

MINIMUM WAGE AND YOUTH EMPLOYMENT RATES, 2000-2008*

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The existence of a universal minimum wage has been, and continues to be, an intensely debated issue. On the one hand, the controversy surrounding a minimum wage appears to be partly justified because the effects of the introduction and increase of a minimum wage may differ greatly depending on the labour market structure. On the other, the current academic literature does not provide clear evidence of which collectives are likely to be more affected in terms of employment by the introduction or increase of a minimum wage. Using the data for the period 2000-2008, this study aims to examine the effect of a minimum wage on youth employment in Spain, taking into account both regional differences and the dynamic behaviour of employment. Unlike previous papers on this subject, we additionally consider the effect of seasonality on employment, a particularly widespread feature of youth employment in Spain. The results obtained in our analysis do not provide clear evidence of any negative effect of a minimum wage on youth employment during the period under study. While this result may point to the existence of a monopsonistic structure of the labour market, the coexistence of increases both in the minimum wage and in youth employment rate during this period could also be explained in the light of a perfectly competitive labour market with a high degree of dynamism and a structural change in employment demand.

Key words: Employment rate, minimum wage, Kaitz index.

JEL Classification: J21, J31, J18.

(*) Acknowledgments: We thank Felipe Sáez and Ainhoa Herrarte for useful comments and suggestions. We also thank the financial support provided by Ministerio de Educación y Ciencia (Plan Nacional I+D+I, 2008-2011, ECO2008-04813) and by Consejería de Empleo y Mujer (Comunidad de Madrid). The usual disclaimer applies.

To date, hundreds of countries all around the world have ratified the ILO's Minimum Wage Fixing Convention, 1970 (No. 131)¹ for the introduction of appropriate legislation and administrative regulations regarding a minimum wage. As signatories of this convention, these countries now provide universal minimum wage coverage, with only a few of them applying certain restrictions in this respect².

The existence of a minimum wage providing universal coverage has been a widely contested issue. On the one hand, those who advocate for its introduction or maintenance argue that a minimum wage established by law provides a basic guarantee for self-sufficiency, that is to say, a sufficient income for full-time workers to acquire essential goods and services. Likewise, it is argued that the existence of a minimum wage prevents employers who hold a dominant market position to take advantage of certain types of employees like women, low-qualified workers, the long-term unemployed and individuals with little or no working experience, etc. On the other hand, those who oppose the existence of a minimum wage, or its maintenance at the current high levels, because of its presumed negative effects, have advanced several arguments for its dismissal. They argue, for example, that a minimum wage is not a suitable instrument to fight against poverty since there are other more effective and efficient fiscal alternatives. The existence of a minimum wage would discourage employers from hiring persons covered by the current legislation and, therefore, it would negatively affect the employment rate of certain collectives, especially women and young people. In addition to this, those who oppose the existence of a minimum wage also point to other presumed negative effects which a minimum wage might have liked. These are mainly related to the competitive position of businesses and companies, the compensatory replacement between workers, the increase of the differences between the so-called insiders and outsiders and the indirect incentive it provides for the growth of an informal economy.

To some extent, this controversy appears to be justified because the effects which result from the introduction or increase of a minimum wage differ from one country to another, depending both on the content and application of the approved legislation and the particular structure of the labour market. In a perfectly competitive labour market, where workers get paid their marginal product, a binding minimum wage always reduces employment. However, when the labour market is not perfectly competitive, the introduction of a minimum wage may raise employment. One case would be monopsony, where workers get paid a wage below their marginal product. It is this gap which allows the minimum wage to raise the wage

(1) International Labour Organisation (ILO) (2008).

(2) Among the countries which do not include certain workers' collectives in their respective minimum wage legislation, we can mention the following examples: agricultural workers in Canada; agricultural workers, domestic service workers and public servants in Austria; workers who are relatives of the owner or legal representative of the business in Ireland; apprentices and domestic workers in Holland, workers who are not covered by collective bargaining agreements in Switzerland, workers who are family members of the owner or legal representatives of the business, fishermen and members of the professional armed forces in the UK; retail, health and education workers and individuals employed by public agencies in the USA.

of the workers without entirely removing their profitability to firms. In this scenario, the level of employment may, therefore, increase with the introduction of a binding minimum wage. However, there is a threshold at which the minimum wage can be set without damaging employment. Raising the minimum wage above this threshold will, therefore, result in employment losses.

Apart from monopsony, there are other theoretical models that can explain how a minimum wage might raise employment. There is, for instance, the case of efficiency wage models, where labour productivity depends on the wage paid [see Manning (1995)]. An explanation for a positive effect of a minimum wage on employment is also found in the works of Calvo and Wellisz (1979) and Rebitzer and Taylor (1995), who argue that, as firms grow in size, it becomes more expensive to monitor workers and, hence, the average cost of labour rises.

These conflicting assessments of the effects of a minimum wage on employment have been a major concern in many empirical studies devoted to this issue. Most pioneering works, primarily focused on the US economy, were based on a competitive structure of the labour market. They concluded that the existence of a minimum wage had a negative effect on youth employment [see Hashimoto and Mincer (1970); Welch (1974); Hamermesh (1981); Brown *et al.* (1982); Wellington (1991); Neumark and Wascher (1992); Deere *et al.* (1995); Currie and Fallick (1996); Partridge and Partridge (1998); Williams and Mills (1998); Baker *et al.* (1999); Pereira (2003); Yuen (2003); Neumark *et al.* (2003)]. Assuming the existence of a monopsony structure, other studies have provided, in contrast, evidence for neutral, or even positive, effects of a minimum wage on youth employment [see Card and Krueger (1995); Manning and Machin (1996); Dickens *et al.* (1998, 1999); Bhaskar (1999); Lang and Kahn (1999)]. Finally, other works based on the current efficiency wage literature have also reached similar conclusions in this respect [see Rebitzer and Taylor (1995)].

Using panel data for the period 2000-2008, this study analyses the impact of the minimum wage on youth employment in Spain, taking into account both the existing regional differences and the dynamic behaviour of employment. We also include labour seasonality in our analysis, a relatively widespread feature of youth employment in Spain. The results obtained do not provide sufficient evidence of any negative effect of the minimum wage on youth employment in Spain over the period under study. While this result may appear to indicate the existence of a monopsony structure in the labour market, the coexistence of an increase in both the minimum wage and youth employment during this period could also be explained in the light of a perfectly competitive labour market with a strong dynamism and a structural change in labour demand.

The paper is organized as follows: the next section will provide a summary of the recent literature on the subject. In Section 2, we present the econometric specification that will be used to analyse the employment-minimum wage relationship. Section 3 offers a description of the data and the main variables employed in our analysis. In Section 4, we present the results obtained from our analysis, while Section 5 examines the possible effects of an increase of the minimum wage in different scenarios. The main conclusions are offered in Section 6.

1. EMPIRICAL EVIDENCE

In general terms, previous works that have analyzed the impact of minimum wages on employment in developed countries, tend to show negative elasticities in the estimated employment functions³. This appears to be particularly the case when the minimum wage increased significantly or when it has been initially established at a relatively high level. In addition to this, as we move forward in time from the introduction of this measure, the negative value of the elasticity grows in absolute terms. This fact appears to indicate the existence of lags in its influence, that is to say, of accumulated effects, as happened before with the case of labour demand relative to wages.

The importance of the effect on employment clearly differs depending on the weight of the minimum wage in relation to the average market wage. Evidence shows that if it is high, the effects are negative while, if it is low, the effects are not significant [see Katz and Krueger (1992)]. From another perspective, for adult workers whose previous market wages were below the new minimum wage, the introduction of a minimum wage has negative consequences on their employment, as is demonstrated in a series of studies carried out in different countries [see Linneman (1980)].

The majority of papers that analyze the employment effects of the minimum wage are focused on the low-wage productive sector (agriculture, retail trade, personal services and certain manufacturing activities). The pioneering studies estimated an elasticity of employment with respect to changes in the minimum wage of around -0.2 [see Brown *et al.* (1982)]. Later, other studies surveyed in Neumark and Wascher (1999) found higher values of this elasticity (around -0.4 or -0.5). According to more recent estimates, the negative employment effects are concentrated on those individuals whose wages are furthest below the established minimum wage as well as those whose wages are just below the minimum wage, with clearly significant elasticities, not only for youth but also for adults who occupy the lower positions in the wage scale [see Neumark *et al.* (2004)]. This reported evidence primarily applies to wage adjustment, working hours, employment and income distribution derived from minimum wage increases.

For Spain, the results do not differ greatly from the evidence obtained in other developed countries. The most relevant result is that youth employment responds in a negative and significant way to changes in minimum wages [see Pérez Domínguez (1995); Dolado *et al.* (1996); Dolado and Felgueroso (1997); González and Güemes (1997); Dolado *et al.* (1999); Pérez Domínguez *et al.* (2002)]. However, this result does not appear to be so conclusive when we take into account the differences across regions. Although minimum wage legislation provides universal coverage in Spain, there are enough regional differences in the social and labour structures to create different effects of the minimum wage on youth employment in each region. The work of González Güemes *et al.* (2003) provides evidence of the fact that the elasticity of youth employment to changes in minimum wages differs greatly across regions.

(3) C. Brow, C. Gilroy and A. Cohen (1982) review the academic research on the subject up to the 1980s. For other, more recent academic works see OECD (1994).

Other research on the Spanish economy have found that the minimum wage has simultaneous effects on the employment, labour participation and the unemployment rate of young workers. The paper of Pérez Domínguez *et al.* (2002) provides evidence of a rise in the unemployment rate of young people due to minimum wages.

Apart from the importance of regions when examining the impact of the minimum wage on youth employment, more recent works have indicated the existence of a dynamic behaviour of employment as a response to changes in the minimum wage [see Neumark and Washer (1992); Baker *et al.* (1999)]. The work of González Güelmes *et al.* (2003) has provided important evidence of these dynamic effects for the Spanish economy.

2. YOUTH EMPLOYMENT AND THE KAITZ INDEX: ECONOMETRIC SPECIFICATION

The relevance of the effect of the minimum wage on employment clearly varies according to the weight of the minimum wage relative to the average wage. As previous works have shown, for a given wage distribution, the impact of a minimum wage will be greater the closer it is to the average wage. Evidence shows that when the minimum wage is high, its impact is negative while, if it is low, the consequences of its introduction are negligible⁴. For this reason, the most common approach to examine the employment–minimum wage relationship is to use the Kaitz Index (KI), which is defined as the ratio of the minimum wage to the average wage. One important reason for using this index is that it makes possible to collect the non-observable labour supply and demand factors, because its denominator—the average wage—can be affected either by supply or demand shocks.

As pointed out by previous works in the literature, workers aged 16-19 years old are the main group affected by the minimum wage. Young workers use to a higher proportion of the low paid, which makes them one of the most examined collectives in empirical works aimed at studying the impact of the minimum wage on employment. The following equation of youth employment is commonly used as the starting point for any theoretical framework that analyses the impact of the minimum wage on employment.

$$e_{it} = f(KI_{it}, X_{it}) \quad [1]$$

where the sub-indexes *i* and *t* represent, respectively, the region and period under study; *e* is the youth employment rate; KI is the Kaitz index; and the vector *X* captures a number of variables which affect both labour supply and demand.

It is important to note that, although the minimum wage in Spain is established at national level, there are reasons to think that it may be different for each region (Comunidades Autónomas, henceforth CCAA). For example, as previous studies have pointed out [see González Güemes *et al.* (2003)], the number of effective hours worked may show certain variations between each region as well as

(4) L.F. Katz and A.B. Krueger (1992).

over time. If that is the case, a Kaitz Index conceived as a simple quotient of the minimum wage and the average wage will not capture these differences. For this reason, the KI used in this paper has been elaborated as the ratio of the minimum wage per hour worked by full-time workers in a region over the average hourly wage in that region. Moreover, in order to biased results due to differences in the sectoral distribution of youth employment, we proposed the following definition of the KI:

$$KI = \sum_i (O_i / O_t) (W_{\min} / W_{med_i}) \quad [2]$$

where W_{\min} is the minimum wage per hour worked by full-time workers and W_{med_i} the average wage per worked hour in sector i ⁵. For each CCAA, O_i represents the number of 16-19 year old employees occupied in sector i , while O_t is the whole number of 16-19 year old employees. This formulation allows us to take into account both the economic weight of different sectors in youth employment in each region and the wage differences between sectors.

When estimating the employment-minimum wage relationship, it is also important to account for the employment dynamics in response to changes in the minimum wage. This issue will be addressed by estimating a model with serial correlation of the error term [see Brown *et al.*, 1983; Solon (1985)], as follows:

$$y_{it} = \alpha + \gamma KI_{it} + \beta X_{it} + \eta_i + \varepsilon_{it} \quad i : \text{CCAA}; t : \text{Period} \quad [3]$$

$$\varepsilon_{it} = \rho \varepsilon_{it-1} + v_{it} \quad v_{it} \sim iid$$

where y_{it} captures the youth employment rate for CCAA and period; KI_{it} is the KI for CCAA and period; and X_{it} a set of explanatory variables that includes: Ocup (total number of employed persons in the region); Temp (temporality ratio in the region); Asalar_no (percentage of wage earners with no qualifications in the region); Inmig (percentage of immigrants in the region); tpj (unemployment rate of 20-24 year old workers); tfem (participation rate of female workers aged 25-54); tact_1 (participation rate of 16-19 year old workers⁶). These last three variables have already been used as explanatory factors in previous papers that analyze the impact of minimum wages on youth employment rates with significant results [see González Güemes *et al.* (2003)].

However, since changes in the minimum wage and its coverage are statutory, employers are likely to begin adjustments in their employee pool as soon as they know the minimum wage increase is due to be enacted. This suggests that the employment-minimum wage relationship is dynamic and, as a consequence, it would be necessary to incorporate lags into the KI in the empirical specification [see Neumark and Wascher (1992), (1994); Baker *et al.* (1999); González Güemes *et al.* (2003)]:

(5) The sub-index i includes three sectors: industry, construction and services.

(6) We use the lagged value of the participation rate of 16-19 year olds because of the endogeneity of this variable when estimating the employment rate of this group of people.

$$y_{it} = \alpha + \gamma KI_{it} + \sum_{s=1}^4 \delta_s IK_{it-s} + \beta X_{it} + \eta_i + \varepsilon_{it} \quad \varepsilon_{it} \sim iid; i : CCAA; t : \text{Period} \quad [4]$$

$$\varepsilon_{it} = \rho \varepsilon_{it-1} + v_{it} \quad v_{it} \sim iid$$

Finally, we have to point out that an important feature of the Spanish youth labour market is its seasonality. Nevertheless, this aspect has not been taken into account in previous papers that examine the employment-minimum wage relationship in the Spanish labour market. We try to fill this gap and to take into account for the seasonality of youth employment by including a set of dichotomous quarterly variables in the estimation⁷:

$$y_{it} = \alpha + \gamma KI_{it} + \sum_{s=1}^4 \delta_s KI_{it-s} + \beta X_{it} + \eta_i + \varpi_s + \varepsilon_{it} \quad \varepsilon_{it} \sim iid; \quad [5]$$

$i : CCAA; t : \text{Period}; s : \text{Quarter}$

$$\varepsilon_{it} = \rho \varepsilon_{it-1} + v_{it} \quad v_{it} \sim iid$$

We also have to clarify the following points: i) the fixed effects of a CCAA are controlled in all cases⁸; ii) the econometric adjustments are made from the series of quarterly data which includes the period 2000Q1-2008Q4⁹; iii) the functional form adopted for the estimation is logarithmic and, as a result, the estimated KI coefficient should be interpreted as the employment elasticity of the examined collective in relation to the variations of that index.

3. DATA AND DESCRIPTIVE ANALYSIS

In this section we describe the evolution of the KI and the youth employment rate using the available information. We also offer some evidence of the existence of regional differences in the evolution of these variables.

The data used in our analysis have been collected from different statistical sources. The data on employment rates, as well as all the explanatory variables included in vector X_{it} , come from the Spanish Labour Force Survey (EPA). The data on minimum wages have been collected from the statistics of the Ministry of Labour and Immigration¹⁰, while the data on average wages proceeds from the Quarterly Survey of Labour Costs (period 2000-2008) and the Industry and Services Wage Survey (1981-1999)¹¹.

(7) We also estimated the model using the employment rate corrected by the seasonal trend as the dependent variable. The results are similar to those obtained with quarterly dichotomous variables.

(8) As has been pointed out by previous works [see González Güemes *et al.* (2003)], estimates of the minimum wage effects on the youth employment rate which do not control for the CCAA fixed effect yield biased results.

(9) The use of quarterly data offers an additional advantage: it allows us to capture the short-term fluctuations of labour demand.

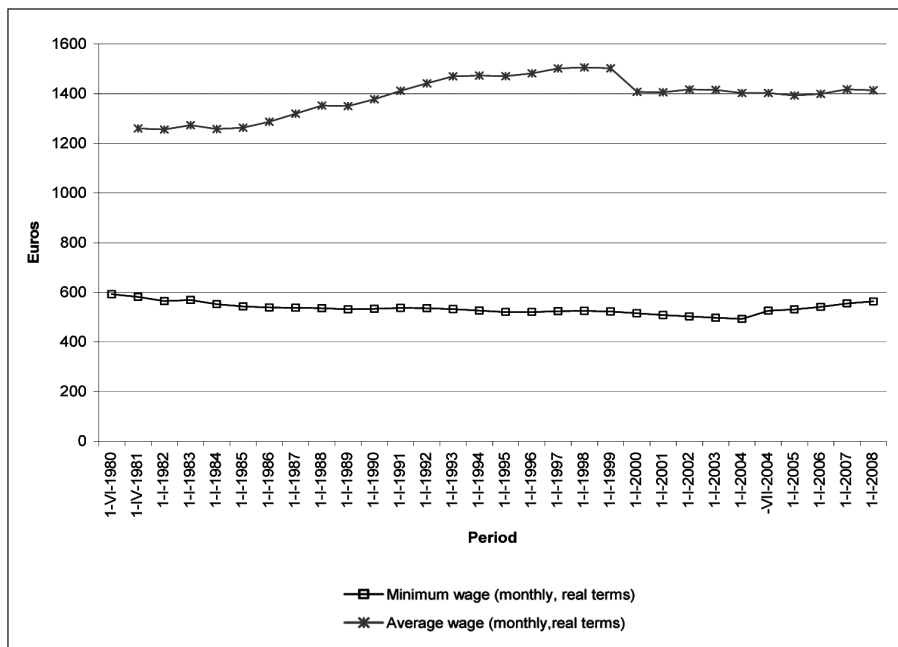
(10) <http://www.mtin.es/estadisticas/bel/IC/index.htm>

(11) We use the ordinary wage cost as a measure of the average wage.

Table 1 shows information about the evolution of the Inter-professional Minimum Wage (SMI) in Spain since 1999, including relevant legislation and the successively established minimum wage levels. Until 1997, different levels of SMI were established for workers below and above the age of 18 years old. After 1998, however, a universal level of the SMI was set. In the table below, we also show the percentage of nominal increases established by law in relation to previous minimum wage levels. These increases were particularly significant in some specific years (1990, 1996 and 1997), usually after a period of price increases. 2006-2008 the real increases have been above the historic increases¹².

Graph 1 shows the evolution of the minimum and the average wage in real terms for the period 1980-2008. Here it is important to note the fall of both minimum and average wages in real terms during the period 1998-2004.

Graph 1: MINIMUM AND AVERAGE WAGE (REAL TERMS). PERIOD 1980-2008



Source: Own elaboration.

In the same period, the overall employment rate experienced an expansion that, in the first years, affected all age groups of workers. Over the period 2001-2004, the employment rate of people aged 16-24 years old increased by 4 per cent. In the last

(12) The Labour and Immigration Ministry's Labour Guide is published annually and provides detailed information about the general and particular application of SMI.

Table 1: MINIMUM INTER-PROFESSIONAL WAGE (SIM) EVOLUTION BY AGE, AMOUNT, AND PERIOD: 1990-2008*

	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009
Under 18 years of age																				
Euros per day	6.6	7	7.4	7.8	8	8.3	10.1	11.8	-	-	-	-	-	-	-	-	-	-	-	-
Euros per month	198.3	211.3	223.4	232.4	240.5	249	301.8	355.4	-	-	-	-	-	-	-	-	-	-	-	-
Increase	15.2	6.5	5.7	4	3.5	3.5	21.2	17.7	-	-	-	-	-	-	-	-	-	-	-	-
18 years of age and older																				
Euros per day	10	10.7	11.3	11.7	12.1	12.6	13	13.4	-	-	-	-	-	-	-	-	-	-	-	-
Euros per month	300.6	320	338.2	351.8	364	376.8	390.2	400.4	-	-	-	-	-	-	-	-	-	-	-	-
Increase	7.1	6.5	5.7	4	3.5	3.5	3.5	2.6	-	-	-	-	-	-	-	-	-	-	-	-
No age distinction																				
Euros per day	-	-	-	-	-	-	-	-	13.6	13.9	14.2	14.4	14.7	15	15.4	17.1	18	19.0	20.0	20.8
Euros per month	-	-	-	-	-	-	-	-	408.9	416.3	424.8	433.4	442.2	451.2	460.5	513	540.9	570.6	600.0	624.0
Increase	-	-	-	-	-	-	-	-	2.1	1.8	2	2	2	2	2	-	5.4	5.4	5.1	4.0

Source: Spanish Ministry of Labour and Social Affairs

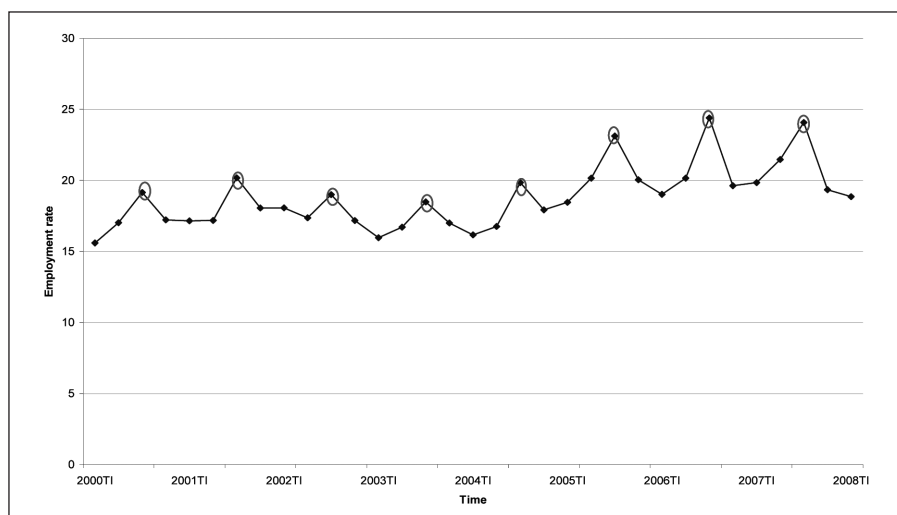
* Legislation:

1990: R.D. 170/1990	1994: R.D. 2318/1993	1998: R.D. 2015/1997	2002: R.D. 1466/2001	2005: R.D. 2388/2004
1991: R.D. 8/1991	1995: R.D. 2458/1994	1999: R.D. 2817/1998	2003: R.D. 1426/2002	2006: R.D. 1613/2005
1992: R.D. 3/1991	1996: R.D. 2199/1995	2000: R.D. 2065/1999	2004: R.D. 1793/2003	2007 R.D. 1632/2006
1993: R.D. 44/1993	1997: R.D. 2656/1996	2001: R.D. 3476/2000	2005: D.L. 3/2004	2008 RD 1763/2007

years of the period, however, this expansion was attenuated among this collective, so that the youth employment rates experience a slight slowdown (see Table 2).

In general terms, youth employment rates are located between 15% and 20% with a slightly growing tendency over time (see Graph 2)¹³. Another significant aspect of youth employment is its marked seasonality. In most regions, youth employment rates tend to reach their highest levels in the third quarter of the year. This is especially important in the last years of the sample, when the youth employment rate in the third quarter is around 25 percent. As we will see later, taking into account this seasonality is of key importance when estimating the employment-minimum wage relationship.

Graph 2: EMPLOYMENT RATE OF 16-19 YEARS OLD. (2000TI-2008TI)



Source: Own elaboration.

Using the data on minimum and average wages, we proceed to estimate the Kaitz Index. Graph 3 shows the KI evolution for the whole economy and by sector (industry, services and construction) for the period 2000-2008. In general terms, we observe a slightly growing trend in the evolution of KI, which indicates that the minimum and the average wages are drawing closer¹⁴. By economic sec-

(13) Asturias and the Basque Country can be singled out for their relatively low youth employment rates (around 10%), while other CCAA like Castilla la Mancha, Valencian Community and Murcia show much higher values (around 25%).

(14) In a first version of the paper, we calculated the KI for every CCAA. The results showed some remarkable differences by region. The lowest values for the index (below 35%) were found in regions like Catalonia, Madrid, Navarra and Basque Country, while the higher values were registered in Murcia, Galicia and Extremadura (around 45% in the latter).

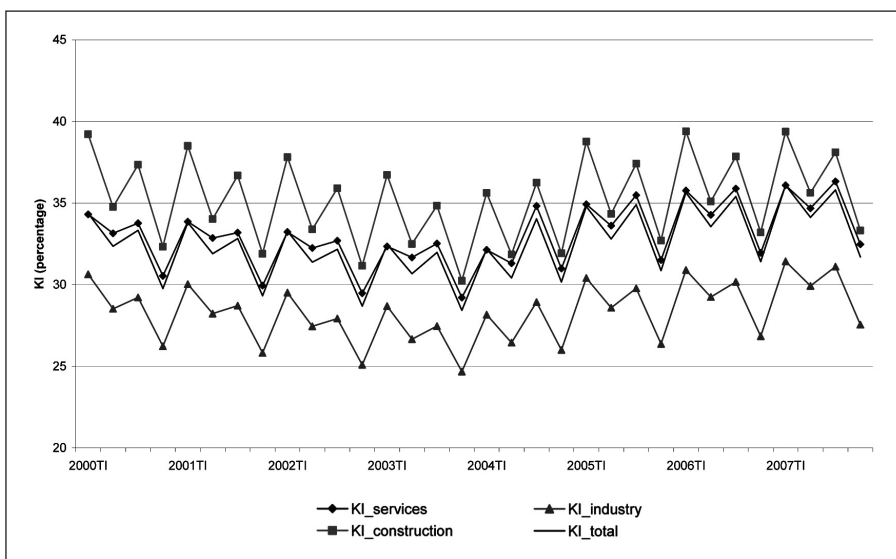
Table 2: YOUTH EMPLOYMENT RATES IN SPAIN (1996-2008)

	1996	2004	2005	2006	2007	2008	T2
1. Overall employment rate	49.0	2001-04	62.0	64.3	65.7	66.6	2005-08
2. Index of employment rate evolution for the following collectives:							
Youth 16-19		95					94
Youth 20-24		105					101
Youth 16-24		104					99
Group 25-29		104					102
Group 30-34		104					103
Group 35-39		103					103
Group 40-44		103					102
Group 45-49		105					105
Group 50-54		106					105

Source: INE, EPA (Population aged between 16-64 years).

tors, it can be observed that the KI in the industry sector is clearly below the average value for the economy as a whole. In contrast, the construction sector is the one with the largest difference between the minimum and average wage.

Graph 3: KAITZ INDEX: EVOLUTION AND SECTORAL DIFFERENCES



Source: Own elaboration.

To provide a first approximation on the employment-KI relationship, we present a series of graphs for each CCAA in the Appendix. We estimate linear relationship between the KI and the youth employment for each CCAA, with the slope providing an indicator of the sign and magnitude of the relationship. As can be observed, there seems to be a positive relation between the KI and the youth employment rates in most of the regions. However, this can not be conclusive, since there are many supply and demand factors that also affect youth employment rates and that must be controlled for when examining the impact of the introduction or the increase of minimum wages.

4. RESULTS

In this section we report the main results on the employment-minimum wage relationship in Spain for the period 2000-2008. Table 3 shows the estimation results of the econometric models specified in Section 2. As we have previously indicated, it is particularly relevant to introduce lags for a correct analysis of the effect of the minimum wage on youth employment. When these lags are not introduced, we do not find any significant effect of the index. However, when we introduce

four quarterly lags of the KI, we find positive and significant effects in the first and second lags and a negative and significant effect in the third lag. Finally, when quarterly dummies are included, the coefficient of the third lag is not significant anymore. The coefficients of the first and second lags, however, are still slightly significant. To this we have to add the positive and particularly significant effect of the dummy of the third quarter, which serves to demonstrate the high degree of seasonality of employment among this particular collective.

Table 3: BLOCK A ECONOMETRIC MODELS (KAITZ INDEX, EQUATION[2]).
DYNAMIC APPROACH

	Basic		With KI lags		With KI lags and quarterly dummies	
	Coef	t	Coef	t	Coef	t
LogIK	-0,068	-0,26	-0,465	-1,22	-0,116	-0,30
LogIK_1			0,680	1,85	0,798	2,05
LogIK_2			2,031	5,29	0,699	1,76
LogIK_3			-1,888	-5,14	-0,497	-1,30
LogIK_4			0,033	0,09	0,147	0,39
Ocup	1,432	4,70	1,953	4,79	0,994	2,60
Temp	0,097	0,74	0,059	0,41	0,167	1,26
Asalar_noc	0,199	1,71	0,340	2,61	0,308	2,60
Inmig	0,004	0,18	-0,019	-0,71	0,001	0,03
tpj	-0,115	-2,73	-0,072	-1,57	-0,042	-0,97
tfem	-1,424	-4,24	-1,547	-3,87	-0,664	-1,77
tact_1	0,026	0,52	-0,035	-0,64	-0,006	-0,11
Quarterly dummies						
1st Quarter						
2nd Quarter					0,033	1,57
3rd Quarter					0,178	8,06
4th Quarter					0,025	1,05
Constant	-1,049	-3,13	-5,825	-5,39	-6,033	-6,01
ρ	0,333		0,438		0,430	
σ_{η}	1,280		1,743		0,893	
σ_{ε}	0,171		0,161		0,146	

Source: Own elaboration.

According to these results, we can conclude, that there is no evidence of any negative effect of the minimum wage on youth employment for the period 2000-2008. There are, however, some indications of a slightly positive or neutral effect, a result which is consistent with previous papers in the literature [see Card (1995); Manning and Machin (1996); Dickens *et al.* (1998, 1999); Bhaskar (1999); Lang and Kahn (1999)].

In the light of these results, we wonder whether it is a valid hypothesis to assume that the youth labour market in Spain has a monopsonistic structure¹⁵. However, its presence does not appear to be the prevailing structure, due to the high level of atomization and dispersion that characterize the current labour demand in Spain. Even so, it can always be counter-argued that the source of power for the employers primarily derives from the intrinsic limitations experienced by workers when choosing a job. In the particular case of young workers, their lower levels of qualification as well as their lack of working experience constitute an important obstacle in the search for employment.

This will imply that young people are more inclined to accept any wage offer (“wage-conformist”) than other workers. This affirmation could, in theory, be extended to other groups of workers, including those which belong to so called “outsider” collectives, when having to negotiate collective bargain agreements. Furthermore, the existence of a dual labour market in Spain, closely linked to the type of labour regulation and the existing collective bargain structure, results in a sharp labour market segregation between permanent and temporary workers, a relatively unbalanced situation when compared to other core European countries. For this reason, the co-existence of increases in both minimum wage and youth employment during this period can be deemed to be compatible with a competitive model characterised by a dynamic behaviour and structural change in labour demand, which also registers increases of its elasticity in relation to low-level wages. That is to say, a model where labour market institutions work as effective mechanisms to prevent the “market clearing condition”, typical of a competitive labour market structure, being fulfilled¹⁶.

In fact, there are a series of reasons which help us to explain both the absence of any negative impact on youth employment and the lack of an increase in the youth unemployment rate under study. In the first place, the Spanish economy has experienced a rapid economic growth during the period –the average growth of the GDP has fluctuated between 3 and 4 %, well above the average for the EU15. This has resulted in continuous shifts in labour demand to respond to new requirements in the productive and service sectors. At the same time, there has been a significant increase in labour supply as a result of the large and steady inflow of immigrants (with high labour participation rates) as well as a continuous growth of female participation among the native population¹⁷.

These two factors have been the driving force behind the significant employment growth experienced during the period under analysis and which has affected all working-age groups. All of them, including young people, have experienced

(15) In Section 3 we already explained how, in a monopsonistic labour market, an increase in minimum wages may be accompanied by employment growth as the average cost for the employer is below the marginal cost. For a deeper explanation of monopsony in the labour market see Elliot (1991).

(16) This last statement leads to the examination of the causes for this situation and to express certain reservations about the efficiency and the degree of “Paretian” symmetry of the current labour regulation mechanisms and labour relations prevailing in Spain.

(17) Recent social changes in the country and the modification of labour legislation for better compatibility between family and labour life have both played an important role in the latter case.

several percentage point increases in their respective employment rates. What this means, in theoretical terms, is that the market balance wage has reached a new threshold as a result of the steady increase of the demand (more specifically, through the shift of the demand function) and of its elasticity.

The excess of labour supply has eliminated most of the previous labour force restrictions which slowed down the growth of production, especially in the construction and service sectors. Several sectors have experienced significant structural changes both in terms of an intensified use of labour per unit of output and the occupational structure. As a result of these changes, the number of unskilled jobs has doubled during the period under study. In addition to this, we also have to include the reinforcement of the elasticity of labour demand in relation to GDP.

The increase in labour supply has been accompanied by a slight fall of average wages, in real terms. This fall has not been the result of any wage reduction in high or medium qualification occupations, but rather of the fall of the wages of an important percentage of new workers employed in low-qualification jobs. The reason is that the evolution of the supply of highly-educated labour has not been matched by an equal increase in labour demand. That is to say, this fall in wages is, in short, due to the increasing degree of wage dispersion.

5. THE MINIMUM INTER-PROFESSIONAL WAGE (SMI) IN THE NEW ECONOMIC CONTEXT

Table 4 shows different scenarios including deadlines, new expected wage levels and percentage increases in monetary terms that these proposed scenarios will imply in the near future¹⁸.

In the case of Scenario A (government proposal), the minimum wage increase for the period 2009-2012 is an accumulated 33.33% (an average simple annual increase of 8%) Under Scenario B, this increase is close to 66.66% for the same period with an annual rate of 16.66%. This larger increase of 66.6% is also considered in the case of Scenario C (proposed by the Socialist Party), but it is extended to the period 2009-2016, with an annual increase of 8.33%. Finally, if the objectives of the European Social Charter are to be met as in the proposed Scenario D, the minimum wage increase will amount to 85.18%. While in this proposal there is no reference to any specific time period, if we presume this to be identical to the previous scenarios, it will represent a 10.64% increase of the minimum wage. In all these cases, the increases will be above the expected accumulated inflation of the reference period, which will imply a significant increase of the Minimum Inter-professional Wage (SMI) in real terms.

Regarding these different proposals, the first consideration that has to be made is that their attainment will take place in a period of economic slow down which, among other things, will result in a severe adjustment of the labour market. This recent, dramatic change in the economic activity trend implies a substantial modification of the framework where we can locate the potential effect of

(18) The alternative scenarios are based on the proposals made by the trade unions and the Spanish government.

wages on labour demand. In this context, it will be difficult to expect that any cost increase in the labour factor would remain neutral. In the next few years, we are likely to see a fall in labour demand, a loss in the elasticity of low-wage sections and changes in the labour time organization.

Table 4: ECONOMIC AND LABOUR MARKET EVOLUTION. FUTURE SMI SCENARIOS

Evolution and scenarios	Evolution (index) or current value	Monthly figure
1. GDP Evolution, Active, Employed, and Unemployed Population:		
1996-2007	150.5	
• GDP (real)	128.3	
• Active population	158.0	
• Employed population	50.3	
• Unemployed population	115.2	
• Activity rate	135.9	
• Employment rate	37.6	
• Unemployment rate		
2. Wage evolution and SMI values		
A) Wage evolution		
• Real average wage:1998-2004	92.8	
• Real SMI:1998-2004	96.9	
• Nominal SMI in 1998	408.9	
• Nominal SMI in 2004	460.5	
• Nominal SMI evolution 1998-2004	112.6	
B) Wage evolution		
• Real average wage: 2005-2007	101.8	
• Real SMI: 2005-2008	106.0	
• Nominal SMI in 2005	513.0	
• Nominal SMI in 2008	600.0	
• Nominal SMI evolution SMI 2005-2008	117.0	
3. SMI proposed scenarios (in current €):		
• Government's scenario A (2009-12)	133.33%	800 €
• Trade Unions' scenario B (2009-12)	166.66%	1,000 €
• PSOE's scenario C (2009-16)	166.66%	1,000 €
• European Social Chart's scenario D (no dates)	185.18%	(*)1,111,1 €

(*) Percentage equivalent to 60% of EU net medium wage.

Source: Own elaboration from the available data in the report: "Efectos en el empleo de las subidas del Salario Mínimo Interprofesional en España y en la Comunidad de Madrid" (Consejería de Empleo y Mujer, Comunidad de Madrid).

For all these reasons, the minimum wage policies should be administered with great caution. In the light of the current literature about theoretical predictions and the accumulated empirical evidence for industrialised countries, including this present work for the case of Spain, we can tentatively elaborate the following list of possible consequences:

- i) Negative effects on employment with an accumulative character and distributed over time due to the existence of lags. This would imply a gradual reduction in the overall employment rate, especially among those workers who are at greater risk of becoming redundant in such circumstances like, for example, young people, women, disabled and low-skilled persons and, in general, all low-pay workers.
- ii) An eventual expansion of part-time, rather than full-time, employment as part of employers' strategy to make working time more flexible, reduce labour costs and increase productivity.
- iii) An increase of the unemployment rate, longer unemployment periods and the rise of long-term unemployment.
- iv) A displacement from the labour market of those collectives whose new wages appear now to be closer to the average market wage by workers with wages above the average but with reduced wage costs for employers.
- v) An early exit from the education system together with an increase in labour participation rate. In the medium term, participation rates would fall gradually due to the disincentive effect as these high school drop-outs have few job opportunities and prefer to work fewer hours (part-time employment).
- vi) A reduction in the intensive use of labour in activities or occupations characterised by low skilled tasks, exactly the opposite of what happened a few years ago.
- vii) Substantial increases of irregular employment, especially among immigrants as they tend to be occupied in low-skilled jobs and they are particularly exposed to the underground economy. This phenomenon is likely to be more pronounced in those regions where the gap between the minimum and average wages becomes smaller.

6. CONCLUSIONS

This work has examined the impact of the minimum wage on youth employment in Spain using the available data for the period 2000-2008. We have developed an analytical framework capable of taking into account regional differences, the existence of lag effects and the seasonal character of youth employment.

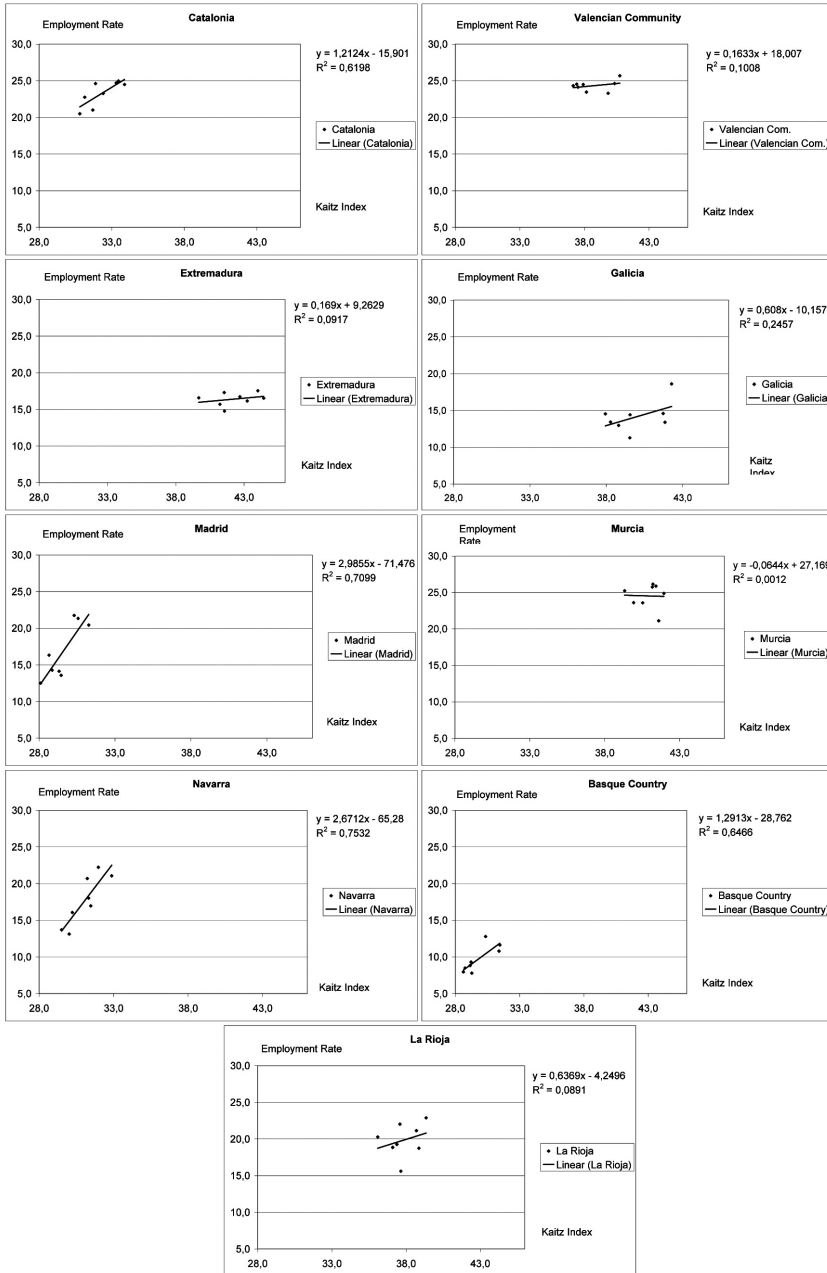
In order to capture the effects that various unobserved labour supply and demand factors may have had on the youth employment rate, we have followed the existing literature on the subject and decided to use the Kaitz Index in our analysis, defined here as the quotient of the minimum wage per worked hour for full-time workers of a particular region and the average wage per worked hour. Furthermore, our definition of the Kaitz Index takes sectorial differences into account.

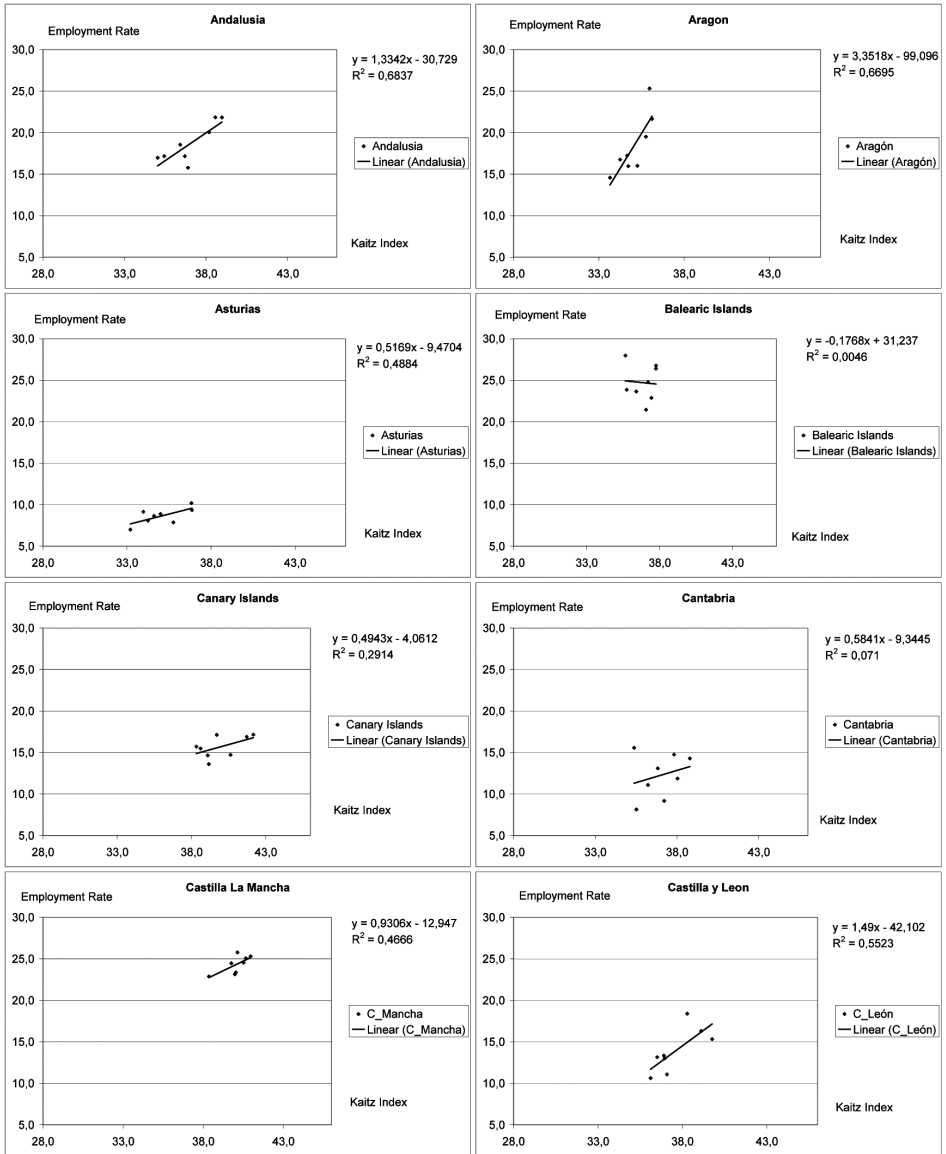
The results obtained show, first of all, that the introduction or increase of the minimum wage may have lagged effects on employment. When we include KI quarterly lags in the estimations, we find positive and significant effects in the first and second lags, but a negative and significant effect in the third lag. However, since youth employment in Spain has a marked seasonal character, it is particularly relevant to take this into account when analysing the impact of the minimum wage on youth employment. Once we take into account the seasonality of employment, the negative impact observed in the KI third lag becomes, accordingly, non-significant.

In conclusion, if we consider existing regional differences, the lags and the seasonal work variations, there is no definitive evidence of any negative effects of the minimum wage on youth employment in Spain in the period under study. While this result can be interpreted as evidence of the existence of a monopsonistic labour market, it can also be compatible with a perfectly competitive structure where a certain dynamic factor and a structural change in labour demand coexist.

APPENDIX

Evolution of the KI and the youth employment rates (annual average values).





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Fecha de recepción del original: marzo, 2009

Versión final: diciembre, 2009

RESUMEN

La existencia de un salario mínimo de cobertura universal ha sido y es un tema objeto de fuertes controversias. Esta controversia se justifica, por un lado, porque los efectos de la introducción o ampliación de salarios mínimos difieren según sea la estructura del mercado de trabajo donde se localiza. Y por otro lado porque los trabajos empíricos no proporcionan una evidencia clara en materia de empleo sobre aquellos colectivos más susceptibles de verse afectados por la introducción o ampliación de salarios mínimos. Utilizando datos del periodo 2000-2008, este trabajo pretende analizar el impacto de los salarios mínimos sobre el empleo adolescente en España, teniendo en cuenta tanto las diferencias regionales como el comportamiento dinámico del empleo. Además, a diferencia de otros trabajos previos en la literatura, se tiene en cuenta el efecto de la estacionalidad, característica bastante frecuente en el empleo adolescente en España. Los resultados obtenidos no proporcionan una evidencia clara de efectos desfavorables del salario mínimo sobre el empleo adolescente en España durante el periodo analizado. Si bien este resultado podría apuntar hacia la evidencia de una estructura monopsonista del mercado de trabajo, la coexistencia de subidas en el salario mínimo y en el empleo adolescente observadas en estos años podrían también ser explicadas bajo una estructura de competencia perfecta con un fuerte dinamismo y cambio estructural de la demanda de trabajo.

Palabras clave: Tasa de empleo, salario mínimo, índice de Kaitz.

Clasificación JEL: J21, J31, J18.

