IEB
Institut
d'Economia
de Barcelona

Document de treball de l'IEB 2015/38

REGIONAL UNEMPLOYMENT, MARRIAGE, AND DIVORCE

Rafael González-Val, Miriam Marcén

Documents de Treball de l'IEB 2015/38

REGIONAL UNEMPLOYMENT, MARRIAGE, AND DIVORCE

Rafael González-Val, Miriam Marcén

Postal Address:
Institut d'Economia de Barcelona
Facultat d'Economia i Empresa
Universitat de Barcelona
C/ John M. Keynes, 1-11
(08034) Barcelona, Spain
Tel.: + 34 93 403 46 46
ieb@ub.edu
http://www.ieb.ub.edu

Documents de Treball de l'IEB 2015/38

REGIONAL UNEMPLOYMENT, MARRIAGE, AND DIVORCE

Rafael González-Val, Miriam Marcén

ABSTRACT: In this paper, we examine whether the business cycle plays a role in marriage and divorce. We use data on Spain, since the differences between recession and expansion periods across regions are quite pronounced in that country. We find that the unemployment rate is negatively associated with the marriage rate, pointing to a pro-cyclical evolution of marriage; however the response of the divorce rate to the business cycle is mixed. Results show the existence of different patterns, depending on geography: divorce rates in coastal regions are pro-cyclical, while in inland regions divorces react to unemployment in a counter-cyclical way. Other factors, such as changes in divorce law and duration of the marriage also have a significant effect on divorce rates.

JEL Codes: J12

Keywords: Divorce, marriage, unemployment, business cycle, geography

Rafael González-Val
Departamento de Análisis Económico
Universidad de Zaragoza & IEB
Facultad de Economía y Empresa
Gran Vía 2, 50005
Zaragoza, Spain
E-mail: rafaelg@unizar.es

Miriam Marcén
Departamento de Análisis Económico
Universidad de Zaragoza
Facultad de Economía y Empresa
Gran Vía 2, 50005
Zaragoza, Spain
E-mail: mmarcen@unizar.es

1. Introduction

The effects of the business cycle are usually measured in terms of unemployment rates, or price and poverty indices, but it also has strong social and individual implications. For instance, economic conditions can affect family stability. Individual decisions about getting married or divorced, or planning a pregnancy, can vary considerably depending on the employment situation of the spouses. In this paper, we examine how marriage and divorce in Spain change in response to the economic environment. Most of the scarce economic literature studying the impact of business cycles on marriage and divorce has focused on the US case, generally finding a negative effect of unemployment rates on both outcomes (Amato and Beattie, 2011; Hellerstein and Morrill, 2011; Schaller, 2013). Less work has been done on the analysis of this issue for other countries; as an exception, we find the studies by Fischer and Liefbroer (2006) examining the Netherlands case, Jensen and Smith (1990) for Denmark, and Ariizumi et al. (2015) for Canada. In our work, we analyse the Spanish case. Spain is characterized as a country with pronounced recessions and significant volatility (Bentolila et al., 2012). For example, before the last Great Recession, Spain exhibited unemployment rates around 8% (INE, *Instituto Nacional de Estadística*) while, in the US, unemployment was around 4-5% in the period 2005-2007 (US Bureau of Labor Statistics). However, in Spain, the unemployment rate reached 25% during the economic crisis (INE), tripling that of the economic expansion period, whereas in the US the maximum rate was around 10% in 2009 and now is back close to 6% (US Bureau of Labor Statistics, 2014). Do such great variations in the unemployment rate affect marriage and/or divorce decisions? [1]

From a theoretical point of view, the relationship of the unemployment rate to both marriage and divorce is ambiguous. The early studies by Becker, of marital decision-making (Becker, 1973), based on utility-maximizing individuals who choose to marry when the expected lifetime utility derived from marriage exceeds the expected utility from remaining single, predict a positive relationship between male job losses and the likelihood of remaining single, within a framework of specialization where the man is the breadwinner. According to Hoynes et al. (2012), since the empirical evidence indicates a greater negative impact on male employment than on that of females in times

[1] Of course, there are more determinants of divorce; e. g., unilateral divorce reforms (Friedberg, 1998; Wolfers, 2006), child custody and child support laws (González-Val and Marcén, 2012a), price stability (Nunley, 2010) or culture (Furtado et al., 2013) among others.

of economic crisis, we would expect a negative association between unemployment rates and marriage rates. Other research suggests an opposite relationship, where marriage is considered as insurance against poor economic conditions (Shore, 2009; Stevenson and Wolfers, 2007). Then, following this argument, marriage and unemployment should be positively associated.

In the case of divorce, Becker et al. (1977) extend Becker's original model to marital instability. In this Beckerian framework, male job losses should increase the likelihood of divorce, again considering specialization. Contrary to this prediction, when marriage is viewed as insurance against economic hardship, it should be expected that the greater the unemployment rate, the lower the divorce rate. More recently, Ariizumi et al. (2015) suggest that the sign of the relationship between divorce and the unemployment rate depends on the balance of the economic crisis impacts on the gains derived from marriage, and on the quality of those without a partner that divorcees may potentially match with. It is also possible to find theoretical alternatives that explain the impact of the business cycle on divorce; for example, Amato and Beattie (2011) propose three perspectives: the psycho-social stress perspective, the cost of divorce perspective, and the hybrid perspective. The first perspective leads to a positive association between the unemployment rate and divorce, although the effect should be greater when the variables are lagged, since the stress of decreasing employment opportunities takes time to affect marital stability. From the cost-of-divorce perspective, a job loss can generate economic constraints, making access to a potentially-costly divorce more difficult; for that, the increase in the unemployment rate should be inversely related to the divorce rate. In the last case, combining the first two perspectives, studies suggest that the unemployment rate should be negatively associated with the divorce rate when both rates are measured in the same year, and positively associated when the divorce rate is measured in subsequent years. Then, a priori, the relationships between the business cycle and patterns of marriage and divorce are less clear.

To shed light on this theoretical debate, only a few papers have empirically studied the role of business cycle fluctuations in determining marriage and divorce rates. Early studies conclude that both marriage and divorce rates are pro-cyclical (Ogburn and Thomas, 1922; Stouffer and Spencer, 1936; Kirk and Thomas, 1960; Silver, 1965). More recent works, using state-level data, or individual-level data for the

US, also find a negative effect of economic recession on divorce rates (Amato and Beattie, 2011; Hellerstein and Morrill, 2011; Hellerstein et al., 2013; Schaller, 2013; Baghestani and Malcolm, 2014) and on marriage rates (Schaller, 2013). As an exception, South (1985) detects a small positive relationship between the unemployment rate and the divorce rate, using US national-level data. In the case of the Netherlands, Fischer and Liefbroer (2006) show a negative effect of consumer confidence on divorce rate. For Denmark, Jensen and Smith (1990), utilizing panel data for a sample of married couples, suggest that unemployment is an important determinant of marital instability. Their results indicate an immediate positive effect of a husband's job loss on divorce probability. Similarly, Doiron and Mendolia (2011) show evidence that involuntary job losses have a positive impact on the probability of divorce, using the British Household Panel Survey. However, Ariizumi et al. (2015) find no effect of unemployment on divorce in an analysis of the Canadian case, but their findings indicate a clear negative impact of male unemployment on the Canadian marriage rate. Finally, González-Val and Marcén (2015) carry out a cross-country analysis using panel data from 29 European countries, from 1991 to 2012, finding that the unemployment rate negatively affected the divorce rate during that period. To our knowledge, there is no other paper examining this issue using data from Spain. The only related study is the work of Gutiérrez-Domènech (2008), who finds that the negative impact of unemployment on fertility decisions in Spain may be due to the postponement of marriage, pointing to an inverse relationship between unemployment and marriage.

In our main empirical analysis, we use Spanish data on marriage and divorce rates from 1998 to 2013, measured at the province level (NUTS III regions). As in prior studies, to capture the business cycle behaviour we use information on regional unemployment rates. We find no statistically significant results after including controls for unobservable characteristics that can vary over time, and for other observable characteristics. The same result is obtained when using the male unemployment rate, rather than the whole unemployment rate. Moreover, we repeat the analysis by splitting the sample into two periods, to check whether our results are driven by variations in legislation. In 2005, there was a significant divorce law reform that reduced the costs of divorce, making it more accessible. Even after this liberalization of the divorce law, our results show a clear negative relationship between the unemployment rate (regardless of the way in which this is measured) and the divorce rate.

Additionally, we consider regional characteristics in the analysis, inasmuch as Spain presents clear dissimilarities in the divorce and unemployment patterns across regions, with those regions with high divorce rates and high seasonality in employment demand being primarily located on the coasts. Differences in the attitudes towards divorce and unemployment could be driving our results if, for instance, a divorce because of a job loss in an area with high seasonality in employment demand would be less acceptable than in a region where unemployment is indicative of the reduced economic suitability of a partner (Doiron and Mendolia, 2011). Our findings point to clear differences in regional patterns, suggesting that the divorce rate responds in a counter-cyclical way in inland regions, but in a pro-cyclical way in coastal regions.

This work also explores the relationship between the business cycle and different kinds of divorce (with/without mutual consent), providing further evidence in favour of the relevance of the business cycle to divorce decisions. When couples divorce under mutual consent, the divorce process normally ends within a few months and so the effect of the contemporary business cycle situation should be detected. However, those who do not agree in their divorce process usually spend significant time involved in judicial processes (perhaps as much as several years); then, for those couples, we would not expect to find any relationship between the contemporary business cycle and the contemporary divorce rate since the business cycle situation when they took the divorce decision may not correspond to the situation when the divorce process is final.

If economic constraints vary during marriage, it would be expected that the response of married individuals to business cycle variations changes, depending on the number of years of marriage (Arkes and Shen, 2014). For example, a job loss in a young married couple may indicate a lower level of economic suitability of a partner, which decreases the potential gains derived from marriage. In addition, those who have been married fewer years are less likely to have children and less likely to have certain assets in common, so divorce would be potentially less costly. Thus, for those young couples, we would expect a positive relationship between unemployment and divorce. Similarly to Arkes and Shen (2014), we find differences in the relationship between divorce and unemployment by stage of marriage.

Regarding the association between marriage and unemployment, our findings point to a pro-cyclical response of the marriage rate, regardless of the sample used, the geography, the measure of marriage and unemployment rates, and the controls for

unobserved and observed characteristics. The inverse relationship between marriage and the unemployment rate is observed in both coastal and inland regions. Nonetheless, those living in inland regions are less likely to get married when the unemployment rate increases than those living in coastal regions. This is consistent with our findings on the relationship between divorce and unemployment, suggesting that unemployment is less acceptable in marriage for those living inland.

Taking into consideration the works of Schaller (2013) and Amato and Beattie (2011), we can hypothesize that there may be a lag impact of the unemployment rate on divorce and marriage rates. This is the case since couples may react by putting off their marital decisions if there are changes in labour market conditions. To examine this issue, we have considered lagged unemployment rates in our analysis. Although the duration of the lag is not clear, we use lags from 1 to 2 years, since in Spain the minimum legal separation period required to obtain a divorce was 2 years, until the divorce law reform of 2005, and even after what is known as the 'express divorce law,' there can be a period of time between the decision to divorce and when the divorce process can become final. Results show that the contemporary unemployment rate impacts both marriage and divorce, but no dynamic effects can be found.

Since divorce rates are quite different between coastal and inland regions, it is possible to argue that our results are simply a consequence of a nonlinear response of that variable to the business cycle, rather than an opposite response of divorce to the unemployment rate in coastal and inland regions. To tackle this issue, we explore the potential nonlinear response of marriage and divorce rates to the fluctuations of the business cycle, using quantile regressions. Our results show that, depending on the level of marriage and divorce rates, the impact of the unemployment rate on marital decisions does not substantially vary. This is even more remarkable when we examine the differences in the impact of unemployment by coastal and inland regions where, for instance, the relationship of the unemployment rate to the divorce rate in inland regions remains almost unchanged, regardless of the level of the divorce rate.

The remainder of the paper is organized as follows. Section 2 presents the data used. In Section 3, we describe the methodology and the main regression results. Section 4 shows the lag specifications. The nonlinear analysis is presented in Section 5, and Section 6 concludes.

2. Data

In order to implement this analysis, we use data from 50 Spanish provinces (NUTS III regions).[2] The divorce rate is defined as the annual absolute number of divorces per thousand inhabitants in each region. The available data on divorce covers the period 1998 to 2013 (INE).[3] This 'crude' divorce rate represents the standard measure of the level of, and changes in, divorce. Nonetheless, the rates may be affected by the marital status structure of the populations to which they relate. Divorce rates may be low, either because marriage rates are low, or because marriages are less likely to end in divorce. To explore this issue, we could have used an alternative definition of divorce rates, measured as the annual number of divorces per 1,000 of the married population. This analysis would have been less reliable due to the scarcity of data on the total number of marriages, which is only available when each census is collected, normally every 10 years (see Furtado et al., 2013). For that reason, we favour the use of the crude divorce rate, although our analysis has been repeated with the divorce rate calculated as the annual number of divorces per 1,000 married inhabitants. Results do not change.[4]

The evolution of the crude divorce rate at the national level is presented in Figure 1. The average divorce rate slightly increases from 1998 to 2004. After that, we observe a sharp rise in this rate until 2006, coinciding with the introduction of the so-called 'express divorce law' in 2005. This reform eliminated the legal separation period requirements to obtain a divorce and introduced the notion of unilateral divorce in Spain. Under this new regime, divorce can be granted at the request of either spouse if both spouses have been married for at least 3 months.[5] From 2006, the divorce rate decreases and has been maintained around 2.1 divorces per thousand individuals since 2008, until the end of our sample in 2013. The average marriage rate is also plotted. This is calculated as the annual number of marriages per thousand inhabitants in each region. As in the case of the divorce rate, this is a common measure of marriage in the literature, but it does not properly consider the population that could legally get married. To tackle this issue, we have re-run this work using as dependent variable a rate calculated as the annual number of marriages per thousand of non-married inhabitants. Results are maintained, while being aware of the concerns that the scarce information

[2] Ceuta and Melilla, located on the African coast, are excluded from the analysis.
[3] There is no information on the Spanish divorce rate at the province level for the period 1981 to 1997.
[4] These results are shown in the Appendix, see Tables A1 to A3 and A6.
[5] As can be seen in the next Section, we take into account this change of the divorce law in the empirical analysis.

on that population (non-married inhabitants), normally only available every 10 years, can generate.[6] As shown in Figure 1, the marriage rate increased a little until 2000, followed by a period of relative stability around an average rate of 5.1. After 2005, a fall in the marriage rate is observed that continues until 2011, with the drop being more pronounced since 2007. In 2012, the average marriage rate increased a little, then decreased again in 2013.

The other variable of interest in our work is the unemployment rate. Unemployment refers to the share of the labour force that is without a job, but is available for and seeking employment. It is a common indicator of economic conditions, highly publicized and used, which captures not only the effects of individual job losses but also the variations in economic uncertainty. As Schaller (2013) claims, the unemployment rate can be useful in exploring marital behaviour, since it is less likely to be endogenous to divorce and marriage decisions than other income or employment variables, such as own wages. The unemployment rate is defined here as the percentage of unemployed individuals in the labour force (sum of the employed and unemployed), and the data is provided by the *Instituto Nacional de Estadística* (the Spanish Statistical Office). It includes changes in both labour demand and labour supply. As Schaller (2013) points out, despite the weaknesses of this variable (it can understate the magnitude of a recession by not incorporating discouraged workers, and it can be a lagged indicator of economic recession), it is considered the best available proxy to capture changes in the labour market conditions of married and unmarried individuals. Data on the unemployment rate come from the Labour Force Survey and it is available for all the period considered in this analysis at the regional level (NUTS III regions).[7] Its pattern of behaviour is presented in Figure 1. As mentioned above, the fluctuations of this variable in Spain are considerable. From 1998 to 2001, the average unemployment rate fell dramatically. After a stable rate around 10% until 2004, there was detected another fall until 2007. Since then, the rate has followed a very steep slope, reaching levels of almost 25% during the period known as the Great Recession.

Another potential problem with the use of the unemployment rate is that variations in the rate can be due to changes in marriage and divorce situations (Schaller, 2013). Non-married women appear to be more likely to enter the labour market than

[6] These results are shown in the Appendix, see Tables A4, A5 and A7.
[7] The Labour Force Survey is collected using the same EUROSTAT methodology in all European countries.

married women; then, in the case that fewer individuals married or many individuals become divorced, more women may be participating in the labour market (Fernández and Wong, 2014a; 2014b). Nevertheless, it is not clear whether decreases or increases in women's participation in the labor market correspond with variations in the overall unemployment rate (Schaller, 2013). Additionally, the rise in divorce rates has been found to account for a very small part of the increase in female employment rates (Eckstein and Lifshitz, 2011). To tackle this issue, as proposed by Schaller (2013), we also use the male unemployment rate (the percentage of men in the labour force who are without a job but available for and seeking employment) in the analysis for the same period, because men are less likely to change their participation in the labour market depending on their marital situation. Figure 1 also displays the evolution of the male unemployment rate. As can be seen there, the pattern is similar to that of the total unemployment rate, although until 2008 this rate is lower than the total unemployment rate, since in Spain female unemployment rates are traditionally higher. After that, both total and male unemployment rates almost coincide; thus, male and female unemployment rates were quite similar during the economic crisis.

This quick glance at the temporal evolution of the average marriage and divorce rates does not appear to reveal a clear relationship between the unemployment rate and marital decisions. It is worth noting that the decline of the marriage rate was greater in the period of the Great Recession, and that the divorce rate also decreased in that period. At the regional level, see Figure 2, significant differences across regions in the rates of divorce, marriage, and unemployment can be observed, but once again a clear pattern cannot be discerned. In contrast, by exploring the average marriage, divorce, and unemployment rates over the sample period for each region, Table 1, it is possible to infer certain regional patterns. Those regions with low divorce rates also have low marriage rates, with the exception of those settled in the Canary Islands, which present high divorce rates and low marriage rates. For the unemployment rate, the variations at the regional level are also quite relevant and persistent over time (Bentolila, 1997; Jimeno and Bentolila, 1998). Some regions maintained an average unemployment rate around 8% whereas this average rate was higher than 20% in other regions during the same period. These large dissimilarities are also detected when the evolution of these variables is plotted at the regional level, Figure 2, suggesting that economic constraints for couples can vary at the regional level.

The considerable differences highlighted above may indicate the necessity of a regional analysis of the impact of unemployment on both marriage and divorce. Additionally, using data at the national level could be problematic, since NUTS II regions have different divorce and marriage laws. For example, there are differences in the property regimes and in the child custody laws; then, as suggested by Wolfers (2006) and González-Val and Marcén (2012a), dissimilarities in those legal frameworks may influence both marriage and divorce decisions. If divorce is less costly in one region than in another, variations in the unemployment rate may have different effects in those regions.

3. Methodology and results

Initially, we estimate the following equation:

$$Y_{it} = \alpha + \beta Unemp_{it} + \Gamma' X_{it} + \Pi' T_{it} + \phi \eta_i + \varepsilon_{it}, \qquad (1)$$

where Y_{it} is the divorce (marriage) rate of region *i* in period *t* and $Unemp_{it}$ is the unemployment rate of region *i* in period *t*. X_{it} is a set of demographic, geographic, and weather controls, whereas η_i is a vector of region fixed effects ($\sum_{i=1}^{n-1} \text{Re}\, gion_i$) that allows us to pick up the impact of unobserved characteristics that can vary at the regional level. T_{it} is a matrix of time variables, incorporating a linear time trend, beginning in 2005, to capture the influence of the divorce law reform approved in 2005 ($\text{Express divorce} \cdot Time_t$ since 2005), known as the 'express divorce law,' the corresponding quadratic trend to measure the nonlinear effect of the express divorce law reform ($\text{Express divorce} \cdot Time_t^2$ since 2005), time fixed effects ($\sum_{t=1}^{t-1} Year_t$), region-specific linear time trends ($\sum_{i=1}^{n-1} \text{Re}\, gion_i \cdot Time_t$) and quadratic region-specific time trends ($\sum_{i=1}^{n-1} \text{Re}\, gion_i \cdot Time_t^2$), allowing us to control for unobserved characteristics that vary over time. ε_{it} is the error term. This framework exploits variations across regions in unemployment behaviour over time, as in Schaller (2013) and in Amato and Beattie

(2011). The identification strategy of the relationship between unemployment rates and both marriage and divorce rates is based on the exogeneity of variation in regional unemployment rates (Schaller, 2013). Theoretically, it is not clear whether marriage and divorce rates respond in a pro-cyclical way, or not. Then, the sign of the β coefficient could be positive (counter-cyclical response) or negative (pro-cyclical reaction).

3.1 Divorce results

Table 2 reports the estimates for Equation (1) when the dependent variable is the divorce rate. As can be seen in the first column, which does not include any control, the estimated coefficient capturing the effect of the regional unemployment rate is not statistically significant, whereas the coefficient picking up the effect of the regional male unemployment rate in the regression without controls, column (2), is positive and statistically significant, pointing to a counter-cyclical response of divorce to the fluctuations of the business cycle. Note that, as we explain above, we have repeated our analysis using male unemployment rates, which allows us to tackle the concerns that the use of female unemployment can generate.

In columns (3) and (4), we include controls for region and year fixed effects, and for region-specific linear and quadratic time trends. We also add controls for observable characteristics. A geographical coastal region dummy is incorporated, since it could be that divorce incentives change between coastal and inland provinces because of the differences in the attitudes towards divorce. Those regions having high divorce rates, normally coastal regions, are more likely to be more accepting of divorce (Furtado et al., 2013). Besides the localization of the regions, the demographic characteristics of the population can also matter. If older individuals are less likely to get divorced (Peters, 1986) and they are less likely to be unemployed, then the older the population, the lower the unemployment and divorce rates. Thus, it is possible to conjecture that our results are driven by the differences in the age structure of the population, in addition to the relationship between unemployment rates and divorce rates. To tackle this issue, we include as a control the median age at the regional level.[8] In these specifications, both a linear time trend and a quadratic time trend, beginning in 2005, are also included in those specifications to capture the influence of the divorce law reform approved in 2005. After the inclusion of all these controls, results for our variable of interest suggest

[8] Data come from the INE.

that there is no significant relationship between unemployment and divorce. The coefficients picking up the effect of the unemployment rate (total in column (3) and male unemployment in column (4)) are not statistically significant, albeit negative. With respect to the estimated points capturing the effect of the controls, we observe a striking inverse relationship between being on the coast and the divorce rate. We revisit this issue below, since it suggests that the differences in the employment structure between coastal and inland regions can have an impact on our results. The impact of the median age is not statistically significant, which is in line with the findings of Bruze et al. (2015), who find that the costs of divorce are similar in the earlier and later stages of marriage, pointing to a lesser importance of the age-structure. The relationship between the liberalization of the divorce law and the divorce rate appears to have an inverted U-shape. As we have described in the previous section, after the divorce law reform, the divorce rate considerably increases and some years later it is seen to fall. This is also observed in the reaction of divorce rates to divorce reforms in other countries (Wolfers, 2006; González and Viitanen, 2009; González-Val and Marcén, 2012a, 2012b).

In the last column of Table 2, the employment rate is added, following Schaller's (2013) advice. Although these results should be taken with caution, since the employment rate incorporates the participation of women in the labour market, which, as explained above, can generate problems of endogeneity in this specification, it is comforting that our results do not vary after its incorporation. The effect of the employment rate is not statistically significant, suggesting that there is no relationship between the employment rate and the divorce rate. This finding is not what would be expected if the higher the divorce rate the more likely would be the participation in the labour market, reducing endogeneity concerns.

Although the inclusion of express divorce law controls does not appear to affect our estimates on the relationship between unemployment and divorce, we provide additional evidence by repeating the analysis, splitting the sample into two periods. We do that in order to test whether our results are driven by the liberalization of the divorce law that could change divorce incentives by making divorce easier. This is important in the analysis if the reduction in the divorce costs makes divorce more attractive for unemployed individuals in the post-reform period than in the pre-reform period. The pre-reform period covers from 1998 to 2004 and the post-reform period from 2005 onwards. Results are shown in Table 3. On the one hand, columns (1) to (3) present the estimates corresponding to the pre-reform period, where we find no significant

coefficient of the impact of unemployment on divorce. On the other hand, using the post-reform sample, columns (4) to (9), the estimates capturing the impact of unemployment on divorce (regardless of the measure of unemployment and of the controls incorporated) are always negative and statistically significant, although only at the 10% level of significance for the total unemployment rate. Contrary to our expectations, in a framework of low divorce costs, we observe a clear negative relationship between unemployment and divorce, whereas in the pre-reform period no effect is detected. This could be explained by the long separation requirements (normally 2 years) of the pre-reform period, which can lead to the conclusion that the contemporary divorce and unemployment rates would not be related. However, during the pre-reform period, when both members of a married couple want to divorce, they could lie about the real separation period to considerably reduce the divorce process, making possible the association between contemporary divorce and unemployment rates. These findings could also be due to the fact that, during the pre-reform period, the unemployment rate remained stable in many regions, see Figure 2. Considerable differences in the evolution of the unemployment rate are only observed in a few of the regions. Thus, without important variations in the unemployment rate, if unemployment matters, we would expect the divorce rate to be maintained almost flat, and that is what we do observe in the estimates and in Figure 2.[9] Another possibility is that regional differences in the response of the divorce rate to the unemployment rate are driving previous results.

As mentioned above, in Spain, those regions with high divorce rates are mainly located on the coast (including the two archipelagos), see Table 1. The map in Figure 3 shows the spatial distribution of divorce rates in 2010, confirming a clear spatial pattern in divorce rates across the regions.[10,11] Taking into account the argument that points to the high-divorce rate areas as having more accepting attitudes towards divorce, it is possible to conjecture that, in those areas, divorce costs are lower, considering both the divorce process and the social costs in terms of social ostracism (Fenelon, 1971; Furtado et al., 2013; Glenn and Shelton, 1985). In this framework, we would expect that

[9] Note that there was a methodological change in the Spanish Labour Force Survey in 2001, which generated an abrupt change in the series in that period. To address this change, we add year fixed effects to our regressions.
[10] The maps for other periods, available from the authors upon request, are similar.
[11] Neither the unemployment nor the marriage rates exhibit the same geographical pattern, see Figures A1 and A2 in the Appendix.

a job loss, which entails economic constraints, would be more likely to generate a divorce in a region with high divorce rates than in a region with low divorce rates. On the other hand, we cannot forget that a job loss also produces social costs and lower economic expectations for the unemployed member of the couple. In this case, the lower the social approval of a job loss for a member of a couple, the lower the gains derived from marriage and so the greater the probability of divorce. For Spain, we would expect greater acceptance of the unemployment situation in coastal regions, since those areas are characterised by seasonality of the employment demand (mainly due to the tourism industry).[12] Additionally, since tourism also has a greater capacity to generate employment, even in times of economic crisis (Sánchez-Ollero et al., 2014), unemployed individuals in tourist areas would have greater expectations of finding a job, which would not be expected to increase the probability of divorce. However, a divorce can be more acceptable in an area with lower attitudes towards divorce if a partner is unemployed, since it indicates that he/she is not an economically- suitable partner (Doiron and Mendolia, 2011). To sum up, divorce decisions in a situation of unemployment will depend on the balance between the social costs of divorce and that of unemployment. To examine this issue, we introduce an interaction between the unemployment rate and a dummy that takes the value of 1 if a province (NUTS III regions) is located on the coast or in an archipelago, and 0 otherwise. Columns (1) to (3) of Table 4 report the estimates. Results indicate that a one-percentage-point increase in the unemployment rate in an inland region involves 0.017 more divorces per thousand inhabitants, whereas in a coastal region, that same increase involves 0.015 fewer divorces per thousand inhabitants. Both effects are statistically significant. The opposite behaviour that these results suggest could help to explain the estimates shown in Table 2, where no relationship is detected between unemployment and divorce. The coefficients remain unchanged, regardless of the unemployment rate measure, and do not vary with the introduction of the employment rate in column (3). The impact is small, which is not surprising in the literature (see for example Schaller, 2013), but significant, representing around 1% of the average divorce rate in Spain during the period considered.

The regional pattern described above can also be explained by population movements. During economic recessions, individuals are less likely to move to tourist

[12] Yearly data on employment by industry by region is not available, but differences in productive structures across regions should be controlled by the region fixed-effects.

areas because of the economic constraints. However, they may go out and socialise in greater proportion in their areas of residence, increasing the probability of meeting new potential partners, which following Ariizumi et al. (2015) may increase the likelihood of divorce, whereas, in coastal regions, there are fewer potential partners to match with (decreasing the probability of divorce). One can also surmise that the differences in the impact of the economic crisis on individual assets can be driving these results if, for instance, the economic crisis decreases the price of houses more in coastal regions than in inland regions. Then, married couples in coastal regions would postpone their divorce decisions in greater proportion than those couples living in inland regions although, with this explanation, opposite results are not expected.[13] Additionally, since there is a large number of married couples who reside in inland areas who have a second residence on the coast, the variation in the price of the houses on the coast would also impact their divorce decision; this could lead to behaviour that would be more similar to that of married couples residing in the coastal regions, contrary to our findings.

Weather conditions can also be responsible, at least in part, for the possible social interactions that can justify those results and the potential divorce decisions of couples. As explained by Connolly (2013), weather conditions impact both mood and prosocial behaviour. Then, it could be argued that the better the weather conditions, the greater the possibility of meeting more potential partners for divorcees to match with, because individuals spend more time outside and the number of social interactions increases. Apart from that, the better the weather conditions in a region, the more likely is that region to receive tourists, and so, to increase the employment demand of the tourist industry which may decrease the probability of divorce. Therefore, if controls for weather conditions are not added, results can be biased. Taking this into account, we add to the specification the following weather controls: the annual average precipitation, the annual number of cloudless days, the annual average temperature, the annual number of days with temperatures greater than 25ºC, and the annual number of days with temperatures below 0ºC, all measured at the regional level.[14] Table 4 shows the estimated coefficients in columns (4) to (7). Results appear to confirm the opposite response in the coastal and inland regions, even after the inclusion of those weather

[13] Only the opposite movement in house prices in inland and coastal regions can explain an opposite reaction of couples. However, this was not the case in Spain. Blanco et al. (2015) study regional house price convergence in Spain during the housing boom, identifying four different convergence clubs in house prices among Spanish regions.
[14] Data come from the INE.

variables, confirming that the divorce rate behaves in a counter-cyclical way in inland regions but in a pro-cyclical way in coastal regions.

A placebo test is also carried out. If it is the business cycle variation that matters, we would not expect to find a relationship between the unemployment rate and the divorce rate for divorces without mutual consent. The contemporary economic situation is not relevant in those cases, since the divorce process without mutual consent takes a long time to be finalized, usually some years, with lengthy judicial proceedings. But, when couples divorce under mutual consent, the process is usually final in a few months, and so we would expect a significant effect of the contemporary business cycle situation on the divorce rate. Table 5 shows the results. Reinforcing our argument that the business cycle plays a role in divorce decisions, we observe that, after separating the sample by divorce type (with/without mutual consent), those divorces under mutual consent dominate the pro-cyclical response in coastal regions, and the counter-cyclical in inland regions, while, as expected, no effect is obtained when married couples do not achieve agreement to divorce.

As in Arkes and Shen (2014), by examining the impact of the business cycle variations on divorce rates at different stages of marriage, we can provide additional empirical evidence on the role of business cycle fluctuations in divorce decisions. As explained above, we would expect a positive relationship between unemployment and divorce for younger married couples, since they are less likely to have children and assets in common, so their divorce costs are lower than those in later stages of marriage. Additionally, a job loss for a young couple may indicate the economic unsuitability of the unemployed member of the couple, which would decrease the potential gains derived from marriage, making divorce more attractive. As times passes, individuals are more likely to have children and to accumulate assets in common, which considerably increases the costs of divorce, so, in that case, we would expect a negative association between unemployment and divorce. Nevertheless, after some years, children grow up and leave home, and mortgages are paid down and, once again, the costs of a possible divorce decrease, so unemployment and divorce should be more likely to be positively associated. These results are presented in Table 6, where the divorce rate varies depending on the years of marriage. As can be seen, we only obtain a negative association of those variables for couples married for a period between 11 and 19 years, while in the rest of the cases there are no statistically significant estimates. In Table 7,

the regional differences are included. Then, the positive association between divorce and unemployment, as expected, is observed for both young and old married couples in inland regions, and an inverse relationship is detected only for those married for 11 years or more, with the impact being lower for those married individuals living in coastal regions for more than 20 years, suggesting that the divorce costs argument presented here may play a significant role.

3.2 Marriage results

Another objective of this work is to explore the relationship between marriage and the business cycle. Similarly to the analysis of the divorce rate, we use the unemployment rate as a proxy of the business cycle. Although, from a theoretical point of view, the effect is not clear, using Spanish data we find evidence pointing to the dominance of pro-cyclical behaviour, as in the studies by Schaller (2013) and Ariizumi et al. (2015). Note that, since the information on the marriage rate was collected at the regional level for more years than that of the divorce rate,[15] we can repeat the analysis using a longer period, from 1985 to 2013. Results are reported in Table 8.[16] All but one of the estimated coefficients on the relationship between unemployment and marriage are negative and statistically significant. The only one that is not statistically significant, although negative, is located in a regression without controls (column 1), but in this case we are not controlling for possible unobserved heterogeneity. It is worth noting that, when the employment rate is added to the specifications, see columns (11) and (12), the coefficient capturing the effect of this variable is not statistically significant, although it is positive after the inclusion of all controls, as in the case of the divorce rate analysis. This is not what we would expect if there were opposite reactions when couples change their marital status, reducing our concerns with the possible endogeneity problem. Our findings indicate that a one-percentage-point increase in the unemployment rate involves around 0.030 (0.033 in the case of the male unemployment rate) fewer marriages per thousand inhabitants, regardless of the period considered. As in the case of the relationship between the divorce rate and the unemployment rate, the

[15] The average marriage rate by region for the sample for the period from 1985 to 2013 is shown in Table 1. The unemployment rate is also calculated for the same period. Data come from the INE.
[16] We do not include controls for weather conditions, since this information is not available at the regional level from 1985 to 1997.

response of the marriage rate appears to be small, but it represents almost 1% of the average marriage rate in Spain.

To determine whether there are differences due to the localization of the regions, we have also re-run the analysis including an interaction between the unemployment rate and a dummy that takes the value of 1 if a province is located on the coast or in an archipelago, and 0 otherwise. Table 9 reports these estimates. In contrast to what we observed in the case of divorce, our results suggest that both those married couples living in coastal and in inland regions behave in a similar way. The response of the marriage rate to the variations in the unemployment rate appears to be pro-cyclical, regardless of the sample used and the measure of the unemployment rate. We find that a one-percentage-point increase in the unemployment rate involves 0.037 (0.040 in the case of the male unemployment rate) fewer marriages per thousand inhabitants in inland regions, and 0.027 (0.029 in the case of the male unemployment rate) fewer marriages per thousand inhabitants for those living in coastal regions. Thus, the reduction in the number of marriages is greater in inland regions than in coastal regions. This is consistent with the results on the divorce rate, suggesting that those living in inland regions prefer not to be married, in a greater proportion than those in coastal regions when the economic constraints increase, since when unemployment rises they get married in a lower proportion than those in coastal regions, and they prefer to divorce if they are married. Thus, it appears that individuals in inland regions are less likely to view marriage as insurance, although it could be argued that, even in regions with low divorce rates (less accepting of divorce decisions), the postponement of marriage or divorce decisions is more acceptable during economic recession in inland regions.

4. Lag specification

Up to now, we have explored the contemporary relationship between unemployment rates and marriage and divorce rates. However, it is possible to surmise that couples react to changes in economic conditions by putting off their marital decisions because of the budget constraints that an unemployment situation may generate. A job loss can also produce a level of high emotional stress that can affect the stability of the relationship, which may lead to a decline in the number of marriages (Schaller, 2013). For those married couples, as in the case of non-married couples, the unemployment of one of the members of the couple, or even of both, produces cash-constraints. In this situation, it is

possible to argue that married individuals are more likely to support themselves together and postpone divorce decisions because they cannot afford to pursue a costly divorce.

To address this issue, we have included lagged unemployment rates in our analysis. As Schaller (2013) and Amato and Beattie (2011) explain, the length of the lag is not clear. We use lags from 1 to 2 years, since the minimum legal separation period required to obtain a divorce in Spain, until 2005, was 2 years. After the 'express' divorce law of 2005, although legal separation requirements were eliminated, it could be argued that the inclusion of lags is needed, since there could be a period of time between the divorce decision and when the divorce process is final. Results using the divorce rate as the dependent variable are shown in Table 10. Once again, we have incorporated all the specifications, with and without controls. As can be observed, when we do not add any control, the coefficients capturing the impact of the contemporary unemployment rate (total or male unemployment) are positive and statistically significant, whereas the coefficients picking up the effect of the lagged unemployment rate are negative and statistically significant, see columns (1) and (2). After adding all controls, we find that only the coefficient picking up the effect of the unemployment rate lag one period is statistically significant and negative, columns (3) and (4). But, when the possible regional differences are taken into consideration, in columns (5) to (7), we see that the contemporary unemployment rate is statistically significant, once again pointing to an opposite response for those married couples living in inland areas and in coastal areas. The estimates on the lagged unemployment are not significant, although the sign of the coefficients coincides in coastal and inland regions when the unemployment rate is lagged one period, which may explain why the estimates on the lagged unemployment rate are statistically significant in columns (3) and (4). All in all, our findings indicate that the contemporary unemployment rate is the only one that is relevant in divorce decisions.

In Table 11, we present the results on the impact of the variations of the business cycle on marriage. In specifications without controls, columns (1) to (6), the sign of the relationship between the unemployment rate and the marriage rate appears to change over time. However, as previously, those results could be biased. Then, we should focus on the estimated coefficients presented in columns (7) to (12). In that case, we see that the contemporary unemployment rate is negatively associated with the marriage rate, pointing to a pro-cyclical behaviour of this variable, regardless of the rate used (total or

male unemployment rate). The rest of the coefficients on the lagged regional unemployment rate are not statistically significant, columns (7) and (8). When the period considered is extended from 1985 to 2013, the coefficient on the unemployment rate lagged one period is also statistically significant, although only at the 10% level of significance, columns (9) and (11), but negative, once again pointing to a pro-cyclical response of the marriage rate to fluctuations in the business cycle.

5. Nonlinear analysis

In this section, we use an alternative approach. One important issue with the previous estimations, derived from linear models, is the existence of possible nonlinear behaviours. Some of the variation in divorce and marriage rates may reflect the fact that the influence of certain regional characteristics, particularly the unemployment rate, is not the same across the distribution of divorce and marriage rates. This is important to our analysis, since we observe a response of the divorce rate to the unemployment rate in the coastal regions (normally characterised with high divorce rates) different from that of the inland regions (usually with low divorce rates). It can be conjectured that those differences are due to a nonlinear response of the divorce rate to the unemployment rate. Thus, if it is just the level of the divorce rate that matters, for example, we would observe that the greater the divorce rate in an inland region, the more likely are the individuals living in those regions to behave as those in the coastal regions, and then, to respond in a pro-cyclical way.

To model these possible heterogeneous effects of the unemployment rate on the divorce and marriage rates, we estimate quantile regressions (Koenker and Bassett, 1978). The quantile regression version of the linear model shown in Equation (1) can be written as

$$Y_{it} = \alpha(\tau) + \beta(\tau) Unemp_{it} + \Gamma'(\tau) X_{it} + \Pi'(\tau) T_{it} + \phi(\tau)\eta_i + \zeta_{it}. \qquad (2)$$

Note that the estimated parameters are τ-dependent in this case, where τ is the corresponding quantile of the divorce (marriage) rate. Quantile regressions provide a richer characterization of the data, allowing us to consider the impact of the unemployment rate on the entire distribution of Y, and not merely its conditional mean. Quantile regressions take into account unobserved heterogeneity and allow for

heteroskedasticity among the disturbances, non-normal errors, and are more robust to outliers than standard OLS regressions.[17]

Figures 4 and 5 show the quantile regression results for the divorce and marriage rates models of Equation 2, respectively (the estimated coefficients are shown in Tables A8 to A13 in the Appendix). The different graphs display the estimates of the coefficients and the 95% confidence intervals for the unemployment rate across the nine quantiles considered (ranges from 0.1 to 0.9). The models include all the controls, and our estimates are weighted by population. As in the previous estimates, we find no statistically-significant coefficients on the impact of unemployment on divorce; only the male unemployment rate appears to have an effect on divorce in the top quantile (0.9), see Figure 4. This would suggest that unemployment is not relevant in divorce decisions. When we separate the impact between coastal and inland regions, Figure 5, it is clear that the two opposite patterns also detected with the OLS estimations could explain the previous result on the non-effect of unemployment on divorce. With these estimates, we are interested in determining whether there is a different response of married couples to the level of the divorce rate in their region. For example, focusing on the case of those living in inland regions, for which a positive impact is obtained, the statistically-significant estimates of the quantile regressions on the relationship between unemployment and divorce are all around 0.012 and 0.014. Then, the response does not appear to be different in inland regions with low and high divorce rates. These findings suggest that it is not only the level of the divorce rate that matters. In the case of marriage, all coefficients are negative and statistically significant, again indicating that marriages respond in a pro-cyclical way to variations in the business cycle. Although there are few changes in the estimates by quantile, a U-shaped pattern can be observed: the decrease in the number of marriages, when the unemployment rate increases, appears to be lower for those situated in the bottom and top quantiles, but the response of the marriage rate does not change so much as that observed in the linear analysis.

6. Conclusion

This paper examines the relationship between variations in the business cycle and marriage and divorce rates. We use Spanish data for the period from 1998 to 2013.

[17] Moreover, quantile regressions are invariant to monotonic transformations of the dependent variable, such as logarithms.

Since Spain is a country with significant business cycle fluctuations, we consider that it provides an appropriate framework to explore how those changes impact marriage and divorce decisions. As a proxy for the evolution of the business cycle, the unemployment rate is used.

Our results suggest that the pro-cyclical behaviour of the marriage rate dominates in the Spanish case. We find a negative relationship between the unemployment rate and the marriage rate regardless of the sample used, of the measure of the unemployment rate, and of the controls included in the analysis. Then, an increase in the unemployment rate is related to a decrease in the marriage rate, which is in line with the theoretical approach that indicates that the economic constraints generated by a job loss and/or the lower economic expectations during an economic recession period are associated with lower probabilities to engage in marriage.

Regarding the evolution of the divorce rate, we find opposite behaviours, depending on geography. The divorce rate in inland regions increases when the unemployment rate rises, whereas the divorce rate in coastal regions decreases with the same movement of the unemployment rate. In this paper, we suggest that the differences in the levels of divorce (with this being higher in coastal regions), which can be due to different attitudes towards divorce, in addition to the differences in the employment demand (with greater seasonality on the coast because of the tourism) can be responsible for that behaviour. Moreover, we propose an alternative explanation. The access for possible divorcees to potential partners decreases in coastal regions during economic crisis (because of the drop in the number of tourists), which can translate into lower divorce rates, whereas in inland regions, the number of potential partners increases (people move in a lower proportion to tourist areas, but increase their social activities in the residential areas) which can increase the probability of divorce.

We recognize that the impact of the unemployment rate on both marriage and divorce appears to be small although, in both cases, it represents around 1% of the average divorce and marriage rates. All these results are maintained after the incorporation of controls for certain observable characteristics, such as the median age of the population, weather conditions, and even the divorce law reforms, in addition to controls for unobservable characteristics that can vary at the regional level and over time. Our findings on the pro-cyclical response of marriage rates and the mixed results on divorce are also observed, even when we consider a timing analysis by introducing

lagged unemployment rates. Results suggest that the contemporary unemployment rate is the most important factor in divorce and marriage decisions. Finally, the analysis of a possible nonlinear response of our outcomes of interest (marriage and divorce) to the unemployment rate does not present significantly different results from that of the linear analysis, although it is important to provide evidence that our results are not driven by the differences in the relative levels of the divorce rate between coastal and inland regions.

Acknowledgements

This research has been funded by Fundación BBVA, I Convocatoria de Ayudas a Investigadores, Innovadores y Creadores Culturales. The views expressed in this paper are those of the authors, and not necessarily those of the "Fundación BBVA." The authors also acknowledge financial support from the Spanish Ministerio de Economía y Competitividad (ECO2012-34828, ECO2013-45969-P and ECO2013-41310-R projects), the DGA (ADETRE research group), and FEDER.

References

Amato, P. R., and B. Beattie, (2011). Does the unemployment rate affect the divorce rate? An analysis of state data 1960–2005. Social Science Research, 40: 705–715.

Ariizumi, H., Y. Hu, and T. Schirle, (2015). Stand together or alone? Family structure and the business cycle in Canada. Review of Economics of the Household, 13: 135–161.

Arkes, J., and Y.-C. Shen, (2014). For better or for worse, but how about a recession? Contemporary Economic Policy, 32(2): 275–287.

Becker, G. S., (1973). A theory of marriage: part I. Journal of Political Economy, 81(4): 813–846.

Becker G. S., E. M. Landes, and R. T. Michael, (1977). An economic analysis of marital instability. Journal of Political Economy, 85(6):1141–1187.

Bentolila, S., (1997). Sticky labor in Spanish regions. European Economic Review, 41: 591–598.

Blanco, F., V. Martín, and G. Vázquez, (2015). Regional house price convergence in Spain during the housing boom. Urban Studies, forthcoming. DOI: 10.1177/0042098014565328

Bentolila, S., P. Cahuc, J. J. Dolado and T. Le Barbanchon, (2012). Two-tier labour markets in the great recession: France versus Spain, The Economic Journal, 122: F155-F187.

Bruze, G., M. Svarer, and Y. Weiss, (2015). The dynamics of marriage and divorce. Journal of Labor Economics, 33(1): 123–170.

Connolly, M., (2013). Some like it mild and not too wet: The influence of weather on subjective well-being. Journal of Happiness Studies, 14(2): 457–473

Doiron, D., and S. Mendolia, (2011). The impact of job loss on family dissolution. Journal of Population Economics, 25(1): 367–398.

Eckstein, Z., and O. Lifshitz, (2011). Dynamic female labor supply. Econometrica, 79(6): 1675–1726.

Friedberg, L., (1998). Did Unilateral Divorce Raise Divorce Rates? Evidence from Panel Data. American Economic Review, 88(3): 608–627.

Fenelon, B., (1971). State variations in United States Divorce Rates. Journal of Marriage and Family, 33(2): 321–327.

Fernández, R., and J. C. Wong, (2014a). Divorce Risk, Wages and Working Wives: A Quantitative Life-Cycle Analysis of Female Labour Force Participation. The Economic Journal, 124(576): 319–358.

Fernández, R., and J. C. Wong, (2014b). Unilateral Divorce, the Decreasing Gender Gap, and Married Women's Labor Force Participation. American Economic Review, 104(5): 342–347.

Furtado, D., M. Marcen, and A. Sevilla-Sanz, (2013). Does Culture Affect Divorce? Evidence from European Immigrants in the US. Demography, 50(3): 1013–1038.

Glenn, N. D., and B. A. Shelton, (1985). Regional Differences in Divorce in the United States. Journal of Marriage and Family, 47(3): 641–652.

González, L., and T. K. Viitanen, (2009). The Effect of Divorce Laws on Divorce Rates in Europe. European Economic Review, 53: 127–138.

González-Val, R., and M. Marcén, (2012a). Unilateral divorce versus child custody and child support in the U.S. Journal of Economic Behavior & Organization, 81(2): 613– 643.

González-Val, R., and M. Marcén, (2012b). Breaks in the breaks: A time series analysis of the divorce rate in Europe. International Review of Law and Economics, 32: 242– 255.

González-Val, R., and M. Marcén, (2015). Divorce and the Business cycle: A cross-country analysis. Working paper, MPRA Paper No. 67229.

Gruber, J., (2004). Is Making Divorce Easier Bad for Children? The Long-Run Implications of Unilateral Divorce. Journal of Labor Economics, 22(4): 799–833.

Gutiérrez-Domènech, M., (2008). The impact of the labour market on the timing of marriage and births in Spain. Journal of Population Economics, 21(1): 83–110.

Hellerstein, J. K., and M. S. Morrill, (2011). Booms, Busts, and Divorce. The B.E. Journal of Economic Analysis & Policy, 11(1) (Contributions), Article 54.

Hellerstein, J. K., M. S. Morrill, and B. Zou, (2013). Business cycles and divorce: Evidence from microdata. Economics Letters, 118: 68–70.

Hoynes, H. W., D. L. Miller, and J. Schaller, (2012). Who suffers in recessions and jobless recoveries. Journal of Economic Perspectives, 26(3): 27–48.

Jensen, P., and N. Smith, (1990). Unemployment and marital dissolution. Journal of Population Economics, 3(3): 215–229.

Jimeno, J. F., and S, Bentolila, (1998). Regional unemployment persistence (Spain, 1976–1994). Labour Economics, 5: 25–51.

Kirk, D., and D. S. Thomas, (1960). The influence of business cycles on marriage and birth rates. In: Roberts GB (ed) Universities-National Bureau Committee for Economic Research Demographic and economic change in developed countries. NBER Books 257–276.

Koenker, R., and G. Bassett, (1978). Regression Quantiles. Econometrica, 46(1): 33–50.

Nunley, J. M., (2010). Inflation and other aggregate determinants of the trend in US divorce rates since the 1960s. Applied Economics, 42(26): 3367–3381.

Ogburn, W. F., and D. S. Thomas, (1922). The influence of the business cycle on certain social conditions. Journal of the American Statistical Association, 18: 324–340.

Peters, E. H., (1986). Marriage and Divorce: Informational Constraints and Private Contracting. American Economic Review, 76(3): 437–454.

Sánchez-Ollero, J. L., J. A. Campos-Soria, and A. García Pozo, (2014). The labor market in the Spanish hospitality industry: An overview from a gender perspective. Working Paper http://dspace.uma.es/xmlui/handle/10630/7524

Schaller, J., (2013). For richer, if not for poorer? Marriage and divorce over the business cycle, Journal of Population Economics, 26: 1007–1033.

Shore, S. H., (2009). For better, for worse: intra-household risk-sharing over the business cycle. Review of Economics and Statistics, 92(3): 536–548.

Silver, M., (1965). Births, marriages, and business cycles in the United States. Journal of Political Economy, 73(3): 237–255.

South, S. J., (1985). Economic conditions and the divorce rate: A time-series analysis of the postwar United States. Journal of Marriage and the Family, 47: 31–41.

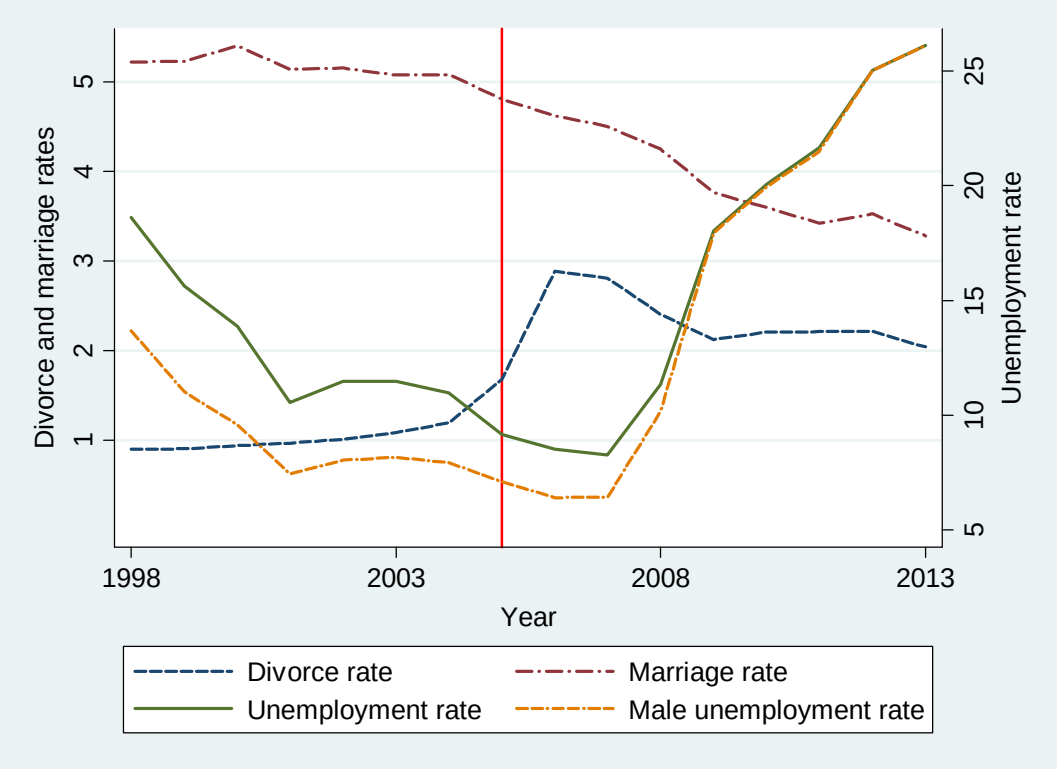
Stevenson, B., and J. Wolfers, (2007). Marriage and divorce: changes and their driving forces. Journal of Economic Perspectives, 21(2): 27–52

Stouffer, S. A., and L. M. Spencer, (1936). Marriage and divorce in recent years. The Annals of the American Academy of Political and Social Science, 188: 56–69.

US Bureau of Labor Statistics, (2014).

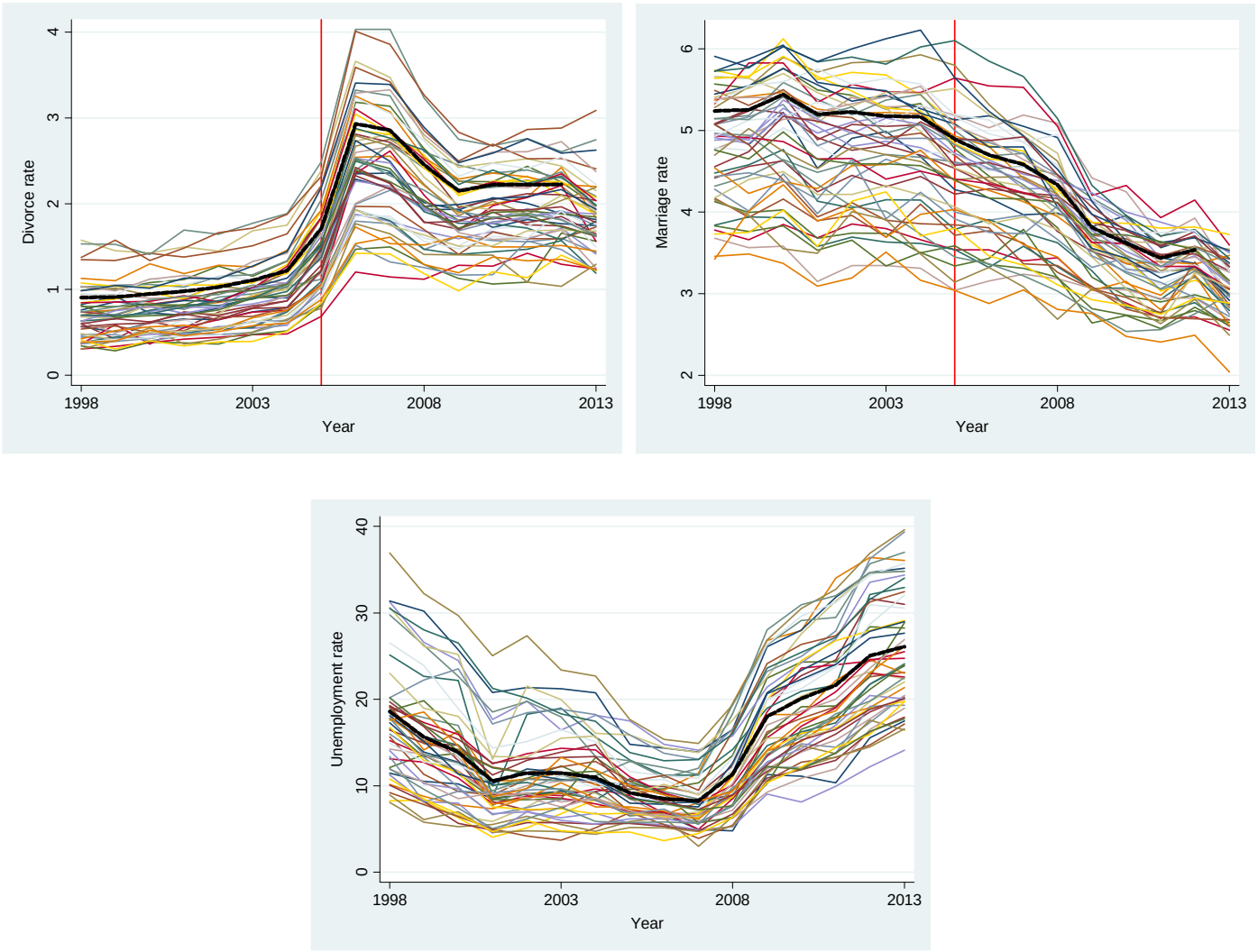
Wolfers, J., (2006). Did unilateral divorce laws raise divorce rates? A reconciliation and new results. American Economic Review, 96(5): 1802–1820.

Figure 1. Divorce, marriage, and unemployment rates in Spain, 1998–2013



Notes: Data source: *Instituto Nacional de Estadística* (INE). The vertical red line indicates the 'express divorce' law reform approved in 2005.

Figure 2. Divorce, marriage and unemployment rates by region, 1998–2013



Notes: Data source: *Instituto Nacional de Estadística* (INE). The vertical red line indicates the 'express divorce' law reform approved in 2005.

Figure 3. Divorce rate by region, 2010

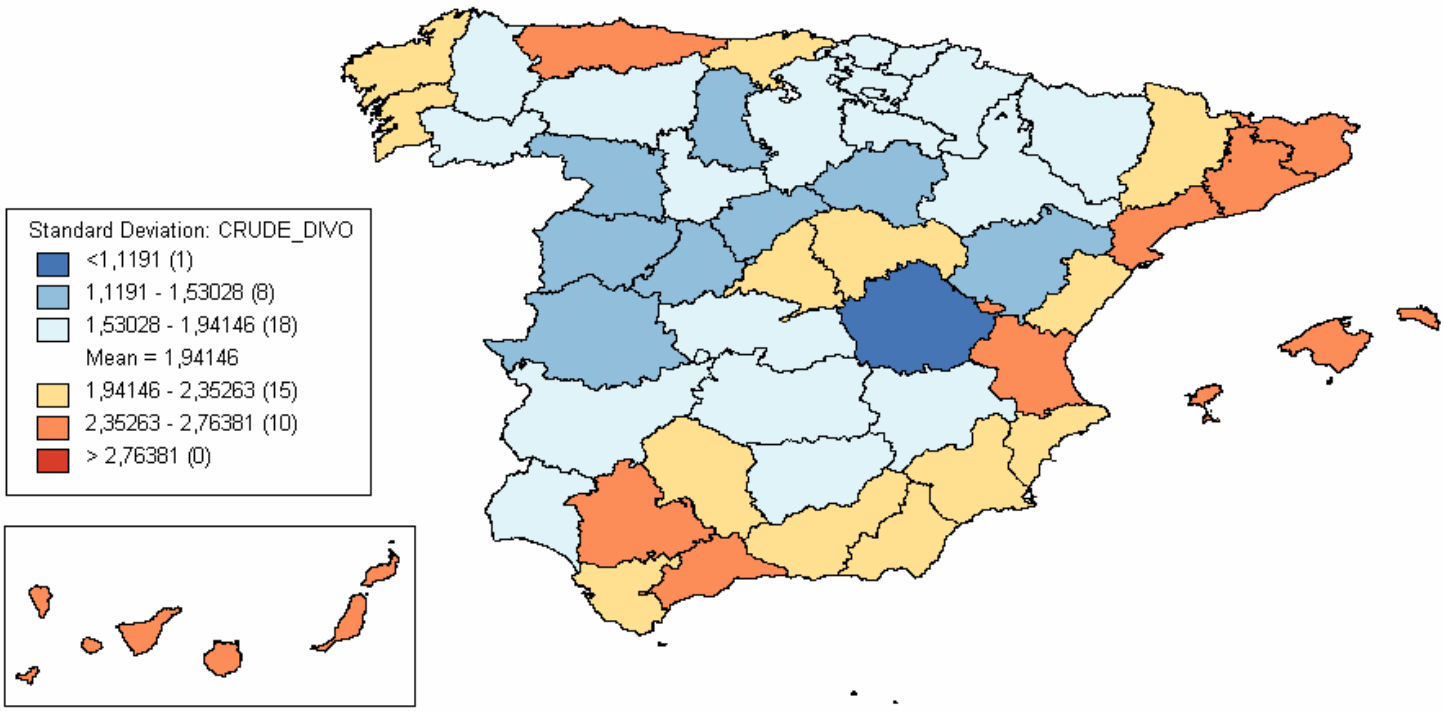
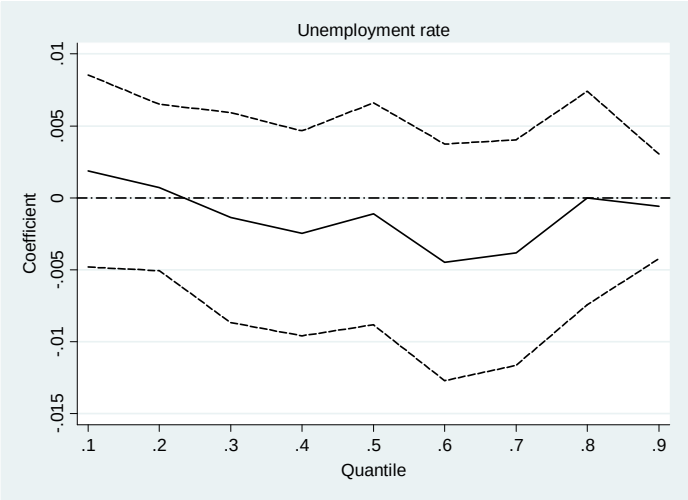
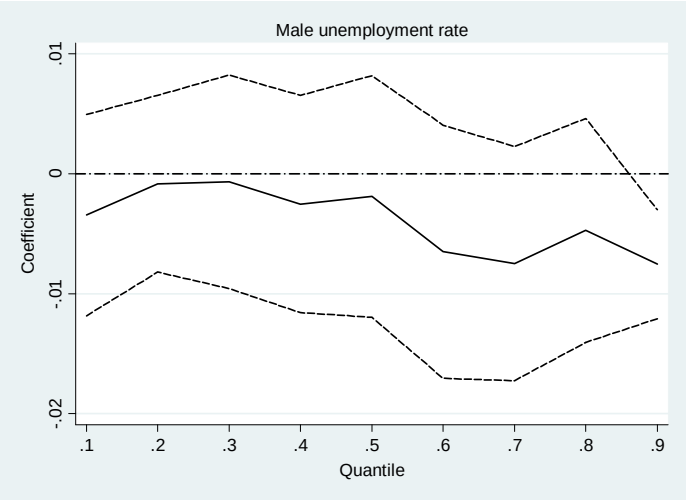


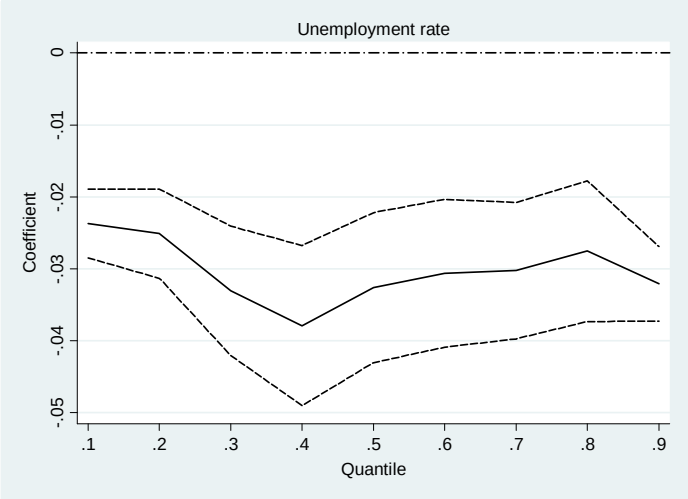
Figure 4. Quantile regression estimates



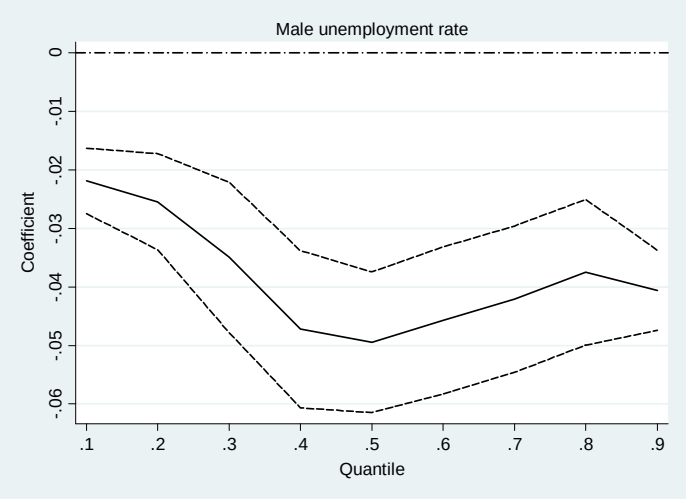
(a) Divorce rate vs. Unemployment



(b) Divorce rate vs. Male unemployment



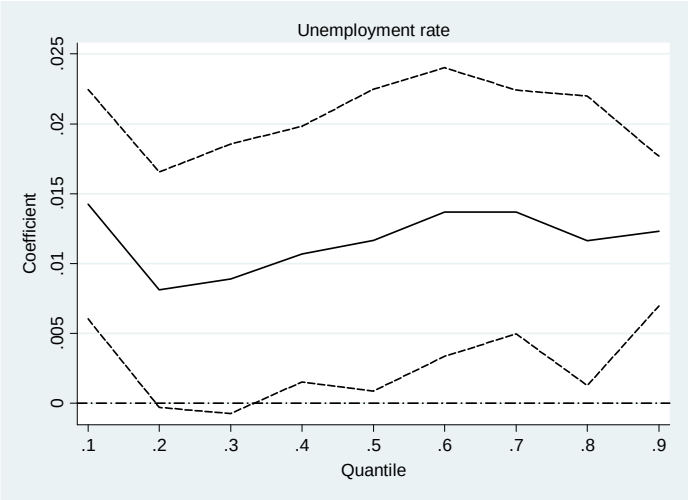
(c) Marriage rate vs. Unemployment

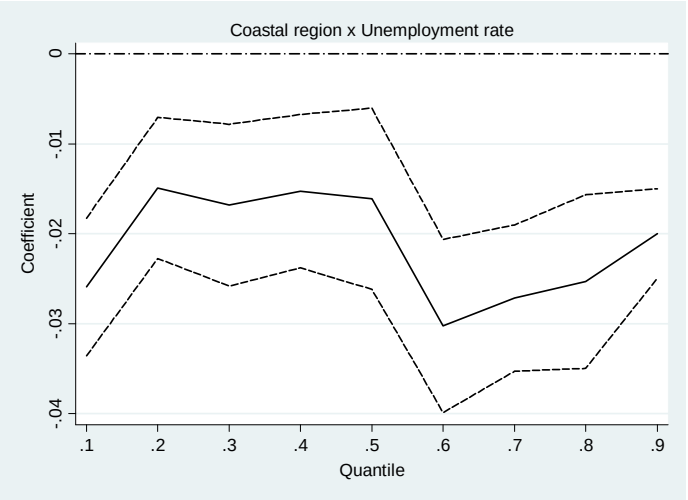


(d) Marriage rate vs. Male unemployment

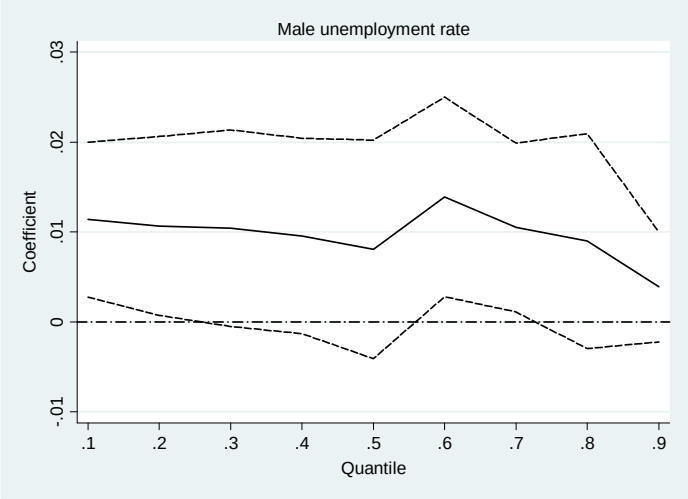
Note: Endogenous variables: (a)-(b) Crude divorce rate, (c)-(d) Marriage rate. Estimates weighted by region population. All the models include a constant, the unemployment rate, the median age, a coastal region dummy, a linear and quadratic time trend beginning in 2005, to capture the influence of the 'express divorce' law reform approved in 2005, region fixed effects, region-specific linear and quadratic time trends, and time fixed effects; (b) and (d) also include the employment rate. Estimated coefficients are shown in Tables A8 to A11 in the Appendix.

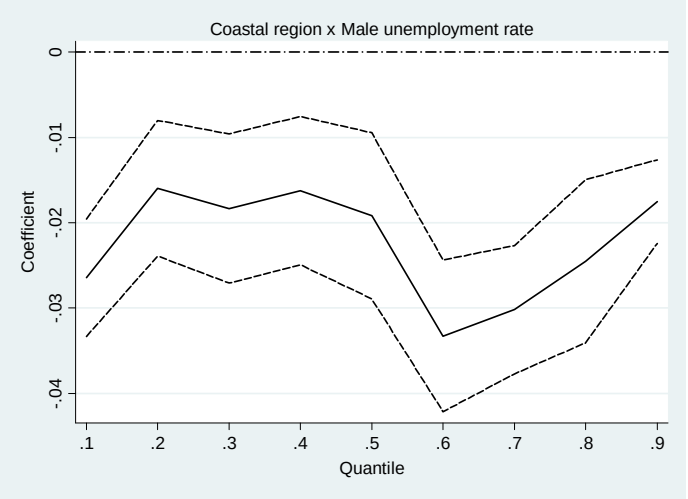
Figure 5. Quantile regression estimates, divorce rate, and geography





(a) Unemployment and Coastal region x Unemployment rate





(b) Male unemployment and Coastal region x Male unemployment rate

Note: Endogenous variable: Crude divorce rate. Estimates weighted by region population. Both models include a constant, the unemployment rate, the interaction between the unemployment rate and the coastal status of the region, the median age, a coastal region dummy, a linear and quadratic time trend beginning in 2005, to capture the influence of the 'express divorce' law reform approved in 2005, region fixed effects, region-specific linear and quadratic time trends, and time fixed effects; (b) also includes the employment rate. Estimated coefficients are shown in Tables A12 and A13 in the Appendix.

Table 1. Average marriage, divorce, and unemployment rates, by region

Region	Unemployment (1998-2013)	Divorce (1998-2013)	Marriage (1998-2013)	Marriage (1985-2013)
Álava	9.84	1.41	4.32	4.58
Albacete	15.80	1.31	4.25	4.90
Alicante	16.14	1.87	4.40	4.79
Almería	18.96	1.55	4.45	5.12
Asturias	13.89	1.92	4.28	4.48
Ávila	14.17	0.84	3.38	3.76
Badajoz	22.32	1.12	4.39	4.89
Balears (Illes)	12.17	2.20	4.56	5.23
Barcelona	12.81	2.18	4.49	4.88
Burgos	11.16	1.10	3.85	4.12
Cáceres	19.23	1.06	3.73	4.36
Cádiz	26.96	1.63	4.87	5.28
Cantabria	12.11	1.68	4.75	4.74
Castellón	12.91	1.75	4.69	5.06
Ciudad Real	16.36	1.19	4.23	4.89
Córdoba	24.17	1.38	4.76	5.34
Coruña (A)	13.41	1.64	4.14	4.47
Cuenca	12.81	0.89	3.35	3.98
Girona	12.55	1.93	4.08	4.61
Granada	22.57	1.59	4.50	5.10
Guadalajara	12.02	1.35	5.05	5.13
Guipúzcoa	8.47	1.39	4.56	4.59
Huelva	22.83	1.54	4.72	5.06
Huesca	8.23	1.18	3.58	3.98
Jaén	21.85	1.23	4.40	5.05
León	13.65	1.40	3.44	3.87
Lleida	8.54	1.67	4.22	4.58
Lugo	10.44	1.25	3.20	3.65
Madrid	11.49	1.77	4.77	5.11
Málaga	21.24	1.89	4.74	5.12
Murcia	15.61	1.58	4.67	5.27
Navarra	8.63	1.35	4.48	4.72
Ourense	13.42	1.42	3.30	3.71
Palencia	12.36	1.09	3.57	3.98
Palmas (Las)	18.81	2.42	3.58	4.72
Pontevedra	15.59	1.75	4.19	4.42
Rioja (La)	10.05	1.47	4.41	4.66
Salamanca	15.45	1.14	3.82	4.16
Santa Cruz de Tenerife	17.87	2.43	3.65	4.53
Segovia	10.84	0.92	3.83	4.20
Sevilla	22.49	1.67	5.19	5.52
Soria	7.98	0.94	3.30	3.67
Tarragona	12.57	2.04	4.64	4.99
Teruel	8.60	0.85	3.45	3.86
Toledo	15.40	1.11	4.68	5.00
Valencia	15.44	2.06	5.05	5.26
Valladolid	13.79	1.37	4.51	4.39
Vizcaya	12.57	1.47	4.21	4.37
Zamora	14.38	0.95	2.95	3.45
Zaragoza	10.52	1.51	4.46	4.78
Total	14.63	1.49	4.20	4.61

Table 2. Divorce rate models, OLS estimates, 1998–2013

	(1)	(2)	(3)	(4)	(5)
Unemployment rate	0.005		-0.006		
	(0.005)		(0.006)		
Male unemployment rate		0.022***		-0.007	-0.005
		(0.004)		(0.006)	(0.006)
Employment rate					0.004
					(0.008)
Coastal region			-2.495***	-2.388***	-4.003**
			(0.693)	(0.699)	(1.439)
Median age			-0.017	-0.018	-0.016
			(0.095)	(0.095)	(0.095)
Express divorce law x Time			0.260***	0.271***	0.259***
			(0.060)	(0.064)	(0.065)
Express divorce law x Time^2			-0.018***	-0.019***	-0.018***
			(0.003)	(0.003)	(0.003)
Regional fixed effects	N	N	Y	Y	Y
Year fixed effects	N	N	Y	Y	Y
Region x Time	N	N	Y	Y	Y
Region x Time^2	N	N	Y	Y	Y
R^2	0.002	0.052	0.983	0.983	0.983
Observations	800	800	800	800	800

Note: Endogenous variable: Crude divorce rate. All the models include a constant. Robust standard errors clustered by region. All regressions are weighted by region population. *** Significant at the 1% level, ** significant at the 5% level, * significant at the 10% level.

Table 3. Divorce rate and divorce law

	Before 'express divorce' law (1998-2004)			After 'express divorce' law (2005-2013)					
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Unemployment rate	-0.006			-0.023*	-0.023*				
	(0.004)			(0.012)	(0.012)				
Male unemployment rate		-0.007	-0.005			-0.023**	-0.023**	-0.021**	-0.021**
		(0.007)	(0.007)			(0.009)	(0.009)	(0.009)	(0.009)
Employment rate			0.005					-0.038	-0.038
			(0.006)					(12.312)	(12.312)
Coastal region	-1.390***	-1.429***	-0.773	-1.382	-1.382	0.419	0.419	-0.372	-0.372
	(0.397)	(0.464)	(0.770)	(11.187)	(11.187)	(11.987)	(11.987)	(0.505)	(0.505)
Median age	-0.010	-0.013	-0.002	-0.369	-0.369	-0.381	-0.381	0.005	0.005
	(0.150)	(0.152)	(0.158)	(0.482)	(0.482)	(0.501)	(0.501)	(0.016)	(0.016)
Express divorce law x Time					0.178***		0.208***		0.201***
					(0.047)		(0.053)		(0.057)
Express divorce law x Time^2					-0.003		-0.006		-0.005
					(0.005)		(0.005)		(0.005)
Regional fixed effects	Y	Y	Y	Y	Y	Y	Y	Y	Y
Year fixed effects	Y	Y	Y	Y	Y	Y	Y	Y	Y
Region x Time	Y	Y	Y	Y	Y	Y	Y	Y	Y
Region x Time^2	Y	Y	Y	Y	Y	Y	Y	Y	Y
R^2	0.988	0.988	0.988	0.973	0.973	0.974	0.974	0.974	0.974
Observations	350	350	350	450	450	450	450	450	450

Note: Endogenous variable: Crude divorce rate. All the models include a constant. Robust standard errors clustered by region. All regressions are weighted by region population. *** Significant at the 1% level, ** significant at the 5% level, * significant at the 10% level.

Table 4. Divorce rate and geography

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Unemployment rate	0.017***			-0.006		0.018***	
	(0.006)			(0.006)		(0.006)	
Coastal region x Unemployment rate	-0.032***					-0.033***	
	(0.008)					(0.007)	
Male unemployment rate		0.017***	0.017***		-0.005		0.018***
		(0.006)	(0.006)		(0.006)		(0.006)
Coastal region x Male unemployment rate		-0.032***	-0.032***				-0.033***
		(0.008)	(0.008)				(0.007)
Employment rate			-0.0004		0.004		-0.001
			(0.008)		(0.008)		(0.007)
Median age	0.036	0.047	0.047	-0.007	-0.007	0.048	0.058
	(0.095)	(0.095)	(0.095)	(0.092)	(0.093)	(0.092)	(0.093)
Express divorce law x Time	0.265***	0.239***	0.240***	0.282***	0.260***	0.287***	0.243***
	(0.066)	(0.067)	(0.072)	(0.062)	(0.064)	(0.066)	(0.070)
Express divorce law x Time^2	-0.022***	-0.021***	-0.021***	-0.021***	-0.018***	-0.025***	-0.021***
	(0.003)	(0.003)	(0.004)	(0.003)	(0.003)	(0.004)	(0.004)
Weather controls	N	N	N	Y	Y	Y	Y
Regional fixed effects	Y	Y	Y	Y	Y	Y	Y
Year fixed effects	Y	Y	Y	Y	Y	Y	Y
Region x Time	Y	Y	Y	Y	Y	Y	Y
Region x Time^2	Y	Y	Y	Y	Y	Y	Y
p-value (F-test of Coastal region x Unemployment rate + Unemployment rate=0)	0.0408	0.0393	0.0723			0.0374	0.0508
R^2	0.985	0.985	0.985	0.983	0.983	0.985	0.985
Observations	800	800	800	800	800	800	800

Note: Endogenous variable: Crude divorce rate, 1998-2013. All the models include a constant. Robust standard errors clustered by region. All regressions are weighted by region population. *** Significant at the 1% level, ** significant at the 5% level, * significant at the 10% level. Weather controls: Annual average precipitation, annual number of cloudless days, annual average temperature, annual number of days with temperatures greater than 25ºC, annual number of days with temperature lower than 0ºC, measured at the province level.

Table 5. Divorce rate with/without mutual consent

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	With mutual consent				Without mutual consent			
Unemployment rate	-0.006		0.012**		-0.001		0.006	
	(0.005)		(0.005)		(0.004)		(0.005)	
Coastal region x Unemployment rate			-0.024***				-0.009**	
			(0.006)				(0.004)	
Male unemployment rate		-0.005		0.011**		-0.0003		0.007
		(0.005)		(0.005)		(0.004)		(0.005)
Coastal region x Male unemployment rate				-0.023***				-0.010**
				(0.006)				(0.004)
Employment rate		0.007		0.003		-0.001		-0.003
		(0.007)		(0.006)		(0.005)		(0.004)
Median age	-0.203**	-0.201**	-0.162*	-0.156*	0.200***	0.199***	0.214***	0.218***
	(0.088)	(0.088)	(0.087)	(0.087)	(0.049)	(0.050)	(0.048)	(0.049)
Express divorce law x Time	0.308***	0.290***	0.312***	0.278***	-0.030	-0.034	-0.029	-0.039
	(0.057)	(0.058)	(0.062)	(0.063)	(0.032)	(0.037)	(0.031)	(0.036)
Express divorce law x Time^2	-0.014***	-0.012***	-0.017***	-0.014***	-0.006***	-0.006***	-0.007***	-0.007***
	(0.003)	(0.003)	(0.003)	(0.003)	(0.002)	(0.002)	(0.001)	(0.002)
Weather controls	Y	Y	Y	Y	Y	Y	Y	Y
Regional fixed effects	Y	Y	Y	Y	Y	Y	Y	Y
Year fixed effects	Y	Y	Y	Y	Y	Y	Y	Y
Region x Time	Y	Y	Y	Y	Y	Y	Y	Y
Region x Time^2	Y	Y	Y	Y	Y	Y	Y	Y
p-value (F-test of Coastal region x Unemployment rate + Unemployment rate=0)			0.0370	0.0609			0.4993	0.4690
R^2	0.980	0.980	0.981	0.982	0.945	0.945	0.946	0.947
Observations	800	800	800	800	350	350	450	450

Note: Endogenous variable: Crude divorce rate, 1998-2013. All the models include a constant. Robust standard errors clustered by region. All regressions are weighted by region population. *** Significant at the 1% level, ** significant at the 5% level, * significant at the 10% level.

Table 6. Divorce rate by duration of marriage

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	1-2 years		3-10 years		11-19 years		More than 20 years	
Unemployment rate	-0.001		-0.001		-0.005**		-0.002	
	(0.001)		(0.002)		(0.002)		(0.002)	
Male unemployment rate		-0.001		-0.002		-0.007***		-0.003
		(0.001)		(0.003)		(0.002)		(0.003)
Employment rate		0.0003		-0.0004		-0.002		0.001
		(0.001)		(0.003)		(0.003)		(0.003)
Coastal region	0.124	0.713***	-0.654*	0.325	-1.467***	-0.639**	-0.448	-0.590
	(0.190)	(0.214)	(0.385)	(0.384)	(0.280)	(0.299)	(0.279)	(0.376)
Median age	-0.046**	-0.046**	-0.059	-0.061	0.007	0.001	0.066	0.065
	(0.022)	(0.022)	(0.041)	(0.040)	(0.038)	(0.036)	(0.040)	(0.040)
Express divorce law x Time	0.129***	0.128***	0.318***	0.318***	0.160***	0.177***	0.150***	0.149***
	(0.021)	(0.022)	(0.040)	(0.042)	(0.040)	(0.038)	(0.042)	(0.044)
Express divorce law x Time^2	-0.012***	-0.012***	-0.031***	-0.030***	-0.017***	-0.018***	-0.019***	-0.018***
	(0.002)	(0.002)	(0.003)	(0.003)	(0.003)	(0.003)	(0.003)	(0.003)
Weather controls	Y	Y	Y	Y	Y	Y	Y	Y
Regional fixed effects	Y	Y	Y	Y	Y	Y	Y	Y
Year fixed effects	Y	Y	Y	Y	Y	Y	Y	Y
Region x Time	Y	Y	Y	Y	Y	Y	Y	Y
Region x Time^2	Y	Y	Y	Y	Y	Y	Y	Y
R^2	0.960	0.960	0.985	0.978	0.975	0.975	0.977	0.977
Observations	750	750	750	750	750	750	750	750

Note: Endogenous variable: Crude divorce rate, 1998-2013. All the models include a constant. Robust standard errors clustered by region. All regressions are weighted by region population. *** Significant at the 1% level, ** significant at the 5% level, * significant at the 10% level.

Table 7. Divorce rate by duration of marriage and geography

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	1-2 years		3-10 years		11-19 years		More than 20 years	
Unemployment rate	0.002*		0.008***		0.002		0.007***	
	(0.001)		(0.003)		(0.003)		(0.002)	
Coastal region x Unemployment rate	-0.003**		-0.013***		-0.009**		-0.012***	
	(0.002)		(0.003)		(0.003)		(0.003)	
Male unemployment rate		0.001		0.008***		0.0004		0.007***
		(0.001)		(0.002)		(0.003)		(0.002)
Coastal region x Male unemployment rate		-0.003*		-0.014***		-0.009**		-0.013***
		(0.002)		(0.003)		(0.004)		(0.003)
Employment rate	0.919***	0.0005	1.142**	-0.001	-0.265	-0.003	0.258	-0.0002
	(0.255)	(0.001)	(0.448)	(0.003)	(0.402)	(0.003)	(0.373)	(0.003)
Median age	0.129***	-0.040*	0.318***	-0.032	0.161***	0.021	0.151***	0.093**
	(0.021)	(0.021)	(0.041)	(0.041)	(0.040)	(0.036)	(0.038)	(0.037)
Express divorce law x Time	-0.012***	0.125***	-0.032***	0.307***	-0.018***	0.170***	-0.020***	0.139***
	(0.002)	(0.022)	(0.003)	(0.043)	(0.003)	(0.039)	(0.003)	(0.042)
Express divorce law x Time^2	0.919***	-0.012***	1.663	-0.032***	-0.265	-0.019***	0.258	-0.019***
	(0.255)	(0.002)	(1.632)	(0.003)	(0.402)	(0.003)	(0.373)	(0.003)
Weather controls	Y	Y	Y	Y	Y	Y	Y	Y
Regional fixed effects	Y	Y	Y	Y	Y	Y	Y	Y
Year fixed effects	Y	Y	Y	Y	Y	Y	Y	Y
Region x Time	Y	Y	Y	Y	Y	Y	Y	Y
Region x Time^2	Y	Y	Y	Y	Y	Y	Y	Y
p-value (F-test of Coastal region x Unemployment rate + Unemployment rate=0)	0.1948	0.2402	0.1390	0.0809	0.0029	0.0010	0.0065	0.0137
R^2	0.961	0.961	0.979	0.979	0.976	0.977	0.979	0.980
Observations	750	750	750	750	750	750	750	750

Note: Endogenous variable: Crude divorce rate, 1998-2013. All the models include a constant. Robust standard errors clustered by region. All regressions are weighted by region population. *** Significant at the 1% level, ** significant at the 5% level, * significant at the 10% level. Climate controls included: Annual average precipitation, number of annual cloudless days, annual average temperature, number of days with temperatures greater than 25ºC, number of annual days with temperature lower than 0ºC.

Table 8. Marriage rate models, OLS estimates

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
	1985-2013	1998-2013	1985-2013	1998-2013	1985-2013	1998-2013	1985-2013	1998-2013	1985-2013	1998-2013	1985-2013	1998-2013
Unemployment rate	-0.006	-0.050***					-0.034***	-0.030***				
	(0.007)	(0.009)					(0.004)	(0.006)				
Male unemployment rate			-0.023***	-0.062***	-0.067***	-0.033***			-0.034***	-0.033***	-0.033***	-0.032***
			(0.009)	(0.007)	(0.011)	(0.010)			(0.006)	(0.007)	(0.008)	(0.009)
Employment rate					-0.078***	-0.002					0.001	0.001
					(0.012)	(0.014)					(0.011)	(0.012)
Coastal region							1.424***	-3.893***	1.638***	-3.640***	1.636***	-6.864***
							(0.159)	(0.701)	(0.183)	(0.803)	(0.183)	(2.230)
Median age							0.554***	0.427**	0.555***	0.421**	0.559***	0.421**
							(0.138)	(0.173)	(0.140)	(0.167)	(0.138)	(0.167)
Express divorce law x Time							-0.348***	-0.731***	-0.317***	-0.678***	-0.319***	-0.679***
							(0.023)	(0.122)	(0.023)	(0.117)	(0.024)	(0.119)
Express divorce law x Time^2							0.012***	0.045***	0.010***	0.041***	0.010***	0.042***
							(0.003)	(0.006)	(0.003)	(0.006)	(0.003)	(0.006)
Regional fixed effects	N	N	N	N	N	N	Y	Y	Y	Y	Y	Y
Year fixed effects	N	N	N	N	N	N	Y	Y	Y	Y	Y	Y
Region x Time	N	N	N	N	N	N	Y	Y	Y	Y	Y	Y
Region x Time^2	N	N	N	N	N	N	Y	Y	Y	Y	Y	Y
R^2	0.002	0.181	0.038	0.318	0.251	0.251	0.963	0.981	0.963	0.981	0.963	0.981
Observations	1450	800	1450	800	1450	800	1450	800	1450	800	1450	800

Note: Endogenous variable: Marriage rate. All the models include a constant. Robust standard errors clustered by region. All regressions are weighted by region population. *** Significant at the 1% level, ** significant at the 5% level, * significant at the 10% level.

Table 9. Marriage rate and geography, OLS estimates

	(1)	(2)	(3)	(4)	(5)	(6)
	1985-2013	1998-2013	1985-2013	1998-2013	1985-2013	1998-2013
Unemployment rate	-0.035***	-0.037***				
	(0.008)	(0.010)				
Coastal region x Unemployment rate	0.008	0.010				
	(0.009)	(0.010)				
Male unemployment rate			-0.037***	-0.041***	-0.037***	-0.040***
			(0.008)	(0.011)	(0.008)	(0.012)
Coastal region x Male unemployment rate			0.004	0.011	0.004	0.011
			(0.008)	(0.010)	(0.008)	(0.010)
Employment rate					0.002	0.002
					(0.012)	(0.012)
Median age	0.446**	0.410**	0.542***	0.398**	0.547***	0.399**
	(0.200)	(0.173)	(0.135)	(0.167)	(0.130)	(0.167)
Express divorce law x Time	-0.353***	-0.733***	-0.314***	-0.667***	-0.316***	-0.673***
	(0.033)	(0.120)	(0.024)	(0.116)	(0.024)	(0.120)
Express divorce law x Time^2	0.019***	0.047***	0.010***	0.042***	0.010***	0.042***
	(0.003)	(0.006)	(0.003)	(0.006)	(0.003)	(0.006)
Regional fixed effects	Y	Y	Y	Y	Y	Y
Year fixed effects	Y	Y	Y	Y	Y	Y
Region x Time	Y	Y	Y	Y	Y	Y
Region x Time^2	Y	Y	Y	Y	Y	Y
p-value (F-test of Coastal region x Unemployment rate + Unemployment rate=0)	0.0001	0.0002	0.0000	0.0002	0.0004	0.0027
R^2	0.978	0.981	0.963	0.981	0.963	0.981
Observations	1450	800	1450	800	1450	800

Note: Endogenous variable: Marriage rate. All the models include a constant. Robust standard errors clustered by region. All regressions are weighted by region population. *** Significant at the 1% level, ** significant at the 5% level, * significant at the 10% level.

Table 10. Divorce rate models, lag specification

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Unemployment rate	0.076***		-0.003		0.018***		
	(0.005)		(0.005)		(0.005)		
Unemployment rate t-1	-0.026***		-0.008*		-0.002		
	(0.007)		(0.004)		(0.004)		
Unemployment rate t-2	-0.070***		0.001		-0.002		
	(0.007)		(0.005)		(0.007)		
Coastal region x Unemployment rate t					-0.030***		
					(0.008)		
Coastal region x Unemployment rate t-1					-0.004		
					(0.005)		
Coastal region x Unemployment rate t-2					0.004		
					(0.006)		
Male unemployment rate		0.080***		-0.003		0.020***	0.020***
		(0.004)		(0.006)		(0.005)	(0.006)
Male unemployment rate t-1		-0.021**		-0.008**		-0.005	-0.005
		(0.008)		(0.004)		(0.005)	(0.005)
Male unemployment rate t-2		-0.063***		0.002		0.002	0.002
		(0.008)		(0.005)		(0.008)	(0.008)
Coastal region x Male unemployment rate t						-0.032***	-0.032***
						(0.008)	(0.008)
Coastal region x Male unemployment rate t-1						-0.001	-0.001
						(0.006)	(0.006)
Coastal region x Male unemployment rate t-2						-0.001	-0.001
						(0.007)	(0.007)
Employment rate				0.004			-0.001
				(0.008)			(0.007)
Median age			-0.008	-0.007	0.047	0.058	0.058
			(0.094)	(0.094)	(0.091)	(0.093)	(0.093)
Express divorce law x Time			0.239***	0.252***	0.253***	0.233***	0.236***
			(0.059)	(0.063)	(0.075)	(0.073)	(0.076)
Express divorce law x Time^2			-0.016***	-0.017***	-0.021***	-0.020***	-0.020***
			(0.003)	(0.003)	(0.005)	(0.005)	(0.005)
Weather controls	N	N	Y	Y	Y	Y	Y
Regional fixed effects	N	N	Y	Y	Y	Y	Y
Year fixed effects	N	N	Y	Y	Y	Y	Y
Region x Time	N	N	Y	Y	Y	Y	Y
Region x Time^2	N	N	Y	Y	Y	Y	Y
R^2	0.231	0.214	0.983	0.984	0.985	0.985	0.985
Observations	800	800	800	800	800	800	650

Note: Endogenous variable: Crude divorce rate. All the models include a constant. Robust standard errors clustered by region. All regressions are weighted by region population. *** Significant at the 1% level, ** significant at the 5% level, * significant at the 10% level.

Table 11. Marriage rate models, lag specification

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
	1985-2013	1998-2013	1985-2013	1998-2013	1985-2013	1998-2013	1985-2013	1998-2013	1985-2013	1998-2013	1985-2013	1998-2013
Unemployment rate	-0.081***	-0.110***					-0.031***	-0.028***				
	(0.007)	(0.008)					(0.004)	(0.005)				
Unemployment rate t-1	-0.016*	-0.032***					-0.007	-0.006				
	(0.009)	(0.006)					(0.004)	(0.006)				
Unemployment rate t-2	0.116***	0.128***					0.006	0.002				
	(0.008)	(0.011)					(0.006)	(0.008)				
Male unemployment rate			-0.091***	-0.102***	-0.095***	-0.102***			-0.031***	-0.030***	-0.030***	-0.030***
			(0.007)	(0.007)	(0.007)	(0.007)			(0.005)	(0.007)	(0.006)	(0.008)
Male unemployment rate t-1			-0.013	-0.034***	-0.018*	-0.034***			-0.008*	-0.008	-0.008*	-0.008
			(0.010)	(0.008)	(0.009)	(0.008)			(0.004)	(0.006)	(0.004)	(0.006)
Male unemployment rate t-2			0.109***	0.108***	0.082***	0.106***			0.005	0.000	0.005	0.000
			(0.009)	(0.013)	(0.012)	(0.015)			(0.005)	(0.007)	(0.005)	(0.007)
Employment rate					-0.051***	-0.004					0.001	-0.000
					(0.012)	(0.013)					(0.011)	(0.012)
Coastal region							1.419***	-3.640**	1.640***	-2.995*	1.638***	-2.991*
							(0.167)	(1.526)	(0.198)	(1.543)	(0.199)	(1.578)
Median age							0.554***	0.430**	0.555***	0.419**	0.559***	0.419**
							(0.139)	(0.174)	(0.141)	(0.168)	(0.140)	(0.168)
Express divorce law x Time							-0.347***	-0.743***	-0.322***	-0.695***	-0.324***	-0.694***
							(0.032)	(0.127)	(0.027)	(0.122)	(0.026)	(0.122)
Express divorce law x Time^2							0.012***	0.047***	0.010**	0.044***	0.010**	0.044***
							(0.004)	(0.007)	(0.004)	(0.007)	(0.004)	(0.007)
Regional fixed effects	N	N	N	N	N	N	Y	Y	Y	Y	Y	Y
Year fixed effects	N	N	N	N	N	N	Y	Y	Y	Y	Y	Y
Region x Time	N	N	N	N	N	N	Y	Y	Y	Y	Y	Y
Region x Time^2	N	N	N	N	N	N	Y	Y	Y	Y	Y	Y
R^2	0.257	0.494	0.274	0.504	0.344	0.504	0.963	0.981	0.963	0.981	0.963	0.981
Observations	1450	800	1450	800	1450	800	1450	800	1450	800	1450	800

Note: Endogenous variable: Marriage rate. All the models include a constant. Robust standard errors clustered by region. All regressions are weighted by region population. *** Significant at the 1% level, ** significant at the 5% level, * significant at the 10% level.

Appendix

Figure A1. Unemployment rate by region, 2010

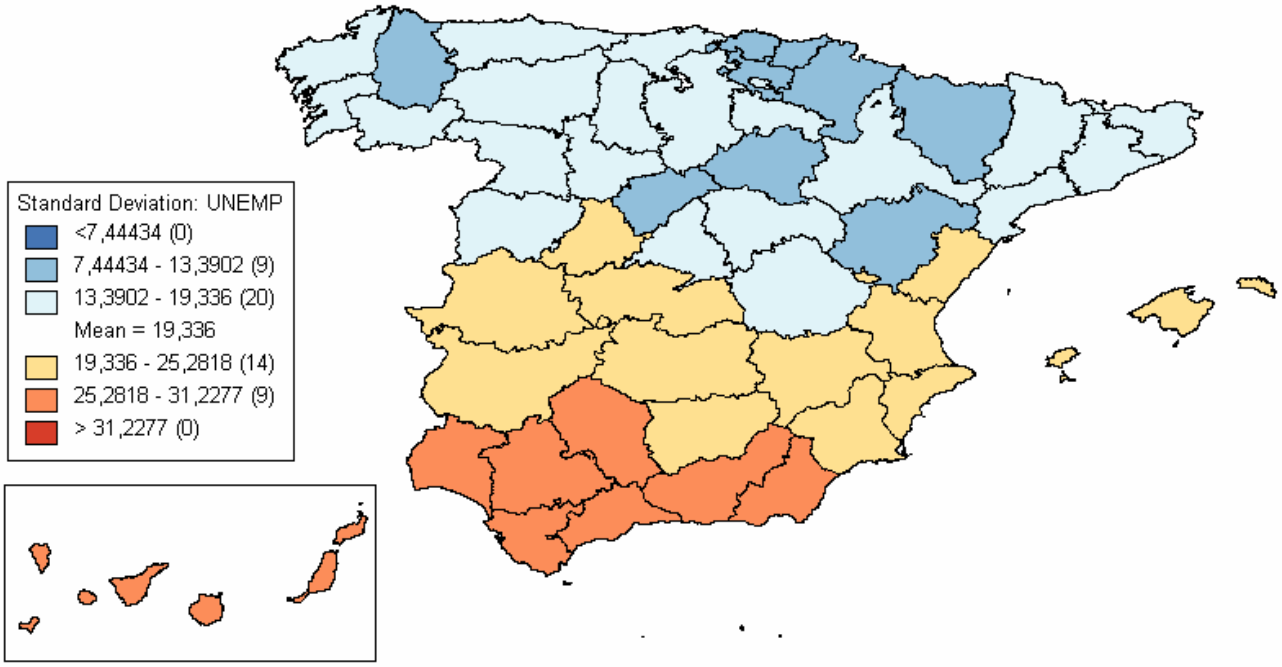


Figure A2. Marriage rate by region, 2010

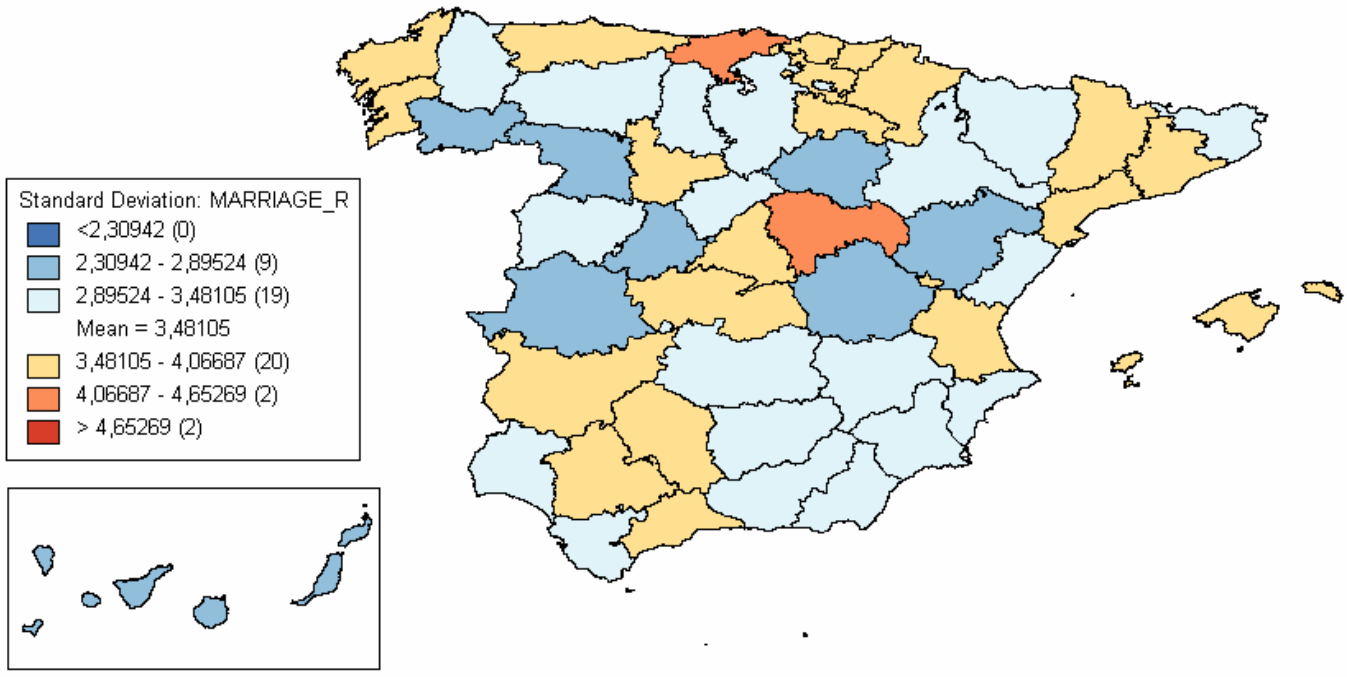


Table A1. Divorce rate models, OLS estimates, 1998–2013

	(1)	(2)	(3)	(4)	(5)
Unemployment rate	0.014		-0.011		
	(0.012)		(0.013)		
Male unemployment rate		0.053***		-0.015	-0.015
		(0.009)		(0.013)	(0.015)
Employment rate					0.0004
					(0.008)
Coastal region			-5.601***	-5.165***	-1.728
			(1.570)	(1.556)	(1.908)
Median age			-0.291	-0.293	-0.293
			(0.229)	(0.230)	(0.228)
Express divorce law x Time			0.763***	0.786***	0.785***
			(0.148)	(0.155)	(0.155)
Express divorce law x Time^2			-0.052***	-0.054***	-0.053***
			(0.007)	(0.007)	(0.007)
Regional fixed effects	N	N	Y	Y	Y
Year fixed effects	N	N	Y	Y	Y
Region x Time	N	N	Y	Y	Y
Region x Time^2	N	N	Y	Y	Y
R^2	0.004	0.056	0.982	0.982	0.982
Observations	800	800	800	800	800

Note: Endogenous variable: Divorce rate measured as annual number of divorces per 1,000 married individuals. All the models include a constant. Robust standard errors clustered by region. All regressions are weighted by region population. *** Significant at the 1% level, ** significant at the 5% level, * significant at the 10% level.

Table A2. Divorce rate and divorce law

	Before 'express divorce' law (1998-2004)			After 'express divorce' law (2005-2013)					
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Unemployment rate	-0.011			-0.068**	-0.068**				
	(0.009)			(0.032)	(0.032)				
Male unemployment rate		-0.012	-0.010			-0.066***	-0.066***	-0.058***	-0.058***
		(0.014)	(0.014)			(0.024)	(0.024)	(0.021)	(0.021)
Employment rate			0.009					0.018	0.018
			(0.013)					(0.041)	(0.041)
Coastal region	-2.400***	-2.497**	-1.375	2.514	2.514	7.915	7.915	6.222	6.222
	(0.808)	(0.962)	(1.659)	(28.048)	(28.048)	(31.006)	(31.006)	(31.240)	(31.240)
Median age	-0.386	-0.394	-0.374	-1.533	-1.533	-1.573	-1.573	-1.539	-1.539
	(0.340)	(0.343)	(0.361)	(1.274)	(1.274)	(1.332)	(1.332)	(1.330)	(1.330)
Express divorce law x Time					0.485***		0.571***		0.546***
					(0.122)		(0.143)		(0.144)
Express divorce law x Time^2					-0.001		-0.009		-0.007
					(0.015)		(0.013)		(0.014)
Regional fixed effects	Y	Y	Y	Y	Y	Y	Y	Y	Y
Year fixed effects	Y	Y	Y	Y	Y	Y	Y	Y	Y
Region x Time	Y	Y	Y	Y	Y	Y	Y	Y	Y
Region x Time^2	Y	Y	Y	Y	Y	Y	Y	Y	Y
R^2	0.990	0.990	0.990	0.975	0.975	0.976	0.976	0.976	0.976
Observations	350	350	350	450	450	450	450	450	450

Note: Endogenous variable: Divorce rate measured as annual number of divorces per 1,000 married individuals. All the models include a constant. Robust standard errors clustered by region. All regressions are weighted by region population. *** Significant at the 1% level, ** significant at the 5% level, * significant at the 10% level.

Table A3. Divorce rate and geography

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Unemployment rate	0.047***			-0.010		0.051***	
	(0.014)			(0.013)		(0.013)	
Coastal region x Unemployment rate	-0.080***					-0.082***	
	(0.019)					(0.018)	
Male unemployment rate		0.046***	0.042***		-0.014		0.045***
		(0.013)	(0.014)		(0.015)		(0.013)
Coastal region x Male unemployment rate		-0.078***	-0.079***				-0.082***
		(0.019)	(0.019)				(0.018)
Employment rate			-0.012		-.0001		-0.013
			(0.019)		(0.020)		(0.019)
Median age	-0.157	-0.132	-0.136	-0.269	-0.271	-0.129	-0.111
	(0.235)	(0.236)	(0.234)	(0.223)	(0.223)	(0.229)	(0.231)
Express divorce law x Time	0.778***	0.707***	0.736***	0.798***	0.784***	0.810***	0.743***
	(0.163)	(0.169)	(0.174)	(0.153)	(0.148)	(0.165)	(0.167)
Express divorce law x Time^2	-0.062***	-0.058***	-0.060***	-0.056***	-0.054***	-0.066***	-0.062***
	(0.008)	(0.009)	(0.010)	(0.008)	(0.007)	(0.009)	(0.009)
Weather controls	N	N	N	Y	Y	Y	Y
Regional fixed effects	Y	Y	Y	Y	Y	Y	Y
Year fixed effects	Y	Y	Y	Y	Y	Y	Y
Region x Time	Y	Y	Y	Y	Y	Y	Y
Region x Time^2	Y	Y	Y	Y	Y	Y	Y
p-value (F-test of Coastal region x Unemployment rate + Unemployment rate=0)	0.0499	0.0410	0.0520			0.0491	0.0389
R^2	0.984	0.984	0.984	0.982	0.982	0.984	0.984
Observations	800	800	800	800	800	800	800

Note: Endogenous variable: Divorce rate measured as annual number of divorces per 1,000 married individuals, 1998-2013. All the models include a constant. Robust standard errors clustered by region. All regressions are weighted by region population. *** Significant at the 1% level, ** significant at the 5% level, * significant at the 10% level.

Table A4. Marriage rate models, OLS estimates, 1998–2013

	(1)	(2)	(3)	(4)	(5)	(6)
Unemployment rate	-0.110***			-0.060***		
	(0.017)			(0.013)		
Male unemployment rate		-0.134***	-0.175***		-0.063***	-0.063***
		(0.013)	(0.017)		(0.015)	(0.018)
Employment rate			-0.096***			0.0002
			(0.025)			(0.023)
Average precipitation				-6.119***	-5.797***	-0.217
				(1.552)	(1.761)	(2.289)
Coastal region				0.444	0.433	0.433
				(0.321)	(0.317)	(0.317)
Median age				-1.099***	-0.996***	-0.996***
				(0.227)	(0.223)	(0.230)
Express divorce law x Time				0.067***	0.059***	0.059***
				(0.011)	(0.011)	(0.012)
Express divorce law x Time^2	N	N	N	Y	Y	Y
	N	N	N	Y	Y	Y
Regional fixed effects	N	N	N	Y	Y	Y
Year fixed effects	N	N	N	Y	Y	Y
Region x Time	0.227	0.382	0.461	0.982	0.982	0.982
Region x Time^2	800	800	800	800	800	800
R^2	-0.110***			-0.060***		
Observations	(0.017)			(0.013)		

Note: Endogenous variable: Marriage rate calculated as annual number of marriages per 1,000 nonmarried individuals. All the models include a constant. Robust standard errors clustered by region. All regressions are weighted by region population. *** Significant at the 1% level, ** significant at the 5% level, * significant at the 10% level.

Table A5. Marriage rate and geography, OLS estimates

	(1)	(2)	(3)
	1998-2013	1998-2013	1998-2013
Unemployment rate	-0.072***		
	(0.018)		
Coastal region x Unemployment rate	0.017		
	(0.020)		
Male unemployment rate		-0.078***	-0.076***
		(0.020)	(0.022)
Coastal region x Male unemployment rate		0.019	0.019
		(0.019)	(0.020)
Employment rate			0.003
			(0.023)
Median age	0.417	0.394	0.395
	(0.319)	(0.314)	(0.315)
Express divorce law x Time	-1.101***	-0.977***	-0.985***
	(0.224)	(0.220)	(0.230)
Express divorce law x Time^2	0.069***	0.060***	0.061***
	(0.011)	(0.011)	(0.012)
Regional fixed effects	Y	Y	Y
Year fixed effects	Y	Y	Y
Region x Time	Y	Y	Y
Region x Time^2	Y	Y	Y
p-value (F-test of Coastal region x Unemployment rate + Unemployment rate=0)	0.0007	0.0009	0.0047
R^2	0.982	0.982	0.982
Observations	800	800	800

Note: Endogenous variable: Marriage rate calculated as annual number of marriages per 1,000 nonmarried individuals, 1998–2013. All the models include a constant. Robust standard errors clustered by region. All regressions are weighted by region population. *** Significant at the 1% level, ** significant at the 5% level, * significant at the 10% level.

Table A6. Divorce rate models, lag specification

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Unemployment rate	0.180***		-0.004		0.050***		
	(0.013)		(0.012)		(0.013)		
Unemployment rate t-1	-0.061***		-0.017*		0.001		
	(0.016)		(0.009)		(0.010)		
Unemployment rate t-2	-0.162***		-0.000		-0.002		
	(0.019)		(0.010)		(0.016)		
Coastal region x Unemployment rate t					-0.075***		
					(0.019)		
Coastal region x Unemployment rate t-1					-0.015		
					(0.012)		
Coastal region x Unemployment rate t-2					0.003		
					(0.014)		
Male unemployment rate		0.190***		-0.006		0.052***	0.047***
		(0.011)		(0.014)		(0.012)	(0.013)
Male unemployment rate t-1		-0.053***		-0.024**		-0.007	-0.008
		(0.019)		(0.010)		(0.012)	(0.012)
Male unemployment rate t-2		-0.144***		0.003		0.010	0.009
		(0.020)		(0.011)		(0.018)	(0.017)
Coastal region x Male unemployment rate t						-0.078***	-0.079***
						(0.020)	(0.020)
Coastal region x Male unemployment rate t-1						-0.009	-0.008
						(0.013)	(0.013)
Coastal region x Male unemployment rate t-2						-0.010	-0.010
						(0.015)	(0.015)
Employment rate				-0.002			-0.013
				(0.020)			(0.018)
Median age			-0.273	-0.270	-0.130	-0.102	-0.108
			(0.230)	(0.230)	(0.224)	(0.229)	(0.225)
Express divorce law x Time			0.716***	0.738***	0.770***	0.709***	0.740***
			(0.147)	(0.153)	(0.180)	(0.176)	(0.177)
Express divorce law x Time^2			-0.047***	-0.048***	-0.062***	-0.059***	-0.061***
			(0.008)	(0.008)	(0.012)	(0.012)	(0.012)
Weather controls	N	N	Y	Y	Y	Y	Y
Regional fixed effects	N	N	Y	Y	Y	Y	Y
Year fixed effects	N	N	Y	Y	Y	Y	Y
Region x Time	N	N	Y	Y	Y	Y	Y
Region x Time^2	N	N	Y	Y	Y	Y	Y
R^2	0.228	0.214	0.982	0.982	0.984	0.984	0.984
Observations	800	800	800	800	800	800	800

Note: Endogenous variable: Divorce rate measured as annual number of divorces per 1,000 married individuals, 1998-2013. All the models include a constant. Robust standard errors clustered by region. All regressions are weighted by region population. *** Significant at the 1% level, ** significant at the 5% level, * significant at the 10% level.

Table A7. Marriage rate models, lag specification

	(1)	(2)	(3)	(4)	(5)
Unemployment rate	-0.219***		-0.054***		
	(0.014)		(0.012)		
Unemployment rate t-1	-0.069***		-0.016		
	(0.011)		(0.011)		
Unemployment rate t-2	0.244***		0.000		
	(0.019)		(0.015)		
Male unemployment rate		-0.200***		-0.057***	-0.058***
		(0.012)		(0.014)	(0.016)
Male unemployment rate t-1		-0.070***		-0.017	-0.017
		(0.015)		(0.011)	(0.012)
Male unemployment rate t-2		0.196***		-0.006	-0.006
		(0.023)		(0.014)	(0.014)
Employment rate					-0.003
					(0.024)
Coastal region			-4.818	-3.534	-3.497
			(2.889)	(3.065)	(3.139)
Median age			0.438	0.419	0.418
			(0.322)	(0.318)	(0.319)
Express divorce law x Time			-1.142***	-1.046***	-1.040***
			(0.232)	(0.227)	(0.231)
Express divorce law x Time^2			0.072***	0.066***	0.065***
			(0.013)	(0.012)	(0.012)
Regional fixed effects	N	N	Y	Y	Y
Year fixed effects	N	N	Y	Y	Y
Region x Time	N	N	Y	Y	Y
Region x Time^2	N	N	Y	Y	Y
R^2	0.507	0.531	0.982	0.982	0.982
Observations	800	800	800	800	800

Note: Endogenous variable: Marriage rate calculated as annual number of marriages per 1,000 non-married individuals, 1998–2013. All the models include a constant. Robust standard errors clustered by region. All regressions are weighted by region population. *** Significant at the 1% level, ** significant at the 5% level, * significant at the 10% level.

Table A8. Quantile regression estimates, divorce rate model

	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9
Unemployment rate	0.002	0.001	-0.001	-0.002	-0.001	-0.004	-0.004	-0.000	-0.001
	(0.003)	(0.003)	(0.004)	(0.004)	(0.004)	(0.004)	(0.004)	(0.004)	(0.002)
Coastal region	-16.757***	-17.823***	-19.102***	-18.423***	-11.386	-13.058*	-11.700*	-10.799	-8.926***
	(5.989)	(5.189)	(6.548)	(6.388)	(6.921)	(7.374)	(7.035)	(6.652)	(3.272)
Median age	-0.177***	-0.131**	-0.085	-0.047	-0.046	0.023	0.083	0.107	0.105***
	(0.063)	(0.055)	(0.069)	(0.067)	(0.073)	(0.078)	(0.074)	(0.070)	(0.034)
Express divorce law x Time	-0.573	-0.183	-0.193	0.011	0.667	0.769	0.934	0.915	0.672**
	(0.596)	(0.516)	(0.651)	(0.635)	(0.688)	(0.733)	(0.700)	(0.662)	(0.325)
Express divorce law x Time^2	0.015	-0.004	-0.003	-0.012	-0.039	-0.044	-0.051*	-0.051*	-0.042***
	(0.026)	(0.022)	(0.028)	(0.027)	(0.030)	(0.032)	(0.030)	(0.028)	(0.014)
Regional fixed effects	Y	Y	Y	Y	Y	Y	Y	Y	Y
Year fixed effects	Y	Y	Y	Y	Y	Y	Y	Y	Y
Region x Time	Y	Y	Y	Y	Y	Y	Y	Y	Y
Region x Time^2	Y	Y	Y	Y	Y	Y	Y	Y	Y

Note: Endogenous variable: Crude divorce rate (1998–2013). Estimates weighted by region population. The model includes a constant. *** Significant at the 1% level, ** significant at the 5% level, * significant at the 10% level.

Table A9. Quantile regression estimates, divorce rate model

	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9
Male unemployment rate	-0.003	-0.001	-0.001	-0.003	-0.002	-0.006	-0.007	-0.005	-0.008***
	(0.004)	(0.004)	(0.005)	(0.005)	(0.005)	(0.005)	(0.005)	(0.005)	(0.002)
Employment rate	0.005	0.005	0.005	0.004	-0.002	-0.004	-0.005	-0.007	-0.010***
	(0.006)	(0.006)	(0.007)	(0.007)	(0.008)	(0.008)	(0.007)	(0.007)	(0.003)
Coastal region	-15.979***	-18.225***	-19.354***	-18.801***	-11.753	-12.778*	-12.330*	-11.261*	-10.923***
	(5.941)	(5.220)	(6.301)	(6.416)	(7.136)	(7.476)	(6.913)	(6.611)	(3.226)
Median age	-0.130**	-0.079	-0.076	-0.065	-0.044	0.018	0.070	0.080	0.123***
	(0.062)	(0.055)	(0.066)	(0.067)	(0.075)	(0.079)	(0.073)	(0.069)	(0.034)
Express divorce law x Time	-0.264	-0.215	-0.395	-0.087	0.658	0.803	1.003	0.835	0.696**
	(0.592)	(0.520)	(0.628)	(0.639)	(0.711)	(0.745)	(0.689)	(0.659)	(0.322)
Express divorce law x Time^2	0.001	-0.002	0.006	-0.007	-0.038	-0.046	-0.054*	-0.048*	-0.045***
	(0.026)	(0.022)	(0.027)	(0.028)	(0.031)	(0.032)	(0.030)	(0.028)	(0.014)
Regional fixed effects	Y	Y	Y	Y	Y	Y	Y	Y	Y
Year fixed effects	Y	Y	Y	Y	Y	Y	Y	Y	Y
Region x Time	Y	Y	Y	Y	Y	Y	Y	Y	Y
Region x Time^2	Y	Y	Y	Y	Y	Y	Y	Y	Y

Note: Endogenous variable: Crude divorce rate (1998–2013). Estimates weighted by region population. The model includes a constant. *** Significant at the 1% level, ** significant at the 5% level, * significant at the 10% level.

Table A10. Quantile regression estimates, marriage rate model

	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9
Unemployment rate	-0.024***	-0.025***	-0.033***	-0.038***	-0.033***	-0.031***	-0.030***	-0.028***	-0.032***
	(0.002)	(0.003)	(0.005)	(0.006)	(0.005)	(0.005)	(0.005)	(0.005)	(0.003)
Coastal region	-16.030***	-12.927**	-12.839	-10.153	-8.650	-9.242	-5.687	-4.710	-0.953
	(4.287)	(5.565)	(8.062)	(9.984)	(9.357)	(9.223)	(8.504)	(8.775)	(4.658)
Median age	0.724***	0.715***	0.725***	0.596***	0.627***	0.612***	0.554***	0.608***	0.598***
	(0.045)	(0.059)	(0.085)	(0.105)	(0.098)	(0.097)	(0.089)	(0.092)	(0.049)
Express divorce law x Time	-1.221***	-2.091***	-1.573*	-2.736***	-2.970***	-1.460	-1.518*	-0.633	-1.358***
	(0.426)	(0.553)	(0.802)	(0.993)	(0.931)	(0.917)	(0.846)	(0.873)	(0.463)
Express divorce law x Time^2	0.050***	0.086***	0.063*	0.113***	0.120***	0.058	0.061*	0.023	0.052***
	(0.018)	(0.024)	(0.034)	(0.043)	(0.040)	(0.039)	(0.036)	(0.038)	(0.020)
Regional fixed effects	Y	Y	Y	Y	Y	Y	Y	Y	Y
Year fixed effects	Y	Y	Y	Y	Y	Y	Y	Y	Y
Region x Time	Y	Y	Y	Y	Y	Y	Y	Y	Y
Region x Time^2	Y	Y	Y	Y	Y	Y	Y	Y	Y

Note: Endogenous variable: Marriage rate (1998–2013). Estimates weighted by region population. The model includes a constant. *** Significant at the 1% level, ** significant at the 5% level, * significant at the 10% level.

Table A11. Quantile regression estimates, marriage rate model

	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9
Male unemployment rate	-0.022***	-0.025***	-0.035***	-0.047***	-0.049***	-0.046***	-0.042***	-0.037***	-0.041***
	(0.003)	(0.004)	(0.007)	(0.007)	(0.006)	(0.006)	(0.006)	(0.006)	(0.003)
Employment rate	0.009**	0.007	0.003	-0.014	-0.013	-0.011	-0.007	-0.001	0.001
	(0.004)	(0.006)	(0.010)	(0.010)	(0.009)	(0.010)	(0.009)	(0.009)	(0.005)
Coastal region	-7.508*	-8.600	-10.544	-8.691	-5.954	-3.861	-1.349	-1.304	2.592
	(3.953)	(5.824)	(9.096)	(9.509)	(8.514)	(8.910)	(8.857)	(8.811)	(4.857)
Median age	0.692***	0.721***	0.724***	0.541***	0.582***	0.532***	0.578***	0.584***	0.648***
	(0.042)	(0.061)	(0.096)	(0.100)	(0.089)	(0.094)	(0.093)	(0.093)	(0.051)
Express divorce law x Time	-1.690***	-2.103***	-1.106	-1.274	-2.461***	-1.716*	-1.337	-0.764	-1.559***
	(0.394)	(0.581)	(0.907)	(0.948)	(0.849)	(0.888)	(0.883)	(0.878)	(0.484)
Express divorce law x Time^2	0.071***	0.087***	0.043	0.049	0.097***	0.069*	0.051	0.028	0.062***
	(0.017)	(0.025)	(0.039)	(0.041)	(0.037)	(0.038)	(0.038)	(0.038)	(0.021)
Regional fixed effects	Y	Y	Y	Y	Y	Y	Y	Y	Y
Year fixed effects	Y	Y	Y	Y	Y	Y	Y	Y	Y
Region x Time	Y	Y	Y	Y	Y	Y	Y	Y	Y
Region x Time^2	Y	Y	Y	Y	Y	Y	Y	Y	Y

Note: Endogenous variable: Marriage rate (1998–2013). Estimates weighted by region population. The model includes a constant. *** Significant at the 1% level, ** significant at the 5% level, * significant at the 10% level.

Table A12. Quantile regression estimates, divorce rate model

	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9
Unemployment rate	0.014***	0.008*	0.009*	0.011**	0.012**	0.014***	0.014***	0.012**	0.012***
	(0.004)	(0.004)	(0.005)	(0.005)	(0.006)	(0.005)	(0.004)	(0.005)	(0.003)
Coastal region x Unemployment rate	-0.026***	-0.015***	-0.017***	-0.015***	-0.016***	-0.030***	-0.027***	-0.025***	-0.020***
	(0.004)	(0.004)	(0.005)	(0.004)	(0.005)	(0.005)	(0.004)	(0.005)	(0.003)
Median age	-0.192***	-0.146**	-0.036	-0.003	0.027	0.090	0.095	0.091	0.162***
	(0.057)	(0.058)	(0.067)	(0.063)	(0.075)	(0.072)	(0.060)	(0.072)	(0.037)
Express divorce law x Time	-0.260	-0.041	0.293	0.112	0.355	0.474	1.106*	0.760	0.848**
	(0.535)	(0.548)	(0.628)	(0.595)	(0.703)	(0.672)	(0.568)	(0.674)	(0.349)
Express divorce law x Time^2	-0.001	-0.011	-0.026	-0.018	-0.029	-0.035	-0.061**	-0.045	-0.053***
	(0.023)	(0.024)	(0.027)	(0.026)	(0.030)	(0.029)	(0.024)	(0.029)	(0.015)
Regional fixed effects	Y	Y	Y	Y	Y	Y	Y	Y	Y
Year fixed effects	Y	Y	Y	Y	Y	Y	Y	Y	Y
Region x Time	Y	Y	Y	Y	Y	Y	Y	Y	Y
Region x Time^2	Y	Y	Y	Y	Y	Y	Y	Y	Y

Note: Endogenous variable: Crude divorce rate (1998–2013). Estimates weighted by region population. The model includes a constant. *** Significant at the 1% level, ** significant at the 5% level, * significant at the 10% level.

Table A13. Quantile regression estimates, divorce rate model

	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9
Male unemployment rate	0.011***	0.011**	0.010*	0.010*	0.008	0.014**	0.011**	0.009	0.004
	(0.004)	(0.005)	(0.006)	(0.006)	(0.006)	(0.006)	(0.005)	(0.006)	(0.003)
Coastal region x Male unemployment rate	-0.026***	-0.016***	-0.018***	-0.016***	-0.019***	-0.033***	-0.030***	-0.025***	-0.018***
	(0.004)	(0.004)	(0.004)	(0.004)	(0.005)	(0.005)	(0.004)	(0.005)	(0.002)
Employment rate	-0.002	-0.002	0.002	-0.000	-0.008	-0.005	-0.012**	-0.010	-0.016***
	(0.005)	(0.006)	(0.007)	(0.007)	(0.008)	(0.007)	(0.006)	(0.007)	(0.004)
Median age	-0.137***	-0.111*	-0.061	-0.023	0.045	0.075	0.098*	0.083	0.095**
	(0.053)	(0.061)	(0.067)	(0.067)	(0.075)	(0.068)	(0.058)	(0.073)	(0.038)
Express divorce law x Time	-0.097	-0.092	0.281	0.150	0.431	0.428	1.304**	1.031	0.868**
	(0.497)	(0.574)	(0.631)	(0.628)	(0.702)	(0.642)	(0.542)	(0.690)	(0.353)
Express divorce law x Time^2	-0.007	-0.010	-0.026	-0.019	-0.033	-0.034	-0.070***	-0.059**	-0.055***
	(0.021)	(0.025)	(0.027)	(0.027)	(0.030)	(0.028)	(0.023)	(0.030)	(0.015)
Regional fixed effects	Y	Y	Y	Y	Y	Y	Y	Y	Y
Year fixed effects	Y	Y	Y	Y	Y	Y	Y	Y	Y
Region x Time	Y	Y	Y	Y	Y	Y	Y	Y	Y
Region x Time^2	Y	Y	Y	Y	Y	Y	Y	Y	Y

Note: Endogenous variable: Crude divorce rate (1998–2013). Estimates weighted by region population. The model includes a constant. *** Significant at the 1% level, ** significant at the 5% level, * significant at the 10% level.

2011

2011/1, Oppedisano, V; Turati, G.: "What are the causes of educational inequalities and of their evolution over time in Europe? Evidence from PISA"
2011/2, Dahlberg, M; Edmark, K; Lundqvist, H.: "Ethnic diversity and preferences for redistribution"
2011/3, Canova, L.; Vaglio, A.: "Why do educated mothers matter? A model of parental help"
2011/4, Delgado, F.J.; Lago-Peñas, S.; Mayor, M.: "On the determinants of local tax rates: new evidence from Spain"
2011/5, Piolatto, A.; Schuett, F.: "A model of music piracy with popularity-dependent copying costs"
2011/6, Duch, N.; García-Estévez, J.; Parellada, M.: "Universities and regional economic growth in Spanish regions"
2011/7, Duch, N.; García-Estévez, J.: "Do universities affect firms' location decisions? Evidence from Spain"
2011/8, Dahlberg, M.; Mörk, E.: "Is there an election cycle in public employment? Separating time effects from election year effects"
2011/9, Costas-Pérez, E.; Solé-Ollé, A.; Sorribas-Navarro, P.: "Corruption scandals, press reporting, and accountability. Evidence from Spanish mayors"
2011/10, Choi, A.; Calero, J.; Escardíbul, J.O.: "Hell to touch the sky? Private tutoring and academic achievement in Korea"
2011/11, Mira Godinho, M.; Cartaxo, R.: "University patenting, licensing and technology transfer: how organizational context and available resources determine performance"
2011/12, Duch-Brown, N.; García-Quevedo, J.; Montolio, D.: "The link between public support and private R&D effort: What is the optimal subsidy?"
2011/13, Breuillé, M.L.; Duran-Vigneron, P.; Samson, A.L.: "To assemble to resemble? A study of tax disparities among French municipalities"
2011/14, McCann, P.; Ortega-Argilés, R.: "Smart specialisation, regional growth and applications to EU cohesion policy"
2011/15, Montolio, D.; Trillas, F.: "Regulatory federalism and industrial policy in broadband telecommunications"
2011/16, Pelegrín, A.; Bolancé, C.: "Offshoring and company characteristics: some evidence from the analysis of Spanish firm data"
2011/17, Lin, C.: "Give me your wired and your highly skilled: measuring the impact of immigration policy on employers and shareholders"
2011/18, Bianchini, L.; Revelli, F.: "Green polities: urban environmental performance and government popularity"
2011/19, López Real, J.: "Family reunification or point-based immigration system? The case of the U.S. and Mexico"
2011/20, Bogliacino, F.; Piva, M.; Vivarelli, M.: "The impact of R&D on employment in Europe: a firm-level analysis"
2011/21, Tonello, M.: "Mechanisms of peer interactions between native and non-native students: rejection or integration?"
2011/22, García-Quevedo, J.; Mas-Verdú, F.; Montolio, D.: "What type of innovative firms acquire knowledge intensive services and from which suppliers?"
2011/23, Banal-Estañol, A.; Macho-Stadler, I.; Pérez-Castrillo, D.: "Research output from university-industry collaborative projects"
2011/24, Ligthart, J.E.; Van Oudheusden, P.: "In government we trust: the role of fiscal decentralization"
2011/25, Mongrain, S.; Wilson, J.D.: "Tax competition with heterogeneous capital mobility"
2011/26, Caruso, R.; Costa, J.; Ricciuti, R.: "The probability of military rule in Africa, 1970-2007"
2011/27, Solé-Ollé, A.; Viladecans-Marsal, E.: "Local spending and the housing boom"
2011/28, Simón, H.; Ramos, R.; Sanromá, E.: "Occupational mobility of immigrants in a low skilled economy. The Spanish case"
2011/29, Piolatto, A.; Trotin, G.: "Optimal tax enforcement under prospect theory"
2011/30, Montolio, D; Piolatto, A.: "Financing public education when altruistic agents have retirement concerns"
2011/31, García-Quevedo, J.; Pellegrino, G.; Vivarelli, M.: "The determinants of YICs' R&D activity"
2011/32, Goodspeed, T.J.: "Corruption, accountability, and decentralization: theory and evidence from Mexico"
2011/33, Pedraja, F.; Cordero, J.M.: "Analysis of alternative proposals to reform the Spanish intergovernmental transfer system for municipalities"
2011/34, Jofre-Monseny, J.; Sorribas-Navarro, P.; Vázquez-Grenno, J.: "Welfare spending and ethnic heterogeneity: evidence from a massive immigration wave"
2011/35, Lyytikäinen, T.: "Tax competition among local governments: evidence from a property tax reform in Finland"
2011/36, Brülhart, M.; Schmidheiny, K.: "Estimating the Rivalness of State-Level Inward FDI"
2011/37, García-Pérez, J.I.; Hidalgo-Hidalgo, M.; Robles-Zurita, J.A.: "Does grade retention affect achievement? Some evidence from Pisa"
2011/38, Boffa, f.; Panzar. J.: "Bottleneck co-ownership as a regulatory alternative"

2011/39, González-Val, R.; Olmo, J.: "Growth in a cross-section of cities: location, increasing returns or random growth?"
2011/40, Anesi, V.; De Donder, P.: "Voting under the threat of secession: accommodation vs. repression"
2011/41, Di Pietro, G.; Mora, T.: "The effect of the l'Aquila earthquake on labour market outcomes"
2011/42, Brueckner, J.K.; Neumark, D.: "Beaches, sunshine, and public-sector pay: theory and evidence on amenities and rent extraction by government workers"
2011/43, Cortés, D.: "Decentralization of government and contracting with the private sector"
2011/44, Turati, G.; Montolio, D.; Piacenza, M.: "Fiscal decentralisation, private school funding, and students' achievements. A tale from two Roman catholic countries"

2012

2012/1, Montolio, D.; Trujillo, E.: "What drives investment in telecommunications? The role of regulation, firms' internationalization and market knowledge"
2012/2, Giesen, K.; Suedekum, J.: "The size distribution across all "cities": a unifying approach"
2012/3, Foremny, D.; Riedel, N.: "Business taxes and the electoral cycle"
2012/4, García-Estévez, J.; Duch-Brown, N.: "Student graduation: to what extent does university expenditure matter?"
2012/5, Durán-Cabré, J.M.; Esteller-Moré, A.; Salvadori, L.: "Empirical evidence on horizontal competition in tax enforcement"
2012/6, Pickering, A.C.; Rockey, J.: "Ideology and the growth of US state government"
2012/7, Vergolini, L.; Zanini, N.: "How does aid matter? The effect of financial aid on university enrolment decisions"
2012/8, Backus, P.: "Gibrat's law and legacy for non-profit organisations: a non-parametric analysis"
2012/9, Jofre-Monseny, J.; Marín-López, R.; Viladecans-Marsal, E.: "What underlies localization and urbanization economies? Evidence from the location of new firms"
2012/10, Mantovani, A.; Vandekerckhove, J.: "The strategic interplay between bundling and merging in complementary markets"
2012/11, Garcia-López, M.A.: "Urban spatial structure, suburbanization and transportation in Barcelona"
2012/12, Revelli, F.: "Business taxation and economic performance in hierarchical government structures"
2012/13, Arqué-Castells, P.; Mohnen, P.: "Sunk costs, extensive R&D subsidies and permanent inducement effects"
2012/14, Boffa, F.; Piolatto, A.; Ponzetto, G.: "Centralization and accountability: theory and evidence from the Clean Air Act"
2012/15, Cheshire, P.C.; Hilber, C.A.L.; Kaplanis, I.: "Land use regulation and productivity – land matters: evidence from a UK supermarket chain"
2012/16, Choi, A.; Calero, J.: "The contribution of the disabled to the attainment of the Europe 2020 strategy headline targets"
2012/17, Silva, J.I.; Vázquez-Grenno, J.: "The ins and outs of unemployment in a two-tier labor market"
2012/18, González-Val, R.; Lanaspa, L.; Sanz, F.: "New evidence on Gibrat's law for cities"
2012/19, Vázquez-Grenno, J.: "Job search methods in times of crisis: native and immigrant strategies in Spain"
2012/20, Lessmann, C.: "Regional inequality and decentralization – an empirical analysis"
2012/21, Nuevo-Chiquero, A.: "Trends in shotgun marriages: the pill, the will or the cost?"
2012/22, Piil Damm, A.: "Neighborhood quality and labor market outcomes: evidence from quasi-random neighborhood assignment of immigrants"
2012/23, Ploeckl, F.: "Space, settlements, towns: the influence of geography and market access on settlement distribution and urbanization"
2012/24, Algan, Y.; Hémet, C.; Laitin, D.: "Diversity and local public goods: a natural experiment with exogenous residential allocation"
2012/25, Martinez, D.; Sjögren, T.: "Vertical externalities with lump-sum taxes: how much difference does unemployment make?"
2012/26, Cubel, M.; Sanchez-Pages, S.: "The effect of within-group inequality in a conflict against a unitary threat"
2012/27, Andini, M.; De Blasio, G.; Duranton, G.; Strange, W.C.: "Marshallian labor market pooling: evidence from Italy"
2012/28, Solé-Ollé, A.; Viladecans-Marsal, E.: "Do political parties matter for local land use policies?"
2012/29, Buonanno, P.; Durante, R.; Prarolo, G.; Vanin, P.: "Poor institutions, rich mines: resource curse and the origins of the Sicilian mafia"
2012/30, Anghel, B.; Cabrales, A.; Carro, J.M.: "Evaluating a bilingual education program in Spain: the impact beyond foreign language learning"
2012/31, Curto-Grau, M.; Solé-Ollé, A.; Sorribas-Navarro, P.: "Partisan targeting of inter-governmental transfers & state interference in local elections: evidence from Spain"

2012/32, Kappeler, A.; Solé-Ollé, A.; Stephan, A.; Välilä, T.: "Does fiscal decentralization foster regional investment in productive infrastructure?"
2012/33, Rizzo, L.; Zanardi, A.: "Single vs double ballot and party coalitions: the impact on fiscal policy. Evidence from Italy"
2012/34, Ramachandran, R.: "Language use in education and primary schooling attainment: evidence from a natural experiment in Ethiopia"
2012/35, Rothstein, J.: "Teacher quality policy when supply matters"
2012/36, Ahlfeldt, G.M.: "The hidden dimensions of urbanity"
2012/37, Mora, T.; Gil, J.; Sicras-Mainar, A.: "The influence of BMI, obesity and overweight on medical costs: a panel data approach"
2012/38, Pelegrín, A.; García-Quevedo, J.: "Which firms are involved in foreign vertical integration?"
2012/39, Agasisti, T.; Longobardi, S.: "Inequality in education: can Italian disadvantaged students close the gap? A focus on resilience in the Italian school system"

2013

2013/1, Sánchez-Vidal, M.; González-Val, R.; Viladecans-Marsal, E.: "Sequential city growth in the US: does age matter?"
2013/2, Hortas Rico, M.: "Sprawl, blight and the role of urban containment policies. Evidence from US cities"
2013/3, Lampón, J.F.; Cabanelas-Lorenzo, P-; Lago-Peñas, S.: "Why firms relocate their production overseas? The answer lies inside: corporate, logistic and technological determinants"
2013/4, Montolio, D.; Planells, S.: "Does tourism boost criminal activity? Evidence from a top touristic country"
2013/5, Garcia-López, M.A.; Holl, A.; Viladecans-Marsal, E.: "Suburbanization and highways: when the Romans, the Bourbons and the first cars still shape Spanish cities"
2013/6, Bosch, N.; Espasa, M.; Montolio, D.: "Should large Spanish municipalities be financially compensated? Costs and benefits of being a capital/central municipality"
2013/7, Escardíbul, J.O.; Mora, T.: "Teacher gender and student performance in mathematics. Evidence from Catalonia"
2013/8, Arqué-Castells, P.; Viladecans-Marsal, E.: "Banking towards development: evidence from the Spanish banking expansion plan"
2013/9, Asensio, J.; Gómez-Lobo, A.; Matas, A.: "How effective are policies to reduce gasoline consumption? Evaluating a quasi-natural experiment in Spain"
2013/10, Jofre-Monseny, J.: "The effects of unemployment benefits on migration in lagging regions"
2013/11, Segarra, A.; García-Quevedo, J.; Teruel, M.: "Financial constraints and the failure of innovation projects"
2013/12, Jerrim, J.; Choi, A.: "The mathematics skills of school children: How does England compare to the high performing East Asian jurisdictions?"
2013/13, González-Val, R.; Tirado-Fabregat, D.A.; Viladecans-Marsal, E.: "Market potential and city growth: Spain 1860-1960"
2013/14, Lundqvist, H.: "Is it worth it? On the returns to holding political office"
2013/15, Ahlfeldt, G.M.; Maennig, W.: "Homevoters vs. leasevoters: a spatial analysis of airport effects"
2013/16, Lampón, J.F.; Lago-Peñas, S.: "Factors behind international relocation and changes in production geography in the European automobile components industry"
2013/17, Guío, J.M.; Choi, A.: "Evolution of the school failure risk during the 2000 decade in Spain: analysis of Pisa results with a two-level logistic mode"
2013/18, Dahlby, B.; Rodden, J.: "A political economy model of the vertical fiscal gap and vertical fiscal imbalances in a federation"
2013/19, Acacia, F.; Cubel, M.: "Strategic voting and happiness"
2013/20, Hellerstein, J.K.; Kutzbach, M.J.; Neumark, D.: "Do labor market networks have an important spatial dimension?"
2013/21, Pellegrino, G.; Savona, M.: "Is money all? Financing versus knowledge and demand constraints to innovation"
2013/22, Lin, J.: "Regional resilience"
2013/23, Costa-Campi, M.T.; Duch-Brown, N.; García-Quevedo, J.: "R&D drivers and obstacles to innovation in the energy industry"
2013/24, Huisman, R.; Stradnic, V.; Westgaard, S.: "Renewable energy and electricity prices: indirect empirical evidence from hydro power"
2013/25, Dargaud, E.; Mantovani, A.; Reggiani, C.: "The fight against cartels: a transatlantic perspective"
2013/26, Lambertini, L.; Mantovani, A.: "Feedback equilibria in a dynamic renewable resource oligopoly: pre-emption, voracity and exhaustion"

2013/27, Feld, L.P.; Kalb, A.; Moessinger, M.D.; Osterloh, S.: "Sovereign bond market reactions to fiscal rules and no-bailout clauses – the Swiss experience"
2013/28, Hilber, C.A.L.; Vermeulen, W.: "The impact of supply constraints on house prices in England"
2013/29, Revelli, F.: "Tax limits and local democracy"
2013/30, Wang, R.; Wang, W.: "Dress-up contest: a dark side of fiscal decentralization"
2013/31, Dargaud, E.; Mantovani, A.; Reggiani, C.: "The fight against cartels: a transatlantic perspective"
2013/32, Saarimaa, T.; Tukiainen, J.: "Local representation and strategic voting: evidence from electoral boundary reforms"
2013/33, Agasisti, T.; Murtinu, S.: "Are we wasting public money? No! The effects of grants on Italian university students' performances"
2013/34, Flacher, D.; Harari-Kermadec, H.; Moulin, L.: "Financing higher education: a contributory scheme"
2013/35, Carozzi, F.; Repetto, L.: "Sending the pork home: birth town bias in transfers to Italian municipalities"
2013/36, Coad, A.; Frankish, J.S.; Roberts, R.G.; Storey, D.J.: "New venture survival and growth: Does the fog lift?"
2013/37, Giulietti, M.; Grossi, L.; Waterson, M.: "Revenues from storage in a competitive electricity market: Empirical evidence from Great Britain"

2014

2014/1, Montolio, D.; Planells-Struse, S.: "When police patrols matter. The effect of police proximity on citizens' crime risk perception"
2014/2, Garcia-López, M.A.; Solé-Ollé, A.; Viladecans-Marsal, E.: "Do land use policies follow road construction?"
2014/3, Piolatto, A.; Rablen, M.D.: "Prospect theory and tax evasion: a reconsideration of the Yitzhaki puzzle"
2014/4, Cuberes, D.; González-Val, R.: "The effect of the Spanish Reconquest on Iberian Cities"
2014/5, Durán-Cabré, J.M.; Esteller-Moré, E.: "Tax professionals' view of the Spanish tax system: efficiency, equity and tax planning"
2014/6, Cubel, M.; Sanchez-Pages, S.: "Difference-form group contests"
2014/7, Del Rey, E.; Racionero, M.: "Choosing the type of income-contingent loan: risk-sharing versus risk-pooling"
2014/8, Torregrosa Hetland, S.: "A fiscal revolution? Progressivity in the Spanish tax system, 1960-1990"
2014/9, Piolatto, A.: "Itemised deductions: a device to reduce tax evasion"
2014/10, Costa, M.T.; García-Quevedo, J.; Segarra, A.: "Energy efficiency determinants: an empirical analysis of Spanish innovative firms"
2014/11, García-Quevedo, J.; Pellegrino, G.; Savona, M.: "Reviving demand-pull perspectives: the effect of demand uncertainty and stagnancy on R&D strategy"
2014/12, Calero, J.; Escardíbul, J.O.: "Barriers to non-formal professional training in Spain in periods of economic growth and crisis. An analysis with special attention to the effect of the previous human capital of workers"
2014/13, Cubel, M.; Sanchez-Pages, S.: "Gender differences and stereotypes in the beauty"
2014/14, Piolatto, A.; Schuett, F.: "Media competition and electoral politics"
2014/15, Montolio, D.; Trillas, F.; Trujillo-Baute, E.: "Regulatory environment and firm performance in EU telecommunications services"
2014/16, Lopez-Rodriguez, J.; Martinez, D.: "Beyond the R&D effects on innovation: the contribution of non-R&D activities to TFP growth in the EU"
2014/17, González-Val, R.: "Cross-sectional growth in US cities from 1990 to 2000"
2014/18, Vona, F.; Nicolli, F.: "Energy market liberalization and renewable energy policies in OECD countries"
2014/19, Curto-Grau, M.: "Voters' responsiveness to public employment policies"
2014/20, Duro, J.A.; Teixidó-Figueras, J.; Padilla, E.: "The causal factors of international inequality in co2 emissions per capita: a regression-based inequality decomposition analysis"
2014/21, Fleten, S.E.; Huisman, R.; Kilic, M.; Pennings, E.; Westgaard, S.: "Electricity futures prices: time varying sensitivity to fundamentals"
2014/22, Afcha, S.; García-Quevedo, J,: "The impact of R&D subsidies on R&D employment composition"
2014/23, Mir-Artigues, P.; del Río, P.: "Combining tariffs, investment subsidies and soft loans in a renewable electricity deployment policy"
2014/24, Romero-Jordán, D.; del Río, P.; Peñasco, C.: "Household electricity demand in Spanish regions. Public policy implications"
2014/25, Salinas, P.: "The effect of decentralization on educational outcomes: real autonomy matters!"
2014/26, Solé-Ollé, A.; Sorribas-Navarro, P.: "Does corruption erode trust in government? Evidence from a recent surge of local scandals in Spain"
2014/27, Costas-Pérez, E.: "Political corruption and voter turnout: mobilization or disaffection?"

2014/28, Cubel, M.; Nuevo-Chiquero, A.; Sanchez-Pages, S.; Vidal-Fernandez, M.: "Do personality traits affect productivity? Evidence from the LAB"
2014/29, Teresa Costa, M.T.; Trujillo-Baute, E.: "Retail price effects of feed-in tariff regulation"
2014/30, Kilic, M.; Trujillo-Baute, E.: "The stabilizing effect of hydro reservoir levels on intraday power prices under wind forecast errors"
2014/31, Costa-Campi, M.T.; Duch-Brown, N.: "The diffusion of patented oil and gas technology with environmental uses: a forward patent citation analysis"
2014/32, Ramos, R.; Sanromá, E.; Simón, H.: "Public-private sector wage differentials by type of contract: evidence from Spain"
2014/33, Backus, P.; Esteller-Moré, A.: "Is income redistribution a form of insurance, a public good or both?"
2014/34, Huisman, R.; Trujillo-Baute, E.: "Costs of power supply flexibility: the indirect impact of a Spanish policy change"
2014/35, Jerrim, J.; Choi, A.; Simancas Rodríguez, R.: "Two-sample two-stage least squares (TSTSLS) estimates of earnings mobility: how consistent are they?"
2014/36, Mantovani, A.; Tarola, O.; Vergari, C.: "Hedonic quality, social norms, and environmental campaigns"
2014/37, Ferraresi, M.; Galmarini, U.; Rizzo, L.: "Local infrastructures and externalities: Does the size matter?"
2014/38, Ferraresi, M.; Rizzo, L.; Zanardi, A.: "Policy outcomes of single and double-ballot elections"

2015

2015/1, Foremny, D.; Freier, R.; Moessinger, M-D.; Yeter, M.: "Overlapping political budget cycles in the legislative and the executive"
2015/2, Colombo, L.; Galmarini, U.: "Optimality and distortionary lobbying: regulating tobacco consumption"
2015/3, Pellegrino, G.: "Barriers to innovation: Can firm age help lower them?"
2015/4, Hémet, C.: "Diversity and employment prospects: neighbors matter!"
2015/5, Cubel, M.; Sanchez-Pages, S.: "An axiomatization of difference-form contest success functions"
2015/6, Choi, A.; Jerrim, J.: "The use (and misuse) of Pisa in guiding policy reform: the case of Spain"
2015/7, Durán-Cabré, J.M.; Esteller-Moré, A.; Salvadori, L.: "Empirical evidence on tax cooperation between sub-central administrations"
2015/8, Batalla-Bejerano, J.; Trujillo-Baute, E.: "Analysing the sensitivity of electricity system operational costs to deviations in supply and demand"
2015/9, Salvadori, L.: "Does tax enforcement counteract the negative effects of terrorism? A case study of the Basque Country"
2015/10, Montolio, D.; Planells-Struse, S.: "How time shapes crime: the temporal impacts of football matches on crime"
2015/11, Piolatto, A.: "Online booking and information: competition and welfare consequences of review aggregators"
2015/12, Boffa, F.; Pingali, V.; Sala, F.: "Strategic investment in merchant transmission: the impact of capacity utilization rules"
2015/13, Slemrod, J.: "Tax administration and tax systems"
2015/14, Arqué-Castells, P.; Cartaxo, R.M.; García-Quevedo, J.; Mira Godinho, M.: "How inventor royalty shares affect patenting and income in Portugal and Spain"
2015/15, Montolio, D.; Planells-Struse, S.: "Measuring the negative externalities of a private leisure activity: hooligans and pickpockets around the stadium"
2015/16, Batalla-Bejerano, J.; Costa-Campi, M.T.; Trujillo-Baute, E.: "Unexpected consequences of liberalisation: metering, losses, load profiles and cost settlement in Spain's electricity system"
2015/17, Batalla-Bejerano, J.; Trujillo-Baute, E.: "Impacts of intermittent renewable generation on electricity system costs"
2015/18, Costa-Campi, M.T.; Paniagua, J.; Trujillo-Baute, E.: "Are energy market integrations a green light for FDI?"
2015/19, Jofre-Monseny, J.; Sánchez-Vidal, M.; Viladecans-Marsal, E.: "Big plant closures and agglomeration economies"
2015/20, Garcia-López, M.A.; Hémet, C.; Viladecans-Marsal, E.: "How does transportation shape intrametropolitan growth? An answer from the regional express rail"
2015/21, Esteller-Moré, A.; Galmarini, U.; Rizzo, L.: "Fiscal equalization under political pressures"
2015/22, Escardíbul, J.O.; Afcha, S.: "Determinants of doctorate holders' job satisfaction. An analysis by employment sector and type of satisfaction in Spain"
2015/23, Aidt, T.; Asatryan, Z.; Badalyan, L.; Heinemann, F.: "Vote buying or (political) business (cycles) as usual?"
2015/24, Albæk, K.: "A test of the 'lose it or use it' hypothesis in labour markets around the world"
2015/25, Angelucci, C.; Russo, A.: "Petty corruption and citizen feedback"

2015/26, Moriconi, S.; Picard, P.M.; Zanaj, S.: "Commodity taxation and regulatory competition"
2015/27, Brekke, K.R.; Garcia Pires, A.J.; Schindler, D.; Schjelderup, G.: "Capital taxation and imperfect competition: ACE vs. CBIT"
2015/28, Redonda, A.: "Market structure, the functional form of demand and the sensitivity of the vertical reaction function"
2015/29, Ramos, R.; Sanromá, E.; Simón, H.: "An analysis of wage differentials between full-and part-time workers in Spain"
2015/30, Garcia-López, M.A.; Pasidis, I.; Viladecans-Marsal, E.: "Express delivery to the suburbs the effects of transportation in Europe's heterogeneous cities"
2015/31, Torregrosa, S.: "Bypassing progressive taxation: fraud and base erosion in the Spanish income tax (1970-2001)"
2015/32, Choi, H.; Choi, A.: "When one door closes: the impact of the hagwon curfew on the consumption of private tutoring in the republic of Korea"
2015/33, Escardíbul, J.O.; Helmy, N.: "Decentralisation and school autonomy impact on the quality of education: the case of two MENA countries"
2015/34, González-Val, R.; Marcén, M.: "Divorce and the business cycle: a cross-country analysis"
2015/35, Calero, J.; Choi, A.: "The distribution of skills among the European adult population and unemployment: a comparative approach"
2015/36, Mediavilla, M.; Zancajo, A.: "Is there real freedom of school choice? An analysis from Chile"
2015/37, Daniele, G.: "Strike one to educate one hundred: organized crime, political selection and politicians' ability"

Universitat de Barcelona

Dos campus d'excel·lència internacional

B:KC

ieb@ub.edu
www.ieb.ub.edu

Document de treball de l'IEB