Design Matters: Causal Evidence on Cash Benefits and Fertility

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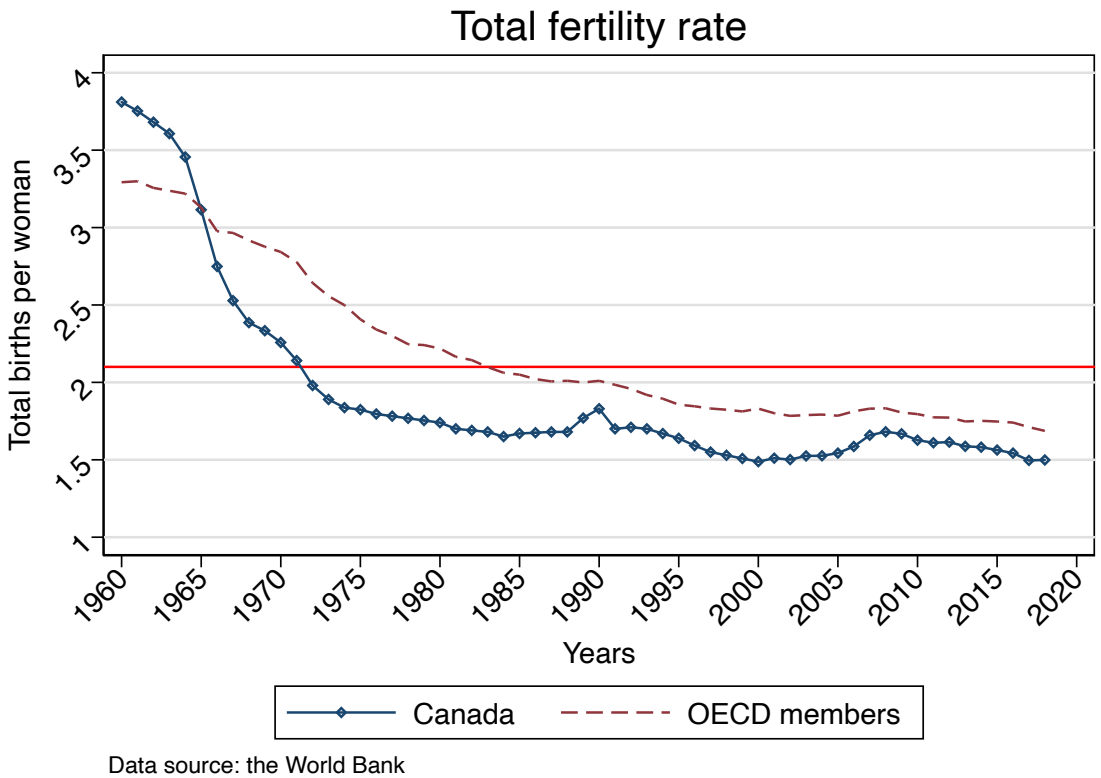
Motivation



Data source: the World Bank

Growing concerns around the world (Jones 2020)

$\Longrightarrow$ Population aging

$\Longrightarrow$ Social security

$\Longrightarrow$ Economic growth

Fertility

Motivation

- Pro-natalist policies have been implemented widely.
- Two main pro-family policy trends:
  - Compatibility of parenthood and employment: childcare, parental leave, and flexible work
  - Direct cash transfer: baby bonus, child allowances
- On average, OECD countries spend 2.1% of GDP on family expenditure (Oecd, 2019).
- Limited research on the cost-effective analysis of these programs

Related Literature

- Large variation in fertility effects, elasticities of fertility wrt. costs of raising a child range from:
  - -4.1 in Canada (Milligan, 2005), -3.8 in Spain (Gonzalez, 2013), -4.4 in Austria (Lalive and Zweimuller, 2009), -3.7 in Soviet Russia (Malkova, 2018), -3.1 in Germany (Raute, 2019), -0.54 in Israel (Cohen et al., 2013), close to 0 in Norway (Dahl et al., 2016).
- Comparison across studies is challenging due to the differences in measurements of fertility, analytical approach, time frame etc.
- Hart et al (2024): findings of the previous literature stipulate future research to better understand not only their efficacy but also their cost-effectiveness in raising fertility

A Tail of Two Benefits

- Two Benefits in Quebec:
  1. Direct Cash Transfer
     - Allowance for new-born children (ANC) anc
  2. Parental Leave Program
     - Quebec Parental Insurance Plan (QPIP) qpip
- Make them as comparable as possible

Allowance for new-born children (ANC)

	1st kid	2nd kid	3rd+
May 1988 to April 1989	C$500	C$500	C$3,000
May 1989 to April 1990	C$500	C$1,000	C$4,500
May 1990 to April 1991	C$500	C$1,000	C$6,000
May 1991 to April 1992	C$500	C$1,000	C$7,500
May 1992 to Sep 1997	C$500	C$1,000	C$8,000

back

Quebec Parental Insurance Plan (QPIP)

	Before (EI)	After (QPIP Basic Plan)	After (QPIP Special Plan)
Replacement Rate	55%	70%, 55%	75%
Maximum Earnings	C$ 39,000	C$ 57,000	C$ 57,000
Duration	50 weeks	55 weeks	43 weeks

back

Data

- Longitudinal Administrative Databank (LAD)
  - Canadian tax record covering 20% of tax filers
  - Information on children's birthdate, individual income and benefits, family income and benefits
  - Variations of benefits by region and time $\Longrightarrow$ Differences-in-differences (DiD)

Sample Selection

- **Cross-sectional Sample**: all women aged between 15 to 44
  - ANC — pre-policy: 1983-1988; post-policy: 1989-1997
  - QPIP— pre-policy: 2000-2005; post-policy: 2006-2014

Empirical Method

- To estimate the overall fertility responses to each policies (Intention to treat (ITT)):

$$Birth_{ijt} = \alpha + \beta(Quebec_j \times Post_t) + X_{ijt}^T\gamma + \lambda_j + \rho_t + \nu_{ijt}, \quad (1)$$

  - where i indexes individuals, j provinces and t years
  - X_{ijt} a number of individual characteristics

Empirical Method

– Use Two-stage-least-square (2SLS) method to estimate Fertility Responses per C$1,000

- First Stage:

$$Benefit_{ijt} = \alpha_0 + \alpha_1 Post \times Quebec + X_{ijt}^{'}\gamma + \pi_j + \theta_t + \varepsilon_{ijt}, \quad (2)$$

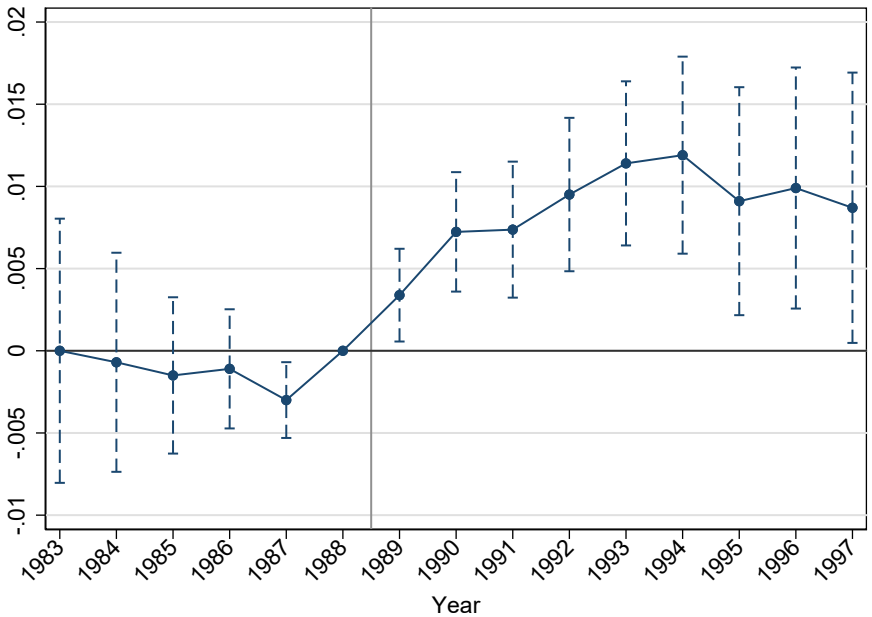
- Reduced Form:

$$Birth_{ijt} = \gamma_0 + \gamma_1 \widehat{Benefit}_{ijt} + X_{ijt}^{'}\gamma + \lambda_j + \rho_t + \varepsilon_{ijt}, \quad (3)$$

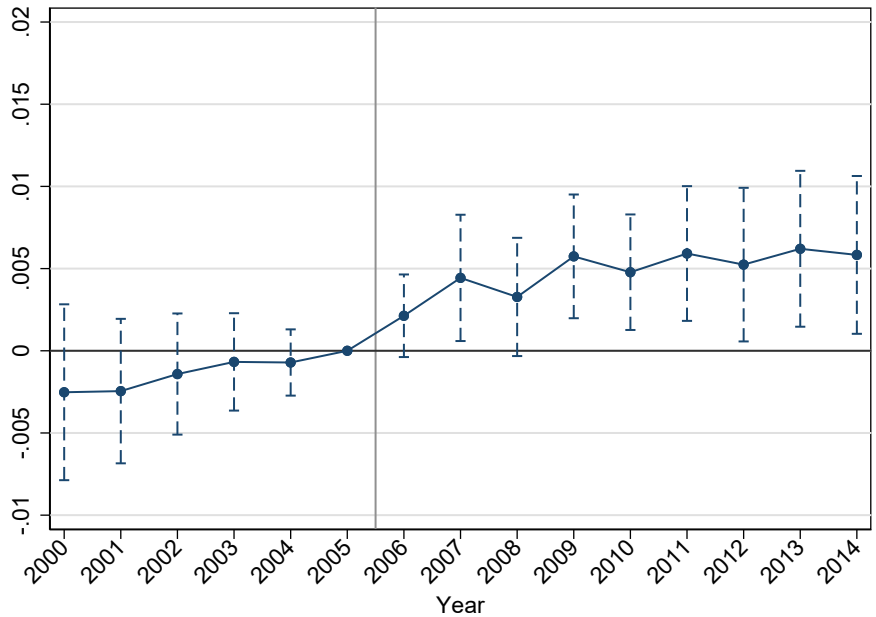
- Interpret: fertility reponses per C$1,000 increase in benefits.

Results: Overall fertility responses to each policy

(a) Direct Cash Transfer (ANC)



(b) Parental Leave (QPIP)



Robust

Fertility responses to each policy, scaling to C$1,000

Table 1: DD estimates of Direct Cash Transfer and Parental Leave on fertility

	A. Direct Cash Transfer (ANC)			**B. Parental Leave (QPIP)**		
Outcomes	(1) Birth	(2) Benefit in $1K	(3) Birth per$1K	(1) Birth	(2) Benefit in $1K	(3) Birth per$1K
Quebec × Post	0.0116***	4.633***	0.0025***	0.0056***	5.439***	0.0011***
t-stat	(11.21)	(17.38)	(35.01)	(3.47)	(14.55)	(16.19)
Implied % change	17.08%		3.69%	10.92%		2.01%

Mechanisms

- Different incentives on higher-order birth

Policy effects along intensive and extensive margins

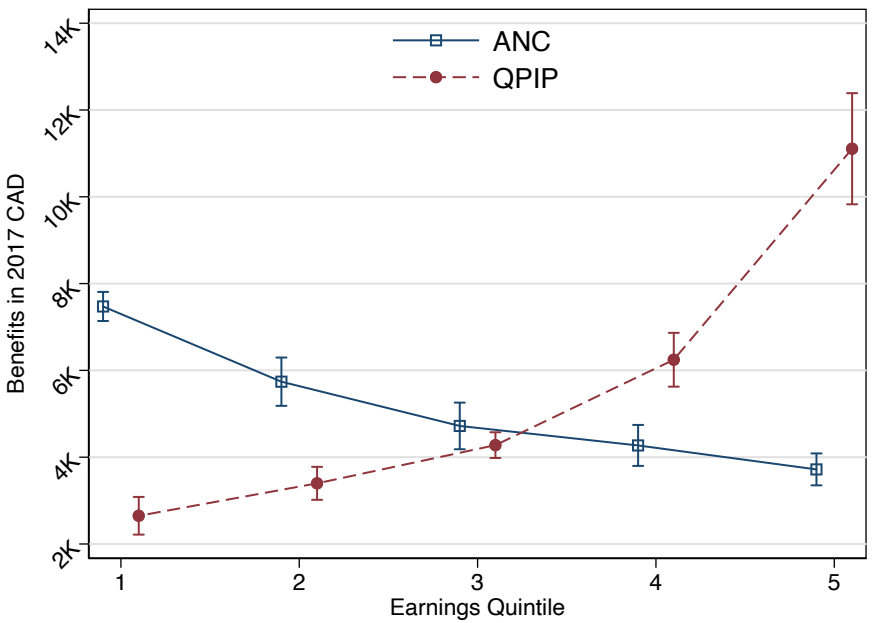
Outcome: Birth	Birth	1st birth	2nd birth	3rd birth	Childless
Panal A. Policy effects of ANC					
Post × *Quebec*	0.0116***	0.003***	0.0035***	0.0052***	-0.0094***
	(0.001)	(0.0006)	(0.0006)	(0.0008)	(0.003)
Implied % change	19.66%	11.28%	17.41%	31.9%	-2.47%
Panal B. Policy effects of QPIP					
Post × *Quebec*	0.0056***	0.0019***	0.0023***	0.0014***	-0.0109***
	(0.0013)	(0.0004)	(0.0006)	(0.0004)	(0.003)
Implied % change	10.39%	7.31%	11.62%	17.28%	-2.46%

Mechanisms

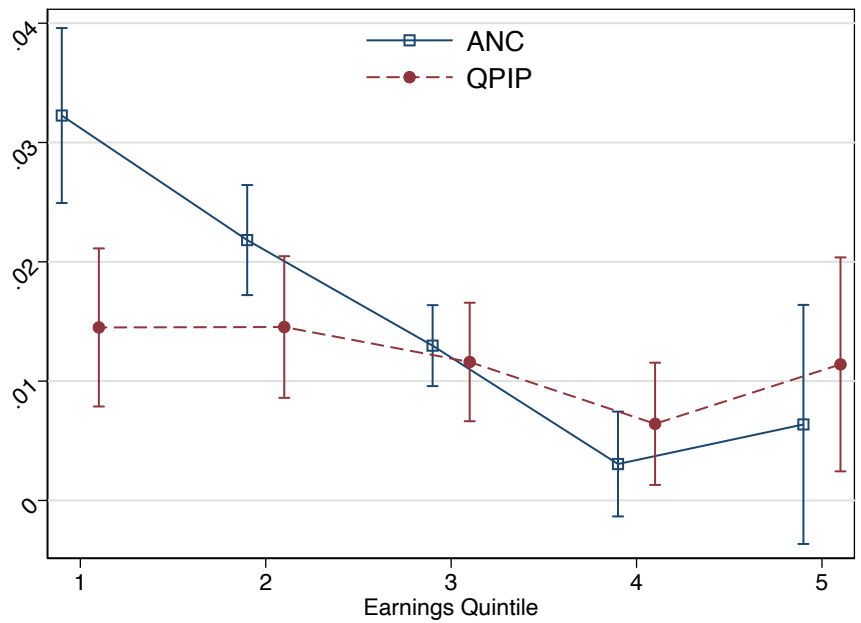
- Different incentives on higher-order birth
- Distributional feature of the two programs

Distributional features of the two benefits

(a) Benefits

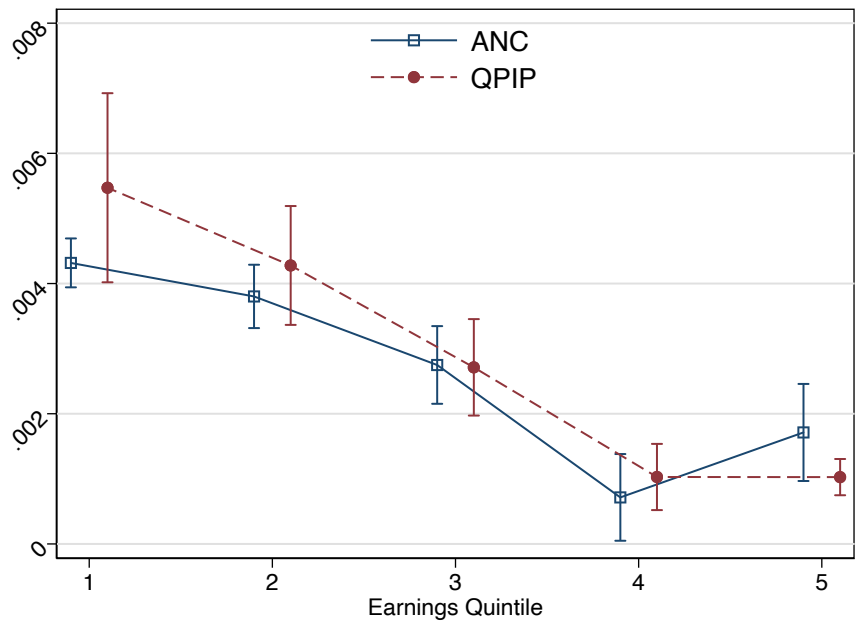


(b) Birth

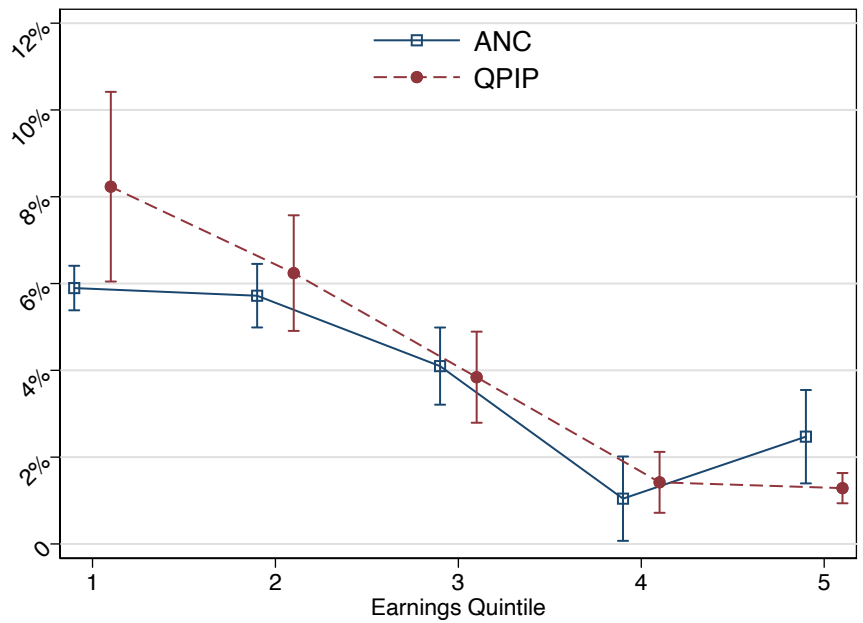


Distributional features of the two benefits

(a) Birth per C$1,000



(b) Birth per C$1,000 (in %)



Mechanisms

- Different incentives on higher-order birth
- Distributional feature of the two programs
- Pro-natalist intent could matter?
- QPIP includes 5 weeks of "Daddy's Quota", which might play a role. (González, 2019)
- With 20 years in between, social values change.

Summary

- Exploit the introduction of two family friendly policies in Canada
- a C$1,000 raises the birth probability by 3.7% for direct cash benefit and 2% for panretal leave.
- Fertility is highly elastic to the costs of having children.
  - Price elasticity of a child is -8.7 for ANC and -4.8 for QPIP.
    literature
- Distributional feature and the heterogeneous responses along income determine the benefits' cost-effectiveness
  - Benefits that pay more amount to lower-earnings women are more effective at encouraging birth.

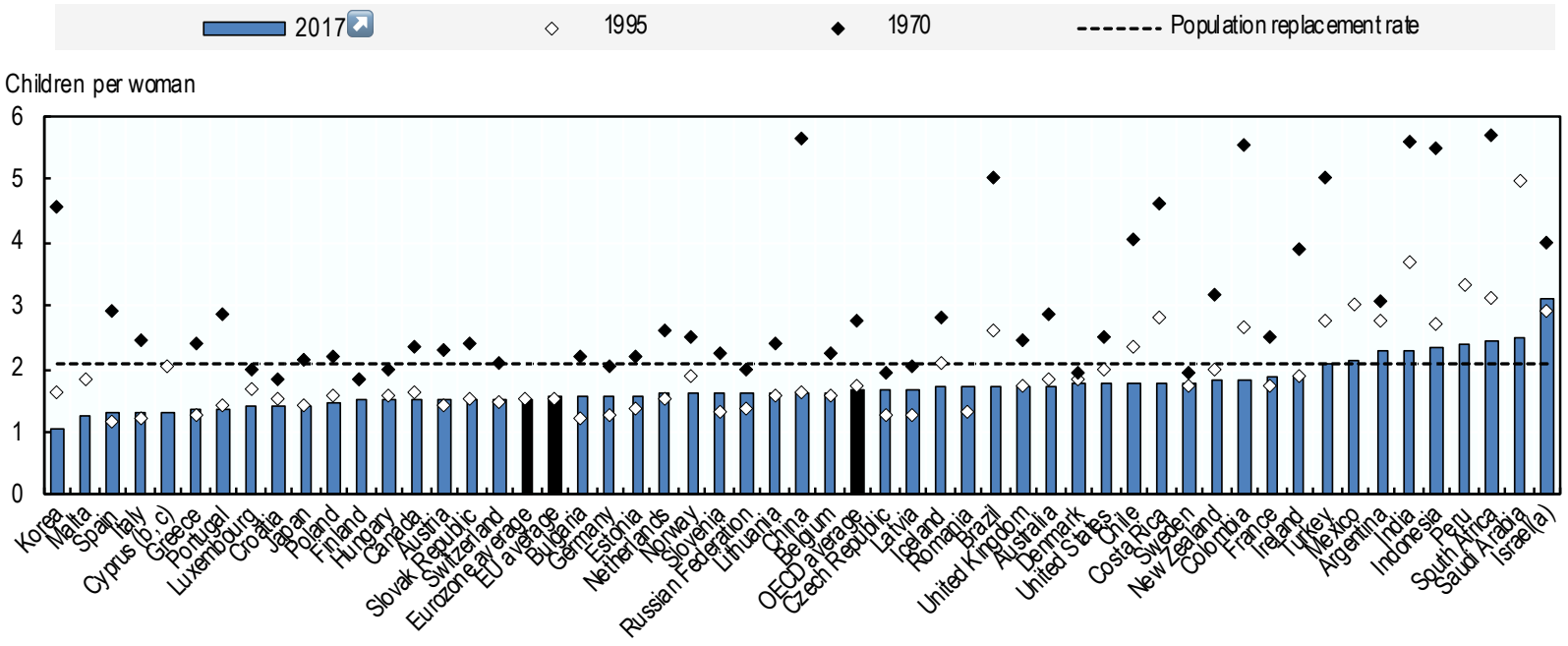
Caveats

- ANC and QPIP benefits entail different policy goals
  - ANC: to encourage birth
  - QPIP: to facilitate women's careers and families
  - How policies are publicized could also affect the fertility responses
- ANC and QPIP might induce differential labour responses
  - Labour responses not studied in this paper
  - Not a full welfare analysis
- Universal benefits $\Longrightarrow$ more effective at encouraging birth
  - not necessarily a better policy option

Appendix

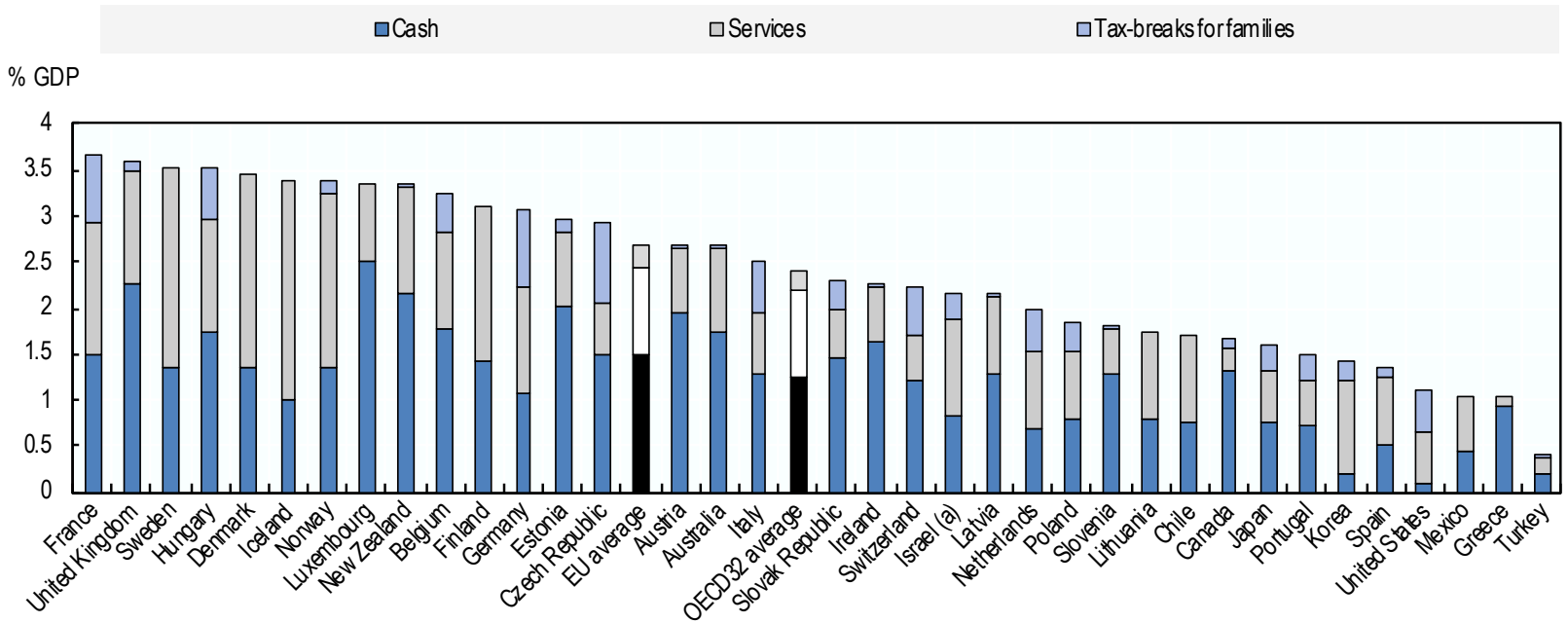
Appendix

Fertility across OECD countries



Motivation

Children-related benefits across OECD countries



Motivation

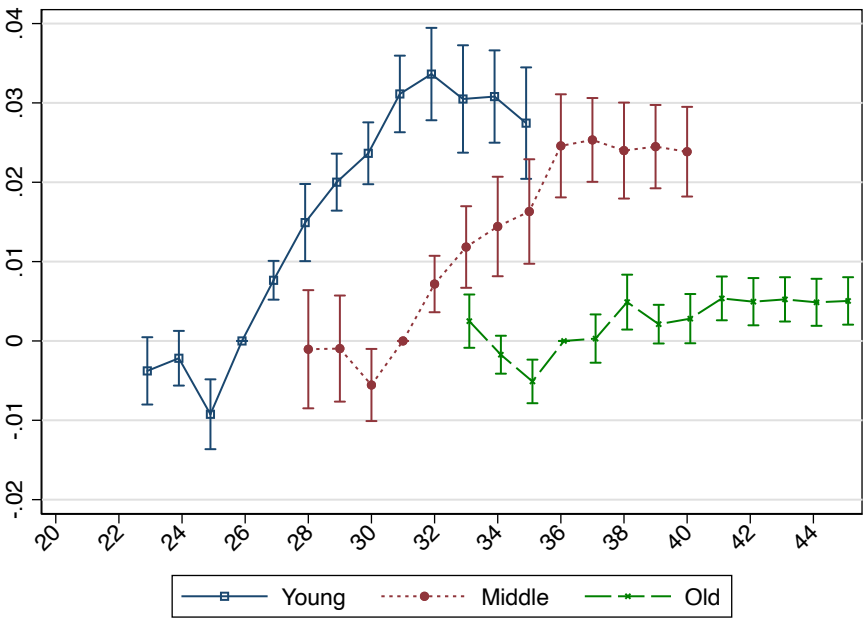
Contribution

- Compare the fertility effects and cost-effectivness of the two types of benefits within the same setting
  - Can study distributional analysis of cash benefits
  - Speak to how the design of benefits affects fertility responses
- Distinguish between fertility re-timing and a change in the ultimate number of children.
  - Can track down a few cohorts and follow them through lifetime

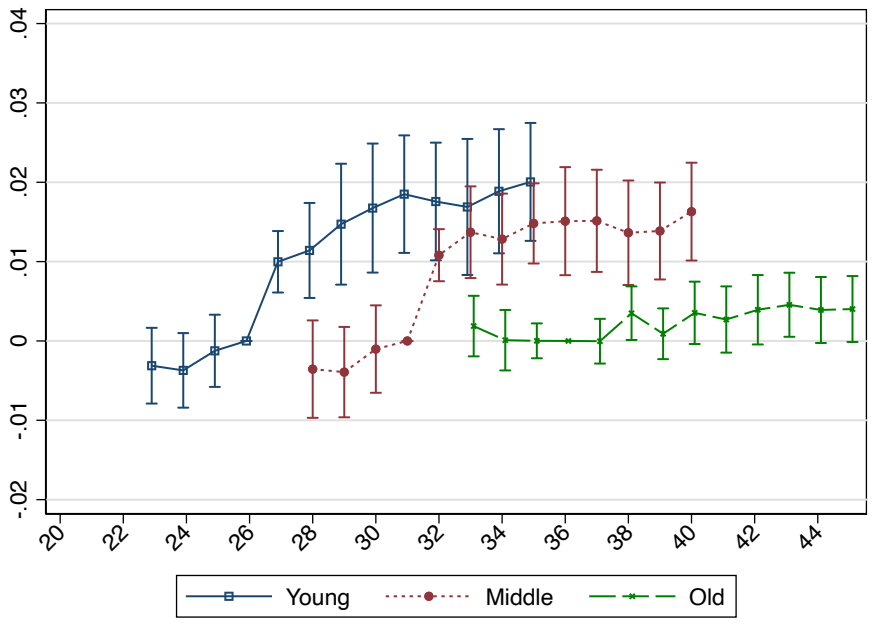
literature

Results: Both benefits cause change in the ultimate number of children

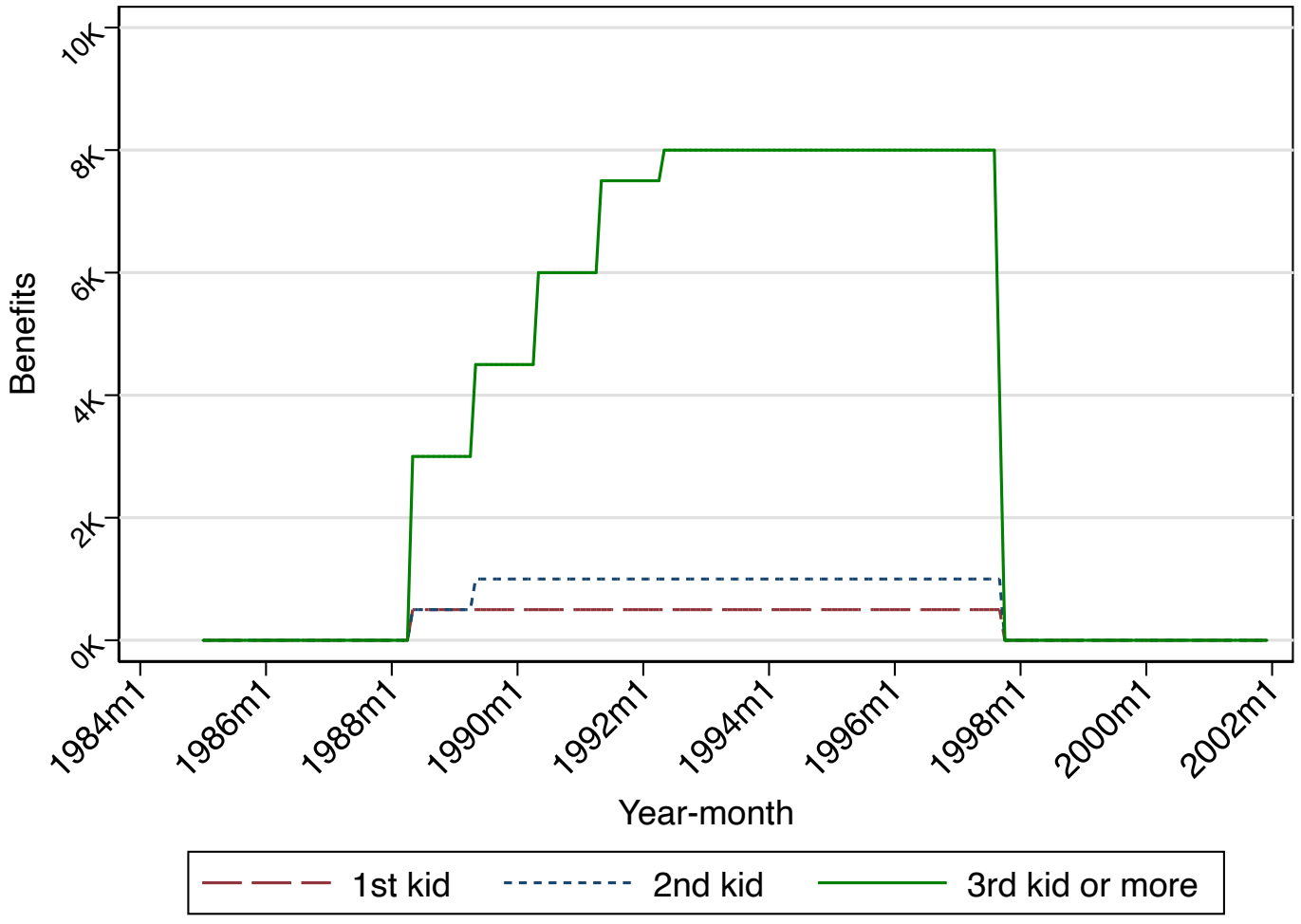
(a) ANC



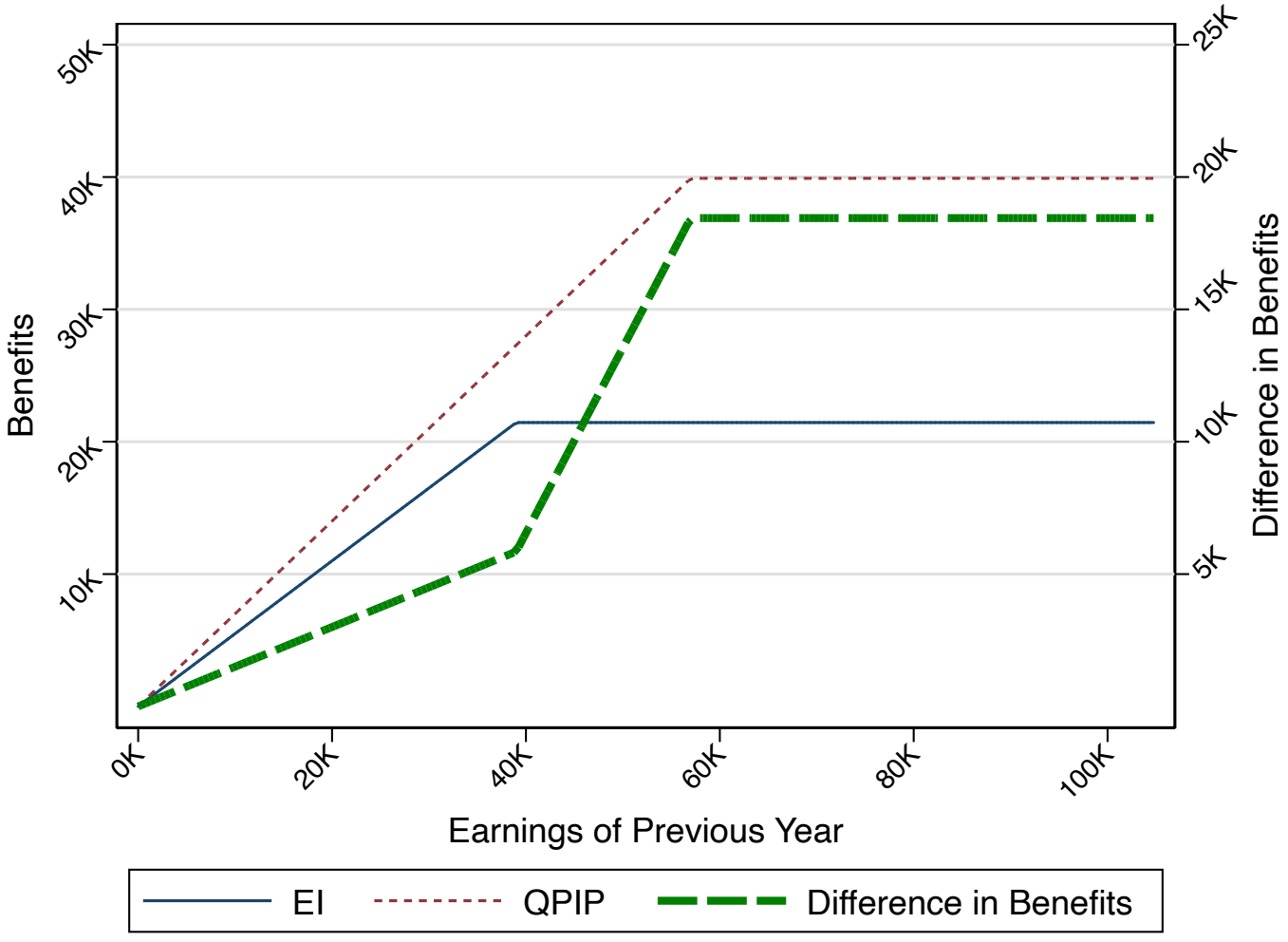
(b) QPIP



Allowance for Newborn Children (ANC)

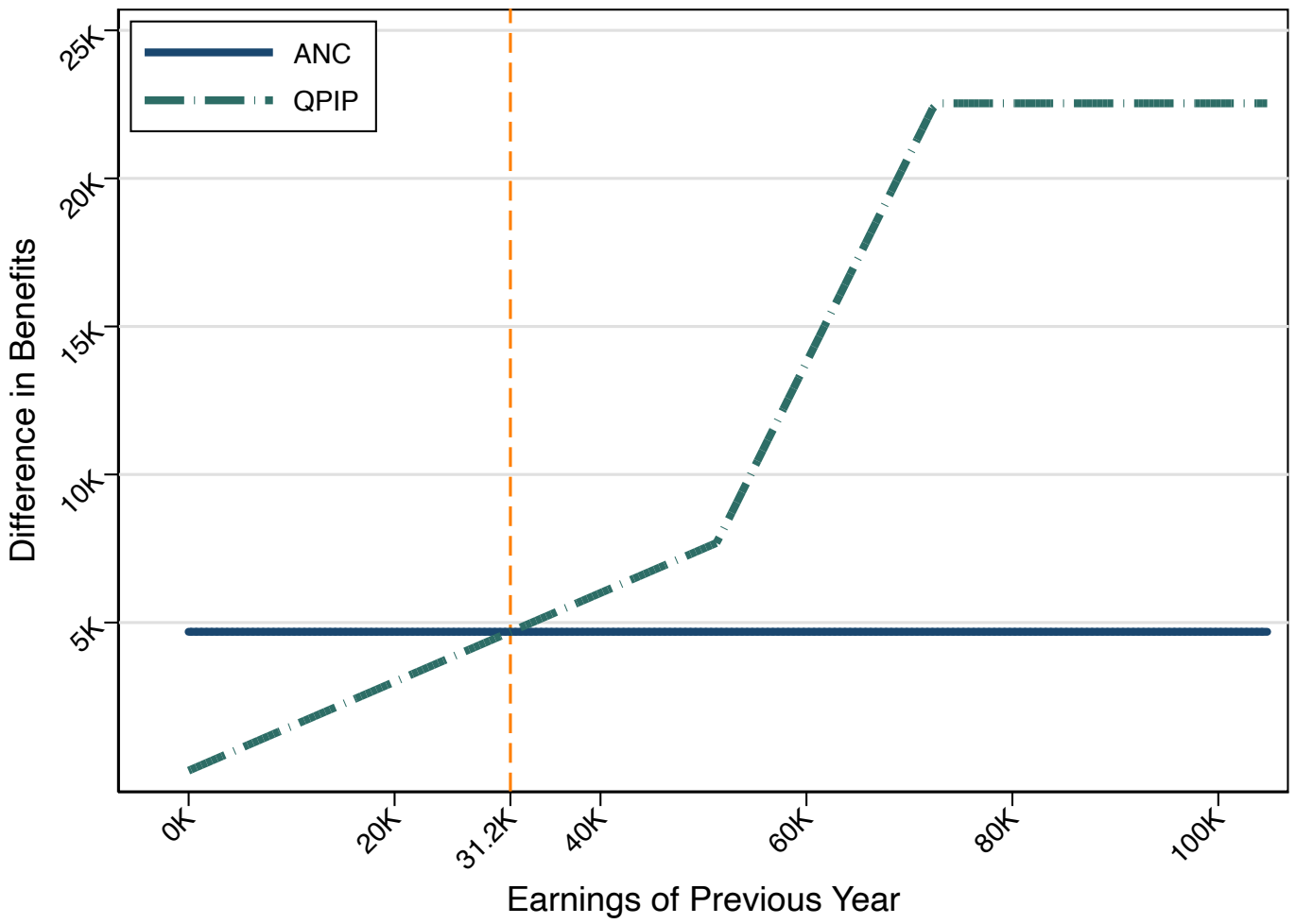


Quebec Parental Insurance Plan (QPIP)

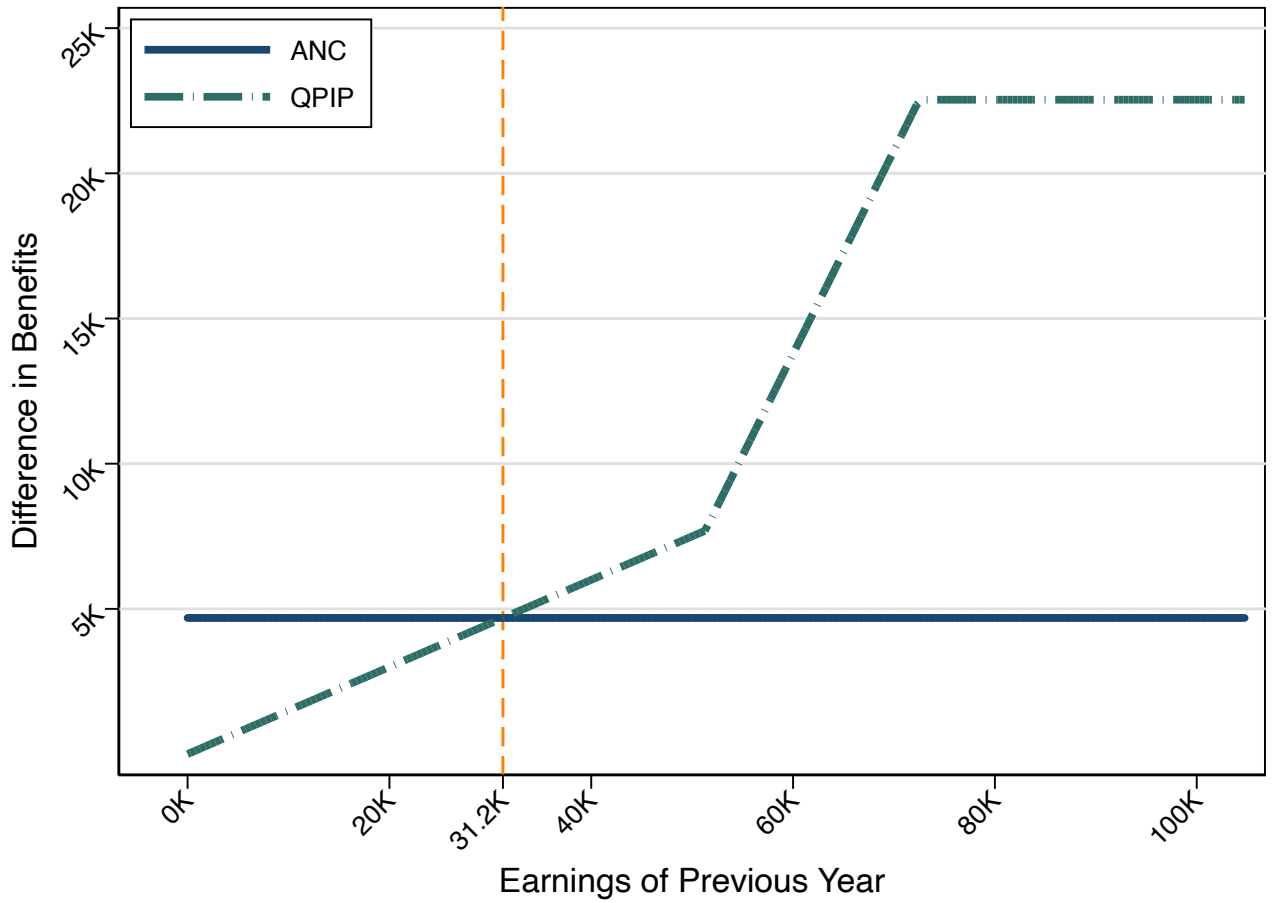


Compare ANC and QPIP

Figure 1: Difference in Benefits



Compare ANC and QPIP

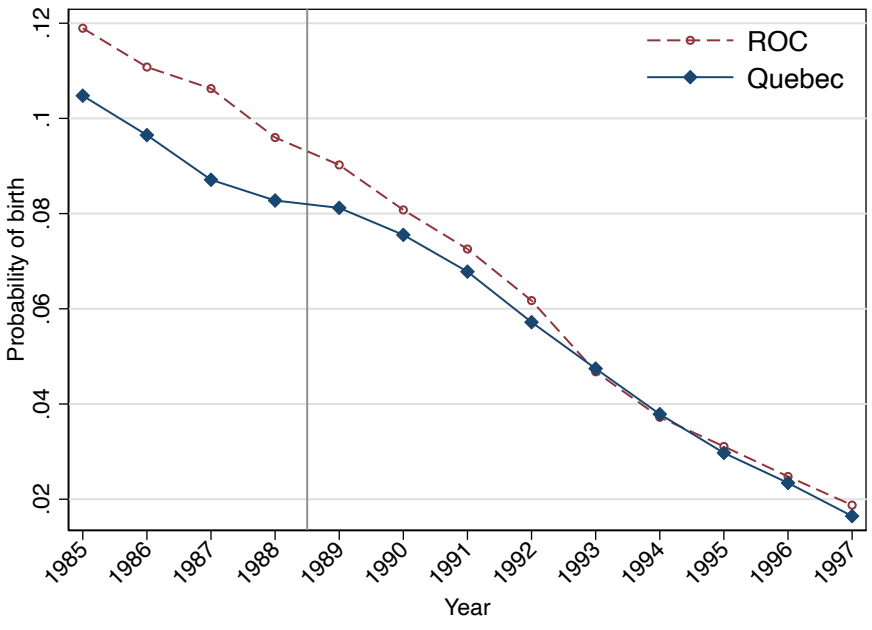


$\Longrightarrow$ Around 68% and 64% of women earn less than C$31.2K in the ANC and QPIP pre-policy period, respectively.

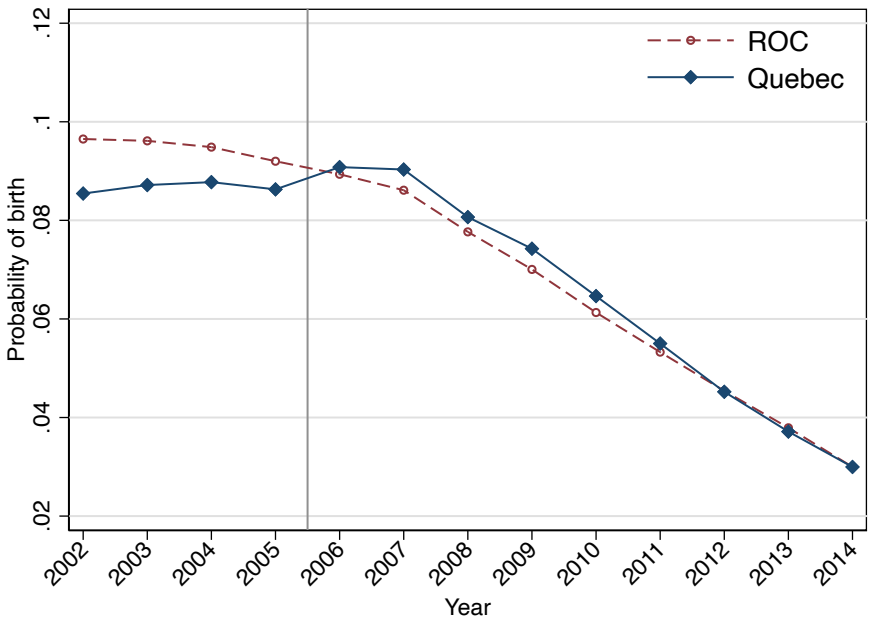
$\Longrightarrow$ The majority of women benefit more from ANC

Raw Fertility Trends: Cohort Sample

(a) ANC



(b) QPIP



Thank You!