

Child-Related Transfers, Household Labour Supply, and Welfare

Guner et al (2020)

Presented by Kazu Matsuda

Motivation

- Child-related transfers affect female labor supply.
 - In Scandinavia, much transfers lead to high female labor participation.
- Child-related transfers are an active policy debate.
 - Expansion of child tax credits discussed in the 2016 Presidential race.
- But large expansions of transfers are unexplored.

This paper

- What are the macroeconomic effect of child-related transfers?
- Should child-related transfers be
 - Universal or means-tested?
 - Conditional or unconditional on mother's labor supply?
 - Subsidy (dependent on childcare expenditure) or lump-sum?

What they do

- Build an equilibrium life-cycle model w/ hetero single/married individuals.
 - Labor supply decisions of spouses at the extensive and intensive margins.
 - Hetero number and timing of children and costs (informal childcare).
 - Endogenous females' human capital that depreciates during childbearing.
- Parameterize the model in line with US data with *three main programs*.
- Examine their effects on female labor supply and welfare.

Program 1: Childcare subsidies

Child-related transfers in the U.S.

- Parents must be employed, in training, or in school.
- For low-income households.
 - Average income threshold was about 60–61% of U.S. median income.
 - In 2010, about 5.5% of all children were served in the U.S.
- About 75% of childcare costs (\$3,600 out of \$4,800) were subsidized.

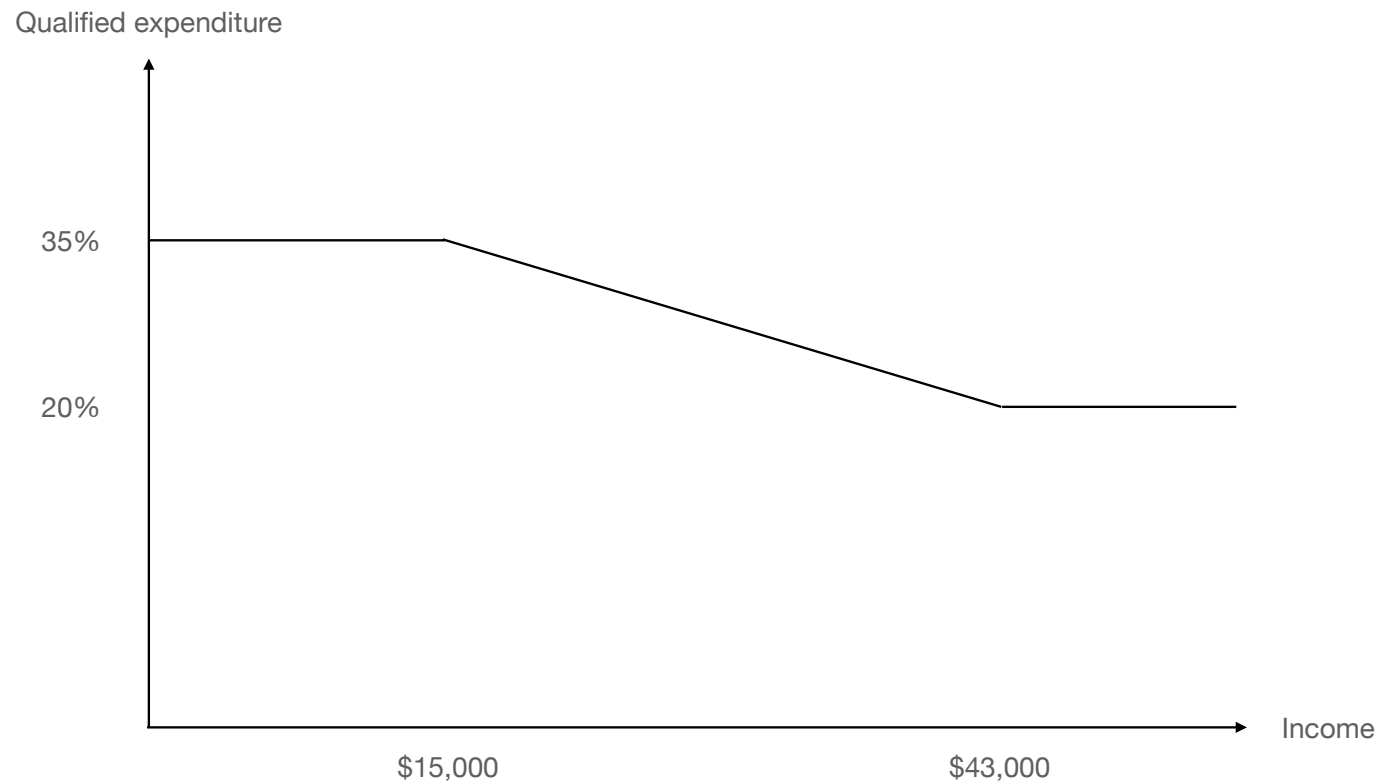
Program 2: Childcare credits

Child-related transfers in the U.S.

- A non-refundable tax credit: deduct a fraction of their childcare expenses.
- Both parents must work.
- Max qualified expenditure is \$3,000 per child, with an overall max \$6,000.
- Only households with positive tax liabilities benefit from it.

Program 2: Childcare credits

Child-related transfers in the U.S.



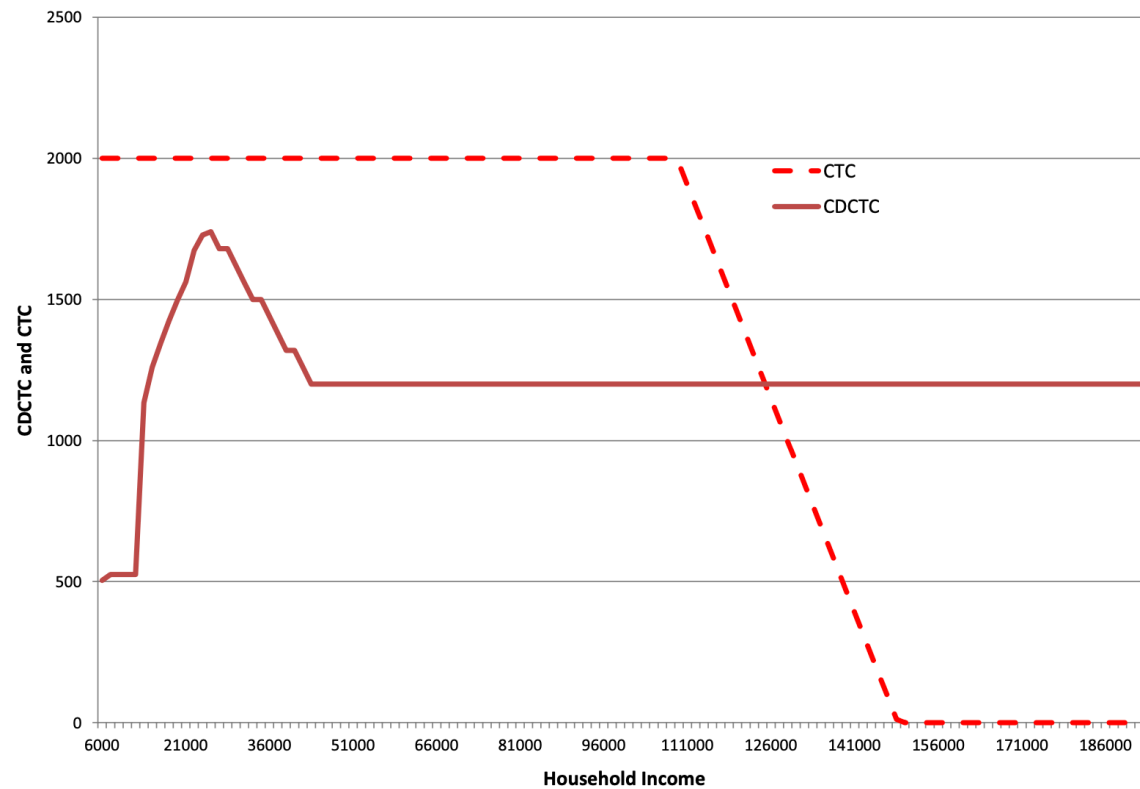
Program 3: Child credits

Child-related transfers in the U.S.

- A non-refundable tax credit for each child independent of
 - their childcare expenditures
 - the labour market status of parents.
- This is partly compensated by the Additional Child Tax Credit (ACTC) that gives part or full of the unused portion of the CTC back to families.

For married households with two children

Child-related transfers in the U.S.



Taxonomy

Child-related transfers in the U.S.

		Universal	Means-Tested
Conditional	Unconditional	①	② Child Credits
	Subsidy	③ Childcare Credits	④ Childcare Subsidy
	Transfer	⑤	⑥

FIGURE 1
Taxonomy of child-related transfers.

Current policy debate

Child-related transfers in the U.S.

1. Expansion of childcare subsidies: universal
2. Increasing the childcare credits: from \$1,200 to \$3,000
3. 2017 expansion of child credits: from \$1,000 to \$2,000 for each qualifying child.

The economic environment

- A stationary OLG equilibrium w/ a continuum of males (m) and females (f).
- Let $j \in \{1, 2, \dots, J\}$ denote age with retirement age J_R .
- Each individual is born with education and marital status (single/married).
 - Marital status does not change over time.
 - Married households are comprised by individuals of the same age.
- Married/single females differ in the number of children (inc. 0) and timing.

Benefits/Costs of working

The economic environment

1. Goods childcare cost.
2. A fixed time cost.
3. Utility cost for married households.
4. Labor efficiency units benefit.

Production

The economic environment

- A representative firm with production function

$$F(K, L_g) = K^\alpha L_g^{1-\alpha}$$

- Wage rate: w
- Capital rents: R
- Rate of return: $r = R - \delta_k$

Heterogeneity and demographics

The economic environment

- Males differ in education z and additional heterogeneity ε_z
- Life-cycle productivity: $\bar{\omega}_m(z, j)\varepsilon_z$
- Females differ in education x and additional heterogeneity ε_x
- Life-cycle productivity: $h_j\varepsilon_x$ where $h_1 = \bar{\omega}_f(x, 1)$ and

$$h' = \mathcal{H}(x, h, l, j) = \exp \left[\ln h + \alpha_j^x \chi(l) - \delta_x(1 - \chi(l)) \right].$$

Children and childcare costs

The economic environment

- Each married couple and single female can be
 - $b = 0$: without any children
 - $b = 1$: early bearers. $k(x, z)$ children in ages $j = 1, 2, 3$.
 - $b = 2$: late bearers. $k(x, z)$ children in ages $j = 2, 3, 4$.
- A female w/ children pays childcare costs $wk(x, z)d(s, x, z, g)$ if she works.
 - s is age of children and $g \in \{0, 1\}$ is access to informal childcare.
- Same for single females with children: they pay $wk(z)d(s, x, g)$.

Preferences

The economic environment

- Momentary utility for a single

$$U_f^S(c, l, k_y) = \log c - \varphi(l + k_y\eta)^{1+\frac{1}{\gamma}},$$

- c : consumption, l : time for work, $k_y \in \{0,1\}$: indicator for presence of age 1 children.
- For married households

$$U_f^M(c, l_f, q, k_y) + U_m^M(c, l_m, l_f, q) = 2 \log(c) - \varphi(l_f + k_y\eta)^{1+\frac{1}{\gamma}} - \varphi l_m^{1+\frac{1}{\gamma}} - \chi\{l_f\}q,$$

- $\chi\{l_f\}$: indicator that a female works. Married households draw $q \sim \zeta(\cdot | z)$.

Government

The economic environment

- $T^M(I, k)$, $T^S(I, k)$: income tax for married/single households with income I .
- τ_p : payroll tax
- τ_k : capital income tax
- $p_f^S(x)$, $p_m^S(z)$, $p^M(x, z)$: social security benefits
- $TR_f^S(I, D, k)$, $TR_m^S(I, D, k)$, $TR^M(I, D, k)$: EITC where D is total childcare exp.

Child-related transfers

The economic environment

- Childcare subsidy: A working mother with income below \hat{I} receives θ fraction of childcare payments.
 - e.g., Effective exp for singles: $wk(x)d(s, x, g)(1 - \theta)$ if $I < \hat{I}$.
- Each household also receives child credits and childcare credits.

Decision problem

The economic environment

- I don't write the Bellman equations here.
- They choose consumption, asset holdings, male and female labor hours.

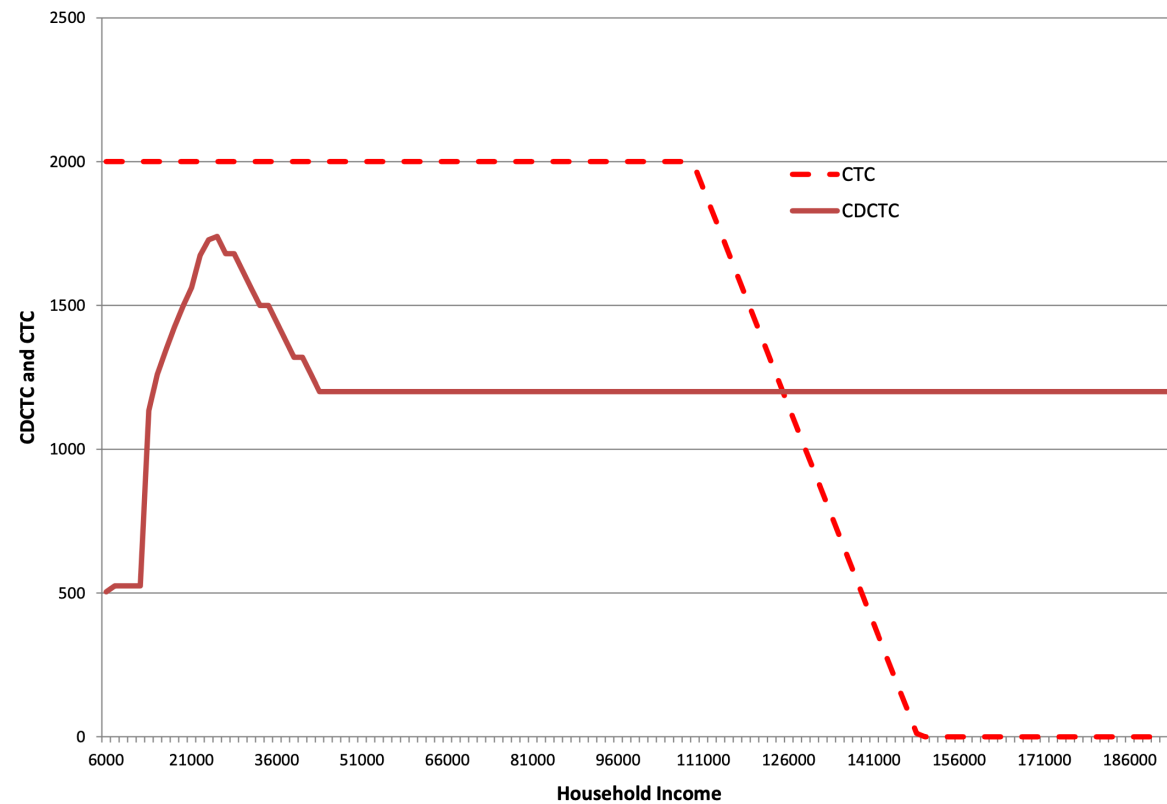
Child-related transfers

The benchmark economy

- One period is 5 years from $j = 1$ to ages 25-29 to J age 80.
- Education types: HS<, HS, SC, COL, COL+
- Demographic structure from the data (single/married, married with whom).
- Childbearing status from data.
- \bar{I} such that the poorest 5.5% receives a subsidy.

Child-related transfers

The benchmark economy



Remaining parameters

The benchmark economy

- Wage shocks $\varepsilon_x, \varepsilon_z$ to match the variance of log wages ages 25-29.
- Female initial HC h_1 to match the wage gender gap at ages 25-29.
- Female wage growth α_j^x equal to the growth rates of males at each age.
- Female wage depreciation δ_x to match the change in gender gap btw 25-29 and 30-34.

Remaining parameters

The benchmark economy

Parameter	Value	Comments
Population growth (n)	0.01	U.S. data
Discount factor (β)	0.9696	Calibrated—matches K/Y
Labour supply elasticity (γ)	0.4	Literature estimates.
Disutility of market work (φ)	7.63	Matches hours per worker
Time cost of children (η)	0.038	Matches LFP of married females with young children
Skill depreciation, females (δ_x)	0.025, 0.056	Calibrated
Growth of skills (α_j^x, α_j^z)	—	See text—CPS data
Distribution of utility costs $\zeta(\cdot z)$ (gamma distribution)	—	See text—matches LFP by education conditional on husband's type
Within group heterogeneity (ε)	0.388	Calibrated
Capital share (α)	0.343	Calibrated
Depreciation rate (δ_k)	0.055	Calibrated

Remaining parameters

The benchmark economy

Childcare costs for single females, $d(s, x, g)$	—	See text—matches expenditure by age, skills, and access to informal care.
Childcare costs for married females $d(s, x, z, g)$	—	See text—matches expenditure by age, skills, and access to informal care.
Childcare subsidy (θ)	75%	U.S. data
Income threshold (\widehat{I}) (as a % of mean household income)	15.8%	Calibrated
Tax functions $T^M(I, k)$ and $T^S(I, k)$		See Supplementary Appendix —IRS data
Transfer functions $TR^M(I, D, k)$, $TR_f^S(I, D, k)$, and $TR_m^S(I, D, k)$		See text and Supplementary Appendix
Payroll tax rate (τ_p)	0.086	See Supplementary Appendix
Social security incomes, $p_m^S(z)$, $p_f^S(x)$, and $p^M(x, z)$	—	See Supplementary Appendix —U.S. Census
Capital income tax rate (τ_k)	0.097	See Supplementary Appendix —matches corporate tax collections

Model and Data

The benchmark economy

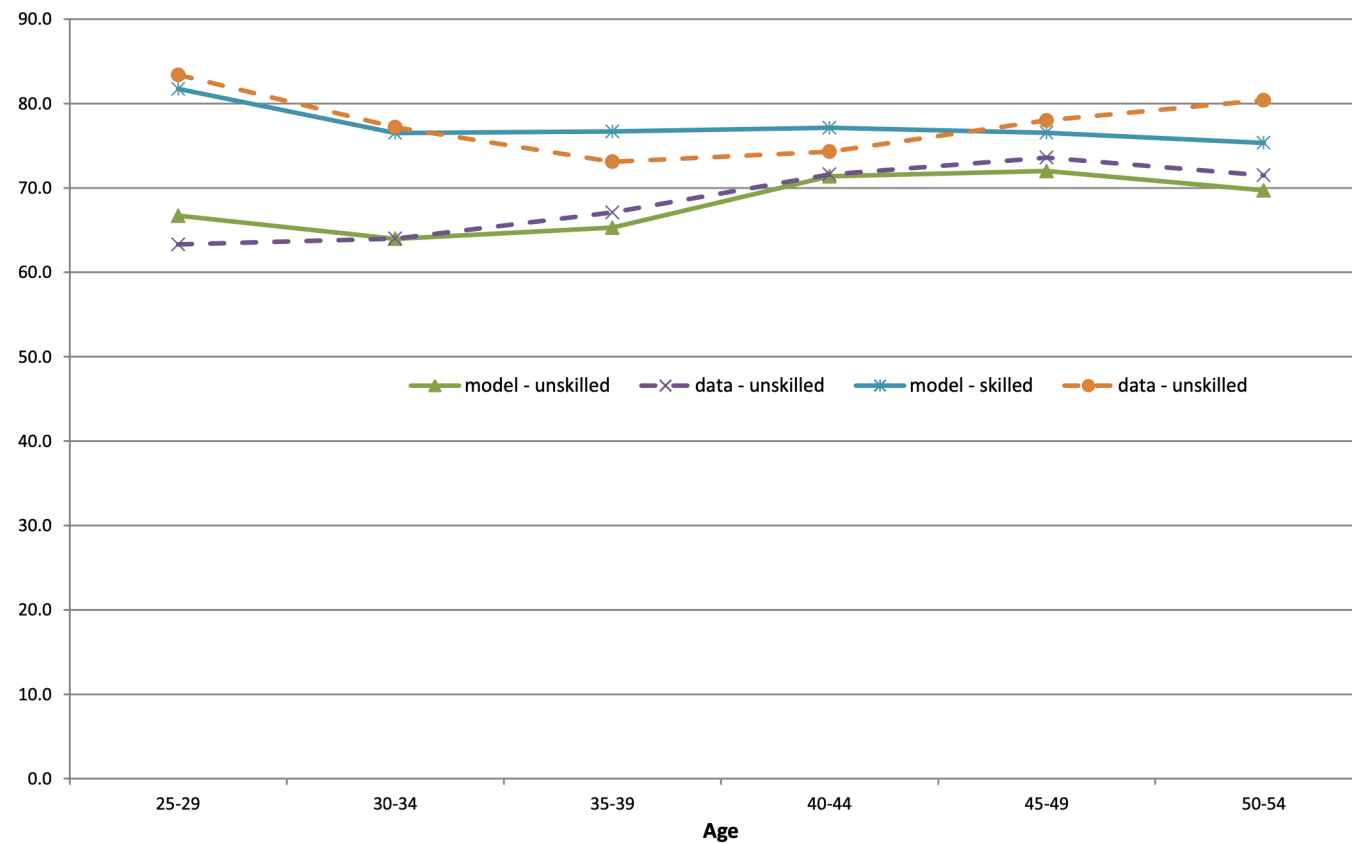
Table 1: Model and Data

Statistic	Data	Model
Capital output ratio	2.93	2.93
Labour hours per-worker	0.40	0.40
LFP of married females with young children (%)	62.6	63.8
Variance of log wages (ages 25–29)	0.227	0.227
Participation rate of married females (%), 25–54	72.4	71.5
Less than high school (<HS)	46.7	47.2
High school (HS)	69.7	66.4
Some college (SC)	74.0	73.4
College (COL)	74.7	73.6
More than college (COL+)	82.2	79.9
Total	72.4	71.5
With children	68.3	66.1
Without children	85.9	83.3

Notes: Entries summarize the performance of the benchmark model in terms of empirical targets and key aspects of data. Total participation rates, with children and without children are not explicitly targeted.

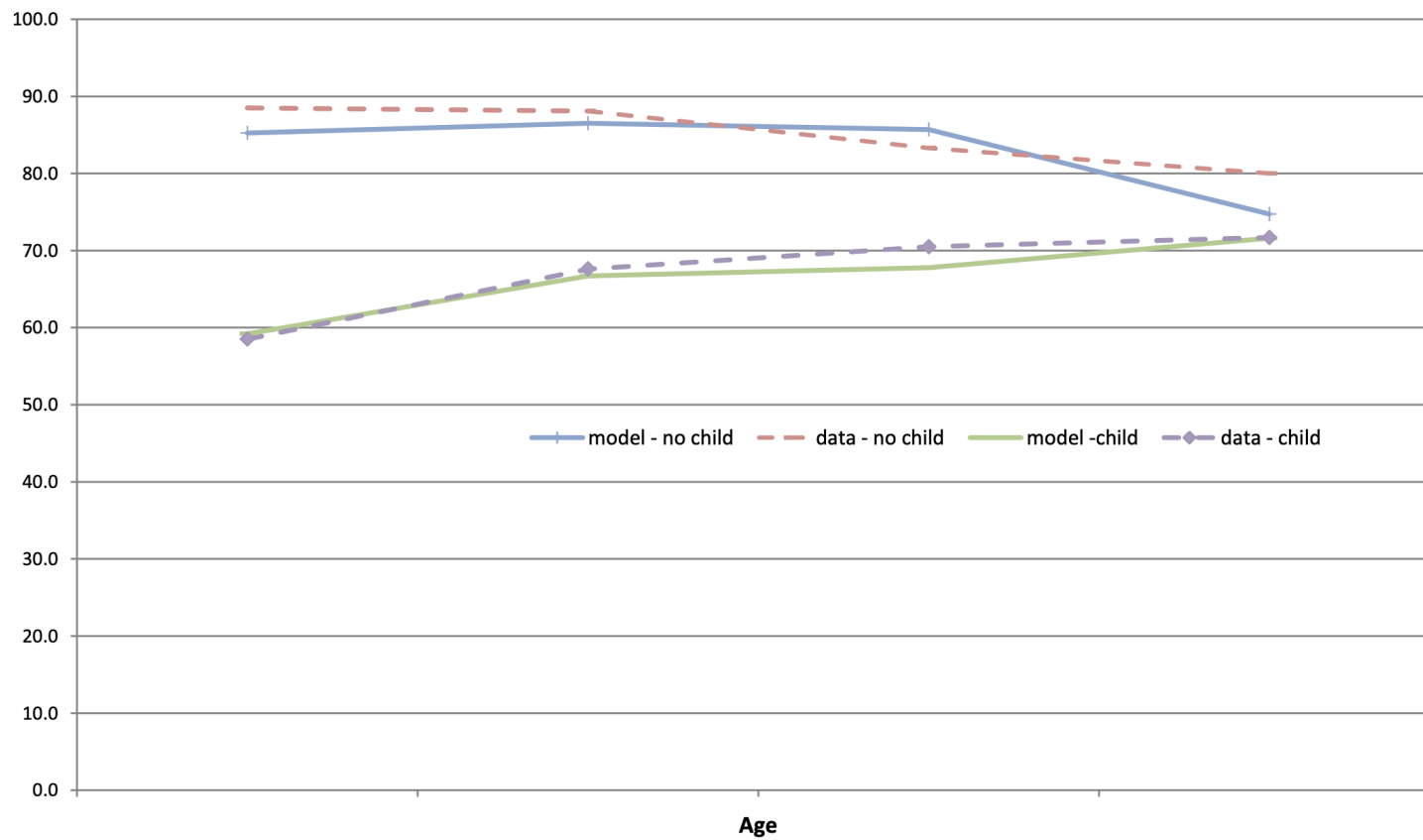
Married FLFP by skill

The benchmark economy



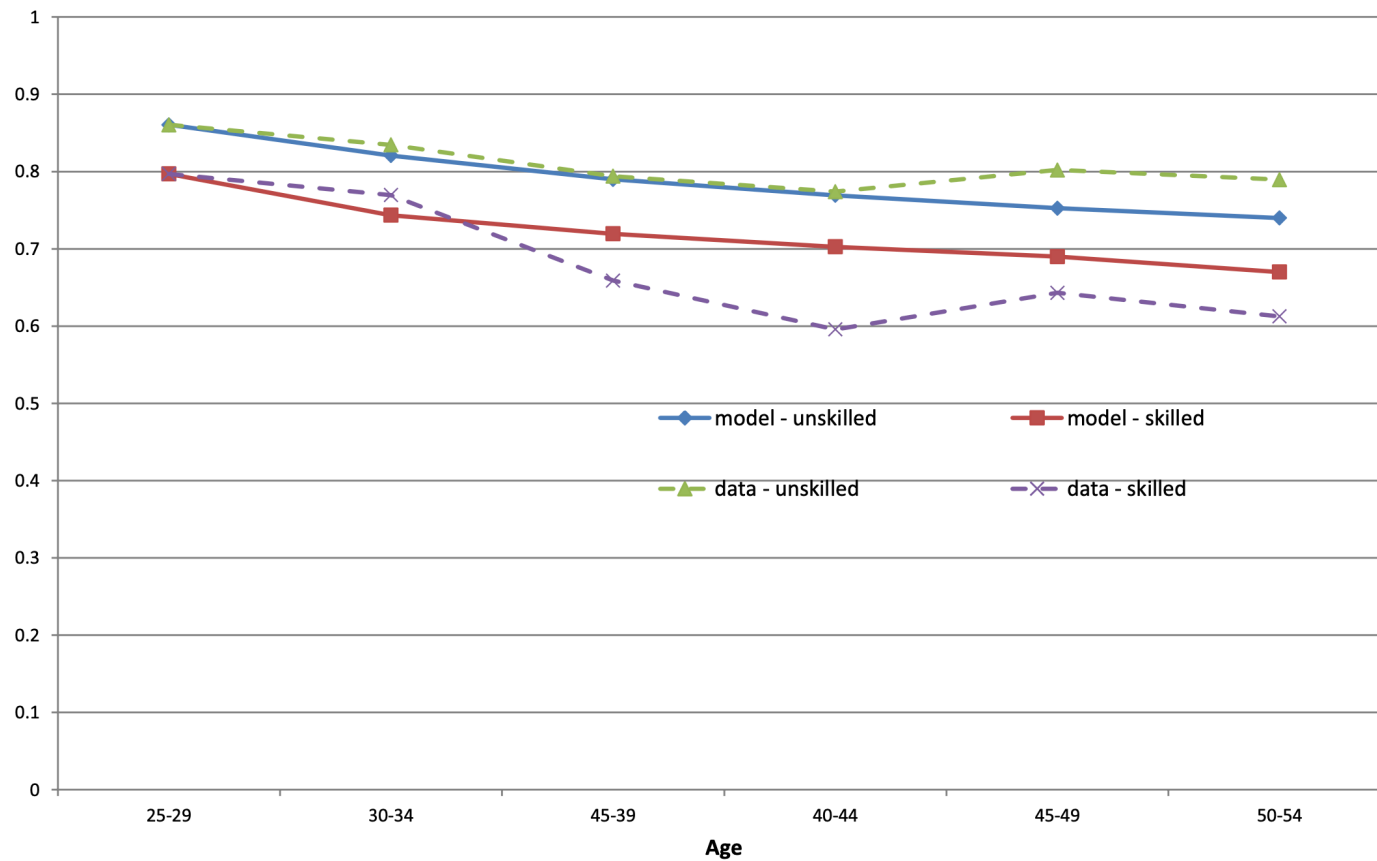
Married FLFP by the presence of children

The benchmark economy



Gender Gap, Model versus Data

The benchmark economy



Reallocation of child-related transfers

Understanding child-related transfers

1. Take all the resources for child-related transfers in the benchmark.
2. Reallocate them to a single program.
3. Study the effects on labor supply, output, and welfare for newborns.

Understanding child-related transfers

Understanding child-related transfers

- Childcare subsidy: subsidizes childcare payments for working mothers.
- Conditional transfers: a lump-sum transfer per child for working mothers.
- Unconditional transfers: a transfer per child that is unconditional on work.
- For each one, we consider two cases:
 - Universal subsidy, which is available to all households with children
 - Means-tested subsidy, which is only available to households whose income is below a threshold.

Gender Gap, Model versus Data

Understanding child-related transfers

TABLE 3
Reallocation of child-related transfers (% changes relative to benchmark)

	Conditional on work				Unconditional	
	Subsidy		Transfer		Transfer	
	Universal	Means-tested	Universal	Means-tested	Universal	Means-tested
LFP (MF)	5.7	6.8	8.1	6.2	−5.1	−8.9
Hours	1.5	1.3	1.9	0.4	−1.4	−3.0
Hours (MF)	5.5	6.0	7.5	4.4	−5.3	−10.0
Output	0.8	−0.2	1.0	−0.9	−0.8	−3.0
LFP						
<HS	9.0	19.1	25.1	37.8	−8.8	−18.1
HS	6.3	10.5	11.8	12.7	−9.1	−13.0
SC	4.9	7.1	7.6	5.2	−5.4	−8.8
COL	6.2	4.7	5.8	0.4	−3.5	−7.4
COL+	3.9	1.1	2.8	−1.0	−1.6	−3.9

Welfare

Understanding child-related transfers

Single F

Early	−0.3	2.5	1.5	8.6	0.1	5.6
Late	−0.2	1.9	0.9	5.5	−0.1	3.3
<HS	−0.8	1.6	3.2	11.6	1.5	8.3
HS	−0.6	1.5	1.5	7.5	0.5	5.3
SC	−0.2	1.6	0.5	4.6	−0.4	2.8
COL	0.3	1.3	0.3	1.5	−0.1	0.8
COL+	0.2	0.8	−0.1	0.5	−0.3	0.0

Married

Early	−3.5	−2.1	−2.0	−0.3	1.1	3.3
Late	−2.6	−2.3	−2.1	−2.6	0.5	−0.1
<HS	−5.1	−3.6	−2.8	3.6	4.8	14.2
HS	−3.8	−2.3	−2.1	0.1	1.1	4.0
SC	−3.0	−1.8	−1.7	−2.0	0.5	0.3
COL	−2.0	−1.7	−1.9	−3.2	0.0	−1.1
COL+	−0.8	−1.4	−1.5	−2.7	−0.1	−1.5

All newborns	−1.7	−0.9	−0.9	0.05	0.44	1.5
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Summary

Understanding child-related transfers

1. Means-testing leads to larger welfare gains than universal programs.
2. Unconditional transfers deliver larger welfare gains.
 - Provide transfers to low-income households in which females don't work.
3. Lump-sum transfers fare better than subsidies.
 - Less-skilled households spend little on childcare.
4. Conditional transfers generate the largest positive effect on labor supply.

Method

Expanding child-related transfers

- Evaluate the macroeconomic and welfare implications of expanding the actual set. (Small open economy)
- Expenditure-equivalent and financed via a 1.2% increase in flat income tax
 1. Expand the current childcare subsidy and make it universal.
 2. Child credit: threshold unchanged but increase from \$1,000 to \$1,800.
 3. Child care credit: shift up the entire schedule by a factor about 2.

Gender Gap, Model versus Data

Expanding child-related transfers

TABLE 4

Expansion of child-related transfers (% changes relative to benchmark)

	Universal subsidies (75%)	Child credit expansion	Childcare credit expansion	New child credit
Participation of married females	10.2	−2.4	10.6	−2.6
Total hours	1.8	−1.4	1.5	−1.5
Total hours (married females)	8.6	−3.1	8.6	−3.3
Hours per worker (all females)	−1.1	−1.1	−1.6	−1.3
Hours per worker (married females)	−1.8	−0.7	−2.2	−0.9
Hours per worker (single females)	0.2	−1.5	−0.3	−1.9
Hours per worker (all males)	−1.5	−0.7	−1.7	−0.7
Human capital (married females)	2.8	−0.8	2.5	−0.8
Output	0.5	−1.7	0.7	−1.5
Tax rate (%)	1.2	1.2	1.2	1.35

Gender Gap, Model versus Data

Expanding child-related transfers

Participation of married females:

By education

<HS	25.4	−6.4	32.0	−7.2
HS	13.3	−4.4	16.9	−4.8
SC	9.1	−2.5	10.4	−2.8
COL	9.4	−1.2	7.0	−1.3
COL+	5.2	−0.7	2.8	−0.3

By child bearing status

Early	14.9	−4.0	17.0	−4.4
Late	8.2	−1.5	6.9	−1.4

Human capital of married females:

By education

<HS	5.7	−2.2	7.0	−2.5
HS	3.5	−1.5	4.2	−1.6
SC	2.7	−1.1	2.9	−1.2
COL	3.4	−0.7	2.5	−0.6
COL+	2.0	−0.4	1.0	−0.2

By child bearing status

Early	4.0	−1.4	4.1	−1.6
Late	2.5	−0.5	1.8	−0.4

Gender Gap, Model versus Data

Expanding child-related transfers

TABLE 5

Expansion of child-related transfers: welfare effects (newborns, %)

	Childcare subsidy (75%)	Child credit	Childcare credit	New child credit
Single F				
No children	−1.41	−1.40	−1.46	−1.62
Early	4.25	5.99	10.06	6.71
Late	3.40	3.58	7.40	4.25
Informal care	4.15	5.44	9.62	6.03
No informal care	3.69	5.23	8.84	6.15
<HS	1.85	8.43	6.95	9.55
HS	2.54	4.93	6.66	5.62
SC	2.41	2.39	6.40	2.65
COL	1.08	0.33	2.43	0.37
COL+	0.56	−0.54	1.19	−0.56

Gender Gap, Model versus Data

Expanding child-related transfers

Married				
No children	−3.16	−3.14	−3.29	−3.61
Early	2.90	3.59	5.80	4.76
Late	0.50	0.85	1.51	1.41
Informal care	2.02	2.09	3.84	3.96
No informal care	1.18	2.95	3.74	2.93
All newborns	0.84	1.28	2.51	1.73
(%) winners	48.0	54.3	50.9	57.7
All newborns (weighted welfare)	0.04	0.04	0.14	~0

Gender Gap, Model versus Data

Expanding child-related transfers

	Childcare subsidy (75%)	Child credit	Childcare credit	New child credit
Age				
25–29	0.84	1.28	2.51	1.73
30–34	0.38	0.39	1.46	0.72
35–39	–0.81	–0.76	–0.23	–0.60
40–44	–1.84	–1.88	–1.84	–2.06
45–49	–2.39	–2.36	–2.51	–2.78
50–54	–1.86	–1.88	–1.99	–2.17
All	–0.82	–0.74	–0.36	–0.73
(%) Winners	14.6	13.6	15.5	15.5
Steady states:				
Newborns	0.77	1.19	2.54	1.71
(%) Winners	47.5	51.8	51.0	57.0

Summary

Expanding child-related transfers

- Universal subsidies and the expansion of childcare credits increase labor.
 - Increasing female skill is key.
- An expansion of child credits reduce labor supply due to income effect.
- Expansions of the existing programs improve welfare.
 - Especially for poorer households.
- Childcare credits improve welfare most.