

**ONLINE APPENDIX  
MORE OR LESS UNMARRIED. THE IMPACT OF LEGAL SETTINGS  
OF COHABITATION ON LABOUR MARKET OUTCOMES**

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## A. EXAMPLE OF CHANGE IN THE DEFINITION OF PARTNERS

FIGURE A1. Definition of Spouse in the Family Property Act. Chapter F-6-3. (Saskatchewan, 1997)

“spouse” means either of two persons who:

- (a) at the time an application is made pursuant to this Act, is legally married to the other or is married to the other by a marriage that is voidable and has not been voided by a judgment of nullity;
- (b) has, in good faith, gone through a form of statutory marriage with the other that is void, where they are cohabiting or have cohabited within the two years preceding the making of an application pursuant to this Act; or
- (c) is cohabiting or has cohabited with the other person as spouses continuously for a period of not less than two years;

and includes:

- (d) a surviving spouse who continues or commences an application pursuant to section 30 and who was the spouse, within the meaning of clause (a), (b) or (c), of the deceased spouse on the day of the spouse's death; and
- (e) where the applicant is a spouse within the meaning of clause (b), the other party to the void marriage; (« *conjoint* »)

FIGURE A2. Definition of Spouse in the Family Maintenance Act. Chapter F-6-3. (Saskatchewan, 1990)

(l) “spouse” means a wife or husband and includes:

- (i) a party to a marriage that is voidable and has not been voided by a judgment of nullity or dissolution of marriage;
- (ii) for the purpose of proceedings to enforce or vary an order, a party to a marriage with respect to which an order for divorce, dissolution of marriage or decree of nullity has been made; or
- (iii) either of a man and woman who are not married to each other and have cohabited as husband and wife:
  - (A) continuously for a period of not less than three years; or
  - (B) in a relationship of some permanence, if they are the birth or adoptive parents of a child.

1990-91, c.F-6.1, s.2; 1993, c.5, s.3; 1994, c.27, s.24; 1997, c.3, s.3.

## B. DATA STRUCTURE AND LIMITS FOR ESTIMATION.

We use longitudinal data from the Survey on Labour Income Dynamic (SLID) provided by Statistics Canada, which is a household survey, with a rotating panel design, representative of the Canadian population. The SLID covers each year a sample of 17000 households of the population of the ten Canadian provinces with the exception of Indian reserves, residents of institutions and military barracks (less than 3 % of the population). Data have been collected each year from 1993 to 2011 from January to March. Five 6-years panels were collected (1993–1998; 1996–2001; 1999–2004; 2002–2007; 2005–2010), the sixth panel was terminated after 4 years (2007–2011). The data structure is described in table B1. Two provinces implemented a reform introducing the alimony regime during the period: Prince Edward Island in 1995 and Alberta in 1999 (in gray in the table). Two provinces implemented a reform introducing the marriage-like regime during the period: Saskatchewan in 1997 and Manitoba in 2004 (in light red in the table).

Our identification strategy is data intensive. We need to observe enough identifying cohabiting couples, that is: individuals observed before and after they become eligible for a protective regime. For couples formed before the reform, we need to observe them before and after the reform was passed. When a reform occurs on the first or the last year of a panel, individuals from this panel are not identifying observations. In this case, even if the panel is included in the estimation, the identification relies on individuals from one panel only, thus reducing the number of identifying individuals. This is the case for the introduction of the alimony regime in Prince Edward Island in 1995 (which is observed in panel 1993–1998 only), the alimony reform in Alberta in 1999 (which is observed panel 1996–2001 only) and the introduction of the marriage-like reform in Manitoba in 2004 (which is observed in panel 2002–2007 only). We carefully counted the number of identifying individuals. We found that some parameters were estimated on too few identifying individuals (less than 35 distinct individuals) and decided not to report them. In particular, we do not estimate reliably the parameter  $\gamma_a$  (effect of alimony reform in specification), and parameter  $\beta_a^{bef}$  (effect of alimony eligibility for couples eligible at the moment of the reform). Regarding

the identification of the impact of eligibility on couples eligible after the reform, identifying couples are those couples observed before and after the eligibility threshold. This is less restrictive, as it depends on the year of formation of the couple and the province.

TABLE B1. Data structure

year	93	94	95	96	97	98	99	00	01	02	03	04	05	06	07	08	09	10	11
P1																			
P2																			
P3																			
P4																			
P5																			
P6																			

TABLE B2. Sample size by province (men and women confounded)

	Observations
Newfoundland and Labrador	1056
Prince Edward Island	487
Nova-Scotia	1733
New-Brunswick	1801
Quebec	14266
Ontario	5634
Manitoba	1269
Saskatchewan	1340
Alberta	2002
British Columbia	2084
Total	31672

Note: Data are from the 1993-2011 SLID panel data. The sample consists in individuals living in cohabitation for less than 10 years, aged between 18 and 50 years old in Canada.

### C. DIFFERENCE-IN-DIFFERENCES DESIGN WITH VARIATION IN TREATMENT TIMING AND MULTIPLE TREATMENTS

In our setting, the treatment may be dynamic in two ways, which means that our estimation strategy partly relies two types of “forbidden comparison”. First, the *time-since-reform* dynamic: as time since reform goes by, couples become more aware of the protection induced by the cohabitation. Couples in an early treated province may not serve as a control group for couples in a late-treated province when it passed the reform. Second, the *time-since-eligibility* dynamic: couples may adjust progressively their behaviour when they become eligible for a protective cohabitation status. Already treated couples may not serve as a control group for not-yet treated couples when they become eligible. Controlling for the number of years of cohabitation of the couple may not be sufficient to sweep away this dynamic.

Our setting is complicated by the implementation of two cohabitation regimes. When several correlated treatments are implemented, the DID estimation of a treatment is contaminated by the other treatment (Goldsmith-Pinkham, Hull, and Kolesár, 2022). No estimation strategy has been proposed in the literature to fully address this issue. We follow de Chaisemartin and D’Haultfoeuille (2022) recommendations to estimate a dynamic treatment effect in presence of multiple treatments. To estimate the dynamic impact of eligibility to alimony regime and marriage-like regime (a dynamic version of eq. 3.2), we estimate the dynamic impact of a treatment, controlling for the other treatment. That is, we sequentially estimate: 1) the dynamic of the treatment effect  $D_{it}^a$  controlling for  $D_{it}^m$ ; 2) the dynamic of the treatment effect  $D_{it}^m$  controlling for  $D_{it}^a$ . The dynamic of the treatment effect is estimated using three types of estimators: a classic event-study estimation (labelled ES), the estimation introduced by Callaway and Sant’Anna (2021)<sup>1</sup> (labelled CS) and by De Chaisemartin and d’Haultfoeuille (2020) estimator (labelled DCDH). This solution is

<sup>1</sup>The `csdid` Stata command, implementing Callaway and Sant’Anna (2021) estimator, provides several options for estimation. In all estimations, we include not-yet treated units in the estimation, to strengthen our control group. In terms of method, we opted for an outcome regression DiD estimator based on ordinary least squares because it was running significantly faster and the results were not significantly different across methods.

not completely satisfying, as it estimates the dynamic of the treatment effect under the assumption that the effect of the other treatment is static. To estimate the dynamic impact of eligibility to alimony regime and marriage-like regime, differentiating the impact on “caught” and “non-caught” couples, the general idea is to reduce the problem to a series of single treatments on well-chosen treated-to-control comparisons and, on each of them, implementing an estimation strategy robust to the dynamic of the treatment effect (De Chaisemartin and d’Haultfoeuille, 2020; Callaway and Sant’Anna, 2021). The construction of the treated-to-control comparisons is driven by our discussion in section 3.1. The alimony treatment effect on “non-caught” couples is estimated by restricting the sample to couples formed after the reform in provinces implementing the alimony regime only and couples in Quebec. The marriage-like treatment effect on “caught” couples is estimated restricting the sample to couples “caught” by the marriage-like reform and couples eligible to the alimony regime in provinces implementing the alimony regime only. Restricting the sample to couples formed after the marriage-like reform to couples in Quebec allows us to estimate the marriage-like regime treatment effect on “non-caught” couples. For each treated-to-control comparison, we implement four types of estimation: a classic static DiD estimation (labelled Static (sep)<sup>2</sup>), a classic event-study estimator (labelled ES), De Chaisemartin and d’Haultfoeuille (2020) estimator (labelled DCDH), and Callaway and Sant’Anna (2021) estimator (labelled CS). The classic event-study estimation is the dynamic version of our main analysis, which is a static DiD analysis. It is subject to the ‘forbidden comparison’ issue presented above. Comparing the event-study estimates to the Callaway and Sant’Anna (2021) and De Chaisemartin and d’Haultfoeuille (2020) estimates, which are robust to the “forbidden comparison” issue, allows us to verify if the “forbidden comparison” issue is serious in our setting. We present all these estimates in addition to our main static estimate (labelled Static (joint)) on figure C1 and C2. Figure C1 compare the different estimates of the effect eligibility for the alimony regime, and of the effect of eligibility for the

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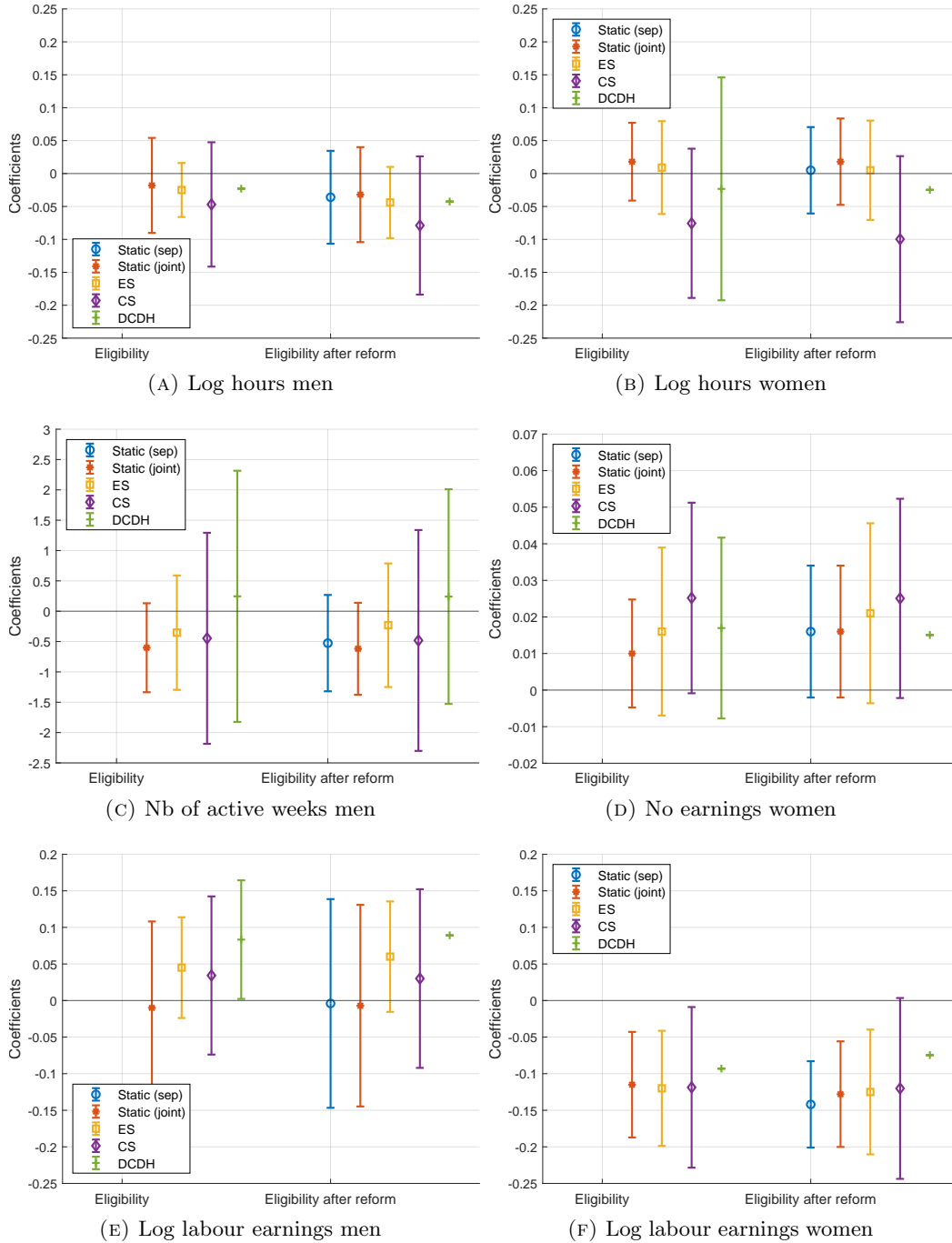
<sup>2</sup>Because we change the control group for each treatment, it may be different from the estimate of the main estimation that we call static (joint).

alimony regime on couples eligible after the reform only. Figure C2 compare the different estimates of the effect of the marriage-like reform, of the effect of eligibility for the marriage-like regime, of the effect of eligibility for the marriage-like regimes on couples eligible at the moment of the reform and of the effect of eligibility for the marriage-like regimes on couples eligible after the reform. While figures C1 and C2 only represent coefficients at period  $t=0$ , figures C3, C4 and C5 present the ES and CS coefficients at periods before and after the treatment<sup>3</sup> for the effect of the introduction of the marriage-like regime, for the effect of eligibility for the alimony regime and for the effect of eligibility for the marriage-like regime.

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<sup>3</sup>We only present coefficients at periods at which we observe more than 20 identifying units.

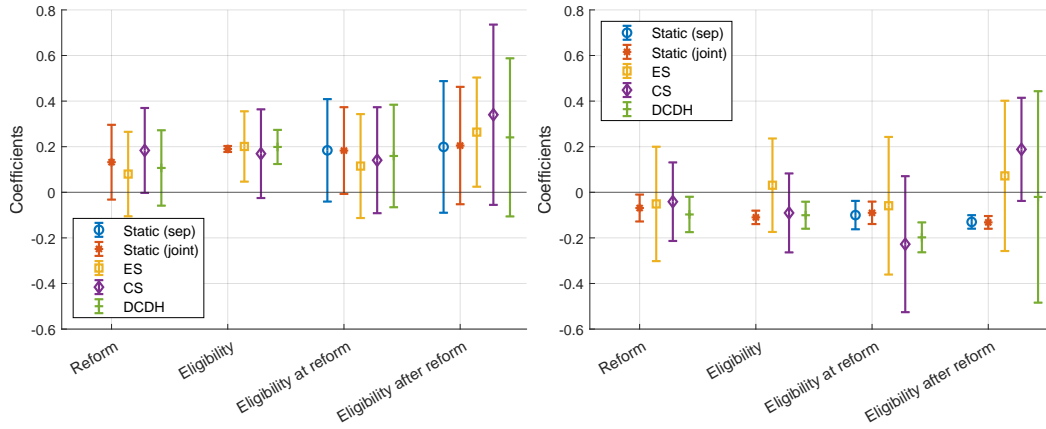
FIGURE C1. Effect of Alimony



Note: Data are from the 1993-2011 SLID panel data. The sample consists in individuals living in cohabitation for less than 10 years, aged between 18 and 50 years old in Canada. Coefficient estimates and 90% confidence intervals of effects computed with regular static TWFE estimation (Joint and sep, as detailed in the text), Event-Study estimation (ES), Callaway and Sant'Anna (2021) estimation (CS) and De Chaisemartin and D'Haultfoeuille (2020) estimation (DCDH). Standard errors are clustered at the province level. All regressions include individual fixed effects, relationship duration and year fixed effects, a dummy indicating having a child, year dummy interacted with a dummy for having a child, relationship duration fixed effects with an interaction for having a child, province fixed effects interacted with a dummy for having a child. We use SLID longitudinal weights. Log hours gives the logarithm of the number of working hours per year; Active weeks gives the number of weeks where the individual is either working or unemployed; No earning is a binary variable indicating whether the individual had no labour income all year. Log labour earnings gives the logarithm of fiscal labour earnings in constant Canadian dollars of 2002.

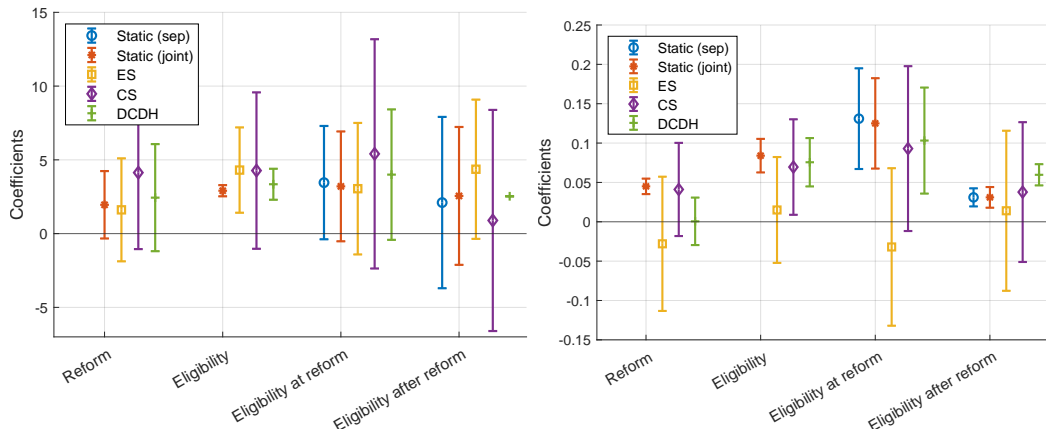


FIGURE C2. Effect of Marriage-like



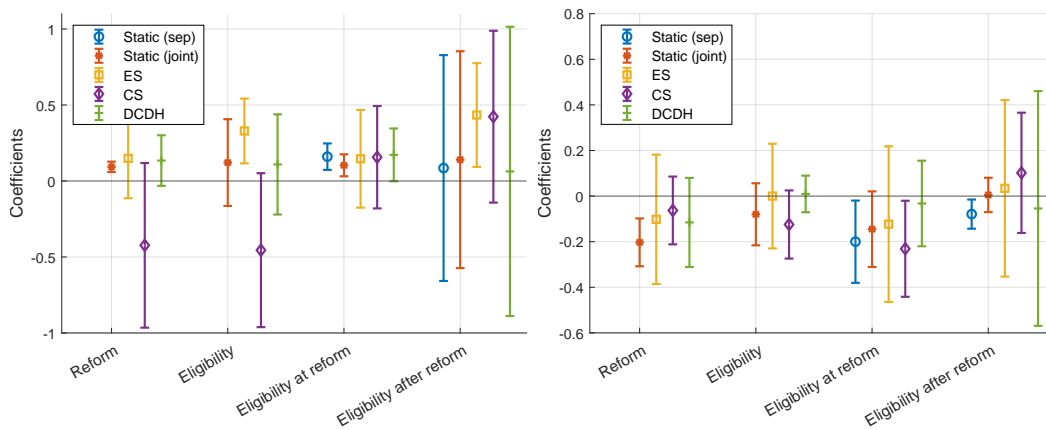
(A) Log hours men

(B) Log hours women



(C) Nb of active weeks men

(D) No earnings women

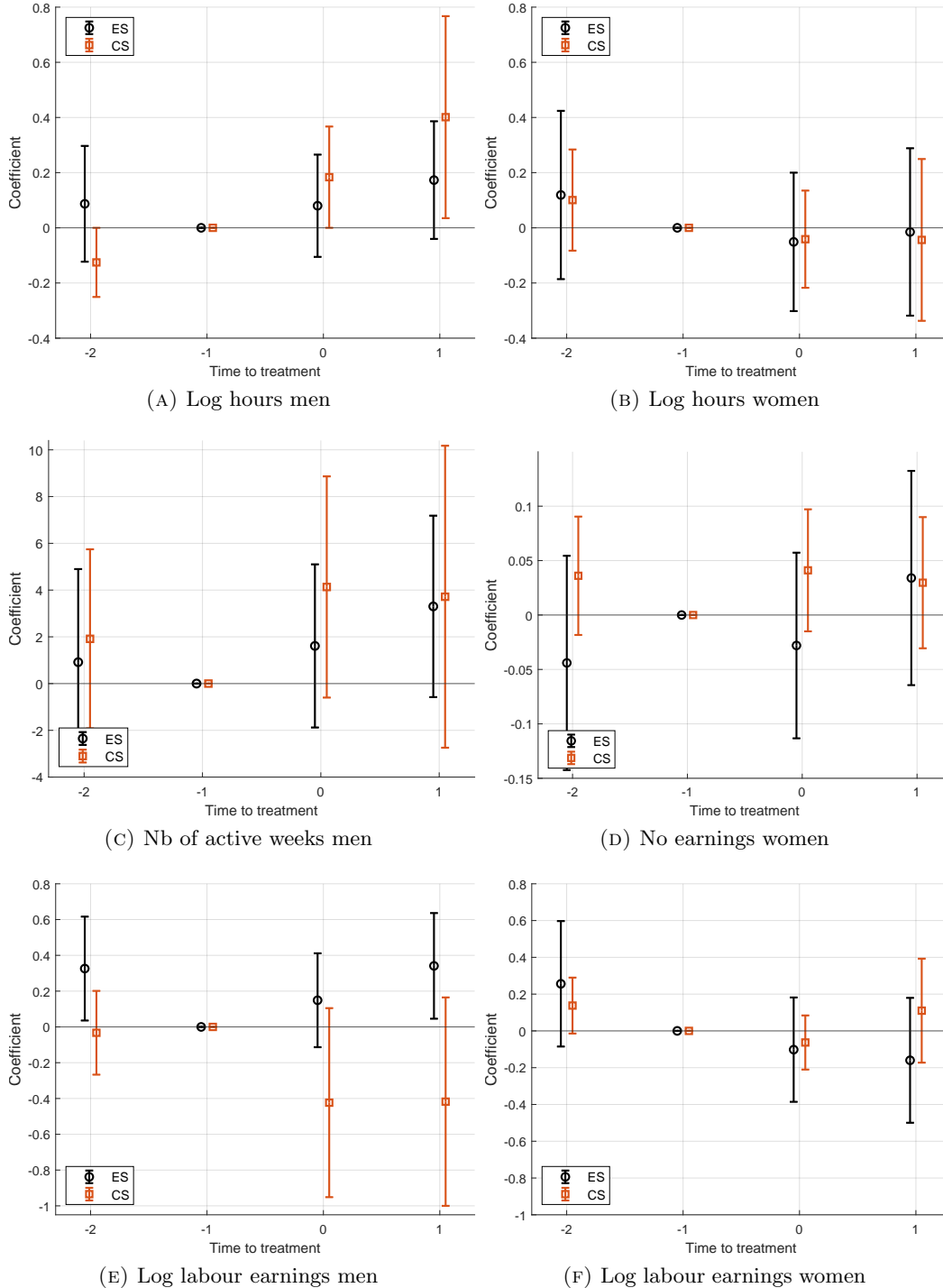


(E) Log labour earnings men

(F) Log labour earnings women

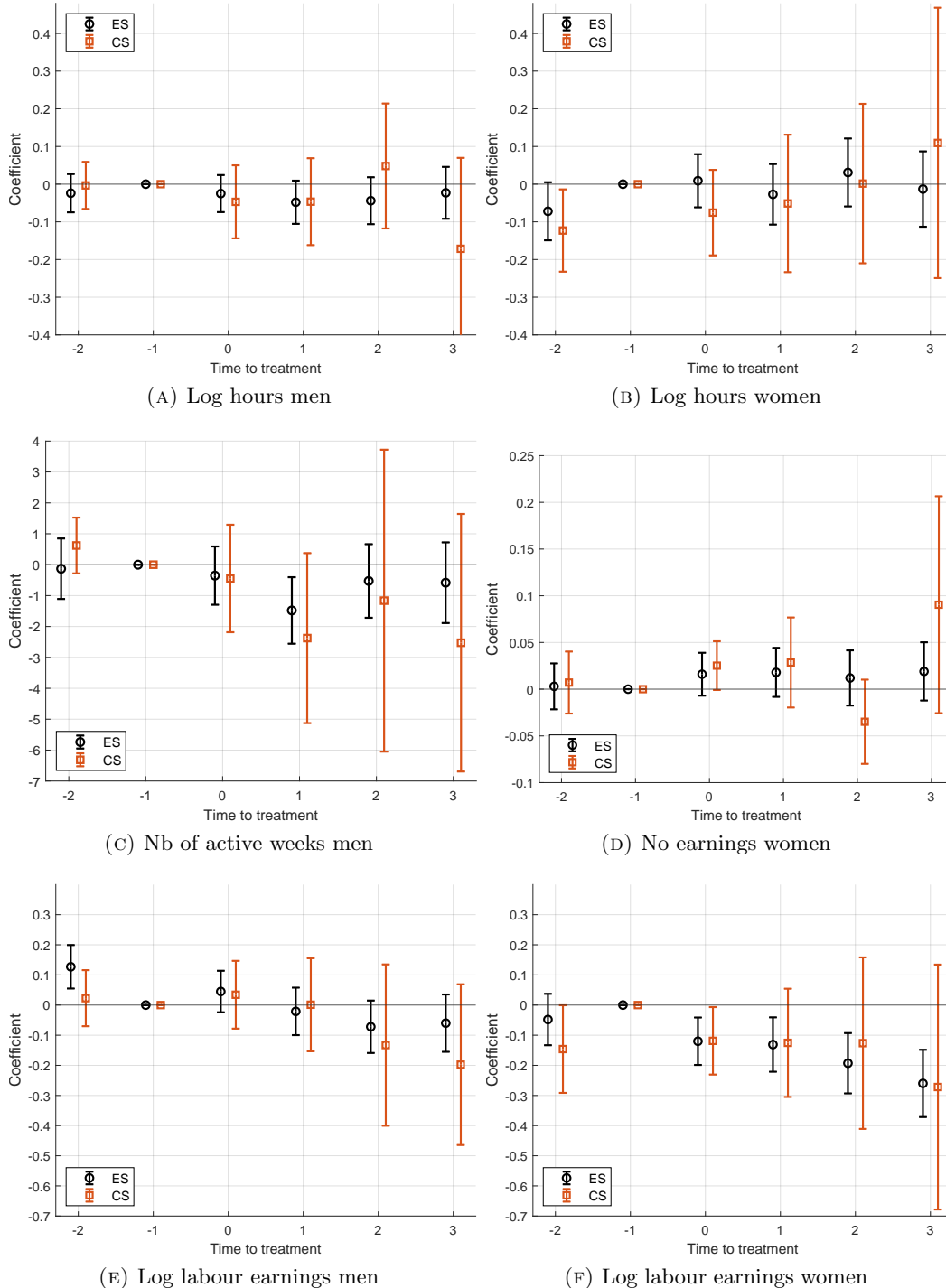
Note: Data are from the 1993-2011 SLID panel data. The sample consists in individuals living in cohabitation for less than 10 years, aged between 18 and 50 years old in Canada. Coefficient estimates and 90% confidence intervals of effects computed with regular static TWFE estimation (Joint and sep, as detailed in the text), Event-Study estimation (ES), Callaway and Sant'Anna (2021) estimation (CS) and De Chaisemartin and D'Haultfoeuille (2020) estimation (DCDH). Standard errors are clustered at the province level. All regressions include individual fixed effects, relationship duration and year fixed effects, a dummy indicating having a child, year dummy interacted with a dummy for having a child, relationship duration fixed effects with an interaction for having a child, province fixed effects interacted with a dummy for having a child. We use SLID longitudinal weights. Log hours gives the logarithm of the number of working hours per year; Active weeks gives the number of weeks where the individual is either working or unemployed; No earning is a binary variable indicating whether the individual had no labour income all year. Log labour earnings gives the logarithm of fiscal labour

FIGURE C3. Effect of the Marriage-like reform



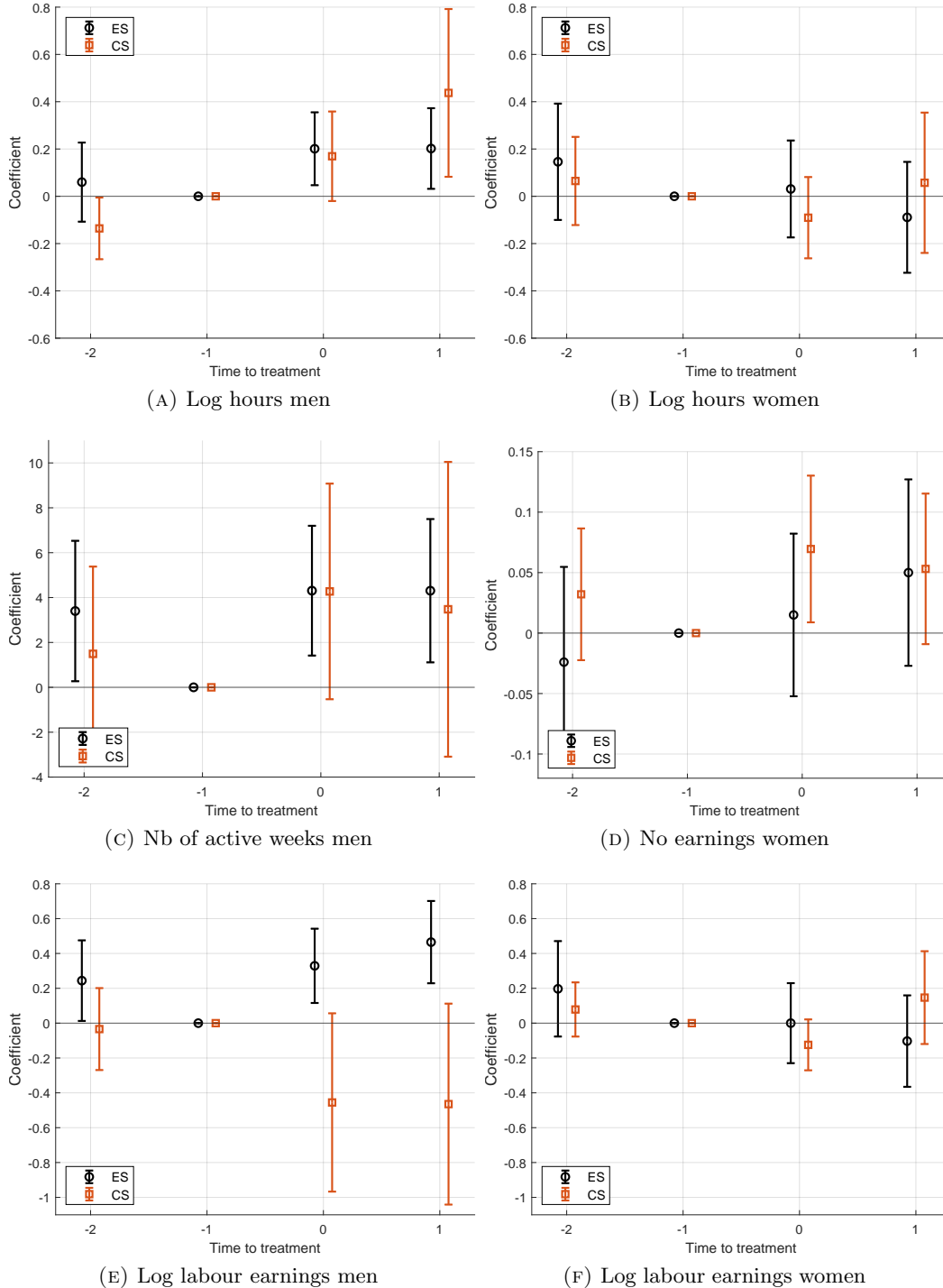
Note: Data are from the 1993-2011 SLID panel data. The sample consists in individuals living in cohabitation for less than 10 years, aged between 18 and 50 years old in Canada. Coefficient estimates and 90% confidence intervals of effects computed with regular Event-Study estimation (ES), and Callaway and Sant'Anna (2021) estimation (CS). Standard errors are clustered at the province level. All regressions include individual fixed effects, relationship duration and year fixed effects, a dummy indicating having a child, year dummy interacted with a dummy for having a child, relationship duration fixed effects with an interaction for having a child, province fixed effects interacted with a dummy for having a child. We use SLID longitudinal weights. Log hours gives the logarithm of the number of working hours per year; Active weeks gives the number of weeks where the individual is either working or unemployed; No earning is a binary variable indicating whether the individual had no labour income all year. Log labour earnings gives the logarithm of fiscal labour earnings in constant Canadian dollars of 2002.

FIGURE C4. Effect of eligibility for the alimony regime



Note: Data are from the 1993-2011 SLID panel data. The sample consists in individuals living in cohabitation for less than 10 years, aged between 18 and 50 years old in Canada. Coefficient estimates and 90% confidence intervals of effects computed with regular Event-Study estimation (ES), and Callaway and Sant'Anna (2021) estimation (CS). Standard errors are clustered at the province level. All regressions include individual fixed effects, relationship duration and year fixed effects, a dummy indicating having a child, year dummy interacted with a dummy for having a child, relationship duration fixed effects with an interaction for having a child, province fixed effects interacted with a dummy for having a child. We use SLID longitudinal weights. Log hours gives the logarithm of the number of working hours per year; Active weeks gives the number of weeks where the individual is either working or unemployed; No earning is a binary variable indicating whether the individual had no labour income all year. Log labour earnings gives the logarithm of fiscal labour earnings in constant Canadian dollars of 2002.

FIGURE C5. Effect of eligibility for the marriage-like regime



Note: Data are from the 1993-2011 SLID panel data. The sample consists in individuals living in cohabitation for less than 10 years, aged between 18 and 50 years old in Canada. Coefficient estimates and 90% confidence intervals of effects computed with regular Event-Study estimation (ES), and Callaway and Sant'Anna (2021) estimation (CS). Standard errors are clustered at the province level. All regressions include individual fixed effects, relationship duration and year fixed effects, a dummy indicating having a child, year dummy interacted with a dummy for having a child, relationship duration fixed effects with an interaction for having a child, province fixed effects interacted with a dummy for having a child. We use SLID longitudinal weights. Log hours gives the logarithm of the number of working hours per year; Active weeks gives the number of weeks where the individual is either working or unemployed; No earning is a binary variable indicating whether the individual had no labour income all year. Log labour earnings gives the logarithm of fiscal labour earnings in constant Canadian dollars of 2002.

D. ADDITIONAL TABLES

TABLE D1. Type of relationship at couple formation: probability of being in cohabitation vs. married

	(1)	(2)	(3)	(4)
Alimony reform ( $\hat{\alpha}_a$ )	-0.075	-0.024	-0.071	-0.034
s.e. (CRVE)	(0.008)	(0.018)	(0.012)	(0.016)
p-value (CRVE)	[0.00]	[0.23]	[0.00]	[0.06]
p-value (EDF)	{0.03}	{0.64}	{0.39}	{0.42}
p-value (WCRB)	{0.21}	{0.39}	{0.39}	{0.29}
Marriage-like reform ( $\hat{\alpha}_m$ )	-0.015	-0.016	-0.013	-0.020
s.e. (CRVE)	(0.024)	(0.019)	(0.026)	(0.018)
p-value (CRVE)	[0.56]	[0.44]	[0.64]	[0.29]
p-value (EDF)	{0.72}	{0.67}	{0.72}	{0.56}
p-value (WCRB)	{0.72}	{0.65}	{0.72}	{0.50}
N	16188	16188	12660	12660
$R^2$	0.191	0.191	0.076	0.076
Linear trend by province	No	Yes	No	Yes
Includes Quebec	Yes	Yes	No	No

Note: Data are from the 1993-2011 SLID panel data. The sample consists in couples in 0 or 1 year after couple formation, aged between 18 and 50 years old in Canada. All regressions include controls for sex of the respondents, dummy for having a child, sex of the respondent interacted with dummy for having a child, year fixed effect, province fixed effect, educational attainment, age of respondent. We use SLID longitudinal weights. Standard errors are clustered at the province level and are reported in parenthesis. Cluster p-value are reported in brackets. P-values accounting for Effective degree of freedom are reported in italic. Wild cluster bootstrap p-values are reported in braces.

TABLE D2. Impact of the eligibility for a protective regime of cohabitation on couples always observed with children

	Men			Women		
	Log of Nb. of hours worked	Nb. of active weeks	Log of Labour earnings	Log of Nb. of hours worked	No earning	Log of Labour earnings
Alimony eligibility ( $\hat{\beta}_a$ )	-0.010 (0.079) [0.91]	2.503 (1.076) [0.05]	-0.040 (0.070) [0.59]	0.037 (0.055) [0.52]	-0.024 (0.033) [0.48]	-0.004 (0.060) [0.96]
Marriage-like eligibility ( $\hat{\beta}_m$ )	0.186 (0.101) [0.10]	3.461 (2.299) [0.17]	-0.007 (0.043) [0.87]	-0.105 (0.101) [0.33]	0.119 (0.025) [0.00]	-0.153 (0.154) [0.35]
N	5511	6024	5520	5964	7701	6050

Data: Statistics Canada. Survey of Labour and Income Dynamics (SLID) 1993-2011.

Notes:

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