

# Labor Supply Spillovers Within the Household

## Lessons from a Mandatory Workweek Reduction

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OECD, 18 November 2010

- Do own working hours respond to spouse's working hours?
- Does own value of leisure depend on spouse's leisure?

Complementarities in labor supply and leisure time are key policy issue

- Targeted reforms may have an impact on individual behavior well beyond targeted population
  - Welfare reforms, taxation, worktime regulations etc. affect labor supply of treated individuals. What about labor supply of their spouses/neighbors/colleagues/social contacts...?
- Labor supply spillovers as a source of misperception of the true effects of labor market policy
- Labor supply spillover also related to the micro/macro elasticity puzzle
  - Small estimated 'micro' elasticity, but strong 'macro' elasticity (Alesina Glasear Sacerdote, 2005, versus Prescott, 2004).
- This paper investigates labor supply spillovers within households
  - presumably stronger ties

## Cross-hour effects hard to identify

- Labor supply of spouses typically jointly determined.
- Need instruments affecting spousal labor supply, that are uncorrelated with other potential determinants of own labor supply.
- Even so, changes in spousal labor supply are in most cases associated with changes in household income. Thus own labor supply response may encompass both 'cross-hour' and 'cross-earnings' effects.
- Pure cross-hour effects identified when changes in spousal labor supply are not associated with changes in household income

## This paper

- Exploits French workweek reduction of the late 1990s
  - a reform which generated independent variation in spousal working hours, while keeping monthly earnings constant.
- We investigate what happens at labor supply of spouses of treated employees.
- We use firm level information on implementation of the shorter workweek to exploit within household variation in treatment.
  - variation across treated-nontreated as well as variation in timing of treatment

- Interdependencies in spousal labor supply
  - Joint retirement decisions (Hurd, 1988, Gustman and Steinmeier, 2000)
  - Added worker effect (Lundberg, 1988)
  - Response to spouse taxation (Gelber, 2010)
- Broader literature on spillover effects on female labor supply
  - Influence of sisters and sisters-in-law (Newmark and Postelwaite, 1998)
  - Influence of mothers-in-law (Fernández Fogli and Olivetti, 2004)
  - Influence of close neighbors (Maurin and Moschion, 2009)
- Worksharing policy evaluation
  - Hunt (1998), Crepon and Kramarz (2002), Askenazy (2008) Estevao and Sa (2008), Wasmer (2009)

# Institutional setting - background

- Early 1990s: 39 hours legal workweek; 25% overtime premium; 130 maximum overtime hours per worker per year.
- 1996. Robien law : cut in social security contributions for firms signing a 35-hours agreement (about -10% in labor costs for 6 years).
  - Legal workweek remains at 39 hours.
  - Very limited impact (less than 2% of the workforce)
- 1997. Unexpected come back of socialists to power
  - Radical worksharing reform: nearly 10% reduction in legal workweek (39 to 35h)
  - Two basic slogans:
    - *Travailler moins pour travailler tous* (work less in order to work all)
    - *35 heures payées 39* (35 hours paid 39)
  - Workweek reduction implemented in two steps : Aubry laws.

# Institutional setting - Aubry Laws

- June 1998, **Aubry I** law sets legal workweek at 35h (keeping earnings constant):
  - by January 2000 in large firms (+20 employees) and by January 2002 in small firms.
  - 25% overtime premium, max 130 overtime hours per worker per year.
  - Fiscal incentives for firms who comply before the deadline by signing a workweek reduction agreement with the unions
- January 2000, **Aubry II** law eases transition to the shorter workweek:
  - slight redefinition of working time (exclude 'unproductive breaks', worktime limit on annual rather than weekly basis - max 1600 hours per year)
  - 2-year transitional phase with 10% overtime premium
  - scrap max 130 overtime hours
- May 2002: conservative party back in power; workweek reduction interrupted.

# Institutional setting - summary

- 35-hour legal workweek never fully implemented, especially in small private firms
- But large coverage nevertheless:
  - about 350,000 agreements signed, covering about 10 million employees
  - roughly one third of employees covered between 1998 and 2002.
- Key features
  - sizeable reduction in legal workweek, no intended impact on earnings
  - reform unexpected
  - interrupted, only a fraction of firms and workers are affected
  - rich within household variation: treated/nontreated; timing of treatment

- Individual level data : French Labor Force Surveys (LFS), 1994-2009.
  - Annual surveys for 1994-2002, first quarterly survey for 2003-2009.
  - For each household member aged 15+, information on: demographics, employment status, occupation, weekly hours, monthly earnings, establishment identifier (SIRET).
- Match individual data with establishment level information from the “DARES-URSSAF” dataset
  - administrative database collected by French Ministry of Labor, containing detailed information on all firms who signed a 35-hour agreement, with exact dates of signing and implementation.
  - nonmatch rate slightly below 20% (presumably very small firms)

Married individuals aged 18-65, whose spouse is an employee.

- 189,894 males - married to female employees, 31% of them treated
- 236,802 females - married to male employees, 36% of them treated

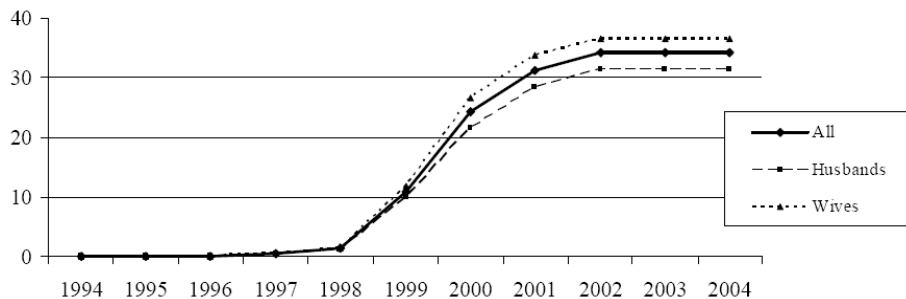
# Within household treatment patterns

<b>Sample: Working Men</b>	Wife treated	Wife nontreated
Nontreated	54.2	71.0
Treated	45.8	29.0
	<i>Same year</i>	-
	<i>Other year</i>	-
Total	100	100

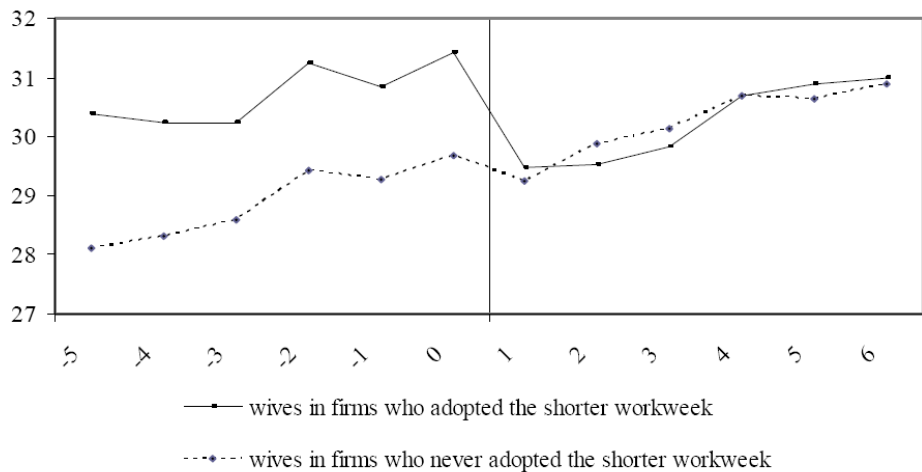
  

<b>Sample: Working Women</b>	Husband treated	Husband nontreated
Nontreated	58.1	73.2
Treated	41.9	26.8
	<i>Same year</i>	-
	<i>Other year</i>	-
Total	100	100

# Timing of implementation

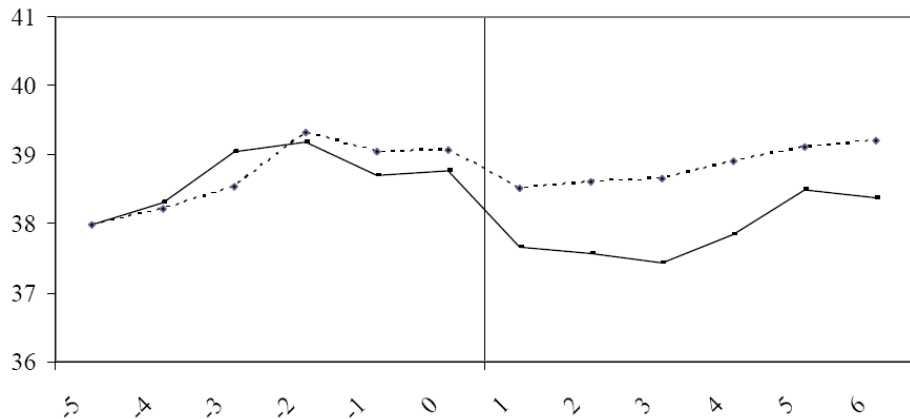


## Direct effect: Wives hours worked, by own firm status

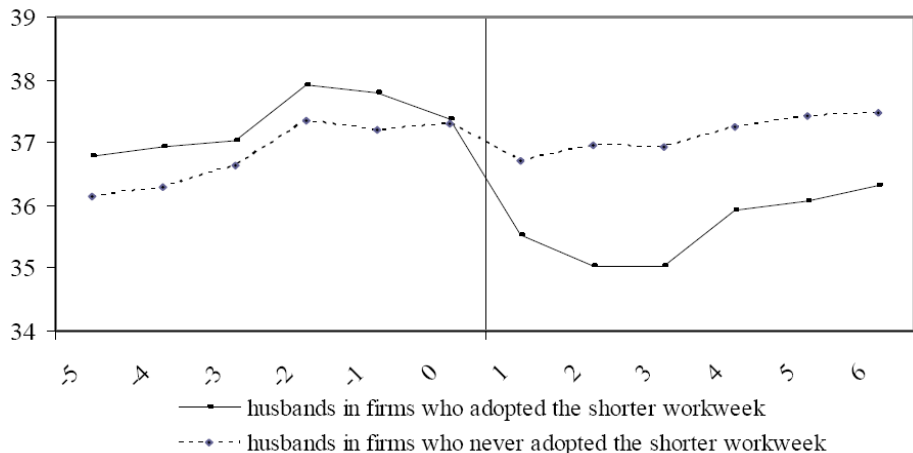




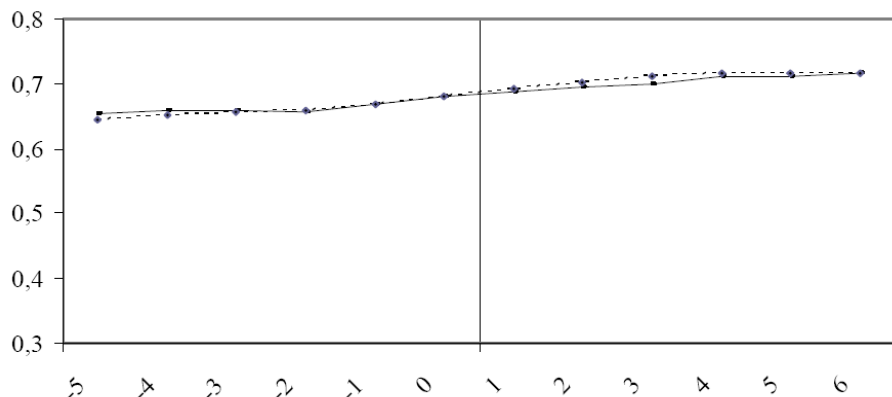
# Cross effect: Husbands hours worked, by wife firm status



# Direct effect: Husbands hours worked, by own firm status



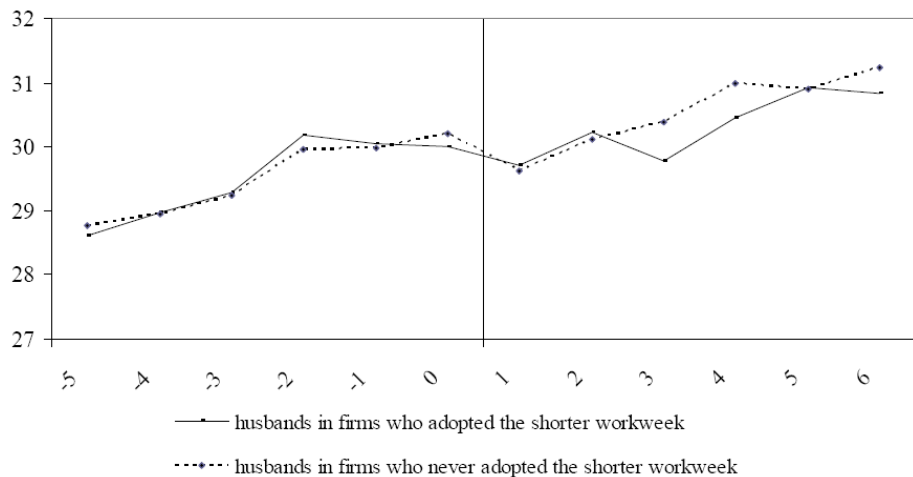
# Cross effect: Wives employment, by husband firm status



—■— husbands in firms who adopted the shorter workweek

- - -◆- - - husbands in firms who never adopted the shorter workweek

## Cross effect: Wives hours, by husband firm status



- Recall: sample consists of married individuals whose spouse is an employee
- Consider **spouses** ( $\hat{\cdot}$ )
  - $\hat{H}_{it}$ : hours worked by spouse  $i$  at time  $t$
  - $\hat{A}_i$ : dummy indicating status of spouse firm  
( $\hat{A}_i = 1$ : ever adopted shorter workweek;  $\hat{A}_i = 0$ : never adopted)
  - $\hat{P}_{it}$ : period post-agreement

$$\hat{H}_{it} = \alpha_0 \hat{A}_i + \alpha_1 (\hat{A}_i * \hat{P}_{it}) + d_t + \beta \hat{X}_{it} + \varepsilon_{it}$$

- Same specification for (log) earnings

- Consider (reduced form) response of **main respondent** to spouse treatment
- Employment versus nonemployment

$$E_{it} = \gamma_0 \hat{A}_i + \gamma_1 \hat{A}_i * \hat{P}_{it} + d_t + \beta X_{it} + \varepsilon_{it}$$

- Hours worked (conditional on working)

$$H_{it} = \alpha_0 A_i + \alpha_1 A_i * P_{it} + \gamma_0 \hat{A}_i + \gamma_1 \hat{A}_i * \hat{P}_{it} + d_t + \beta X_{it} + \varepsilon_{it}$$

- Identification of effect of interest ( $\gamma_1$ ) from variation in treatment across spouses ( $A_i$  versus  $\hat{A}_i$ ), and/or variation in timing for treated individuals ( $P_{it}$  versus  $\hat{P}_{it}$ )

# Results: Direct effects for Wives

	Weekly hours		Monthly earnings	
	(1)	(2)	(3)	(4)
$\hat{A}_i$	1.36*** (0.10)	1.01*** (0.10)	0.087*** (0.004)	0.064*** (0.04)
$\hat{A}_i * \hat{P}_{it}$	-1.81*** (0.13)	-1.91*** (0.13)	0.002 (0.006)	0.002 (0.006)
Other controls	no	yes	no	yes
No. Obs.	189894	189894	160046	160046

# Results: Direct effects for Husbands

	Weekly hours		Monthly earnings	
	(1)	(2)	(3)	(4)
$\hat{A}_i$	-0.28*** (0.08)	-0.34*** (0.08)	0.042*** (0.003)	0.013*** (0.003)
$\hat{A}_i * \hat{P}_{it}$	-1.94*** (0.11)	-1.92*** (0.11)	0.017*** (0.004)	0.007* (0.004)
Other controls	no	yes	no	yes
No. Obs.	236802	236802	201559	201559

## Direct effects: summary

- Employees in firms that signed a 35-hour agreement had a reduction in their actual workweek of about 2 hours.
- This is lower than what could be expected from Aubry I (39-35)
  - slight redefinition of working time (unproductive breaks excluded from working time)
  - shorter worktime could be implemented at the annual level, eg more vacation (LFS run in March, unlikely to be vacation season)
  - overtime, paid or unpaid

# Results: Cross effects for Husbands

	Employment		Weekly hours   $H_{it} > 0$		
	(1)	(2)	(3)	(4)	(5)
$A_i$	—	—	-0.05 (0.11)	-0.05 (0.11)	-0.10 (0.12)
$A_i * P_{it}$	—	—	-1.94*** (0.14)	-1.97*** (0.14)	-2.03*** (0.16)
$\hat{A}_i$	0.0062*** (0.0022)	0.0043*** (0.0021)	-0.11 (0.10)	-0.10 (0.10)	-0.12*** (0.11)
$\hat{A}_i * \hat{P}_{it}$	-0.0037 (0.0031)	-0.0037 (0.0029)	-0.44*** (0.14)	-0.47*** (0.14)	-0.52*** (0.16)
Other conts.	no	yes	no	yes	yes
No. Obs.	167460	167460	167460	167460	156392

# Results: Cross effects for Wives

	Employment		Weekly hours   $H_{it} > 0$		
	(1)	(2)	(3)	(4)	(5)
$A_i$	—	—	1.76*** (0.11)	1.75*** (0.11)	1.57*** (0.12)
$A_i * P_{it}$	—	—	-1.86*** (0.16)	-1.86*** (0.16)	-1.88*** (0.18)
$\hat{A}_i$	0.0164*** (0.0027)	0.0148*** (0.0027)	-0.24*** (0.10)	-0.33*** (0.11)	-0.41*** (0.11)
$\hat{A}_i * \hat{P}_{it}$	-0.0032 (0.0037)	-0.0036 (0.0037)	<b>0.12</b> <b>(0.14)</b>	<b>0.08</b> <b>(0.14)</b>	<b>0.11</b> <b>(0.15)</b>
Other conts.	no	yes	no	yes	yes
No. Obs.	236802	236802	160689	160689	150371

# A robustness test

- Previous estimates exploit two sources of variation
  - in treatment status
  - in timing of treatment for the treated
- We replicate results using each source of variation separately
- Our variable of interest:

$$\widehat{A}_i * \widehat{P}_{it} = \widehat{A}_i * (t > 2002) + \widehat{A}_i * (1998 \leq t \leq 2002) * \widehat{P}_{it}$$

- the 1st term exploits variation between treated and nontreated
- the 2nd term exploits variation in timing of treatment for the treated (note  $\widehat{P}_{it} = 1$  for any  $t > 2002$  and  $\widehat{P}_{it} = 0$  for any  $t < 1998$ )

# A robustness test: Results

	Wife's hours	Wife's earn.	Husband's hours
$A_i$			-0.05 (0.11)
$A_i * P_{it}$			-1.96*** (0.014)
$\hat{A}_i$	1.19*** (0.14)	0.006 (0.005)	0.02 (0.13)
$\hat{A}_i * (t > 2002)$	-1.87*** (0.20)	0.009 (0.011)	-0.49*** (0.020)
$\hat{A}_i * (1998 \leq t \leq 2002)$	-0.47*** (0.20)	-0.002 (0.007)	0.27 (0.20)
$\hat{A}_i * (1998 \leq t \leq 2002) * \hat{P}_{it}$	-1.84*** (0.20)	-0.005 (0.007)	-0.42*** (0.020)
other controls	yes	yes	yes
No. Obs.	167460	141623	167460

# Heterogeneous effects (I)

- Why do we observe significant cross-hour effects for men but not for women?
- Must be differences in utility functions and/or constraints
- Possible explanation: some men have less constrained workweeks and have more control on their working hours
  - around 30% of men work 45+ hours per week, versus 9% of women
  - men more likely to work overtime, thus more leeway to reduce one's working hours
  - women are more likely to work at the legal limit
- Consider men who are managers or professionals (*cadres*):
  - 51% of managers and professionals work 45+ hours per week, versus 24% among other workers
- One may expect cross-hour effects to be stronger for managers and professionals than for other husbands

# Heterogeneous effects (I): Results

## Sample: Men who are managers or professionals

	Wife's hours	Husband's hours	Husband's hours $\geq 45$
$\hat{A}_i$	1.26*** (0.28)	0.34 (0.31)	0.0051 (0.0094)
$\hat{A}_i * \hat{P}_{it}$	-2.32*** (0.36)	-0.92** (0.41)	-0.035*** (0.012)
other controls	yes	yes	yes
No. Obs.	30432	30432	30432

## Sample: Other men

	Wife's hours	Wife's earnings	Husband's hours $\geq 45$
$\hat{A}_i$	0.94*** (0.11)	-0.08 (0.11)	-0.002 (0.003)
$\hat{A}_i * \hat{P}_{it}$	-1.72*** (0.15)	-0.32** (0.15)	-0.007* (0.004)
other controls	yes	yes	yes
No. Obs.	137028	137028	137028

## Heterogeneous effects (II)

- It has been argued the interdependence of spouses' labour supply decisions is stronger when they have young children.
- Children as a “jointly consumed commodity” (Lundberg, 1987), which may increase the value of time spent together.
- It may also be the case that spousal complementarities in home production becomes more important when there is a young child at home.
- We replicated results separately for households with at least one child aged 0-6 and other households

# Heterogeneous effects (II): Results

<b>Sample: Men with 1+ child aged 0-6</b>			
	Wife's hours	Husband's hours	Husband's hours $\geq 45$
$\hat{A}_i$	0.48** (0.22)	0.02 (0.21)	0.001 (0.006)
$\hat{A}_i * \hat{P}_{it}$	-1.30*** (0.31)	-0.78*** (0.30)	-0.027*** (0.009)
other controls	yes	yes	yes
No. Obs.	39468	39468	39468
<b>Sample: Other men</b>			
	Wife's hours	Wife's earnings	Husband's hours $\geq 45$
$\hat{A}_i$	1.17*** (0.11)	-0.13 (0.12)	-0.010*** (0.003)
$\hat{A}_i * \hat{P}_{it}$	-2.08*** (0.16)	-0.37** (0.16)	-0.004 (0.005)
other controls	yes	yes	yes
No. Obs.	127992	127992	127992

- Previous regressions show the effects of worktime regulations in spousal firm on own labor supply
- Possible interpretation as reduced-form estimates, in which own labor supply responds to spousal firm worktime regulation via spousal labour supply (Pollack, 1969, Lundberg, 1987).
- Estimate cross hour elasticity using worktime regulation as IV for spousal labor supply
- Identifying assumption: worktime regulation in wives' firms affect husbands' hours only via wives' hours (and vice versa).

$$H_{it} = \alpha_0 A_i + \alpha_1 A_i * P_{it} + \gamma_1 \widehat{H}_{it} + d_t + \beta X_{it} + \varepsilon_{it}$$

- $\widehat{A}_i$  and  $\widehat{A}_i * \widehat{P}_{it}$  used as IV for  $\widehat{H}_{it}$

## Sample: Working men

	All	Manager&profs.	Others	Kids 0-6	No kids 0-6
$\hat{H}_{it}$	0.24*** (0.07)	0.39*** (0.16)	0.18** (0.08)	0.58*** (0.23)	0.18*** (0.07)

## Sample: Working women

	All	Manager&profs.	Others	Kids 0-6	No kids 0-6
$\hat{H}_{it}$	-0.04 (0.07)	0.10 (0.24)	-0.09 (0.07)	-0.22 (0.15)	0.02 (0.08)

- French reduction in legal workweek is useful natural experiment to estimate cross-hour effects
- We find evidence of cross-hour effects, that are highly asymmetrical and heterogenous
- Positive and significant for husbands but negligible for wives.
- Larger for managers and professionals than for other husbands
- Larger for father of young kids than for other husbands
- Lesson for policy: existing evaluations of worktime regulations or other targeted labor reforms are likely to underestimate the effect of these reforms on male labour supply
  - and possibly on time spent by parents with their young children.

Table A2: Direct Effects of the Shorter Workweek on Hours Worked and Earnings.  
Subsample of employed individuals.

Panel A		Direct Effects on Wives			
		Hours Worked ( <i>YS</i> )		Earnings ( <i>WS</i> )	
	(1)	(2)	(3)	(4)	
<i>AS</i>	1.34 (0.10)	0.99 (0.10)	0.086 (0.004)	0.064 (0.004)	
<i>AS*post</i>	-1.80 (0.14)	-1.89 (0.14)	0.002 (0.006)	-0.002 (0.006)	
Add. Controls	no	yes	no	yes	
No. Observations	167 460	167 460	141 623	141 623	

Panel B		Direct Effects on Husbands			
		Hours Worked ( <i>YS</i> )		Earnings ( <i>WS</i> )	
	(1)	(2)	(3)	(4)	
<i>AS</i>	-0.28 (0.09)	-0.32 (0.09)	0.035 (0.003)	0.009 (0.003)	
<i>AS*post</i>	-2.12 (0.13)	-2.08 (0.13)	0.013 (0.005)	0.004 (0.005)	
Add. Controls	no	yes	no	yes	
No. Observations	160 689	160 689	135 729	135 729	

Notes: the sample includes employees who have a spouse, whose spouses are employed. Same controls as in Table 2.