much affected because of their assurance of employment stability, however, this tenet of employment stability has evolved during the crisis. The aim has been to solve the persistent problems of the Spanish labor market through a twofold defence (Baviera, 2013). First, defending the principle of employment stability i.e. the objective has never been to completely eliminate all the advantages insiders enjoy it rather reduce them or adapting them to the situation underway. Secondly, making exceptional openings for temporary recruitment in fixed-term contracts. The result of this process can be translated into a gradually undercut of employment stability (Baviera, 2013). The reforms of the past years have entailed a more significant change as they have integrated greater flexibility into the dismissal process and a new framework in the collective bargaining process, both characteristics of the 2012 labor reform that I will present in the following lines.

### **3. The 2012 Labor Market Reform**

Since the return to democracy the Spanish labor market reforms efforts had been focusing on a process of “flexibility on the margins” that has stimulated employers to achieve competitive adjustment expanding the use of temporary contracts that has failed to stabilize the pattern of employment (Dubin, 2012). For that reason, the 2012 labor

reform had the objective of increasing the intern flexibility and finally achieving some stability in the labor market, as I will present throughout this section.

Two important features must be taken into account when analysing labor reforms. First, the effects of such reforms could present delayed effects i.e. not observed in the short run, years after the implementation of the policy (García-Pérez and Jansen, 2015). Second, that when labor policies are applied one question arises, are the possible improvements observed structural i.e. are likely to stay in the future? Or they are just the result of cyclical developments? (Cuerpo, et.al., 2018). All in all, my RDD analysis will try to recover the effects of the labor reform, but it exists the possibility that some effects of the policy are not reflected in the data studied. Thus, the interpretation of the results from a transversal economic point of view is crucial because just focusing on “numbers” will not lead to precise conclusions on the effect of the 2012 labor reform.

This section will be organized in three sub-sections, where I will explain the main objectives and characteristics of the labor reform, then getting in into the discussion on the drawbacks and the general valuation of it, to finally present the main findings existent in the literature about the effects of the mentioned reform.

### **3.1 Objectives of the Labor Reform**

The latest labor market reform in Spain took place in the midst of the European Debt Crisis when the country was still recovering from the Great Recession shock. The policy included measures with the objective of transforming the logic, structure, and reach of the collective bargaining system and also drastically reduce the historic protections enjoyed by the insiders that have contributed to high levels of precarious employment (Dubin, 2012). The policy considerably reduced the costs of dismissal for permanent workers and significantly expanded the ability of employers to reorganize work, reassign workers, and reduce salaries (Dubin, 2012). A very clarifying example is the one-year full-time training contract (for firms with less than 50 employees) during which time workers can be fired at any moment and any cost, with reduced social security contributions, and with an extended trial period of one year (García-Pérez, et.al., 2019).

The policy prioritized collective bargaining agreements at the firm level over those at the regional or sectoral level, making it easier for firms to deviate from the collective agreement, and the reform also implemented, as an alternative to job destruction, internal flexibility measures in the form of new regulation for dismissal, in particular reducing monetary compensation for unfair dismissal and clarifying the definition of fair economic dismissal (García-Pérez, et.al., 2019). More concretely, three quarters in a row of declining sales or revenues made it a cause for fair dismissal (Bentolila, et.al., 2012), and severance pay for unfair dismissal was set at 33 days instead of 45, with a 24 month's pay limit, instead of three and half years (Bentolila and Jansen, 2012).

As I pointed out, the policy also sought to promote the rapid readjustment of the contents of collective agreements and a radical decentralization of them. So, it inverted the “monopoly” of sectoral over firm-level collective bargaining agreements and put an end to the ultra-activity rules that left in place indefinitely any collective bargaining clause unless both sides agreed to its elimination or revision (Dubin, 2012). So, employers were allowed, for competitiveness-related reasons (having two quarters in a row of declining sales or revenues), to unilaterally change working conditions, including wages, as far as these changes were above industry collective-agreement level (Bentolila, et.al., 2012). Thus, priority was given to firm-level agreements, decentralizing the collective bargaining



process approaching to the European standards, and the ultra-activity level is also an advance that had the potential to reduce the inertia in working conditions (Bentolila and Jansen, 2012).

In conclusion, the dismissal costs of the insiders were reduced with the objective of approximating their standards to those of outsiders. The mechanism the government had in mind, was that reducing these costs a change in the pattern of hiring will be accomplished, boosting the use of permanent instead of temporary contracts because if the economic situation worsened in the future, companies would not have to pay overwhelming dismissals. In addition, the new bargaining process also gave more negotiation power to employers enabling them to change the working conditions of their employees quickly to adapt more efficiently to the undergoing economic situation. All of these had the potential to reduce the duality of the labor market, because of the promotion of permanent contracts, and also reducing the high rates of unemployment caused by the huge external flexibility, because of better tools in the working conditions adjustment negotiations. My results, as I will present in Section 5, show that the pattern of hiring has not changed, and that unemployment was reduced but not to a great extent. Moreover, the price to pay has proven to be a more unstable and precarious labor market.

### **3.2 Problems and Valuation of the Labor Reform**

Way before the introduction of the labor reform in 2012, the absence of clauses of salaries automatic adjustment in the face of a deterioration in firms' situation and salary indexing prevented the gradual wage adjustment (Bentolila and Jansen, 2012). The labor reform corrected this misleading structure, but with an undoubted loss for employees. As Bentolila et.al. (2012) claimed, the reform entailed a significant shift of bargaining power from workers to employers. By boosting external adjustment, it had the potential of attaining the internal adjustments (working time, salaries, mobility...) that the Spanish economy badly needed to restore competitiveness. However, in the context of high indebtedness where all Europe was situated during those harsh times, substantial productivity growth was also required, not only to sustain internal demand and, hence restart employment growth but also as a complementary way to restore competitiveness. In this respect, the reform fell short of what was needed (Bentolila, et.al., 2012).

One key issue which remained inappropriately addressed on the reform was dualism. The policy reduced the firing-cost gap between insiders and outsiders, which should have encouraged firms to use fewer temporary contracts. However, the incentive may have been proved insufficient (as my results show) since the firing-cost gap is still large, 18 days of the temporary contract (for a typical duration), and the 40 days (fair) or the 66 days (unfair), plus red-tape costs for permanent contracts (Bentolila, et.al., 2012). Nevertheless, the dismissal for economic reasons was completely blocked before the reform, just 8% of the extinction of contracts in 2010. The 45 days were clearly excessive from an international perspective (Bentolila and Jansen, 2012). The previous situation led to excessive temporality, the major source of dismissal (56%). Sadly, the reform did not eliminate this last feature, cause the modification did not completely affect the crucial aspect of temporary employment (Bentolila and Jansen, 2012). All in all, if the objective, as the government claimed, was to reduce the duality in the labor market, just addressing one part of the problem, in this case insiders, could have been proven insufficient, as my RDD analysis does.

From the main literature is known that if the wedge of dismissal costs between insiders-outsiders is big, an increase in dismissal costs boost unemployment reducing the conversion of outsiders into insiders, and also, the recruitment of permanent workers (Bentolila and Jansen, 2012). So, taking into account this argument, the reduction in dismissal cost contemplated in the reform should have diminished unemployment, but exist the possibility that the wedge was not reduced enough. In fact, the main effect on unemployment is achieved when the possibilities of temporary hiring are limited by law, an aspect that the original reform implemented did not collect (Bentolila and Jansen, 2012). This can explain why my results show that the effect on unemployment despite been statistically positive, is scant.

The 2012 context must be considered when I analyse the effects observed on unemployment and temporality. Spain and Europe, almost as a whole, was in a context of great uncertainty, scarcity of credit and recession prospects, so the reduction in dismissals costs could have brought even more dismissals, with all the social negative consequences of it, and thinking that in the future the permanent recruitment could increase, maybe was not enough relief for society. For that reason, (Bentolila and Jansen, 2012) defend that such a reform should have been taken in an expansion context, in other words, politics arrived late, again. As I just point out, this reform had the potential to have major impacts in the future because it advocates bigger intern flexibility, which could translate in a quick fall in real wages in coming recessions, which could reduce the magnitude of unemployment cycles (Bentolila and Jansen, 2012).

As I have explained, this reform relied almost exclusively on job creation subsidies, which had the potential of favouring workers older than 45, women, youth and the long-term unemployed (Bentolila, et.al., 2012). In past labor reforms, jobs subsidies have caused large deadweight losses and substitution effects, so the increase in the reach and magnitude of these instruments is likely to have been too costly (Bentolila, et.al., 2012).

Apart from not solving completely the problem of dualism in the Spanish labor market, there is another shortcoming in the policy implemented in 2012, the absence of significant changes in active labor market policies and unemployment insurance. Spain was, and still is, out phased in this aspect of labor policies (Bentolila and Jansen, 2012). There is a great consensus in Europe about two points, as is explained by Bentolila and Jansen (2012). First, unemployment insurance is not just an important instrument to mitigate the negative effects of unemployment that has been acquired by workers because of their previous contribution to social security, but also it implies the duty of an active search of employment. For this reason, the unemployment insurance programs should be complemented by formation and job reinsertion programs. Second, active policies should be well-designed to be useful in reducing the duration of unemployment. For a given level of job vacancies, there is a disincentive of job search due to unemployment insurance that could boost the duration of unemployment. In fact, active policies are the third wheel on what it is known as flexicurity, jointly with low dismissal costs and generous unemployment insurance.

Previously to the labor reform, that did not consider any modification in labor active policies, the percentage of spending in unemployment insurance in Spain doubled the OECD average, 32% against 16%, whereas the spending on formation program was 22% against 29% (Bentolila and Jansen, 2012). One of the main problems is not just that there are non-modifications in this type of policies, but also that the reform has extracted resources from the reinsertion and formation programs to be able to deal with the unemployment insurance bonuses (Bentolila and Jansen, 2012).

Lastly, one of the main problems in the Spanish labor market was that salaries and working conditions did not respond enough to the economic situation, which exacerbates unemployment and the duration of his cycle (Bentolila and Jansen, 2012). The measures took on the reform pursued that the working conditions were subjected to negotiation, as a response to the continuous market distortions firms faced, so it is possible that the structural unemployment rate of the Spanish economy fall in the near future (Bentolila and Jansen, 2012).

To conclude, as Bentolila et.al. (2012) point out the reform has advanced towards flexicurity but only in the *flexi* part, promoting internal flexibility through reducing firing costs and betting for collective bargaining agreement at firm-level. However, the reform lacked significant productivity-enhancing measures. Thus, though it represents an improvement, it was unclear how far it would reduce the Spanish structural unemployment rate and whether it would spur economic growth. This last concern is what I will try to answer in this thesis.

### **3.3 Main Results found in the Literature**

I will organize this sub-section in two parts. First, I will present which effects are found in the literature about the policies implemented in the reform i.e. findings related to the measures taken, not the effects of this particular reform itself. Then, I will discuss the findings and main concerns of the effects of the Spanish labor reform of 2012.

Bentolila and Jansen, (2012) did not found a clear causal effect of dismissal costs on the average unemployment rate, which can be of major importance in my analysis of the reform because it rests on the lowering of dismissal costs to reduce unemployment. Dismissal costs make firms more reluctant to recruit employees because they imply more problems (costs) when economic downturns come into play, but dismissal costs also ensure fewer firings. The net effect, then, is more stable employment, it increases less in expansions, but it decreases also less in recessions. Nevertheless, it is important to highlight that the final effect depends also on how, economic shocks, technologies, and collective agreements are modelled (Bentolila and Jansen, 2012). Moreover, some literature found that the unemployment rate is five percentage points lower with firm-level collective bargaining if efficient off-hook clauses are introduced, as the labor reform did (Bentolila and Jansen, 2012).

Turning our attention to the effects directly related with the 2012 Spanish labor reform, I must highlight the proclamation of the Ministry of Labor who, in 2013, said that the reform was successful on limiting job destruction because the number of permanent employment contracts fell only by 1.2% in the following year of the reform, compared with the 13.5% fall in the previous 12 months of the reform (Gamberoni, et.al., 2016). It is interesting to notice that for the government, even presenting negative results a year after the reform, considered the policy as a success because it put break on the way down in the roller-coaster of unemployment that the Spanish economy was in. However, García-Pérez and Jansen, (2015) explained that there are two main visions about the effects of the reform. The optimists defended that the reform explained the creation of employment, 400.000 jobs in 2014, with just an economic growth rate of 1.4%. On the contrary, the sceptics put the emphasis on the net loss of employment since the labor reform was implemented, claiming that the policy was responsible for the employees' precariousness. These two visions can also be extracted from my RDD analysis. On one hand, unemployment was reduced as a cause of the reform, but on the other hand, the duality of the labor market was not reduced, in fact, could have even been exacerbated.

So, the reduction in dismissal costs and the shift of power towards employers in collective bargaining helped to reduce unemployment but paying the price in the form of more precarious jobs.

As I explained some lines ago, the Spanish labor market presented some dysfunctions that became evident at the beginning of the recession when real wages rose even though employment and GDP growth dropped. Nevertheless, it is important to recall that the inflation pattern was helpful in easing some pressures in wage dynamics i.e. it required a lower nominal adjustment (Cuerpo, et.al., 2018). But with the pass of the years, the pattern changed, and pro-cyclical responses of real wages could be interpreted as a consequence of the labor reform. The improvement of collective bargaining and the increase of intern flexibility would have made real wages more responsive to cyclical conditions (Cuerpo, et.al., 2018). In my analysis I will not analyse the effect of the reform on wages, nonetheless, it so interesting and important, not only to support the argument of an increase of precariousness but also for the argument of a more efficient adjustment of working conditions to the prevailing economic situation. Furthermore, the labor reform would have contributed to the moderation of wages observed in Spain, but it is not disposable that part of this restraint was the result of public-sector wage cuts and long-lasting adverse cyclical conditions (OECD, 2013). Moreover, this wage moderation was affecting workers' living standards, although there is evidence that the reform started yielding its dividends contributing to save jobs and boosting employees' performance.

So, after some months since his approval and an accelerated wage adjustment, the labor reform yielded a positive employment growth. In fact, it is at the end of 2015 when the overall balance in terms of jobs became positive, 350.000 new jobs since the policy implementation, but quite far away from the previous levels to the Great Recession (two million jobs fewer) (García-Pérez, et.al., 2019). The overall balance in unemployment showed that the reform could have saved 60.000 jobs in the short term, reducing the unemployment rate by as much as 0.6% with respect to the hypothetical situation where the labor reform would not have been implemented. With respect to recruitment, the reform increased the rate of hiring by 8 percentage points, by not changing the pattern of dismissals for insiders and increasing the rate of recruitment of them too (García-Pérez, et.al., 2019).

This paper I just mentioned is of great interest because the analysis provided on it tries to study the duration (time) for a representative worker to exit from unemployment to employment, and the other way around. So, they focused on the duration of unemployment, and not the probability of being unemployed that it is what I tried to retrieve in my analysis. But this study is also remarkably interesting because it also uses an RDD analysis, that took February 2012 i.e. the month of implementation of the labor reform, as the cutoff point, in line with my study. The main difference is that they used monthly data because their source is different from mine. They used data from the *Muestra Continua de Vidas Laborales (MCVL)*, that comes directly from the social security institutions. I, as will be explained in the following section, used data from the National Institute of Statistics that only dispose of quarterly data. Access to MCVL data is very restricted, so just universities, researchers, or important economic institutions have access to it.

García-Perez et.al. (2019) found a positive, although small, effect of the policy in exits both from employment and unemployment. More concretely, they found that the monthly transition from unemployment to permanent employment increased on average from 1.7% to 2.6% the following twelve months from the implementation of the reform. The

study also found a reduction in the probability of exiting employment for insiders, which can be interpreted, by the authors, as a sign that the internal flexibility measures introduced by the reform were used, instead of external flexibility measures. The transition from temporary to permanent contracts increased, on average, from 0.3 to 0.4 percentage points which is another positive outcome of the new reform because it reduced duality. Compared to my analysis, they found more transitions from temporary contracts to permanent ones, but it must be highlighted that I analysed the number of temporary contracts as a whole and not as a percentage of total employment. Nevertheless, they also found a positive effect of the reform on unemployment, just as my results show, which supports the argument that the labor reform accomplished one of his objectives, increasing employment.

Nowadays, the overall image of the Spanish labor market shows an increased dynamism, but the external flexibility measures of firing outsiders remain, by far, the most likely option, and the increase in the number of insiders, as a percentage of total employment, it is not significant (García-Pérez, et.al., 2019). It is also interesting to observe the pattern in the share of temporary workers. The number, and share, of outsiders fell strongly in 2012, the year where the reform was introduced, but it started to grow again immediately in 2013, which could imply that the initial fall is due to the recession the economy entered (European Debt Crisis) and that when things were starting to go well the share of temporary contracts got back to his pattern (Cuerpo et.al., 2018). This argument is in line with my results, the dualism insider-outsider is still present in the Spanish labor market, so the labor reform has not put solution to one of the most important drawbacks of the Spanish economy. Thus, the reform could have had two sources of effects, direct and indirect effects, on the efficiency of the employment matching process. The former effects are explained by changes in placement services regulation and in employment protection, and the latter via their effect on the collective bargaining process (Cuerpo, et.al., 2018).

So, the literature points to an overall conclusion: the labor reform helped to reduce the unemployment rate but let the insider-outsider framework intact. My RDD analysis helps to support this argument studying the effects of this disruptive policy on the probability of being unemployed or having a temporary contract. Using these variables, statements about the creation of employment and the increase of precariousness of the Spanish labor market can be elaborated but first will be necessary to explain how the RDD study is constructed.

#### **4. Methodology**

In order to assess the effects that the Spanish labor reform of 2012 had on some of the main variables related to the labor market, I am going to conduct a Regression Discontinuity Design (RDD) using the date of enactment of the law that established the labor reform as the cutoff. The source of data that will be used to estimate the main effects will come from the *Instituto Nacional de Estadística*. I will use quarterly data, so the cutoff point will be the second quarter of 2012, to estimate the effect of this market flexibilization policy on the number of unemployed people and temporary contracts on the Spanish economy.

In an RDD regression, treatment is determined by whether the observed assignment variable exceeds a certain cutoff point. So, in my case, the treatment group would be made up of observations after the second quarter of 2012. But there are some

assumptions that need to be taken into account if I want to retrieve the causal effects of the 2012 Spanish labor reform. First, all other factors determining our variable of interest must evolve smoothly around the cutoff point i.e. the assignment variable (in our case, quarters) is the only variable determining treatment status. If there exist other variables that also “jump” at the cutoff, the treatment effect will be (potentially) biased. Secondly, individuals in my sample need to have an imprecise control over the assignment variable, because if there is a potential benefit of receiving the treatment, individuals will try to sort themselves in the treatment group, and this will bias my estimates. Finally, it is necessary to be aware that my estimates require data away from the cutoff point, so I will need to choose the best possible bandwidth given the data. In my case, I will use two bandwidths, a large one (from the 4th quarter of 2009 to the 4th quarter of 2014), and a smaller one (from the 3rd quarter of 2011 to the 1st quarter of 2013). So, I perform the same analysis using these two different bandwidths because of the bandwidth trade-off problem present in RDD analysis. When a larger sample (more observations) across the cut-off is used, the larger would be the potential bias term in the estimates, so it would be more difficult to really retrieve the causal effect. But at the same time, when the bandwidth used is larger, the variance component decreases. In conclusion, two contradictory forces play a role in choosing the bandwidth, so the election must try to find a balance between them.

Regarding the first assumption, there are potential variables or events around the time of the introduction of the labor reform that can have a meaningful impact on the status of the Spanish labor market. First of all, the labor reform was introduced in the midst of the European Debt Crisis, where the worrying levels of public debt on several economies in the Eurozone (including Spain) were threatening the stability of the EU, and also the strength of their main trade partners, Japan, China, and the USA, that were involved in a governmental change and an economic deceleration. For this reason, some events and variables will need to be taken into account in our regression approach, as the effects of the main measures introduced by the EU and most importantly the European Central Bank (ECB), like the European Stability Mechanism (ESM) program that I will discuss in a sub-section later on. It also will be important to focus on some of the variables regarding the Spanish economy, like the low valuation of Spanish debt, the risk premium, and the impact of the austerity measures introduced by the Spanish government driven from Brussels. I will see how these different policies can play a role in my analysis in a sub-section later.

Focusing on the second assumption, the imprecise control of the assignment variable is almost guaranteed, because to my knowledge individuals cannot control “time”. More seriously, the government that implemented the labor reform had an absolute majority in Congress, so did not pass too much time since the announcement of the reform (late November 2011) to the enactment of it (February 2012), making quite difficult for individuals to know anything about the policy before it was implemented, and so enabling them to sort themselves in the treatment group. Nonetheless, I will take a close look at a possible anticipation effect in a sub-section in the following lines.

So, the RDD workhorse equation will look like this:

$$Y_i = \beta_0 + \beta_1 D_i + \beta_2 X_i + \beta_3 Z_i + \varepsilon_i$$

Where  $Y_i$  will be our variable of interest (number of unemployed people and temporary contracts),  $D_i$  will be the variable that indicates the treatment status,  $F(X_i)$  will be some function of the assignment variable, in my case quarters,  $Z_i$  will contain a set of control

variables regarding some background characteristics, such as age, gender or educational level, that can bias our estimates, and finally  $\varepsilon_i$  will be the random error term of the estimation.

I must add that maybe another term with some function to collect the interception between the treatment and assignment variables will need to be included, but this will depend on the bandwidth used in the analysis.

#### **4.1 The European Debt Crisis and the ESM program**

The Great Recession triggered some financial market problems in a bunch of European countries. After months of summits and discussions between Euro area members, the group agreed to create a financial assistance program to help those economies more affected by the financial crisis. The agreements led to the creation of a rescue fund named the European Stability Mechanism (ESM), which was composed of some instruments that range from economic adjustment programs to loans at favourable conditions, all of them with the objectives of overcome the structural weaknesses or imbalances in the recipient countries, and rebuild trust in the financial sector (Strauch et.al., 2016). So, some experts refer to the ESM as the solution to the lack of a bailout system in the EU treaties (Cornel and Seabrooke, 2017). These authors also affirm that the access to financial markets for countries receiving aid from the ESM hinges on Member States' credibility and credit rating because they will have to make up any losses that the rescue fund may incur in the event of a sovereign default.

The real estate bubble break hit with full force the Spanish economy, and more precisely their banks, due to the non-payment of the easy loans offered by these institutions during the period that preceded the Great Recession, named by some Spanish economists as the "fake prosperity". Spain made different reforms in order to restructure some saving banks affected by the real estate bubble crisis, but despite the efforts by the Spanish institutions, credible external assistance was necessary to rebuild trust in the financial sector of the country (Strauch et.al., 2016). While Spain never lost access to market financing, raising money became gradually more expensive, leading to the intervention of the mentioned ESM program on June 25 of 2012, under the financial assistance for recapitalisation of financial institutions (indirect recapitalisation) umbrella. The funds of this financial aid program (€41.3 billion) were lent to the Spanish government, more concretely to the recapitalization fund of the Spanish government (FROB). In return to this financial assistance, Spain modernized the sector reforming the ownership structures and improving the risk management practices (Strauch, 2019).

The support enabled to Spain through the ESM financial aid was the smallest as a share of a country's economy and the shorter in time. It also was unique in comparison with the programs of other countries because the only objective was to restructure the country's banks (Strauch, 2019). So, the workhorse objective of the financial aid program was to increase the long-term resilience of the Spanish banking sector. In order to achieve this, it was necessary to facilitate an orderly downsizing of bank exposures to the real estate sector, restore market-based funding, reduce bank's reliance on central bank liquidity, and enhance risk identification and crisis management mechanisms (Strauch, 2019). It is important to notice that the objectives of the program were not only fixed it on capital and funding needs, but also on improving the banks' governance, transparency, and supervision. The ESM program for Spain was also different to other financial aid programs because it focused on the restructuring and recapitalization of the

financial sector, bank recapitalization was based on an independent asset quality review and stress test, and the bail-in of private subordinate creditors was carried out for the first time (Strauch, 2019).

Thus, the ECB implemented an unlimited intervention in government debt markets under the Quantitative Easing umbrella, with actions focused on short-term sovereign bonds (Strauch et.al., 2016). Even after the loan to recapitalise the financial sector, the Spanish government retained its market access and its average cost of funding was not as high as the pre-crisis period levels. Spain's economic recovery is explained by a broad agenda of structural reforms, both in the financial sector and in the labor market, alongside fiscal consolidation, and an unprecedented internationalization of the economy (Strauch et.al., 2016).

## 4.2 Spanish austerity policies

I will focus on all the economic measures taken in 2012 by the new Spanish government of the Popular Party (PP), that could have affected the labor supply, apart from the labor reform and the ESM financial aid program, that is deeply explained in Secretaría de Estado de Comunicación (2012). The principal reforms I am going to highlight are encompassed as austerity measures boosted by Europe, more concretely by "the Merkel's Germany" as the Spanish media used to describe. It is possible to distinguish between two groups of reforms, those focused on achieving the budgetary adjust and fiscal consolidation, and the measures focused on structural reforms for the competitiveness.

In the first group of measures, the main objective was to achieve budgetary stability accomplishing the objectives of deficit and debt established by the EU. The austerity measures adjustment rose to €15 billion. In order to achieve this objective, the new Spanish government took several measures and used different instruments, for example, it reduced their expenses in public sector labor, freezing salaries, and offers of public employment. In addition, they also increased income taxes and property taxes for the whole distribution of the population. Moreover, the public administration reduced its organic structures in almost 20% of its weight. But two of the most controversial measures were, the so-called *recortes* (cuts) in the public health system and public education, very criticized by the society that considers these two sectors of prime interest for the country, and the increase of the VAT, that rose the general tax from 18% to 21% and the reduced tax from 8% to 10%.

The second group of measures was focused on improving the competitiveness of the economy in general, for that reason the measures that were taken focused on liberalizing the commerce, amplifying the commercial schedules for example. The public institutions also wanted it to increase the possibilities for the small and medium companies, so the ICO (Official Credit Institute) expanded their credit lines to the development of business projects. Furthermore, measures to boost the growth of exports and international trade were taken, with a special focus on tourism to improve the competitiveness of the companies in this pivotal sector of the Spanish economy.

Of all these measures I must focus on those that had the potential to affect the labor supply, either positively or negatively. The most direct effect on labor supply could have been the reduction, or rather freezing, of the public employment offer. Considering that the number of people working on the public sector as a percentage of total employment is around 20%, according to the data extracted from the National Institute of Statistics (INE), the impact of such a measure in the labor market is quite important. Instead, all



the measures framed under the improvement of competitiveness policies could have boost employment in those sectors, international trade, and tourism, which are quite important as their weight on the country's GDP is quite elevated and increasing over time. Last but not least, the increase in several taxes, as the income taxes or the VAT, could have had an impact on the labor supply, but that would have depended on the substitution and income effect trade-off, and such study is quite intensive on his own and surpasses the scope of this thesis.

In conclusion, the different austerity and structural reforms policies could have had an impact on the labor supply of the Spanish economy since 2012, when they were undertaken, so they must be considered in the interpretation of the results of my RDD analysis.

### **4.3 Anticipation effect**

The electoral program of "Partido Popular" PP, the party that won the 2011 general elections, was released on 1 November of that same year. Regarding the published measures on the labor market, this political party referred to all the problems that the Spanish labor market was facing during that devastating years and proposed some general ideas, or proposals, about how to tackle these concerns. As I just point out, the proposals were too general just focusing on achieving a modern and more flexible labor market to the image of the European colleagues. Some of the measures described in the electoral program advocated to simplify the types of contracts in the labor market, promoting the collective bargaining process at a firm-level, and creating mechanisms that enhanced the formation of workers and protection of unemployed people. The general idea of a flexibilization of the labor market was indeed in this text, but the exact policy measures were not well described, and some points did not coincide with the law that promulgated the reform in February 2012. To our knowledge, the exact measures were not anticipated by the social agents, because they were not described in advance to the enactment of the law. Moreover, it is worthy to point out that even taken into account a possible flexibilization of the labor market the November-February time-period is quite small, so it is difficult to think that social agents could act in advance to the reform, considering that the labor market used to adapt to changes slowly.

### **4.4 Data**

As I pointed out before, the data I will use in the RDD analysis came from the Spanish National Institute of Statistics (INE), more concretely from their quarterly survey "Encuesta de Población Activa" (EPA), that collects information at household levels but disentangling it at individual levels. The Active Population Survey is balanced across the Spanish territory in a way that the sample is able to represent the population, so they divide the country into electoral areas and take representative households taking into account the population density in the area. Multiple questions are asked in the survey, all of them related to the labor market, and also some background characteristics are collected. The raw data that the institution provides already presents a variable that makes it easy to classify the individual on employed, unemployed or non-active, and also provides another variable indicating if the individual has a permanent or rather a temporary contract.

With this information creating my variables of interest is straightforward. The two dependent variables I will use in the study are binary, one indicating if the individual is unemployed or not, and the other indicating if the individual has a permanent contract or not. It is important to remark that what will be observable in the study are absolute numbers, so I present the number of unemployed people over the active population, I do not present the rate of unemployment. The same explanation applies to the other dependent variable representing the number of temporary contracts.

The running variable of the study will be the quarters, and the treatment variable is just going to be a binary variable indicating in which side of the cutoff the observation is situated. Regarding control variables, some background characteristics, such as gender, group of age, nationality, and age at which individuals reach their higher level of studies, are included.

A more detailed description of the data is presented in the following table:

**Table 1: Data Description.**

<i>Bandwidth</i>	<i>Observations</i>		<i>Mean</i>		<i>Std. Dev.</i>		<i>Minimum</i>		<i>Maximum</i>	
	<i>SB</i>	<i>LB</i>	<i>SB</i>	<i>LB</i>	<i>SB</i>	<i>LB</i>	<i>SB</i>	<i>LB</i>	<i>SB</i>	<i>LB</i>
<i>Q_</i>	475,455	1,589,252	-.495	-.547	1.705	5.768	-3	-10	2	9
<i>NVIVI</i>	475,455	1,589,252	32,496.84	32,651.34	18,728.29	18,847.99	1	1	65,552	66,005
<i>NPERS</i>	475,455	1,589,252	1.821	1.823	.952	.954	1	1	12	15
<i>EDAD5</i>	475,455	1,589,252	39.491	39.456	11.533	11.539	16	16	65	65
<i>SEXO1</i>	475,455	1,589,252	3.332	3.320	2.494	2.493	1	1	6	6
<i>NAC1</i>	457,455	1,589,252	1.157	1.158	.524	.525	1	1	3	3
<i>edadest</i>	474,040	1,584,521	19.26	19.25	6.021	5.990	7	7	74	79
<i>DUCON1</i>	297,325	1,002,168	2.153	2.163	2.106	2.112	1	1	6	6
<i>AOI</i>	475,455	1,589,252	4.344	4.331	.910	.901	3	3	6	6
<i>OCU</i>	475,455	1,589,252	.770	.777	.420	.416	0	0	1	1
<i>UNEM</i>	475,455	1,589,252	.229	.222	.420	.416	0	0	1	1
<i>TEMP</i>	475,455	1,589,252	.144	.146	.351	.353	0	0	1	1
<i>TREAT</i>	475,455	1,589,252	.502	.497	.499	.499	0	0	1	1

This table presents the main descriptive characteristics (number of observations, mean, standard deviation, minimum and maximum) of the variables used in the study. “SB” refers to the small bandwidth (3<sup>rd</sup> quarter 2011 – 1<sup>st</sup> quarter 2013) whereas “LB” refers to the large bandwidth (4<sup>th</sup> quarter 2009 – 4<sup>th</sup> quarter 2014). “Q\_” is the running variable of the study, it represents the quarters in which the observation is situated, being the 2nd quarter of 2012 i.e. the cutoff point, equal to zero. “NVIVI” identifies the households where the survey has been conducted. “NPERS” identifies the individual in a specific household. “EDAD5” identifies the age of the individual and is constructed in five-year groups, being “20” the group of people between “20-24” years old. “SEXO1” identifies the gender, being equal to “1” for men and “2” for women. “NAC1” gives the information about the nationality of individuals, being “1” for Spanish, “2” for Spanish and other nationality, and “3” for foreign nationalities. “edadest” represents the age in which the individual reached his (her) higher level of studies. “DUCON1” informs about which type of contract the individual has, being “1” for permanent contracts and “6” for temporary contracts. “AOI” informs about the qualification of the individual with respect to his economic activity relationship i.e. if the individual is employed, unemployed or inactive. “OCU” is a binary variable indicating if the individual is employed “1” or not “0”. “UNEM” is one of the binary dependent variables used in the study and indicates if the individual is unemployed “1” or not “0”. “TEMP” is the other binary dependent variable that takes value “1” if the individual has a permanent contract and “0” if not. Finally, “TREAT” is the binary treatment variable that indicates in which side of the cutoff is the observation situated i.e. the variable takes value “1” if the observation is situated after the second quarter of 2012 and “0” if it is situated before that quarter.

As it is observable in the table above, the data is well balanced between the two different bandwidths i.e. the means, standard deviations and so on, do not vary too much from the large to the small bandwidth, which indicates that there are no differences in the composition of observations that could lead to erroneous interpretations of the results. If differences in the general characteristics of the variables were observed, the estimates would not have been comparable because the samples used would not have been alike. Generally, there are enough observations to apply an RDD analysis in both cases, using a small and larger bandwidth, and none mean presents extreme values that could be thought of as no representative of the population. So, the data does not present problems that can prevent me to do a consistent and precise RDD analysis.

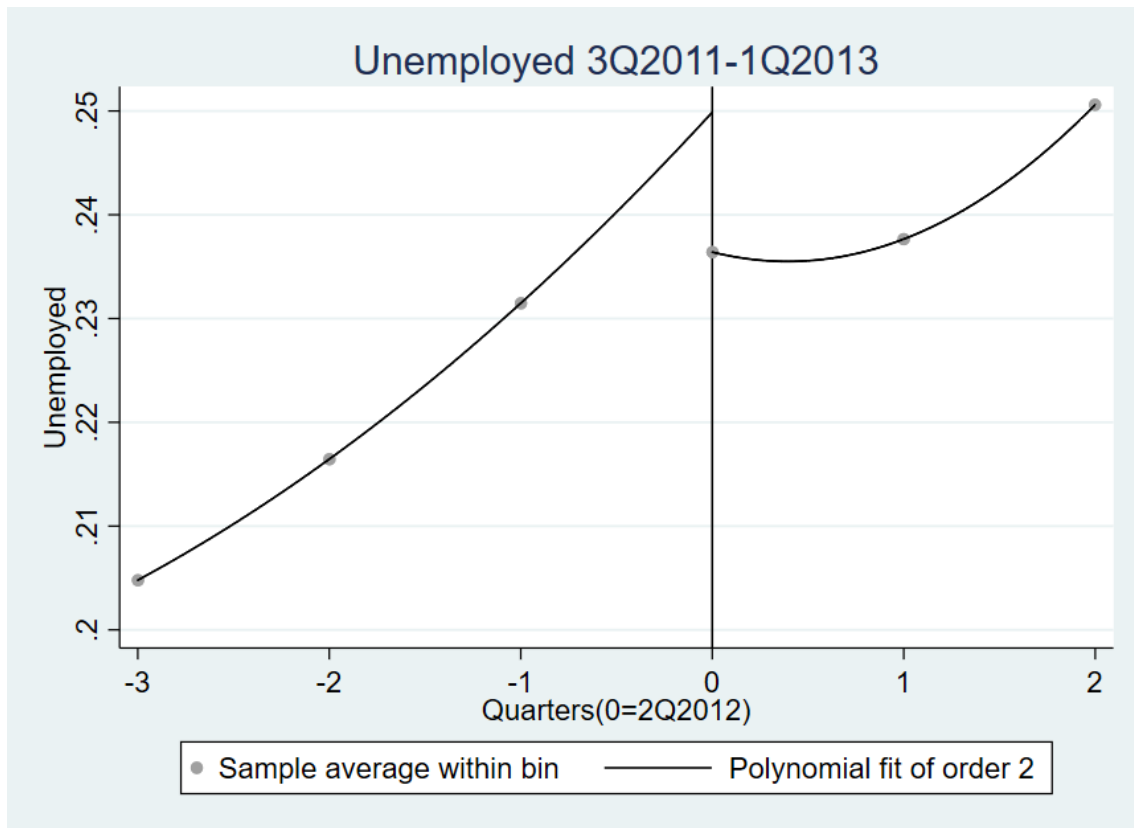
## 5. Results

In this section, I will present the results of the RDD analysis and provide an interpretation of them. I will use the same equation for all the regressions:

$$Y_i = \beta_0 + \beta_1 D_i + \beta_2 X_i + \beta_3 X_i^2 + \beta_4 X_i D_i + \beta_5 X_i^2 D_i + \beta_6 Z_i + \varepsilon_i$$

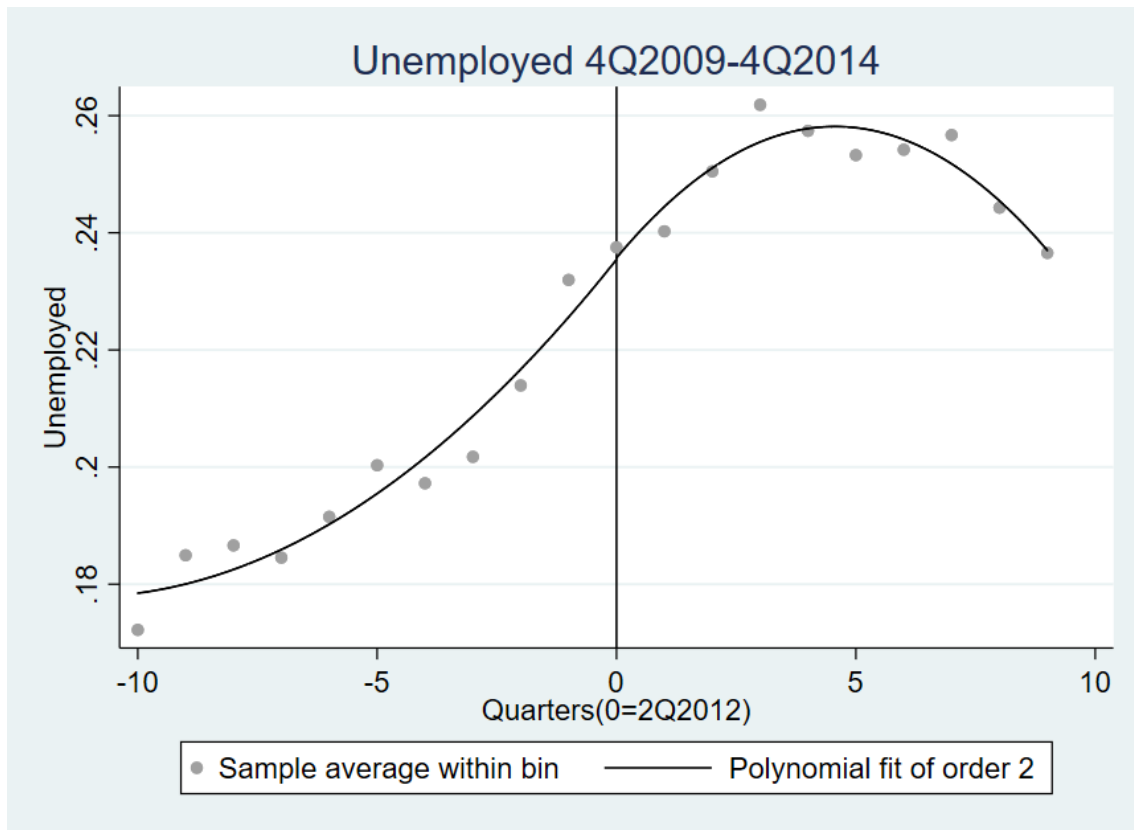
The dependent variables in my regression will be UNEM, that is a binary variable that identifies the unemployed, and TEMP, that is another binary variable that gives the information about temporary contracts. The treatment variable TREAT is yet another binary variable indicating in which side of the cutoff, the second quarter of 2012 when the labor reform is implemented, is the observation situated. The running variable is the quarters, where I have normalized the cutoff point to zero. Then I included squared terms of the running variable in the equation and also two interactions, one between the running and treatment variable, and another between the treatment variable and the squared running variable. The decision of including the squared terms is because of the non-linearity between the assignment variable and the two different outcome variables, and the inclusion of the interaction terms is explained by the change in the pattern observed in both sides of the cutoff. All these characteristics are clearly visible in the graphs below. In addition, I also included some control variables, more concretely gender, age, nationality, and level of studies variables. The assessment for the inclusion of these different background characteristics in my analysis is provided after the presentation of the main results. Finally, I also used robust standard errors in all my regressions.

Figure 1: Plot UNEM against running variable (Small Bandwidth)



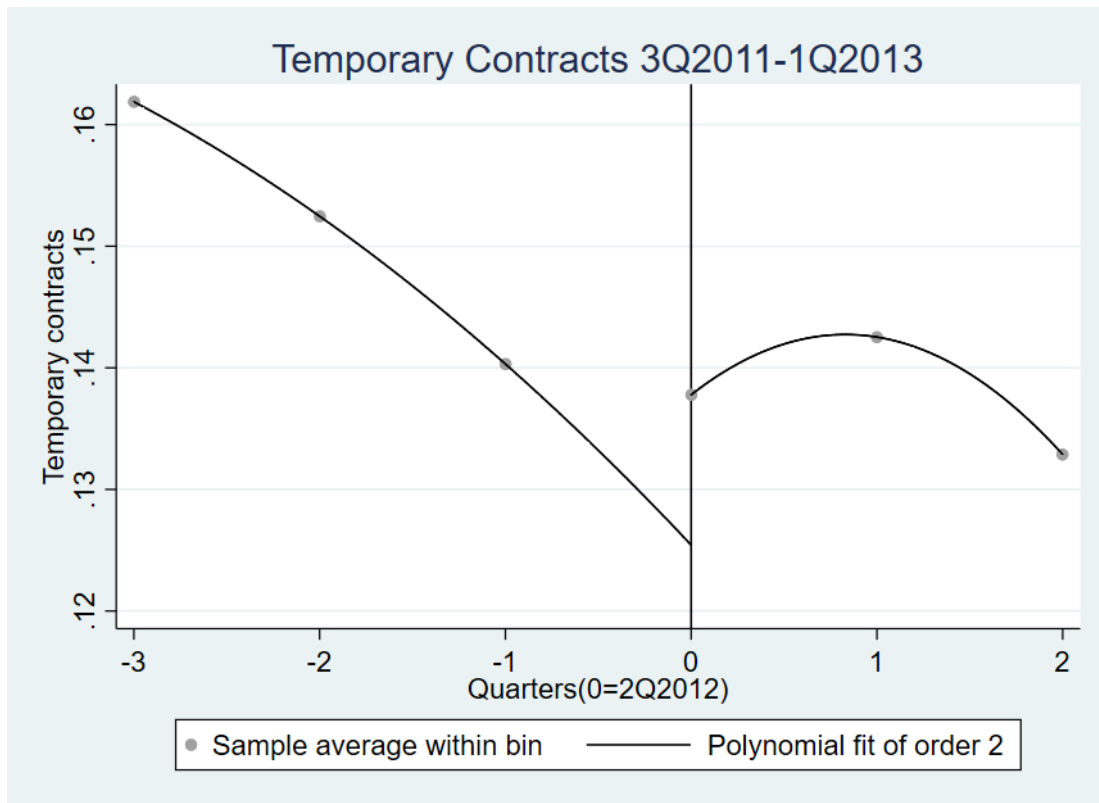
This graph shows the relationship between the running variable “Q\_”, in the abscissa axis, and the “UNEM” variable, in the ordinate axis, using the small bandwidth (3<sup>rd</sup> quarter 2011 – 1<sup>st</sup> quarter 2013).

Figure 2: Plot UNEM against running variable (Large Bandwidth)



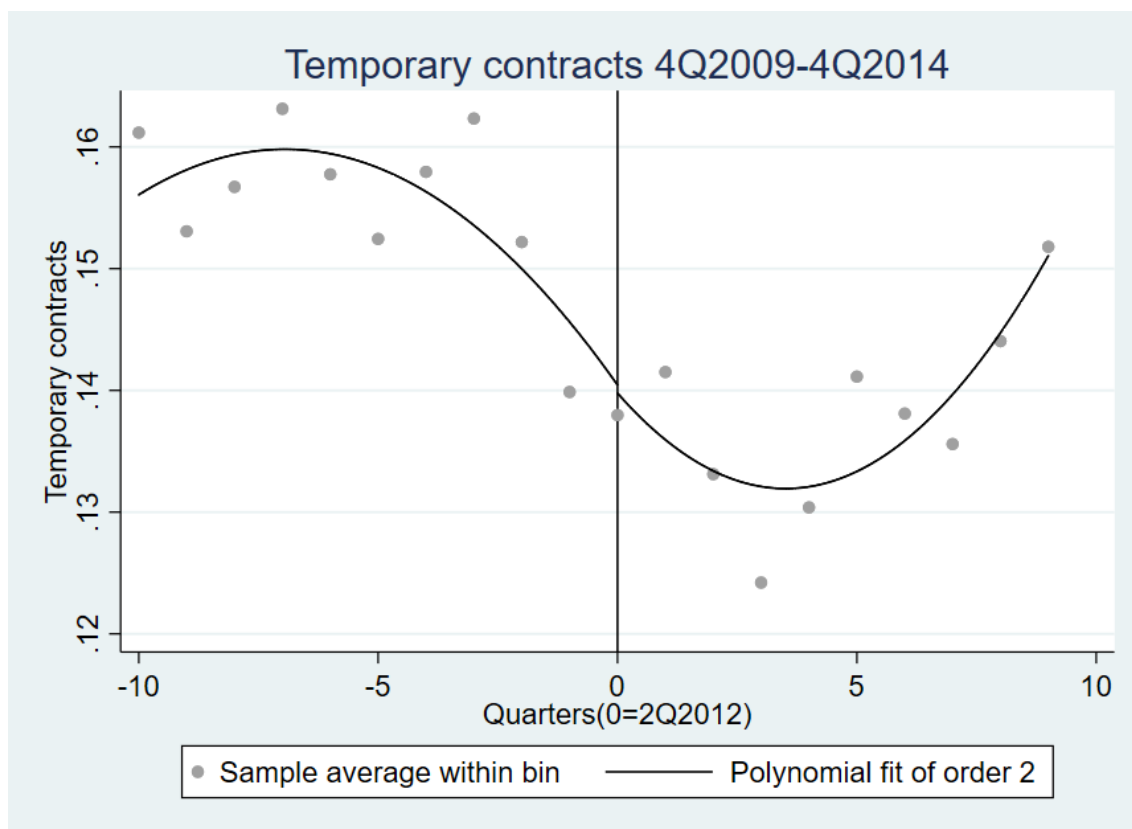
This graph shows the relationship between the running variable “Q\_”, in the abscissa axis, and the “UNEM” variable, in the ordinate axis, using the large bandwidth (4<sup>th</sup> quarter 2009 – 4<sup>th</sup> quarter 2014).

**Figure 3: Plot TEMP against running variable (Small Bandwidth)**



*This graph shows the relationship between the running variable “Q\_”, in the abscissa axis, and the “TEMP” variable, in the ordinate axis, using the small bandwidth (3<sup>rd</sup> quarter 2011 – 1<sup>st</sup> quarter 2013).*

**Figure 4: Plot TEMP against running variable (Large Bandwidth)**



*This graph shows the relationship between the running variable “Q<sub>t</sub>”, in the abscissa axis, and the “TEMP” variable, in the ordinate axis, using the large bandwidth (4<sup>th</sup> quarter 2009 – 4<sup>th</sup> quarter 2014)*

First, just for presenting a more visual interpretation, I plot the dependent variables against the running variables. As can be observed in the graphs above, there exists a jump around the cutoff point, the second quarter of 2012, for both dependent variables of the study when I use the small bandwidth ( 3<sup>rd</sup> quarter 2011 – 1<sup>st</sup> quarter 2013). This could imply that the 2012 labor reform had an effect on the number of unemployed people and temporary contracts because a difference in the pattern at both sides of the threshold is observed for my variables of interest. Nevertheless, when the larger bandwidth (4<sup>th</sup> quarter 2009 – 4<sup>th</sup> quarter 2014) is used, such jump is not observable but some change in the pattern after the threshold is still perceivable, what can mean that the labor reform had an effect on unemployment and temporary contracts. In order to assess the statistical and economical significance of these possible jumps, I run the regression using the workhorse equation presented at the beginning of the section.



**Table 2: Regressions Results.**

	<i>Unemployed</i>	<i>Temporary Contracts</i>
<b><i>Large Bandwidth</i></b> (N° Obs: 1.505.065)	-.0021 (.0020)	-.0013 (.0017)
<b><i>Small Bandwidth</i></b> (N° Obs: 284.520)	-.0199 (.0083)*	.0125 (.0071)

The results presented on this table came from the regressions using the workhorse equation described at the beginning of section 5. In the first row, I used the model applying a large bandwidth (4<sup>th</sup> quarter 2009 – 4<sup>th</sup> quarter 2014), and in the second row, I used the model applying a small bandwidth (3<sup>rd</sup> quarter 2011 – 1<sup>st</sup> quarter 2013). Unemployed column represents the results using the unemployed binary variable “UNEM” as the dependent variable, and Temporary Contracts column represents the results using the temporary contract binary variable “TEMP” as the dependent variable. Standard errors between parenthesis. Level of significance indicated by stars (\*).

The table proves that the jumps observed in the graphs above are not significant, or slightly significant for the case of the unemployed people variable when I use the small bandwidth. Focusing on this last case, the regression implies that the labor reform would have had the impact of reducing the probability of being unemployed by (almost) 2 percentage points i.e. being in the right side of the cutoff would imply that the individual would have reduced the probability of being unemployed by 2 percentage points with respect to the situation before the labor reform took place. The same interpretation of the coefficients can be applied to the other values presented in Table 1, but none of them is statistically significant, nonetheless what is really interesting is how these variables could be related to one another.

In the large bandwidth the estimate of the probability of being unemployed, apart from not being statistically significant, is also not very meaningful economically speaking, and the same can be said for the temporary contracts, where a decrease of them is estimated. So, the reform is not responsible, at least not too much, of the pattern of these two variables. However, in the small bandwidth more economically significant results are observed. The probability of being unemployed decreases by 2 percentage points due to the reform, and this effect is in fact slightly statistically significant, whereas the probability of having a temporary contract increases by 1.25 percentage points although in a non-significative manner. The interesting thing is that when unemployment is decreasing significantly, both in an economically and statistically way, the number of temporary contracts seems to increase, while when non-effect is estimated for unemployment the temporary contract variable decreases. From this interpretation, I can infer that the labor reform has not completely fulfilled its objectives.

On one hand, the level of unemployment seems to have been positively affected by the labor reform i.e. the probability of being unemployed was decreased, which was one of the main objectives of the 2012 labor reform. On the other hand, no significant effects on the probability of having a temporary contract have been found, but it appears that when unemployment decreased it was, at least partially, explained by an increase of hiring through this type of contract. All in all, from my results I can state that the labor reform helped to decrease the level of unemployment, but had not put end to the duality problem of the Spanish labor market, which was one of the objectives of the reform.

So, my results are in line with De Lange et.al. (2012), because they stated that liberalization policies in the labor market create a trade-off between less unemployment and more temporary jobs. The last characteristic, the increase in temporary contracts, leads to a labor market more unstable, as Baviera (2013) pointed out, which jointly with the change to a pro-cyclical pattern of wages (Cuerpo, et.al., 2018), led to more precarious jobs. The reform has created this framework due to the decrease of dismissal costs and the shift of power towards the employers in the collective bargaining process. Thus, my results prove that the duality in the labor market is still present, so the adjustment of differences between insiders and outsiders has proven to be insufficient as Bentolila et.al. (2012) claimed. Finally, the argument of Amable (2014) must be considered, the cause of a high number of temporary jobs is not just due to how the labor regulation is constructed, but also how the economic activity of a country looks like. Spain, for years, has been focused on an economy based too much on tourism and construction, which entails low qualification and seasonal jobs, that are greatly affected by economic downturns. So, if the government wants to reduce duality and high rates of unemployment, changing the labor market framework can be not enough, an industrial policy, promoting high qualification and stable jobs, is also necessary.

### 5.1 Sensitivity tests

One of the main concerns with an RDD analysis is the possible breaking off the first assumption i.e. that no other variables jump at the cutoff. For that reason, I provide a sensitivity test, where the different background variables are regressed against the running and treatment variables. In general, it is observable that the potential jump at the cutoff of these variables is deluded when the bandwidth is narrowed, as it is observable in the table.

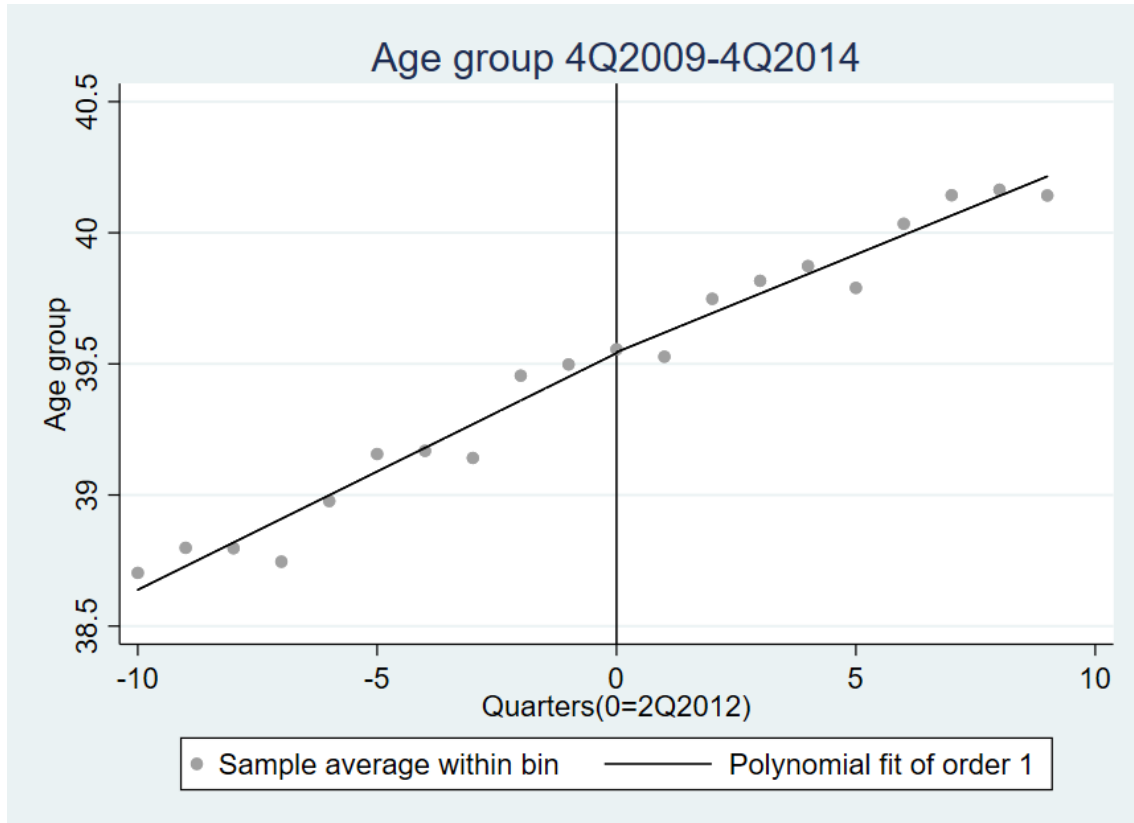
**Table 3: Sensitivity Check**

<i>Bandwidths</i>	<i>Age Group</i>		<i>Gender</i>		<i>Nationality</i>		<i>Level of Studies</i>	
	<i>SB</i>	<i>LB</i>	<i>SB</i>	<i>LB</i>	<i>SB</i>	<i>LB</i>	<i>SB</i>	<i>LB</i>
<i>TREAT</i>	.269 (.183)	-.150 (.057)**	-.021 (.039)	-.027 (.012)*	-.005 (.008)	.003 (.002)	-.017 (.006)**	-.167 (.030)***
<i>Q<sub>-</sub></i>	-.351 (.203)	.158 (.020)***	.010 (.044)	.012 (.004)**	.007 (.009)	-.003 (.000)***	.025 (.007)**	.084 (.010)***

On this table, I present the regressions of the background characteristics variables on the treatment variable “TREAT” and the running variable “Q<sub>-</sub>”. The meaning of all these variables is explained in Table 1 and as well as in the other table, “SB” refers to the small bandwidth (3<sup>rd</sup> quarter 2011 – 1<sup>st</sup> quarter 2013), and contains 285.321 observations whereas “LB” refers to the large bandwidth (4<sup>th</sup> quarter 2009 – 4<sup>th</sup> quarter 2014), and contains 1.509.530 observations. The model used in the regressions has, as in the workhorse equation, a squared term of the running variable “Q<sub>-</sub>”, an interaction term between the treatment and running variable, and another interaction term between the treatment and the squared running variable. Standard errors between parenthesis. Level of significance indicated by stars (\*).

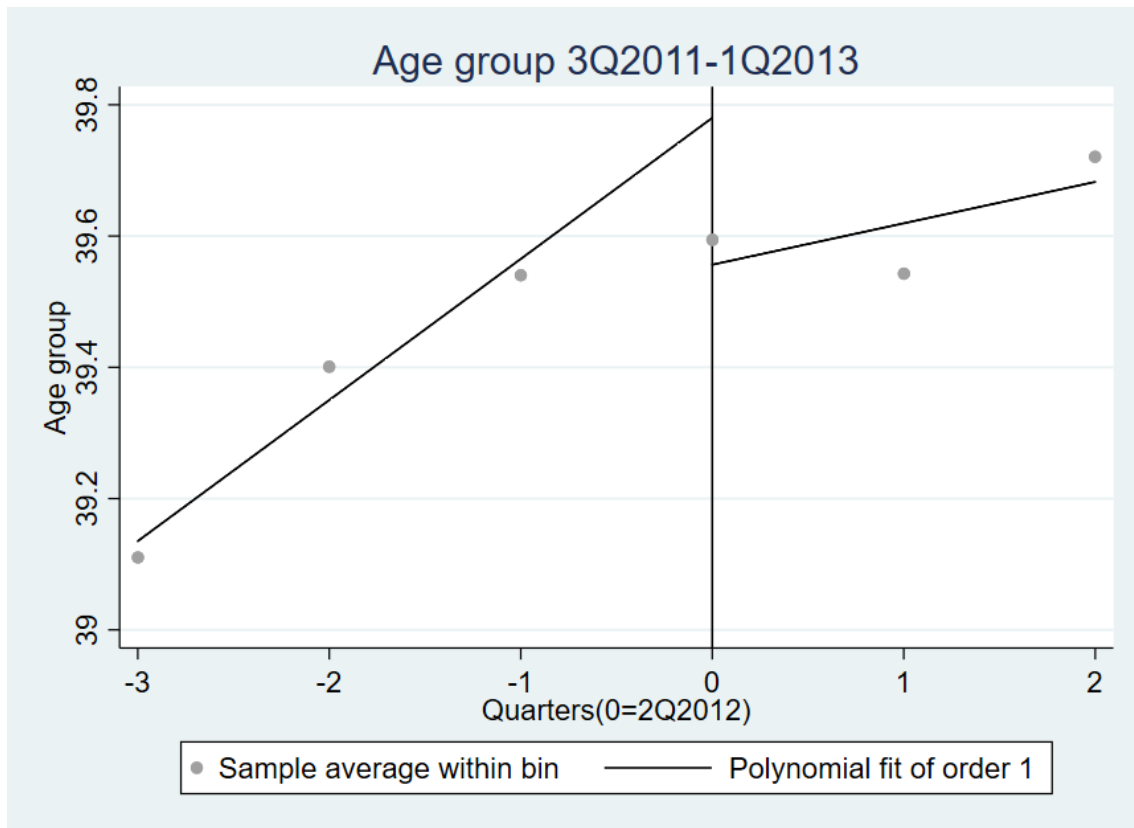
With respect to the variable that classifies the observations by group of age (EDAD5), it is observable that there is a significant jump at the threshold when I use a large bandwidth but that this effect disappears when the bandwidth is narrowed. It is interesting that looking at the graphs the interpretation seems to be the other way around, for that reason doing a regression analysis is key whenever is possible.

**Figure 5: Plot EDAD5 against running variable (Large Bandwidth)**



*This graph shows the relationship between the running variable “Q\_”, in the abscissa axis, and the “EDAD5” variable, in the ordinate axis, using the large bandwidth (4<sup>th</sup> quarter 2009 – 4<sup>th</sup> quarter 2014)*

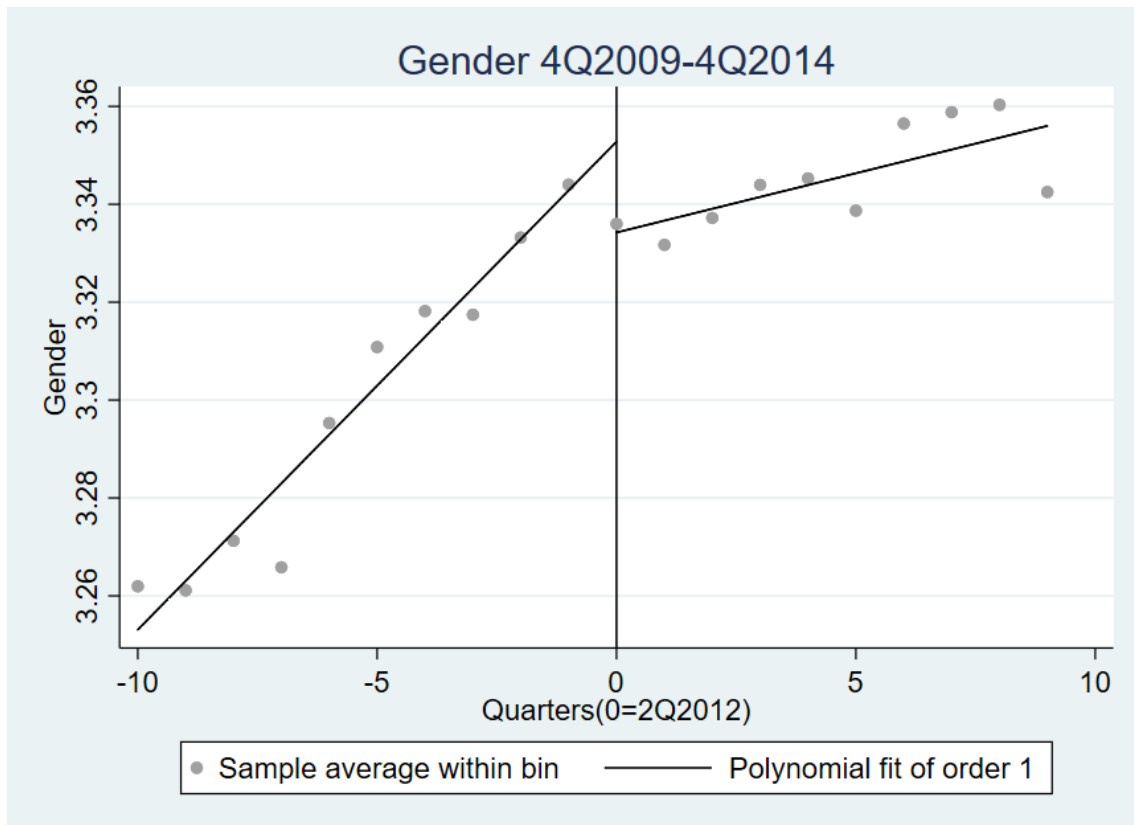
Figure 6: Plot EDAD5 against running variable (Small Bandwidth)



*This graph shows the relationship between the running variable “Q\_”, in the abscissa axis, and the “EDAD5” variable, in the ordinate axis, using the small bandwidth (3<sup>rd</sup> quarter 2011 – 1<sup>st</sup> quarter 2013).*

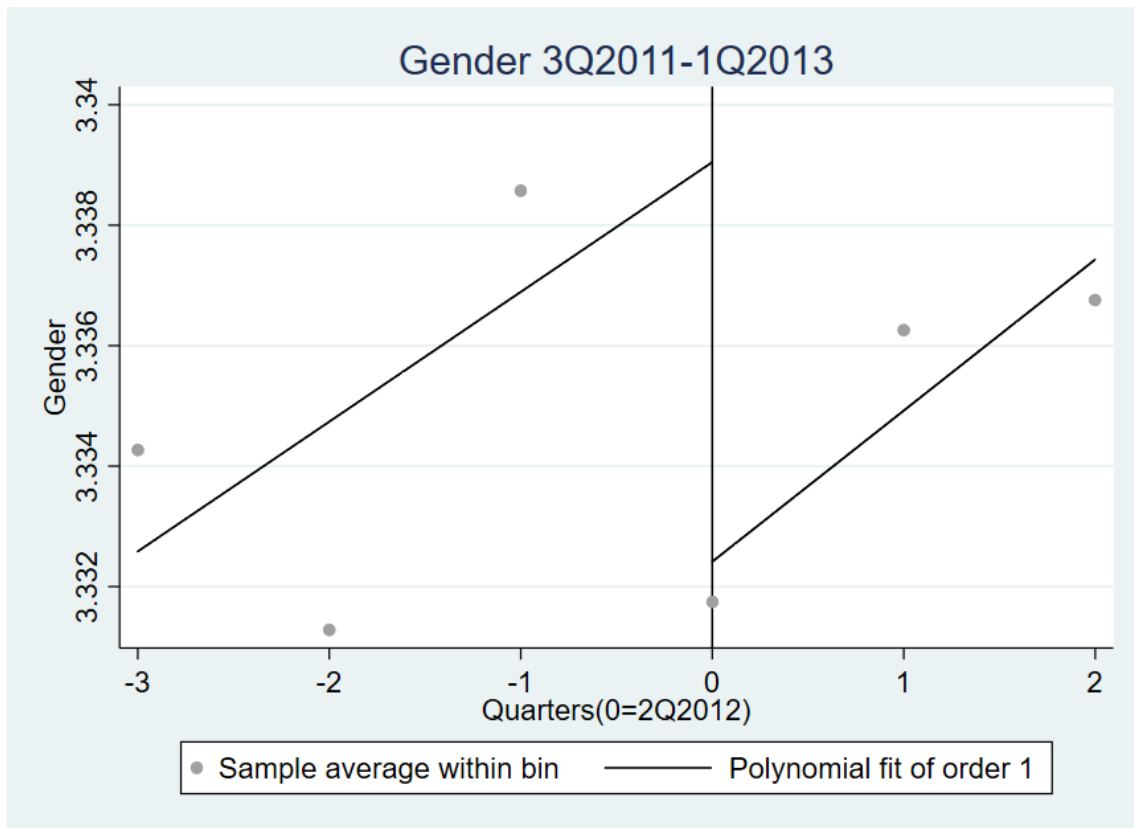
When I do the same sensitivity test focusing on the gender variable (SEXO1) a similar pattern is observable. There is a slightly significant jump at the cutoff when the large bandwidth is used, but the effect disappears in the small bandwidth scenario. Again, I plug in the graphs for a more visual interpretation.

Figure 7: Plot SEXO1 against running variable (Large Bandwidth)



*This graph shows the relationship between the running variable “Q\_”, in the abscissa axis, and the “SEXO1” variable, in the ordinate axis, using the large bandwidth (4<sup>th</sup> quarter 2009 – 4<sup>th</sup> quarter 2014)*

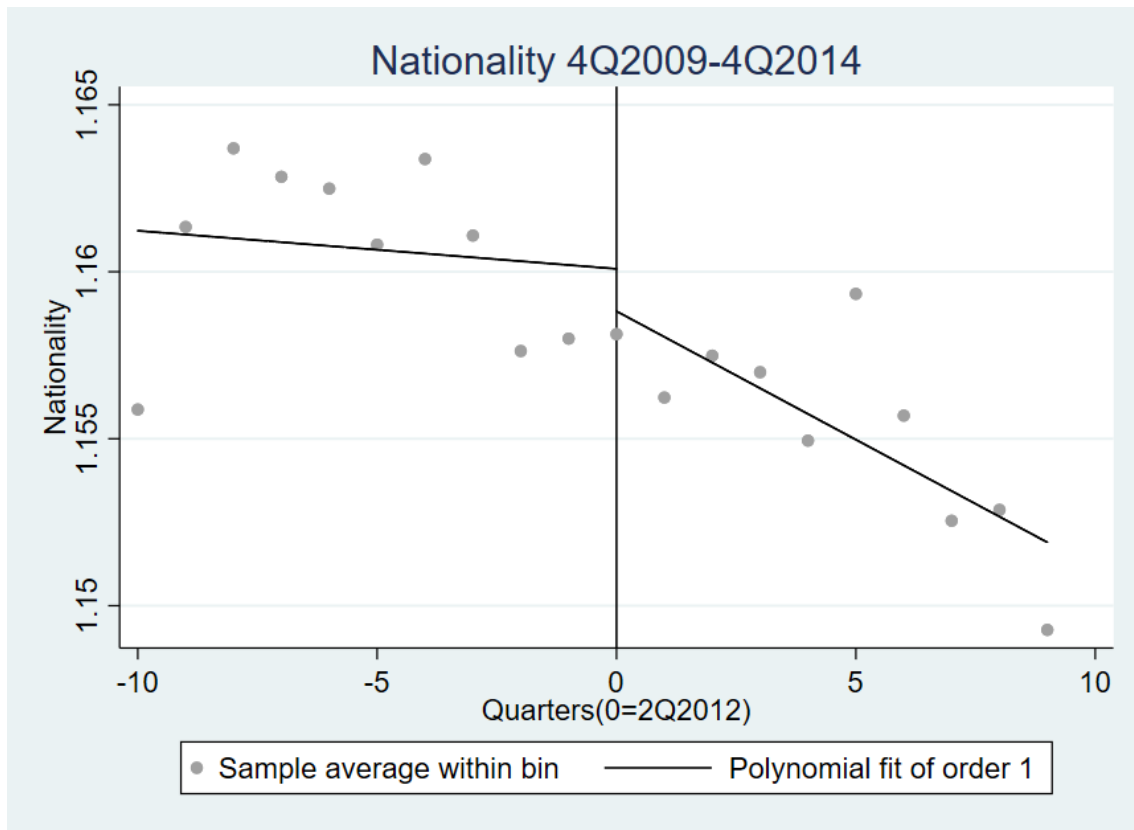
Figure 8: Plot SEXO1 against running variable (Small Bandwidth)



This graph shows the relationship between the running variable “Q\_”, in the abscissa axis, and the “SEXO1” variable, in the ordinate axis, using the small bandwidth (3<sup>rd</sup> quarter 2011 – 1<sup>st</sup> quarter 2013).

The regressions on the background variable NAC1, which identifies the nationality of the respondent, are more interesting to study. The regression of nationality against the treatment variable (TREAT) does not present any significant jump neither in the large bandwidth nor in the small bandwidth, however, the regression of NAC1 against the running variable presents no significant effect in the small bandwidth but a statistically significant effect when the bandwidth is broadened. All in all, using the small bandwidth ensures no jump at the cutoff point for the nationality variable.

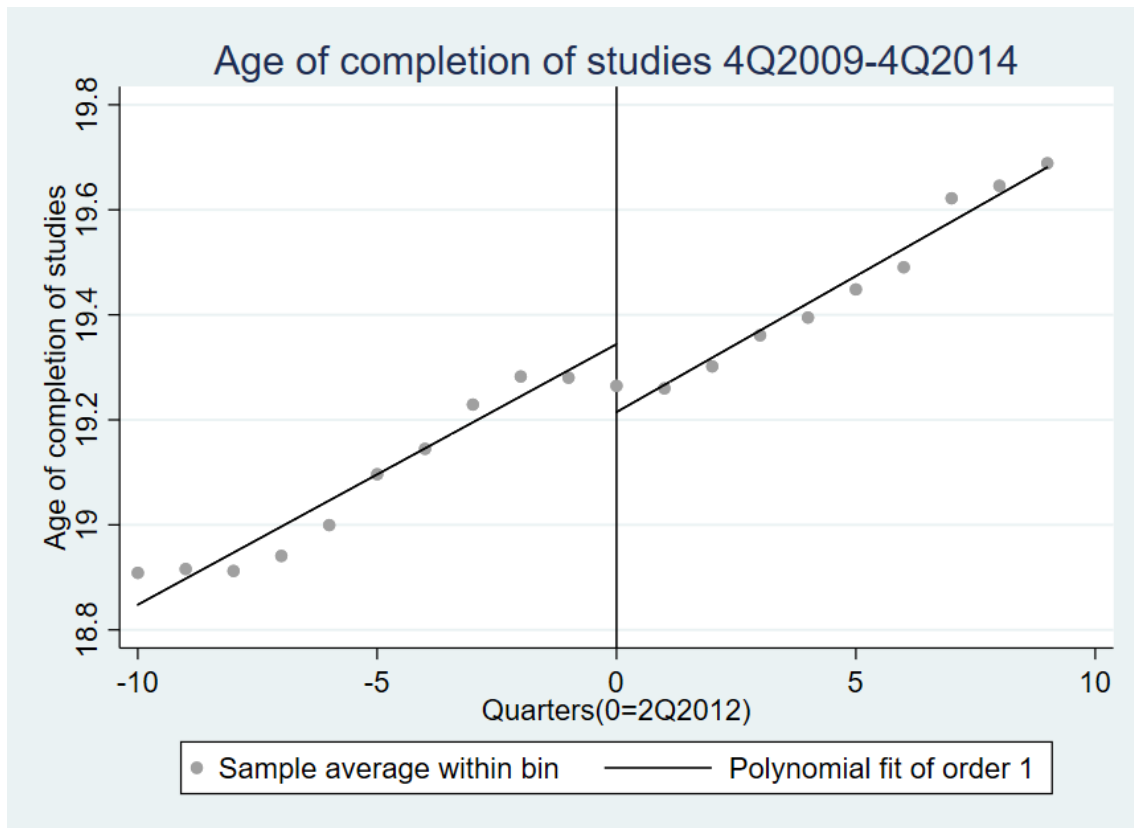
Figure 9: Plot NAC1 against running variable (Large Bandwidth)



This graph shows the relationship between the running variable “Q\_”, in the abscissa axis, and the “NAC1” variable, in the ordinate axis, using the large bandwidth (4<sup>th</sup> quarter 2009 – 4<sup>th</sup> quarter 2014)

Finally, the “edadest” variable, that measures the age at which the individual finished his (her) studies, is the only one that presents statistically significant effects i.e. this variable jump at the cutoff point what can bias our estimates, as can be seen in the graphs below. So, controlling for this variable is a must if I want to retrieve the causal effect of the 2012 labor reform implementation on the probability of being unemployed or having a temporary contract.

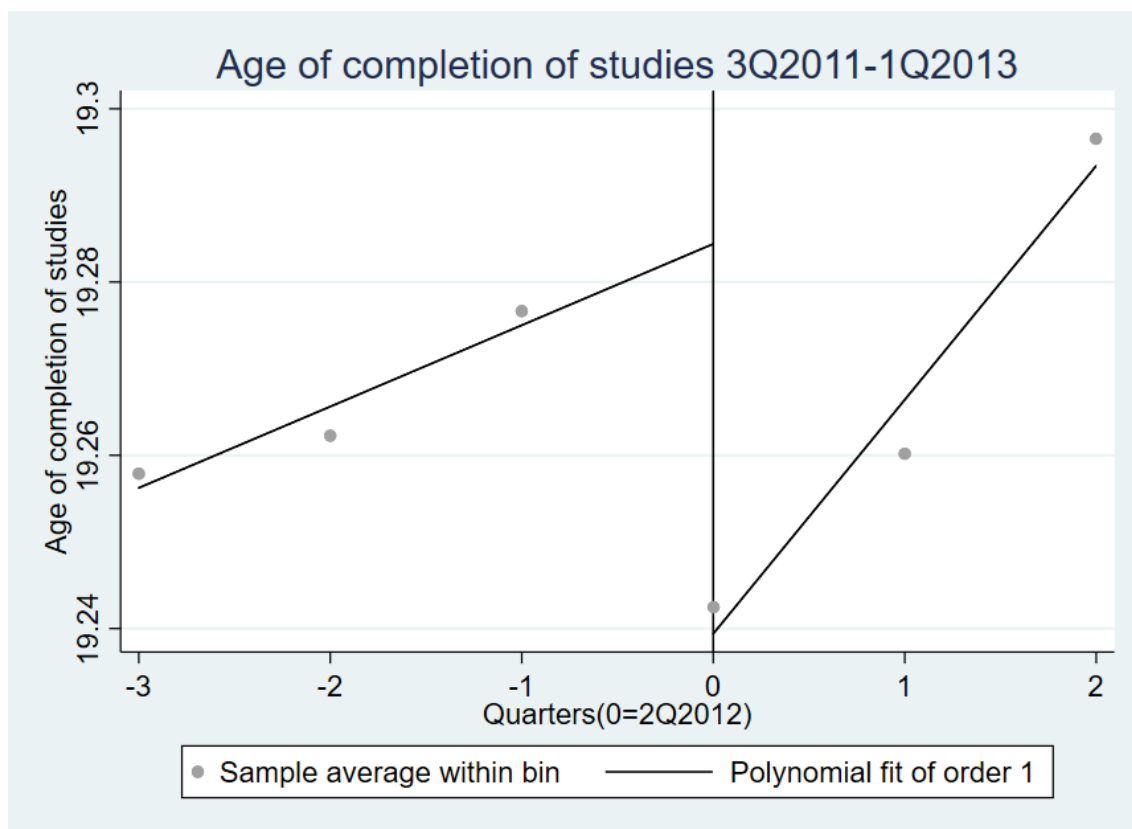
**Figure 10: Plot edadest against running variable (Large Bandwidth)**



*This graph shows the relationship between the running variable “Q\_”, in the abscissa axis, and the “edadest” variable, in the ordinate axis, using the large bandwidth (4<sup>th</sup> quarter 2009 – 4<sup>th</sup> quarter 2014)*



**Figure 11: Plot edadest against running variable (Small Bandwidth)**



*This graph shows the relationship between the running variable “Q\_”, in the abscissa axis, and the “edadest” variable, in the ordinate axis, using the small bandwidth (3<sup>rd</sup> quarter 2011 – 1<sup>st</sup> quarter 2013).*

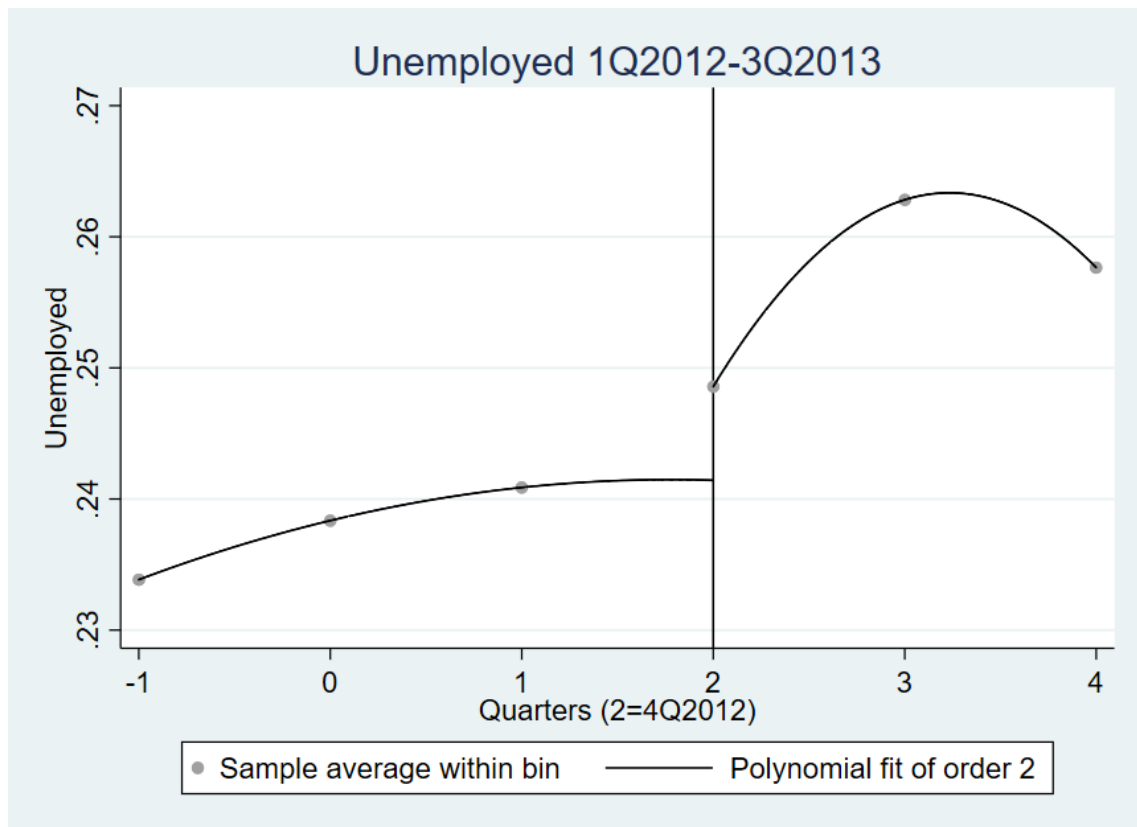
To sum up, for most of the background characteristic variables the regression showed that there are not statistically significant jumps at the cutoff that could bias my estimates, in the case where the small bandwidth is used. Nevertheless, broaden the bandwidth can bias my estimates, as shown by the statistically significant effects of the background characteristics variables on the regressions against the treatment and running variables. Thus, it is possible that these variables could affect treatment status. For that reason, our workhorse equation includes all these background characteristics as control variables in the regression for both the unemployment and the temporary contract, and also for both bandwidths small and large. I decided to do it this way, because even that there are no statistically significant effects in the small bandwidth case, the fact that for the large bandwidth those effects become significant, and that, as it has been point out during the thesis, it is probable that some characteristics of people, such as gender, age or level of studies, influence in the effect of the labor reform on people. Workers with a low level of studies or women used to have proportionally more temporary contracts and be the first ones affected by recessions in the form of dismissals.

Last but not least, one of the main problems of our study is the, more than possible, influence of the European Debt Crisis and all the policies that came with it, from the austerity measures to the ESM program, on the labor market, and consequently, on our variables of interest. For that reason, I provide an alternative analysis where I try to check if there exists a jump at the time all these policies took place. In this alternative analysis, the cutoff point is the fourth quarter of 2012, when all the austerity policies and the ESM financial aid program were implemented in Spain, as I have explained some sections above. As a remainder, the ESM program was the umbrella that the Spanish economy

needed to reset the confidence of investors in the country, moreover Europe also recommended Spain to do reforms, as freezing the supply of public jobs and the salaries of the public administration and modifying the fiscal framework increasing the VAT rates for example. All the austerity measures, as well as the financial aid provided by the ESM program, had the potential to affect either directly or indirectly the labor market, so assessing if there exists a jump at the time of implementation of all these reforms is wise.

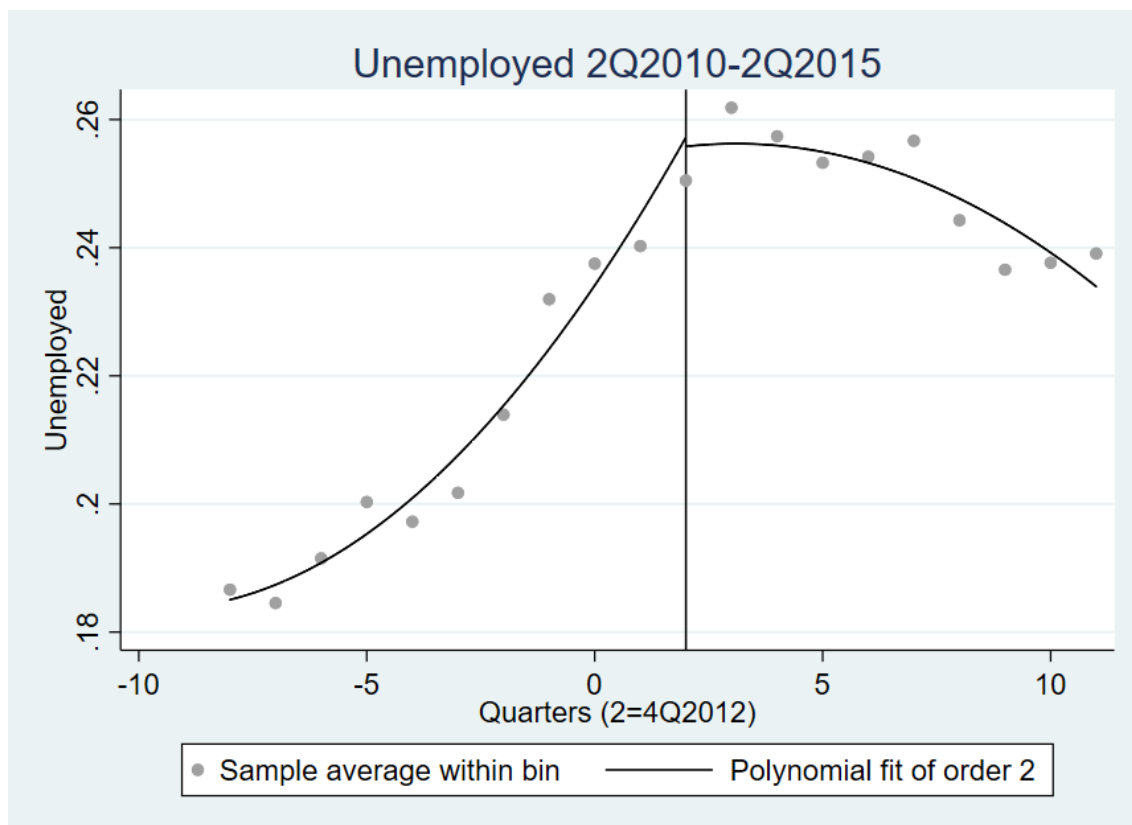
For the described alternative analysis, I also going to use two different bandwidths, a small bandwidth (1<sup>st</sup> quarter of 2012 - 3<sup>rd</sup> quarter of 2013) and a larger bandwidth (2<sup>nd</sup> quarter 2010 – 2<sup>nd</sup> quarter of 2015). With a naked eye, it is clearly observable that the jump is more pronounced in the small bandwidth than in the large bandwidth for both of my dependent variables UNEM (that identifies if the person is unemployed or not) and TEMP (which indicated if the respondent has a temporary contract or not). I will assess those differences in the bandwidths separately for the unemployment variable and the temporality variable because different patterns with different explanations must be given for my variables of interest.

**Figure 12: Plot UNEM against running variable (Alternative cutoff-Small Bandwidth)**



*This graph shows the relationship between the running variable “Q\_”, in the abscissa axis, and the “UNEM” variable, in the ordinate axis, using the alternative cutoff small bandwidth (1<sup>st</sup> quarter of 2012 - 3<sup>rd</sup> quarter of 2013).*

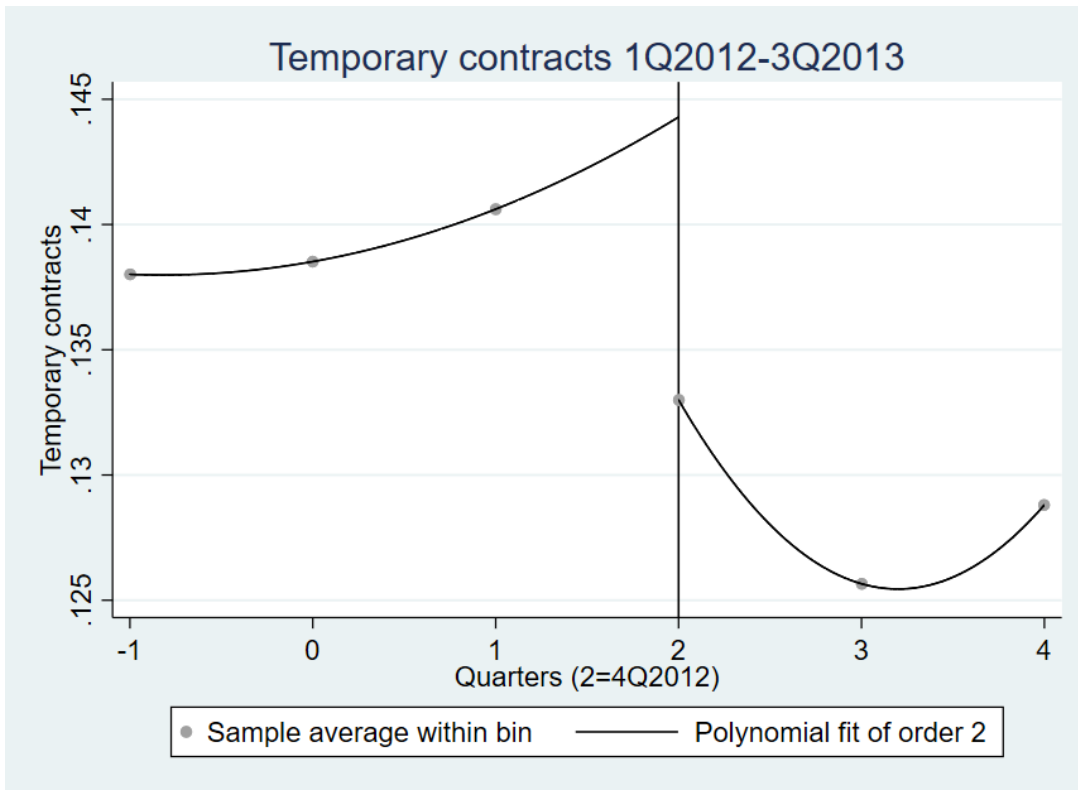
**Figure 13: Plot UNEM against running variable (Alternative cutoff-Large Bandwidth)**



*This graph shows the relationship between the running variable “Q\_”, in the abscissa axis, and the “UNEM” variable, in the ordinate axis, using the alternative cutoff large bandwidth (2<sup>nd</sup> quarter 2010 – 2<sup>nd</sup> quarter of 2015).*

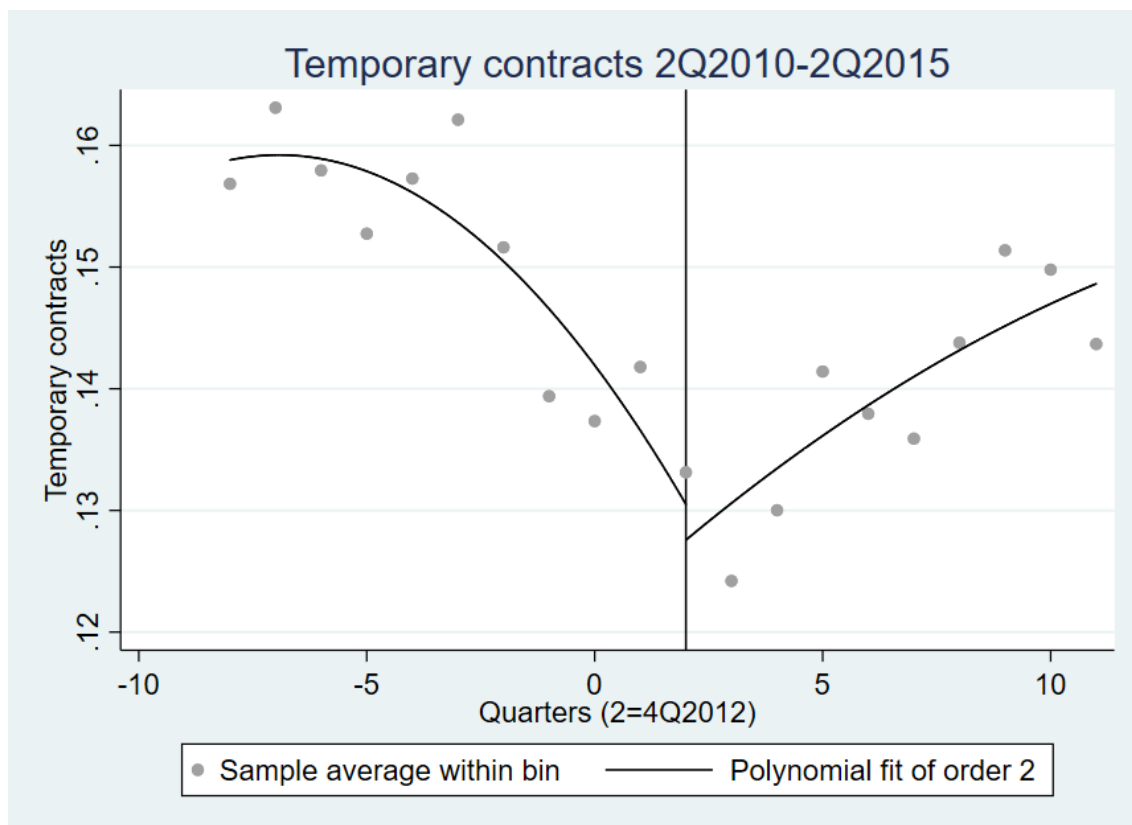
Focusing first on the binary variable for unemployment, it is observable in the graphs that the number of unemployed people was increasing before the fourth quarter of 2012 when all the austerity measures and the ESM program were implemented in Spain, and this pattern is observable not matter which bandwidth is observed. But what is most interesting is the pattern after the alternative cutoff point. In the small bandwidth the number of unemployed people increases, whereas in the large bandwidth decreases. These contradictory effects can be explained by short and large term effects of the labor reform. It is important to recall that one of the main characteristics of the labor reform was the reduction in the cost of dismissal, so in the midst of the European Debt Crisis is explainable that the companies used the new legal framework to dismiss workers and alleviate the negative consequences of the recession. Nevertheless, after this initial increase in unemployment, when the economic situation came back to the right way, the number of unemployed decreased, which can be explained by some measures contemplated in the 2012 labor reform enhancing the hiring with a new type of contracts for small companies and also by the new collective bargaining process that give the companies more power to change the working conditions. Thus, the pattern in unemployment seems to be affected not just by the labor reform but also for all the other measures taken during those harsh times Europe was involved.

**Figure 14: Plot TEMP against running variable (Alternative cutoff-Small Bandwidth)**



*This graph shows the relationship between the running variable “Q\_”, in the abscissa axis, and the “TEMP” variable, in the ordinate axis, using the alternative cutoff small bandwidth (1<sup>st</sup> quarter of 2012 - 3<sup>rd</sup> quarter of 2013).*

**Figure 15: Plot TEMP against running variable (Alternative cutoff-Large Bandwidth)**



*This graph shows the relationship between the running variable “Q\_”, in the abscissa axis, and the “TEMP” variable, in the ordinate axis, using the alternative cutoff large bandwidth (2<sup>nd</sup> quarter 2010 – 2<sup>nd</sup> quarter of 2015)*

Turning the attention to the number of temporary contracts the pattern observed in the graphs is more much difficult to explain, but can lead to a conclusion, the temporality is still present in the Spanish labor market. Analysing the small bandwidth, a decrease in the number of temporary contracts can be observed in the graph, which can have some relation with the explanation given for the unemployment. The labor reform eased the dismissal process and jointly with the European Debt Crisis can explain an increase in unemployment due to more dismissals, also of people with temporary contracts. A priori, the decrease in temporary contracts is good news because was one of the objectives of the reform, reducing the duality insider-outsider in the Spanish labor market, but in a context of an increase of unemployment and uncertainty like Europe was living during those times, such “news” is nothing but harmful. This conclusion is even more supported by the large bandwidth case, where the number of temporary contracts starts increasing as the economy starts to recover again, confirming the null effect of the labor reform in reducing the level of duality in the labor market.

All in all, it is possible that the effects of the labor reform I provided before, are at the same time, influenced by other policies of the Spanish government and the EU. This proves that it is too difficult to disentangle the effects of the 2012 Spanish labor reform from other policies, because, on the one hand, the different policies are too close in time and, on the other hand, because these policies could have had meaningful effects on their own on the variables I want to study. But I must add that this explanation is more suitable with the case of the unemployment variable because in the end all the reforms, events, and conjunctural situations will affect such an important and general index like

unemployment level. Nonetheless, the composition of unemployment in an economy i.e. the high temporality rate in the labor market in Spain's case is more influenced by deeply reforms and measures, and not by general events. So, the non-meaningful effect estimated in my regression and the pattern observed in the graphs above where the number of temporary contracts was increasing again, demonstrates that the labor reform has not accomplished one of their main objectives, reducing the duality in the Spanish labor market.

In conclusion, the labor reform could have had an instantaneously effect on the number of unemployed people and temporary contracts, but this effect is not of a big magnitude (at least on the short run), and also could have been affected by other policies introduced around the time of implementation of the labor reform. So, analysing just the labor reform and attributing to it all the effects, changes, and patterns observed in the main variables of the labor market is misleading because also other policies could have affected the market in a meaningful way. What it is also remarkable is that the Spanish labor market still presents so many problems in the form of a high unemployment rate, even in expansion periods, and a duality insider-outsider problem that the 2012 labor reform has not solved. Thus, so much work needs to be done by the institutions if they want to ensure a more stable labor market for their citizens and companies.

## **6. Conclusion**

As it has been seen throughout the paper, the 2012 Spanish labor reform was and still is, as this thesis proves, an interesting case of study because of the time it was promulgated, the disruptive characteristics for the Spanish labor market it had and all the political and economic discussions that aroused when it was implemented. My objective was to recover the causal effect that the reform had on two of the main variables that the policy wanted to affect, unemployment and temporality.

In order to achieve it, I conducted an RDD regression using the data of implementation of the reform as the cutoff point, which led me to two main conclusions. First of all, the labor reform was a policy implemented in the midst of a devastating European Debt Crisis that jeopardized the European Union project and led the governments of the whole Union to take unique actions to safeguard their economies. So, the labor reform was not just the only meaningful policy implemented during those harsh times, multiple austerity measures were taken, reducing the expenses on the national health system and public education, and increasing taxes like the VAT, and even the ESM financial aid program was implemented in the country to "save the banks". This implies that disentangling the effects of each policy from the other becomes an almost impossible task, so it would be wise to interpret the results obtained not just as a representation of the labor reform but also as an effect of all the policies of those times that could have affected the labor market. Secondly, the estimations showed that rejecting the null hypothesis is not possible for almost all regressions conducted, so the effect in the labor reform is not statistically different from zero.

Moreover, from an economic point of view, I cannot preach about huge effects of the policy because the estimates are quite small. This implies that the labor reform was not perfectly designed and that reducing the privileges of the insiders did not lead to the end of labor market duality, in fact, this duality is still being a defining characteristic of the Spanish labor market. Furthermore, worsening the working and negotiation conditions for insiders, and do not improve it for outsiders, has been translated in more precarious

work for all the employed people, that face low and stagnated wages and suffer the lack of stability in their bones every day they tie a pair of boots and go to work. From a firm's perspective, the labor reform helped them to achieve more power in the bargaining process which, jointly with the reduction and clarification of the costs of dismissal, enabled companies to respond in a more quickly and effective way to the lunges of the economy. This translates into fewer companies closing for bankruptcies as they cannot adjust to the needs of the economy, so the flexibilization of the labor market, the defining characteristic of the reform, is a fact. Moreover, the composition of the economic activity in Spain, focused in a great way on tourism, also explains why the temporality rate is one of the highest in Europe. This sector is composed mostly of low-qualified and seasonal jobs that boost the temporary recruitment, so an industrial policy with the potential of changing the composition of the economic activity in the country is a must if Spain wants to be competitive and ensure their citizens better jobs.

To sum up, the observational data and the regressions conducted in this paper clarify that the duality problems of the Spanish labor market and the huge steady state, or long run, rate of unemployment, are far from been completely solve. I cannot disregard a positive, but small effect, of the policies during the years to solve these structural problems, but a long path is still to be walked. The next recession, that is already upon us while I am writing these lines, will be key to assess if the labor reform was enough to solve the drawbacks that the labor market presented, sadly I cannot affirm that the reform had done it.

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