

Labor Market Institutions and Fertility

Nezih Guner, UAB, ICREA, BSE, CEMFI

Ezgi Kaya, Cardiff Business School

Virginia Sánchez–Marcos, Universidad de Cantabria and CEPR

6th July 2023, Santander
BdE-CEMFI-UIMP Conference

Total Fertility Rate

- The average total fertility rate (TFR) among the OECD countries was 1.7 children per women, well below the replacement rate of 2.1 children per women.
- There is substantial heterogeneity across countries, with a group of them having TFR of 1.3 children or belows, *lowest-low fertility*, [Kohler et al. 2002](#), [Billari and Kohler 2004](#)

Potential Drivers

- **Labor market uncertainty**: empirical literature and quantitative papers on how fertility is negatively associated with
 - Higher rates of unemployment, [Ahn and Mira 2001](#), [Adeserà 2011](#), [Currie and Schwandt 2014](#), [Da Rocha and Fuster 2006](#),
 - Dual labor markets, [Ahn and Mira 2001](#), [de la Rica and Iza 2005](#), [Auer and Danzer 2016](#)
 - Job displacement, [Del Bono, Weber and Winter-Ebmer 2012, 2015](#)
- Institutions such as **childcare support, parental leave arrangements, family allowances**, [Del Boca et al. 2008](#), [Bick 2016](#), [Erosa et al. 2010](#), [Doepke and Kindermann 2019](#)
- **Lack of work schedule flexibility** matters for female labor supply, occupation segregation and wages,
 - women have a stronger preference for greater work flexibility [Goldin 2014](#), [Wiswall and Zafar 2018](#), [Erosa et al 2017](#), [Cubas et al. 2019](#), [Ciasullo and Uccioli 2022](#)
 - women have greater distaste for commuting [Petrongolo and Ronchi 2020](#), [Farre et al. 2020](#)

▶ Figure

▶ Figure

Why Spain?

- Persistently low fertility
 - Spain stands out as the country with the **highest incidence of childlessness** and the **lowest share of women with two or more children**
 - ▶ Figure
 - Large discrepancy with **desired number of children** (about 2)
- Institutions
 - **Dual labor markets** (temporary contracts vs. permanent contracts)
 - destruction rate is very different
 - the conversion rates are small
 - ▶ Figure
 - Concrete example of inflexible working arrangements with an unusual organization of the workday, **split-shift work schedules** have a fix cost of work
 - 5 hours of work in the morning, followed by a 2 hour break and another 3 hours of work in the afternoon/evening
 - the working days end at a late hour

▶ Figure

What We Do

- Study the effects of labor market institutions on **fertility behavior in Spain**, in particular
 - **temporary vs. permanent contracts**
 - **split vs. regular schedules**
 - **childcare costs**
- Build a life-cycle model of **female labor force participation** and **fertility** and **savings** decisions
- Use the quantitative model as a lab to conduct **counterfactual experiments** to understand the effects on fertility of alternative policies
- Other quantitative papers: **Da Rocha and Fuster 2007, Sommer 2006, Adda et al. 2017, Lopes 2019**

Data

- **Spanish Social Security Records** (Muestra Continua de Vida Laboral, MCVL), 2005-2010
 - construct a **quarterly data set** on labor market transitions of women
- **Nativity Survey**, 2018
- **Spanish Labor Force Survey** (Encuesta de Población Activa, EPA), 1977-2013, and **LFS flows** (Encuesta de Población Activa-Flujos, EPA flujos), 1995, 2000 and 2005
- **European Union Statistics on Income and Living Conditions** (EU-SILC), 2004-2012
- **Spanish Time Use Surveys** (STUS), 2002-2003 and 2009-2010

Some Important Facts

Native cohabiting women born between 1966Q1-1971Q4

- Probability of a childless women giving birth four quarters later is 3.4% for those in a permanent contract and 2.3% for those in a temporary contract. In first birth hazard estimates reveal that the probability of having a child is reduced by 28% for high educated.
- Average number of children at 44
 - on temporary contracts, < 50% ages 25-44: 1.53
 - on temporary contracts, ≥ 50% ages 25-44: 1.27
- Fraction of mothers on regular schedule is 0.74, in contrast to 0.56 for non-mothers. Mothers are about 57% less likely to work with a split-shift schedule compared to men and women without children

Households

- Life cycle economy with heterogenous (ability, cost of children and preferences) married households that that make **female labor supply, fertility and saving decisions**
- Each period households decide whether to have a child or not, but there is **uncertainty**: women who would like to have a kid may not get pregnant. Fertility opportunities decrease with a woman's age
- **Children age stochastically**: less than 2 years old (babies), between 3 and 14 (school-age) and 15 or older (young adults)
- There are **childcare costs** (children aged 0-15 and depends on job schedule) and **time cost** of having children. However, some households have access to **informal childcare**
- Labor market status of males evolve exogenously. Males can be in three different labor market states: **working with a temporary contract, working with a permanent contract** or **not-working**.

Labor Market for Females

- A married women can be in one of three labor market states: **working, unemployed or out-of-labor force.**
- Only unemployed can get job offers and thee is **participation cost.** Unemployed agents only get job offers with temporary contracts
- There are **temporary and permanent contracts.** A worker with a temporary contract is promoted to a permanent job with a certain probability. Each period a job can be destroyed, temporary contracts have a higher probability of being destroyed.
- Jobs also differ by the type of work schedule: **split** (extra time cost) or **regular schedule**
- Wage of a female depends on her ability, her **endogenous human capital** (learning by doing and depreciation) and her type of contract

Labor Market for Females

- Wage of a female depends on
 - her ability
 - her **human capital is endogenous**
 - her type of contract, ζ_P

$$w_f(a_f, P, h) = a_f h \zeta_P$$

- Human capital evolves according to

$$\ln h' = \ln h + \ln(1 + \eta_1^P + \eta_2^P j)$$

- If a woman is unemployed or out of the labor force, her human capital depreciates at rate δ_h .

Childcare Costs

- Each period a working female with children (babies, school age or young adults) may have to pay monetary childcare costs
- A household can have access to informal childcare (e.g. grandparents), denoted by g
 - if $g = 0$, a household has to pay (a fraction φ of households)
 - if $g = 1$, the household has access to informal care and does not pay childcare cost
- The childcare cost also depends on the work schedule women has

$$D(i, g, l, S) = \begin{cases} \left(1 + \frac{\kappa S}{l}\right) [d_1 \mathcal{J}(i = 1) + d_2 \mathcal{J}(i = 2)] & \text{if } g = 0 \\ 0 & \text{if } g = 1 \end{cases}$$

- There is a time cost of babies, l

Preferences

- Women make the decisions: savings, fertility and labor participation
- Husbands simply provide income
- A household of age j gets utility according to

$$u(c, n, \ell) = \log\left(\frac{c}{\Omega(n, i)}\right) + \gamma_1 \frac{\exp(j - \gamma_3)}{1 + \exp(j - \gamma_3)} (\bar{n} + n)^{\gamma_2} + \vartheta \log(\ell)$$

c : household's equivalized consumption

n : number of children

ℓ : female leisure

- We allow heterogeneity in γ_3 (higher value means stronger preference for delaying childbirth)

Decision Problem of an Employed Woman

- State of a female: $\mathbf{x} = (a_f, a_m, g, k, n, i, P, S, h, \lambda_m)$

$$V_j^e(\mathbf{x}) = \max_{k', b} u(c, n, i, \ell, j) + \beta(1 - \delta_P)EW_{j+1}^o(\mathbf{x}') + \beta\delta_P EW_{j+1}^{no}(\mathbf{x}'),$$

subject to

$$c + k' + D(i, g, l, S) = I_m + I_f + k(1 + r) + G(I) - T(I)$$

and

$$\ell = 1 - l - \kappa S - \iota \mathcal{J}(i = 1)$$

where

$$I_f = w_f(a_f, P, h)$$

$$I_m = \begin{cases} w_m(a_m, j, \lambda_m) & \text{if } \lambda_m \in \{0, 1\} \\ \theta_m \bar{I}_{lab} & \text{if } \lambda_m = u. \end{cases}$$

Decision Problem of an Employed Woman

- If she does not loose her job

$$EW_{j+1}^o(\mathbf{x}') = \sum_{\lambda'_m} \sum_{P'} \sum_{n', i'} \max\{V_{j+1}^e(\mathbf{x}'), V_{j+1}^u(\mathbf{x}'), V_{j+1}^{np}(\mathbf{x}')\} \pi_{\lambda_m, \lambda'_m}^m \pi_{P, P'}^f \Gamma_j(n', i' | n, i, b)$$

- If she loose her job

$$EW_{j+1}^{no}(\mathbf{x}') = \sum_{\lambda'_m} \sum_{n', i'} \max\{V_{j+1}^u(\mathbf{x}'), V_{j+1}^{np}(\mathbf{x}')\} \pi_{\lambda_m, \lambda'_m}^m \Gamma_j(n', i' | n, i, b)$$

Exogenous Parameters

- College graduated women
- Quarterly frequency

| Description | Parameters/Values | Comments |
|---------------------------|---|------------------------------|
| Time on Regular Contracts | $l = 0.4$ | Standard |
| Interest Rate (annual) | $r = 0.8\%$ | OECD, Bank of Spain |
| Fecundity | α_j | Sommer (2006) |
| Equivalence of Scale | $\Omega(n, i) = 1 + 0.5 + 0.3n\mathcal{J}(i \neq 3)$ | OECD Modified Scale |
| Male Wage Profiles | $\omega_0^P, \omega_1^P, \omega_2^P$ | Figure 2 |
| Male Empl Transitions | $\pi_j^m(\lambda_m, \lambda'_m)$ | Figure 2 |
| Unemployment Benefits | $\theta_f = 0.058, \theta_m = 0.095$ | The EU-SILC |
| Transfers | $g_0 = 0.049, g_1 = 0.031, g_2 = -0.01$ | The EU-SILC |
| Taxes | $\tau_0 = 0.904, \tau_1 = 0.134, \tilde{I} = 0.47\bar{I}$ | Garcia-Miralles et al (2019) |

► Figure

► Figure

Endogenous Parameters

| Parameter | Description |
|---|---|
| Ability Distribution $\mu_{af} = 0.87, \sigma_{af} = 0.41, \sigma_{am} = 0.44, \rho = 0.27$ | Joint Log Normal Distribution |
| Preferences $\beta = 0.9993$ (quarterly) $\gamma_1 = 0.40, \gamma_2 = 0.442, \bar{n} = 2.40$ $\gamma_3^{high} = 24.0, \gamma_3^{med} = 37.5, \gamma_3^{low} = 49.5$ $\chi = 0.745$ | Discount Factor Preferences for Children Preferences for Children Preferences for Leisure |
| Cost of Children $d_1 = 0.14$ $d_2 = 0.10$ $\varphi = 0.216$ $\iota = 0.105$ | Childcare Cost, youngest is a baby Childcare Cost, youngest is a school-age child Frac. of Households with Informal Care Time Cost of Babies |
| Female Wages $\eta_1^P = 0.0214, \eta_2^P = -0.00045, \eta_1^T = 0.0198$ $\zeta_0 = 0.972$ $\delta_h = 0.006$ (quarterly) | Human Capital Accumulation Temporary Contract Wage Penalty Depreciation Rate |
| Labor Market $\xi = 0.79$ $\pi = 0.047$ $\phi = 0.23, \phi_{25} = 0.53$ $\delta^1 = 0.0065, \delta^0 = 0.055$ $\kappa = 0.138$ $\psi = 0.40$ | Cost of Participation Promotion Probability Job Finding Rate Job Destruction Rate Time Cost of Split Jobs Frac. of Split-Schedule Jobs |

Inequality (targeted)

| | Model | Data | Source |
|--|-------|-------|------------------------------|
| Variance of Wife Log Earnings | 0.15 | 0.21 | Table A6 |
| Variance of Husband Log Earnings | 0.17 | 0.21 | Table A6 |
| Husband and Wife Earnings Correlation | 0.49 | 0.44 | Table A6 |
| Hourly Wage Gender Gap | 0.91 | 0.92 | Table A6 |
| Female Wage Growth(permanent) | | | ▶ Figure |
| The Gap in Returns, Perm. vs. Temp. | 17% | 15% | Garcia-Louzano et al. (2022) |
| Temp. Cont. Wage Penalty | -3.0% | -3.0% | Garcia-Louzano et al. (2022) |
| Av earn at 44, \leq 50% in perm. contracts | 1.13 | 1.15 | Table 2 |
| Median wealth to income ratio, hholds, 35-44 | 2.40 | 2.60 | The EFF |

Labor Market (targeted)

| | Model | Data | Source |
|---|-------|------|-----------|
| Unemployment/Population, 25-27 | 0.20 | 0.22 | Figure 5 |
| Permanent/Employed, 25-27 | 0.46 | 0.46 | Figure 5 |
| Unemployment/Population, 25-44 | 0.08 | 0.08 | Table A6a |
| Fraction Temporary 25-44 | 0.26 | 0.25 | Table A6a |
| Employment/Population, 25-44, Mothers | 0.72 | 0.76 | Table A6a |
| Employment/Population, 25-44, Mothers with Babies | 0.70 | 0.71 | Table A6a |
| (Employment/Population, 25-44, Non-Mothers) | 0.81 | 0.81 | Table A5a |
| Trans prob. Temporary to Unemployment, 30-34 | 5.30 | 5.37 | Table A8a |
| Trans prob. Permanent to Unemployment, 30-34 | 0.53 | 0.55 | Table A8a |
| Fraction of Non-mothers on Regular Contracts | 0.57 | 0.56 | Section 2 |
| Fraction of Mothers on Regular Contracts | 0.70 | 0.74 | Section 2 |

► Figure

Fertility and child care (targeted)

| | Model | Data | Source |
|--|------------------|--------------|----------|
| Fertility timing (Average Age at First Birth) | ▶ Figure 31.6 | 32.0 | FS FS |
| Fraction childless | 0.18 | 0.17 | FS |
| Fraction with 1 Child) | 0.15 | 0.21 | FS |
| Fraction with 2 Children (Fraction with 3 or More Children) | 0.56 0.11 | 0.49 0.11 | FS FS |
| (Number of Children) | 1.60 | 1.62 | FS |
| Median Childcare Costs/Household Income, $i = 1$ | 0.05 | 0.05 | FS |
| Median Childcare Costs/Household Income, $i = 2$ | 0.03 | 0.03 | FS |
| Informal Child Care Use, Mothers with Babies, Employed | 0.31 | 0.31 | Table A8 |

Model assessment

| | Model | Data | Source |
|--|-------|------|-----------|
| Average Job Tenure, Temporary Contracts | 8.17 | 6.95 | MCVL |
| Employment/Pop., Females, 25-44, hhold inc., 1st tercile | 0.54 | 0.58 | Table A9 |
| Employment/Pop., Females, 25-44, hhold inc., 2nd tercile | 0.94 | 0.83 | Table A9 |
| Employment/Pop., Females, 25-44, hhold inc., 3rd tercile | 0.84 | 0.93 | Table A9 |
| Number of children at 44, female earnings, 1st tercile | 1.19 | 1.35 | Table A10 |
| Number of children at 44, female earnings, 2nd tercile | 1.57 | 1.49 | Table A10 |
| Number of children at 44, female earnings, 3rd tercile | 1.67 | 1.72 | Table A10 |
| Number of children at 44, hhold inc., 1st tercile | 1.50 | 1.45 | Table A10 |
| Number of children at 44, hhold inc., 2nd tercile | 1.49 | 1.58 | Table A10 |
| Number of children at 44, hhold inc., 3rd tercile | 1.81 | 1.85 | Table A10 |
| Average number of children at 44 | | | |
| on temp. contracts, ages 25-44 < 50% | 1.46 | 1.53 | Table 2 |
| on temp. contracts, ages 25-44 ≥ 50% | 1.31 | 1.27 | Table 2 |
| Fraction of Childless at 44 | | | |
| on temp. contracts, ages 25-44 < 50% | 0.22 | 0.20 | Table 2 |
| on temp. contracts, ages 25-44 ≥ 50% | 0.24 | 0.22 | Table 2 |

Heterogeneity

- Selection of women into participation, split-shift schedules jobs, permanent contracts and fertility is not random
- Ability, preferences, childcare access and spouse's ability play an important role
 - high ability women are more likely to work, to have a permanent and a split-shift job
 - women with a low ability spouse are more likely to participate and have a permanent contract
 - women with strong preferences for delaying birth are more likely to be on a permanent contract and childless with a permanent contract are more likely to be the ones without access to informal care
- Temporary Contracts and the First Birth Probability

| Specification | Odds Ratio |
|---|------------|
| Baseline | 0.84 |
| With Fertility Preference Controls | 0.76 |
| With Preference and Childcare Access Controls | 0.71 |

- i **Single contract**: separation rate of temporary and permanent is equal to the separation rate of permanent in the benchmark economy, $\delta^0 = \delta^1$

- ii **Eliminating split-shift schedule**: remove the extra time cost of working with a split schedule, $\kappa = 0$

- iii **Lower child care cost d_1, d_2** : a 35% reduction, equivalent to 100 euros for working mothers

Fertility and Labor Market Outcomes - Counterfactual Economies I
(Women with a College Degree)

| | BM | (i) Single Contract | (ii) All Regular Job | (iii) Lower Childcare Costs |
|------------------------------------|--------|---------------------------|----------------------------|-----------------------------------|
| Age at First Birth | 31.6 | 31.7 | 31.8 | 31.9 |
| Number of Children | 1.60 | 1.68 | 1.69 | 1.86 |
| Fraction childless | 0.18 | 0.12 | 0.11 | 0.03 |
| Fraction with 1 kid | 0.15 | 0.17 | 0.18 | 0.20 |
| Fraction with ≥ 2 kids | 0.67 | 0.71 | 0.71 | 0.77 |
| <u>Ages 25-44</u> | | | | |
| Partic./Pop | 0.85 | 0.94 | 0.93 | 0.85 |
| Emp./Pop | 0.77 | 0.86 | 0.84 | 0.77 |
| Emp./Pop., Non-mothers | 0.81 | 0.83 | 0.84 | 0.79 |
| Emp./Pop., Mothers | 0.72 | 0.88 | 0.84 | 0.76 |
| Emp./Pop., Mothers, with babies | 0.70 | 0.89 | 0.84 | 0.74 |
| Unem. Rate | 0.093 | 0.091 | 0.095 | 0.095 |
| Regular, Non-Mothers | 0.57 | 0.95 | 1 | 0.60 |
| Regular, Mothers | 0.70 | 0.97 | 1 | 0.66 |
| δ^0 (Separation, temporary) | 0.055 | 0.0065 | 0.055 | 0.055 |
| δ^1 (Separation, permanent) | 0.0065 | 0.0065 | 0.0065 | 0.0065 |
| d_1 (Childcare Costs) | 0.14 | 0.14 | 0.14 | 0.09 |
| d_2 (Childcare Costs) | 0.10 | 0.10 | 0.10 | 0.07 |
| κ | 0.138 | 0.138 | 0 | 0.138 |

- Chillessness declines from 6 pp and more women have 2 or more children
- Higher female labor force participation and employment
- Women wait to have a regular schedule job, prevalence of split-shift jobs is reduced endogenously
- Spain becomes similar to other European countries
- Lower child care costs increases the participation of mothers and mothers with babies by 4 and 6 pp, the number of mothers increases
- Women are more likely to accept split-shift schedule jobs when childcare cost are lower
- With childcare subsidies the after-tax-transfer income for households in the bottom decile becomes 5.2% higher than their gross income in this economy (in contrast to 3% in the benchmark)

Fertility and Labor Market Outcomes - Counterfactual Economies II
(Women with a College Degree)

| | BM | (i) Single Contract + All Regular | (ii) Single Contract + All Regular + Lower Cost | (iii) Single Contract for All + All Regular + Lower Cost |
|------------------------------------|--------|---|--|---|
| Age at First Birth | 31.6 | 31.7 | 31.8 | 31.7 |
| Number of Children | 1.60 | 1.69 | 1.96 | 1.98 |
| Fraction childless | 0.18 | 0.11 | 0.01 | 0.01 |
| Fraction with 1 kid | 0.15 | 0.17 | 0.16 | 0.15 |
| Fraction with ≥ 2 kids | 0.67 | 0.72 | 0.83 | 0.84 |
| <u>Ages 25-44</u> | | | | |
| Partic./Pop | 0.85 | 0.97 | 0.98 | 0.97 |
| Emp./Pop | 0.77 | 0.93 | 0.93 | 0.92 |
| Emp./Pop., Non-mothers | 0.81 | 0.91 | 0.90 | 0.90 |
| Emp./Pop., Mothers | 0.72 | 0.94 | 0.94 | 0.94 |
| Emp./Pop., Mothers, with babies | 0.70 | 0.94 | 0.95 | 0.94 |
| Unem. Rate | 0.093 | 0.049 | 0.049 | 0.050 |
| Regular, Non-Mothers | 0.57 | 1 | 1 | 1 |
| Regular, Mothers | 0.70 | 1 | 1 | 1 |
| δ^0 (Separation, temporary) | 0.055 | 0.0065 | 0.0065 | 0.055 |
| δ^1 (Separation, permanent) | 0.0065 | 0.0065 | 0.0065 | 0.0065 |
| d_1 (Childcare Costs) | 0.14 | 0.14 | 0.09 | 0.09 |
| d_2 (Childcare Costs) | 0.10 | 0.10 | 0.07 | 0.07 |
| κ | 0.138 | 0 | 0 | 0 |

- Small impact of removing temporary contracts for husbands (although the model mimics the negative correlation in the data between a husband having a temporary and first birth)
- Unemployment rate does not changes in the single contract economy (women wait for a regular) or split-schedule jobs (high separation rate), but decreases when both combined

Fertility and Labor Market Outcomes - The Role of Single Contracts

| | BM | (i) Single Contract Low Sep. | (ii) Single Contract High Sep. | (iii) Single Contract Very High Sep. |
|------------------------------------|--------|---------------------------------------|---|---|
| Age at First Birth | 31.6 | 31.7 | 31.4 | 31.4 |
| Number of Children | 1.60 | 1.68 | 1.58 | 1.87 |
| Fraction childless | 0.18 | 0.12 | 0.19 | 0.11 |
| Fraction with 1 kid | 0.15 | 0.17 | 0.15 | 0.13 |
| Fraction with ≥ 2 kids | 0.67 | 0.71 | 0.66 | 0.76 |
| <u>Ages 25-44</u> | | | | |
| Partic./Pop | 0.85 | 0.94 | 0.85 | 0.56 |
| Emp./Pop | 0.77 | 0.86 | 0.78 | 0.46 |
| Emp./Pop., Non-mothers | 0.81 | 0.83 | 0.84 | 0.64 |
| Emp./Pop., Mothers | 0.72 | 0.88 | 0.72 | 0.32 |
| Emp./Pop., Mothers, with babies | 0.70 | 0.89 | 0.70 | 0.29 |
| Unem. Rate | 0.093 | 0.091 | 0.091 | 0.18 |
| Regular, Non-Mothers | 0.57 | 0.95 | 0.59 | 0.60 |
| Regular, Mothers | 0.70 | 0.97 | 0.71 | 0.66 |
| δ^0 (Separation, temporary) | 0.055 | 0.0065 | 0.017 | 0.055 |
| δ^1 (Separation, permanent) | 0.0065 | 0.0065 | 0.017 | 0.055 |
| ϕ (Finding rate) | 0.23 | 0.23 | 0.23 | 0.23 |
| φ (Fraction Split) | 0.40 | 0.40 | 0.40 | 0.40 |

- Why are children costly for women with a temporary?
 - childcare cost are more binding when on a temporary (lower income and lower expected income)
 - time cost of children is more important for women who has to face participation cost, in particular since jobs may be split-schedule
- Reduced labor market risk (jobs last longer and less likely to move between employment and unemployment and higher income) versus no reason to wait for better job before having a child

Fertility and Labor Market Outcomes - Counterfactual Economies I
(Women without a College Degree)

| | BM | (i) Single Contract | (ii) All Regular Job | (iii) Lower Childcare Costs |
|------------------------------------|-------|---------------------------|----------------------------|-----------------------------------|
| Age at First Birth | 28.0 | 27.4 | 27.9 | 28.0 |
| Number of Children | 1.60 | 1.29 | 1.60 | 1.79 |
| Fraction childless | 0.17 | 0.32 | 0.16 | 0.07 |
| Fraction with 1 kid | 0.16 | 0.13 | 0.17 | 0.18 |
| Fraction with ≥ 2 kids | 0.67 | 0.55 | 0.67 | 0.75 |
| <u>Ages 25-44</u> | | | | |
| Partic./Pop | 0.54 | 0.81 | 0.59 | 0.55 |
| Emp./Pop | 0.41 | 0.72 | 0.44 | 0.41 |
| Emp./Pop., Non-mothers | 0.62 | 0.84 | 0.62 | 0.56 |
| Emp./Pop., Mothers | 0.31 | 0.63 | 0.36 | 0.37 |
| Emp./Pop., Mothers, with babies | 0.24 | 0.55 | 0.30 | 0.32 |
| Unem. Rate | 0.25 | 0.11 | 0.25 | 0.25 |
| Regular, Non-Mothers | 0.59 | 0.58 | 1 | 0.56 |
| Regular, Mothers | 0.64 | 0.66 | 1 | 0.64 |
| δ^0 (Separation, temporary) | 0.17 | 0.017 | 0.17 | 0.17 |
| δ^1 (Separation, permanent) | 0.017 | 0.017 | 0.017 | 0.017 |
| d_1 (Childcare Costs) | 0.13 | 0.13 | 0.13 | 0.08 |
| d_2 (Childcare Costs) | 0.09 | 0.09 | 0.09 | 0.06 |
| κ | 0.138 | 0.138 | 0.0 | 0.138 |

Fertility and Labor Market Outcomes - Counterfactual Economies II
(Women without a College Degree)

| | BM | (i) Single Contract + All Regular | (ii) Single Contract + All Regular + Lower Cost | (iii) Single Contract for All + All Regular + Lower Cost |
|------------------------------------|-------|---|--|---|
| Age at First Birth | 28.0 | 27.4 | 28.0 | 28.1 |
| Number of Children | 1.60 | 1.33 | 1.74 | 1.85 |
| Fraction childless | 0.17 | 0.29 | 0.06 | 0.02 |
| Fraction with 1 kid | 0.16 | 0.14 | 0.18 | 0.17 |
| Fraction with ≥ 2 kids | 0.67 | 0.67 | 0.76 | 0.81 |
| <u>Ages 25-44</u> | | | | |
| Partic./Pop | 0.54 | 0.87 | 0.88 | 0.82 |
| Emp./Pop | 0.41 | 0.78 | 0.79 | 0.73 |
| Emp./Pop., Non-mothers | 0.62 | 0.84 | 0.80 | 0.76 |
| Emp./Pop., Mothers | 0.31 | 0.73 | 0.78 | 0.72 |
| Emp./Pop., Mothers, with babies | 0.24 | 0.69 | 0.77 | 0.69 |
| Unem. Rate | 0.25 | 0.11 | 0.11 | 0.11 |
| Regular, Non-Mothers | 0.59 | 1 | 1 | 1 |
| Regular, Mothers | 0.64 | 1 | 1 | 1 |
| δ^0 (Separation, temporary) | 0.17 | 0.017 | 0.017 | 0.017 |
| δ^1 (Separation, permanent) | 0.017 | 0.017 | 0.017 | 0.017 |
| d_1 (Childcare Costs) | 0.13 | 0.13 | 0.08 | 0.08 |
| d_2 (Childcare Costs) | 0.09 | 0.09 | 0.06 | 0.06 |
| κ | 0.138 | 0 | 0 | 0 |

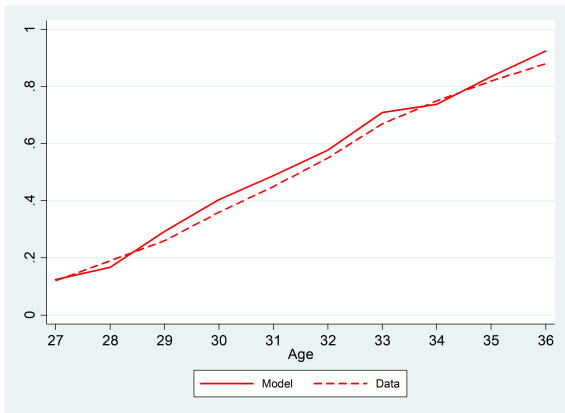
- Elimination of temporary contracts for women without college have very strong effect on the participation: females earnings become an important source of household income
- Elimination of split-shift schedule jobs have a small effect on the participation and employment of mothers
- Reducing childcare cost is the most effective policy to increase the number of children, but with small effects on the participation and employment
- The extension of single contracts to husbands has a substantial effect on the fertility, since economic resources of husbands are critical in these households

Conclusions

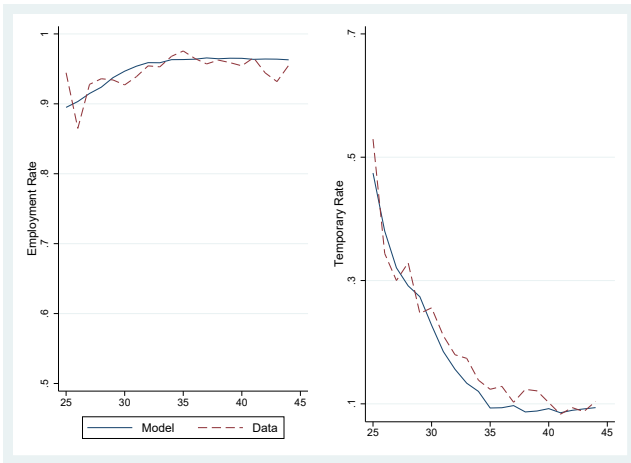
- The number of children at age 44 increases from 1.60 to **1.96** for college graduates and from 1.58 to **1.74** for women without a college degree. Average completed fertility for married women is **1.80**
- There is a substantial increase in women's labor force participation, and the employment gap between women with and without children decreases
- If single contract are also implemented for men, completed fertility goes from 1.96 to **1.98** for college-educated women and from 1.74 to **1.85** for women without a college degree. Average completed fertility for married women is **1.87**
- Potential **welfare gains** from
 - elimination of split-shift schedules if they persist due to coordination failure
 - childcare subsidies and elimination of temporary allow higher female employment rates and accumulation of human capital

Thanks!!!

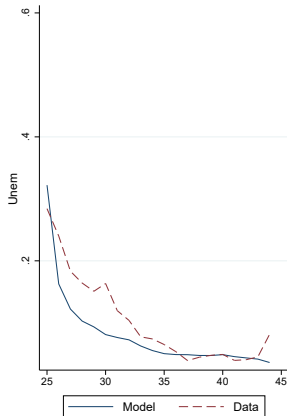
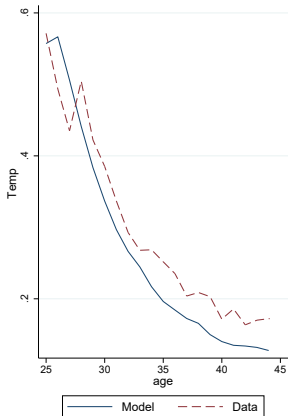
Fertility Timing



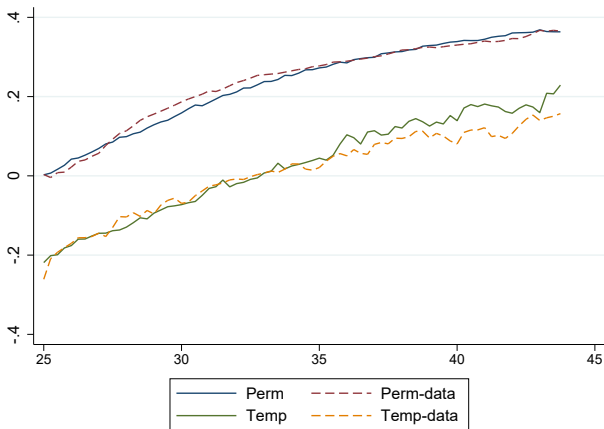
Labor Market, Males



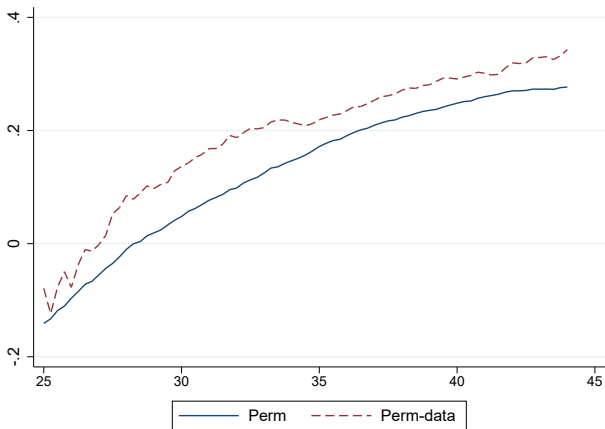
Labor Market, Females



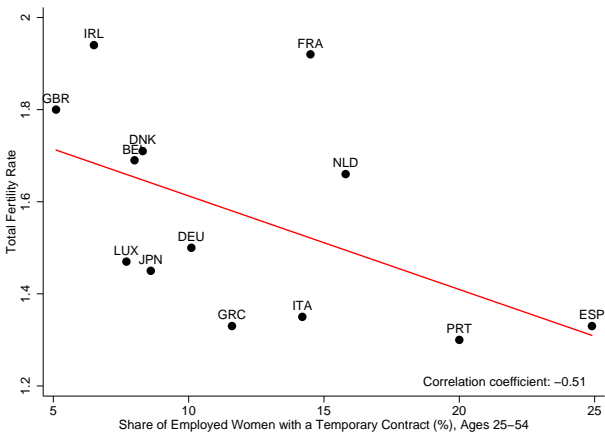
Earnings, Males



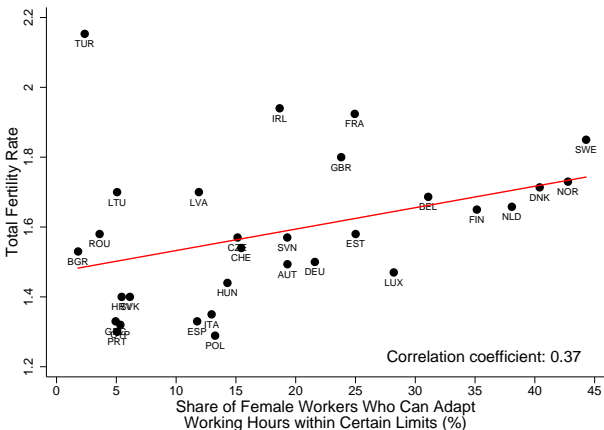
Earnings, Females



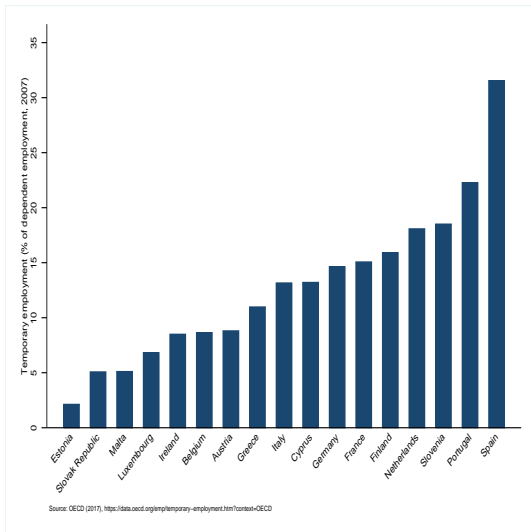
Temporary Contracts and the TFR



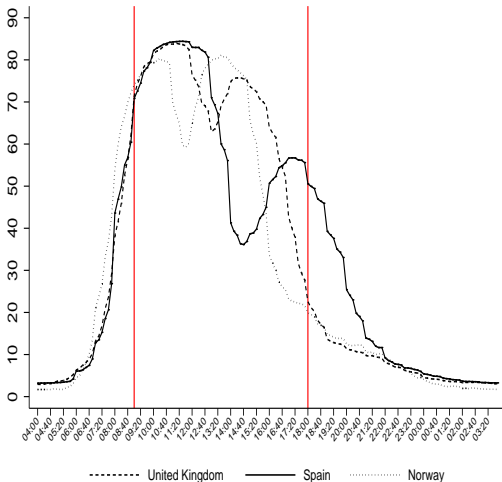
Flexibility and the TFR



Temporary Contracts



Split-Shift Work Schedules



Childlessness (left) and Share of Women with Two Children (right)

