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## Labor Market Institutions and Fertility

Nezih Guner, UAB, ICREA, BSE, CEMFI Ezgi Kaya, Cardiff Business School Virginia Sánchez–Marcos, Universidad de Cantabria and CEPR

19-20th October 2023, Sevilla VI Workshop of the Spanish Macroeconomics Network



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#### **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.



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#### **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

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# **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

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• 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

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- 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

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# 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)

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    - destruction rate is very different
    - the conversion rates are small

▶ Figure

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▶ 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



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- Study the effects of labor market institutions on fertility behavior in Spain, in particular
  - temporary vs. permanent contracts
  - split vs. regular schedules
  - childcare costs



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- Other quantitative papers: Da Rocha and Fuster 2007, Sommer 2006, Adda et al. 2017, Lopes 2019



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- Spanish Social Security Records (Muestra Continua de Vida Laboral, MCVL), 2005-2010
  - construct a quarterly data set on labor market transitions of women



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- Spanish Time Use Surveys (STUS), 2002-2003 and 2009-2010

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#### **Some Important Facts**

Native cohabiting women born between 1966Q1-1971Q4



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### 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.



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- Average number of children at 44
  - on temporary contracts, < 50% ages 25-44: 1.53
  - on temporary contracts,  $\geq 50\%$  ages 25-44: 1.27

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  - on temporary contracts, < 50% ages 25-44: 1.53
  - on temporary contracts,  $\geq 50\%$  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

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### Households

 Life cycle economy with heterogenous (ability, cost of children and preferences) married households that that make female labor supply, fertility and saving decisions

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- Life cycle economy with heterogenous (ability, cost of children and preferences) married households that that make female labor supply, fertility and saving decisions
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- Children age stochastically: less than 2 years old (babies), between 3 and 14 (school-age) and 15 or older (young adults)
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- 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.

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#### Labor Market for Females

• A married women can be in one of three labor market states: working, unemployed or out-of-labor force.

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- A married women can be in one of three labor market states: working, unemployed or out-of-labor force.
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- 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

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### Labor Market for Females

- Wage of a female depends on
  - her ability
  - her human capital is endogenous
  - her type of contract,  $\zeta_P$

 $w_f(a_f, P, h) = a_f h \boldsymbol{\zeta}_P$ 

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• Human capital evolves according to

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

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• If a woman is unemployed or out of the labor force, her human capital depreciates at rate  $\delta_h$ .



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#### **Childcare Costs**

• Each period a working female with children (babies, school age or young adults) may have to pay monetary childcare costs


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# **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  ${m arphi}$  of households)
  - if  $g=1,\,{\rm the}$  household has access to informal care and does not pay childcare  ${\rm cost}$

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- The childcare cost also depends on the work schedule women has

$$D(i,g,l,S) = \begin{cases} \left(1 + \frac{\kappa S}{l}\right) \left[ \mathbf{d}_1 \mathcal{J}(i=1) + \mathbf{d}_2 \mathcal{J}(i=2) \right] & \text{if } g = 0\\ 0 & \text{if } g = 1 \end{cases}$$

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• There is a time cost of babies, *ι* 

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# **Preferences**

• Women make the decisions: savings, fertility and labor participation

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# Preferences

- Women make the decisions: savings, fertility and labor participation
- Husbands simply provide income

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# Preferences

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

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

- c: household's equivalized consumption
- n: number of children
- $\ell$ : female leisure

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- $\ell$ : female leisure
- We allow heterogeneity in  $\gamma_3$  (higher value means stronger preference for delaying childbirth)

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# **Decision Problem of an Employed Woman**

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

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

subject to

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

and

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

where

$$I_f = w_f(a_f, P, h)$$
$$I_m = \begin{cases} w_m(a_m, j, \lambda_m) \text{ if } \lambda_m \in \{0, 1\}\\ \theta_m \overline{I}_{lab} \text{ if } \lambda_m = u. \end{cases}$$

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# **Decision Problem of an Employed Woman**

• If she does not loose her job

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

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# **Decision Problem of an Employed Woman**

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• If she loose her job

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

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# **Exogenous Parameters**

- College graduated women
- Quarterly frequency

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



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# **Endogenous Parameters**

Parameter	Description
Ability Distribution	
$\mu_{a_f} = 0.87, \sigma_{a_f} = 0.41, \sigma_{a_m} = 0.44, \rho = 0.27$	Joint Log Normal Distribution
Preferences	
$\beta = 0.9993$ (quarterly)	Discount Factor
$\gamma_1 = 0.40, \ \gamma_2 = 0.442, \ \overline{n} = 2.40$	Preferences for Children
$\gamma_3^{nigh} = 24.0 \ \gamma_3^{med} = 37.5, \ \gamma_3^{low} = 49.5$	Preferences for Children
$\chi = 0.745$	Preterences for Leisure
Cost of Children	
$d_1 = 0.14$	Childcare Cost, youngest is a baby
$d_2 = 0.10$	Childcare Cost, youngest is a school-age child
$\varphi = 0.216$	Frac. of Households with Informal Care
i = 0.100	
Female Wages	
$\eta_1^P = 0.0214, \ \eta_2^P = -0.00045, \ \eta_1^T = 0.0198$	Human Capital Accumulation
$\zeta_0 = 0.972$	Temporary Contract Wage Penalty
$\delta_h \equiv 0.000$ (quarterly)	Depreciation Rate
Labor Market	
$\xi = 0.79$	Cost of Participation
$\pi = 0.047$	Promotion Probability
$\varphi = 0.23, \ \varphi_{25} = 0.53$ $\delta^1 = 0.0065, \ \delta^0 = 0.055$	JOD Finding Kate
$\kappa = 0.138$	Time Cost of Split Jobs
$\psi = 0.40$	Frac. of Split-Schedule Jobs 16/43

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# 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) The Gap in Returns, Perm. vs. Temp. Temp. Cont. Wage Penalty Av earn at 44, ≤ 50% in perm. contracts	17% -3.0% 1.13	15% -3.0% 1.15	Figure Garcia-Louzano et al. (2022) Garcia-Louzano et al. (2022) Table 2
Median wealth to income ratio, hholds, 35-44	2.40	2.60	The EFF

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# 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
Irans 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

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# Fertility and child care (targeted)

	Model	Data	Source
Fertility timing	🕩 Fig	ure	FS
(Average Age at First Birth)	31.6	32.0	FS
Fraction childless	0.18	0.17	FS
Fraction with 1 Child)	0.15	0.21	FS
Fraction with 2 Children	0.56	0.49	FS
(Fraction with 3 or More Children)	0.11	0.11	FS
(Number of Children)	1.60	1.62	FS
Modian Childcare, Costs /Household Income $i = 1$	0.05	0.05	FS
Median Childrene Costs/Household Income, $i = 1$	0.00	0.03	
Median Childcare Costs/Household Income, $i = 2$	0.03	0.03	гS
Informal Child Care Use, Mothers with Babies, Employed	0.31	0.31	Table A8

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# **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 $\geq 50\%$	1.31	1.27	Table 2
Fraction of Childless at 11			
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

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# Heterogeneity

• Selection of women into participation, split-shift shedules jobs, permanent contracts and fertility is not random

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# Heterogeneity

- Selection of women into participation, split-shift shedules 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

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# Heterogeneity

- Selection of women into participation, split-shift shedules jobs, permanent contracts and fertility is not random
- Ability, preferences, childcare access and spouse's ability play an important role
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  - 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,  $\delta^0 = \delta^1$ 



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



- 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

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### Fertility and Labor Market Outcomes - Counterfactual Economies I

(Women with a College Degree)

	BM	(i)	(ii)	(iii)
		Single	Âİ	Lower
		Contract	Regular Job	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 $\geq 2$ kids	0.67	0.71	0.71	0.77
Ages 25-44				
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
$\delta^0$ (Separation, temporary)	0.055	0.0065	0.055	0.055
$\delta^1$ (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

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- 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)

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

	BM	(i)	(ii)	(iii)
		Single Contract	Single Contract	Single Contract for All
		+ All Regular	+ All Regular	+ All Regular
			+ Lower Cost	+ 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 $\geq 2$ kids	0.67	0.72	0.83	0.84
Ages 25-44				
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
$\delta^0$ (Separation, temporary)	0.055	0.0065	0.0065	0.055
$\delta^1$ (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

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### Fertility and Labor Market Outcomes - The Role of Single Contracts

	BM	(i)	(ii)	(iii)
		Single	Single	Single
		Contract	Contract	Contract
		Low Sep.	High Sep.	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 $\geq 2$ kids	0.67	0.71	0.66	0.76
Ages 25-44				
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
$\delta^0$ (Separation, temporary)	0.055	0.0065	0.017	0.055
$\delta^1$ (Separation, permanent)	0.0065	0.0065	0.017	0.055
$\phi$ (Finding rate)	0.23	0.23	0.23	0.23
$\varphi$ (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

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### Fertility and Labor Market Outcomes - Counterfactual Economies I

(Women without a College Degree)

	BM	(i)	(ii)	(iii)
		Single	All	Lower
		Contract	Regular Job	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 $\geq$ 2 kids	0.67	0.55	0.67	0.75
Ages 25-44				
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
$\delta^0$ (Separation, temporary)	0.17	0.017	0.17	0.17
$\delta^1$ (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

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

	BM	(i)	(ii)	(iii)
		Single Contract	Single Contract	Single Contract for All
		+ All Regular	+ All Regular	+ All Regular
			+ Lower Cost	+ 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
Ages 25-44				
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
_				
$\delta^0$ (Separation, temporary)	0.17	0.017	0.017	0.017
$\delta^1$ (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 effec on the fertility, since economic resources of husbands are critical in theses households



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# 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



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# 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 wihtoug children decreases

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# 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 wihtoug 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

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# 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 wihtoug 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

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# Thanks!!!
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## **Fertility Timing**



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#### Labor Market, Males



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#### Labor Market, Females



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#### **Earnings**, Males



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# **Earnings**, Females



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#### **Temporary Contracts and the TFR**



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#### Flexibility and the TFR



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# **Temporary Contracts**



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## **Split-Shift Work Schedules**



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

