Labor Market Institutions and Fertility

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INTERNATIONAL ECONOMIC REVIEW

ONLINE APPENDIX

Appendix A: Data

Spanish Social Security Records   Our main data source is the 2005-2010 Continuous Sample of Working Lives (Muestra Continua de Vidas Laborales con Datos Fiscales, MCVL). The MCVL is a random sample of 4% of the population of the individuals registered to the Spanish Social Security during the reference year.[1] In a given year, a working age person can have a social security record if she is employed or is receiving unemployment benefits. Individuals without a relationship with the social security system at any time during the reference year are not included in that particular MCVL wave. Starting from the reference year and going back, the MCVL records all changes about the labor market history of individuals up to the date of first employment (or up to 1980 for older cohorts).

The unit of observation in the MCVL is an individual labor market spell, which can be employment with a particular contract (a job spell) or unemployment (an unemployment spell).[2] Each spell is characterized by a start date, an end date and a firm identifier. For each job spell, the MCVL provides information on part-time or full-time status, sector of employment (public or private), industry (at the NACE three-digit level), occupational skill categories, type of contract (temporary or permanent), and working hours expressed as a percentage of a full-time equivalent job.[3] The MCVL also contains monthly labor earnings (called the 'contribution basis') and the days worked in a particular month. Although the labor earnings are both top and bottom coded, this information allows us to calculate censored earnings for each job that an individual holds in a month.[4]

The MCVL also provides information on individual characteristics contained in social security records, such as age and gender but lacks information on other demographic characteristics such as education or marital status. However, it can be matched with the Continuous Municipal Registry (Padrón Continuo), which contains information on the country of birth, nationality, and educational attainment. The MCVL can also be matched with the Spanish

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[1]The MCVL does not cover public sector employees who belong to a different social assistance system.

[2]The MCVL also includes information on self-employed. Since our focus on wage and salary earners, they are excluded from the sample.

[3]Part-time/full-time status can also be constructed using the working hours expressed as a percentage of a full-time equivalent job. Employers assign workers into one of the social security occupation categories which proxy skills required by the job.

[4]In addition to censored earnings, uncensored earnings information is also available from income tax records for any job that was held between 2005 and 2010. However, as we describe later in more detail, we restrict the sample to women born between 1966-1971. Since uncensored earnings are only available when women in our sample are 35 to 44 years old, we use censored earnings in the analysis.

Municipal Registry of Inhabitants (Padrón Municipal de Habitantes), which contains information on the household composition (date of birth and gender of each individual living in the household). These registries allow us to construct socioeconomic variables, such as marital status, number of children and new births. We count a woman as being married if there is a male household member in the household whose age difference with her is between -2 and +10 years.[5] We determine mothers based on the presence of household members aged 0-16 year old. Since we determine marital and motherhood status of a woman based on her household members and their dates of birth, there is a possibility that a woman, a male, and a child who live in the same household are not related. To minimize this probability, we drop from the sample women who are living in households with more than one potential husband or with another potential mother.[6]

Based on labor market spells, we construct a quarterly panel data set on labor market transitions of women in the MCVL. We start to construct the quarterly panel using the individuals that were registered to social security in 2010. For these individuals we record the complete labor market history contained in this edition going back to their date of first employment (or to 1980 for the older cohorts) and use municipality records for their personal characteristics. For individuals who are not included in 2010, but appear in previous editions, we follow the same procedure. The resulting data set contains information for each individual in each quarter on type of employment contract, sector of employment, industry, occupation, earnings, country of birth, nationality, education, marital status, number of children and new-born children.

Note that constructing a quarterly panel from the individual-spell data requires assigning a single job to each individual in each quarter (the 'main job'). For individuals that only have a unique spell in a quarter, i.e. if they hold a single job or they are unemployed during an entire quarter, this procedure is straightforward. There can also be individuals who hold multiple jobs within a quarter.[7] For such cases, we follow a similar approach to De la Roca and Puga (2017) to determine the main job. In particular, if an individual has more than one spell *with the same firm* in a given quarter (around 10% of observation in each birth-year cohort), we select as the main the one with the longest duration (in days) in that quarter. If these multiple spells are of the same duration in that quarter (less than 1% of observations in each birth-year cohort), we compare the *entire* duration of spells and assign the main job as that with the longest total duration. If the total duration of these multiple spells is also the same (less than 0.5% in each birth year-cohort), we record the most recent one as the main job. At this stage, individuals may have more than one spell by quarter if they worked in more than one firm (or spent some time unemployed). For individuals who have more than one spell in a quarter *with multiple firms*, we select the main job as that with the highest labor earnings in that quarter. For individuals who hold at least one job but also experience

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[5]In the Spanish Labor Force Survey, for around 94% of women in our sample, age gap between them and their husbands is between -2 and 10, with a median age difference of 2.

[6]Any other male household member in the household whose age difference with her is between -2 and +10 years is considered as another potential husband. Similarly, any other 1966-1971 born women living in the same household can be another potential mother.

[7]If an individual changes job within a firm in a given quarter, we combine the consecutive employment spells into a single job spell for the purposes of constructing firm tenure, but otherwise treat them as separate spells with different job characteristics.

a spell (or spells) of unemployment in a given quarter, we assign a main job, independent of the duration of unemployment spell, following the same criteria.

After determining the main job for each worker in each quarter, we express the quarterly earnings for the main job in 2000 euro using quarterly consumer price index. Then, we compute the daily earnings from the main job by dividing the quarterly real earnings by the days worked in that quarter in that job. Finally, we adjust the real daily earnings from the main job by part-time work and calculate the full-time equivalent real daily earnings in euro for each quarter.[8]

Since the type of contract is a key variable in our analysis and the MCVL provides reliable information on the type of contract only after 1996, we restrict our sample to job spells from 1996 to 2010. We construct labor market experience and tenure variables, however, using all available information back to 1980. In the sample, there are temporary contracts that continue beyond the legal limit of 3 years (7% of the total temporary spells in our sample). Following Güell and Petrongolo (2007), we winsorize temporary spell duration at 14 quarters.

Our female sample is restricted to native, married women born between 1966Q1 and 1971Q4.[9] When we look at male earnings, we focus on married men born between 1964Q1 and 1969Q4 since the median age difference between husbands and wives is about 2 years for this sample of women in the Spanish Labor Force Survey (see below). As per females, we determine the marital status of a male based on his household members and their dates of birth. We count a man as being married if there is a female member in the household whose age difference with him is between -10 and +2 years and who is old enough to be his potential wife (at least 22 years old). We drop from the sample, men who are living in households with more than one potential wife or with another man from the same cohort.

Fertility Survey　While the MCVL is an excellent data source to capture the relation between temporary contracts and fertility, as the demographic characteristics of households are obtained by merging the MCVL with the municipal records, information on the number of children is restricted to children at home. Therefore, we complement the MCVL with the 2018 Spanish Fertility Survey (FS) of the Instituto Nacional de Estadística (INE), the Spanish Statistical Institute, which collects information about fecundity for 14,556 women in Spain that were interviewed in 2018. The survey provides data of completed fertility for this group of women and therefore of the distribution of number of children, the distribution of age at first birth and the average number of children depending on female's current earnings, as well as childcare costs among other. We restrict the sample to married native women, born between 1967 and 1971. To maximize the sample size, the completed fertility of employed women in our cohort at around age 49 is calculated based on those between ages 46 to 52. The mean age in the sample is 49.

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[8]The MCVL provides information on a part-time coefficient which identifies the working hours of a part-time worker in a company in proportion to the duration of normal working hours of a full-time worker in the same company. This allows us to build a measure of full-time equivalent (FTE) earnings that is what part-time workers could be expected to earn if they worked full-time.

[9]The country of birth and nationality information in the MCVL enables us to distinguish between natives and immigrants. Note that in our sample, women are 25 to 31 years old in 1996 and 39 to 45 years old in 2010. By this way, we ensure that childless women in our sample are unlikely to be mothers after 2010. Among native, married women who were born between 1966Q1 and 1971Q4, 18% are college educated.

Spanish Labor Force Survey   As a rich administrative data source, the MCVL provides an excellent picture of the Spanish labor market dynamics. The MCVL does not contain, however, any information on individuals who are out of the labor force. To be able to calculate the distribution of workers across different labor market states (employment, unemployment, and out-of-the-labor force), we use data from the Spanish Labor Force Survey (LFS) from 1987 to 2010.[10] These surveys are run by the INE, and constitute the Spanish part of Labor Force Statistics of the OECD. Each survey consists of a representative sample of about 60,000 households and provides detailed labor market information of all individuals who are older than 16 in each household. When we calculate the LFS statistics, we restrict the sample to heads of households and their partners or spouses, and following the same restriction as in the MCVL sample, focus on married native women, born between 1966 and 1971 and their husbands.

Since the second quarter of 1987, the LFS also has a rotating panel dimension (LFS-flows) that follows individuals up to six consecutive quarters. This enables us to calculate quarterly transition rates across the labor market states. We calculate the transition rates across different labor market states using 2000 wave of the LFS-flows. Since in the LFS-flows the age information is available only in 5-year intervals, we have to base the analysis on the 1966-1970 cohort of married women instead of the 1966-1971 cohort that we used in the MCVL.[11] The LFS-flows also do not provide information on nationality, and therefore, we consider all women instead of only native women. In contrast to the LFS, the LFS-flows do not allow us to link husbands and wives. Since the median age difference between husbands and wives is about 2 years for this cohort in the LFS sample and we only have the age information in 5-year intervals in the LFS-flows, thus, for men, we restrict the sample to the 1966-1970 cohort who are married.

European Union Statistics on Income and Living Conditions   In the MCVL, it is not possible to match wives and husband and construct joint labor market transitions or total household earnings. The LFS does not contain any information on earnings, either. Therefore, we use the European Union Statistics on Income and Living Conditions (EU-SILC) 2004-2012, to construct household-level income measures as well as statistics in relation to unemployment benefits and transfers (see Appendix C). We restrict the sample to heads of households and their spouses and again focus on married native women, born between 1966 and 1971 and their husbands. To calculate earnings, we also restrict the sample to employees with non-missing wage and hours information. We also exploit the information on childcare arrangements that is available in the EU-SILC. For each child age 12 or younger, the EU-SILC reports the number of hours of different forms of childcare, such as center-based care, baby-sitters or relatives, that a household uses. To calculate the share of women with access to informal care, we also restrict the sample to those who reported positive hours of education or childcare use in any of the childcare arrangement categories

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[10]Since the particular cohort we are focusing is between 25-44 only in years 1991-2010, we are effectivity using data from the LFS from 1991 to 2010.

[11]The age is reported in 5 year intervals in LFS-flows, from 16-19 to 60-64, and one age group for those who are 65 or older. Consider 2000 LFS-flows, the 1966-1971 cohort were 29-34 years then. But the only category that overlaps with this group is 30-34 which corresponds to the 1966-1970 cohort.

for at least one 0-12 years old child.[12]

Spanish Time Use Survey We calculate the fraction of mothers and non-mothers working with a split-shift job from the 2009-2010 Spanish Time Use Survey (STUS). We restrict the sample to native, married, 25-44 years old women, but as the STUS sample size is small, we do not restrict the sample to a particular cohort of women. If a household member reports to be the child (son or daughter) of a female household member in the household roster, we consider that female as a mother. As this only identifies the motherhood status based on cohabiting children, then we use the respondent's answer to the STUS question: "Do you have children age 18 or younger who do not live with you?" to determine mothers who have non-cohabiting children. The split vs. regular work schedule is a question in the STUS, stated as "Do you have a continuous or a split work schedule?". Therefore, the fraction of mothers and non-mothers who work with a split contract is simply the fraction of those who responded that their work schedule is a split one. We only consider employees who filled the diary in an ordinary/usual day in a regular working week and who worked that week. The STUS also includes time-diaries which provide information on whether the respondent is working or not within each 15-minute interval (from 6.00am-6.14am to 5.45am-5.59am) within 24 hours. Using this information, we construct the time interval between the first and last times a female worker indicates that she works in a day.

Survey of Household Finances To compute the wealth-to-income ratio of married couples (see Appendix C), we use the 2014 wave of the Survey of Household Finances (Encuesta Financiera de las Familias, EFF). The EFF is conducted by the Bank of Spain and collects information on socioeconomic characteristics, income, assets, and debt of around 6,000 households in each wave.

References

[1] De La Roca, Jorge and Diego Puga. 2017. "Learning by Working in Big Cities, *Review of Economic Studies* 84(1): 106–142.

[2] Güell, Maia and Barbara Petrongolo. 2007. "How Binding are Legal Limits? Transitions from Temporary to Permanent Work in Spain." *Labour Economics* 14(2): 153-183.

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[12]The information on the number of hours in childcare in the EU-SILC is collected only for household members not over 12 years old.

Appendix B: Additional Tables and Figures

Appendix B1: Cross-Country Evidence

In this Appendix, we present cross-country data on the relationship between flexible work arrangements and TFR (Figure B1), the gender employment and unemployment gaps and TFR (Figure B2), the share of temporary contracts and TFR (Figure B3), and cross-country evidence on childlessness and the fraction of women with 2 or more children (Figure B4).
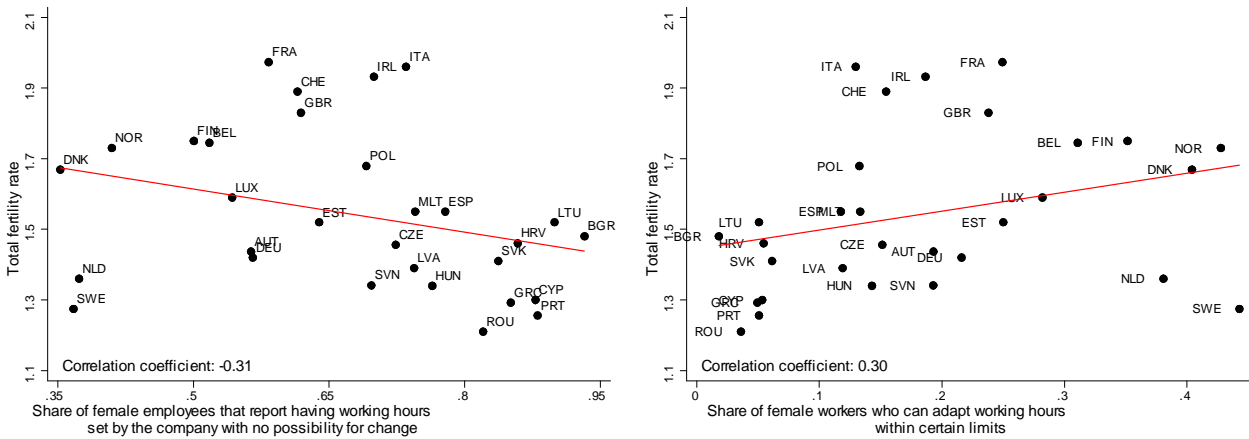
Figure B1. Flexibility and the TFR

Source: Data for year 2015 from OECD Family Database, Tables LMF2.4 Family-friendly workplace practices and SF2.1 Fertility rates, http://www.oecd.org/social/family/database.htm (accessed on 07/03/2023)
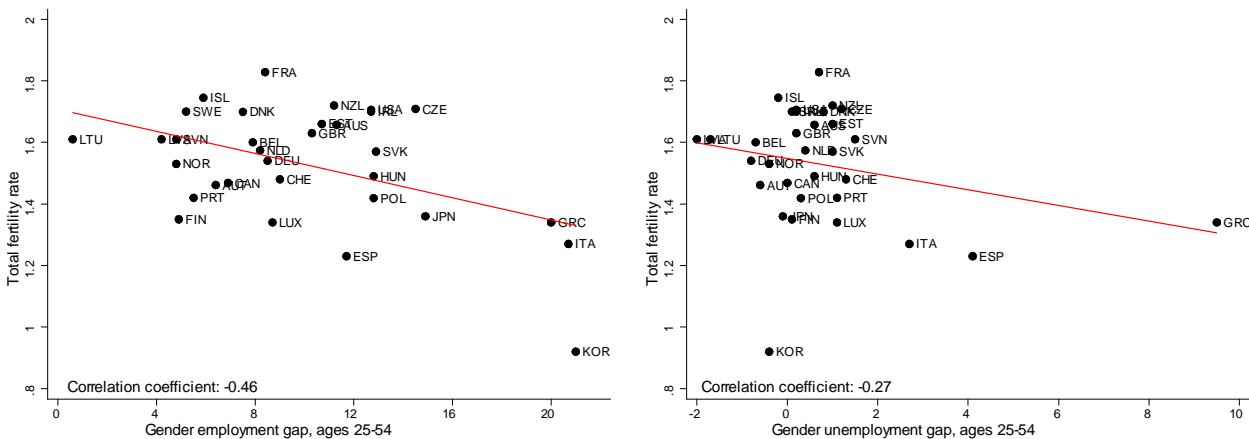
Figure B2. Gender Employment and Unemployment Gap and the TFR

Source: Data for year 2019 from OECD Employment Database, https://www.oecd.org/gender/data/employment/ and OECD Family Database, Table SF2.1 http://www.oecd.org/social/family/database.htm (accessed on 07/03/2023).

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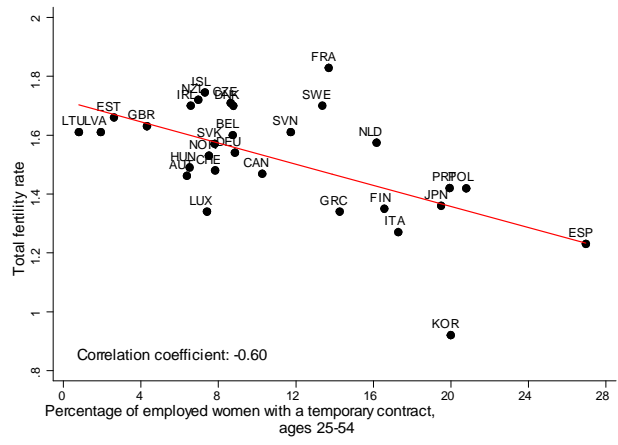
Figure B3. Temporary Contracts and the TFR

Source: Data for year 2019 from OECD Employment Database, https://bit.ly/2AjAnGc (accessed on 07/03/2023) and OECD Family Database, Table SF2.1 http://www.oecd.org/social/family/database.htm (accessed on 07/03/2023).
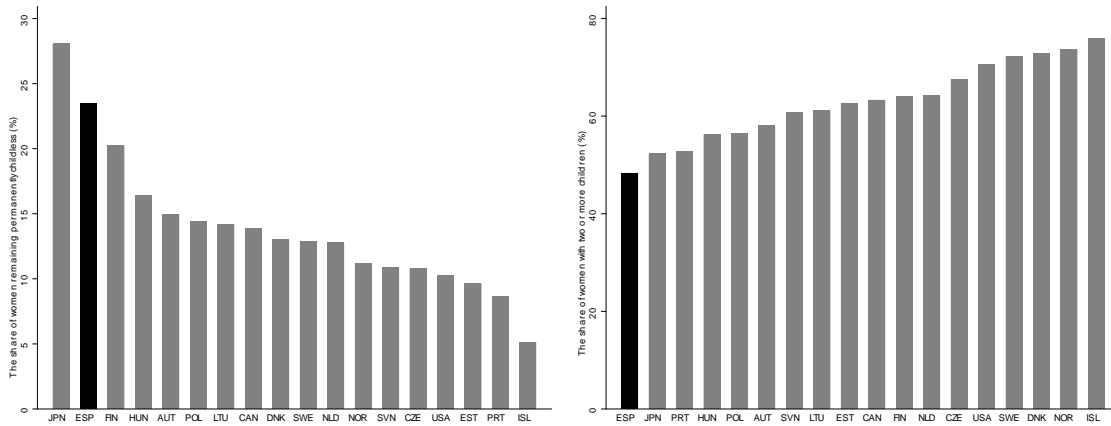
Figure B4. Childlessness (left panel) and Share of Women with Two Children (right panel)

Source: Data for 1973-76 cohorts of women (who reached at least age 44) from Human Fertility Database https://www.humanfertility.org/ (accessed on 24/04/2023).

Appendix B2: Temporary Contracts and Fertility of Men

In this Appendix, we show the association between employment in temporary contracts and fertility (Table B1) and between cumulative exposure to temporary contracts and the number of children, childlessness and daily earnings (Table B2) for men.

Table B1. Temporary Contracts and the First Birth Probability

|	(1)	(2)	(3)	(4)
Men				
Temporary$_{t-4}$	0.841***	0.792***	0.792***	0.811***
	(0.022)	(0.021)	(0.032)	(0.033)
Number of observations	353,359	353,359	206,352	206,352
Personal characteristics	no	yes	yes	yes
Work-related characteristics	no	no	yes	yes
Year fixed effects	no	no	no	yes

Notes: (i) Reported are the odds ratio with individual level clustered standard errors in parentheses. (ii) Personal characteristics include age. Work-related characteristics are firm tenure (in quarters), a binary indicator for public sector, a binary indicator for full-time, occupation dummies (twelve social security categories) and NACE one-digit industry dummies (nine categories). All models include a constant term. (iii) *p < 0.10,**p < 0.05, ***p < 0.01.

Table B2. Fertility and Earnings Statistics by Time Spent on Temporary Contracts, aged 25-44

	Number of children			% childless			Daily earnings		
	<50%	≥50%	Δ	<50%	≥50%	Δ	<50%	≥50%	Δ
Men									
Married at age 35	0.94	1.04	-0.10***	37.04	33.37	3.67***	71.90	48.99	22.92**
Married at age 40	1.28	1.23	0.05***	23.42	24.72	-1.30	73.68	54.52	19.16***
Married at age 44	1.24	1.05	0.19***	24.08	31.86	-7.78***	74.69	56.42	18.27***

Notes: (i) We further restrict our sample of men to those who were employed at least 50% of the time between 1996Q1 and 2010Q4. (ii) Within each panel Δ denotes the difference between columns <50% and ≥50%. (iii) ***, **, and * indicate that the difference is statistically significant at the 0.01, 0.05 and 0.10 level, respectively.

Appendix B3: Split-shift Jobs by Occupation, Industry and Region

In this Appendix, we document the prevalence of split-shift schedule contracts across occupations, industries and regions (Table B3). We also show the relationship between the fraction of women working with split-shift schedules and the completed fertility across occupations and regions (Figure B5).

Table B3. Incidence of Split-Shift Schedules by Occupation, Industry and Region

	%
Occupation	
Business administration and public administration	59.46
Scientific technicians, professionals and intellectuals	37.51
Support technicians and professionals	44.41
Administrative-type employees	33.33
Catering, personal, and protection services and trade salespersons	31.54
Skilled agriculture and fishing workers	37.14
Craftspersons, qualified manufacturing, construction, and mining workers	55.50
Machine operators, fixed machinery fitters, mobile machinery drivers/operators	33.89
Unskilled workers	28.41
Industry	
Agriculture, forestry and fishing	45.87
Mining and quarrying	71.43
Manufacturing	44.84
Electricity, gas, steam, water supply, and waste	35.14
Construction	70.99
Wholesale, retail trade, repair of motor vehicles/motorcycles	50.97
Accomodation and food service activities	43.21
Transportation, storage, information and communication	29.24
Financial and insurance activities	36.25
Real estate, professional, scientific and technical activities	49.10
Admin. activities; public admin., defense, compulsory social security	18.35
Education	35.46
Human health and social work activities	13.29
Arts, entertainment, and recreation; other service activities; and activities of households as employers	38.53
Region	
Galicia, Asturias, Cantabria	41.44
Community of Madrid	38.34
Basque Community, Navarre, La Rioja, Aragon	36.42
Catalonia, Valencian Community, Balearic Islands	45.50
Castile and Leon, Castile-La Mancha, Extremadura	36.94
Andalusia, Region of Murcia	28.47
Canary Islands, Ceuta, Melilla	25.42

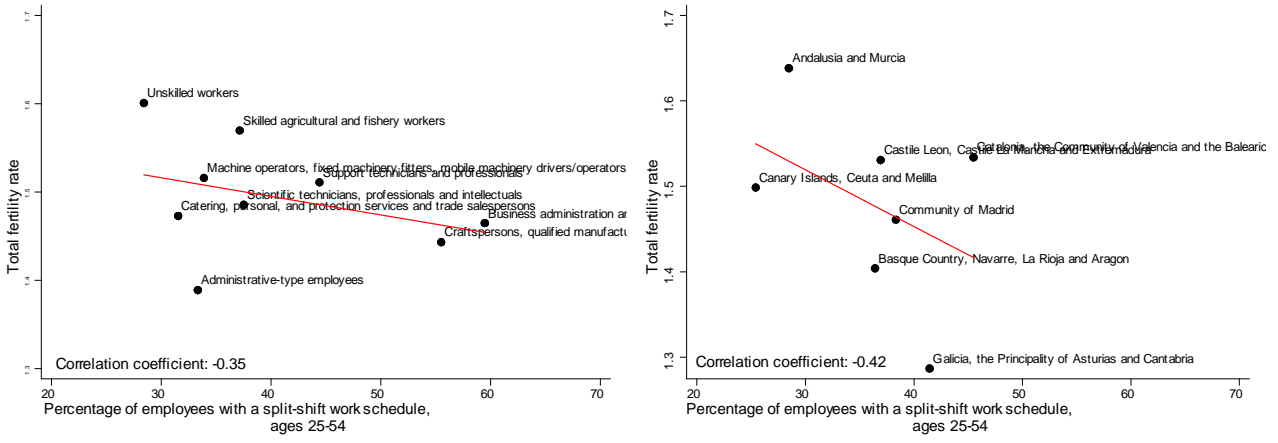Source: The STUS, 2009-2010. Sample: 25-54 years old employees.

Figure B5. Split-shift Work Schedules and the TFR

Source: Percentage of 25-54 years old employees with a split-shift work schedule from the STUS, 2009-2010 and the TFR (number of children at age of 40 and above) from the FS, 2018.

Appendix B4: Transitions from Temporary to Permanent Contracts

In this Appendix, we show the association between gender, children and promotions from temporary to permanent contracts. In the LFS-flows sample, where we can calculate transitions among employment, unemployment and out-of-labor force as well as well moves from temporary to permanent contracts (i.e. promotions), each quarter about 6.39% of college-educated women are promoted from a temporary to a permanent contract. The transition rate is 8.76%, or 2.4 percentage points higher, for married men with a college education. Non-college women, on the other hand, have slightly higher transition rate than that of married non-college men (5.93% vs. 5.67%). These differences can be due to selection, if men and women with temporary contracts have different characteristics, such as the sector of employment, occupation, and tenure. To check whether the association between gender and promotions is robust to such controls, we use the MCVL sample. We focus on childless individuals working with a temporary contract in a given firm in a given quarter and estimate the probability of being promoted to a permanent contract using a logistic regression. Table B4 shows the odds ratio of promotion one year after a birth. Columns 1 and 2 present the results when we only control for gender and parenthood, respectively. For college women, being a female and having a child are negatively and significantly associated with lower odds of promotion (odds ratios are less than one). As we move across the columns, we gradually add the interaction between gender and the indicator for having a child (column 3), other personal and work-related characteristics (columns 4 and 5, respectively), and find that only gender matters. In the most demanding specification (column 6), where we control for all covariates along with year fixed-effects, the odds of being promoted one year after for college-educated women is 20% lower than the odds for males. The results at the bottom panel, however, suggest a higher odds of promotion for non-college women relative to men (columns 1-4), consistent with the quarterly figures from the LFS-flows sample, but this difference turns statistically indifferent from zero once work-related characteristics are controlled for.

Table B4. Gender, First-birth and the Probability of Promotion

	(1)	(2)	(3)	(4)	(5)	(6)
Men and College Women						
Female	0.898**	-	0.904**	0.854***	0.866**	0.797***
	(0.042)		(0.043)	(0.041)	(0.061)	(0.062)
First-birth	-	0.833**	0.896	0.906	0.886	0.843
		(0.062)	(0.072)	(0.073)	(0.106)	(0.101)
Female × First-birth	-	-	0.607**	0.630**	0.622	0.651
			(0.133)	(0.138)	(0.215)	(0.225)
Number of observations	63,527	63,527	63,527	63,527	32,054	32,054
Men and Non-College Women						
Female	1.192***	-	1.191***	1.166***	1.071	1.007
	(0.039)		(0.040)	(0.039)	(0.054)	(0.057)
First-birth	-	0.865**	0.896	0.901	0.879	0.839
		(0.059)	(0.072)	(0.072)	(0.105)	(0.100)
Female × First-birth	-	-	0.972	0.971	1.112	1.123
			(0.150)	(0.150)	(0.253)	(0.256)
Number of observations	83,280	83,280	83,280	83,280	43,209	43,209
Personal characteristics	no	no	no	yes	yes	yes
Work-related characteristics	no	no	no	no	yes	yes
Year fixed effects	no	no	no	no	no	yes

Source: The MCVL, 2005-2010. Sample: Native, married women born between 1966Q1 and 1971Q4 and native married men born between 1964Q1 and 1969Q4. Sample is further restricted to childless individuals when first observed. Notes: (i) Reported are the odds ratio with individual level clustered standard errors in parentheses. (ii) The outcome variable takes the value one if the individual is employed in a firm with a temporary contract in a given quarter is promoted to a permanent contract one year after and zero otherwise. (iii) Personal characteristics include age. Work-related characteristics are firm tenure (in quarters), a binary indicator for public sector, a binary indicator for full-time, occupation dummies (eleven social security categories) and NACE one-digit industry dummies (nine categories). All models include a constant term. (iv) $^*p < 0.10$, $^{**}p < 0.05$, $^{***}p < 0.01$.

Appendix B4: Moments

In this Appendix, we document set of moments used in the calibration (Section 4).

Table B5. Education and Marriage

Women, ages 25-44 (%)

	College	Non-College
Education	0.19	0.81
Married to a Husband with		
College	0.49	0.07
Non-College	0.51	0.93

Source: The LFS, 1987-2010. Sample: 25-44 years old married native women
born between 1966 and 1971 (only household heads and spouses).

Table B6a. Distribution across Labor Market States by Motherhood Status, ages 25-44 (%)

(College)

	Out of Labor Force	Unemp.	Temp.	Perm.
All women	15.35	7.70	19.30	57.65
Non-mothers	7.73	11.40	26.34	54.53
Mothers	17.72	6.55	17.11	58.62
Mothers of 0-2 years old	22.03	6.68	16.75	54.54

Source: The LFS, 1987-2010. Sample: 25-44 years old married native women with at least a college
education born between 1966 and 1971 (only household heads and spouses).

Table B6b. Distribution across Labor Market States by Motherhood Status, ages 25-44 (%)

(Non-College)

	Out of Labor Force	Unemp.	Temp.	Perm.
All	44.58	14.48	13.53	27.41
Non-mothers	23.77	17.06	19.30	39.87
Mothers	47.81	14.08	12.64	25.48
Mothers of 0-2 years old	57.52	11.79	8.12	22.57

Source: The LFS, 1987-2010. Sample: 25-44 years old married native women with below college education
born between 1966 and 1971 (only household heads and spouses).

Table B7. Inequality

	College	Non-College
Average hourly wage of wives	12.97	7.46
Average hourly wage of husbands	13.89	9.92
Variance of wives' log(hourly wage)	0.207	0.171
Variance of husbands' log(hourly wage)	0.214	0.182
Correlation between husbands' and wives' log(hourly wage)	0.437	0.413

Source: The EU-SILC, 2004-2012. Sample: 25-44 years old married native women born between 1966 and 1971 and their husbands (only household heads and their spouses). Sample is further restricted to employees with non-missing wage and hours information.

Table B8a. Quarterly Transition Rates across Labor Market States, aged 30-34

(College)

Married women	O_t	U_t	T_t	P_t		
O_{t-1}	84.22	10.02	4.69	1.07		
U_{t-1}	12.93	73.00	12.17	1.90		
T_{t-1}	4.86	5.37	83.38	6.39		
P_{t-1}	0.92	0.55	1.10	97.43		

Married men	Non-College			College		
	N_t	T_t	P_t	N_t	T_t	P_t
N_{t-1}	67.17	30.56	2.27	80.00	18.18	1.82
T_{t-1}	8.19	86.42	5.39	5.67	85.57	8.76
P_{t-1}	0.81	2.04	97.15	0.25	0.76	98.98

Source: The LFS-flows, 2000Q1-2000Q4. Sample: Married women with at least a college education born between 1966 and 1970 and their potential husbands (married men born between 1966 and 1970). Notes: (i) O: Out of Labor Force, U: Unemployed N: Non-employed, T: Employed with a temporary contract, P: Employed with a permanent contract. (ii) 1966-1970 cohort is 30-34 years old in 2000.

Table B8b. Quarterly Transition Rates across Labor Market States, aged 30-34
(Non-College)

Married Women	O_t	U_t	T_t	P_t		
O_{t-1}	89.50	6.51	3.22	0.77		
U_{t-1}	16.89	69.62	12.08	1.42		
T_{t-1}	10.90	13.68	69.49	5.93		
P_{t-1}	3.28	1.01	1.07	94.64		
	Non-College			College		
Married men	N_t	T_t	P_t	N_t	T_t	P_t
N_{t-1}	67.17	30.56	2.27	80.00	18.18	1.82
T_{t-1}	8.19	86.42	5.39	5.67	85.57	8.76
P_{t-1}	0.81	2.04	97.15	0.25	0.76	98.98

Source: The LFS-flows, 2000Q1-2000Q4. Sample: Married women with below college education born between 1966 and 1970 and their potential husbands (married men born between 1966 and 1970). Notes: (i) O: Out of Labor Force, U: Unemployed N: Non-employed, T: Employed with a temporary contract, P: Employed with a permanent contract. (ii) 1966-1970 cohort is 30-34 years old in 2000.

Table B9. Distribution of Households by the Main Mode of Childcare Arrangement (%)
(Children Ages 0-2)

	College	Non-College
Education at pre-school	50.00	44.81
Childcare at a day-care centre	1.85	3.25
Childcare by a professional childcare provider	16.98	9.09
Childcare by grandparents/relatives/friends	31.17	42.86

Source: The EU-SILC, 2004-2012. Sample: 25-44 years old married native employed women born between 1966 and 1971 and their husbands (only household heads and their spouses). The sample is further restricted to households who have at least one 0-2 years old child and reported positive hours of education or childcare use in any of the above categories for a 0-2 years old child. Note: The number of hours in education and childcare during a usual week is collected for household members not over 12 years old (age at the date of interview).

Table B10. Employment Rate of Women by Household Gross Income Tercile
(College)

Tercile	Employment/Population	Household income (euros)
1	0.58	23,584.38
2	0.83	44,347.49
3	0.93	76,336.90

Source: The EU-SILC, 2004-2012. Sample: 25-44 years old married native women with at least a college education born between 1966 and 1971 (only household heads and spouses).

Table B11. Average Number of Children at age 44, Married Women
(College)

Tercile	Female Earnings[a]	Household Income[b]
1st	1.35	1.43
2nd	1.49	1.64
3rd	1.72	1.83

Source: [a]The MCVL, 2005-2010. [b]The FS, 2018. Sample: Native, married women without a college education born between 1966Q1 and 1971Q4.

Appendix C: Calibration Details, College Women

In this Appendix, we provide further details on the calibration of the model for women with a college education.

Interest Rate   The real interest rates are calculated as the nominal rates minus the CPI-inflation. The data on long-term interest rates and the consumer prices index is taken from the OECD database (https://data.oecd.org/interest/long-term-interest-rates.htm, and https://data.oecd.org/interest/long-term-interest-rates.htm). The data on deposit rates is taken from the monthly Statistical Bulletin of the Bank of Spain. The numbers refer to average values for 2003-2018 period (https://www.bde.es/webbde/en/estadis/infoest/bolest.html).

Age-Earnings Profiles and Labor Market Outcomes for Husbands   The targets for males reflect averages for husbands (with or without a college degree) who are married to college-educated women in our samples (see Figure 2).

Transfers   We use pooled data from the EU-SILC from 2006 to 2012 since information on household income variables, including transfer income, are only available 2006 onward. Transfer income includes old-age benefits, survivor' benefits, sickness benefits, disability benefits, education-related allowances, family/children related allowances and housing allowances, and social exclusion not elsewhere classified. We restrict the sample to households with one married couple and only consider household heads and spouses. We further restrict wives to be born between 1966 and 1971, native, and 25 to 44 years old, and calculate the average household income in the sample including all households (about 36,775.55 euro). Both the transfers and household income for college women are reported as a fraction of the average household income in the *overall* sample.

Unemployment Benefits   We use pooled data from the EU-SILC from 2004 to 2012 as information on unemployment benefits are collected at individual level and available 2004 onward. We restrict the sample to married household heads and spouses in which the wife is born between 1966 and 1971, native, and 25-44 years old. Then, we calculate the average income of unemployed from unemployment insurance (including zeros), separately for men and for college women. As per transfers, we calculate these as a fraction of the average household income in the *overall* sample.

Labor Market Transitions for Husbands   These exogenous transitions are calibrated without running the full model. To reduce the number of parameters, we assume that transitions are same for three age groups, 25-34, 35-44, and 45-54, which are shown in Table C1. Calibrated transitions differ slightly from the ones we observe in the data (e.g. in Table B8) since we are matching labor market shares. We could alternatively take the transitions from the data, which would result in slightly different shares.

Table C1. Labor Market Transitions for Husbands of College Wife, % (Calibrated)

	Age-25 shares (%)		
	N_t	T_t	P_t
	10.0	46.5	43.5
	Transitions		
	N_t	T_t	P_t
	Ages 25-29		
N_{t-1}	85.0	15.00	0.00
T_{t-1}	3.00	87.00	10.00
P_{t-1}	0.00	3.00	97.00
	Ages 30-34		
N_{t-1}	80.0	18.0	2.00
T_{t-1}	5.00	86.00	9.00
P_{t-1}	0.00	1.00	99.00
	Ages 35-54		
N_{t-1}	61.0	23.0	16.00
T_{t-1}	6.00	70.00	24.00
P_{t-1}	1.00	2.00	97.00

Wealth-to-Income Ratio   To compute the wealth-to-income ratio we use the 2014 wave of the EFF and restrict the sample to married couples in which the wife has at least a college degree. The EFF provides information on gross wealth defined as the sum of all financial and real assets as well as on total income obtained by all household members in the previous calendar year including labour income, capital income and income from public or other assistance or social benefits.

Appendix D: Calibration, Non-College Women

In this Appendix, we provide further details on the calibration of the model for women without a college education.

Parameters Chosen a Priori

For the simulations for households without a college-educated wife, the parameters l, r, α_j, and $\Omega(n,i)$ take the values in Table 4. The tax and transfer functions, $G(I)$ and $T(I)$, are also identical for two types of households. For unemployment benefits, we use the same data source and the steps as the one for college-educated wives (see Appendix C). The values are $\theta_f = 0.058$ and $\theta_m = 0.095$.

The construction of age-earnings profiles and labor market outcomes for an average husband who is married to a wife without a college degree also follows the same steps. In the LFS sample, 93% of wives without a college degree have husbands without a college degree, while 7% have college-graduate husbands (Table B5). The resulting profiles (Figure D1) are then used to calibrate the earnings function (ω_0^P, ω_1^P, and ω_2^P) and the labor market transitions, $\pi_j^m(\lambda_m, \lambda_m')$. Table D1 shows the transitions between non-participation, temporary and permanent employment. Compared to the husbands of college-educated women (Table C1), a larger share is out of the labor force at age 15 (20% versus 10%). Husbands of non-college-educated women are also much less likely to be promoted from a temporary to a permanent job; for ages between 35 and 54, the gap is quite large (24% versus 4%).
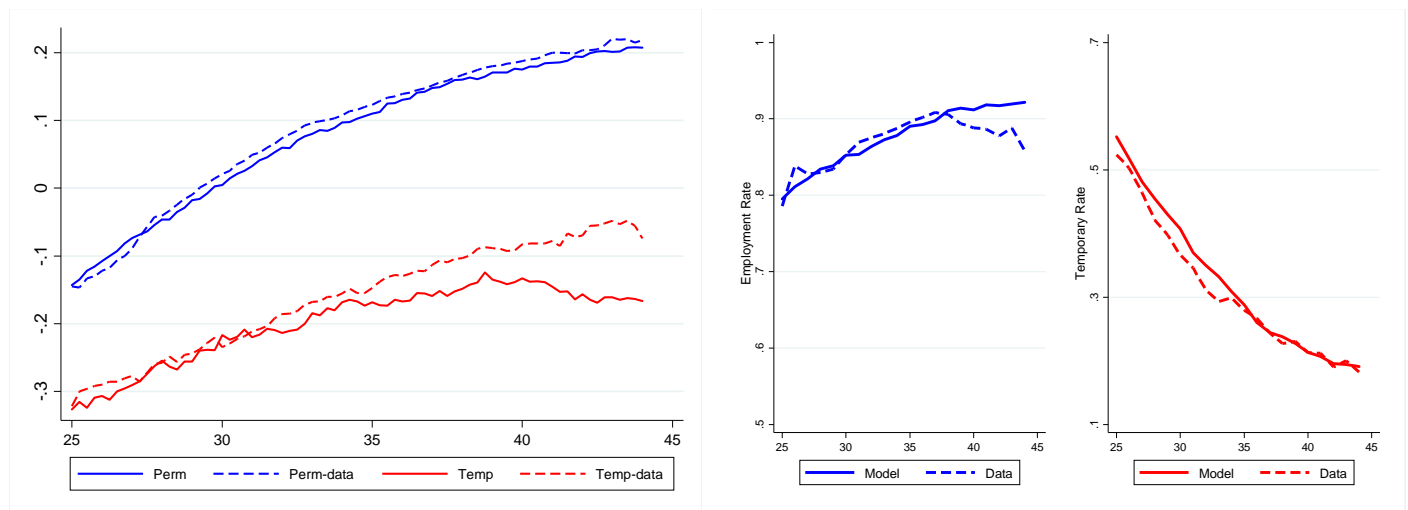

Figure D1. Age-Earnings Profiles (left) and Labor Market Outcomes (right), Males, model vs. data

Notes: Right panel sample includes husbands of 25-44 years old, native, married women without a college education born between 1966 and 1971 (from the LFS, 1987-2010). Left panel is based in authors' calculation from the sample of 1964-1969 born, native and married men (from the MCVL 2005-2010) weighted by the couple's education distribution (from the LFS, 1987-2010).

Table D1. Labor Market Transitions for Husbands of Non-College Wife, % (Calibrated)

	N_t	T_t	P_t
	Age-25 shares (%)		
	20.0	45.0	35.0
	Transitions		
	N_t	T_t	P_t
	Ages 25-29		
N_{t-1}	83.0	15.00	2.00
T_{t-1}	2.00	91.00	7.00
P_{t-1}	0.00	1.00	99.00
	Ages 30-34		
N_{t-1}	83.0	15.0	2.00
T_{t-1}	7.00	90.00	3.00
P_{t-1}	0.00	1.00	99.00
	Ages 35-54		
N_{t-1}	83.0	15.0	2.00
T_{t-1}	7.00	89.00	4.00
P_{t-1}	0.00	1.00	99.00

Calibrated Parameters

With a few exceptions, the calibration of the parameters for non-college-educated women uses the same targets as the ones for college-educated women.

First, since the mean ability for the husbands of college-educated women is normalized to 1, the mean ability for the husbands of non-college-educated women is an additional parameter that needs to be calibrated. We choose this parameter so that the average earnings of the husbands of non-college wives relative to the average earnings of husbands of college wives is in line with the data.

Second, we calibrate the parameters for female human capital accumulation, i.e. parameters in $\ln(h') = \ln h + \ln(1 + \eta_1^P + \eta_2^P j)$ and $w_f(a, h, P) = \zeta_P ah$ with $\zeta_0 < \zeta_1 = 1$, differently. Garcia-Louzao et al. (2023) show that for women without a college education there are no differences between returns to experience accumulated in temporary and permanent jobs (see their Table 6). As a result, we assume that η_1^P and η_2^P are the same for both types of jobs and target them to match the age-earnings profiles for permanent jobs (Figure D2). The parameter ζ_0 is then chosen to match the age-25 earnings gap between non-college-educated women with and without a permanent job, about 18 log points (Figure D2). Table D2 shows the targets for inequality.

In Table D3 and Figure D3, we show the targets for labor market outcomes. The model matches these labor market outcomes for non-college-educated women very well. One exception is the fraction of mothers who work with a regular contract, which is lower than the number observed in the data. Figure D4 and Table D4 show the fertility targets.

The estimated parameters are in Table D5. The values for γ_3 are relatively smaller for non-college-educated women, since they have their children earlier along the life cycle

(Figure D4). The childcare costs (d_1 and d_2) are also estimated to be lower since less-educated households, on average, spend a smaller fraction of their household income on childcare. Less-educated households also have a higher usage of informal care. Returns to experience are significantly lower for less-educated women compared to ones with a college degree. Finally, both temporary and permanent jobs are more unstable for less-educated women, i.e., both δ^1 and δ^0 are higher.
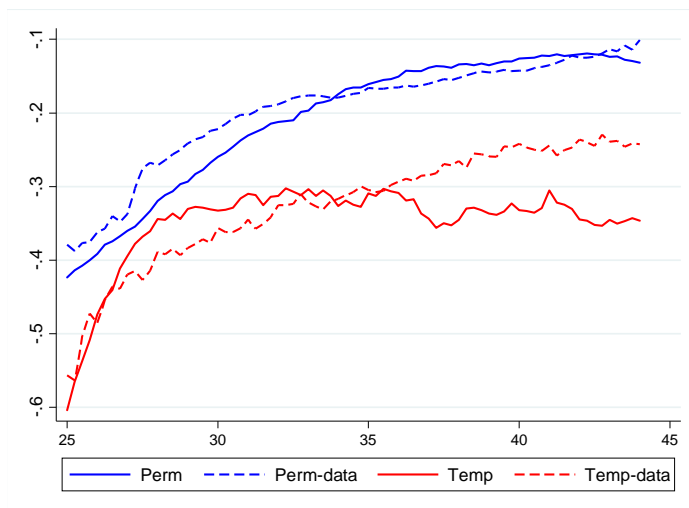

Figure D2. Age-Earnings Profiles, Females, model vs. data

Source: The MCVL, 2005-2010.

Sample: Native, married women without a college education born between 1966Q1 and 1971Q4.

Table D2: The Model vs. Data – Inequality
(Non-College)

	Model	Data	Source
Variance of Wife Log Earnings	0.14	0.17	Table B7
Variance of Husband Log Earnings	0.18	0.18	Table B7
Husband and Wife Earnings Correlation	0.34	0.41	Table B7
Husbands Earnings/Husbands of College Educated			Figure D1
Female Wage Growth, 25–35 (permanent)			Figure D1
Female Wage Growth, 35–52 (permanent)			Figure D1
Temp. Cont. Wage Gap			Figure D1
Av earn at $44 \geq 50\%$ relative $< 50\%$ on temp. contracts	1.05	1.15	MCVL
Hourly Wage Gender Gap	0.75	0.75	Table B7
Median wealth to income ratio, hholds, 35-44	1.91	2.06	The EFF

Table D3: The Model vs. Data – Labor Market
(Females, Non-College)

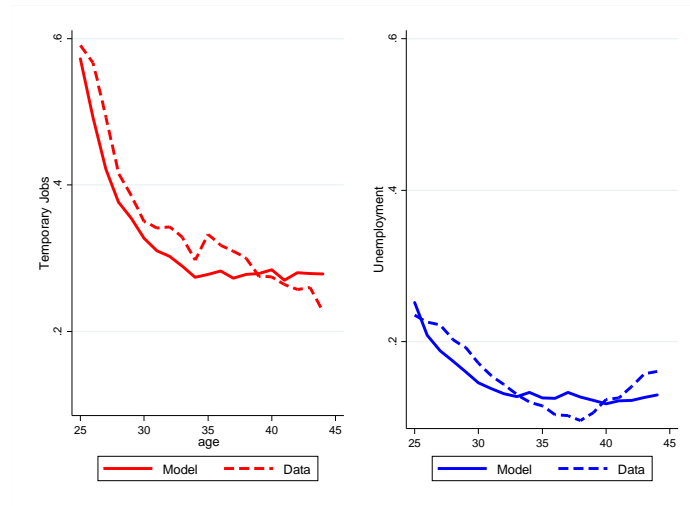|	Model	Data	Source
Female Unemployment/Population, 25-27	0.20	0.23	Figure D3
Female Unemployment/Population, 25–44	0.14	0.15	Table B6b
Fraction Temporary, Female Workers, 25–44	0.32	0.33	Table B6b
Trans prob. Temporary to Unemployment, 30–34	13.5	13.7	Table B8b
Trans prob. Permanent to Unemployment, 30–34	1.1	1.0	Table B8b
Employment/Population, 25-44	0.41	0.41	Table B6b
Employment/Population, 25-44, Mothers	0.31	0.38	Table B6b
Employment/Population, 25-44, Mothers with Babies	0.24	0.31	Table B6b
(Employment/Population, 25-44, Non-Mothers)	0.62	0.59	Table B6b
Out of Labor Force/Population, 25-44	0.46	0.45	Table B8b
Fraction of Non-mothers on Regular Contracts	0.59	0.59	Section 2
Fraction of Mothers on Regular Contracts	0.64	0.75	Section 2

Figure D3. Workers with a Temp. Contract (left), Frac. Unemployed (right), Females, model vs. data

Source: The LFS, 1987-2010.

Sample: Native, married women without a college education, born between 1966 and 1971.
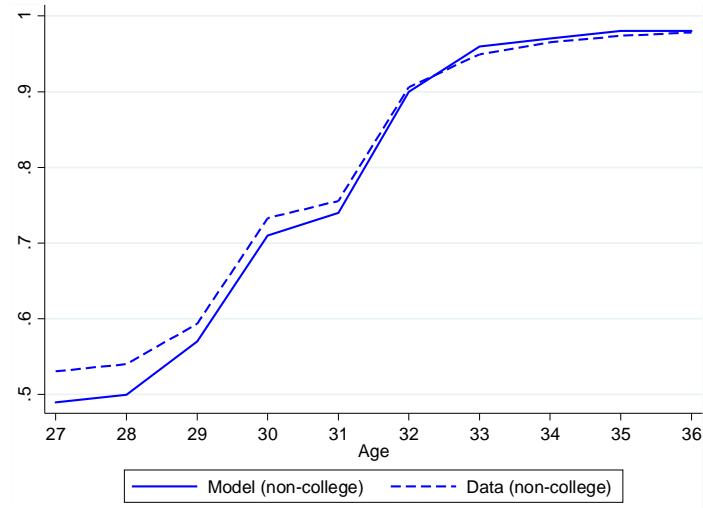
Figure D4. Fraction of Women with a First Births Below a Certain Age

Source: The FS, 2018.

Sample: Married native women without a college degree, born between 1966 and 1971.

Table D4: The Model vs. Data – Fertility
(Non-College)

	Model	Data	Source
Fertility timing	Figure D1		The FS
(Age at First Birth)	28.0	27.0	The FS
Fraction childless	0.17	0.17	The FS
Fraction with 1 Child	0.16	0.23	The FS
Fraction with 2 Children	0.58	0.50	The FS
(Fraction with 3 or More Children)	0.09	0.10	The FS
(Number of Children)	1.60	1.54	The FS
Median Childcare Costs/Household Income, $i = 1$	0.05	0.06	The FS
Median Childcare Costs/Household Income, $i = 2$	0.04	0.03	The FS
Informal Child Care Use, Mothers with Babies, Employed	0.45	0.43	Table B9

Table D5: Parameter Values - Calibrated
(Non-College)

Parameter	Description
Ability Distribution	
$\mu_{a_m} = 0.92, \mu_{a_f} = 0.68, \sigma_{a_f} = 0.46, \sigma_{a_m} = 0.41, \rho = 0.17$	Joint Log Normal Distribution
Preferences	
$\beta = 0.997$ (quarterly)	Discount Factor
$\gamma_1 = 0.40, \gamma_2 = 0.442, \overline{n} = 2.72$	Preferences for Children
$\gamma_3^{low} = 10.0 \ \gamma_3^{med} = 24.0, \gamma_3^{high} = 34.0$	Preferences for Children
$\chi = 0.5$	Preferences for Leisure
Cost of Children	
$d_1 = 0.13$	Childcare Cost, youngest is a baby
$d_2 = 0.09$	Childcare Cost, youngest is a child
$\varphi = 0.216$	Frac. of Household with Informal Care
$\iota = 0.07$	Time Cost of Babies
Female Wages	
$\eta_1^P = 0.0084, \eta_2^P = -0.0002, \ P \in \{0,1\}$	Human Capital Accumulation
$\zeta_0 = 0.83$	Temporary Contract Wage Penalty
$\delta_h = 0.006$ (quarterly)	Depreciation Rate
Labor Market	
$\xi = 0.83$	Time Cost of Participation
$\pi = 0.052$	Promotion Probability
$\phi = 0.175, \phi_{25} = 0.55$	Job Finding Rate
$\delta^1 = 0.017, \delta^0 = 0.16$	Job Destruction Rate
$\kappa = 0.138$	Time Cost of Split Jobs
$\psi = 0.40$	Frac. of Split-Schedule Jobs

Table D6: Female Labor Force Participation and the Fertility
(Non-College)

	BM	(i) Single Contract	(ii) Single Contract for Both	(iii) Single Contract Sep. rate	(iv) Single Contract Find rate
Age at First Birth	28.0	27.4	27.5	27.9	28.1
Number of Children	1.60	1.29	1.56	1.58	1.65
Fraction childless	0.17	0.32	0.20	0.19	0.15
Fraction with 1 kid	0.16	0.13	0.12	0.14	0.16
Fraction with $\geq$2 kids	0.67	0.55	0.68	0.67	0.69
Ages 25-44					
Partic./Pop.,	0.54	0.81	0.68	0.56	0.54
Emp./Pop., Non-mothers	0.62	0.84	0.80	0.68	0.66
Emp./Pop., Mothers	0.31	0.63	0.52	0.32	0.31
Emp./Pop., Mothers, with babies	0.24	0.55	0.46	0.26	0.27
Unemp. Rate	0.25	0.11	0.10	0.21	0.23
Regular, 25-44, Non-Mothers	0.59	0.58	0.56	0.59	0.58
Regular, 25-44, Mothers	0.64	0.66	0.67	0.64	0.62
δ^0 (Separation, temporary)	0.17	0.017	0.017	0.05	0.017
δ^1 (Separation, permanent)	0.017	0.017	0.017	0.05	0.017
ϕ (Finding rate)	0.175	0.175	0.175	0.175	0.04