

The Effects of a Universal Child Benefit

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Overview

- I study empirically the household-level effects of a universal child benefit.
- The identification strategy exploits the sharp cutoff date determining benefit eligibility.
 - Families who had children “right before” the cutoff as the “control group”.
- I analyze the impact on:
 - Fertility
 - Household consumption patterns,
 - Maternal labor supply and childcare arrangements.

Summary of findings

- The benefit increased fertility, both by:
 - Increasing conceptions, and
 - Decreasing abortions.
- Households that received the benefit did *not* increase overall or child-related expenditure over the following year.
 - They actually spent *less* on daycare services.
- Mothers took longer to return to work after childbirth.
 - The benefit allowed families to “buy” maternal time at home during the first year of the child’s life.

1. Introduction

- Many countries offer benefits to families with children.
- The goals typically include:
 - Encouraging fertility, and/or
 - Improving the well-being of households with children.
- Hard to assess the impact of such policies.

The Spanish “baby-check”

- On July 3, 2007, the Spanish president announced unexpectedly that all children born from that date on would receive a one-time, €2,500 benefit.
 - 4.5 times the monthly minimum wage for a full-time worker (more than 2 times median monthly earnings).
- A natural experiment!

Potential effects

- 1) The benefit could increase *fertility* by reducing the cost of children.
- 2) The increase in income could alter household *expenditure* patterns.
 - For instance, increasing expenditure in “inputs” relevant for child development and well-being (food, clothes, housing, books, etc).
- 3) Higher unearned income could also affect household *labor supply*.

Related Literature

- A broad literature analyzing:
 - The relationship between income and child outcomes.
 - The labor supply effects of public assistance.
- Some papers evaluating the fertility effects of child benefits.
 - Milligan (2005), Cohen et al. (2007).
- Two papers on the impact of child benefits on expenditure (different angle).
 - Lundberg et al. (1997), Ward-Batts (2010).
- A few recent papers have analyzed the effect of benefits on child development and well-being.
 - Milligan & Stabile (2008, 2009), Dahl & Lochner (2008).

Innovation

- Credible identification strategy.
- Fertility effect both through conceptions and abortions.
- Unintended labor supply effect.
 - The child benefit as paid maternity leave.

Outline

1. Introduction
2. Institutional background
3. Identification strategy
4. Data
5. Results
6. Conclusions

2. Institutional background

- In his 2007 “State of the Union” address, the Spanish President announced the introduction of the new subsidy.
- To be paid to the mother right after childbirth.
- All children born after the announcement date are eligible.
 - Except for immigrant mothers with less than 2 years of legal residence.
- Goals: Helping families cope with the extra expenditures associated with a new child, and encouraging fertility.
- More than 95% of children born in 2008 received the subsidy.

3. Identification strategy

- The child benefit as an unexpected shock,
- Both to women considering a pregnancy (or an abortion),
- And to new mothers.

i) Fertility effects

- The benefit introduction may have encouraged more women to conceive.
- It may also have discouraged some pregnant women from aborting.
- I look for a “jump” in the number of conceptions and abortions just at the benefit announcement date.

Econometric specification

$$N_m = \alpha + \beta Post_m + \gamma_1 m + \gamma_2 (m \cdot Post_m) + X_m' \mu + u_m$$

N : (log) monthly number of conceptions (abortions) in Spain

$Post$: binary indicator indicating post-announcement months

m : month, normalized so $m=0$ in July 2007

X : control variables (number of days in a month)

Seasonality concerns

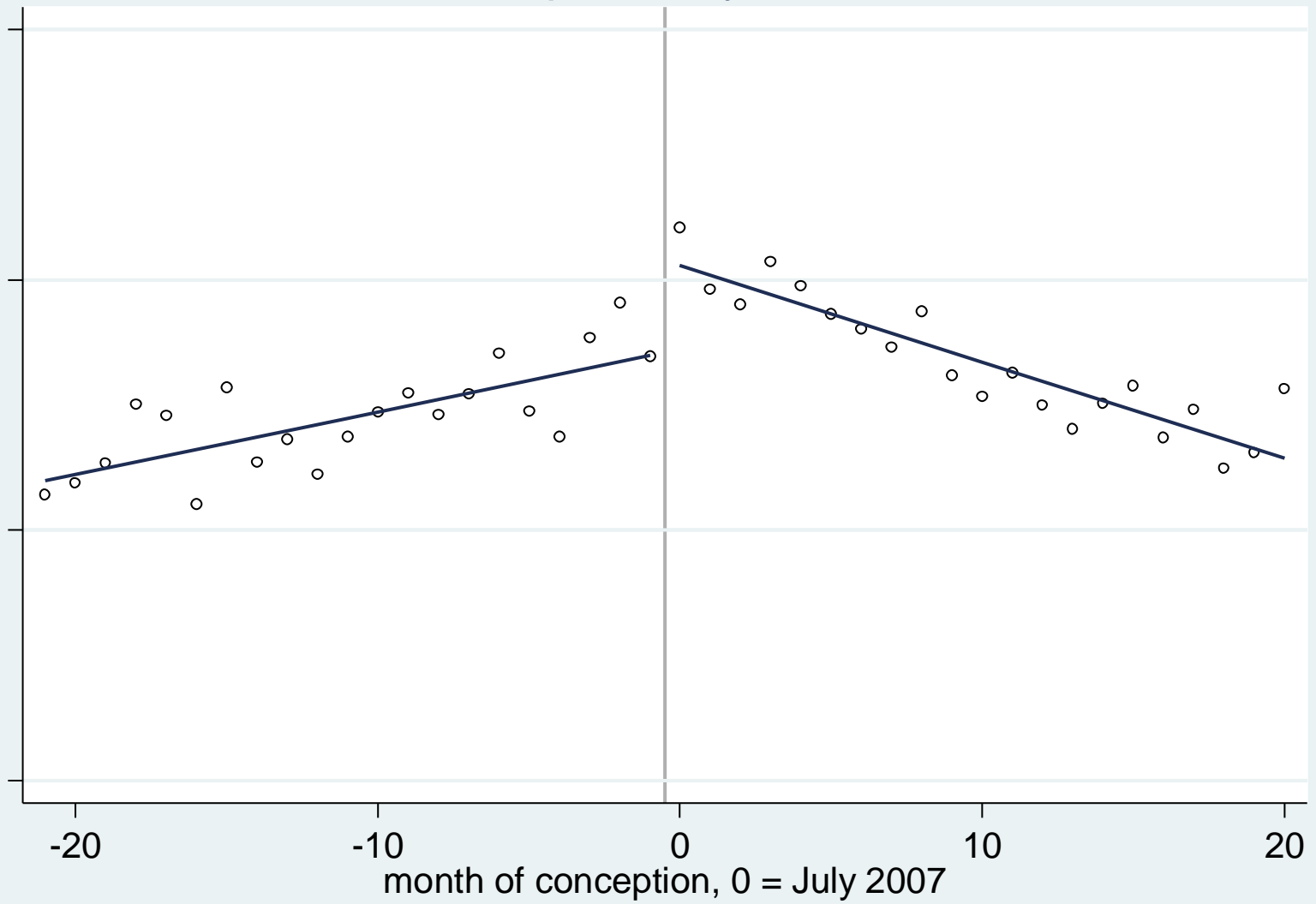
- Since the data are only available monthly, we may worry about seasonality effects.
 - Systematic difference in June versus July.
- An additional specification includes calendar month fixed-effects.
- Thus, I look for a jump from June to July 2007,
 - Above and beyond the typical June-July difference.

Fertility data

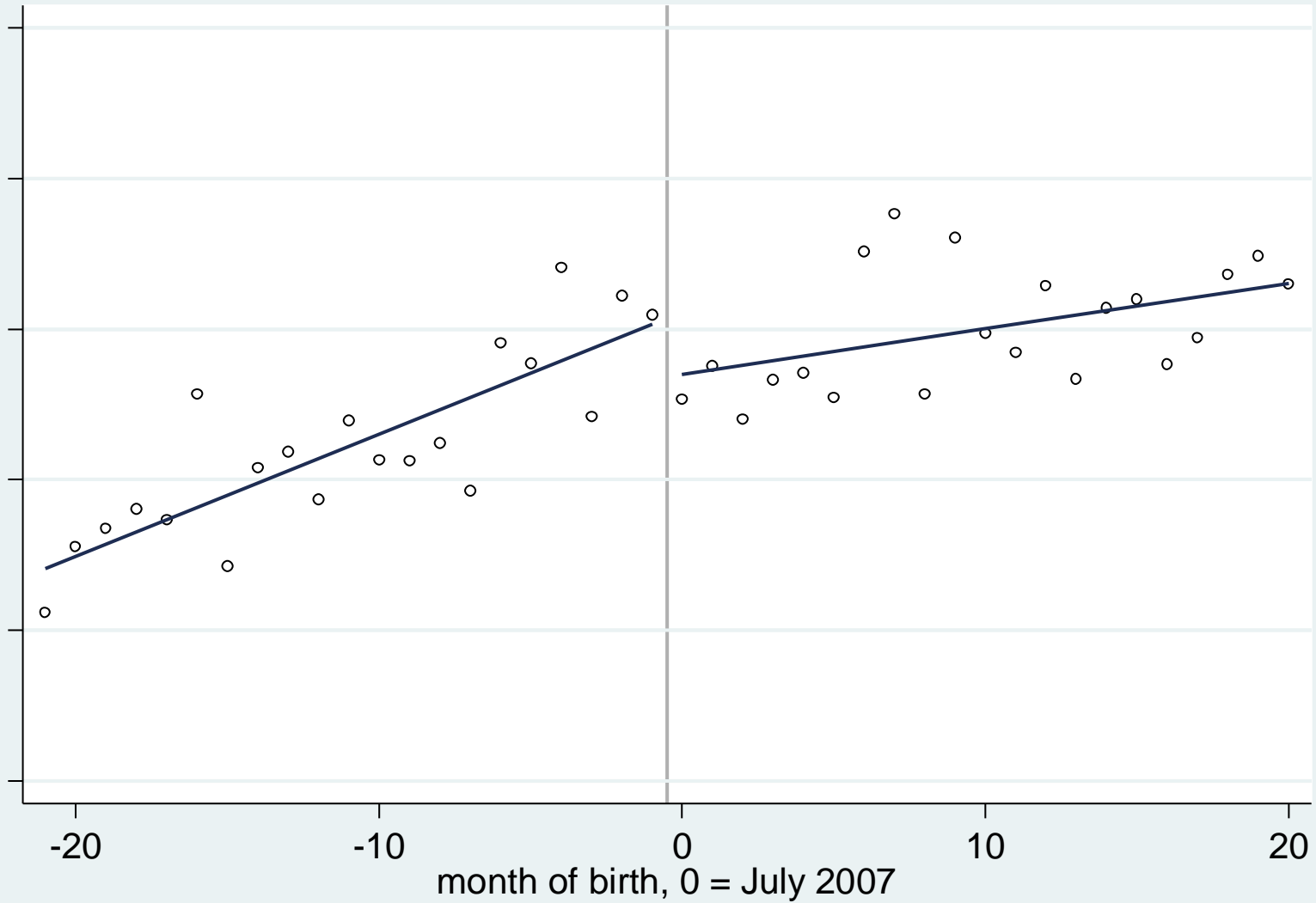
- Estimated monthly number of conceptions:
Spanish Vital Statistics 2005-2009.
 - About 37,500 conceptions per month (population).
- Monthly number of abortions 2000-2009:
regional governments official figures.
 - About 6,000 abortions per month.

Fertility results

Number of conceptions by month, 2005-2009



Number of abortions by month, 2005-2009



Fertility results

	RDD 10 years	RDD 5 years	RDD 12- 12m	RDD 9- 9m	RDD 3- 3m	DiD 10 years	DiD 7 years	DiD 5 years	
	1	2	3	4	5	6	7	8	
Conceptions									
Abortions									
Years included	2000-09	2005-09	2006-08	2006-08	2007	2000-09	2003-09	2005-09	
N (number of months)	120	60	24	18	6	120	96	60	
Linear trend in m	Y	Y	Y	Y	N	Y	Y	Y	
Quadratic trend in m	Y	Y	Y	N	N	Y	Y	Y	
Cubic term in m	Y	N	N	N	N	Y	N	N	
N. days of the month	Y	Y	Y	Y	Y	Y	Y	Y	
Calendar month dummies	N	N	N	N	N	Y	Y	Y	

Fertility results

	RDD 10 years		RDD 5 years		RDD 12- 12m		RDD 9- 9m		RDD 3- 3m		DiD 10 years		DiD 7 years		DiD 5 years
	1		2		3		4		5		6		7		8
Conceptions	0,0558	**	0,0714	***	0,0852	**	0,075	**	0,0503						
	(0,0222)		(0,0247)		(0,0359)		(0,0285)		(0,0314)						
Abortions															
Years included	2000-09		2005-09		2006-08		2006-08		2007		2000-09		2003-09		2005-09
N (number of months)	120		60		24		18		6		120		96		60
Linear trend in m	Y		Y		Y		Y		N		Y		Y		Y
Quadratic trend in m	Y		Y		Y		N		N		Y		Y		Y
Cubic term in m	Y		N		N		N		N		Y		N		N
N. days of the month	Y		Y		Y		Y		Y		Y		Y		Y
Calendar month dummies	N		N		N		N		N		Y		Y		Y

Fertility results

	RDD 10 years		RDD 5 years		RDD 12- 12m		RDD 9- 9m		RDD 3- 3m		DiD 10 years		DiD 7 years		DiD 5 years
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Conceptions	0,0558	**	0,0714	***	0,0852	**	0,075	**	0,0503		0,0489	***	0,059	***	0,0555
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Linear trend in m	Y		Y		Y		Y		N		Y		Y		Y
Quadratic trend in m	Y		Y		Y		N		N		Y		Y		Y
Cubic term in m	Y		N		N		N		N		Y		N		N
N. days of the month	Y		Y		Y		Y		Y		Y		Y		Y
Calendar month dummies	N		N		N		N		N		Y		Y		Y

Fertility results

	RDD 10 years		RDD 5 years		RDD 12- 12m		RDD 9- 9m		RDD 3- 3m		DiD 10 years		DiD 7 years		DiD 5 years
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Abortions	-0,15	***	-0,1724	***	-0,2323	**	-0,2125	***	-0,1159	*					
	(0,0447)		(0,0517)		(0,0843)		(0,0643)		(0,0405)						
Years included	2000-09		2005-09		2006-08		2006-08		2007		2000-09		2003-09		2005-09
N (number of months)	120		60		24		18		6		120		96		60
Linear trend in m	Y		Y		Y		Y		N		Y		Y		Y
Quadratic trend in m	Y		Y		Y		N		N		Y		Y		Y
Cubic term in m	Y		N		N		N		N		Y		N		N
N. days of the month	Y		Y		Y		Y		Y		Y		Y		Y
Calendar month dummies	N		N		N		N		N		Y		Y		Y

Fertility results

	RDD 10 years		RDD 5 years		RDD 12- 12m		RDD 9- 9m		RDD 3- 3m		DiD 10 years		DiD 7 years		DiD 5 years
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	(0,0222)		(0,0247)		(0,0359)		(0,0285)		(0,0314)		(0,0107)		(0,0093)		(0,0110)
Abortions	-0,15	***	-0,1724	***	-0,2323	**	-0,2125	***	-0,1159	*	-0,0549		-0,0503	*	-0,0516
	(0,0447)		(0,0517)		(0,0843)		(0,0643)		(0,0405)		(0,0335)		(0,0279)		(0,0361)
Years included	2000-09		2005-09		2006-08		2006-08		2007		2000-09		2003-09		2005-09
N (number of months)	120		60		24		18		6		120		96		60
Linear trend in m	Y		Y		Y		Y		N		Y		Y		Y
Quadratic trend in m	Y		Y		Y		N		N		Y		Y		Y
Cubic term in m	Y		N		N		N		N		Y		N		N
N. days of the month	Y		Y		Y		Y		Y		Y		Y		Y
Calendar month dummies	N		N		N		N		N		Y		Y		Y

ii) Expenditure and labor supply effects

- Receiving the benefit may alter household consumption and labor supply.
- I compare households who gave birth just before and just after benefit introduction.
- Sharp cutoff date determines benefit eligibility.
 - Families unable to adjust date of birth around the threshold.
- Close to the cutoff, treatment assignment “as good as randomized” (Lee & Lemieux, 2010).
 - “Treated” families: Birth on or after July 1, 2007.
 - “Control” families: Birth “just before”.
- “Effect” of the subsidy: difference in outcomes between births right before and right after the cutoff.

Econometric specification

Sample: Households (i) who had a child near the cutoff, interviewed in 2008.

$$Y_{im} = \alpha + \beta Post_{im} + \gamma_1 m + \gamma_2 (m \cdot Post_{im}) + X'_{im} \mu + u_{im}$$

Y : Household expenditure or labor supply

$Post$: binary indicator indicating post-announcement months

m : month, normalized so $m=0$ in July 2007

X : control variables (age and education of the mother, etc)

Variations

- I explore sensitivity to number of months included and order of the polynomial.
- I also estimate additional specifications with calendar month fixed-effects.

Expenditure and labor supply data

- Household expenditure: *Household Budget Survey (HBS) 2005-2009.*
 - About 50 births per month.
- Labor supply: *Labor Force Survey (LFS) 2005-2009.*
 - About 450 births per month.
- Child care use: *Survey of Income and Living Conditions (SILC) 2008.*
 - About 20 births per month.

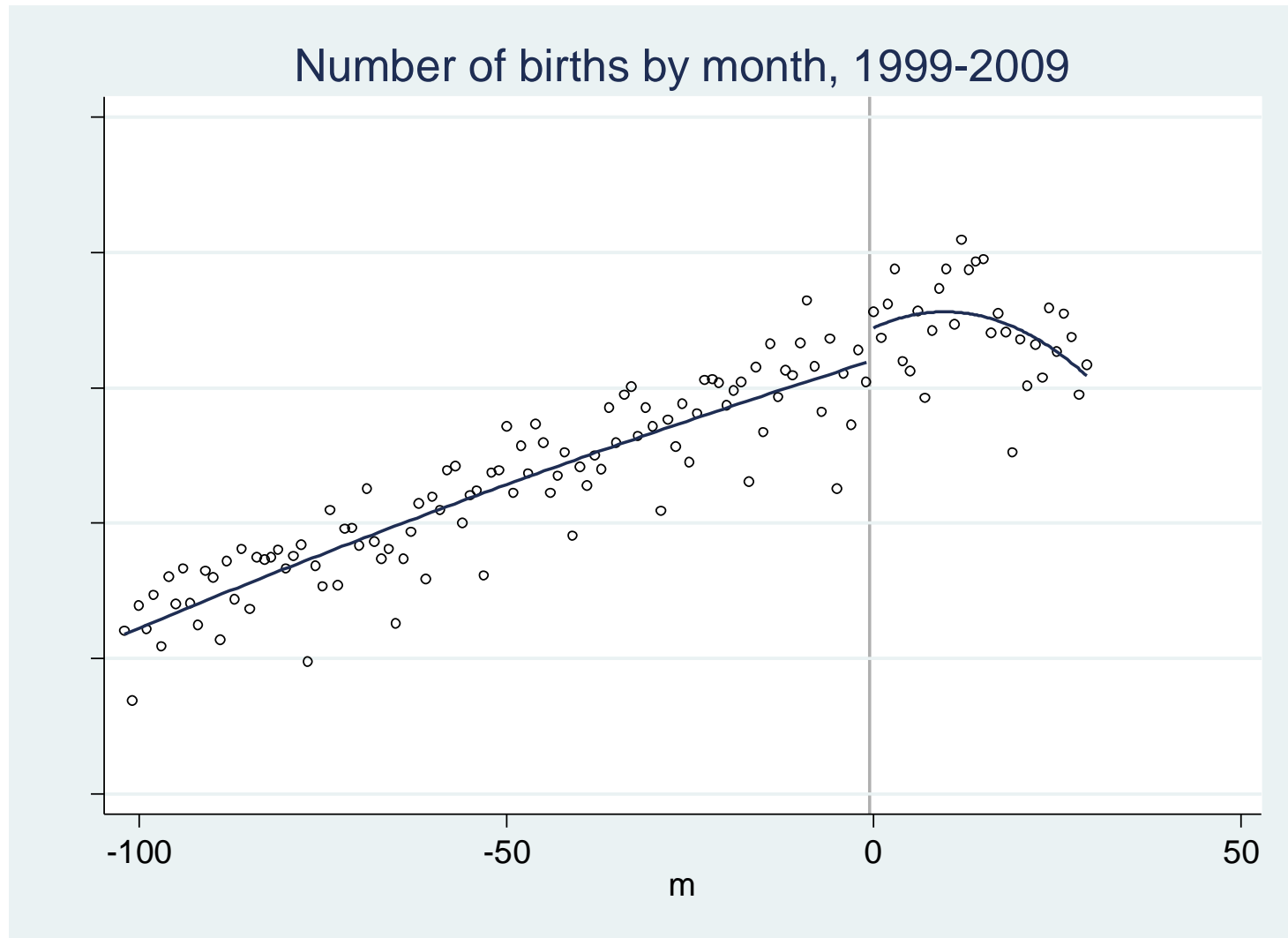
Expenditure and labor supply results

Validity checks:

- 1) Examining the density of the “running” variable, month of birth.
 - A jump in the density at the threshold would question the appropriateness of the RDD.

- 2) Showing that treated and control groups are similar in their observed baseline covariates.
 - “Randomization test.”

1) Jump in births at the cutoff?



(Spanish Vital Statistics data.)

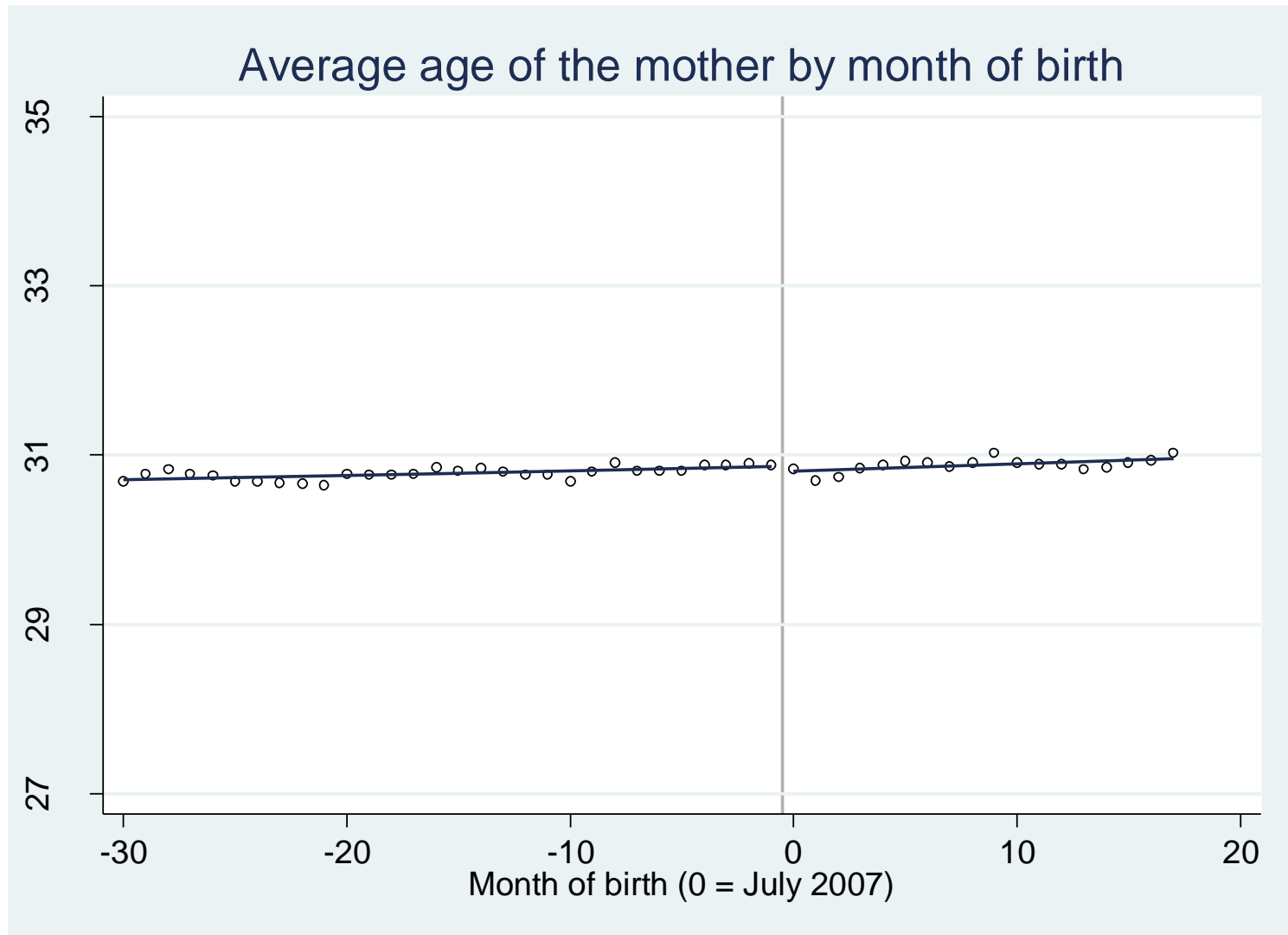
(2nd order polynomial fits) 29

Discontinuity in number of births at the threshold

Dep. var.: (Log) Number of births per month

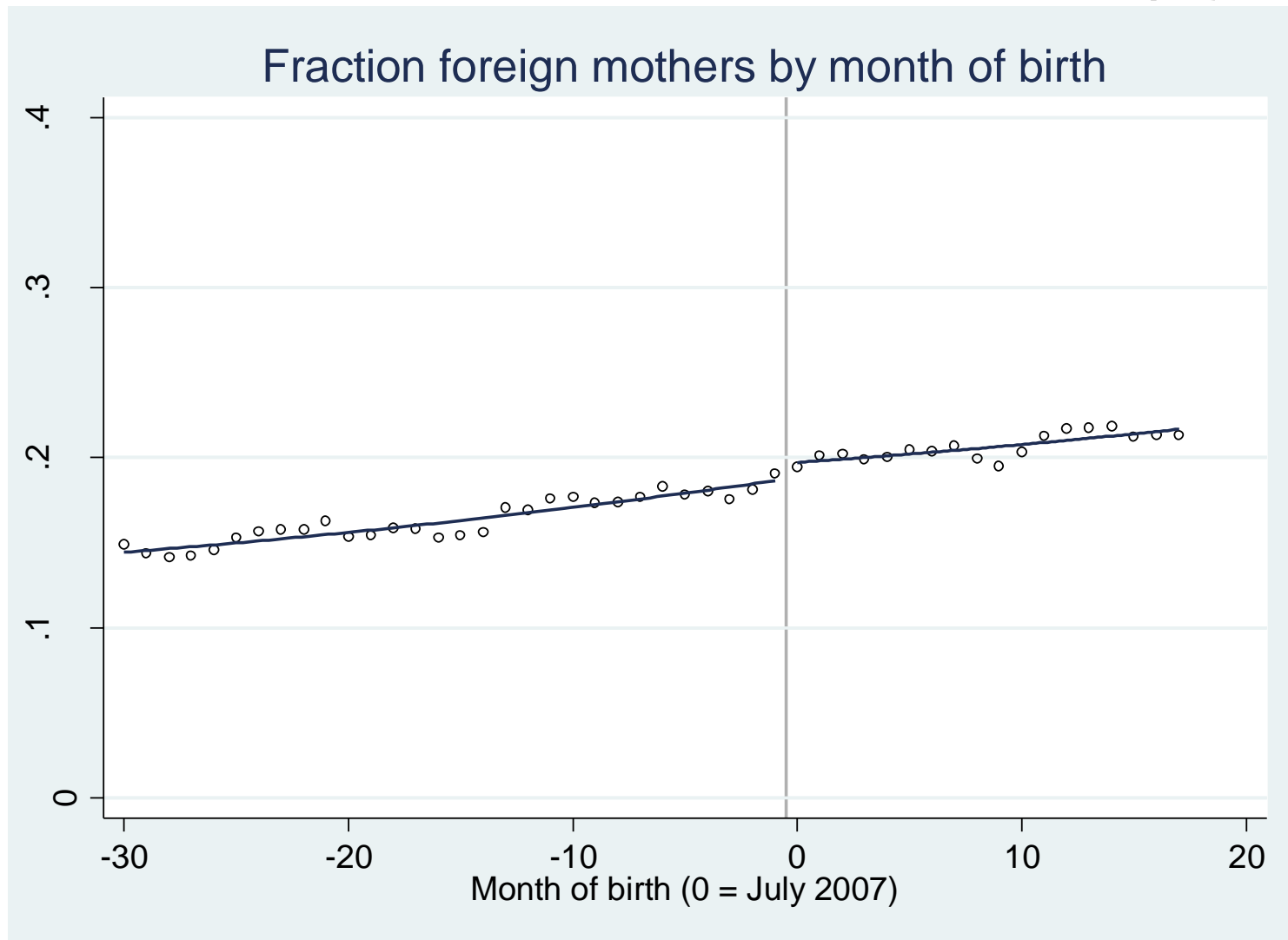
	RDD 90-30m	RDD 30m	RDD 12m	RDD 9m	RDD 3m	DiD1	DiD2	DiD3
	1	2	3	4	5	6	7	8
Post	0.0069	0.0274	0.0469	0.0511	0.0416	-0.0349	-0.0163	0.0080
	(0.0250)	(0.0221)	(0.0446)	(0.0331)	(0.0332)	(0.0230)	(0.0172)	(0.0177)
Years included	2000-2009	2005-2009	2006-2008	2006-2008	2007	1990-2009	2000-2009	2005-2009
N	120	60	24	18	6	240	120	60
Linear trend in m	Y	Y	Y	Y	N	Y	Y	Y
Quadratic trend in m	Y	Y	Y	N	N	Y	Y	Y
Cubic term in m	Y	N	N	N	N	Y	Y	N
Control days of the month	Y	Y	Y	Y	Y	Y	Y	Y
Calendar month of birth dummies	N	N	N	N	N	Y	Y	Y

2) Balanced covariates?



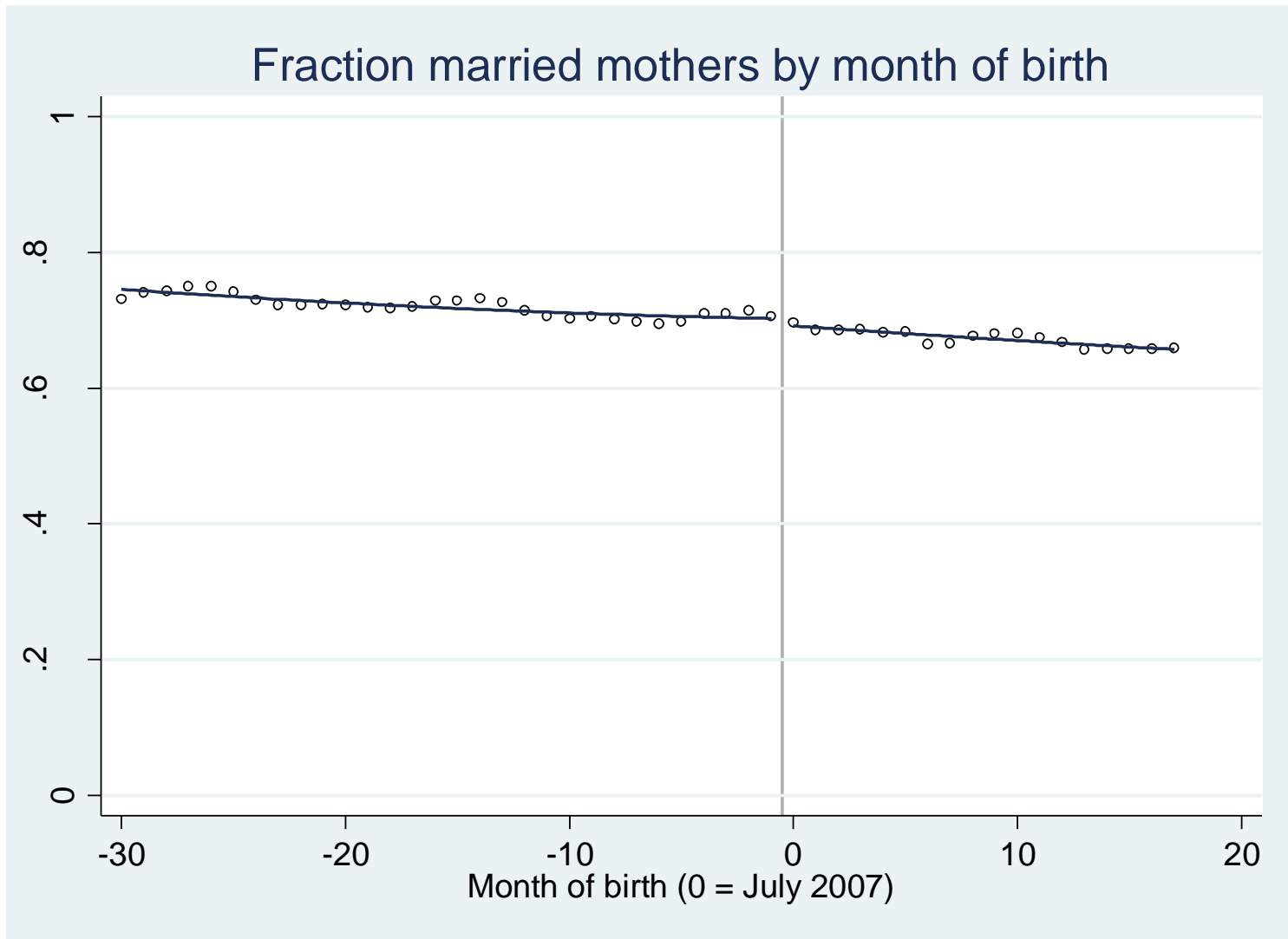
Vital Statistics 2005-2008, linear fits.

Balanced covariates? (ii)



Vital Statistics 2005-2008, linear fits.

Balanced covariates? (iii)



Vital Statistics 2005-2008, linear fits.

Balance in covariates (HBS 2008)

HBS 2008	1	2	3	4	5	6	7
Age of the mother	0.345 (0.392)	0.388 (0.419)	-0.301 (0.544)	-0.073 (0.683)	-0.044 (0.597)	-0.407 (0.708)	0.333 (0.909)
Age of the father	0.844* (0.463)	0.954* (0.502)	0.051 (0.570)	0.269 (0.767)	0.465 (0.679)	-0.324 (0.769)	-0.634 (-1.025)
Primary educ. mother	-0.006 (0.020)	-0.007 (0.018)	0.007 (0.027)	0.011 (0.041)	0.017 (0.037)	0.016 (0.042)	0.039 (0.054)
Secondary educ. mother	0.011 (0.045)	-0.003 (0.039)	0.046 (0.055)	0.079 (0.061)	0.025 (0.053)	0.019 (0.061)	0.050 (0.081)
College deg. mother	0.009 (0.038)	0.001 (0.032)	0.013 (0.045)	0.073 (0.065)	0.027 (0.056)	0.033 (0.065)	0.098 (0.090)
Primary educ. father	-0.010 (0.028)	0.004 (0.025)	-0.025 (0.041)	-0.018 (0.047)	-0.025 (0.043)	-0.018 (0.049)	0.000 (0.060)
Secondary educ. father	-0.054* (0.030)	-0.055* (0.030)	-0.071 (0.045)	-0.005 (0.067)	-0.058 (0.058)	-0.045 (0.068)	-0.109 (0.092)
College deg. father	-0.014 (0.035)	-0.026 (0.035)	-0.020 (0.050)	0.071 (0.065)	0.016 (0.055)	0.058 (0.065)	0.029 (0.091)
Foreign-born mother	0.026 (0.038)	0.023 (0.037)	0.027 (0.064)	0.025 (0.049)	0.011 (0.044)	0.058 (0.047)	-0.075 (0.067)
Non-first-born	-0.015 (0.035)	-0.014 (0.034)	-0.032 (0.039)	-0.014 (0.065)	-0.017 (0.056)	-0.045 (0.066)	0.014 (0.090)
Linear trend	Y	Y	Y	Y	N	N	N
Quadratic trend	N	N	Y	N	N	N	N
Month dummies	N	Y	N	N	N	N	N
Number of months	48	48	48	18	6	4	2

* p<0.1, ** p<0.05, *** p<0.01

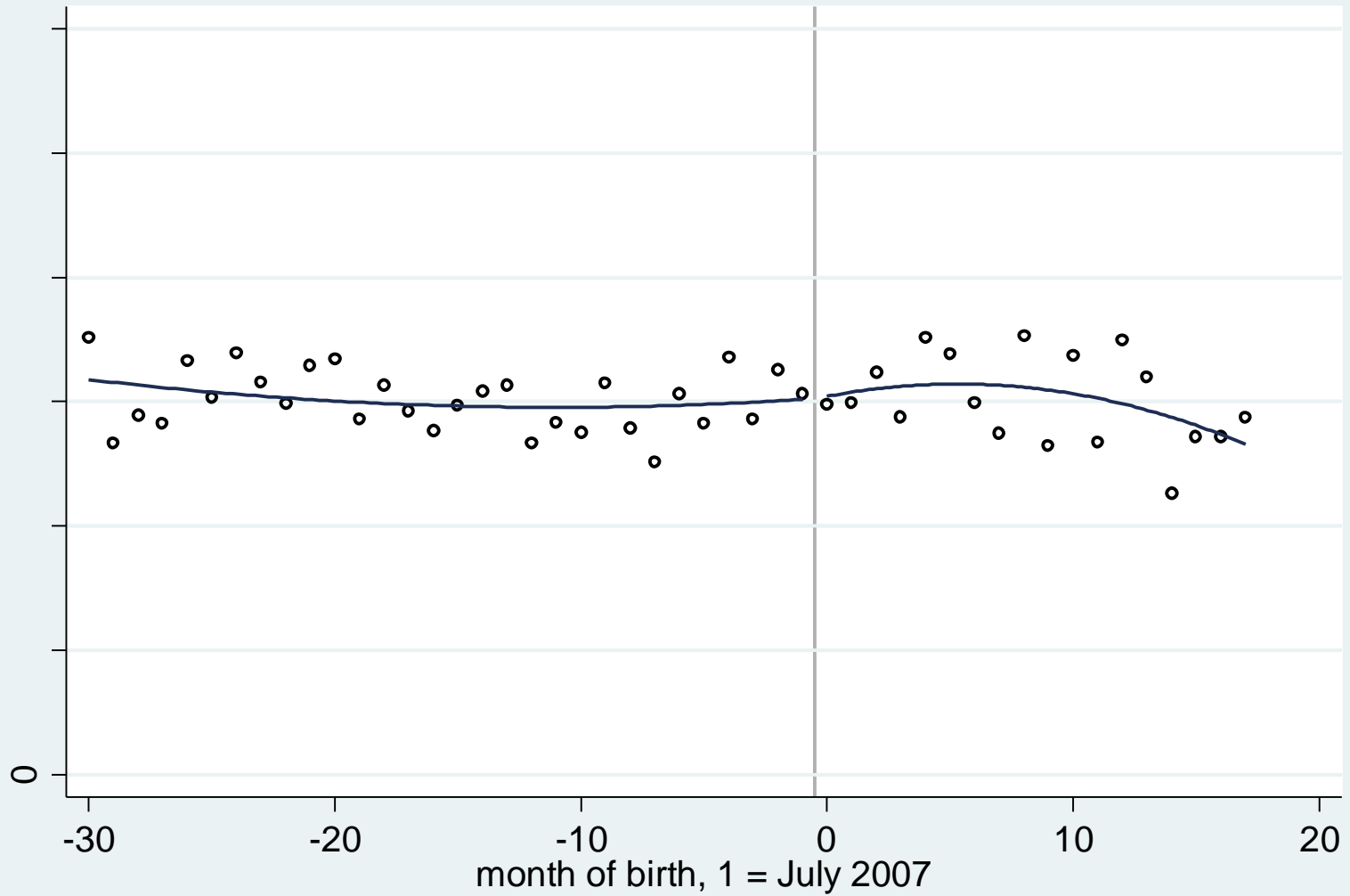
Expenditure results

- Overall household expenditure.
- Child-related expenditure.

Timing

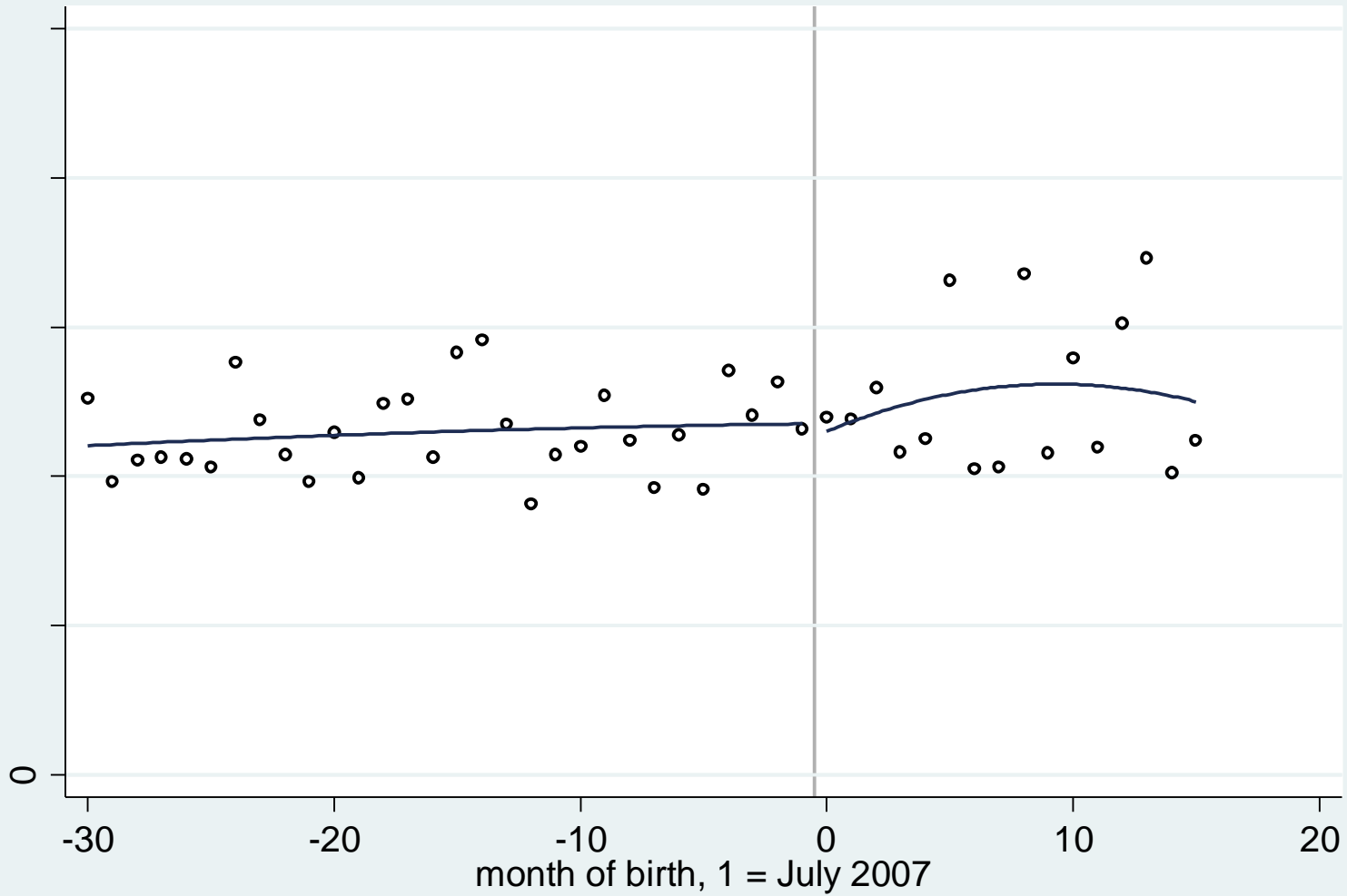
- All households report expenditures in 2008.
- The survey captures all expenditures over the 12 months previous to the interview.
- I analyze expenditure as a function of the month of birth of the child (m).
 - The “running variable”.

Total expenditure by month of birth



HBS 2008, 2nd order polynomial fit.

Child-related expenditure by month of birth



HBS 2008, 2nd order polynomial fit.

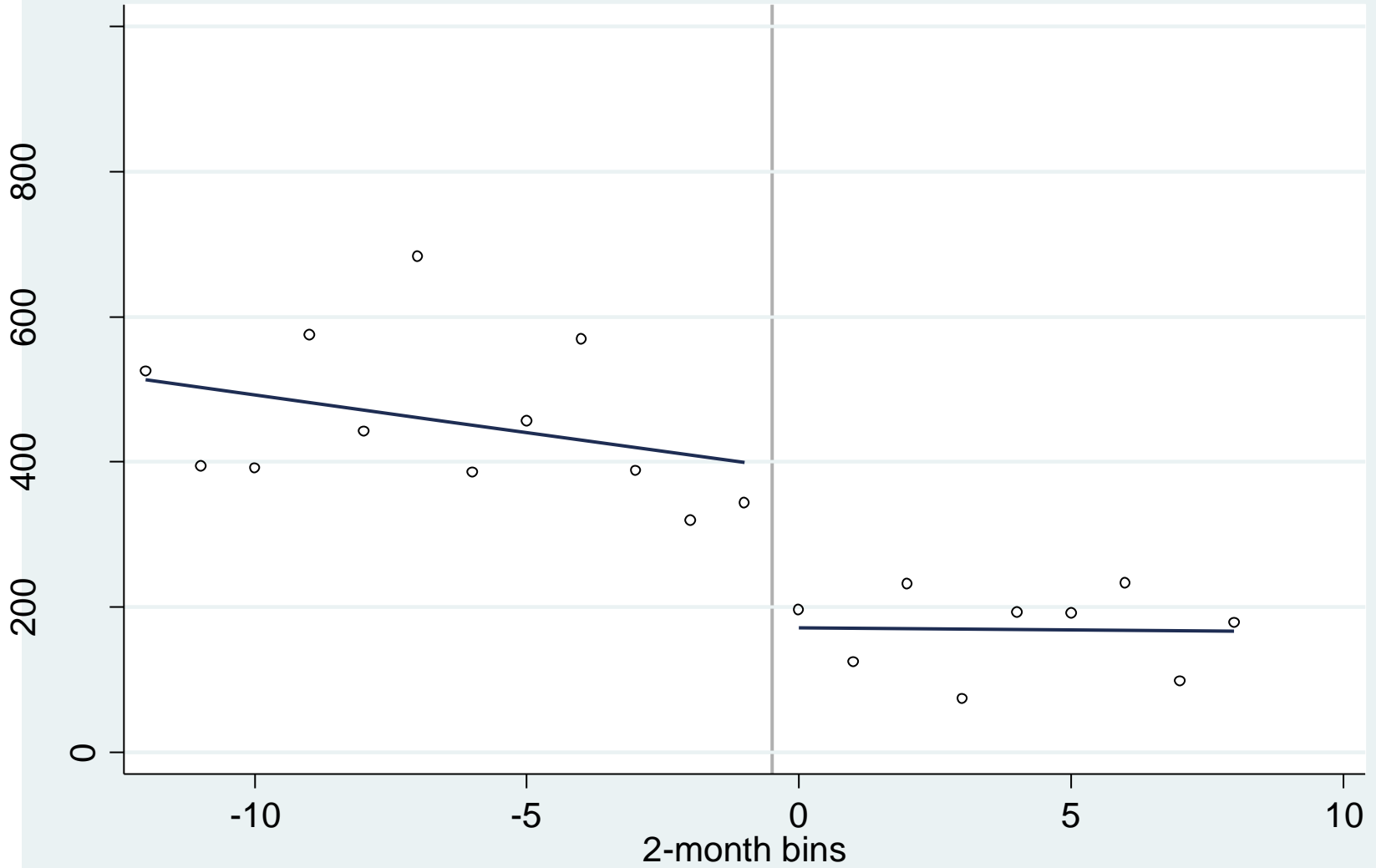
Expenditure regression results

	1	2	3	4	5	6	7	8
Dependent variables	RDD 9m	RDD 6m	RDD 4m	RDD 3m	RDD 2m	RDD 2m	DiD 1	DiD 2
Total exp.	-3175 (2838)	-2247 (2244)	405 (2885)	-580 (1553)	-1774 (2032)	-1084 (1832)	-1307 (2194)	-621 (1258)
Child-related exp.	-407 (766)	-599 (618)	357 (795)	-21 (444)	-150 (536)	10 (534)	94 (592)	-350 (320)
Durable goods exp.	-1513 (1688)	-1849 (1345)	-1011 (1704)	-760 (927)	-1046 (1105)	-999 (1099)	-1721 (1137)	-380 (645)
N	941	640	441	315	230	230	2249	2902
Linear trend in m	Y	Y	Y	N	N	N	Y	Y
Quadratic trend in m	Y	N	N	N	N	N	Y	N
Calendar month of birth dummies	N	N	N	N	N	N	Y	Y
Controls	Y	Y	Y	Y	N	Y	Y	Y
N. of months	18	12	8	6	4	4	48	48

Controls: Mother's age, age squared and age cubed, maternal education dummies, immigrant status, child parity.

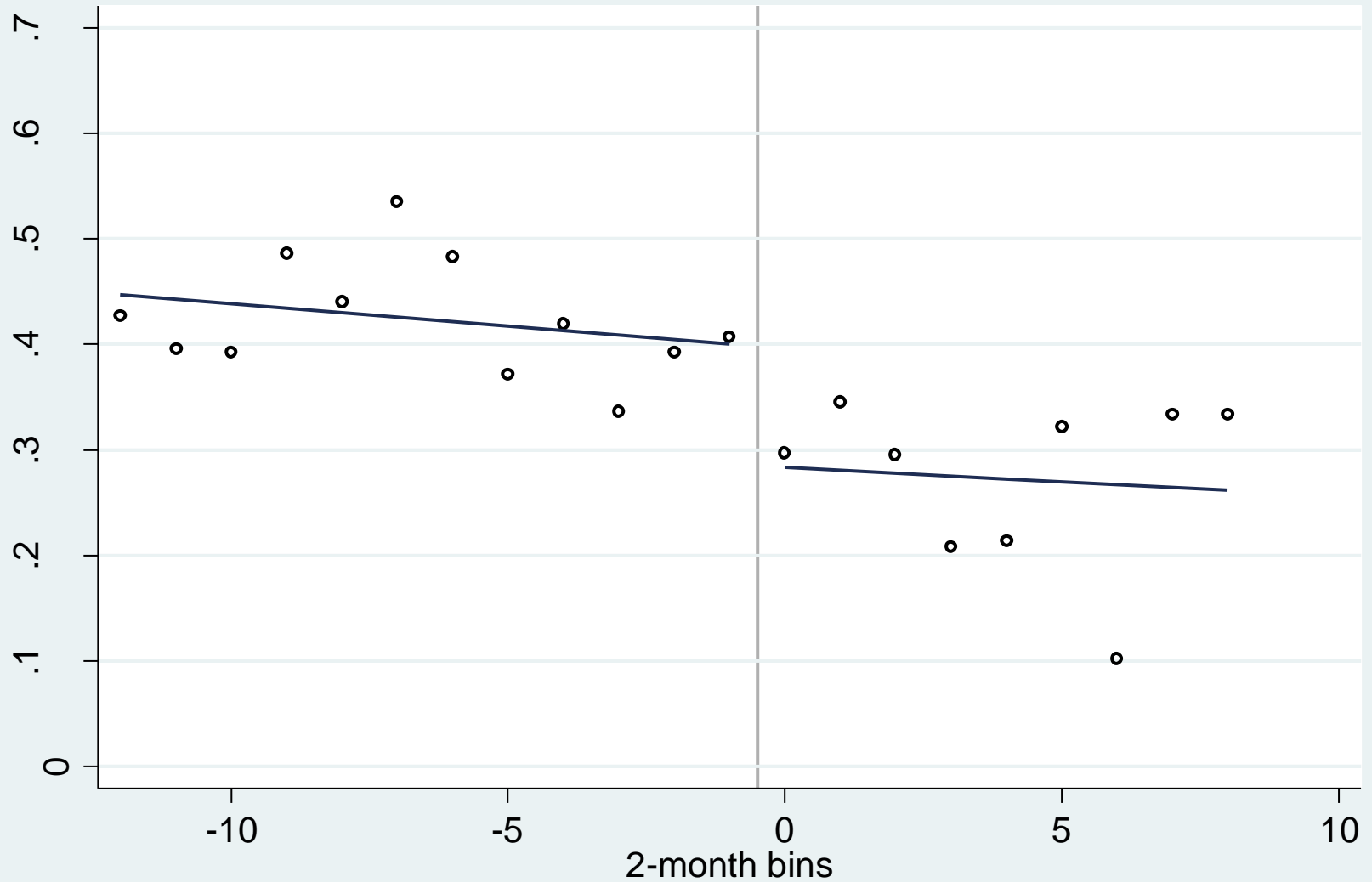
* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

Daycare expenditure by month of birth



(2-month bins, linear fits)

Fraction with + daycare expenditure by month of birth



(2-month bins, linear fits)

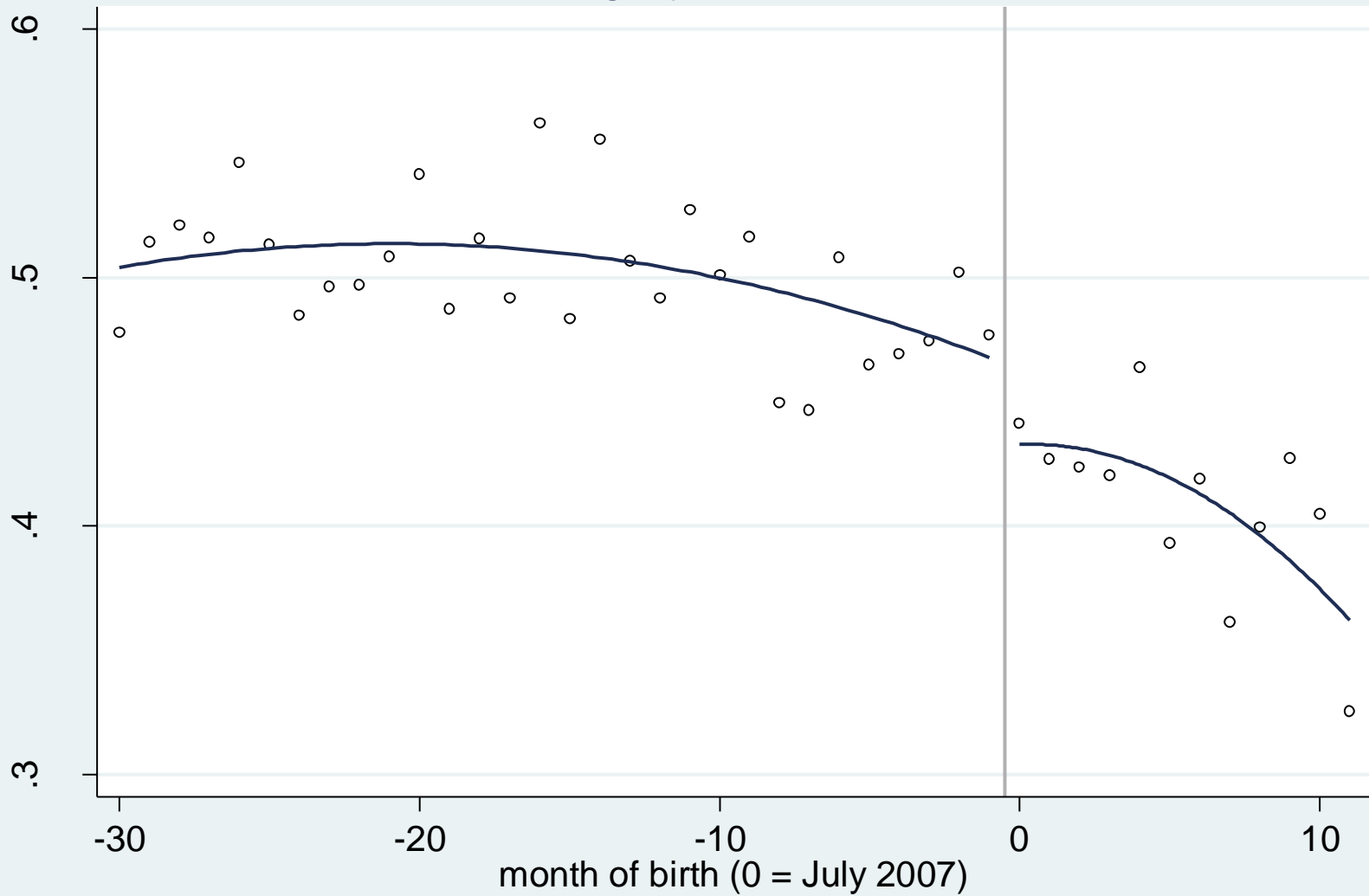
Child care expenditure results

	1	2	3	4	5	6	7	8
Dep. var.	RDD 9m	RDD 6m	RDD 4m	RDD 3m	RDD 2m	RDD 2m	DiD 1	DiD 2
Private daycare (binary)	-0.0795 (0.0940)	-0.0985 (0.0743)	-0.1041 (0.0938)	-0.0943* (0.0538)	-0.1096* (0.0624)	-0.1248* (0.0644)	-0.0364 (0.0500)	-0.0627* (0.0324)
Official infant care center (binary)	-0.1135 (0.0911)	-0.0471 (0.0713)	-0.0538 (0.0897)	0.0070 (0.0510)	-0.0470 (0.0609)	-0.0158 (0.0622)	0.0068 (0.0475)	-0.0129 (0.0298)
Nanny/ babysitter (binary)	-0.0384 (0.0931)	-0.0038 (0.0728)	0.0418 (0.0904)	0.0129 (0.0532)	0.0002 (0.0635)	0.0191 (0.0630)	-0.0161 (0.0502)	-0.0281 (0.0319)
N	958	651	446	319	234	234	2289	2904
Linear trend in m	Y	Y	Y	N	N	N	Y	Y
Quadratic trend in	Y	N	N	N	N	N	Y	N
Calendar month c	N	N	N	N	N	N	Y	Y
Controls	Y	Y	Y	Y	N	Y	Y	Y
N. of months	18	12	8	6	4	4	48	48

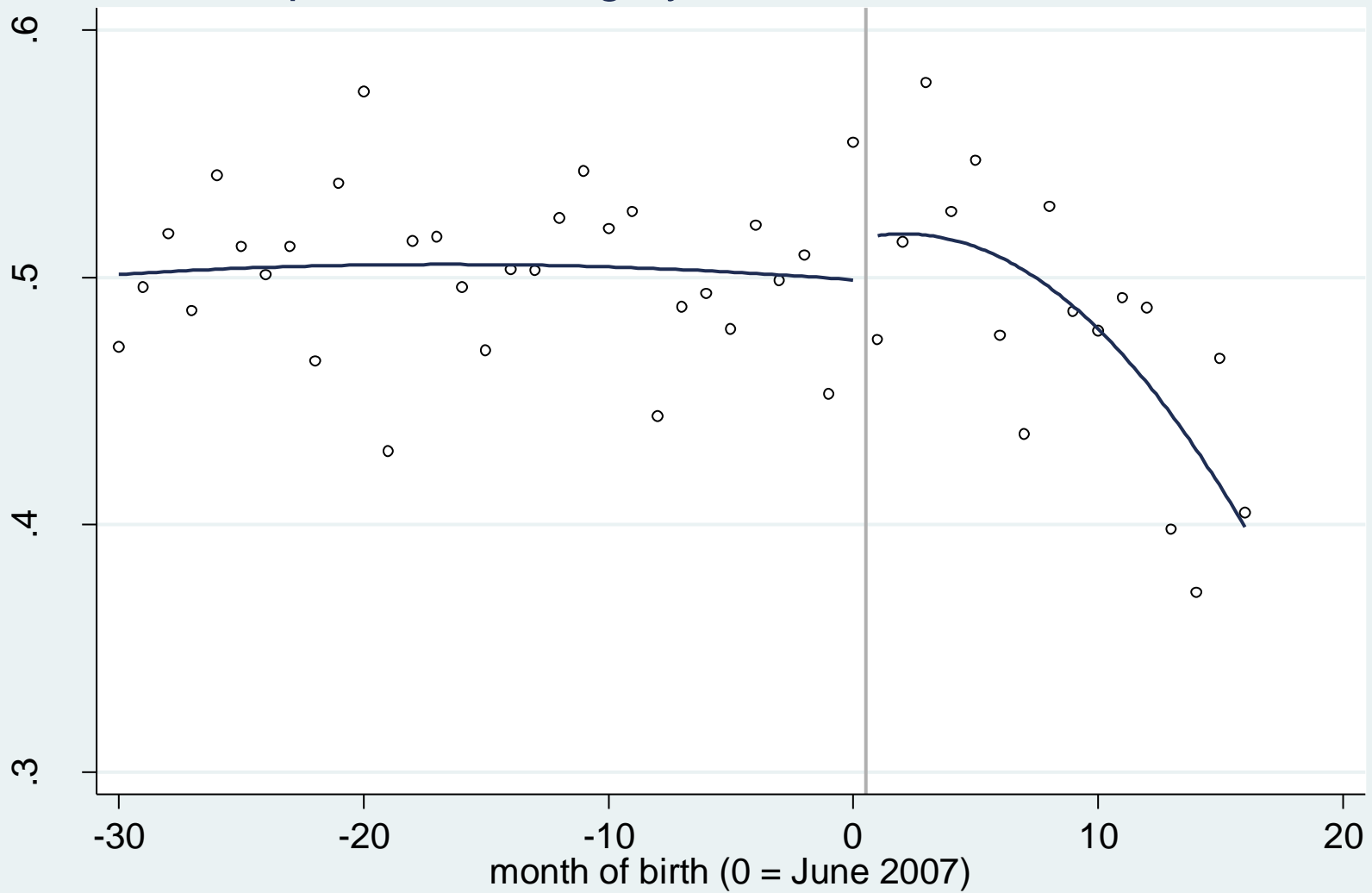
Why didn't the benefit increase expenditure?

- Small effect on permanent income.
- Possibly compensated by a reduction in other sources of income:
 - Labor supply effects?

Proportion working by month of birth, LFS 2008



Proportion working by month of birth, LFS 2009



Maternal labor supply results

	1	2	3	4	5	6	7	8
Dep. var.	RDD 9m	RDD 6m	RDD 4m	RDD 3m	RDD 2m	RDD 2m	DiD 1	DiD 2
Working last week	-0.0640** (0.0316)	-0.0430* (0.0249)	-0.0577* (0.0311)	-0.0532*** (0.0179)	-0.0547** (0.0219)	-0.0576*** (0.0213)	-0.0435*** (0.0155)	-0.0206* (0.0116)
Employed	-0.0632** (0.0309)	-0.0393 (0.0243)	-0.0799*** (0.0304)	-0.0535*** (0.0174)	-0.0612*** (0.0219)	-0.0610*** (0.0208)	-0.0200 (0.0166)	-0.0186 (0.0114)
N	8691	5813	4083	3026	2062	2062	21185	25544
Linear trend in m	Y	Y	Y	N	N	N	Y	Y
Quadratic trend in m	Y	N	N	N	N	N	Y	N
Calendar month of	N	N	N	N	N	N	Y	Y
Controls	Y	Y	Y	Y	N	Y	Y	Y
N. of months of birth	18	12	8	6	4	4	48	48

Other outcomes

- Family stability (LFS)
- Maternal health (SILC)
- Child health (Vital Statistics)

Heterogeneous effects?

- By parental education
- By parental age
- By immigrant status
- By child gender
- By child parity
- By marital status

6. Conclusions

- The child benefit increased fertility.
 - Both via conceptions and abortions.
- It also decreased labor supply among new mothers.
 - An effective paid maternity leave.
- No effect on expenditure patterns.
 - Probably due to reduced earnings.