Maternity benefits, consumption and labor supply

Estimating causal effects with bank transaction data

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Agenda

Debate around unconditional cash transfers

- Active recent debate on what unconditional cash transfers do (Bartik et al. 2024, Vivalt et al. 2024, Miller et al. 2024, Walker et al. 2025)
- Evidence suggests effects may vary with context - Larger effects in developing countries (Walker et al. 2025)
- Recent RCT evidence for the US suggests that large temporary transfers increase short-term consumption (Bartik et al. 2024) and decrease employment moderately (Vivalt et al. 2024) but have no effect on health (Miller et al. 2024) or long-term financial position of young, low-income households (Bartik et al. 2024)

Maternity benefits as one particular case

- Large literature on maternity benefits / child Support / cheque bebé
- The evidence suggests some (limited) effects on **fertility** (González 2013; González and Trommlerová 2023;)
- From positive (Jones, Milligan and Stabile, 2019) to moderate effects in **consumption** (Goldfayn, et al., 2022)
- Mixed effects on **labor Supply**:
  - negative (Milligan and Stabile, 2009; Schirle, 2015; González, 2013; McNown and Ridao-Cano, 2004), randomized unconditional transfers in the U.S. (Gennetian et al., 2022; Sauval et al., 2024) yield no detectable changes in work effort.
  - In more liquidity-constrained settings, such as Bolivia, unconditional transfers can even increase maternal labor supply by enabling self-employment or small-scale business activity (Vera-Cossio, 2022).
  - Conditional (working mothers) in Spain (2003), positive effects (Sánchez and Sánchez, 2008)

What we do

- We exploit the introduction of a generous maternity benefit in a Spanish region (Madrid) in January-2022 (announced June 17, 2021)
- Paying 500€ monthly from the 5th month of pregnancy to 24 months after birth (to low-income mothers less than €30,000 – gave birth under age 31 and after January 1st 2022 - cutoff)
- Eligibility fully determined by the cutoff – we follow a sharp-RD in eligibility (date of child birth around cutoff)
- Because of partial take-up, our estimates should be interpreted as ITT effects.
- We use very granular, individual-level transaction data coming from one of the largest banks in Spain
- We analyze the effects of the benefit on consumption (spending) and labor supply (earnings)

Objectives of maternity benefits

- Family benefits are a widespread family policy
- All OECD countries have them in place, spending 1.1% of GDP on cash transfers to families with children in 2019 (OECD, 2023)
- The main goals typically include raising fertility and promoting well-being in (low-income) households with children.

Frequent identification and data challenges

- Identifying causal effects of cash transfers to families on the relevant outcomes is challenging for several reasons:
- Control group not obvious in national-level policies
- Hard to find high-quality data sources with info on consumption and labor supply
- Unclear how small-scale RCT's scale up

Why we think it's interesting – (1) it's huge!

- Huge benefit - €500/month, 29 months - €14,500 in total (cumulative with # of children)
- 88% of pre-policy labor income (Caixabank sample)
- 54% of pre-policy expenditures (Caixabank sample)
- Because 92% of young mothers earn less than €30,000 (MCVL) – this can be considered a targeted (age) but unconditional (wrt income) cash benefit program.

Why we think it's interesting – (2) Good data!

- Bank Transactions Data
- Very granular (daily-merchant level), individual-level, panel, transaction data coming from one of the largest commercial banks in Spain
- Longitudinal - We keep track of individual's consumption and labor supply responses during the 29-month window of benefit receipts
- Caixabank – highly representative (25% market share)

Why we think it's interesting – (3) Spanish case!

- "Ultra-low", "Lowest-low" fertility country (Italy, South Korea, Japan)
- Demographic winter
- Below OECD and EU average
- How cash-transfer interventions might alleviate short-term financial barriers around childbirth in a country facing a severe fertility decline.

What we find

- **Overall:**
- The benefit led to significant increases in income for eligible women (+45%)
- No evidence of negative effects on labor supply or earnings (during the two-year eligibility period) - Confirmed with other, more standard data sources
- Consumption (spending) moderate increase (MPC=0.16), non statistically-significant
- **Big differences by income group:**
- Above median – MPC=0.00 – negative (-11%) effect on labor Supply, but imprecisely estimated
- Below median – MPC=0.41 (Basic necessities +29%) – no effect on labor Supply
- Suggests the benefit helped alleviating liquidity constraints of low income mothers – confirmed with high-frequency data (daily spending)

Identification strategy

- We follow a sharp-RD based in eligibility where the running variable is the date of birth of the child (d)

$$Yid = a + bTit + gf(d) + mXit + eit$$

- The threshold T for benefit eligibility is January 1, 2022
- Main assumption: No sorting across the threshold (birth timing effects) – confirmed by bunching and balance in covariates analysis
- ITT: Our sample includes women living in Madrid who were less than 31 at the time of birth
- Some would be ineligible (high income, recent residents)
- Progressive adoption
- Donut specification – measurement error date of childbirth

The data and the sample

- We use micro bank transaction data from Caixabank, the largest Spanish bank (about 25% market share, more than 1/3 of payrolls)
- Our sample includes women under 31 living in Madrid, who had a child in 2021 or 2022
- We don't restrict by income or years since arrival (ITT)
- Sample size: 2,064
- We identify the month of birth with the start of receipt of maternity leave benefits (+/- 1 month measurement error – Donut specification excl. t=-1, 0)
- We measure outcomes over the 29 months window (t=-5 to t=+24)
- We also use Social Security data (MCVL) and Labor Force Survey data (EPA) to corroborate labor supply effects

Data advantages

- Granular, longitudinal data for a large sample of individuals
- Much larger sample size compared with using Labor Force Survey or even Social Security data (4% sample)
- The main strength is that we can observe spending in great detail (daily, by detailed categories)
- We can also observe benefit receipt (take-up) directly
- And we have detailed data on labor earnings, other sources of income, deposits, etc

Data limitations

- We only observe women with an account at Caixabank (+97% adult women with a bank account)
- We don't observe births per se, we approximate them with maternity leave spells (working?)
- We miss women who are ineligible for maternity leave (inactives) – yet low proportion of women with a payroll six months prior to childbirth (46.7%) – very generous rules for maternity leave benefit - 180 days of social security contributions within the previous seven years or 360 days over their entire working life.
- We don't observe accounts in other banks

Representativeness of Caixabank sample

Table 15 - Representativeness of the Caixabank Sample (Madrid)

Panel A. Gender and Age Distribution

	Caixabank sample	EPA
Gender		
Male	0.47	0.48
Female	0.53	0.52
Age group		
≤19	0.06	0.05
20–24	0.05	0.06
25–34	0.11	0.14
35–44	0.14	0.18
45–54	0.19	0.20
55–64	0.17	0.16
≥65	0.27	0.21

Panel B. Monthly Net Wages (euros)

	Caixabank sample	ESS
Male	1,932.7	1,914.2
Female	1,672.4	1,631.8

Notes: The table compares the demographic composition and wage distribution of the Caixabank sample of residents in the Community of Madrid to official sources. Gender and age distributions are benchmarked against the Labour Force Survey (EPA), while monthly net wages are compared to the Wage Structure Survey (ESS). All reference data come from the Spanish National Statistics Institute (INE).

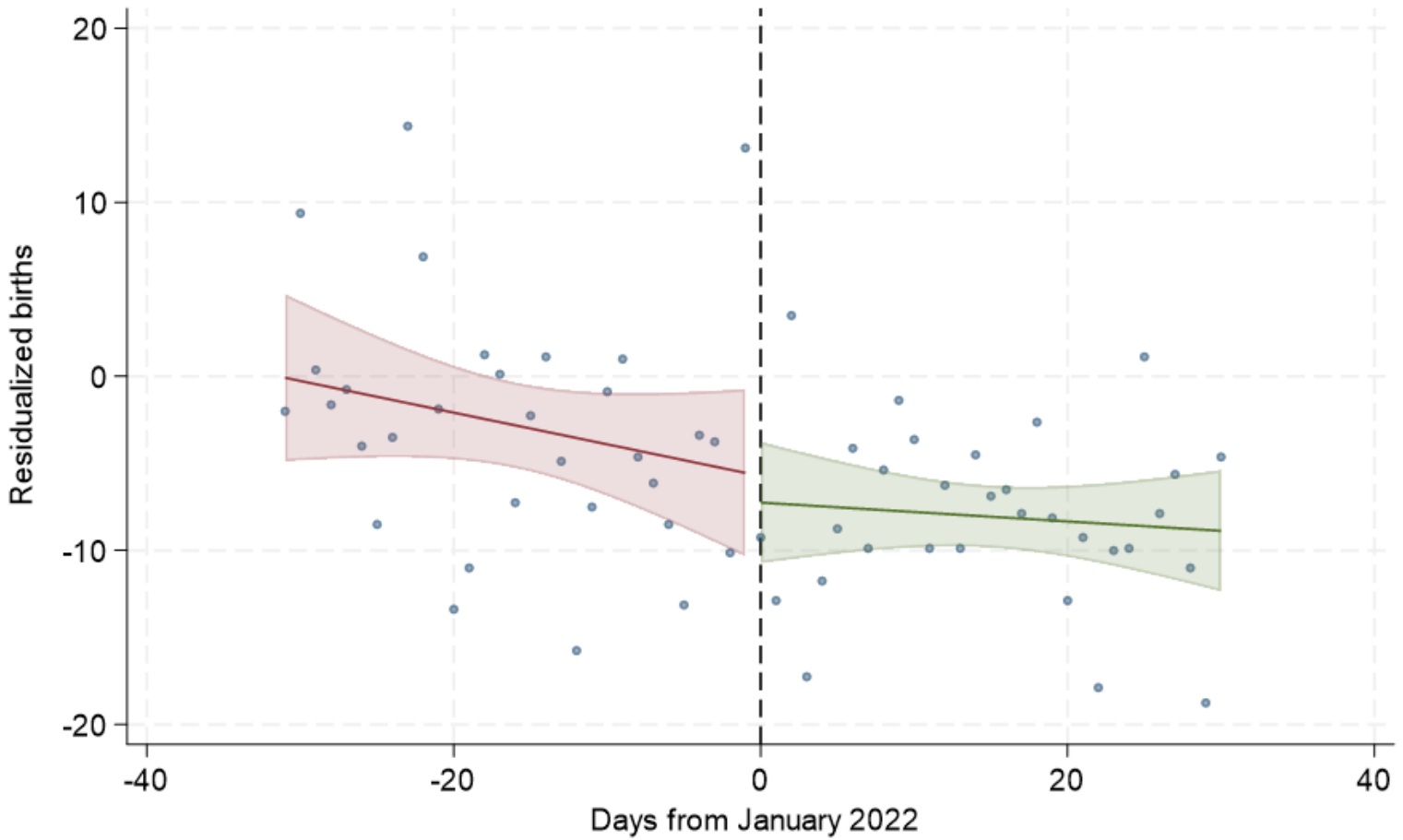
Validity checks

- **Bunching**
- **Birth timing effects?**
- **Balance in covariates**

Bunching / Birth Timing

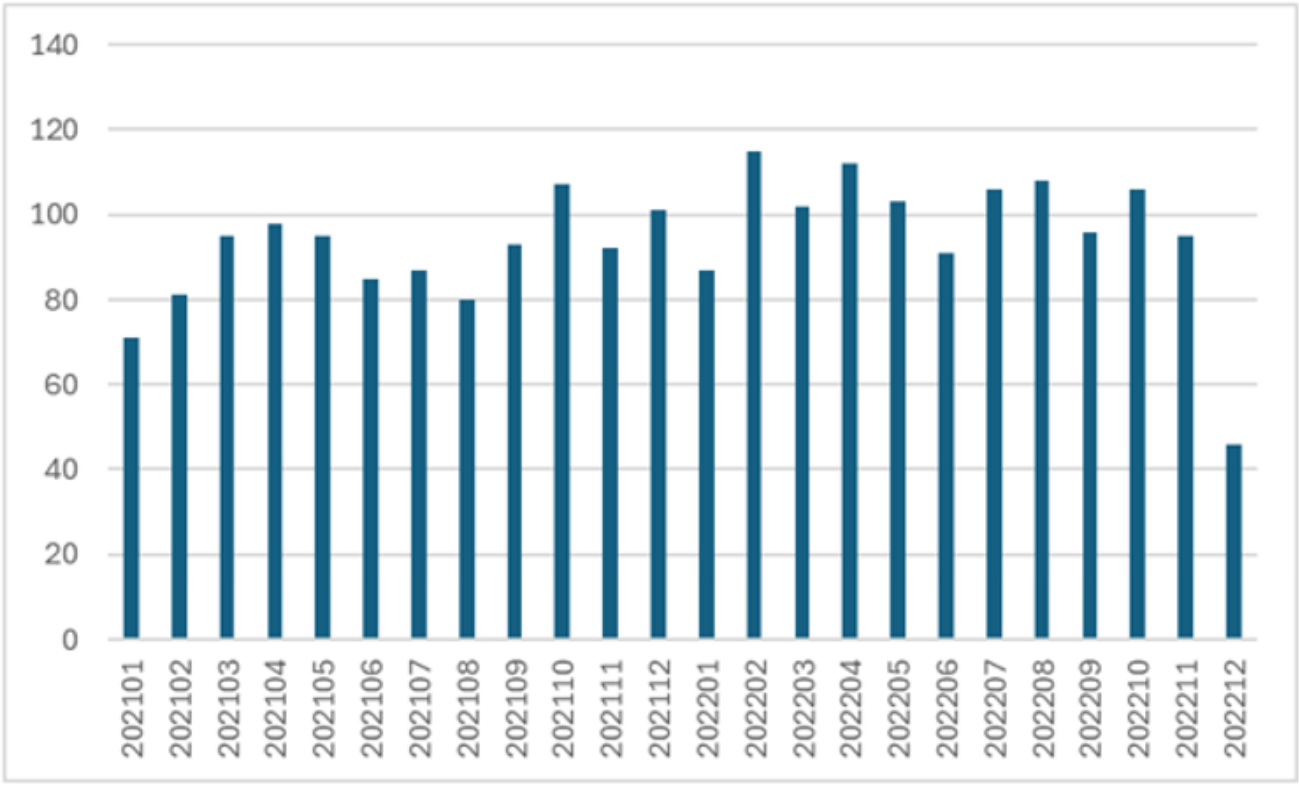
- Source: Spanish Vital Statistics

Figure 1 – RD Check for Manipulation in Birth Timing: Daily Births (Madrid)



Bunching / Birth Timing Caixabank Sample

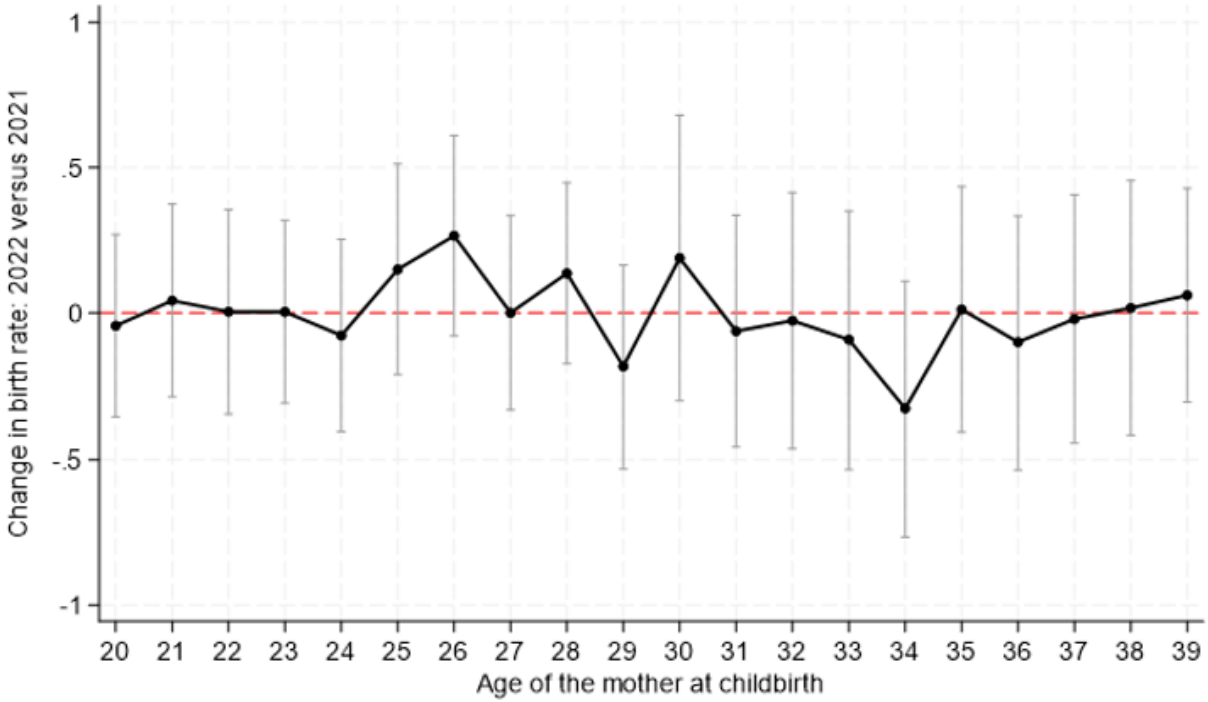
Figure 2 - Monthly Births, Caixabank Data



Notes: The figure plots monthly births in Madrid from January 2021 to December 2022 in Caixabank Data. These are women that were eligible for the national, social security maternity leave at the time of childbirth.

Bunching / Births by Age of the Mother

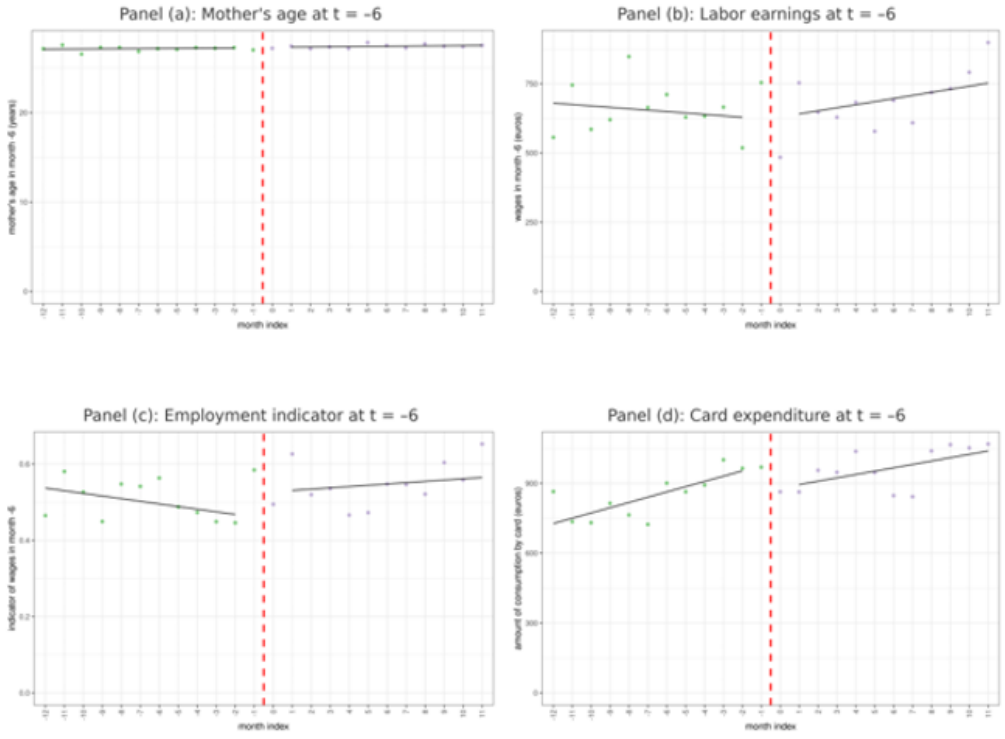
Figure 3 – Bunching – Births by Age of the Mother: 2022 versus Pre-Reform



Notes: This figure plots estimated coefficients from a regression of the monthly birth rate (number of births divided by the female population) on indicator variables for the mother's age. Each coefficient represents the difference in birth rates at a given age, comparing women who gave birth in 2022 with those who gave birth in 2021. Confidence intervals at the 95% level are shown. Data comes from the Vital Statistics Births information system.

Balance in Covariates

Figure 4 - Balance in Covariates Tests



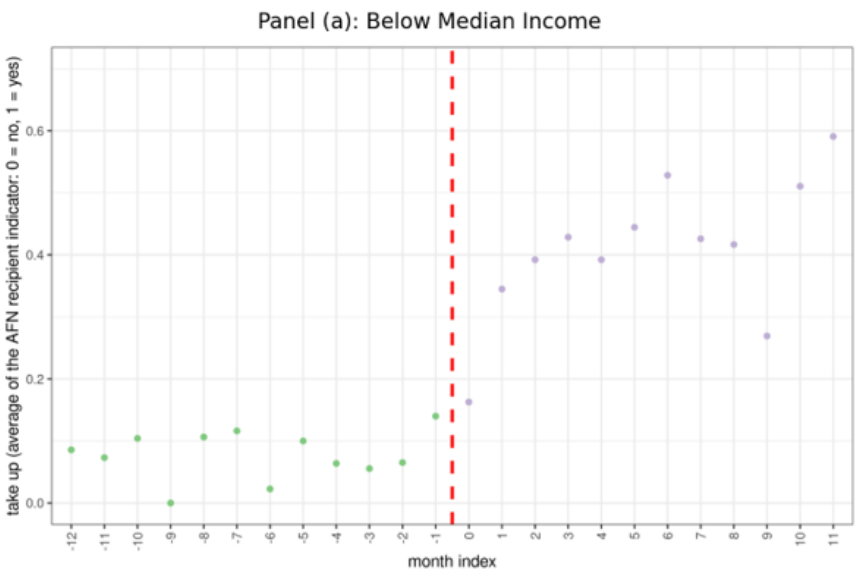
Notes: Each panel reports mean values of predetermined covariates—measured six months before childbirth—plotted against the running variable (month index) together with local linear fits estimated separately on each side of the policy cutoff.

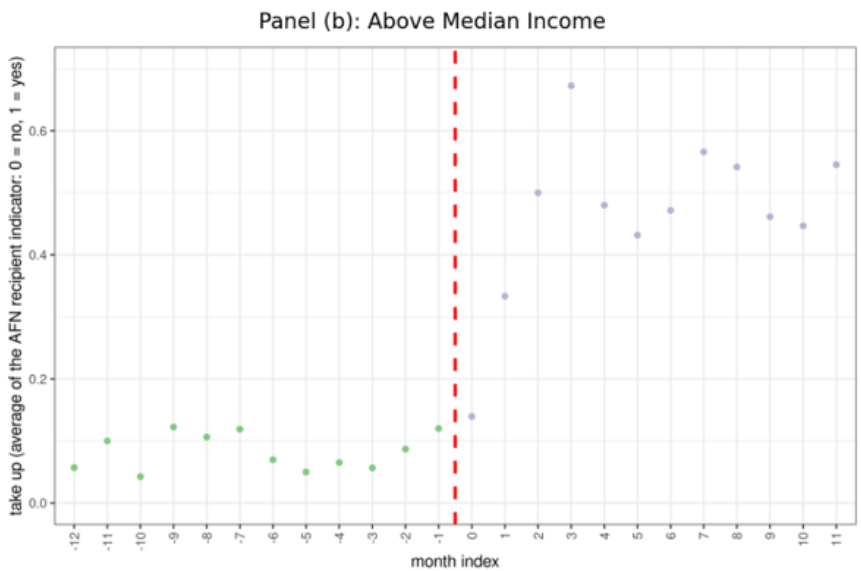
Results

- **Take-up & Benefit Amount**
- **Spending**
- **Labor earnings**
- **Overall financial position**

Take-up (observed receipt, months -5 to 24)

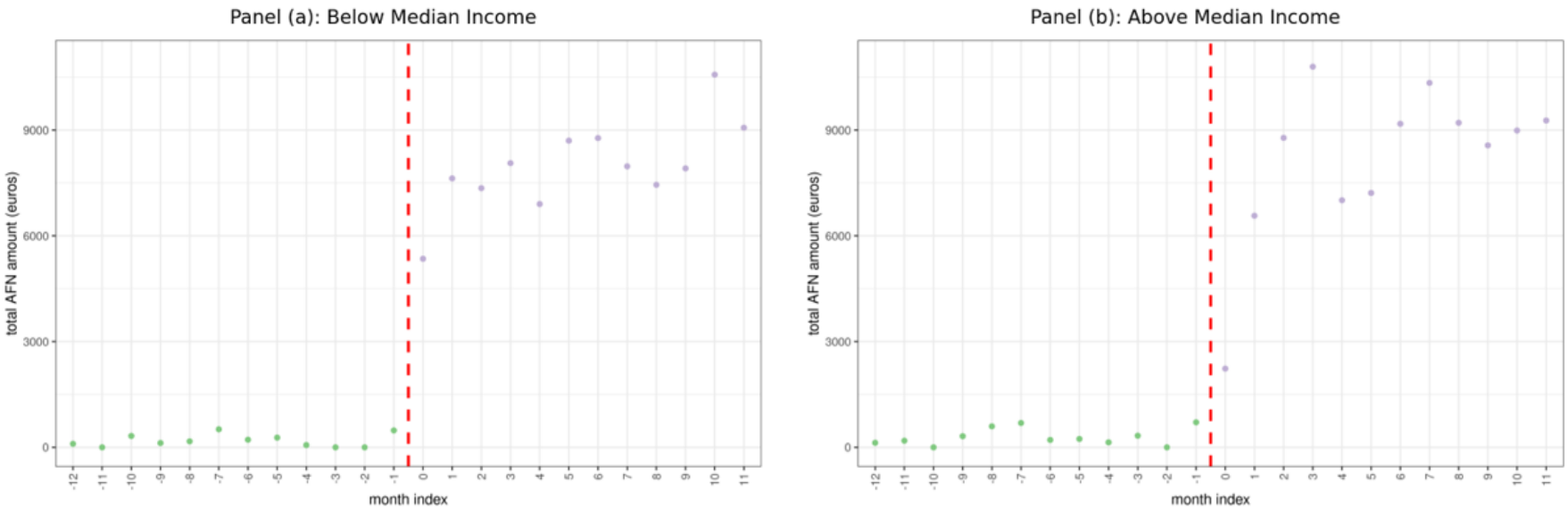
- Partial take-up (50%) – Intention-to-Treat (ITT)
- Income threshold and residency status
- Gradual awareness – benefit must be actively requested
- Not major differences across income groups





Total amount received (months -5 to 24)

- €7,076-€7,353 (68%-34% of labor income) (24%-21% of consumption)
- Conditional on receipt, the average amount is very close to 14,500
- Differences in subsequent outcomes between higher- and lower-income women cannot be attributed to disparities in participation or benefit receipt



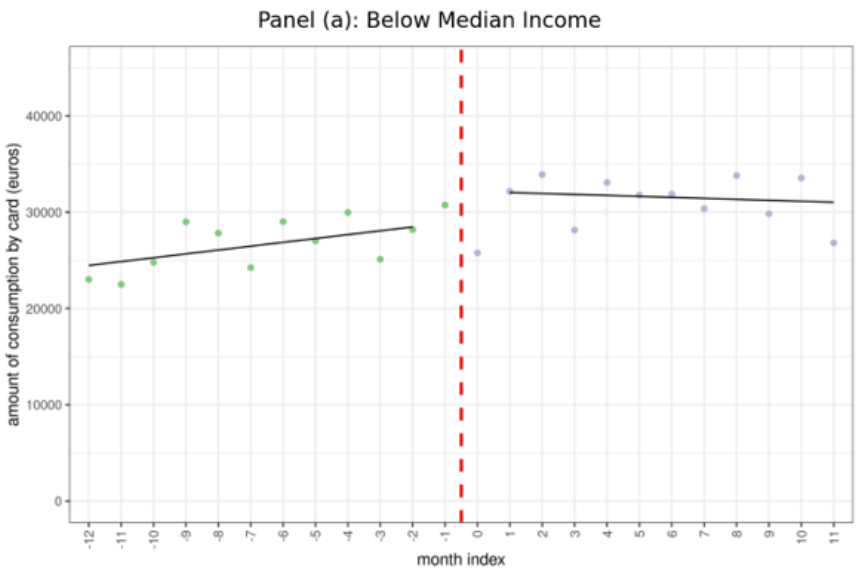
Summary of Results

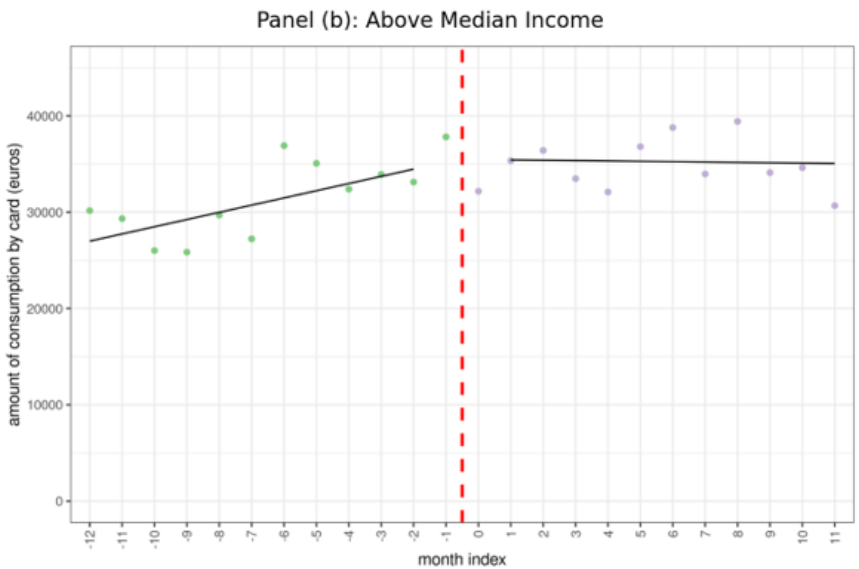
Table 1. Regression discontinuity results: the effects of the maternity benefit on take-up, spending and labor earnings

	Take-up	Benefit €	Spending	Necessities	Months worked	Earnings
All	0.36*** (p = 0.00)	7,353*** (p = 0.00)				
Below Median Income	0.32*** (p = 0.00)	7,076*** (p = 0.00)				
Above Median Income	0.40*** (p = 0.00)	7,651*** (p = 0.00)				

Total spending (months -5 to 24)

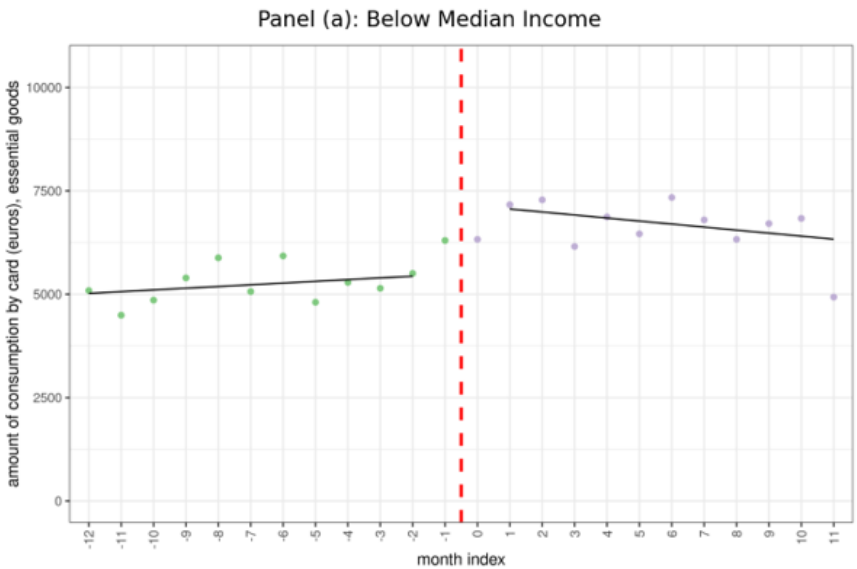
- Larger (+10% - €2,667) ITT effect for lower-income mothers, but imprecisely estimated
- Zero effect for higher-income mothers

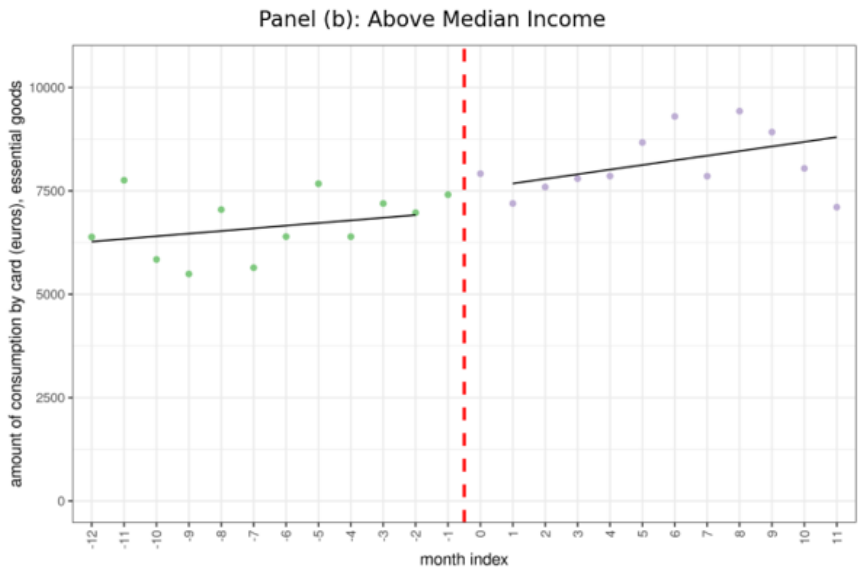




Spending on Basic Necessities (months -5 to 24)

- Large (+29%) and statistically significant ITT effect among lower-income mothers
- Zero effect for higher-income mothers





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All	0.36*** (p = 0.00)	7,353*** (p = 0.00)	1,185 (p = 0.49) 3.65%	1,016** (p = 0.03) 16.16%		
Below Median Income	0.32*** (p = 0.00)	7,076*** (p = 0.00)	2,876 (p = 0.23) 9.83%	1,615*** (p = 0.01) 29.27%		
Above Median Income	0.40*** (p = 0.00)	7,651*** (p = 0.00)	-493 (p = 0.60) -1.37%	522 (p = 0.44) 7.42%		

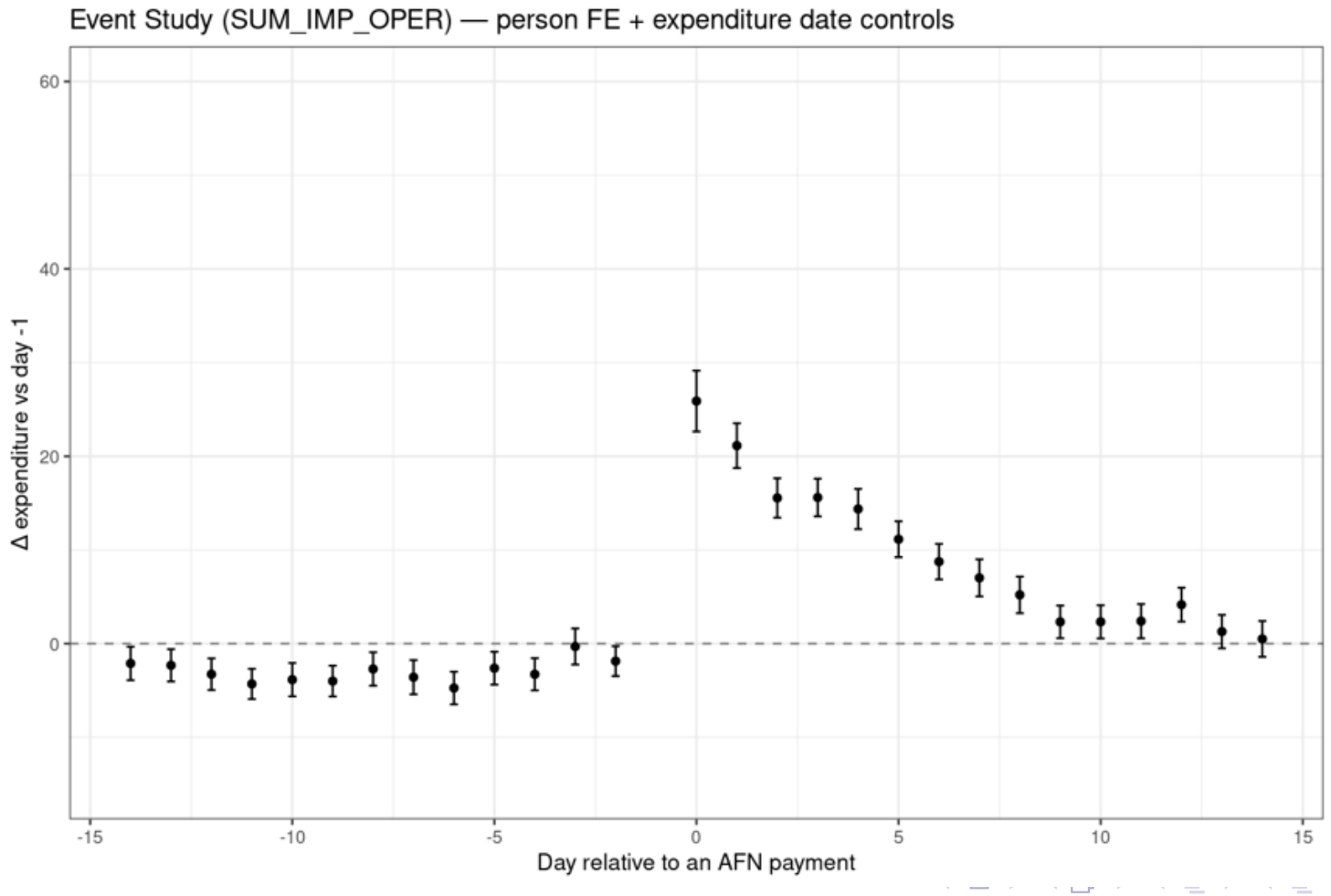
Evidence of liquidity constraints - Timing of spending

- We explore changes in spending in the dates immediately surrounding benefit receipt (+/-14 days)
- y is the daily spending of woman i on date t
- Individual and date fixed effects (day of the week, month of the year, year)
- First payment for each woman / regular €500 payments
- Omitted category: the day before receiving the payment

$$y_{i,t} = \alpha_i + \delta_t + \sum_{k \neq r} \beta_k \cdot \mathbf{1}\{d_{i,t} = k\} + \varepsilon_{i,t}$$

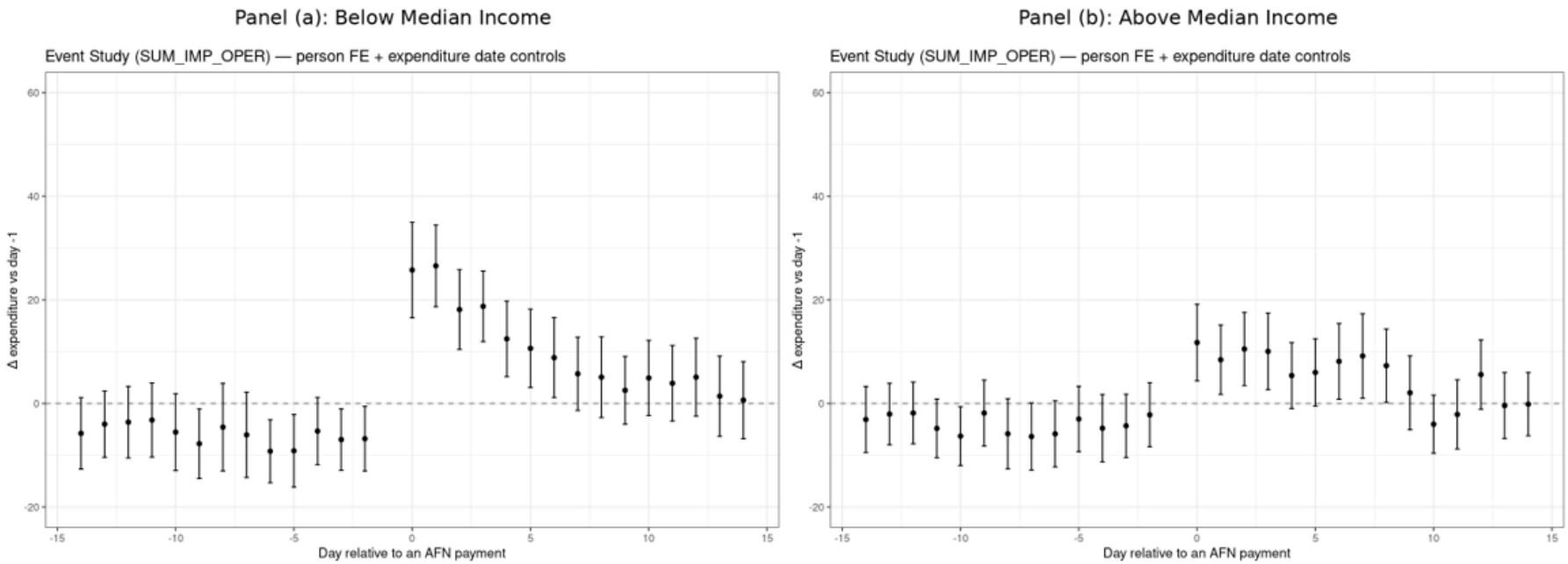
Daily spending around benefit receipt (regular €500 payments)

- On average, women spend close to 30% of the benefit receipt in the first 13 days after payment.



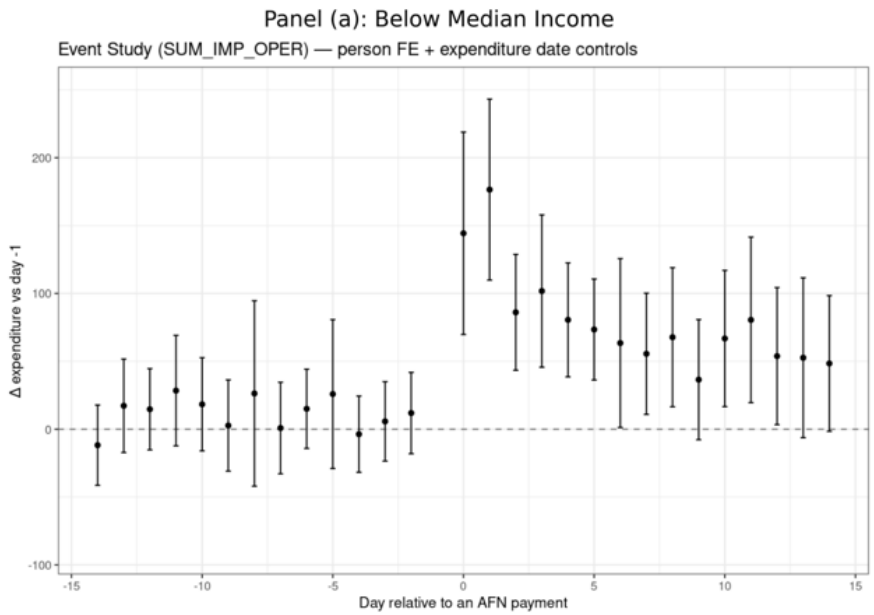
Daily spending around benefit receipt (regular €500 payments)

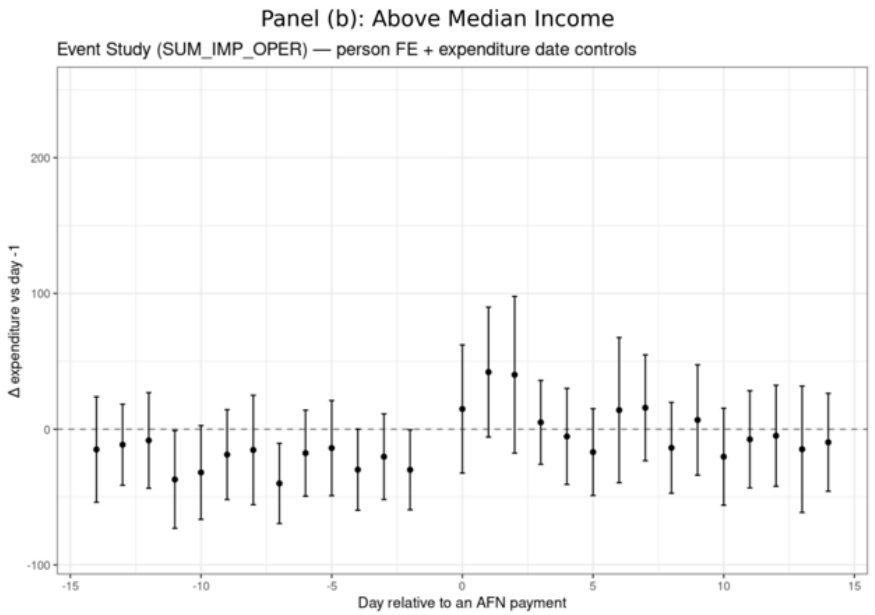
- Lower-income mothers spend 28% of the first payment during the first 10 days vs 15% (not statistically significant) for higher-income mothers



First payments ? €2,500

- Lower-income mothers spend 38% of the first payment during the first 10 days vs 3.2% (not statistically significant) for high-income women



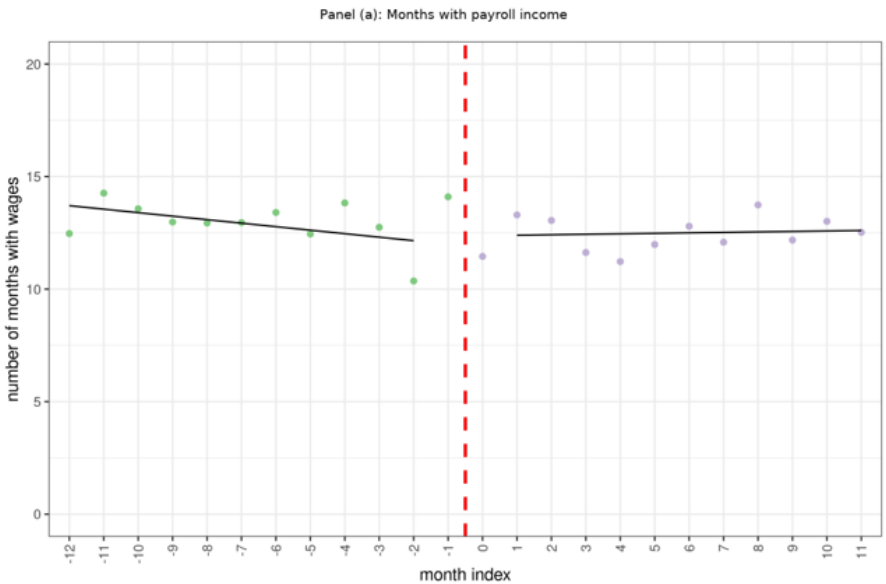


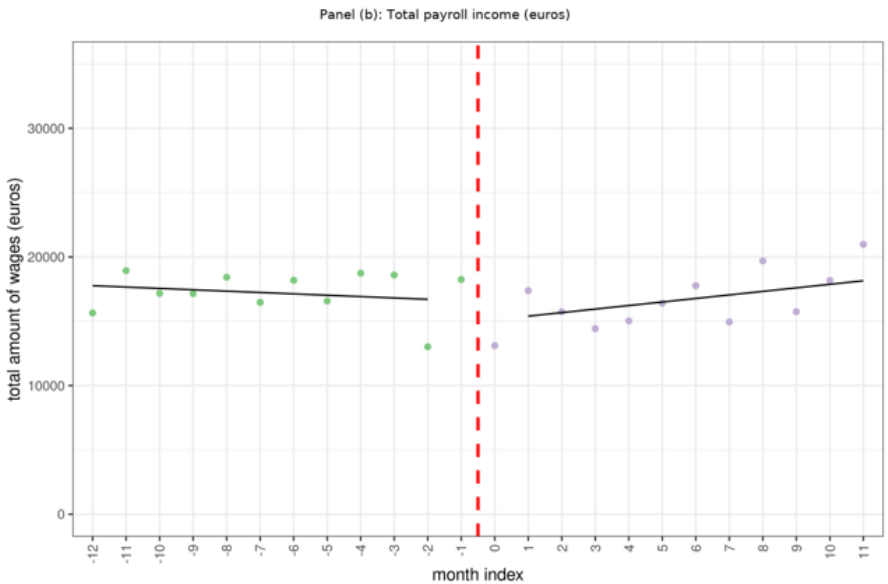
Labor Supply and Overall Financial Position

- **Findings so far:**
- Low-income women – strong evidence of benefit receipt used to alleviate liquidity constraints (MPC = 0.41)
- High-income women (MPC ? 0.00) – consumption smoothing consistent with life-cycle/permanent income hypothesis (LCPIH) (Stephens, 2003; Gelman, Kariv, Shapiro, Silverman, & Tadelis, 2014; Deaton, 1991)
- **Other effects:**
- Do high-income women "buy time" instead of goods (labor supply effects)
- Can we say something about savings, overall financial position?

Labor Supply (months -5 to 24)

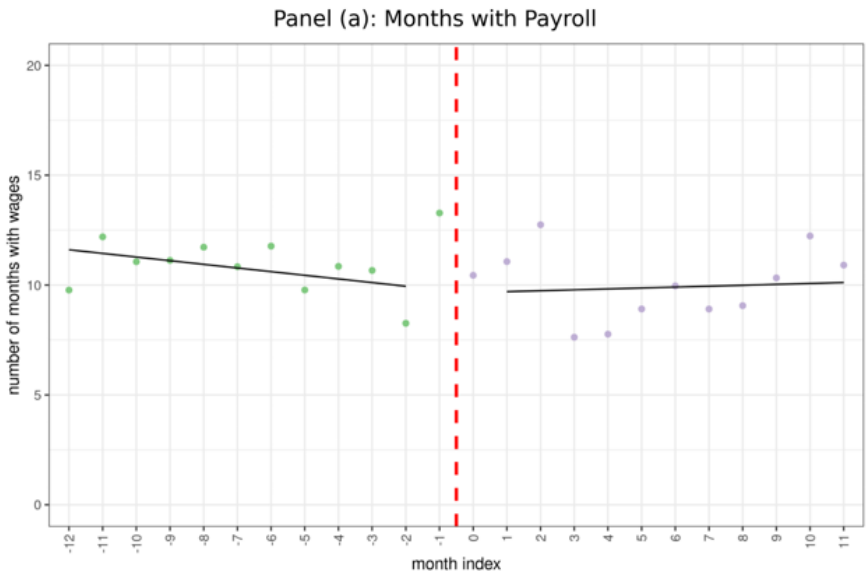
- No effect on labor supply, neither for the extensive margin (# months payroll), nor for the intensive margin (total payroll income)

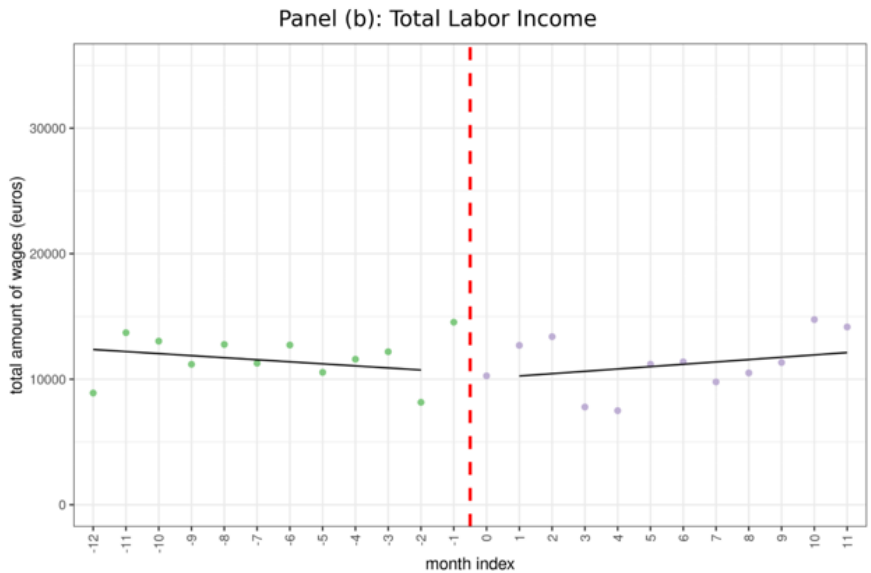




Labor Supply (months -5 to 24) – LOW-INCOME women

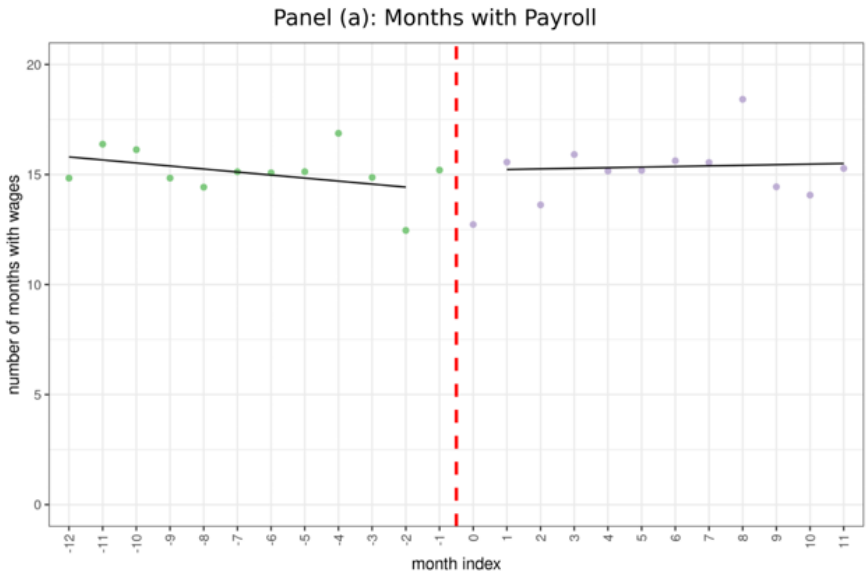
- No effect on labor supply, neither for the extensive margin (# months payroll), nor for the combined effect (extensive + intensive margin - total payroll income)

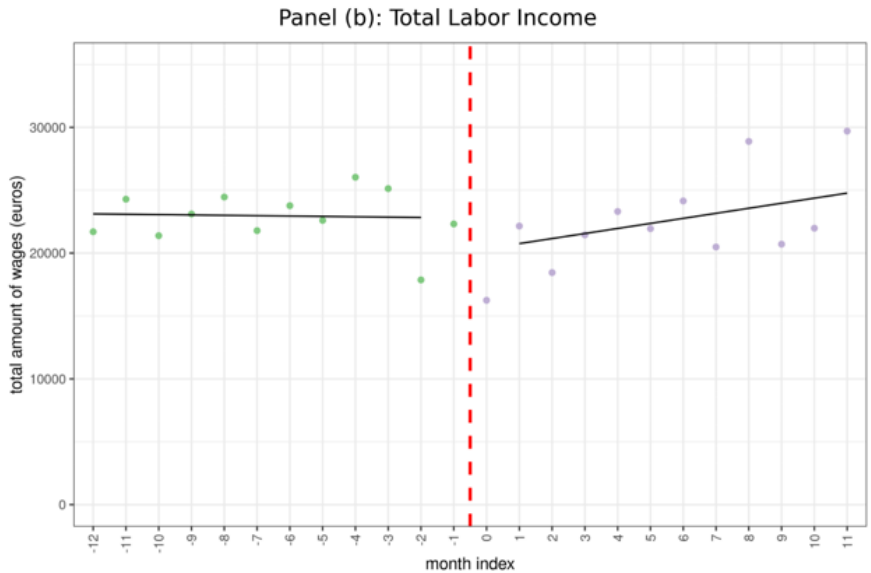




Labor Supply (months -5 to 24) – HIGH-INCOME women

- No effect on labor supply for the extensive margin (# months payroll)
- Economically significant (-11%) effect on earnings (extensive + intensive margin) but imprecisely estimated





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Below Median Income	0.32*** (p = 0.00)	7,076*** (p = 0.00)	2,876 (p = 0.23) 9.83%	1,615*** (p = 0.01) 29.27%	0.04 (p = 0.97) 0.45%	-338 (p = 0.84) (-3.24%)
Above Median Income	0.40*** (p = 0.00)	7,651*** (p = 0.00)	-493 (p = 0.60) -1.37%	522 (p = 0.44) 7.42%	1.05 (p = 0.46) 7.41%	-2,423 (p = 0.38) -10.64%

Robustness of labor supply effects using Social Security (MCVL) and Labor Force Survey (EPA) data

- Sample of women in Madrid who had a child in 2021-22 and were <31 at the time of childbirth
- **Social Security data: (N=900)**
- Advantages: 4% random sample of all women with a Social Security affiliation in 2023, with detailed info on working histories
- Disadvantages: Inactive women are under-represented, we don't observe take-up
- **Labor force survey data: (N=188)**
- Advantages: Representative sample of all women (including inactives), with detailed info on employment at the time of the survey
- Disadvantages: Repeated cross-section, low N for relevant subsample, we don't observe take-up

Labor Supply Effects Using Admin LFS Data

Table 4 – Labor Supply Effects of the Maternity Benefit Using Administrative (Social Security) Data and Labor Force (LFS) Data

	Earnings (€)	Days worked	With job	Worked last week	Weekly hours
Data source	**Social Security**	**Social Security**	**Labor Force Survey**	**Labor Force Survey**	**Labor Force Survey**
Main estimate	378.8	–17.11	0.0419	0.0934	0.9783
	(1,555)	(20.35)	(0.1332)	(0.1243)	(4.771)
Mean dep. var.	10,473	204.84	0.564	0.420	0.194
N	900	900	188	188	188

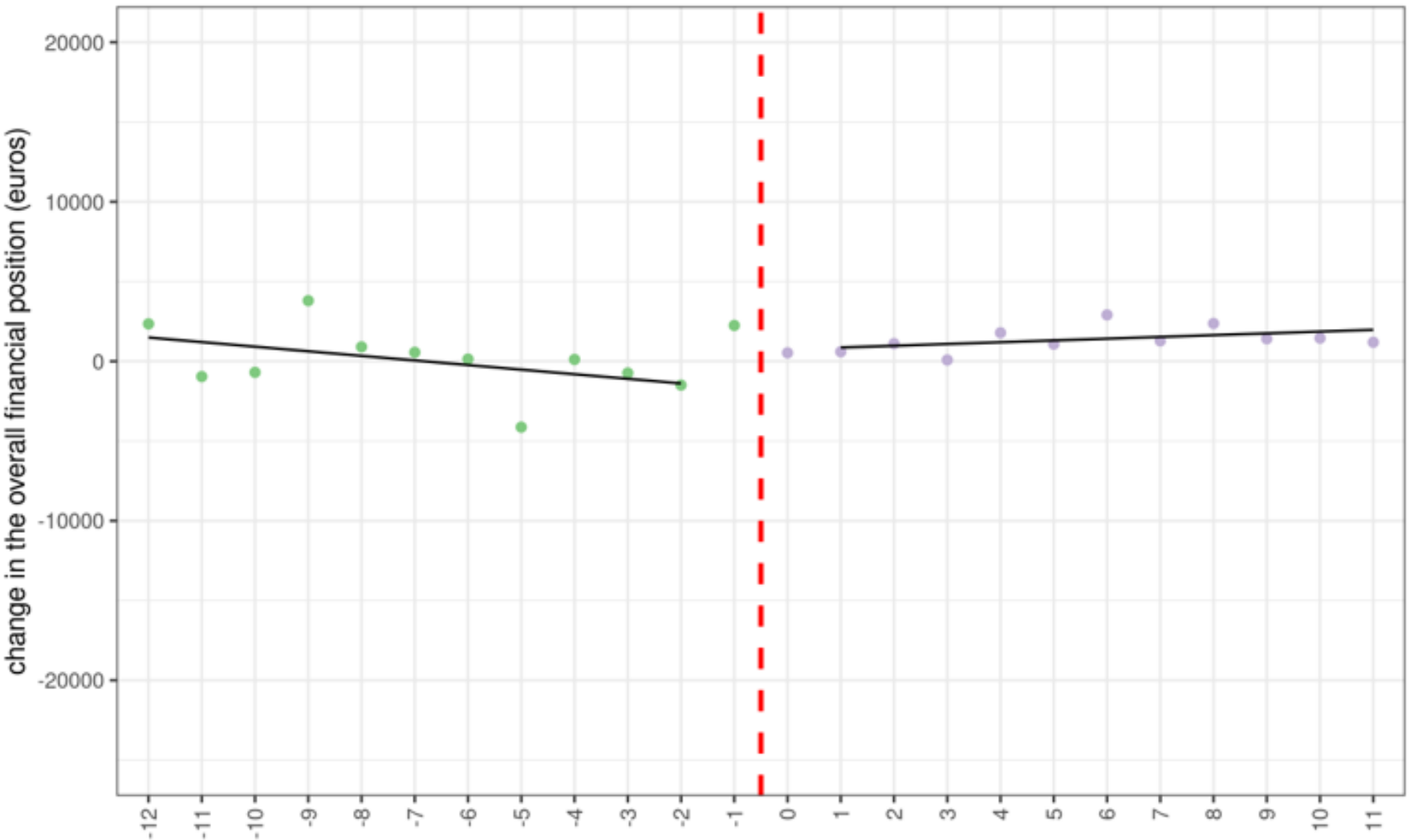
Notes: Columns 1–2 use administrative Social Security data, while columns 3–5 use Labor Force Survey (LFS) data. Each coefficient shows the estimated impact of exposure to the 2022 Madrid maternity benefit on labor-market outcomes during the 12-month (Social Security) or 8-quarter (LFS) period after childbirth. Standard errors are reported in parentheses, and significance levels are denoted as follows: *** $p < 0.01$, ** $p < 0.05$, * $p < 0.10$.

Effect on overall financial position

- We estimate the change in the global position in the bank, from months -5 to 24
- In accounts where the woman is the first holder, alone or jointly
- Checking plus savings accounts, plus financial assets - mostly liquid assets (no housing)
- Significant discontinuity at the threshold for benefit eligibility, driven by higher-income mothers

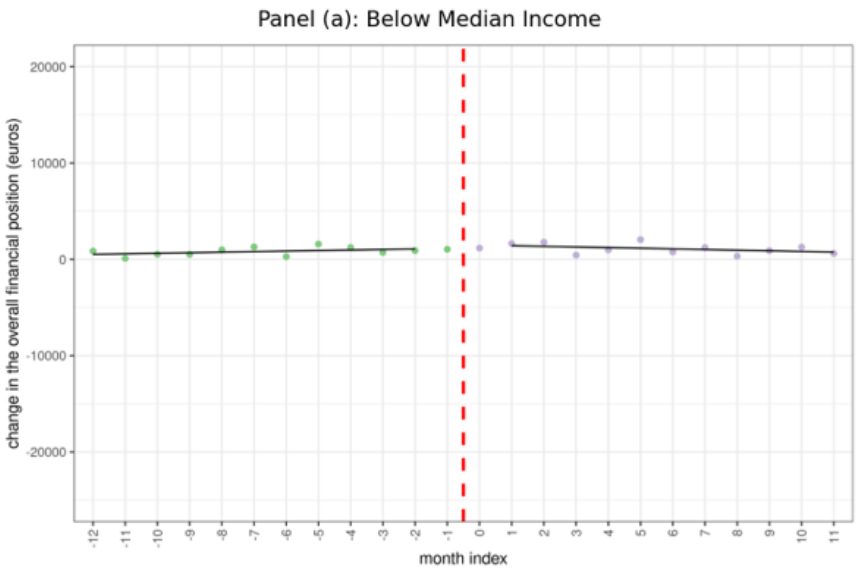
Change in the overall financial position between months -5 and 24)

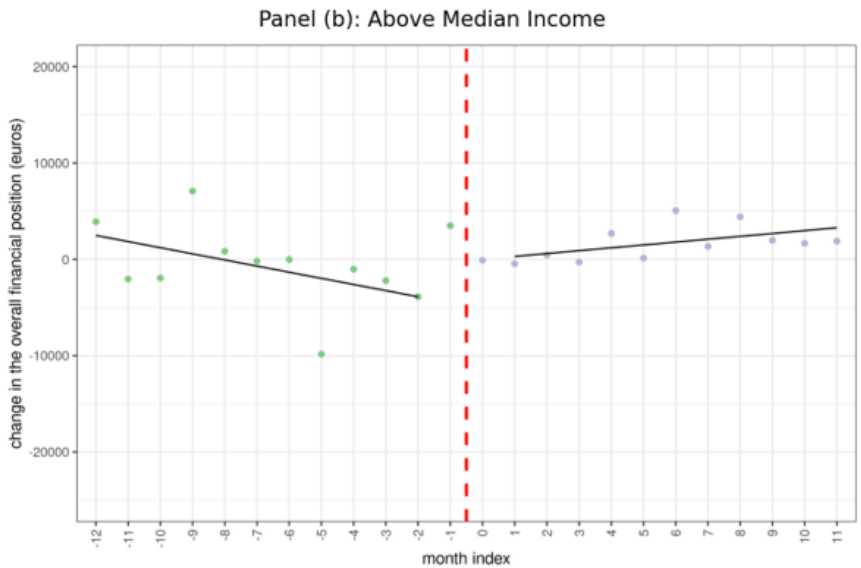
- +€2,714 – (37% of benefit receipt) statistically significant



Change in the overall financial position between months -5 and 24)

- Much bigger increase (savings) for higher-income mothers (€5,166, statistically significant) vs €296 for lower-income mothers, not statistically significant.
- Higher-income mothers – savings = 68% of benefit receipt





Main Takeaway and Next steps

- The MMB, huge & highly-predictable cash transfer, alleviates liquidity constraints of low-income mothers without negative labor supply effects (high-income mothers reduce labor time ("buy time"?)
- Relatively large unexplained component for low-income mothers (1/2) – intrahousehold transfers, operations outside Caixabank account
- **Robustness tests**
- Specifications with controls (calendar effects, controls (t = -6))
- Difference-in-discontinuities using other regions as controls
- Placebo analysis – mothers giving birth at +31

Thank you!

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Summary of Results

Table 14 – Summary of Results: Regression Discontinuity Estimates by Income Group

A. Benefit receipt and expenditure category	All households	Above-median income	Below-median income
Benefit receipt	7,353.00 (n.a.)	7,867.38 (n.a.)	6,843.61 (n.a.)
	p = 0.00	p = 0.00	p = 0.00
Total spending	1,185.05 (3.65%)	−319.39 (−0.86%)	2,667.70 (9.58%)
	p = 0.49	p = 0.90	p = 0.24
Basic necessities	1,016.67 (16.16%)	605.63 (8.33%)	1,423.62 (26.79%)
	p = 0.03	p = 0.37	p = 0.02
Leisure & hospitality	401.76 (8.79%)	449.66 (8.29%)	354.94 (9.50%)
	p = 0.27	p = 0.41	p = 0.45
Transport	−245.51 (−10.78%)	−350.03 (−12.56%)	−142.13 (−8.00%)
	p = 0.17	p = 0.20	p = 0.52
Retail & home goods	132.87 (2.26%)	−100.47 (−1.33%)	364.04 (8.60%)
	p = 0.76	p = 0.88	p = 0.43
Cash withdrawals	77.72 (1.16%)	−470.11 (−7.26%)	611.89 (8.90%)
	p = 0.91	p = 0.63	p = 0.60
Other categories	209.49 (4.13%)	143.04 (2.39%)	275.79 (6.61%)
	p = 0.60	p = 0.81	p = 0.58