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ABSTRACT

Gender Gaps in Spain: Policies and Outcomes over the Last Three Decades*

We document recent trends in gender equality in employment and wages in Spain. Despite an impressive decline in gender gap in employment, females are still less likely to work, and if they work they are more likely to be employed part time and with temporary contracts. The gender gap (after controlling for worker and job characteristics) is about 20% and did not change between 1995 and 2006. Furthermore, the gender gap in wages is driven mainly by differences in returns to individual characteristic. While women are more qualified than men in observable labor market characteristics, they end up earning less. Public policy seems to affect female employment. In particular, there was a significant acceleration of female employment in 2000s. This was a period in which many policies that were implemented after early 1990s started to have their longer term effects. It was also a period during which Spain received a large number of immigrants, which had a positive impact on female labor force participation.

JEL Classification: J16, J21, J22, J24

Keywords: gender employment gap, gender wage gap, occupational segregation, quantile regressions, public policy

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I. INTRODUCTION

The Spanish labor market experienced a remarkable transformation in the last couple of decades as the female employment rate increased from 25% to 66% between 1977 and 2010. Indeed, the decline of the gender employment gap in Spain has been among the highest in OECD countries (OECD, 2008). Nevertheless, the gender gap in employment, which was close to 19% in 2008, is still one of the highest among OECD countries, outreached only by two other European Union countries in OECD, Italy and Greece (OECD, 2008). Furthermore, unemployment rate has been substantially higher among females than males (11% versus 8% in 2008). The gender gap in wages has also remained high; it was about 20% in 2006.

Furthermore, Spain lags behind other OECD countries in coverage and generosity of family policies. The parental leave system is quite restrictive. It provides about 16 weeks of maternity and parental paid leave. This is about half of OECD average and significantly lower than in countries like France (47 weeks), Germany (49 weeks), or Sweden (62 weeks) -- OECD Family Database.[1] Child care remains a significant barrier for employment of mothers and public subsidies are limited. The childcare fees for a two-year old in 2004 were about 30% of average wages, a figure surpassed only by Luxembourg and Switzerland among OECD countries (OECD, 2007). Spain spends about 1.2% of its GDP on family benefits (transfers to families and children), while the average for OECD is about 2.2% -- OECD Social Expenditure Database.[2]

The dramatic change in labor markets and the ongoing challenges are also reflected in public opinion surveys. According to the Centro de Investigaciones Sociológicas (CIS), which runs a monthly opinion survey about the economic, political and social issues in Spain, in March 2010 about 54% of the individuals stated that the differences between men and women were large or very large.[3] However, almost 80% said that those differences were smaller than 10 years ago. Most of the respondents agree that men and women have equal access to education. By contrast, only about 30% agree that they have the same opportunities of promotion in the labor market. When individuals were asked about their preferred household type (a two-earner household with balanced gender housework responsibilities, a two-earner household with some housework specialization by one of the spouses or a one-earner household with complete

[1] http://www.oecd.org/social/familiesandchildren/37864482.pdf.
[2] http://www.oecd.org/social/socialpoliciesanddata/socialexpendituredatabasesocx.htm.
[3] See http://www.cis.es/cis/opencm/ES/11_barometros/index.jsp.

housework specialization by one of the spouses), about 72% of the individuals chose the first option. When individuals were asked who should take time off from the labor market (or reduce hours of work) to undertake housework, 36% said females and 57% answered that it depends on their relative wage.

Against this background, the current study has two main goals: First, we document the trends in employment and wage gender gaps for recent decades. Second, we describe several family related policies currently in force as well as their evolution over the last decades.

II. GENDER GAPS

II.1. Employment

Before presenting an account of gender gaps in employment and wages, it is important to note some key features of the Spanish labor market. First, over the last decades the unemployment rate has been quite high (it averaged about 13% for men and 21% for women between 1977 and 2010) and exhibited large fluctuations, reaching above 20% during recessions (Figure 1). Females are much more likely to be unemployed than males, with female unemployment rate being twice as high as the male one in some years. This pattern changed in the last recession as the male unemployment rate increased more than the female unemployment rate and they were essentially identical by 2010.[4] Second, as Figure 2 shows, the fraction of temporary (fixed-term) workers has grown since the end of the eighties as a result of a series of labor market reforms that were introduced to combat unemployment.[5] In 2008 the fraction of the labor force with temporary contracts was 29.3% in Spain. On the contrary, the OECD average was only 11.8% (OECD, 2010a). Furthermore, the incidence of temporary contracts among women is higher than among men. The last recession increased the fraction of temporary contracts as most of the adjustment on the labor force was made through

[4] A similar pattern is also observed in the U.S. - see Sahin, Song and Hobijn (2010).

[5] In 1984 the Labor Law Reform relaxed the conditions for firms to hire workers under fixed term contracts. Firms could hire fixed-term employees subject to a severance pay of 12 days' wages per year of service for any kind of job (with contract duration between 6 months and 3 years and compulsory conversion into permanent thereafter). Workers with permanent contracts are entitled to severance pay of 20 days' wages per year of service (up to a maximum of 12 months' wages) in fair dismissals and to 45 days' (up to a maximum of 42 months') wages in unfair dismissals. In spite of several reforms (in 1994, 1997, 2002, and 2006) aimed at fighting the prevalence of temporary employment, the fraction of temporary contracts in the mid-2000s was above 30%.

workers with temporary contracts. The reason was that the severance payment for those who had an permanent contract was much higher.[6] The increase in the prevalence of temporary contracts implies an increase in the degree of uncertainty that households face regarding their labor income over the period of analysis. This uncertainty has been somehow mitigated by the large increase in public sector employment up to the early 1990s, but since then there has been a significant drop in public sector employment, further exacerbating the uncertainties that women face in the labor market (Figure 3).

In order to document gender labor market gaps and their evolution over time, we use the Encuesta de Población Activa (EPA), from 1977 to 2010. These surveys are run by the Instituto Nacional de Estadística (INE), the Spanish Statistical Agency, and constitute the Spanish part of Labor Force Statistics of OECD. Each survey consists of a representative sample of about 60,000 households and contains labor market information of all individuals older than 16 that belong to each household. Although the information on labor market outcomes is quite detailed; the surveys do not contain information on wages.[7]

We focus on individuals between ages 25 and 54. There are two reasons for this sample restriction. On the one hand, we want to concentrate on individuals who have already completed their education. On the other hand, we want to leave aside the effect of early retirement decisions on employment, which is an important feature of the Spanish labor market.[8]

II.1.a. Cross sectional analysis

We start by documenting cross-sectional changes in educational attainment of the population, employment and unemployment rates, and hours of work for men and women.

The most remarkable change during this period has been the increase in the educational attainment of the population. As shown in Figure 4a, about 90% of the population had less than upper secondary education (high school) by the end of 1970s. In 2010, the

[6] See Bentolila, Cahuc, Dolado and Le Barbanchon (2010) and Costain, Jimeno and Thomas (2010) for an analysis of the role of temporary contracts in the last recession in Spain.
[7] Although there have been some methodological changes over the period of analysis, as documented by Cuadrado, Lacuesta, Martínez and Pérez (2007), the basic structure of EPA remained unchanged over this period.
[8] See García-Pérez, Jiménez, and Sánchez-Martín (2010).

population with less than upper secondary education declined to 43%, and about 23% of the population had a college degree (more than four times its value at the beginning of the period). Indeed, by the end of the sample period, the fraction of the population with tertiary education in Spain reached levels quite similar to the average of the OECD countries, about 28% in 2008 (OECD 2010b).[9] The fraction of population with less than upper secondary education is, however, about 20 percentage points higher (and correspondingly the fraction of individuals with upper secondary education is 20 percentage points lower) than the OECD average (OECD, 2010b).

Figures 4b and 4c document the educational attainment for females and males. With the increase in educational attainment of the population, the college attainment gender gap (ratio of women to men with college education) has also declined and was eventually reversed, from 0.6 in 1977 to 1.4 in 2010.[10] However, there are still substantial gender differences in college degrees that are pursued by men and women. According to the Instituto Nacional de Estadística (INE), more than 80% of those who were registered in college degrees related to "Teaching" were women, whereas the figure was lower than 30% in those college degrees related to "Engineering".[11]

Together with the educational attainment, female employment rate (employment to population ratio) increased dramatically over this period, whereas male's employment rate went down slightly (Figure 5). In 1977, about 28% of women between ages 25 to 54 worked, while by the end of the sample period more than 60% did so. With the increase in female employment rate, the employment gender gap was reduced from 69% in 1960 to 16% in 2010. As we noted above, the last recession had an asymmetric effect on men and women. In particular, men were more likely to lose their jobs. As a result, part of the decline in gender employment gap might be transitory, reflecting particular effects of the recent crisis on labor markets. In contrast to employment, the gender gap in hours worked (conditional on working) has been widening over this period and in particular since the 1990s (Figure 6). In 1977, men worked on average about 5 hours per week more than women, while the gap was about 8 hours in 2010. This reflects the fact that some fraction of women who entered the labor force took part-

[9] Tertiary education includes not only college education but also other programs that focus on practical, technical or occupational skills for direct entry into the labor market. As a result, the fraction of population with tertiary education is higher than the fraction with a university degree.

[10] According to OECD (2010b), the tertiary education gender gap was 0.97 in 2010.

[11] See Estadística de Enseñanza Universitaria 2008/2009 published by INE (http://www.ine.es/inebmenu/mnu_educa.htm).

time jobs. Figure 7 shows that females are more likely to be working in part time jobs than males and the gap has been increasing in recent years. In 2010, 23% of females were working part-time in contrast with 4% for males.[12] As Figure 8 shows, however, there has also been a slight widening of the gap between working hours of full-time workers, further contributing to the increasing gender gap in hours worked.

One of the driving forces for the changes in female employment rate could be the change in educational composition of the female population as there are substantial differences in employment rates across educational groups. Figure 9 shows, however, that female employment rate increased for all educational levels, and the increase is indeed more prominent for women with less than upper secondary education.

Besides educational attainment, there have been other compositional changes of the female population that may underlie the overall trend. With the changing patterns of marriage and fertility, women have become more likely to be single or married without any children in recent years. In particular, the fraction of married women in our sample decreases from 84% in 1977 to 63% in 2010. Since single women and married women without any children are more likely to work, this has important implications for the average behavior. Single females work more than married females and their employment rate has been increasing at least since mid 1990s. The increase in overall employment rate of females, however, has been mainly determined by the increase in the employment rate of married females (Figure 10). Their employment rate increased from 22% in 1977 to 60% in 2010. Furthermore, the increase in married females' employment rate is independent of the number of children they have (Figure 11). Even for married females with more than 2 children, the employment rate increased from 18% to 49%.

It is important to note that employment rate of mothers seems to be independent of the age of their youngest child (Figure 12).[13] Since there has been a significant change in the educational attainment of female population, it is more informative to look at this conditioning on education. As Figures 13a-13c show, for females with college

[12] Still, the incidence of part-time employment is quite lower than in other EU countries. In 2009, part-time employment as a fraction of total employment was about 21% in Spain, whereas it was above 30% in most of the EU countries (OECD 2010c).

[13] This is in contrast with what we observe in other countries, where there are significant differences between employments rate of mothers of children aged 0 to 3 and mothers with older children. According to the OECD (2007) the Spanish females' employment rate gap with respect to the average of the OECD countries was 2.8 percentage points. However, the gap is increasing with the age of the youngest child. It ranges from 1.3 percentage points if the youngest child is younger than 2, to 6.9 if the child is 3 to 5 years old, and to 15.6 if the child is 6 to 16 years old.

education the increase has been similar regardless of the age of the youngest child, whereas for those with less than college education the increase started earlier for mothers with children older than three and has been more pronounced. Furthermore, we observe that the increase for mothers of children younger than three starts in the mid nineties, and as we discuss in more detail below, this coincides with a large increase in the enrolment rates of children of age three.

The previous literature focused on education and fertility as possible determinants of female employment. Arellano and Bover (1995) use a time series model of female labor force participation and conclude that the increase in women's education and the decrease in birth rates (after controlling for endogeneity by treating education and fertility endogenous) are the main factors underlying the increase in female labor supply during the period 1976-1991. Although these two factors (education and fertility) must certainly play an important role, as we have shown above, even when we condition on education and children, there has been a significant increase in female employment after 1990s.

There is some further evidence that child bearing is an important determinant of female labor force participation. Gutiérrez-Domenech (2005) uses the Family and Fertility Survey produced by the United Nations, to explore women's transitions from employment to non-employment after first birth in several European countries (Spain, Belgium, W. Germany, Italy and Sweden). She finds that Spain, together with Germany, are the countries that experienced the greatest drop in post-birth employment rates. Furthermore, the drop is persistent even 10 years after childbearing.

II.1.b. Cohort Analysis

In order to provide a more comprehensive picture of female labor supply behavior, we now document life-cycle employment profiles for three cohorts of individuals. This is important since labor supply is a dynamic decision: low labor market attachment early in the working life may determine labor market participation later on**,** due to returns to labor market experience and depreciation of human capital.[14] As a result, changes in working conditions might affect female behavior with a long delay.

[14] See Olivetti (2006) and Miller (2011) on the effects of career interruptions on female wages.

We focus on three cohorts and compare the behavior of those born at the beginning of the fifties (between 1950 and 1954), to those born at the beginning of the sixties (between 1960 and 1964) and to those born at the beginning of seventies (between 1970 and 1974). We are able to observe the first (oldest) cohort from 25 to 55, the second cohort from 25 to 50 and the third (youngest) cohort from 25 to 40. As Figures 14-18 show, life-cycle labor supply behavior of these three cohorts of females differ quite significantly.

First, the three cohorts differ both in terms of labor market attachment and in how their labor supply changes with age. Females in cohort 2 are more likely to work than those in cohort 1 at any age and cohort 3 is more likely to work than cohort 2.[15] Furthermore, for cohort 1 there is an important decline in employment rates during child bearing ages, while this decline is much less visible for cohort 2 and disappears completely for the youngest cohort. Indeed a comparison of female and male life-cycle behavior for the youngest cohort shows that the shape of their employment-age profiles is very similar (Figures 14a and 14b).[16] Figure 15 shows that it is among those women with upper secondary education or less where we observe more substantial differences across cohorts. Furthermore, the main difference between these cohorts originates from the behavior of married females (Figure 16) and this is independent of the number of children they have (Figure 17). Second, if we look at males, Figure 14b shows that younger cohorts (cohorts 2 and 3) have much lower employment rates than cohort 1. This reflects partly the delay in labor market entry of younger cohorts, as these cohorts are more educated than the older one. It also reflects the high youth unemployment in Spain. Finally, as Figure 18 shows, whereas about 25% of women from cohort 1 and 2 benefited from working in the public sector since the beginning of their working life (the percentage is even higher later in life), the figure is lower than 15% for women who belong to cohort 3.

An important difference between these three cohorts is their fertility behavior (both the number as well as the timing of children). Starting in the early 1980s, Spain experienced a dramatic decline in fertility. As Figure 19 shows the total number of births per 1000 women aged 15-49 has declined from 80 to 40 between 1975 and 1993 and has remained low since then. As a result, Spain had a very low (around 1.2) Total Fertility

[15] Part of this increase from the second to the third cohort might simply reflect time effects since the 1990s was a period of rapid growth.
[16] See Attanasio, Low and Sánchez-Marcos (2008) for a similar pattern in employment-age profiles in the U.S.

Rate (TFR) by the end of the 1990s, which has been reversed in recent years (TFR in 2007 was 1.4); mainly due to the large inflow of immigration in the 2000s. As females started to have fewer children, they also started to have them later in life, and the mean age at first birth has increased from 25 years in 1977 to 29 years by 2007 (Figure 20). Part of this shift must reflect more widespread availability of contraception. While before 1978 the use of contraceptive methods was penalized by law in Spain, the contraceptive prevalence rate (percentage of women who are practicing or whose sexual partners are practicing any form of contraception, usually measured for married women ages 15-49) went up from 54% in 1983 to 76 in 1993, and today is comparable to other developed countries (Carro and Mira, 2006).[17]

It is, however, not clear if the changing fertility patterns had an impact on female employment behavior. First, the fertility started to decline in mid 1970s (almost immediately after Spain's transition to democracy) while female employment started to grow about a decade later. Second, the literature that studies the interaction between fertility and labor market outcomes in Spain often concludes that it is the labor market that affects fertility behavior and not the other way around. Ahn and Mira (2001) estimate a discrete time hazard model of the probability of marriage and childbearing and conclude that the high incidence of unemployment and temporary jobs in Spain had a very strong negative effect on these outcomes.[18] Da Rocha and Fuster (2006) develop a quantitative theory of fertility and labor market participation decisions in order to explore the impact of labor market frictions (low probability of finding a job) on the observed positive correlation between fertility and employment among OECD countries.[19]

[17] Carro and Mira (2006) estimate a dynamic stochastic discrete choice model of contraceptive decisions. They show that an exogenous delay in the age of marriage can substantially reduce fertility. In particular**,** an increase in the age of marriage, from age 23 to ages 27 or 30 reduces the expected number of births from 2.08 to 1.86 or 1.65, respectively. The ability of females to control their fertility decisions may have a substantial impact on their career planning and on fertility rates (see Goldin and Katz 2002).

[18] The negative impact of temporary contracts is also supported by the analysis in De la Rica and Iza (2005) and Adeserá (2006). Gutiérrez-Domenech (2008) finds that the increase in the incidence of unemployment among men tends to delay marriage and then fertility. Alba, Alvarez and Carrasco (2009) estimate the causal effect of female labor market status on fertility using Spanish data. They find a positive although non-significant effect of participation and employment on the probability of having the first child, once the endogeneity is accounted for using a switching probit model with endogenous switching. Finally, De la Rica and Ferrero (2003) estimate the effect of fertility on participation under the existence of unobserved characteristics that affect both fertility and participation (fertility decisions are endogenous to the participation decision) and find that the effect is negative and very strong.

[19] Da Rocha and Fuster (2006) find that unemployment induces females to postpone and space births, resulting in lower total fertility rate. Adeserá (2011) uses fluctuations in unemployment rates across European countries during the eighties and the nineties to investigate their effect on childbearing. She finds that high and persistent unemployment in a country is associated with delays in childbearing (and second births).

II.1.c. Do changes in the composition of population account for the increase in female employment rate?

It is a challenging task to determine what the driving forces of these changes are. In principle, compositional changes of the population may account for at least a fraction of the increase in female employment rate. As we have seen, young cohorts of women are more educated, more likely to be unmarried and have fewer children; factors that make them more likely to work.

In order to get an idea of the effect of compositional changes on the female employment rate we carry out the following counterfactual exercise. Female employment rate was 25% in 1985 and 59.9% in 2005.[20] We calculate what the employment rate in 2005 would be, if the population had the educational attainment, marital status and the number of children of 2005 but faced the employment rates of 1985.

Table I shows that if only the distribution of education had changed, the employment rate in 2005 would have been 37.5%. It would have been 29.4% if only the distribution of marital status had changed and, finally, 28.8% if only the distribution of number of children had changed. All the compositional changes together would have rendered 17.7 additional percentages points in 2005 with respect to 1985, about half of the actual increase in female employment rate. Hence it is important to understand the factors that determine female labor supply behavior, in particular the role of policy and institutional changes, which we discuss in Section III.

II.1.d. Occupational Segregation

Gender segregation across occupations or the tendency for men and women to be employed in different occupations is another important aspect of gender inequality. If men and women are employed in different occupations and if, for example, women are more concentrated in low-paying jobs; this will be reflected in gender wage equality, as we explore in Section 11.2.

[20] We compare 1985 and 2005 because the increase in female labor supply started during the mid eighties and we want to avoid the comparison with years affected by the last recession. Furthermore, for these counterfactuals we restrict the sample to household heads and their partners and spouses. As a result the employment rates in Table II differ slightly from ones we have reported above.

We study differences in the occupational distribution of men and women in Spain and the trends in gender segregation across occupations based on EPA from 1994 to 2010.[21] In Table II, the first column in each year displays the share of female workers within a particular occupation while female concentration represents the distribution of females across occupations for that year.[22] As Table II documents, occupations in services such as clerical, service and sale, and elementary occupations gradually became female dominated in the Spanish labor market during these years.[23] From 1995 to 2010 the share of female workers in these occupations increased by 15.8 percentage points for clerical occupations and 13.5 percentage points for services and sales. Moreover, the largest share of female labor force was employed in services and elementary occupations or in professional occupations in all years. On the other hand, women in the Spanish labor market seem to be less likely to work as skilled agricultural and fishery workers, craft and related trades workers, plant and machine operators or assemblers. This possibly reflects the decline of agriculture and manufacturing (sectors with male dominated occupations).

A more formal and commonly-used measure of occupational segregation is the Duncan & Duncan index of dissimilarity (ID), defined as

$$ID_t = \frac{1}{2}\sum_{i=1} |m_{it} - f_{it}|,$$

where m_{it} and f_{it} are the fractions of the male and female labor force employed in occupation i at time t.[24] The index number is interpreted as the percentage of female and male workers that would have to change occupations in order the employment distribution of men and women to be identical. In other words, the value 0% indicates that the distribution of genders across occupations is identical, whereas the value 100% implies that female and male workers concentrated in completely different occupations.

Duncan and Duncan occupational segregation index was 35.13, 37.21, 38.5 and 36.5, for 1995, 2002, 2006 and 2010 respectively. The level of occupational segregation has

[21] In Spain, in 1993 and 1994 there were fundamental changes in the National Classification of Occupations, making it impossible to compare pre and post-1994 data. In order to guarantee the homogeneity of the occupation data and prevent errors that may arise from their re-classification, the period of analysis is 1994-2010.
[22] We focus on 1995, 2002 and 2006 since, as we document in the next section, these are the years for which we have data on wages.
[23] Elementary occupations consist of simple and routine tasks which mainly require the use of hand-held tools and often some physical effort, e.g. selling goods in streets and public places, or from door to door; providing various street services; cleaning, taking care of apartment houses, hotels, offices and other buildings, construction and manufacturing including product-sorting and simple hand-assembling of components, etc.
[24] For a discussion of this index, see Blau, Ferber and Winkler (2002).

been fairly stable and implies that more than one third of the male and female workers would have to change places across occupations so as to have a perfectly equal distribution.

Dolado, Felgueroso and Jimeno (2001, 2004) use the European Labour Force Survey (1999) and the Current Population Survey (1999) to examine the incidence and composition of female employment both in the EU and in the US in 1999 as well as the differences across age cohorts and educational levels. Their findings suggest that occupational segregation in EU is higher than in the US for highly educated women, particularly for women aged 35-44, and Spain is not an exception.[25] They also find that occupational segregation by gender is positively correlated with the share of part-time jobs in the economy. Interestingly, their results reveal some discriminatory forces behind this choice as the degree of job satisfaction by women is not high in part time jobs.

II.2. Wages

Both lower attachment to labor market and occupational segregation can have an impact on gender wage gap, which we analyze next. Since the EPA does not provide data on individual wages, we use the Encuesta de Estructura Salarial (EES), the Spanish Wage Structure Surveys, conducted by INE for 1995, 2002 and 2006. These surveys consist of random samples of workers from establishments with 10 or more employees in the manufacturing, construction and service industries (accounting for about 71% of the working population). One important difference between the 2006 Survey and the previous ones is that it incorporates for the first time establishments with less than 10 employees. Establishments are randomly selected from the Social Security General Register of Payments records, which are stratified by region and establishment size. Workers from each of the selected establishments are also randomly selected.

We focus on full time employees, comprising around 96 percent of all employees in the dataset as of 1995, 90 percent in 2002 and 85 percent in 2006 (because the sample size of part time employees is not adequate to achieve reliable statistical we have chosen to

[25] Moreover, their findings suggest that in Spain occupational segregation is much higher for the less educated women, with the dissimilarity index taking a value around 50 percent for all age groups. On the other hand, especially for the higher educated group the dissimilarity index is considerably higher for older women**,** implying less occupational segregation for the younger highly educated women in Spain in 1999.

consider the more homogeneous group of full-timers). Furthermore, the sample is restricted to individuals of working age, between 19 and 59 years old. Table III provides the summary statistics for three EES surveys.

The first three columns of Table IV report observed (raw) gender gap, obtained by regressing log hourly wages on a gender dummy without any additional controls. The raw gender gap has decreased from 26% in 1995 to 17% in 2002 and further to 13% in 2006.[26]

We start our analysis with standard Mincer regressions to isolate the mean gender wage differential that is not accounted by gender differentials in observable individuals' characteristics (education, age, seniority as well as the fixed term contract, firm size, public sector, type of occupation and industry). We also present the results of Oaxaca (1973) decomposition based on the Mincer regressions to identify the separate effects of these observable factors on gender wage differentials. Then, in order to compare male and female wages at different points of the wage distribution, we employ quantile regression technique. Finally, based on the quantile regression estimates, we perform Machado-Mata (2005) decomposition.

Ideally, since participation in the labor market is not random one should control for selection to have unbiased estimates of the wage gender gap. The way to proceed would be to estimate a reduced model of the participation decision and then use Heckman's correction in the regressions for wages. Unfortunately, the EES survey only has data for employees and, as we have already mentioned above, the EPA does not have information on wages, which make estimation of a selection equation impossible.

Mincer regressions: We first run a simple human capital wage regression and then move to an expanded wage model that controls for a series of additional variables. Although most of these additional variables can be thought as endogenous, the expanded model shows the extent to which the gender gap can be accounted by these additional variables.

The expanded model is given by:

[26] These numbers are similar to the ones reported in the literature that has explored the gender wage gap in Spain using the same data set. Gardeazábal and Ugidos (2005) report the raw gender gap as 0.2549 for Spain for 1995, while Amuedo-Dorantes and de la Rica (2006) report that the raw gender gap has decreased from 0.24 to 0.14 between 1995 and 2002. One should keep in mind the change in the sample design in 2006**,** that we mentioned above, when comparing the figures of 2006 with the previous years.

$$ln\,Wage = \beta_0 + \beta_1 Female + \sum_{i=2}^{3} \beta_i Edu_i + \sum_{j=4}^{6} \beta_j Age_{j-2} + \beta_7 Seniority + \frac{\beta_8 Seniority^2}{100} + \beta_9 Fixed$$
$$+ \beta_{10} Medium + \beta_{11} Large + \sum_{s=11}^{18} \beta_s Occup_{s-9} + \sum_{m=19}^{29} \beta_m Sec_{m-17} + \beta_{30} Public + u,$$

where $ln\,Wage$ is the natural logarithm of gross hourly wages, calculated as a simple division of monthly gross wage by monthly paid hours.[27] The simple model includes only the first five control variables. $Female$ is the gender dummy variable that takes a value one if the worker is female and Edu_i stands for two educational attainment dummies corresponding to above upper secondary, and college graduates (leaving out the below upper secondary education as a reference category). Since the actual labor market experience is not available in ESS we include yearly seniority, seniority squared and three age group dummies for 30-39 years, 40-49 years and 50-59 years old groups (leaving out the 20-29 years old group as a reference category). For the extended model, $Fixed$ is a dummy variable for the temporary (fixed term) employment contracts. $Medium$ and $Large$ are the dummy variables for medium and large size firms (with small firms as reference group).[28] $Occup_s$ and Sec_m are the seven major occupation group dummies and eleven economic activity dummies based on the National Classification of Occupations (CNO-94) and Economic Activities (CNAE-93).[29] Finally, $Public$ is a dummy variable for the public sector employment.

The Ordinary Least Squares (OLS) estimation results are shown in Table IV. The first row of the table shows the wage gender gap under different specifications. The first specification named as observed gender gap is the basic model where log hourly wage is regressed on a gender dummy. The second specification is the basic human capital model that includes the basic control variables (age, educational attainment, seniority and seniority square divided by 100). The last specification is the expanded model described above that also controls for the type of the employment contract, firm size,

[27] Wages include the agreed upon and calculated gross wages paid to employees for days worked and not worked, overtime payments, payments for shift work/night work and other regular payments paid to employees and monthly paid hours include the sum of contractual working hours pertaining to basic wage and overtime hours worked.

[28] Small, medium and large firms are defined as those with less than 50, between 50 and 200, and more than 200, respectively.

[29] For 1995, EES covers economic activities comprised in sections C to K of the CNAE-93. However 2002 and 2006 ESS includes the additional sections in which women are highly concentrated, namely: M, Education; N, Health and veterinary activities, social services; O, Other social activities and services provided to the community; personal services. This is why, these sectors are included in the analysis in 2002 and 2006, although it was not feasible to include them in 1995. This is why we get only 8 coefficient estimates related to economic activities rather than 11 from the expanded model of 1995. For occupations, legislators, and senior officials, managers are the reference group, while for industries; the reference group is mining and quarrying.

occupation and sector. The first panel in Table IV shows that the raw wage gender gap has been decreasing between 1995 (26) to 2006 (13). However, this pattern starts to change once we add the basic control variables. The mean gender wage gap increased slightly from around 21 percent in 1995 to 23 percent in 2002 and declined back to 21 percent in 2006 after accounting for individual characteristics. When we also control for fixed term contract, public sector, firm size, occupation and economic activity, the mean gender wage gap remains almost constant around 20 percent during these years.[30,31] In 1995 the raw wage gender gap was greater than the one estimated with the simple model, whereas in 2002 and 2006, it is slightly smaller than the one estimated with the simple model. Accordingly, whereas in 1995 individual characteristics were to some extent responsible for the observed gender wage gap, more recently, female population characteristics are partially mitigating the gender wage differential. This is detailed below using the Oaxaca decomposition.

Oaxaca decomposition: In order to explore the relative weights of the factors causing the gender wage differentials, we now display the Oaxaca decomposition results of the difference between male and female wages. The basic idea is to split the observed raw gender gap into a part that can be explained by gender differences in observed characteristics and an unexplained or residual part that cannot be accounted for by such differences.

The wage differential between males and females can be written in the following way:

$$\bar{X}^{female}\hat{\beta}^{female} - \bar{X}^{male}\hat{\beta}^{male} = (\bar{X}^{female} - \bar{X}^{male})\hat{\beta}^{male} + \bar{X}^{female}\left(\hat{\beta}^{female} - \hat{\beta}^{male}\right),$$

where $\bar{X}^{female}$ and $\bar{X}^{male}$ are the average attributes of the male and female workers and $\hat{\beta}^{male}$ and $\hat{\beta}^{female}$ are the coefficient estimates from separate regressions for males and females.[32] In this expression, the first term captures the gender gap that can be

[30] Amuedo-Dorantes and de la Rica (2006) consider a similar sample, i.e., full-time employees based on the 1995 and 2002 EES data, to investigate the role of gender segregation and pay structure in explaining gender wage differentials. Their model, that additionally includes the type of collective bargaining, the establishment's market orientation, establishment size, and region, as well as gender segregation at various levels as explanatory variables, results in 14 percent as coefficient estimate for the female dummy. Furthermore, their results suggest that the this wage differential is mostly due to the gap in the wage complements, which is estimated 27 percent for 1995 and 31 percent for 2002, while the gap in the base wage was around 5 percent.

[31] Part of the gender gap can be attributed to the penalty for having children. Fernández-Kranz and Rodrigues Planas (2011) find that a negative motherhood earnings differential between childless women and mothers of 2.3 log points remains even after controlling for both individual- and firm-level unobserved heterogeneity. They also show that births are usually followed with significant declines in mothers' earnings and moving from full-time to part-time work upon births plays an important role.

[32] Note that if the model includes a constant, this would lead a zero difference between the average of the males' and females' characteristics with respect to this term. Otherwise, there would be a non-zero constant difference, unless

accounted for by observed differences between females and males in terms of their labor market characteristics while the second term is the residual (unexplained) differences in the returns to these characteristics.

Tables Va and Vb show the results of the Oaxaca decomposition analysis using the basic and the expanded model, respectively. The last rows on both tables show the components and the raw gender gap as of 1995, 2002 and 2006. As we have noted above, raw gender gap declines significantly between 1995 and 2006. Despite this decrease, we find that the "unexplained" part of the raw gender wage gap has increased considerably over these years. With the basic model, 17.5 percent of the observed gender gap is due to observable (education, age and seniority) differences and the remaining 82.5 percent is due to differential rates of return to these variables in 1995. Even after we account for additional variables (fixed term employment, firm size, public sector, type of occupation and sector) the unexplained component is still around 75 percent in 1995 (Table Vb).[33]

As Tables Va and Vb show, the unexplained component exceeds 100 percent in both 2002 and 2006. Furthermore, in determining gender wage gap the effect of human capital factors is positive but smaller relative to the one of unexplained factors. In other words, despite the advantageous condition of women in terms of their labor market characteristics, the relative wage disadvantage of women persists mainly due to differences in the rewards to labor market characteristics. Although this could be due to unobserved characteristics or factors that we fail to control for, it can also reflect labor market discrimination against women. For a deeper understanding of these results, in the following subsection, we extend this analysis to the entire wage distribution in Spain.

Quantile regressions: In order to investigate the gender wage gaps at different points of the wage distribution we also estimate a series of quantile regressions for 1995, 2002 and 2006. The quantile regressions technique, introduced by Koenker and Bassett (1978)**,** seeks to extend the analysis to the whole wage distribution and provides a more

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the constant terms are equal for the males and females regressions. This is why there is a contribution of the constant term to the unexplained part whereas the contribution of the constant to the explained part is zero.

[33] Gardeazábal and Ugidos (2005) also report the unexplained component to be 75 percent of the average gender wage gap in 1995. They also use (in addition to the controls in Table Vb) regional dummies and the type of labor agreement that settles wages in the firm as controls.

complete picture of the covariate effects. The quantile regression estimation results for various specifications are reported in Tables VIa-VIc.

We start again by estimating the raw gender gap and then move to the simple and expanded models. We present coefficient estimates and standard errors of the gender dummy in each specification for the fifth, tenth, twenty-fifth, fiftieth, seventy-fifth, ninetieth and ninety-fifth percentiles. For comparison, the mean OLS estimate of the gender dummy coefficient in each model is displayed in the last column of the tables. The gender dummy coefficients in the tables present the gender gap that remains unexplained at the various quantiles of the wage distribution after controlling for the covariates in each specification.

As Tables VIa-VIc show, all estimates are negative for each year and specification, indicating the existence of gender gap not only at the mean but also at the entire wage distribution in Spain. The first rows of Tables VIa-VIc show that the raw gender gap is increasing throughout the wage distribution in 1995 which is interpreted as a *glass-ceiling* effect. This pattern, however, starts to disappear in 2002 and 2006. Furthermore, the raw gender gap is decreasing between 1995 and 2002, and then again between 2002 and 2006 at each quantile. The decrease at the top of the wage distribution over these eleven years is very significant; the gender gap at the 95^{th} quantile decreased from 0.37 to 0.17 between 1995 and 2006. Nevertheless, in each year, the maximum gap is observed at the top quantile of the wage distribution. On the other hand, the decrease in the gender gap at the lower tail of the wage distribution is not as remarkable as in the upper tails of the wage distribution; the gender gap at the 5^{th} quantile decreased from 0.17 to only 0.16 between 1995 and 2006.

Carrasco, Jimeno and Ortega (2011) analyze the changes in the gender wage gap between 1995 and 2002, as well as the change between 2002 and 2006 using the data from ESS. Consistent with our findings, their results suggest that the gender wage gap declined from 1995 to 2002, and from 2002 to 2006. Along the entire distribution, they show that the gap decreased up to the 60th percentile between 1995 and 2002 and increased at the upper tail of the distribution, while we found that the gap decreased over the entire distribution. Between 2002 and 2006, both their and our analysis show that the gap decreased at each quantile.[34]

[34] It is possible that the difference comes from different sample restrictions. In 1995 the ESS survey does not cover some sectors (such as education, health and social sectors). While Carrasco, Jimeno and Ortega (2011) exclude

When we move to the second and thirds rows of Tables VIa-VIc and start adding controls for relevant labor market characteristics this picture starts to change. First, the gender dummy coefficient is increasing with quantiles for each year (*glass-ceiling* effect). Hence, the gender wage gap that remains unexplained is higher in the upper tail of the wage distribution than at the median and the lower tail. Second, the decline in the gender gap is much less visible. Indeed, for the expanded model, the gender gap increases between the years 1995 and 2006 for all but the highest (95^{th} percent) quantile.[35]

Machado and Mata decomposition: Following the traditional Oaxaca (1973) decomposition of effects on mean wages, Machado and Mata (2005) propose a decomposition method combining quantile regressions and the bootstrapping approach. Now we turn our attention to these results. Like the Oaxaca decomposition technique, the Machado-Mata decomposition calculates the relative importance of observed characteristics and the coefficients on these characteristics at different points of the wage distribution beside the mean.

The difference between male and female wage distribution at the θ^{th} quantile can be written as:

$$X^{female}\hat{\beta}^{female}(\theta) - X^{male}\hat{\beta}^{male}(\theta) = (X^{female} - X^{male})\hat{\beta}^{male}(\theta) + X^{female}\left[\hat{\beta}^{female}(\theta) - \hat{\beta}^{male}(\theta)\right],$$

where $\hat{\beta}(\theta)$ is the θ^{th} quantile regression coefficient. For the decomposition analyses we focus on the extended model. First, we construct the counterfactual densities using the expanded model. The counterfactual density is constructed assuming that women keep their own labor market characteristics but they are rewarded for these characteristics as male employees ($X^{female}\hat{\beta}^{male}(\theta)$). This allows us to calculate two components of the difference between the θ^{th} quantile of the female wage distribution and the θ^{th} quantile

these sectors from 2002 data while they are comparing 1995-2002, while in their 2002-2006 comparison they again include these sectors. In contrast we include these sectors in our analysis for both 2002 and 2006.

[35] De la Rica, Dolado and Llorens (2008) perform a similar analysis for different levels of education attainment in Spain, using data from the European Community Household Panel. They show that for the college/tertiary education group, the gender wage gap is higher at the upper tail than at the lower tail of the wage distribution. On the other hand, they find that for the lower education group, the gap is much higher at the bottom than at the top of the distribution, which they interpret as statistical discrimination by employers, due to low participation rates of women in the lower education group. De la Rica, Dolado and Vegas (2010) analyze the gender wage gap in the performance–pay component of total hourly wages and its contribution to the overall gender gap in Spain. After controlling for observable differences in individual and job characteristics as well as for non random selection, the adjusted gender gap in performance pay reaches 26 log points, displaying a *glass-ceiling* pattern.

of the male wage distribution: i) the contribution of the differences in labor market characteristics of female and male workers (the first term on the right hand side of the above expression) and ii) the contribution of the coefficients (the second term on the right hand side of the above expression).

The decomposition results are presented in Figures 21a-21c.[36] First, as seen in Figure 21a, in 1995 the observed gap is increasing when we move up along the wage distribution. Both components of the observed gender gap are negative. Hence**,** both the human capital variables and the rewards to these characteristics are responsible for the observed gender gap. Quantitatively, the second effect is more important than the first one. These results suggest that there is a *glass-ceiling* effect for women; the gender gap increases (and rewards to observable characteristics decline) as we move up along the wage distribution for women. In 2002, although the *glass-ceiling* pattern is relatively less distinctive, the quantitative effect of the coefficients is the one that drives the observed gender gap. Especially at the upper tail of the wage distribution, although the characteristics have an opposite effect, the effects of the coefficients at all points of the wage distribution pull down the observed gender gap. This effect is more severe in 2006.

Gardeazábal and Ugidos (2005), using a similar decomposition technique, also found that the raw gender gap increases along the distribution in 1995 while the effects of the coefficients are higher at low quantiles. Parallel to their results, Figure 21a suggests that the effects of the coefficients explain a higher fraction of the gender wage gap at the lower quantiles since at the lower tail of the wage distribution the differences in characteristics is almost zero. On the other hand, when we move throughout the wage distribution, differences in labor market characteristics of female and male workers become as important as the effects of coefficients in determining the gender wage gap with the highest effect at the top of the wage distribution.

With Machado-Mata decomposition, differently from the Oaxaca decomposition results, we observe the effects of the components at different points of the wage distribution. In

[36] The decomposition of differences in wage distributions is applied using the STATA command rqdeco (See Melly (2007). Melly (2006) shows that this procedure is numerically identical to the Machado and Mata (2005) decomposition method when the number of simulations used in Machado and Mata procedure goes to infinity. In the decomposition procedure of our study, rather than taking - random draws from (0,1) and estimating – quantile regression coefficients, the decomposition is performed for the 99 percentile differences in wages between men and women. 100 quantile regressions are estimated in the first step and the standard errors for the counterfactual densities are obtained by repeating the procedure 100 times. Given the size of the dataset and the computational limitations, it was not feasible to perform the decomposition on the whole sample. Therefore, in this part of the analysis a random sample of the data consisting of 20% of the whole data is used.

1995, the observed gender gap is increasing throughout the wage distribution. While the effects of the coefficients remain the same throughout the wage distribution, differences in labor market characteristics between females and males are increasing. As a result, the observed gender gap is increasing and this is mostly due to the labor market characteristics. From 2002 onwards, this pattern starts to change. In 2002, at the lower tail of the wage distribution (until the 39th percentile), the observed gender gap is driven by the two components. However, as we move to the upper tail, the observed gender gap is driven by the unobservables. Although women are advantageous in terms of their labor market characteristics at the median and the upper tail of the wage distribution we observe gender gap due to the effects of the coefficients. This effect disappears only after the 96th quantile, where the effects of coefficients are also negative contributing to the gender gap. In 2006 we have a similar picture. However, we start to observe women with better labor market characteristics relative to men also at the lower tail of the wage distribution. Women seem to have an advantage in terms of their labor market characteristics right after the 18th percentile until the 99th percentile. But the observed gender gap is still present due to the effect of coefficients. The observed gender gap is relatively smaller with respect to 2002 mostly because women in the Spanish labor market in 2006 are better qualified than the ones in 2002.

III. POLICIES

Spain went through dramatic institutional changes over the period of analysis. The return to democracy in 1977 and the entry into the EU in 1986 were accompanied with reforms that changed labor markets in fundamental ways and affected the evolution of the gender gaps. In this section we describe these reforms and, based on findings from the existing literature, we discuss their potential effects.

II.1. Family-Friendly Policies

Child Care Arrangements: The cost and availability of child care is possibly one of the most important factors determining female labor supply decisions. Table VII documents (using EPA data) reasons for not participating in the labor force for males

and females. The "care of children or sick adults" together with "other family responsibilities" are the main reasons for women to stay out of the labor market, while they do not seem to affect the labor force participation of males.

An important source of child care is provided by the public education system. School enrollment rates at early ages have been increasing over the last years, mainly due to a new Law on Education (Ley 1/1990, de 3 de octubre, LOGSE) that introduced the possibility for children aged 0 to 3 to be enrolled in the public school system (Table VIII). Nollenberger and Rodríguez-Planas (2011) study this legislation and show that it led to a 10% increase in the employment of mothers with children under the age of three. Furthermore, the effect seems to persist as women who benefited from this policy continue to work more even when their child is older than three. However, children under three years old are rarely enrolled in the public education system since public education at this level is not widely available. In 2003, the enrollment rate was only 10% for children younger than one and 22% for two-year-old children (compared to 5% in 1986). By contrast, at the age of three, 95% of children were enrolled (compared to 17% in 1986).[37] This figure is substantially above the 88.2% average of the EU-25. The enrollment rate goes up to 99% at the age of four and to 100% at the age of five.

In addition to the public schools system, privately provided child care services (nurseries or kindergartens) play a crucial role for children younger than 3 years old. According to the Ministry of Education, in 2006 the number of children between 0 and 2 years old in private schools was 32% larger than the number of children in public schools.[38] There is a large variation across regions and cities on the monthly price of this type of services, but on average, it was around 250 Euros in 2005.[39]

Child care cost may be a key determinant of female labor supply. Attanasio, Low and Sánchez-Marcos (2008) found that one of the main driving forces of the increase in married women's labor supply in the United States (when one compares cohorts of women born in the forties and fifties) was a decrease in the child care cost. Encouraging female labor supply at early ages is important since this may have an impact on their attachment to the labor market later in life. As a result, it is reasonable to expect that higher female employment rates at early ages for the youngest cohorts of women in Spain would generate a sustained increase in female labor supply in coming years.

[37] See Fundación Encuentro (2006).
[38] Ministerio de Educación. Estadística de Enseñanza no Universitaria 2006-2007.
[39] See Consumer (2005).

Baizán (2009) shows that child care availability is also an important determinant of the fertility behavior in Spain.

Formal childcare services may be substituted or complemented by informal childcare provided by family networks. Tobío (2002), based on a survey conducted in 1998, studies alternative forms of childcare used by parents. She finds that grandparents are key in order to understand how parents reconcile family and work. Higher life expectancy together with low geographical mobility in Spain allows grandparents' involvement with their grandchildren.[40] According to this survey, among mothers who participate in the labor market, 77% live in the same town with other relatives (and 56% of working mothers live in the same town as their mothers). Among those who live in the same town, 50% live in the same neighborhood. About half (51%) of the grandmothers, who live in the same neighborhood as their grandchildren, are involved with grandchildren's care, while this figure amounts to 38% for those who live in the same town.

A final and important aspect of child care arrangements in Spain is the role of immigration. The number of immigrants has increased dramatically over the last decade in Spain. The number of immigrants increased from 637,085 (1.6% of population) to 5,648,671 (12% of population) between 1998 and 2009. A substantial fraction of immigrant women is employed in household services, including both housekeeping and caring for children and elderly dependents (in many cases as part of the underground economy). Farré, González and Ortega (2011) investigate the effects of immigrants on female labor supply of highly skilled native women. They find that immigration allowed women to take shorter children-related breaks from the labor market and enabled later retirement from the labor force.

Parental Leave Policies: There are three types of policies providing special treatment of parents at work. First, parents can take 16 weeks of paid leave (Ley 3/1989, de 3 de marzo), of which 6 weeks have to be enjoyed by the mother. The length of the paid parental leave was increased during the eighties, first from 12 to 14 weeks in 1981 and from 14 to 16 in 1989. The mother (or father) on leave is entitled to 100% of her (his) salary since 1995 (before this date the replacement rate was 75%). While these "family-

[40] Garcia-Moran and Koehn (2012), using German data, show that women who live close to their parents or parents-in-law are more likely to have children and more likely to work. They face, however, lower wages as the child care provided by the grandparents restrict women's job geographic mobility.

friendly" policies may help to keep mothers in the labor market or encourage working women into motherhood, there may also be unintended effects of these policies as lower attachment to labor market may limit human capital accumulation and potential promotions within firms.

In addition to the paid parental leave, mothers can enjoy one hour leave per day for breastfeeding (up to nine months after birth). Mothers are allowed, in general, to accumulate these hours to extend the paid parental leave. Second, a new law was passed in 1999 (Ley 39/1999, de 5 de noviembre) that specifically aimed at helping to balance family and work. This new law introduced the possibility of "family-friendly" arrangements between the worker and the firm. In particular, the law allows parents to ask for an unpaid leave of up to three years after a birth. However, the same job position is only guaranteed if the spell is shorter than one year. After that period only a job of similar category is guaranteed. These unpaid leaves are taken into account for the seniority calculation and thus they do not affect negatively automatic wage increases or severance payments. Furthermore, the recent Law on Equal Opportunities between Women and Men (Ley 3/2007, de 22 de marzo) increased the duration of unpaid parental leave that is counted for retirement social security benefits from 1 to 2 years. Lapuerta, Baizán and González (2010) explore the incidence of unpaid parental leave among workers. They find that those who are most likely to use parental leaves are women (only five of every 100 users are men) and that the use of unpaid parental leave was limited to only 3% of entitled mothers in December 2006. Among women, those with full-time permanent contracts and high level of education are more likely to enjoy an unpaid parental leave. However, unpaid parental leaves are shorter among high educated women than among low educated ones.

Flexibility at Work for Parents: Based on the aforementioned law (Ley 39/1999, de 5 de noviembre), parents of children under the age of 7 have the right to reduce their daily hours worked. In particular, the law makes it illegal to fire a worker if she/he asked for a reduction in hours in the past. In practice, the law mainly protects workers with permanent contracts since the employer is not forced to renew a fixed-term contract. Fernández-Kranz and Rodríguez-Planas (2011) explore the effects of this reform on labor market outcomes and they do not find significant effects on the employment rate of eligible women. They show that the policy increased part-time work among eligible mothers with a permanent contract by 39%, while it had no effect on women with

temporary contracts or men. They also find that the policy had an unintended effect, as the likelihood of being employed with a permanent contract for high school graduate women in childbearing ages declined by 17%.

Finally, another possible impediment for female employment is the way the work day is organized in Spain. Work schedules in Spain are typically split and consist of 5 hours of work in the morning (from 9 am to 2 pm), followed by a 2 hours break at lunch time and another 3 hours of work in the afternoon/evening (from 4 pm to 7 pm). Figure 22 shows the fraction of adult population (ages 16 and above) who works at a given time of the day in Norway, Spain and the UK.[41] In all countries, a very small fraction of the population is at work before 8.00AM and the fraction is highest between 9.00AM and 16.00PM. There are two features that distinguish Spain from the other two countries: First, a larger fraction of people have lunch break. Second, while in the other countries a very small fraction, less than 10%, is working by 6.00PM, almost 40% of the population is still at work in Spain. The picture is very similar if one looks at males and females separately. The split of the work schedule and the longer hours imply additional costs for parents. Comparing workers with different work schedules in Spain, Amuedo-Dorantes and De la Rica (2010) do not find evidence of a compensating wage differential for having a split work schedule.

Cash Benefits for Working Mothers and Children: With the aim of reconciling family and work, a monthly cash benefit for working mothers of children aged less than three years old was introduced in 2003. The monthly cash benefit amounted to 100 Euros per child aged less than three years old. To be eligible, working mothers must fulfill certain conditions in relation to the number of hours worked.[42] The cash benefit is sizeable; it represents about 30% of the average cost of private day-care centers in Spain. Compared to the working females' observed earnings, it is about 13% of a primary educated female's monthly earnings, 8% of a secondary educated one or 5% of a college educated one.[43]

[41] The data in Figure 22 are based on Harmonised European Time Use Surveys (HETUS).

[42] These conditions differ for full-time and part-time working mothers. In particular, full- time female workers must work at least 15 days per month. For part-time female workers the equivalent figure is 20 days. Furthermore, part-time female workers are eligible only if they work at least 50% of full-time hours. There is an upper limit to the cash benefit given by the annual social security payroll taxes, but the benefit is not income tested. In 1998 908,347 benefited from these types of subsidies.

[43] Families with children (whether the mother works or not) are also eligible for a cash benefit per child (Ley 24/1997) if the child is younger than 18 years old or if the child suffers from any type of disability. This subsidy is, however, means tested and the income threshold is quite low (about 7000 Euros annual income in 2000).

Sánchez-Mangas and Sánchez-Marcos (2008) show that this policy had a positive effect on the employment rate of eligible women, of about 5% increase, and the effect was more pronounced on less educated women. Azmat and González (2010) also explore the effect of the policy on fertility. They estimate that the birth rate increased by about three births per 1000 women as a result of the policy change, representing a 5% increase. By allowing women to work and accumulate labor market experience, this policy might also have longer-run affects on female employment that are difficult to measure.

II.2. Other Institutional Changes

Changing Divorce Laws: It was not until 1981 that divorce was legalized (Ley 30/1981) in Spain and although there were some marital separations before the law had been passed, they were rare. More recently, a reform of the law established unilateral divorce in 2005 (Ley 15/2005). As a consequence of these laws the cost of marital dissolution has gone down over the last decades, and the number of marital dissolutions increased from 16,336 in 1984 to 106,039 in 2009. This is a substantial increase if we take into account that the fraction of married population has gone down over the same period.[44]

Several papers in the literature found a positive impact of marital dissolution risk on women's employment using reduced form analysis for the United States (see, among others, Johnson and Skinner (1986), Sander (1985), Parkman (1992) or Sen (2000)). In the context of a structural model, Caucutt, Guner and Knowles (2002) explore how married women consider the effect of motherhood and labor supply on the prospects of future outside-marriage options once divorce is allowed and find that this is important in order to understand labor supply and fertility patterns in the United States. Hence, it is reasonable to expect that the series of reforms concerning marital dissolution might be one of the factors behind the transition in female's employment and fertility decisions. Of course, divorce risk cannot be considered as an exogenous shock. A higher female attachment to the labor force may have underlied the increase in marital dissolutions, as it enhances outside-marriage opportunities for women.

The impact of divorce on female labor supply might depend on how property is divided upon divorce (Gray, 1998; Stevenson, 2008). Kapan (2008) studies the effect of a law

[44] The fraction of divorced population was 2.8% in 1960, 9.2% in 1980 and 9.8% in 2005.

implemented in 2000 in England and Wales that favored the financially disadvantaged spouse by entitling him/her to a higher share of total assets at divorce. Using the British Household Panel Survey 1991-2006, he finds that married women reduced their labor supply between 2 to 3 hours per week after the law had changed. For Spain, Brassiolo (2012) studies the effect of changes in laws governing the division of family assets at divorce on the probability of divorce and on female labor supply in two regions of Spain (Catalonia and Balearic Islands). In these two regions, a 1993 reform introduced an economic compensation for the financially weaker spouse upon divorce. In 1998, however, another change allowed the marital contract to include provisions referring to the dissolution of marriage, possibly counterbalancing the reform of 1993. He find that while the first change led to a decrease in female employment and working hours (as the provision improved the bargains position of women within marriages), the second change was associated with higher employment and working hours.

Taxation: Several tax reforms have been undertaken in Spain since the personal income tax was introduced for the first time in 1979. Some of these reforms have potentially affected household decisions to some extent, in particular, fertility and female labor supply. Until 1987 married couples were required to file joint returns and, as a consequence, their incomes were subject to a higher marginal tax rate. However, a deduction from the tax liability for married households and an additional deduction in case of two-earner households were applied. Hence, before 1988**,** marriage was treated asymmetrically depending on the number of earners. After this date, married couples were allowed to choose between joint and individual taxation. As it has been shown in Kaygusuz (2010) for the case of the US, this may have a substantial impact on female labor market participation. In fact, Gutiérrez-Domenech (2005) shows that the transition towards separate taxation has positively affected mothers' probability of post-birth employment in Spain. A second important change in tax policy took place in 1999 and changed how family structure affects tax calculations. Before 1999 there was a deduction from tax liabilities for dependent children. After 1999 deductions for family size are applied directly to taxable income and the tax liability is calculated for household income net of deductions. As a result, tax saving per child is now increasing in the marginal tax rate. Finally, in January 2003 a new reform increased the tax deduction regarding the number of children and the tax deduction for each child aged less than three years old. This reform was aimed at promoting fertility.

Affirmative Action Policies: In March 2007 the Spanish Government passed the Equality Law (Ley 3/2007, de 22 de marzo) imposing gender parity in all selection committees in the state administration, party lists and those firms and organizations depending on the public administration.[45] The justification of such a policy relies on the potential discrimination against women by the evaluation committees. However, it is not obvious to what extent this type of measures would increase the chances of females filling top positions in the public sector. In fact, Bagues and Esteve-Volart (2010) analyze how the chances of success of 150,000 female and male candidates (from 1987 to 2007) for positions in the four main Corps of the Spanish Judiciary were affected by the gender composition of their evaluation committee. They find that a female (male) candidate was significantly less likely to be hired whenever she (he) was randomly assigned to a committee in which the share of female (male) evaluators was relatively greater. Their evidence suggests that this was related to the fact that female majority committees overestimated the quality of male candidates.

IV. DISCUSSION

In this section we assess the potential role of public policies in accounting for the changes in female employment behavior (Table IX provides a chronology of major policy changes). To this end, we estimate a simple linear probability model of the employment decision to identify those periods in which a relatively higher increase in female employment rate is observed**,** once we control for potential changes in the composition of the population.

In Table X, using pooled EPA data, we report estimates of the following linear probability equation for the period 1977-2010:

$$Emp = \beta_0 + \beta_1 Age + \beta_2 Kids + \beta_3 Married + \sum_{i=4}^{5} \beta_i Edu_{i-2} + \sum_{s=6}^{7} \beta_s PartnerEdu_{s-4} + \beta_8 PartnerEmp + \beta_9 trend + \beta_{10} Decade1990s + \beta_{11} Decade2000s + \sum_{m=12}^{27} \beta_m Region_{m-10} + u,$$

[45] Private corporations also received governmental guidelines in order to increase participation of women on boards.

where Emp is the employment dummy variable that is equal to one if a female is employed and zero otherwise. Age stands for the age of the female, $Kids$ is the number of kids living in the household, $Married$ is a dummy variable indicating whether the female is married, Edu_2 ($PartnerEdu_2$) is a dummy variables that is equal to one if the female completed upper secondary school (her husband completed upper secondary school) and Edu_3 ($PartnerEdu_3$) is a dummy variable that is equal to one if the female is college graduated (her husband is college graduated) leaving out the below upper secondary education as a reference category. $PartnerEmp$ is a dummy variable indicating whether the husband is working or not (if a husband is present). Finally, $Trend$ is the linear time trend, $Decade1990s$ and $Decade2000s$ are dummy variables for each decade after 1979, and $Region_m$ stands for the sixteen regional (autonomous communities of Spain) dummies.

All right-hand-side variables have the expected signs and they are all significant. Age has a negative effect on employment that may be capturing that older cohorts of women have lower attachment to the labor market than younger cohorts. The number of children living in the household reduces the probability of female being employed (the marginal effect is -2.6 percentage points). Married women are almost 18 percentage points less likely to be employed, especially if their husband is employed (0.7 additional points). Education has a positive effect on female employment. Compared to women with less than upper secondary education, those with upper secondary education are 18 percentage points and those with a college degree are 40 percentage points more likely to work. Finally, husband's education positively affects the probability of working.

Our estimates show a positive common linear trend that indicates that, even after controlling for obvious factors, female's employment rate has been increasing by 0.5 percentage points per year over the period of analysis. In addition, female's employment rate is 1.5 percentage points higher during the nineties than in the previous years and 5.3 percentage points higher during the last decade than in the period before 1999. It is quite interesting that the last decade during which Spain received a large number of immigrants was also the decade of very fast growth in female employment.

V. CONCLUSIONS

In this paper, we document recent trends in gender equality in employment and wages in Spain and try, following the existing literature, to relate these trends to important changes in public policy. Our results show that: i) Last decades witnessed a huge decline in the gender gap in employment as women, in particular married women, entered the labor force. There remains, however, significant difference between employment patterns of males and females, as females are less likely to work, and if they work they are more likely to be employed part time and with temporary contracts. These differences are more pronounced for women with children younger under than 3 years old. Female employment is also concentrated in lower paid jobs (such as clerical support and service and sales). ii) Although the observed gender wage gap has declined, the gender gap (after controlling for worker and job characteristics) did not decline much between 1995 and 2006 (years for which the data on wages is available). Furthermore, the gender gap in wages is driven mainly by differences in returns to individual characteristic. While women are more qualified than men in observable labor market characteristics, they end up earning less. iii) Public policy seems to affect female employment. In particular, there was a significant acceleration of female employment in 2000s. This was a period in which many policies that were implemented after early 1990s started to have their longer term effects. It was also a period during which Spain received a large number of immigrants, which had a positive impact on female labor force participation.

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TABLES

Table I. Employment rate under counterfactual distributions of observables

	Employment rate (%)	Difference with respect to 1985 (%)
Data 1985	25.0	
Data 2005	59.9	34.9
Counterfactual (1985 employment rates + 2005 education distribution)	37.5	12.5
Counterfactual (1985 employment rates + 2005 marital status distribution)	29.4	4.4
Counterfactual (1985 employment rates + 2005 number of kids distribution)	28.8	3.8
Counterfactual (1985 employment rates + 2005 distribution)	42.7	17.7

Source: Encuesta Poblacion Activa 1985, 2005.
Notes: Sample includes prime working age 25-54 heads of the household and partners or spouses of the heads.

Table II: Percent female by major occupation (%)

Occupation	1995		2002		2006		2010	
	Female share	Female concentration	Female share	Female concentration	Female share	Female concentration	Female share	Female concentration
Legislators. senior officials and managers	31.1	7.7	32.4	6.1	33.3	5.4	35.2	5.7
Professionals	51.0	17.3	52.8	17.5	55.0	16.6	57.4	18.2
Technicians and associate professionals	34.3	8.5	43.0	12.3	46.3	13.3	49.6	14.4
Clerical support workers	52.0	16.6	60.9	15.5	66.3	15.4	67.8	14.1
Service and sales workers	51.9	19.8	59.4	21.9	62.9	22.5	65.4	23.9
Skilled agricultural and fishery workers	23.6	4	21.3	1.8	20.9	1.1	23.0	0.9
Craft and related trades workers	7.4	3.8	6.8	2.8	7.8	2.8	7.2	1.9
Plant and machine operators and assemblers	13.0	4.3	14.5	3.8	13.7	3	13.1	2.6
Elementary occupations	48.5	18	52.7	18.3	57.0	19.9	60.9	18.3
Index of Dissimilarity	**35.13**		**37.21**		**38.5**		**36.5**	

Source: Encuesta Poblacion Activa 1994-2010.
Note: Major occupation groups are based on one-digit CNO-94 National Classification of Occupations.

Table III: Descriptive statistics

	1995		2002		2006	
	Male	Female	Male	Female	Male	Female
Number of observations	122 219	34 233	125 430	58 138	126 514	64 875
Age distribution						
20-29 years	24 922	11 911	30 106	18 189	26 352	17 060
30-39 years	38 691	12 310	40 463	19 744	42 255	23 415
40-49 years	34 966	7 353	32 733	14 225	34,631	16 152
50-59 years	23 640	2 659	22 128	5 980	23 276	8 248
Education distribution						
Below upper secondary	79 067	19 637	72 866	24 476	69 526	24 699
Upper secondary	29 561	10 419	32 558	17 521	34 474	19 702
Higher education	13 591	4 177	20 006	16 141	22 514	20 474
Public sector	7 618	1 938	9 894	9 261	6 616	8 845
Fixed term employment	28 553	9 589	29 120	14 059	30 112	15 935
Average hourly wage	7.54	5.65	9.76	7.86	10.99	9.22
	(5.21)	(3.44)	(6.80)	(5.06)	(7.04)	(5.52)
Percentile ratio of hourly wage						
P90/P10	3.72	3.24	3.52	3.45	3.30	3.38
P90/P50	2.15	2.11	2.14	2.15	2.08	2.11
P50/P10	1.73	1.54	1.65	1.60	1.59	1.60
Average seniority	11.30	9.18	8.73	7.05	8.39	7.08
	(9.97)	(8.91)	(10.01)	(8.78)	(9.82)	(8.82)

Source: Encuesta de Estructura Salarial 1995, 2002 and 2006.
Note: Standard derivations are in paranthesis

Table IV. Wage regressions

Variables	1995	2002	2006	1995	2002	2006	1995	2002	2006
	Observed Gender Gap			Simple Model			Expanded Model		
Female	**-0.257*** **	**-0.171*** **	**-0.128*** **	**-0.212*** **	**-0.232*** **	**-0.207*** **	**-0.192*** **	**-0.201*** **	**-0.189*** **
	(0.006)	(0.004)	(0.005)	(0.004)	(0.003)	(0.004)	(0.004)	(0.003)	(0.004)
Education									
Upper Secondary				0.312***	0.217***	0.172***	0.167***	0.102***	0.084***
				(0.005)	(0.003)	(0.004)	(0.004)	(0.004)	(0.004)
College and above				0.686***	0.620***	0.556***	0.327***	0.220***	0.222***
				(0.007)	(0.005)	(0.005)	(0.008)	(0.007)	(0.007)
Age									
30-39 years				0.146***	0.118***	0.094***	0.114***	0.094***	0.075***
				(0.005)	(0.004)	(0.005)	(0.004)	(0.003)	(0.004)
40-49 years				0.224***	0.169***	0.133***	0.182***	0.141***	0.111***
				(0.006)	(0.005)	(0.006)	(0.005)	(0.004)	(0.005)
50-59 years				0.233***	0.208***	0.154***	0.202***	0.182***	0.138***
				(0.007)	(0.006)	(0.007)	(0.006)	(0.006)	(0.007)
Seniority				0.032***	0.031***	0.030***	0.014***	0.019***	0.019***
				(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
Seniority^2/100				-0.049***	-0.047***	-0.043***	-0.018***	-0.029***	-0.028***
				(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)
Fixed term contract							-0.134***	-0.080***	-0.056***
							(0.005)	(0.004)	(0.004)
Firm Size									
Medium							0.132***	0.106***	0.122***
							(0.003)	(0.003)	(0.003)
Large							0.260***	0.202***	0.229***
							(0.004)	(0.004)	(0.004)
Occupation									
Professionals							-0.226***	-0.256***	-0.320***
							(0.014)	(0.013)	(0.013)
Technicians and associate professionals							-0.365***	-0.483***	-0.503***
							(0.012)	(0.012)	(0.013)
Clerks							-0.541***	-0.706***	-0.703***
							(0.012)	(0.013)	(0.013)
Service and market sales workers							-0.578***	-0.736***	-0.756***
							(0.014)	(0.014)	(0.013)
Craft and related trade workers							-0.560***	-0.688***	-0.694***
							(0.012)	(0.013)	(0.013)
Plant. machine operators and assemblers							-0.556***	-0.701***	-0.713***
							(0.012)	(0.013)	(0.013)
Elementary occupations							-0.664***	-0.829***	-0.810***
							(0.013)	(0.013)	(0.013)
Industry									
Manufacturing							-0.122***	-0.186***	-0.129***
							(0.023)	(0.013)	(0.009)
Electricity. gas and water supply							0.103***	-0.051***	0.056***
							(0.024)	(0.014)	(0.011)
Construction							-0.104***	-0.160***	-0.095***
							(0.023)	(0.013)	(0.010)
Wholesale and retail trade and repair							-0.155***	-0.222***	-0.191***
							(0.023)	(0.014)	(0.010)
Hotels and restaurants							-0.136***	-0.206***	-0.110***
							(0.024)	(0.014)	(0.012)

Transport. storage and communication							-0.064***	-0.161***	-0.123***
							(0.024)	(0.014)	(0.010)
Financial intermediation							0.016	-0.051***	-0.022**
							(0.024)	(0.015)	(0.011)
Real estate and business activities							-0.142***	-0.255***	-0.201***
							(0.024)	(0.014)	(0.010)
Education								-0.270***	-0.250***
								(0.014)	(0.012)
Health and social work								-0.263***	-0.195***
								(0.015)	(0.012)
Other service activities								-0.227***	-0.180***
								(0.014)	(0.011)
Public Sector							0.030***	0.055***	0.126***
							(0.007)	(0.005)	(0.007)
Number of observations	156 452	183 568	191 389	156 452	183 568	191 389	156 452	183 568	191 389
Pseudo-R^2	0.04	0.02	0.02	0.41	0.41	0.39	0.52	0.51	0.52

Source: Encuesta de Estructura Salarial 1995, 2002 and 2006.

Notes: (i) Robust standard errors are in parenthesis. *. ** and *** significant at 1. 5 and 10 % significance level respectively.
(ii)Raw gender gap includes gender dummy without any control variables. (iii) The omitted category is taken as illiterate for education dummies; 20-29 years for age dummies; small-size firm for firm size dummies; legislators. senior officials and managers for occupation dummies; and mining & quarrying for industry dummies. All models include the constant term.

Table Va. Oaxaca decomposition of observed gender gap using simple model

	Human capital factors			Unexplained factors			Total difference		
Characteristics	1995	2002	2006	1995	2002	2006	1995	2002	2006
Education	0.031	0.092	0.090	0.017	0.001	0.003	0.048	0.093	0.093
Age	-0.038	-0.015	-0.008	0.007	0.010	0.006	-0.031	-0.005	-0.002
Seniority	-0.038	-0.016	-0.002	0.001	-0.004	0.001	-0.037	-0.019	-0.002
Sub-total	-0.045	0.061	0.079	0.025	0.007	0.010	-0.020	0.068	0.089
Constant difference				-0.237	-0.239	-0.217	-0.237	-0.239	-0.217
Total difference	**-0.045** [17.5%]	**0.061** [35.6%]	**0.079** [62%]	**-0.212** [82.5%]	**-0.232** [135.6%]	**-0.207** [162.3%]	**-0.257** [100%]	**-0.171** [100%]	**-0.128** [100%]

Source: Encuesta de Estructura Salarial. 1995, 2002 and 2006.

Table Vb. Oaxaca decomposition of observed gender gap using expanded model

	Human capital factors			Unexplained factors			Total difference		
Characteristics	1995	2002	2006	1995	2002	2006	1995	2002	2006
Education	0.017	0.034	0.037	0.017	0.001	0.003	0.033	0.035	0.040
Age	-0.032	-0.013	-0.007	0.008	0.008	0.003	-0.025	-0.005	-0.004
Seniority	-0.018	-0.010	-0.001	0.029	-0.004	0.003	0.011	-0.013	0.002
Fixed term contract	-0.005	0.003	0.003	0.008	0.001	0.005	0.003	0.004	0.008
Firm size	0.007	0.016	0.022	0.004	0.002	0.005	0.011	0.019	0.026
Occupation	-0.023	0.021	0.028	-0.002	0.009	0.019	-0.026	0.030	0.046
Sector	-0.009	-0.026	-0.029	-0.009	0.012	0.009	-0.018	-0.014	-0.020
Public sector	-0.000	0.005	0.010	0.002	0.015	0.011	0.002	0.020	0.021
Sub-total	-0.065	0.030	0.062	0.056	0.045	0.057	-0.008	0.075	0.119
Constant difference				-0.249	-0.246	-0.217	-0.249	-0.246	-0.247
Total difference	**-0.065** [25.1%]	**0.030** [17.7%]	**0.062** [48.3%]	**-0.192** [74.9%]	**-0.201** [117.7%]	**-0.190** [148.3%]	**-0.257** [100%]	**-0.171** [100%]	**-0.128** [100%]

Source: Encuesta de Estructura Salarial. 1995, 2002 and 2006.

Table VIa. Gender dummy coefficients using alternative specifications, 1995

Specification	Quantile regressions (percentage of the conditional wage distribution)							OLS
	5th	10th	25th	50th	75th	90th	95th	mean
(1) Observed gender gap	-0.174***	-0.176***	-0.208***	-0.296***	-0.255***	-0.306***	-0.365***	-0.257***
	(0.005)	(0.004)	(0.005)	(0.007)	(0.010)	(0.013)	(0.014)	(0.006)
(2) Simple model	-0.174***	-0.173***	-0.197***	-0.207***	-0.217***	-0.242***	-0.249***	-0.212***
	(0.006)	(0.005)	(0.004)	(0.005)	(0.007)	(0.009)	(0.013)	(0.004)
(3) Expanded model	-0.160***	-0.166***	-0.174***	-0.180***	-0.205***	-0.228***	-0.245***	-0.192***
	(0.005)	(0.005)	(0.003)	(0.004)	(0.004)	(0.009)	(0.013)	(0.004)

Source: Encuesta de Estructura Salarial 1995.
Note: Standard errors are in parentheses. *, ** and *** significant at 1, 5 and 10 % significance level respectively.

Table VIb. Gender dummy coefficients using alternative specifications, 2002

Specification	Quantile regressions (percentage of the conditional wage distribution)							OLS
	5th	10th	25th	50th	75th	90th	95th	mean
(1) Observed gender gap	-0.169***	-0.177***	-0.161***	-0.169***	-0.154***	-0.177***	-0.235***	-0.171***
	(0.004)	(0.003)	(0.004)	(0.006)	(0.007)	(0.008)	(0.012)	(0.004)
(2) Simple model	-0.188***	-0.197***	-0.207***	-0.221***	-0.243***	-0.282***	-0.287***	-0.232***
	(0.005)	(0.004)	(0.003)	(0.003)	(0.005)	(0.007)	(0.011)	(0.003)
(3) Expanded model	-0.148***	-0.157***	-0.170***	-0.196***	-0.221***	-0.251***	-0.263***	-0.201***
	(0.005)	(0.004)	(0.003)	(0.003)	(0.004)	(0.007)	(0.010)	(0.003)

Source: Encuesta de Estructura Salarial 2002.
Note: Standard errors are in parentheses. *, ** and *** significant at 1, 5 and 10 % significance level respectively.

Table VIc. Gender dummy coefficients using alternative specifications, 2006

Specification	Quantile regressions (percentage of the conditional wage distribution)							OLS
	5th	10th	25th	50th	75th	90th	95th	mean
(1) Observed gender gap	-0.157***	-0.158***	-0.137***	-0.104***	-0.108***	-0.117***	-0.165***	-0.128***
	(0.007)	(0.006)	(0.005)	(0.007)	(0.008)	(0.009)	(0.011)	(0.005)
(2) Simple model	-0.180***	-0.189***	-0.196***	-0.196***	-0.211***	-0.237***	-0.230***	-0.207***
	(0.007)	(0.005)	(0.004)	(0.004)	(0.005)	(0.006)	(0.011)	(0.004)
(3) Expanded model	-0.144***	-0.154***	-0.160***	-0.183***	-0.213***	-0.230***	-0.218***	-0.189***
	(0.007)	(0.004)	(0.004)	(0.004)	(0.004)	(0.006)	(0.009)	(0.004)

Source: Encuesta de Estructura Salarial 2006.
Note: Standard errors are in parentheses. *, ** and *** significant at 1, 5 and 10 % significance level respectively.

Table VII: Distribution of reasons for not seeking work by gender

Reasons for not seeking work	Female (%)	Male (%)
Does not think she/he will find work. having sought work before	3.3	1.5
Affected by an employment regulation	0.1	0.4
Sickness or incapacity	13.2	16.9
Care of children or sick adults. disabled or the elderly	**9.0**	**0.4**
Other family or personal responsibilities	**29.5**	**1.5**
Studying or receiving training	15.5	24.1
Retired	13.2	47.1
Other reasons	16.0	7.7
Does not know	0.3	0.3

Source: Encuesta Poblacion Activa 2005-2010.
Note: Sample includes prime working age group 25-54

Table VIII. Enrollment rates by child age

	<1 year	1 year	2 years	3 years	4 years	5 years
1986-1987				17	86	100
1991-1992				39	97	100
1996-1997	1	5	12	67	99	100
2001-2002	2	9	21	93	100	100
2002-2003	3	10	22	95	99	100

Source: INECSE

Table IX. Policies

1978	Contraceptive Methods
1981	Divorce Law & Extension of paid maternity leave from 12 to 14 weeks
1983	Sterilization
1988	Separate taxation for couples
1989	Extension of paid maternity leave from 14 to 16 weeks
1990	LOGSE: extension of enrollment in public schools to ages 0-3
1995	Replacement rate from 75% to 100% during maternity leave
1999	Family friendly package: right to part-time for parents of 0-6 & unpaid leave of up to 3 years for parents
1999	From tax credit to deduction for children
2003	Cash benefits to working mothers 0-3 and increase in tax deduction for children
2005	Unilateral divorce

Table X. Linear probability model of employment decision with decade dummies

Variables	
Age	-0.001***
	(0.000)
Kids	-0.026***
	(0.000)
Married	-0.178***
	(0.002)
Edu_2	0.180***
	(0.001)
Edu_3	0.396***
	(0.002)
PartnerEmp	-0.007***
	(0.001)
$PartnerEdu_2$	0.005***
	(0.001)
$PartnerEdu_3$	0.004**
	(0.002)
Decade1990s	**0.015***
	(0.002)
Decade2000s	**0.068***
	(0.003)
Trend	0.005***
	(0.000)
Number of observations	998653
R^2	0.195

Source: Encuesta Población Activa 1977-2010.
Notes: (i) Standard errors in parentheses. *. ** and *** significant at 1. 5 and 10 % significance level respectively. (ii) Model includes regional dummies.

FIGURES

Figure 1. Unemployment rate

Figure 2. Fraction of temporary workers

Figure 3. Fraction of workers in the public sector

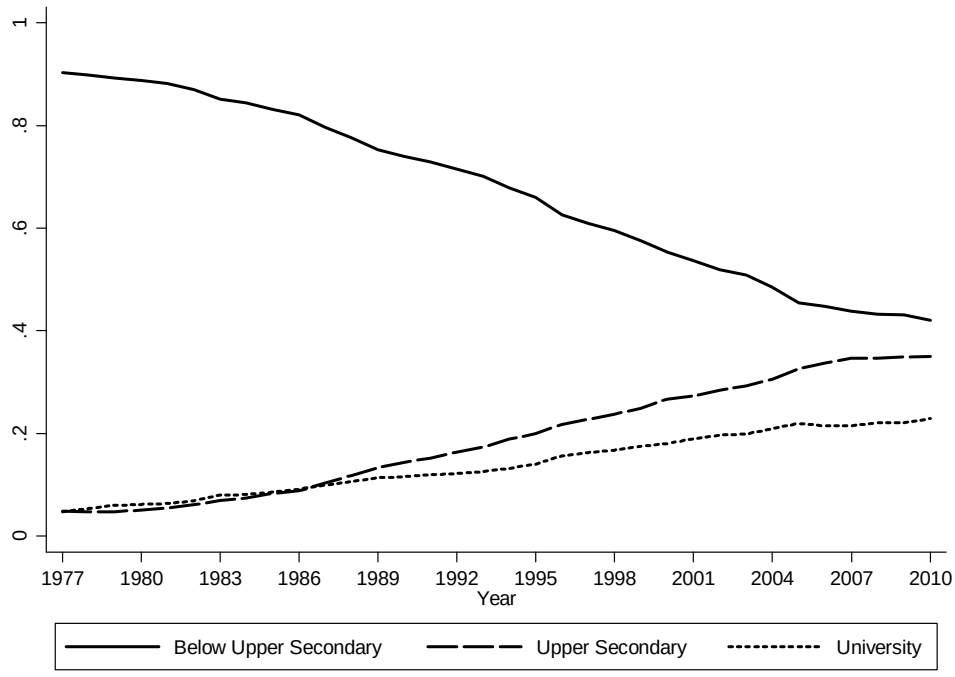

Figure 4a. Educational attainment, total

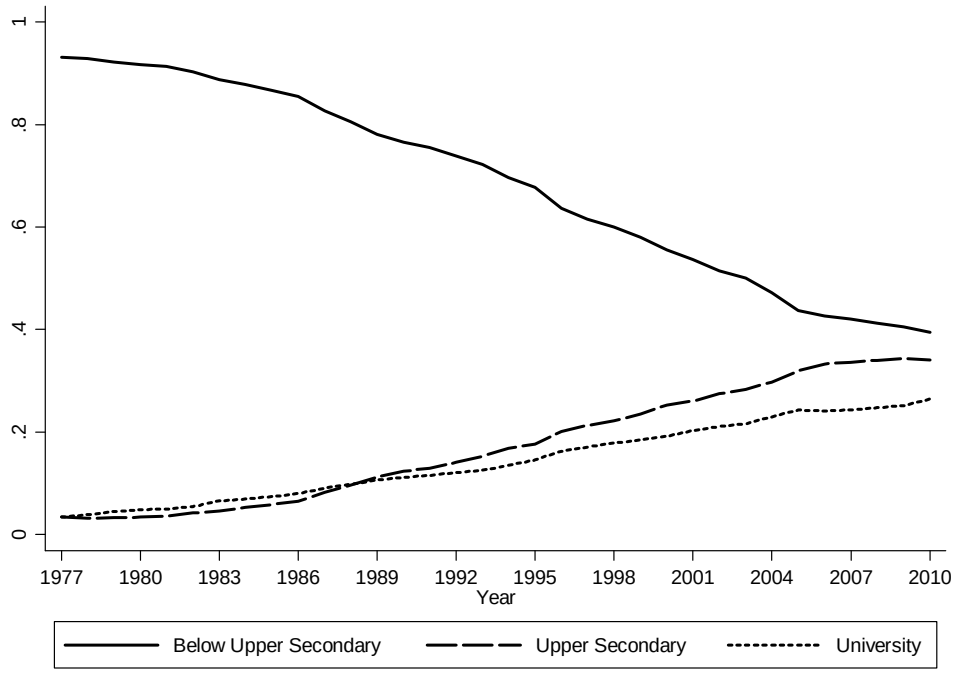

Figure 4b. Educational attainment, females

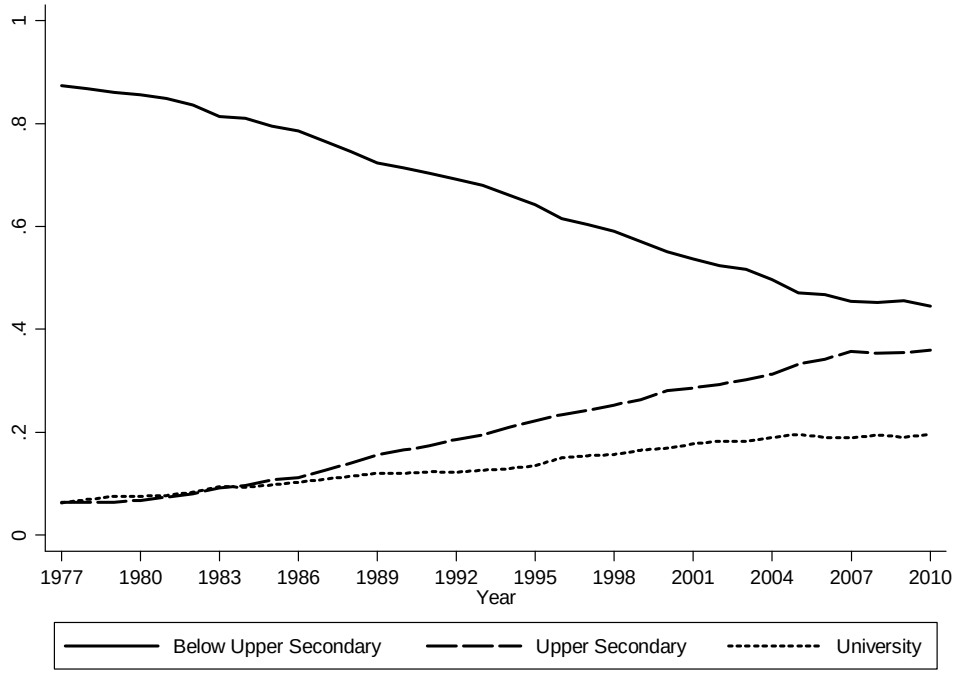

Figure 4c. Educational attainment, males

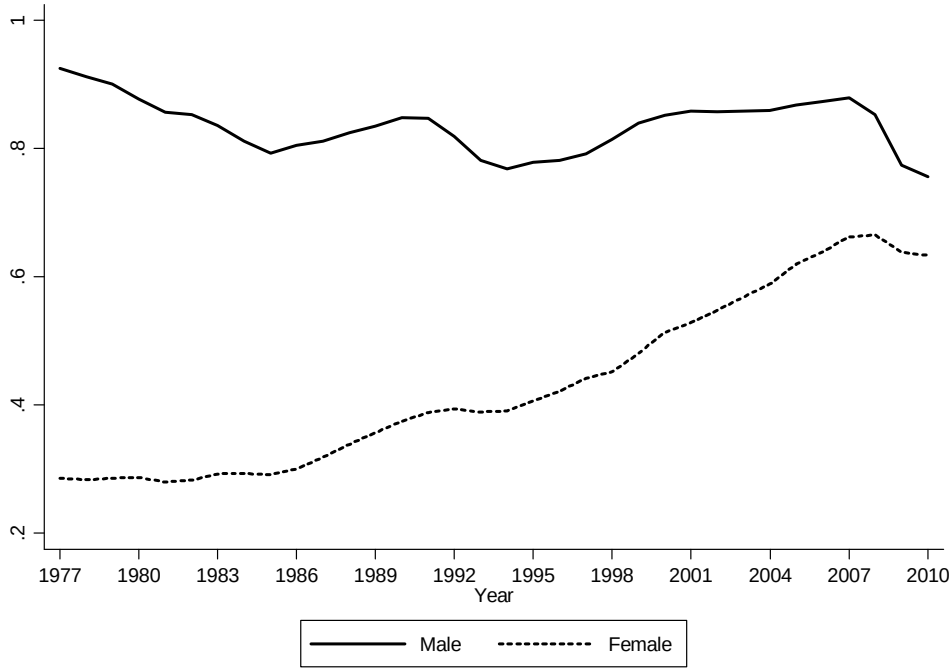

Figure 5. Employment rate

Figure 6. Workers's average weekly hours of work

Figure 7. Fraction of part-time workers

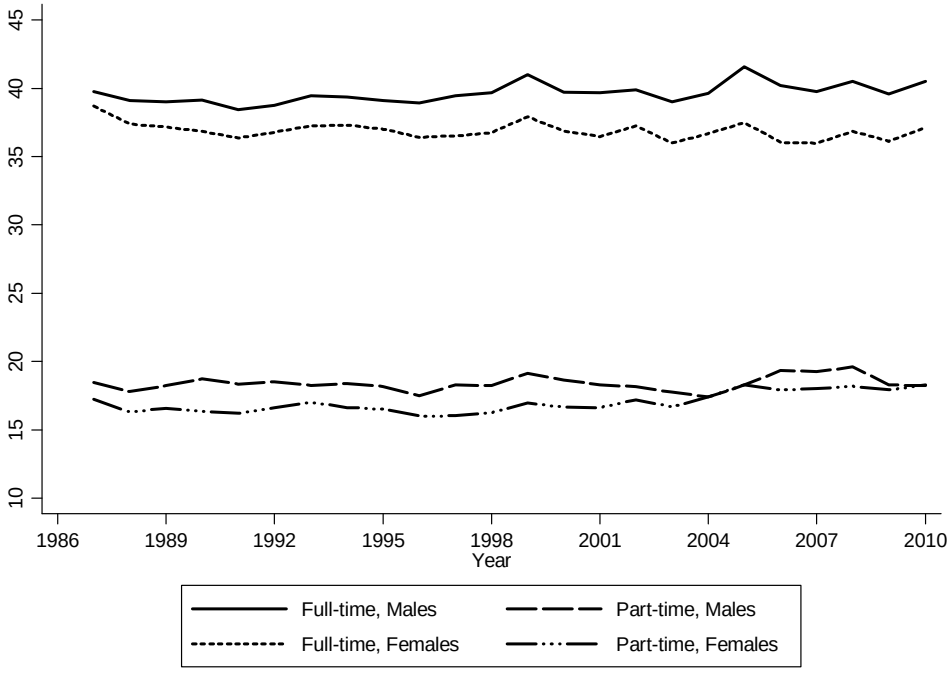

Figure 8. Workers's average weekly hours of work by type of contract

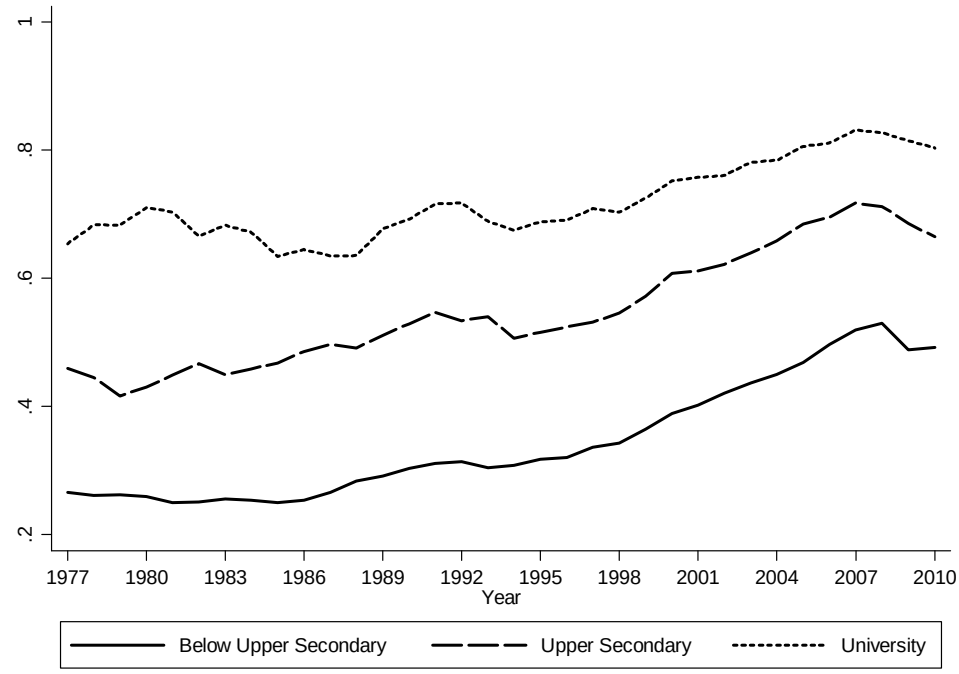

Figure 9. Employment rate of females by educational attainment

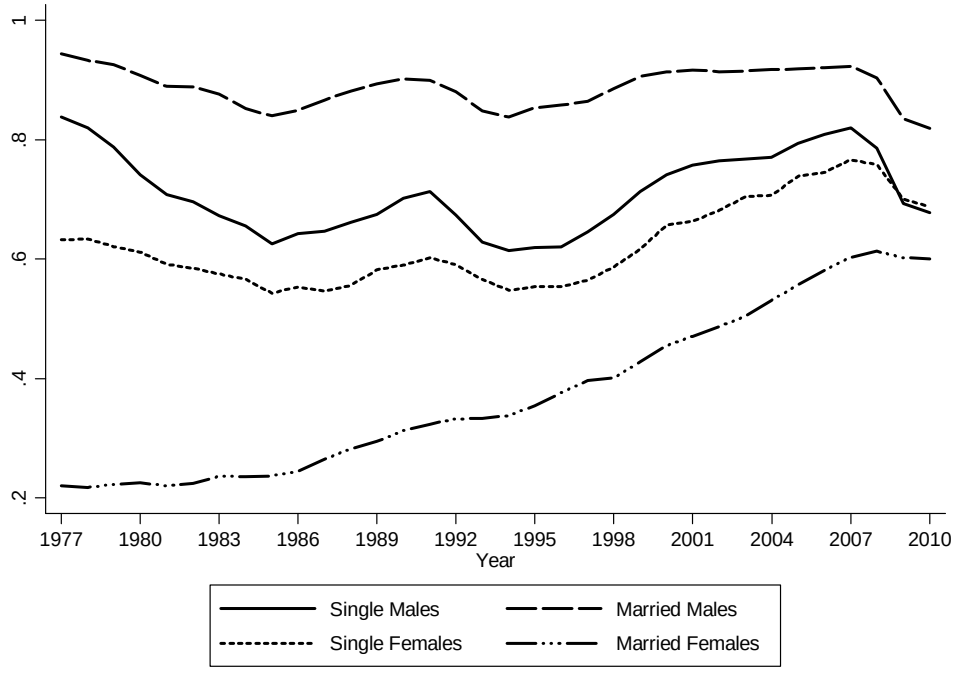

Figure 10. Employment rate by marital status

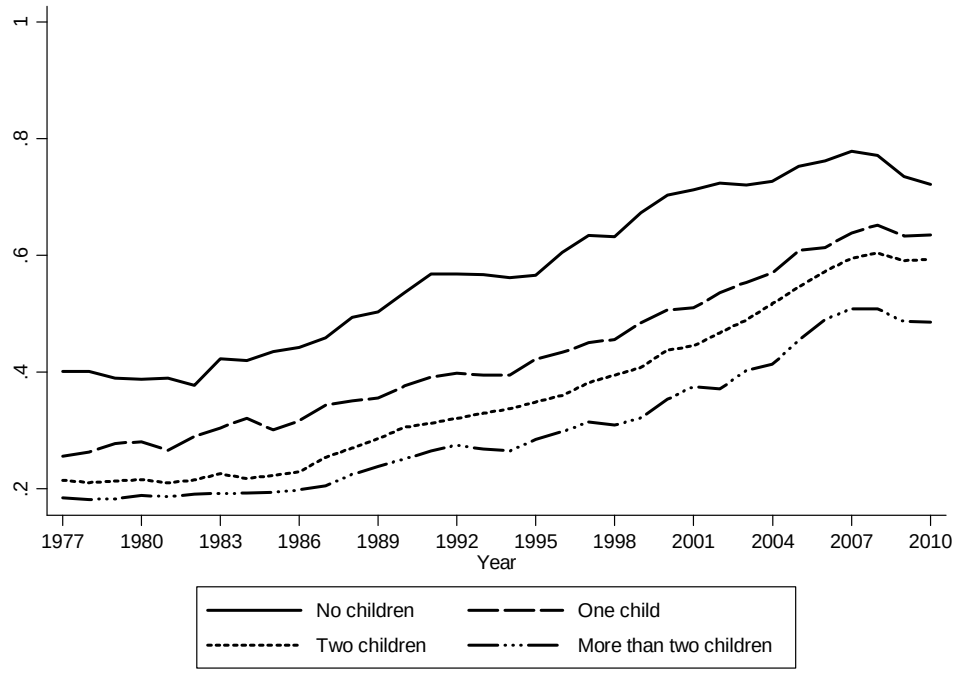

Figure 11. Employment rate of females by number of children

Figure 12. Employment rate of mothers by age of the youngest child (1987-2010)

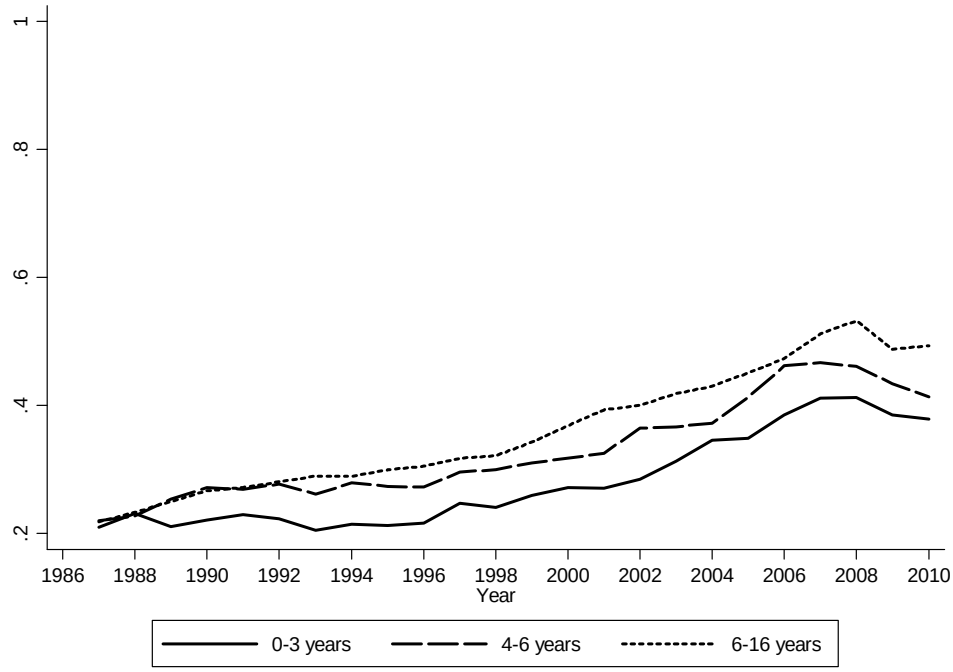

Figure 13a. Employment rate of mothers by age of the youngest child (1987-2010), below upper secondary education

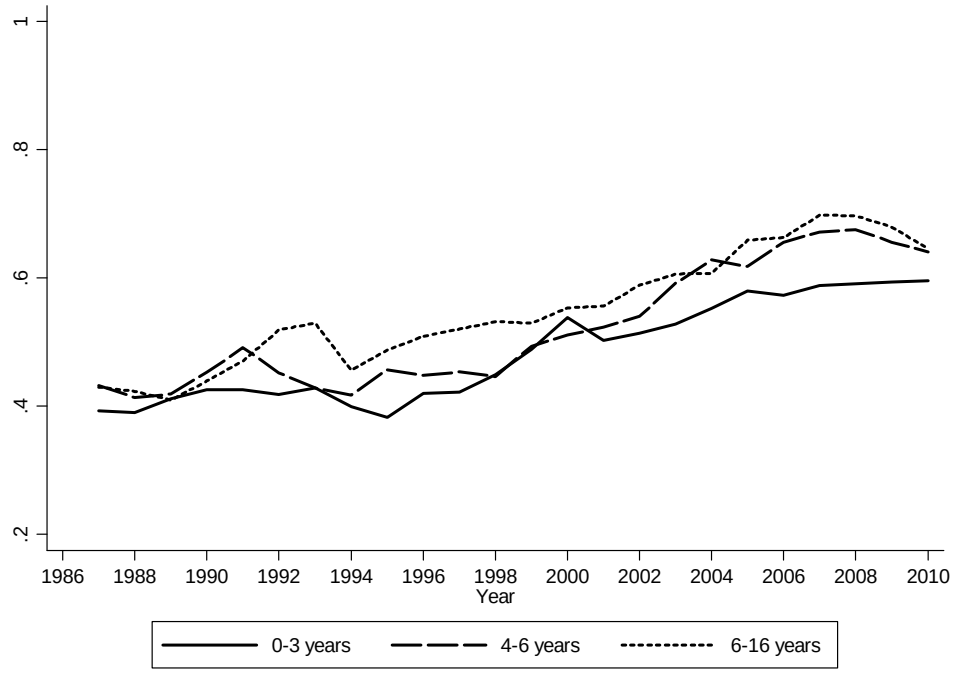

Figure 13b. Employment rate of mothers by age of the youngest child (1987-2010), upper secondary education

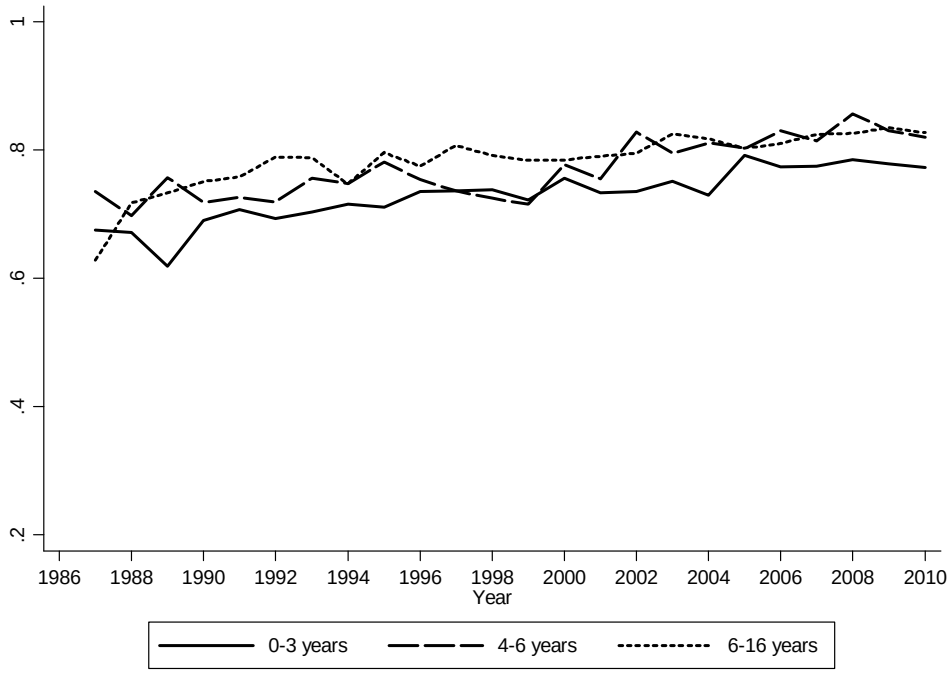

Figure 13c. Employment rate of mothers by age of the youngest child (1987-2010), university education

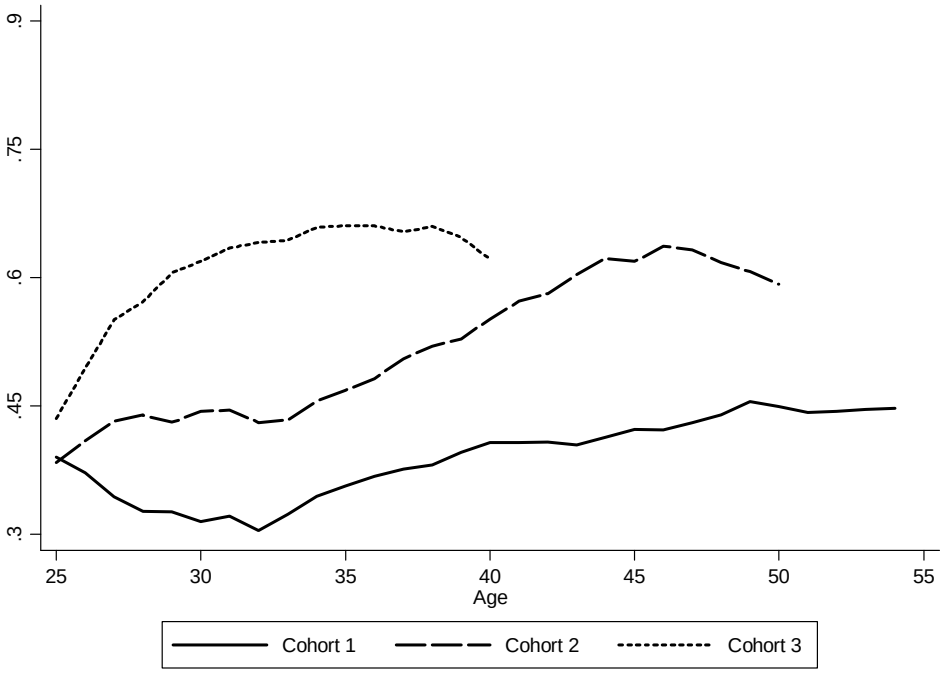

Figure 14a. Employment rate of cohorts of females

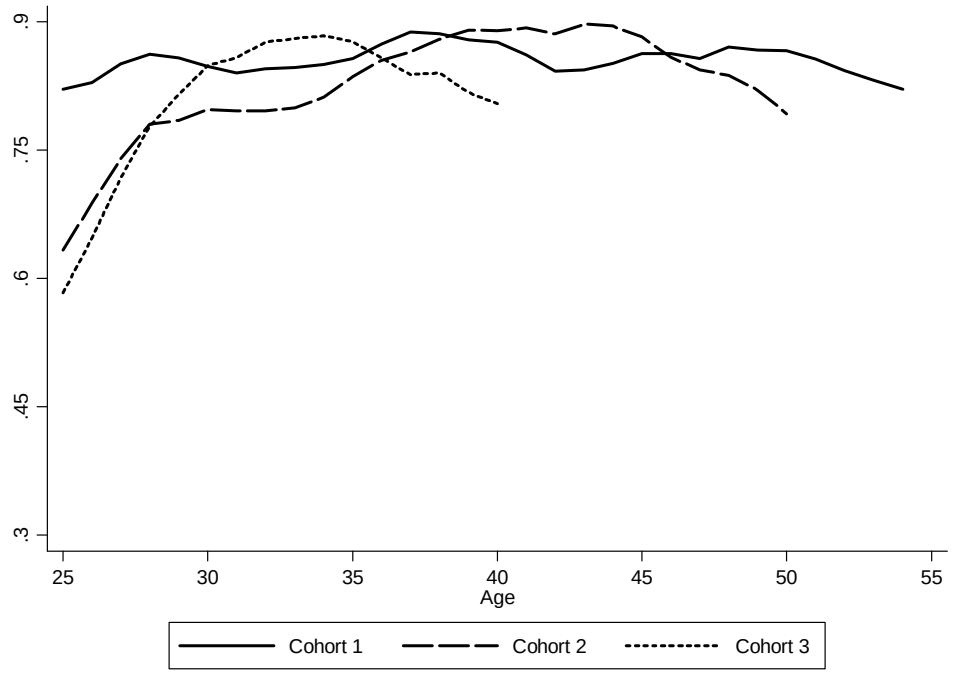

Figure 14b. Employment rate of cohorts of males

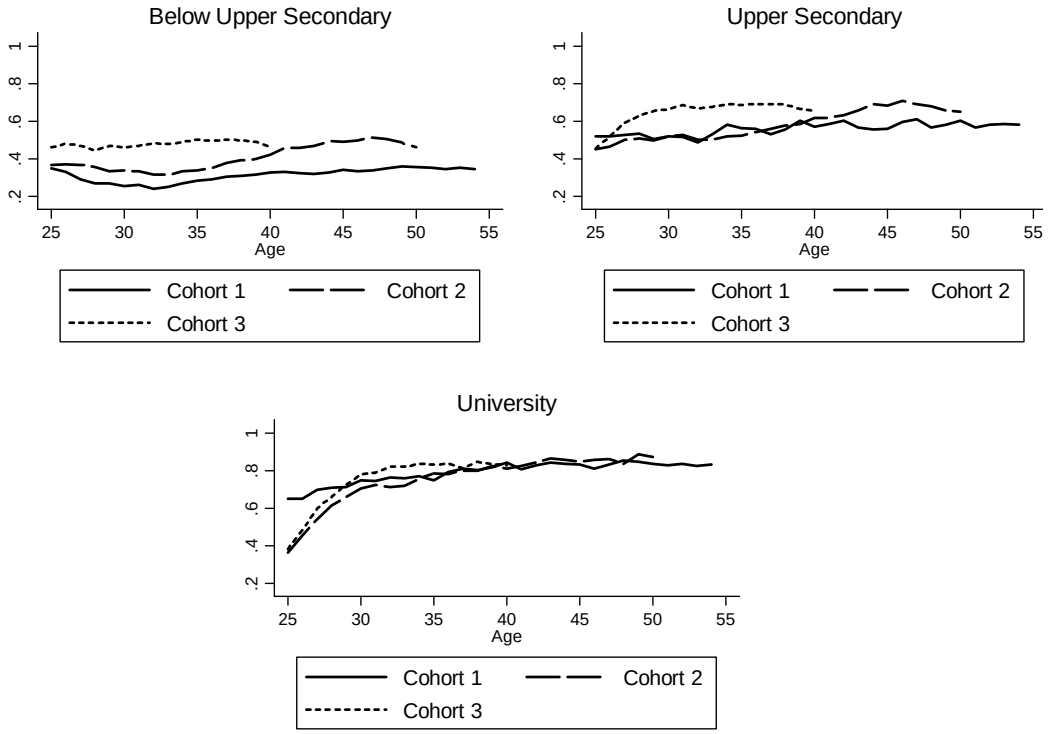

Figure 15. Employment rate of cohorts of females by educational attainment

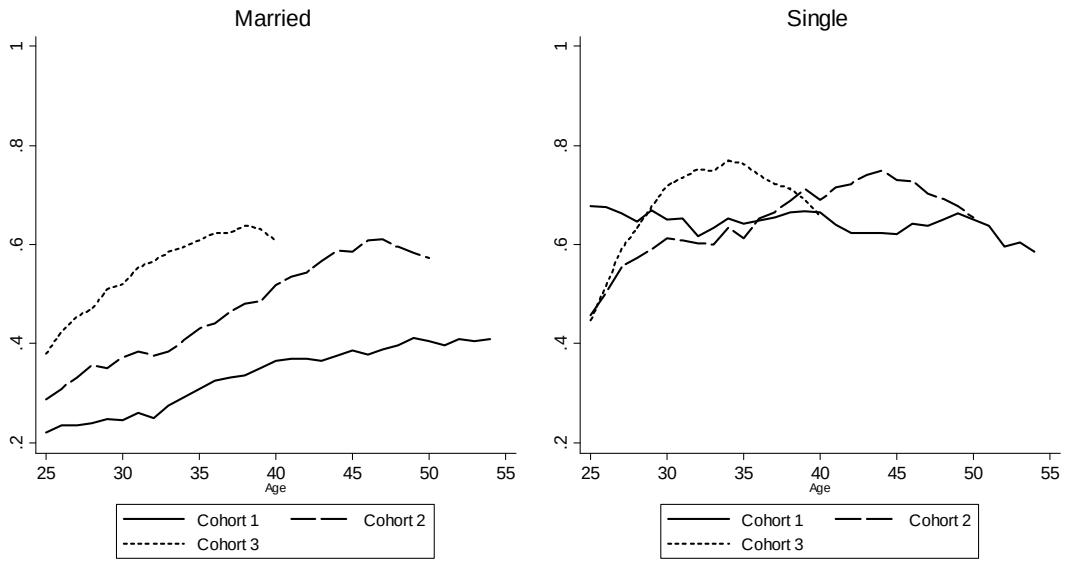

Figure 16. Employment rate of cohorts of females by marital status

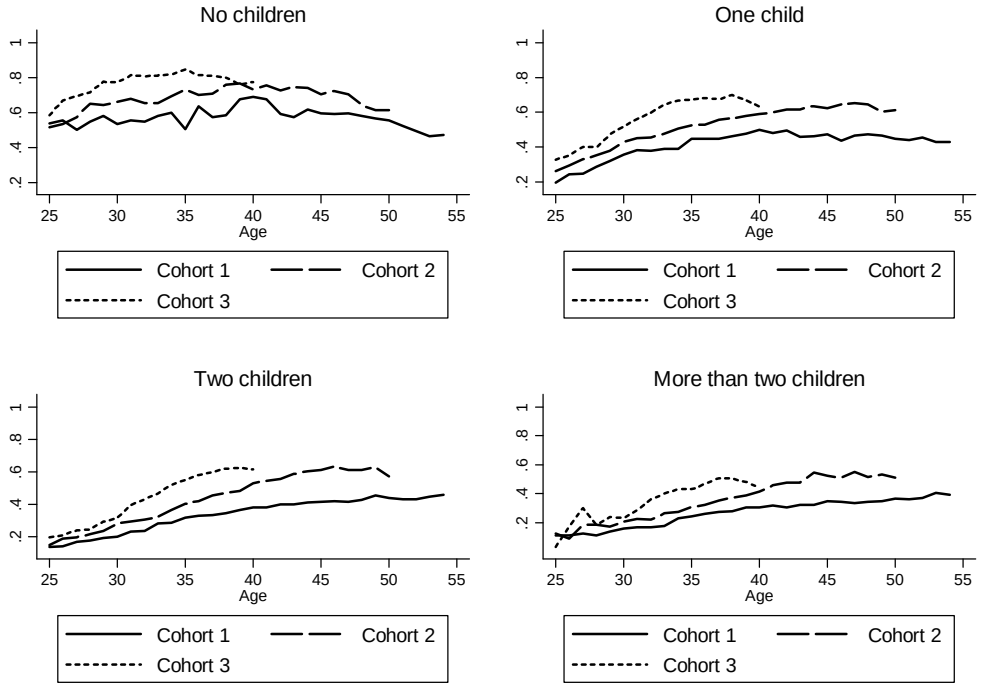

Figure 17. Employment rate of cohorts of mothers by number of children

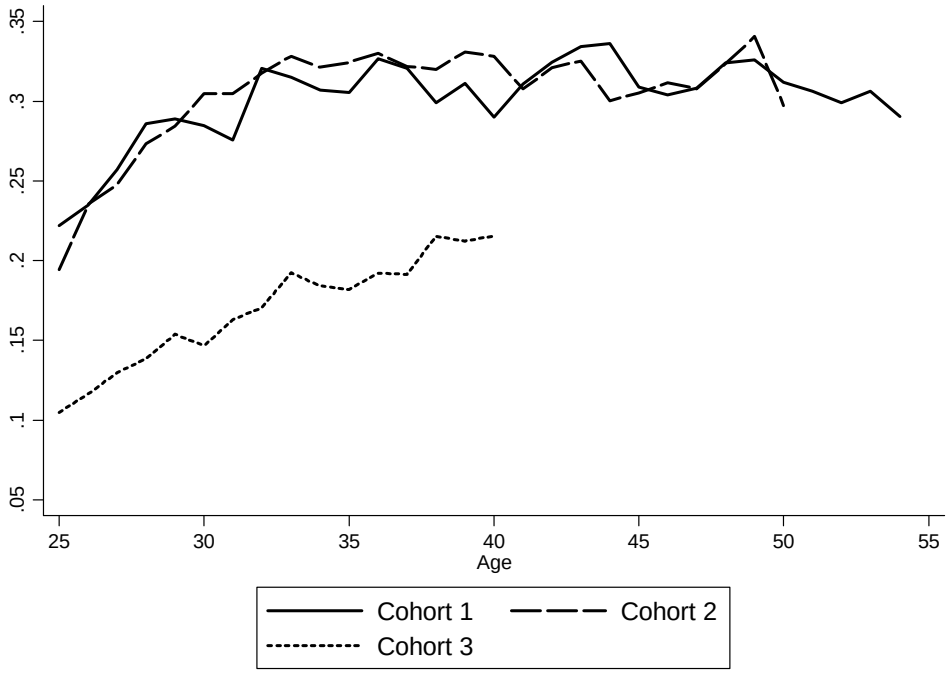

Figure 18. Fraction of females working in the public sector by cohorts

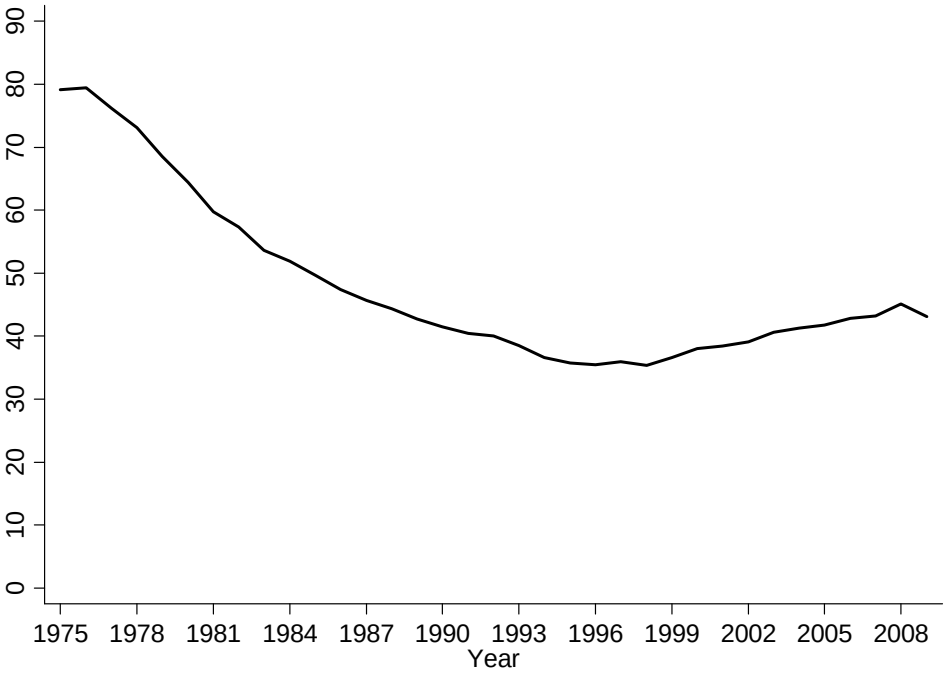

Figure 19. Number of births per 1000 women 15-49

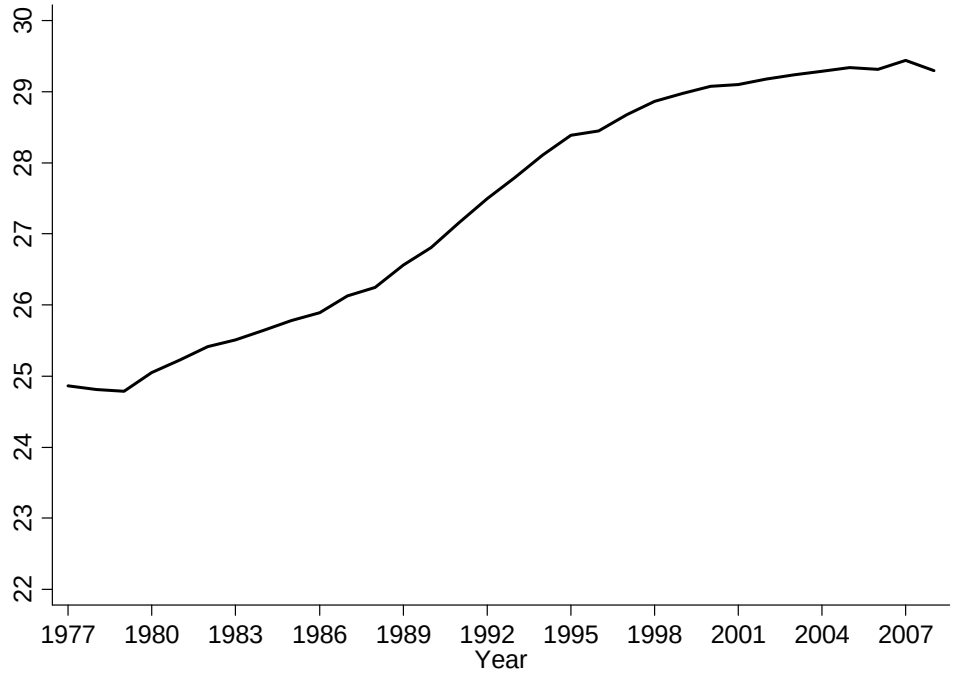

Figure 20. Average age at first child birth

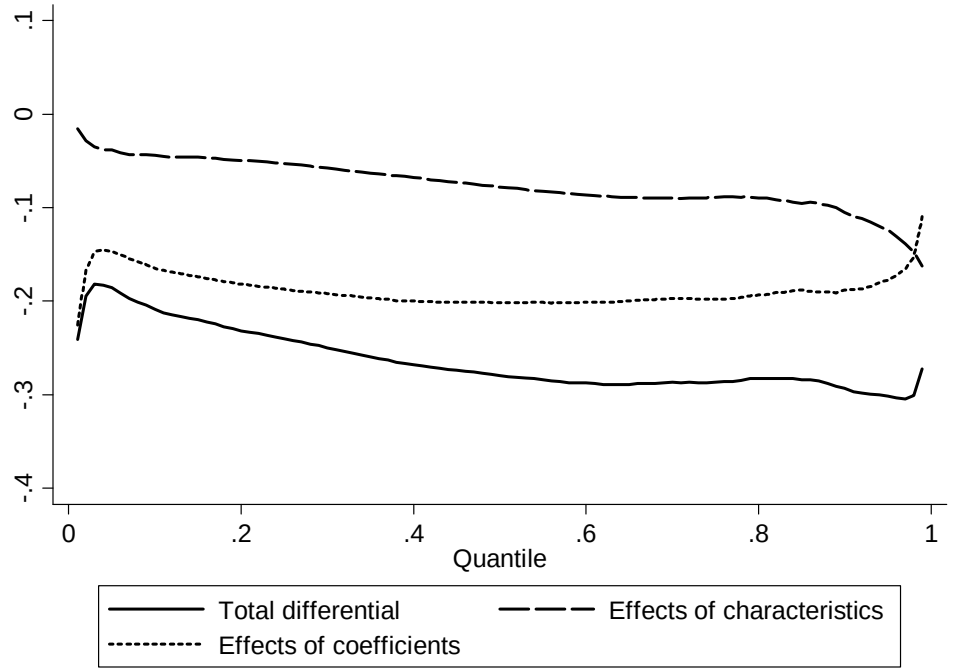

Figure 21a. Decomposition of observed gender gap, 1995

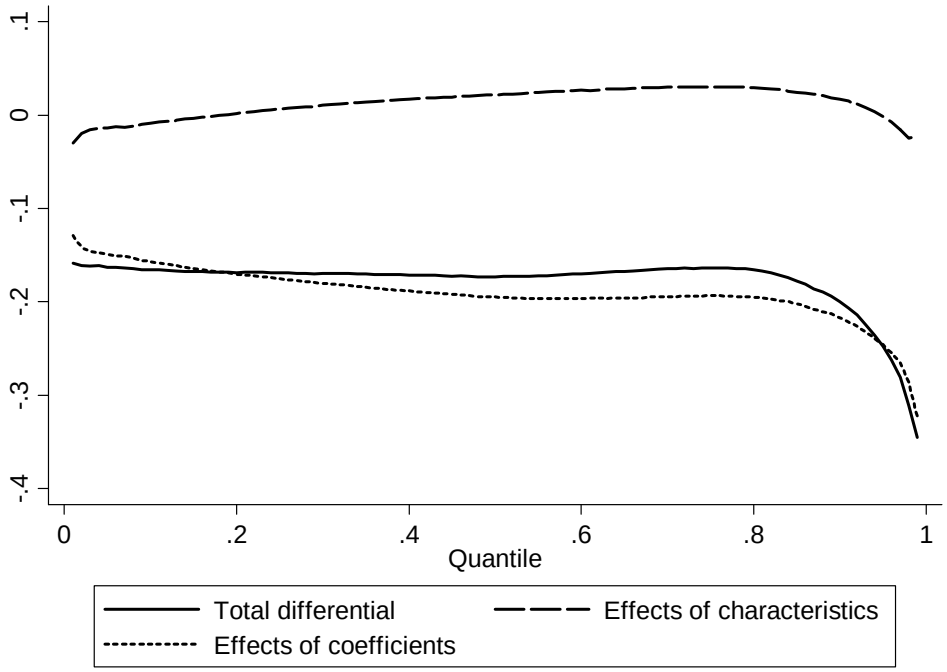

Figure 21b. Decomposition of observed gender gap, 2002

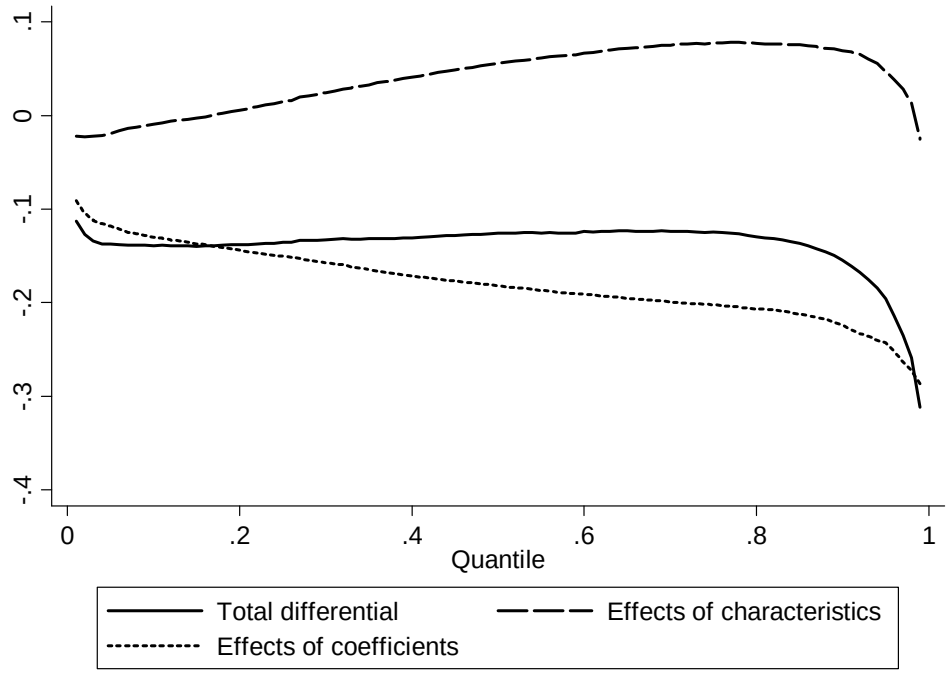

Figure 21c. Decomposition of observed gender gap, 2006

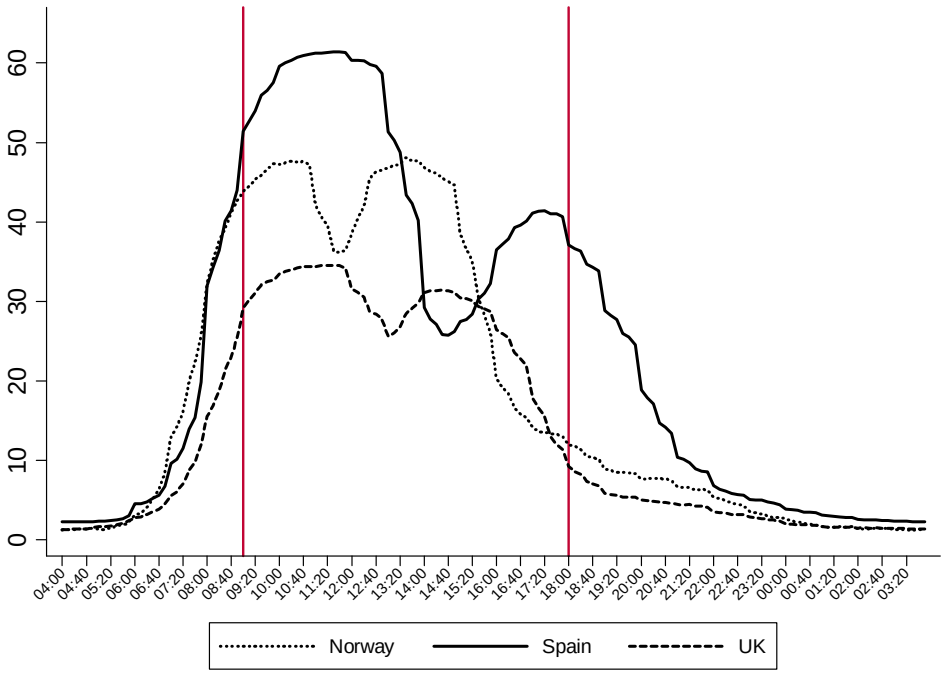

Figure 22. Distributions of the Timing of Work in Various European Countries