

The Family Gap in Canada: Trends, Geographical Patterns and the Link with Family - Friendly Policies

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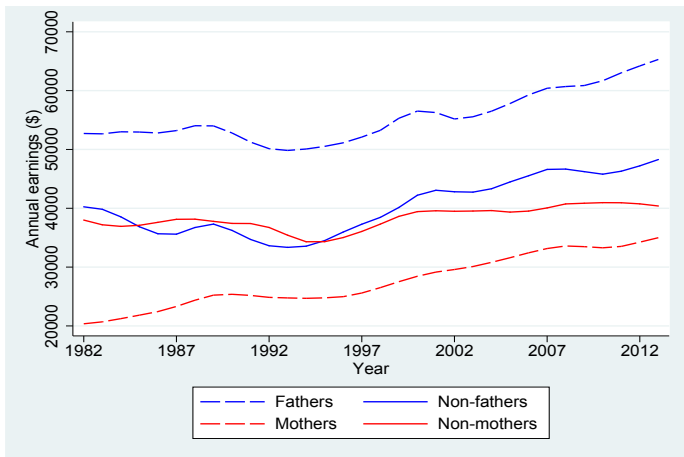
The Family Gap

- Measures the pay gap between parents and non-parents
- Generally, motherhood is related to lower wages for mothers, while fatherhood is related to greater wages for fathers.
- Here, we focus on the pay gap between mothers and childless women

Link to the gender gap

- Reduction of the gender gap in earnings over time ... (Goldin, 2016)
- ... due to important demographic and social changes :
 - ▶ increase in women's participation in the labor market
 - ▶ educational progress of women
 - ▶ declining fertility rates
 - ▶ legislative and political changes
- Since 1990 convergence is stagnating (Blau and Kahn, 2016)
- Hypothesis of persistence of these gaps : "parenthood" (Waldfogel, 1998)

Parenthood is linked to persistent gender pay gap



Source : LISA (2012) and T1 Files (1982-2013) author's calculations

Note : earnings are in constant 2016 dollars and weighted with Statistics Canada sample weights

Hypothesis for the motherhood pay gap

- Depreciation on human capital (Phipps et al., 2001 ; Anderson et al., 2002)
- Mothers choose more family-friendly jobs (Budig and England, 1999)
- Mothers are less productive due to family responsibilities (Budig and England, 2001 ; Phipps et al.,2001)
- Employers discrimination
- Unobserved heterogeneity (Anderson et al. 2002 ; Waldfogel, 1998)

Family Gap International studies

- **United States** : Motherhood penalties of 7.5% for mothers with 2 children and more, but these gap have decrease between 1977 and 2007 (Pal and Waldfogel, 2014)
- **France** : Motherhood pay gap of 4.4% and 10.1% for mothers of 2 and 3 children or more, respectively int the private sector. No significant pay gap in the public sector (Duvivier et al., 2014)
- **International comparaison** : Large pay gap in Germany, Luxembourg and Netherlands ($\simeq 30\%$) and conversely no significant pay gap in Sweden and Finland (Budig et al., 2012)
- **Canada** : Longitudinale analysis : motherhood penalties of 40% the year of the childbirth that totally disappear after 7 years (Zhang, 2010)

Family policies in Canada

Within Canada, some family policies are regulated at the provincial level.

The province of Quebec has a notably generous set of family-oriented policies such as :

- ① Highly subsidized daycare (since 1997)
- ② Higher parental leave benefits (since 2006)

Are these policies related to a lower family gap in Quebec as compared to the rest of Canada ?

Contribution

- Use linked administrative and survey data providing a unique and more accurate way of identifying mothers
- Provide a more recent assessment regarding wage gap between mothers and childless women
- Identify public policies in place that may facilitate work and family balance
- Enlarge the Canadian literature on the family gap

Research questions

- 1 Is the motherhood pay gap resorbed after a few years?
- 2 Are there difference between Quebec and the rest of Canada regarding to the family gap?
- 3 Is there heterogeneity in motherhood penalties?

Data sources

Longitudinal and International Study of Adults (LISA) : wave 1 (2012)

- Advantages

- ▶ Crucial information on education, labor market and family background
- ▶ Historical administrative data component : detailed family and individual earnings from the T1 dating back 1982 to 2013

Sample size

- Extended sample of women aged 25 to 54 years old each period

	Quebec		Rest of Canada	
	Mothers	Childless women	Mothers	Childless women
Person-years	33 971	4 644	145 863	19 039
Persons	1 766	378	7 245	1 564

Source : LISA (2012) author's calculations

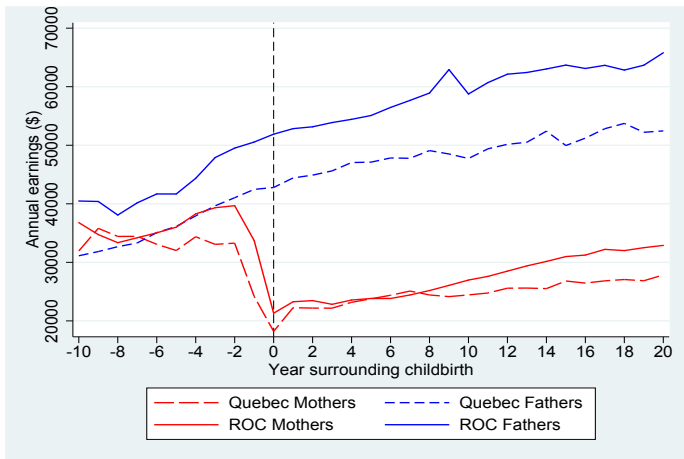
Description of the sample

	Quebec		Rest of Canada	
	Mothers	Childless women	Mothers	Childless women
Current age	39,2	37,5	39,0	36,1
Average earnings (\$2016)	25 410	32 500	28 829	40 776
Potential work experience	35,3 years	31,0 years	34,0 years	26,1 years
Effective work experience	21,1 years	22,7 years	20,3 years	20,5 years
Education				
Years of education	13,1 years	14,0 years	13,9 years	15,5 years
HS or less	38,9%	32,6%	37,0%	20,7%
Post secondary	39,8%	39,5%	37,1%	39,8%
More than bachelor	21,3%	28,0%	26,0%	39,5%
Marital status				
Married or common-law	74,4%	38%	75,7%	36,7%
Separated or divorced	14,1%	9,8%	13,7%	6,7%
Single	11,5%	52,2%	10,6%	56,6%
Number of children				
1 child	24,2%	-	19,5%	-
2 children	47,5%	-	45,2%	-
3 children and more	28,3%	-	35,3%	-
Country of birth				
Canada	84,4%	88%	68,6%	72,2%
Abroad	14,2%	9,8%	28,9%	25%

Source : author's calculations from LISA (2012) and T1 Files (1982-2013)

Note : results are weighted with Statistics Canada sample weights

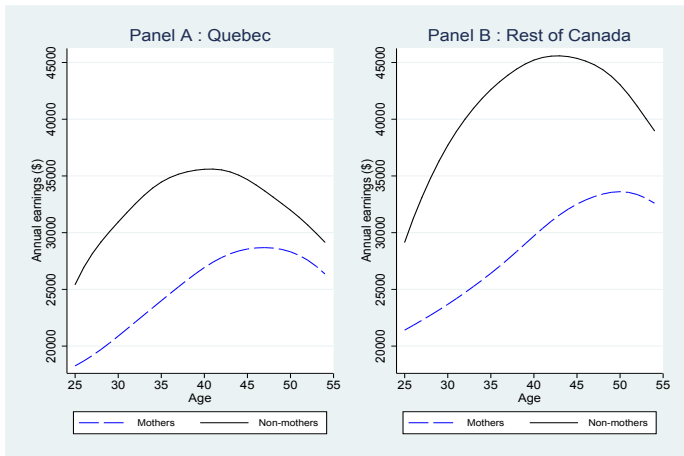
Trajectories of parents' earnings related to their first childbirth



Source : author's calculations from LISA (2012) and T1 Files (1982-2013)

Note : earnings are in constant 2016 dollars and weighted with Statistics Canada sample weights

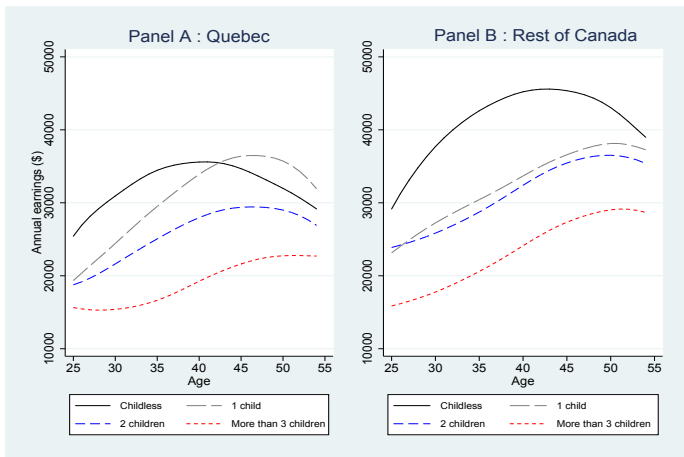
At any age, mothers earn less than childless women...



Source : author's calculations from LISA (2012) and T1 Files (1982-2013)

Note : earnings are in constant 2016 dollars and weighted with Statistics Canada sample weights

...and this wage gap increases with the number of children



Source : author's calculations from LISA (2012) and T1 Files (1982-2013)

Note : earnings are in constant 2016 dollars and weighted with Statistics Canada sample weights

Methodology

Two step estimations

- 1 Purge provincial and temporal effects on wages

$$\ln Y_{it} = \alpha + UNEMP_{jt}\theta + Years_{jt}\Psi + u_{it}$$

- 2 Regress residuals of (1) on a set of explanatory variables

$$\hat{u}_{it} = \alpha_j + X_{it}\beta + \sum_{k=-5}^{20} D_{it}^k \delta_k + \epsilon_{it}$$

Baseline model : women aged 25 to 54 years old

	Quebec		Rest of Canada	
	T4	T4 + EINS	T4	T4 + EINS
5 years before	.111(.05)	.048(.05)	.195***(.03)	.136***(.03)
4 years before	.185***(.04)	.123**(.04)	.227***(.03)	.171***(.03)
3 years before	.244***(.04)	.163***(.03)	.283***(.02)	.228***(.02)
2 years before	.235***(.04)	.144***(.03)	.343***(.02)	.276***(.01)
1 year before	-.132**(.04)	.023(.03)	.177***(.02)	.195***(.02)
Childbirth	-.403***(.04)	-.104***(.03)	-.373***(.02)	-.0972***(.02)
1 year after	-.181***(.04)	-.109**(.03)	-.266***(.02)	-.212***(.02)
2 years after	-.15***(.03)	-.101***(.03)	-.207***(.02)	-.159***(.02)
3 years after	-.138***(.03)	-.121***(.03)	-.237***(.02)	-.191***(.02)
4 years after	-.06(.03)	-.0573(.03)	-.197***(.02)	-.175***(.02)
5 years after	-.0643(.03)	-.052(.02)	-.154***(.02)	-.153***(.02)
6 years after	-.0584(.03)	-.0849**(.03)	-.185***(.02)	-.181***(.02)
7 years after	-.0601(.03)	-.037(.02)	-.162***(.02)	-.167***(.02)
8 years after	-.147***(.04)	-.111***(.03)	-.148***(.02)	-.148***(.02)
9 years after	-.147***(.03)	-.122***(.03)	-.143***(.02)	-.161***(.02)
10 years after	-.13***(.03)	-.121***(.03)	-.0766***(.01)	-.1***(.01)
...				
15 years after	-.0072(.03)	-.00851(.03)	.0379(.02)	.0232(.01)
...				
20 years after	.0542(.03)	.0525(.03)	.134***(.01)	.124***(.01)
N : Person-years	20440	20905	82 200	83 877
n : Persons	1758	1770	7 159	7 184

Source : author's calculation from LISA (2012) and T1 Files (1982-2013)

Note : clustered standard errors are in parentheses. Results are weighted with Statistics Canada sample weights

*** : $p < 0,01$; ** : $p < 0,05$; * : $p < 0,1$

Heterogeneity of the effects : by number of children

Dep. variable : T4	Quebec		Rest of Canada	
	1 child	2 children	1 child	2 children
5 years before	.0363(.079)	.188*(.08)	.0495(.05)	.295***(.04)
4 years before	.0923(.073)	.223***(.06)	.138**(.04)	.246***(.06)
3 years before	.131*(.062)	.291***(.05)	.216***(.04)	.313***(.03)
2 years before	.148*(.062)	.306***(.05)	.234***(.03)	.375***(.02)
1 year before	-.171**(.063)	-.129(.07)	.114**(.04)	.211***(.03)
Childbirth	-.58***(.084)	-.346***(.06)	-.507***(.05)	-.33***(.03)
1 year after	-.228**(.073)	-.128*(.05)	-.388***(.05)	-.226***(.03)
2 years after	-.0583(.056)	-.214***(.05)	-.142**(.04)	-.215***(.03)
3 years after	-.116(.060)	-.158**(.05)	-.125*(.05)	-.281***(.03)
4 years after	-.00657(.057)	-.0429(.04)	-.13**(.04)	-.214***(.03)
5 years after	-.0211(.045)	-.0283(.04)	-.126*(.04)	-.155***(.03)
6 years after	-.0276(.060)	-.0258(.04)	-.0525(.04)	-.181***(.03)
7 years after	-.0253(.064)	-.0599(.04)	-.259***(.05)	-.117***(.02)
8 years after	-.119(.086)	-.103*(.04)	-.0807(.05)	-.15***(.03)
9 years after	-.089(.066)	-.14**(.04)	-.0903(.05)	-.153***(.02)
10 years after	-.056(.063)	-.127**(.04)	-.0147(.04)	-.071**(.02)
...				
15 years after	.065(.06)	-.0753(.05)	.0492(.04)	.0998***(.02)
...				
20 years after	-.0198(.086)	.0429(.04)	.133**(.04)	.152***(.02)
N : Person-years	7695	12 306	48994	35502
n : Persons	684	1 051	4094	3394

Source : author's calculation from LISA (2012) and T1 Files (1982-2013)

Note : clustered standard errors are in parentheses. Results are weighted with Statistics Canada sample weights

*** : $p < 0,01$; ** : $p < 0,05$; * : $p < 0,1$

Heterogeneity of the effects : by marital status

Dep. variable : T4	Quebec		Rest of Canada	
	Married	Single	Married	Single
5 years before	.139(.080)	.151(.09)	.164***(.04)	.224***(.04)
4 years before	.195**(.063)	.243**(.07)	.273***(.03)	.184**(.07)
3 years before	.203***(.059)	.317***(.06)	.296***(.03)	.28***(.04)
2 years before	.22***(.056)	.239**(.07)	.359***(.02)	.252***(.04)
1 year before	-.203***(.058)	.0765(.09)	.184***(.02)	.0406(.08)
Childbirth	-0.454***(.057)	-0.249(.13)	-0.392***(.03)	-0.24*(.11)
1 year after	-.214***(.054)	-.0239(.12)	-.284***(.03)	-.164(.11)
2 years after	-.2***(.048)	.0731(.08)	-.236***(.02)	-.0864(.07)
3 years after	-.179***(.046)	-.00694(.09)	-.27***(.02)	-.0737(.08)
4 years after	-.101*(.045)	.0281(.11)	-.249***(.02)	-.16(.11)
5 years after	-.0917*(.046)	-.0592(.08)	-.22***(.02)	-.0103(.07)
6 years after	-.0787(.043)	-.0704(.12)	-.231***(.02)	.071(.06)
7 years after	-.0711(.045)	-.0864(.09)	-.18***(.02)	.0896(.06)
8 years after	-.188***(.053)	-.0542(.11)	-.154***(.02)	-.0934(.07)
9 years after	-.168***(.048)	-.174(.14)	-.158***(.02)	.0292(.07)
10 years after	-.156**(.048)	-.11(.12)	-.0917***(.02)	.0549(.05)
...				
15 years after	-.0133(.046)	.181*(.09)	.0373(.02)	-.000827(.08)
...				
20 years after	.0638(.046)	-.0424(.11)	.133***(.02)	.108(.09)
N : Person-years	14884	3549	60760	13770
n : Persons	1507	743	6044	2760

Source : author's calculation from LISA (2012) and T1 Files (1982-2013)

Note : clustered standard errors are in parentheses. Results are weighted with Statistics Canada sample weights

*** : $p < 0,01$; ** : $p < 0,05$; * : $p < 0,1$

Heterogeneity of the effects : by education level

Dep. variable : T4	Quebec		Rest of Canada	
	Less HS	Post HS	Less HS	Post HS
5 years before	.24*(.12)	.105(.06)	.381***(.06)	.161***(.03)
4 years before	.223(.11)	.19***(.05)	.346***(.08)	.207***(.04)
3 years before	.265**(.09)	.248***(.04)	.397***(.04)	.26***(.03)
2 years before	.155(.09)	.253***(.04)	.324***(.04)	.35***(.02)
1 year before	-.21(.13)	-.117*(.04)	.173**(.05)	.179***(.02)
Childbirth	-.261**(.09)	-.433***(.05)	-.416***(.06)	-.363***(.02)
1 year after	-.0707(.09)	-.208***(.05)	-.29***(.07)	-.26***(.03)
2 years after	-.0982(.07)	-.172***(.04)	-.172***(.05)	-.22***(.02)
3 years after	-.133(.08)	-.147***(.04)	-.24***(.05)	-.239***(.02)
4 years after	-.0337(.08)	-.0777(.04)	-.153**(.05)	-.215***(.02)
5 years after	-.0947(.06)	-.064(.03)	-.163***(.04)	-.154***(.02)
6 years after	-.228**(.07)	-.0109(.03)	-.193***(.05)	-.184***(.02)
7 years after	-.214*(.08)	-.0176(.03)	-.207***(.04)	-.146***(.02)
8 years after	-.259**(.08)	-.115*(.04)	-.237***(.05)	-.113***(.02)
9 years after	-.22**(.06)	-.129**(.04)	-.149***(.04)	-.144***(.02)
10 years after	-.247**(.07)	-.0958*(.04)	-.0526(.03)	-.0911***(.02)
...				
15 years after	-.0708(.06)	.0202(.04)	.049(.03)	.0298(.02)
...				
20 years after	-.0129(.06)	.101*(.03)	.111***(.03)	.146***(.02)
N : Person-years	5489	14951	22681	59519
n : Persons	512	1246	2230	4929

Source : author's calculation from LISA (2012) and T1 Files (1982-2013)

Note : clustered standard errors are in parentheses. Results are weighted with Statistics Canada sample weights

*** : $p < 0,01$; ** : $p < 0,05$; * : $p < 0,1$

Heterogeneity of the effects : by maternal birth cohort (Qc)

Dep. variable : T4	Quebec		
	1920 - 1956	1957 - 1966	1967 - 1988
5 years before	.319*(.14)	.238**(.07)	.0614(.08)
4 years before	.442***(.09)	.11(.08)	.248***(.06)
3 years before	.302*(.12)	.223***(.06)	.311***(.05)
2 years before	.335***(.08)	.213**(.06)	.295***(.05)
1 year before	-.00184(.17)	-.127(.06)	-.0924(.06)
Childbirth	-.13(.11)	-.241**(.07)	-.506***(.06)
1 year after	-.00913(.10)	-.0916(.07)	-.195**(.06)
2 years after	-.0718(.08)	-.0729(.05)	-.142*(.05)
3 years after	-.0605(.10)	-.122*(.06)	-.0847(.04)
4 years after	-.114(.09)	-.0437(.04)	.0368(.05)
5 years after	.0238(.08)	-.073(.04)	-.0112(.05)
6 years after	-.0532(.07)	-.081(.05)	.0483(.04)
7 years after	-.0682(.07)	-.122*(.05)	.0838(.04)
8 years after	-.24**(.08)	-.152*(.07)	-.00282(.05)
9 years after	-.245***(.07)	-.139*(.06)	-.00515(.05)
10 years after	-.27***(.07)	-.123*(.05)	.055(.05)
...			
15 years after	-.137(.07)	.0358(.04)	.0817(.05)
...			
20 years after	-.0309(.05)	.0425(.04)	-.0836(.13)
N : Person-years	5634	8357	6449
n : Persons	474	534	750

Source : author's calculation from LISA (2012) and T1 Files (1982-2013)

Note : clustered standard errors are in parentheses. Results are weighted with Statistics Canada sample weights

*** : $p < 0,01$; ** : $p < 0,05$; * : $p < 0,1$

Heterogeneity of the effects : by maternal birth cohort (RoC)

Dep. variable : T4	Rest of Canada		
	1920 - 1956	1957 - 1966	1967 - 1988
5 years before	.193**(.06)	.23***(.04)	.197***(.04)
4 years before	.299***(.06)	.239***(.04)	.232***(.06)
3 years before	.297***(.06)	.252***(.04)	.33***(.03)
2 years before	.251***(.06)	.302***(.03)	.419***(.02)
1 year before	.175*(.06)	.0702(.03)	.277***(.03)
Childbirth	-.277***(.06)	-.387***(.03)	-.36***(.04)
1 year after	-.462***(.08)	-.221***(.04)	-.216***(.04)
2 years after	-.39***(.07)	-.214***(.04)	-.123***(.03)
3 years after	-.272***(.05)	-.302***(.04)	-.154***(.03)
4 years after	-.311***(.06)	-.243***(.04)	-.101**(.03)
5 years after	-.349***(.05)	-.162***(.03)	-.05(.03)
6 years after	-.347***(.04)	-.158***(.03)	-.117*(.04)
7 years after	-.351***(.05)	-.141***(.03)	-.0679(.03)
8 years after	-.284***(.04)	-.171***(.03)	-.0314(.04)
9 years after	-.292***(.04)	-.153***(.03)	-.0265(.03)
10 years after	-.175***(.03)	-.0825**(.02)	-.00154(.03)
...			
15 years after	-.0703(.03)	.00455(.02)	.158***(.03)
...			
20 years after	.0494(.02)	.0922**(.02)	.116(.06)
N : Person-years	60760	13770	7670
n : Persons	6044	2760	1699

Source : author's calculation from LISA (2012) and T1 Files (1982-2013)

Note : clustered standard errors are in parentheses. Results are weighted with Statistics Canada sample weights

*** : $p < 0,01$; ** : $p < 0,05$; * : $p < 0,1$

Conclusion

- Motherhood has negative effects on women's wages
- Married and more educated mothers are subject to more severe penalties
- Our preliminary results suggest that there are important differences between Quebec and the rest of Canada
 - ▶ Difference in cultural and social norms in the two regions
 - ▶ Is there a link with the family-friendly policies in Quebec?