The impact of children on labor supply

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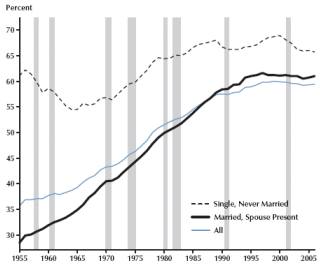
Introduction

- 2 key labor market trends in the past 40 years
  - Rising labor force participation of women
  - Falling fertility
- These two fact are intimately linked, but how?
  - Are women working more because they are having less children
  - Are women having less children because they are working more

Figure 2

LFPR by Marital Status (Women)



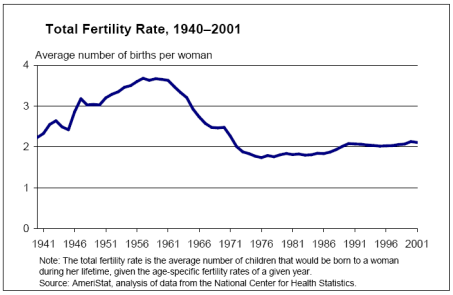


TABLE 1—FERTILITY AND LABOR-SUPPLY MEASURES

Sample	1970 PUMS	1980 PUMS	1990 PUMS
Women aged 21–35			
Mean children ever born	1.78	1.27	1.18
Percent with 2 or more children	52.10	40.40	37.60
Percent worked last year	60.00	73.40	79.30
Observations	203,918	1,326,631	1,478,546

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- Note that between 1970 and 1990
  - Mean children ever born has fallen by 33%, from 1.78 to 1.18
  - % worked last year increased by 32%, from 60 to 79%
- Hundreds have studies have attempted to address these questions
- Lots of persistent relationships, but what have we measured?

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- Women with children are not randomly assigned
- Who is most likely to have large families?
  - Lower educated
  - Those with lower wages
  - Certain minority groups
  - Certain religious groups
  - Those who want more children

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- Problem is, many of these same groups are also those most likely to be out of the labor force
- Of the lower women among women with young children, hoe much is due to the kids, how much is attributable to some of these other factors?

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Gallop Poll/Gender Preferences

	Girl	Boy	Either
1941			
M	24%	38%	38%
W	19%	48%	33%
2000			
M	28%	38%	34%
W	35%	30%	35%

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Table 1. Preference for sex of next child, according to current parity and sex composition of past births. (Number of women shown in parentheses.)

Parity	Sex preference for next child	Total (%)	Sex preference if past births were: All or most boys (%)	Equal number of boys and girls (%)	All or most girls (%)
All	Boy	51.1	19.8	51.1	80.6
	Girl	48.9	80.1	48.9	19.4
		(5828)	(2084)	(1050)	(1841)
0	Boy	63.2			
	Girl	36.8			
		(853)			
1	Boy	47.2	21.3		77.8
	Girl	52.8	78.7		22.2
		(1151)	(611)		(540)

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Table 1. Preference for sex of next child, according to current parity and sex composition of past births. (Number of women shown in parentheses.)

Parity	Sex preference for next child	Total (%)	Sex preference if past births were: All or most boys (%)	Equal number of boys and girls (%)	All or most girls (%)
2	Boy	48.8	15.0	50.9	84.2
	Girl	51.2	84.9	49.1	15.8
		(1505)	(392)	(777)	(336)
3	Boy	49.1	20.8		81.1
	Girl	50.9	81.2		18.8
		(1052)	(548)		(504)
4	Boy	50.7	18.4	50.9	84.2
	Girl	49.3	81.6	49.2	15.8
		(611)	(198)	(218)	(195)
5 +	Boy	50.3	26.6	55.2	77.8
	Girl	49.7	73.4	44.8	22.2
		(656)	(335)	(55)	(226)

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Preferences for sex mix

- Among married couples who desire 2+ kids
  - 66% wives and 75% of husbands prefer mix
- Of women with 2 boys and desiring a 3rd, 85% would prefer a girl
- Of women with 2 girls and desiring a 3rd, 84% would prefer a boy

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TABLE 3—FRACTION OF FAMILIES THAT HAD ANOTHER CHILD BY PARITY AND SEX OF CHILDREN

Sex of first child in families with one or more children	All women				Married women			
	1980 PUMS (649,887 observations)		1990 PUMS (627,362 observations)		1980 PUMS (410,333 observations)		1990 PUMS (477,798 observations)	
	Fraction of sample	Fraction that had another child	Fraction of sample	Fraction that had another child	Fraction of sample	Fraction that had another child	Fraction of sample	Fraction that had another child
(1) one girl	0.488	0.694 (0.001)	0.489	0.665 (0.001)	0.485	0.720 (0.001)	0.487	0.698 (0.001)
(2) one boy	0.512	0.694 (0.001)	0.511	0.667 (0.001)	0.515	0.720 (0.001)	0.513	0.699 (0.001)
difference (2) − (1)	—	0.000 (0.001)	—	0.002 (0.001)	—	0.000 (0.001)	—	0.001 (0.001)

Sex of first two children in families with two or more children	All women				Married women			
	1980 PUMS (394,835 observations)		1990 PUMS (380,007 observations)		1980 PUMS (254,654 observations)		1990 PUMS (301,588 observations)	
	Fraction of sample	Fraction that had another child	Fraction of sample	Fraction that had another child	Fraction of sample	Fraction that had another child	Fraction of sample	Fraction that had another child
one boy, one girl	0.494	0.372 (0.001)	0.495	0.344 (0.001)	0.494	0.346 (0.001)	0.497	0.331 (0.001)
two girls	0.242	0.441 (0.002)	0.241	0.412 (0.002)	0.239	0.425 (0.002)	0.239	0.408 (0.002)
two boys	0.264	0.423 (0.002)	0.264	0.401 (0.002)	0.266	0.404 (0.002)	0.264	0.396 (0.002)
(1) one boy, one girl	0.494	0.372 (0.001)	0.495	0.344 (0.001)	0.494	0.346 (0.001)	0.497	0.331 (0.001)
(2) both same sex	0.506	0.432 (0.001)	0.505	0.407 (0.001)	0.506	0.414 (0.001)	0.503	0.401 (0.001)
difference (2) − (1)	—	0.060 (0.002)	—	0.063 (0.002)	—	0.068 (0.002)	—	0.070 (0.002)

"The desire for a son is the father of many daughters"

Relative risk of giving birth to another child

		Den.	Fin.	Nor.	Swe.
2nd birth	1G	1.00	1.00	1.00	1.00
	1B	1.01	0.98	1.01	1.01
3rd birth	1B/1G	1.00	1.00	1.00	1.00
	2G	1.17	1.28	1.17	1.20
	2B	1.27	1.17	1.20	1.25

Other countries

- In Argentina, married parents of 2 kids of the same sex and 4.1% points more likely to have a third
- In Mexico, this number is 3.7% points

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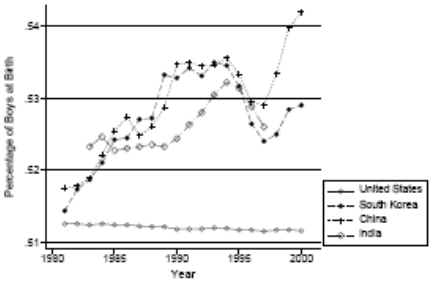

Figure 1: Likelihood of a Male Birth, by Country

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Figure 1: Male Fraction of Births Following Daughters in China

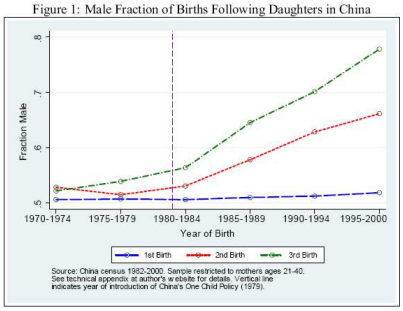

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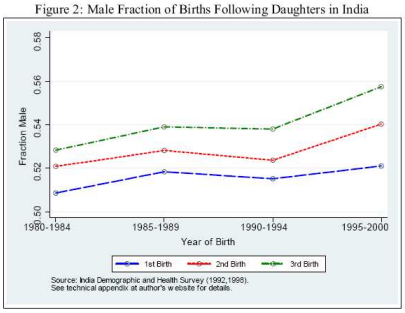
Figure 2: Male Fraction of Births Following Daughters in India



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% Male Births, 2000

Parity	Sex combo	China	India	Taiwan	US
1st	None	0.52	0.52	0.52	0.52
2nd	1 boy	0.50	0.52	0.52	0.52
	1 girl	0.62	0.52	0.52	0.51

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% Male Births, 2000

Parity	Sex combo	China	India	Taiwan	US
3rd	2 boys	0.39	0.51	0.52	0.52
	1 b, 1 g	0.53	0.53	0.52	0.51
	2 girls	0.70	0.55	0.56	0.50

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% Male Births, 2000

Parity	Sex combo	China	India	Taiwan	US
4th	3 boys	0.37	0.50	0.51	0.52
	2 b, 1 g	0.52	0.52	0.52	0.51
	1b, 2g	0.55	0.53	0.53	0.51
	3 girls	0.64	0.54	0.56	0.50

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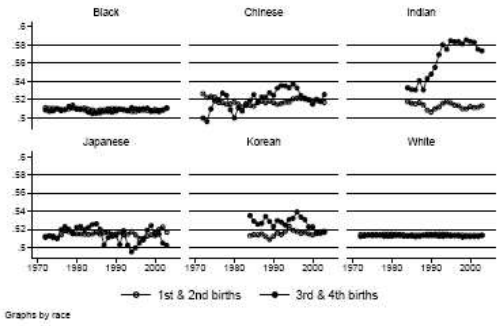

Figure 2: Boy-birth likelihoods by birth parity and race, California data

Infant Mortality Rate China

	1981	1990	1995	2000
Male	38.12	28.29	27.27	21.98
Female	36.12	32.77	36.29	30.98

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Table 2, Characteristics of women with 2+ Kids

	1980 Census	1990 Census
Childen ever born	2.55	2.50
More than 2 kids	0.402	0.375
Boy 1st	0.511	0.512
Boy 2nd	0.511	0.511
1st 2 kids same sex	0.264	0.264

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What do we learn from this table?

TABLE 4—DIFFERENCES IN MEANS FOR DEMOGRAPHIC VARIABLES BY *SAME SEX* AND *TWINS*-2

	Difference in means (standard error)		
	By *Same sex*		By *Twins-2*
Variable	1980 PUMS	1990 PUMS	1980 PUMS
Age	−0.0147	0.0174	0.2505
	(0.0112)	(0.0112)	(0.0607)
Age at first birth	0.0162	−0.0074	0.2233
	(0.0094)	(0.0114)	(0.0510)
Black	0.0003	0.0021	0.0300
	(0.0010)	(0.0011)	(0.0056)
White	0.0003	−0.0006	−0.0210
	(0.0012)	(0.0013)	(0.0066)
Other race	−0.0006	−0.0014	−0.0090
	(0.0005)	(0.0009)	(0.0041)
Hispanic	−0.0014	−0.0007	−0.0069
	(0.0009)	(0.0010)	(0.0047)
Years of education	−0.0028	0.0100	0.0940
	(0.0076)	(0.0074)	(0.0415)

Notes: The samples are the same as in Table 2. Standard errors are reported in parentheses.

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TABLE 5—WALD ESTIMATES OF LABOR-SUPPLY MODELS

	1980 PUMS			1990 PUMS			1980 PUMS		
		Wald estimate using as covariate:			Wald estimate using as covariate:			Wald estimate using as covariate:	
Variable	Mean difference by *Same sex*	*More than 2 children*	*Number of children*	Mean difference by *Same sex*	*More than 2 children*	*Number of children*	Mean difference by *Twins-2*	*More than 2 children*	*Number of children*
More than 2 children	0.0600	—	—	0.0628	—	—	0.6031	—	—
	(0.0016)			(0.0016)			(0.0084)		
Number of children	0.0765	—	—	0.0836	—	—	0.8094	—	—
	(0.0026)			(0.0025)			(0.0139)		
Worked for pay	−0.0080	−0.133	−0.104	−0.0053	−0.084	−0.063	−0.0459	−0.076	−0.057
	(0.0016)	(0.026)	(0.021)	(0.0015)	(0.024)	(0.018)	(0.0086)	(0.014)	(0.011)
Weeks worked	−0.3826	−6.38	−5.00	−0.3233	−5.15	−3.87	−1.982	−3.28	−2.45
	(0.0709)	(1.17)	(0.92)	(0.0743)	(1.17)	(0.88)	(0.386)	(0.63)	(0.47)
Hours/week	−0.3110	−5.18	−4.07	−0.2363	−3.76	−2.83	−1.979	−3.28	−2.44
	(0.0602)	(1.00)	(0.78)	(0.0620)	(0.98)	(0.73)	(0.327)	(0.54)	(0.40)
Labor income	−132.5	−2208.8	−1732.4	−119.4	−1901.4	−1428.0	−570.8	−946.4	−705.2
	(34.4)	(569.2)	(446.3)	(42.4)	(670.3)	(502.6)	(186.9)	(308.6)	(229.8)
ln(*Family income*)	−0.0018	−0.029	−0.023	−0.0085	−0.136	−0.102	−0.0341	−0.057	−0.042
	(0.0041)	(0.068)	(0.054)	(0.0047)	(0.074)	(0.056)	(0.0223)	(0.037)	(0.027)

Notes: The samples are the same as in Table 2. Standard errors are reported in parentheses.

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- The sex composition is only impacting 6 percent of women
- So the change in labor supply should be for this group only,
- So, if we divide -0.008 by 0.06, we get
- -0.008/0.06 = -0.133
- Having a 3rd child will reduce labor supply by 13.3 percentage points

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TABLE 6—OLS ESTIMATES OF *MORE THAN 2 CHILDREN* EQUATIONS

	All women		
Independent variable	(1)	(2)	(3)
1980 PUMS			
Boy 1st	—	−0.0080 (0.0015)	0.0001 (0.0021)
Boy 2nd	—	−0.0081 (0.0015)	—
Same sex	0.0600 (0.0016)	0.0617 (0.0015)	—
Two boys	—	—	0.0536 (0.0021)
Two girls	—	—	0.0698 (0.0021)
With other covariates	no	yes	yes
R^2	0.004	0.084	0.084

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TABLE 7—OLS AND 2SLS ESTIMATES OF LABOR-SUPPLY MODELS USING 1980 CENSUS DATA

	All women		
	(1)	(2)	(3)
Estimation method	OLS	2SLS	2SLS
Instrument for *More than 2 children*	—	*Same sex*	*Two boys, Two girls*
Dependent variable:			
Worked for pay	−0.176 (0.002)	−0.120 (0.025)	−0.113 (0.025) [0.013]
Weeks worked	−8.97 (0.07)	−5.66 (1.11)	−5.37 (1.10) [0.017]
Hours/week	−6.66 (0.06)	−4.59 (0.95)	−4.37 (0.94) [0.030]

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