Coordination of Hours within the Firm

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Introduction

- Teamwork has become a mainstay in the organization of work (Delarue et al., 2008)
- More than 60% of Fortune 1000 corporations engage $>$ 25% of their workforce in teams (Shaw and Lazear, 2007)
- Coworkers spend a greater share of working time interacting (Cross and Gray, 2013)
- Cooperation involves coordination of hours among coworkers
- Little evidence on worker behaviour or firm performance under hours coordination

The Main Idea

- Firms gain in productivity from coordinating hours
- Coworkers want to work a different number of hours
- Part 1: Firm finds a compromise and pays compensating differentials
  - Only more productive find it optimal to coordinate
- Part 2: If desired hours of one group of workers change (e.g. tax change, health shock, children), spillovers on hours of coworkers
- Part 2: Labor supply responses of coordinated workers are attenuated

This Paper

In this study we assess:

- Part 1 (observational): how coordination of hours predicts wage differentials across firms
- Part 2 (quasi-experimental): how coordination affects the labor supply elasticity to tax changes

Motivation

1. Firm-based mechanism that amplifies/attenuates policy changes
    - Relevant to policies that affect preferences of a part of workforce in a firm (e.g. older workers, workers with children)
    - Diff in Diff gives downwards biased estimates of the labor supply elasticity
    - Spillovers imply extra tax efficiency costs
2. Coordination can link wage and productivity differentials across firms
    - Wage differentials correlate with productivity differentials
      (e.g. Card et al., 2016; Barth et al., 2014; Faggio et al., 2010)

Literature

1. Wage and productivity differentials across firms:
   - Wages: e.g. Card et al. (2016); Card et al. (2013); Abowd et al. (1999)
   - Productivity differentials: e.g. Syverson (2011)
2. Effects of taxation on labor supply with constraints on hours
   - Battisti (2015); Best (2014); Chetty et al. (2011); Kahn and Lang (1991)
3. Compensating wage differentials and hours
   - e.g. Chen and Rossi (2017); Mas and Pallais (2016); Goldin and Katz (2012); Bertrand, Goldin and Katz (2010); Hamermesh (1999); Abowd and Ashenfelter(1981); Rosen (1986)
4. Other related studies:
   - Social skills and wages
     - e.g. Deming (2015); Heckman and Kautz (2012)
   - Synchronization of work activities
     - Hamermesh (2006); Weiss (1996); Siow (1987).

Outline

I. Conceptual framework

II. Institutional background, data and measures of coordination

III. Part 1: Coordination and wage differentials

IV. Part 2: Coordination and labor supply elasticities

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The Setup

- High skilled (H) and low skilled (L) differ in desired hours $h_L^* \neq h_H^*$
- Heterogeneous firms, with varying productivity ϕ, produce $q(\omega)$ under monopolistic competition (as in Melitz, 2003)
- Firms choose to be coordinated or uncoordinated and produce using H and L labor
- Coordinated firms select $\hat{h}, \hat{n}_L, \hat{n}_H$, gain extra productivity ($\hat{\gamma} > 1$), pay fixed costs of coordination: $q(\omega) = \hat{\gamma}\,\phi\, G\left(\hat{n}_H\,\hat{h}, \hat{n}_L\,\hat{h}\right)$
- Uncoordinated firms select n_L^*, n_H^* and take as given h_L^*, h_H^*, w_L^* and w_H^*: $q(\omega) = \phi\, G\left(n_H^* h_H^*, n_L^* h_L^*\right)$

Optimal Choice of Inputs

- Uncoordinated firms choose n_H^* and n_L^* to minimize costs:

$$\frac{G_H(n_H^* h_H^*, n_L^* h_L^*)}{G_L(n_H^* h_H^*, n_L^* h_L^*)} = \frac{\mathrm{w}_\mathrm{H}^*}{\mathrm{w}_\mathrm{L}^*}$$

$\mathrm{w}_\mathrm{H}^* > \mathrm{w}_\mathrm{L}^*$ and $h_L^* \neq h_H^*$ if $G_H(\cdot,\cdot) > G_L(\cdot,\cdot)$

- Workers indifference condition implies wage-hours function $\hat{\mathrm{w}}_i(\hat{h})$

$$\underbrace{U\left(\hat{\mathrm{w}}_\mathrm{i}\,\hat{h}\,(1-t_i),\,\hat{h}\right)}_{\text{Utility at coordinated firms}} = \underbrace{U\left(\mathrm{w}_\mathrm{i}^*\,h_i^*\,(1-t_i),h_i^*\right)}_{\text{Utility at non-coordinated firms}} \quad \text{for } i = H, L \tag{1}$$

Wage-hours function $\hat{\mathrm{w}}_i(\hat{h})$ U-shaped with minimum at w_i^*, under regularity condition on $U(\cdot,\cdot)$

- Coordinated firms choose $\hat{h}$ to minimize costs under workers indifference:

$$\underbrace{\hat{n}_H\,\hat{\mathrm{w}}_\mathrm{H}'(\hat{h})}_{\text{Marginal savings from H}} = \underbrace{-\hat{n}_L\,\hat{\mathrm{w}}_\mathrm{L}'(\hat{h})}_{\text{Marginal costs from L}} \tag{2}$$

$\hat{h}$ is the weighted average of h_L^* and h_H^*

Wage-Hour function

Predictions

1. Compensating wage differentials: $\hat{w}_i(\hat{h}) > w_i^*$ *for i=H,L*

2. Spillovers. Tax changes affect coordinated hours: $d\hat{h}/dt_i \neq 0$

3. Attenuation. Dampened responses to tax changes: $|\, d\hat{h}/dt_i \,| < |\, dh_i^*/dt_i \,|$

4. If $\hat{\gamma}$ large relative to costs, then a coordinated labor market exists

    - Coordinated firms have ϕ above a productivity threshold

Graphs Threshold

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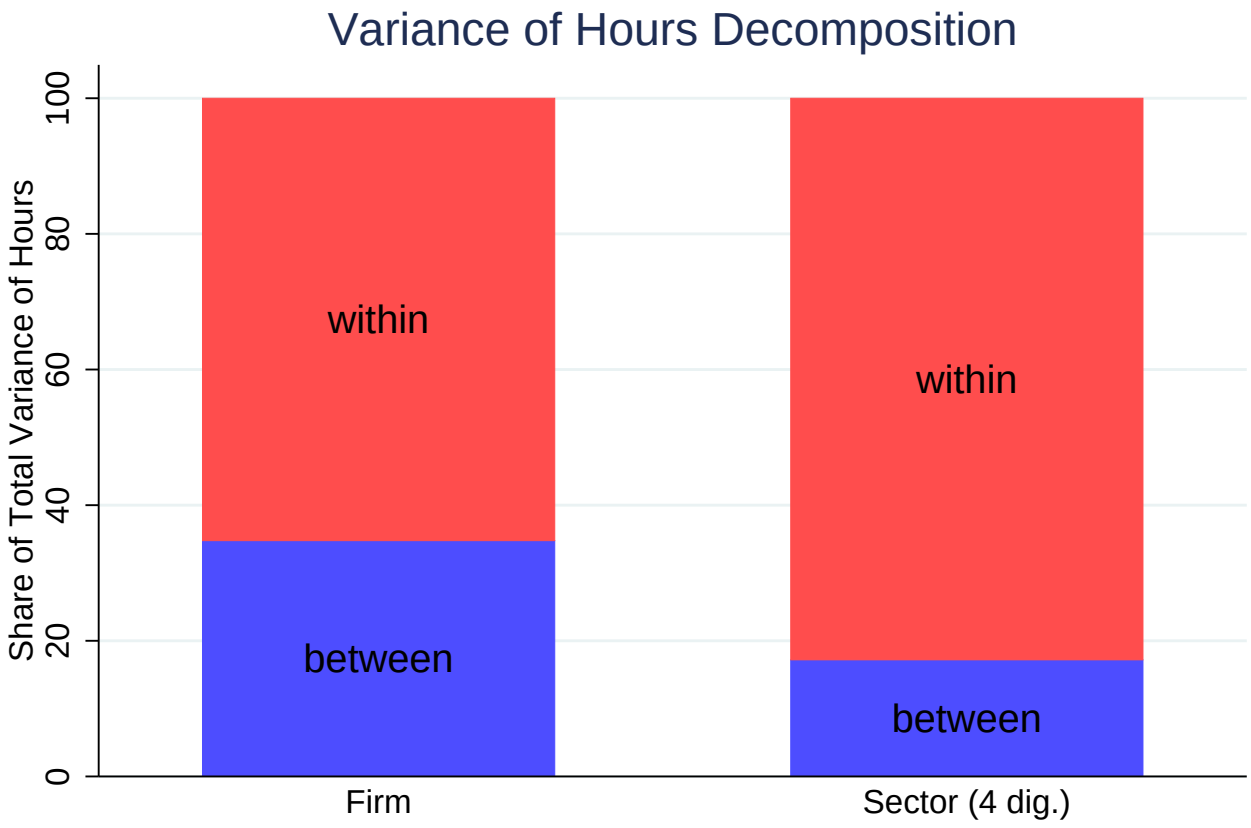
Why Denmark?

1. Data on hours worked, individual and firm characteristics
2. 2010 personal income tax reform that mostly affected high incomes
3. Low hiring and firing costs, flexible system of negotiation of wages and hours (Botero et al., 2004)
    - 85% of wages are negotiated directly between employers and employee (Hummels et al., 2014)
    - 60% of workers in the private sector are covered by firm-level agreements on working time

Between-Within Hours Variation



Source: 2003-2011 Danish Administrative Data
Note: Annualized total hours of full time workers (>26 weekly hours)

- Number of hours worked vary across firms within sectors

More

Data

- Individual administrative records on universe of employees 15 to 65
- Accounting and exporting data on private firms with more than 50 employees and a representative sample of the others
- Total annual hours (regular and overtime) in 2003-2011 in a subset of firms with no missing hours
- Final sample: 400,000 workers and 8,200 firms

Measures of Coordination

- *Measure of coordination*: standard deviation of average hours worked across ability groups within a firm

- Definition of ability groups:
  1. Deciles of the distribution of predicted earnings from a wage regression with individual and firm fixed effects (i.e. AKM, Irarrazabal et al., 2014)
  2. (Parallel analysis) the intersection of education and occupation

- Focus on full-time workers ($\geq$ 27 weekly hours - 90% of the sample)
  - More likely to overlap at work (Danish TUS data)
  - Studies on the firm component of wages focus on full-timers

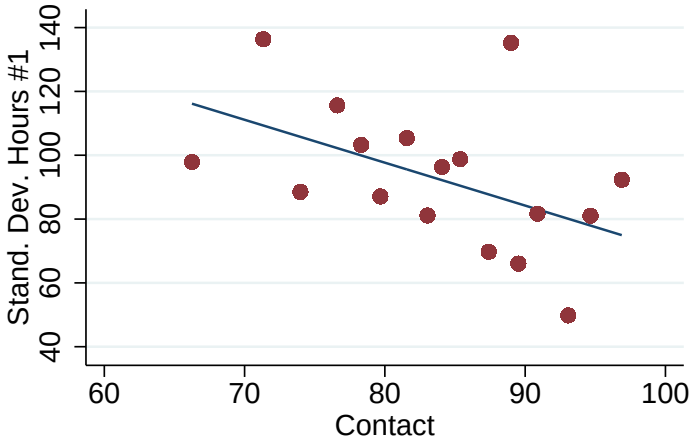
Descriptive Skill Groups | Desired Hours

Validation Exercises

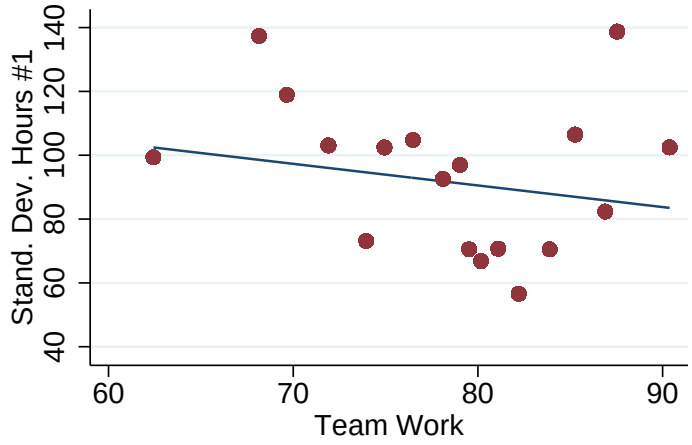
- Validation exercises using survey data:
  - Strong correlation with measures of coordination in O*NET
  - Strong correlation with measures of cooperation in Survey of Adult Skills
  - Similar ranking of sectors by coordination from Time Use Survey
- Questions in O*NET that capture coordination (Bombardini et al, 2012):
  - Contact: *"How much does this job require the worker to be in contact with others (face-to-face, by telephone, or otherwise) in order to perform it?"*
  - Teamwork: *"How important is it to work with others in a group or team in this job?"*
  - Communication: *"How important is communicating with supervisors, peers, or subordinates to the performance of your current job?"*

Survey of Adult Skills | TUS

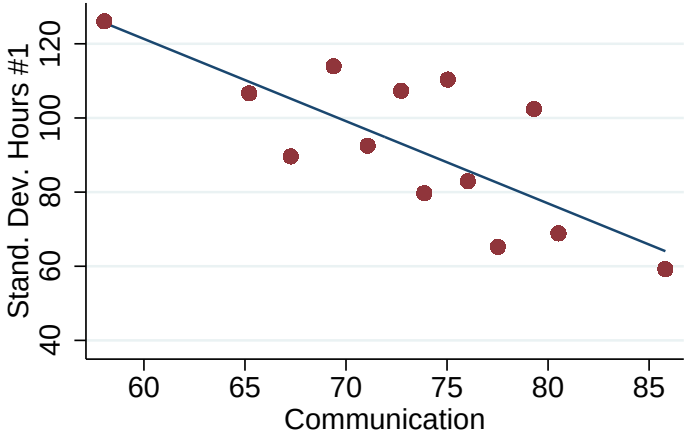
Validation with O*NET



Coef= -1.3972, t-stat=-13.2278



Coef= -0.6542, t-stat= -5.0014



Coef= -2.0047, t-stat=-14.3805

Coordination and Firm Characteristics

- Coordination is positively associated with TFP, value added and sales per employee
- Coordination is negatively associated with the share of part-timers, hourly workers and females
- Coordination is positively associated with the importance of social skills
- Higher coordination in services but correlations persist within sectors

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Coordination and Wage Premiums (Estimation)

- Step 1:

$$ln\, w_{ijt} = \alpha_i + \psi_{j(i,t)} + \beta_1 X_{ijt} + r_{ijt}$$

  - $\psi_{j(i,t)} =$ Proportional wage premium/discount paid by firm j to all employees.
  - Identifying assumption: conditional exogenous mobility (as in Abowd et al. 2016 (NBER ch.); Card et al. 2015 (QJE); Card et al. 2016 (QJE); Macis and Schivardi 2016 (JOLE); Moser and Engbom 2016 (AEJ: Macro); Song et al. 2017 (QJE); Serafinelli 2016 (JOLE)).

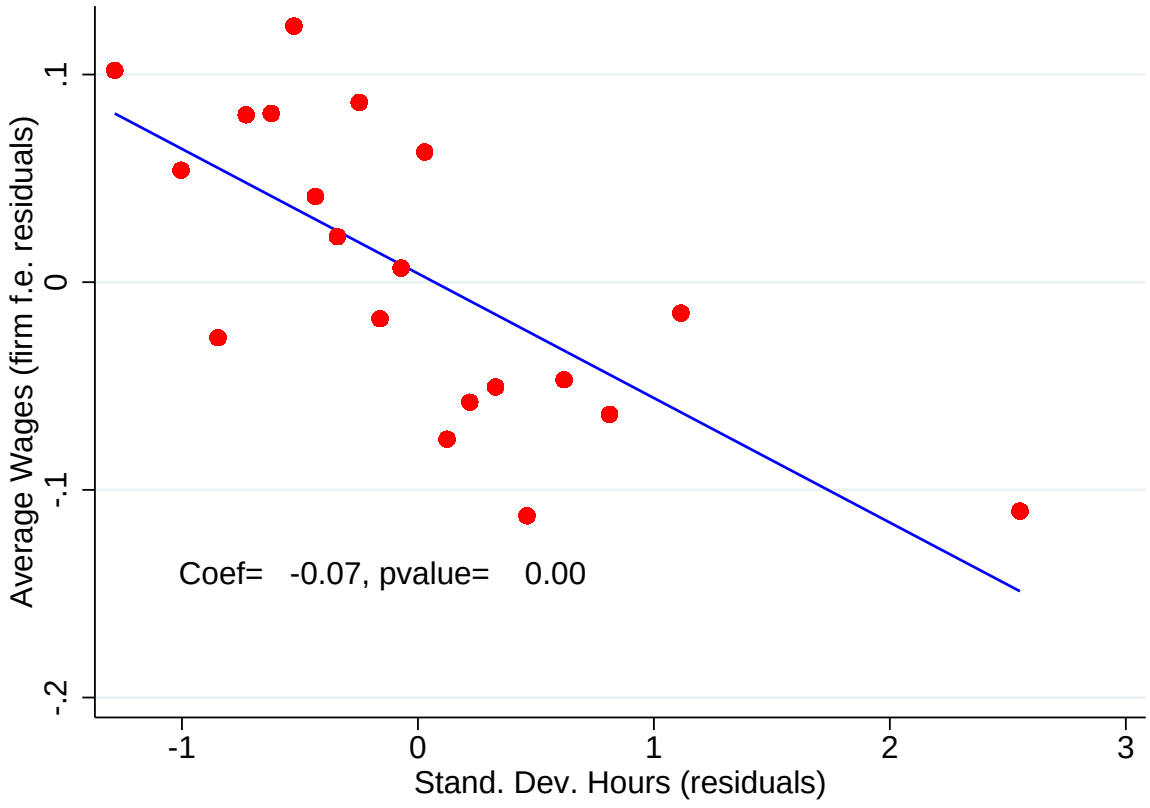
- Step 2:

$$\widehat{\psi_{j(i,t)}} = \delta_0 + \delta_1 \sigma_j + \delta_2 \bar{Z}_j + v_j$$

  - $\sigma_j =$ average stand. dev. of average hours across skill groups
  - Firm level controls to confounding factors ($\bar{Z}_j$):
    - Exporter status, average size, unionization rate, average hours
    - Geographic controls
    - Skills and gender composition of the labor force, proxies for workforce and managerial ability

Wage trends of movers

Coordination and Wage Premiums (Results)



- Higher average wages in more coordinated firms
- 1 Std. Dev. increase in coordination is associated with 0.5% higher wages

Coordination and Wage Premiums (Table)

	(1) Firm f.e.	(2) Firm f.e.	(3) Firm f.e.	(4) Firm f.e.	(5) Firm f.e.
Stand. Dev. Hours (σ_j)	-0.075***	-0.066***	-0.060***	-0.031*	-0.028*
	(0.016)	(0.018)	(0.018)	(0.016)	(0.016)
Firm size		0.010	0.009	0.006	0.017*
		(0.007)	(0.006)	(0.005)	(0.009)
Export status		0.059***	0.065***	0.030**	0.021
		(0.016)	(0.018)	(0.013)	(0.013)
Union. Rate		0.031	0.040	0.039	0.039
		(0.024)	(0.025)	(0.029)	(0.030)
Female Share		-0.108**	-0.140***	-0.069**	-0.057*
		(0.043)	(0.040)	(0.027)	(0.029)
Average Hours		0.004	-0.006	-0.033	-0.039*
		(0.026)	(0.022)	(0.023)	(0.023)
Capital / employee		0.024*	0.028**	0.031***	0.035***
		(0.013)	(0.013)	(0.010)	(0.010)
Region F.E.	NO	YES	YES	YES	YES
Compos. and Ability cntr	NO	YES	YES	YES	YES
2 digits Sector f.e.	NO	NO	NO	YES	NO
3 digits Sector f.e.	NO	NO	NO	NO	YES
R-sq	0.008	0.106	0.113	0.155	0.162
N	7306	7306	7306	7306	7306

Standard errors are clustered at the two digits industry level. *, ** and *** are 10, 5 and 1 percent significance levels.

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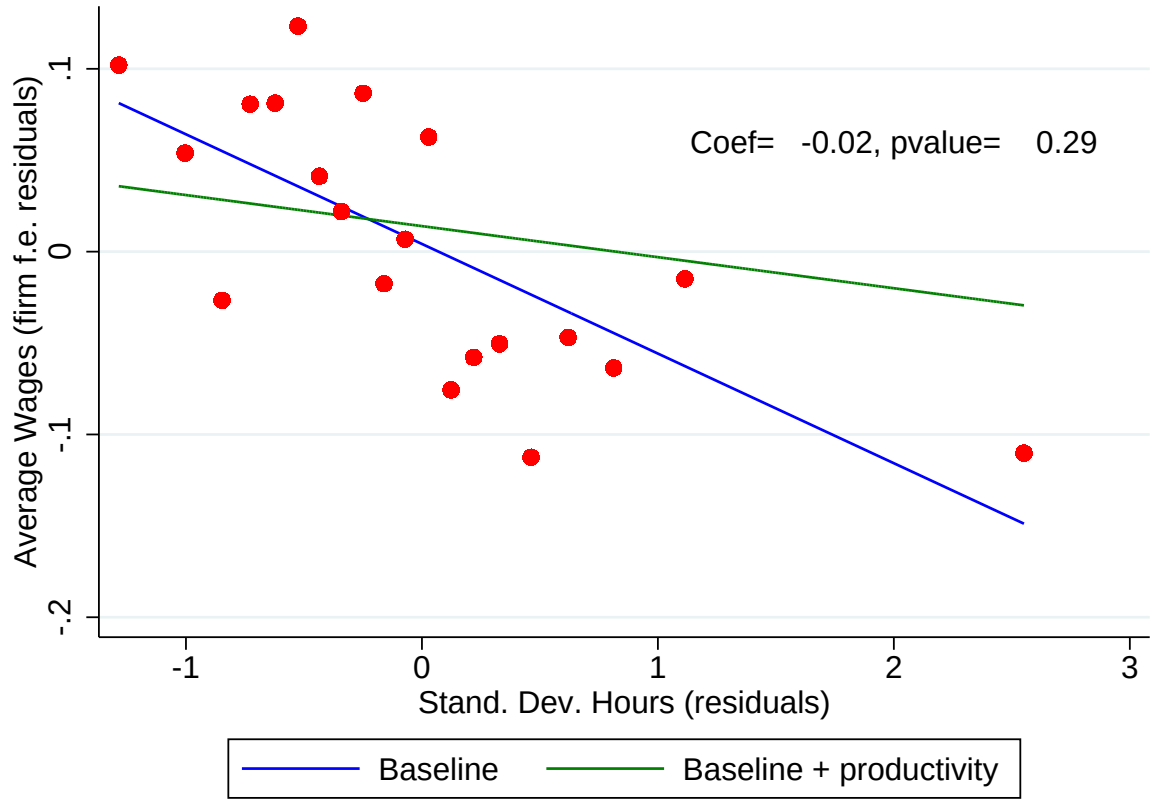
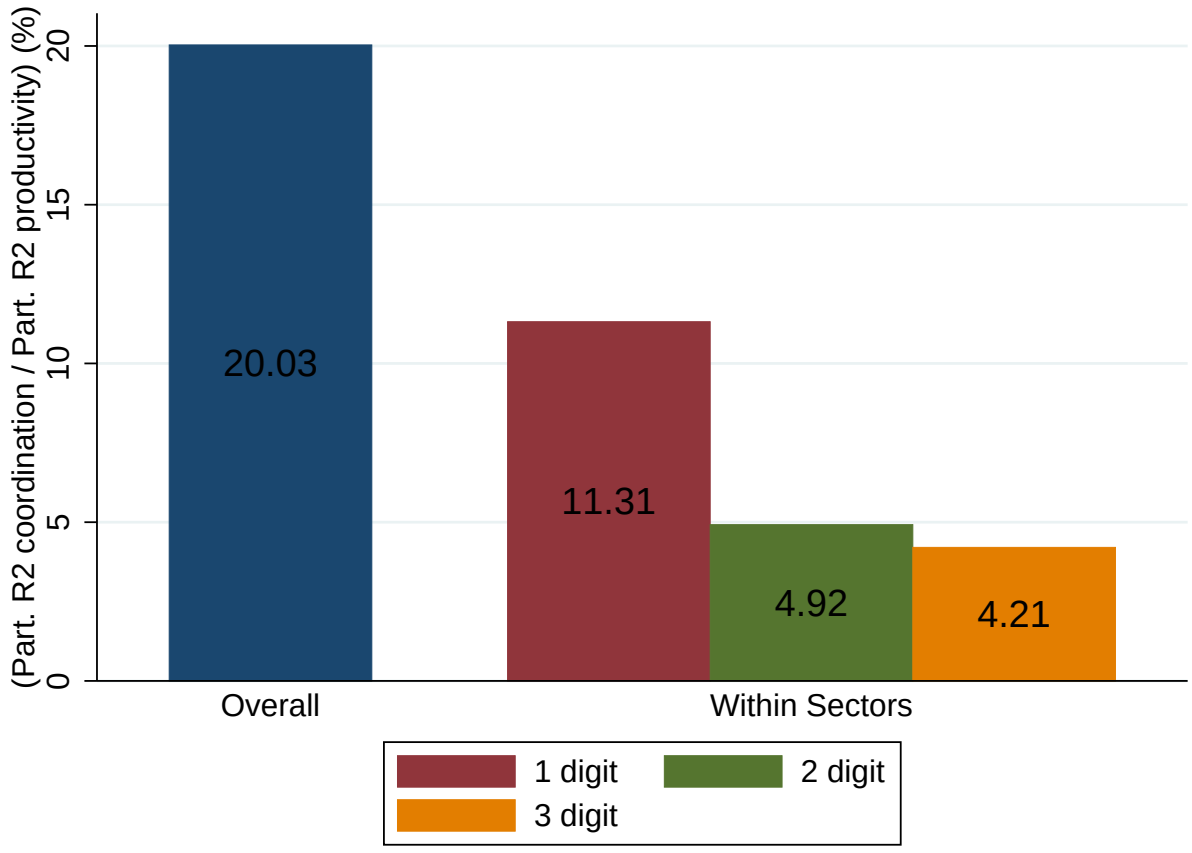
Coordination, Wages and Productivity (1)



- More productive firms pay coordination premiums

Coordination, Wages and Productivity (2)



- Coordination explains a reasonable share of the (conditional) variance of wage premiums due to productivity across and within sectors

Additional Findings and Robustness Checks

1. Institutional constraints: 37 hours bunching and normal hours
2. Coordination premium as a reward for social skills? (Deming, 2015)
3. Measurement error: IV using coordination measures from O*Net
4. Alternative measures of dispersion robust to outliers (MAD)
5. Controls for proxy of innovation (Van Reenen, 1996)
6. All firms in the connected group, sub-period fixed effects

Check 1 and 2 | Check 3, 4 and 5 | Check 6

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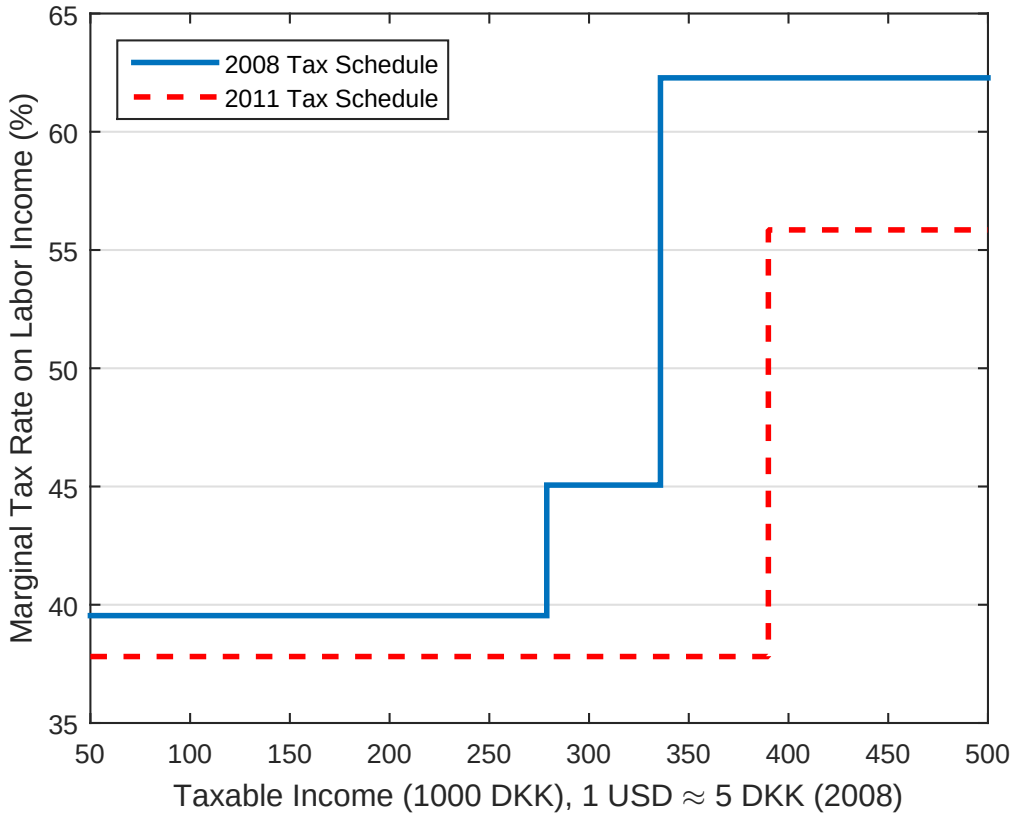
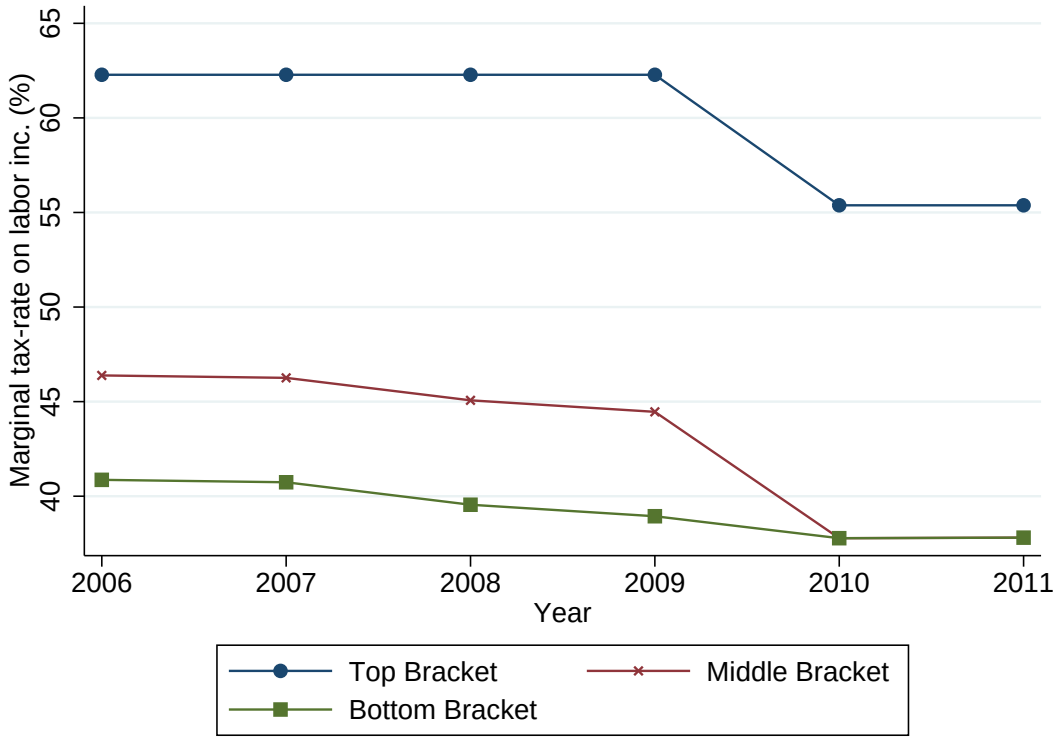
The 2010 Tax Reform



- Middle tax bracket was abolished
- Top tax rate went down by 7 perc. points, the bottom by 2 perc. points
- Lower income cutoff of the top tax bracket went up by 9% in real terms

High and Low Skilled Workers



- Marginal tax rate on labor income down by 10% and 16% in the top and middle bracket. Bottom marginal rate decreased by 4%
- High skilled are in the middle or top bracket in 2008 (excluding top-bottom movers). Low skilled are tax exempt or in the bottom tax bracket in 2008

Tax change over income | Shares

Tax Simulator (2008-2011)

- Marginal tax rates are not observable.
- We use detailed tax records to simulate the marginal tax rates for each worker through our own tax simulator.
- This accounts for:
  - that tax liabilities calculated on labor income also depends on other income components (such as capital income)
  - the elements of jointness, i.e. for married person, income tax liability depends on both individual incomes and on spousal incomes.

Coordination and Tax Changes (estimation)

- Attenuating effects on high skilled:

$$log\left(\frac{h^H_{ijt+3}}{h^H_{ijt}}\right) = \alpha_0 + \alpha_1\, log\left(\frac{1-\tau^H_{it+3}}{1-\tau^H_{it}}\right) + \alpha_2\, X^H_{ijt} + \omega_{ijt}$$

h =Hours worked, τ =Marginal Tax Rate on labor income

- Spillover effects on low skilled :

$$log\left(\frac{h^L_{ijt+3}}{h^L_{ijt}}\right) = \beta_0 + \beta_1\, log\left(\frac{1-\tau^L_{it+3}}{1-\tau^L_{it}}\right) + \beta_2\, log\left(\frac{\overline{h^H_{jt+3}}}{\overline{h^H_{jt}}}\right) + \beta_3\, X^L_{ijt} + \epsilon_{ijt}$$

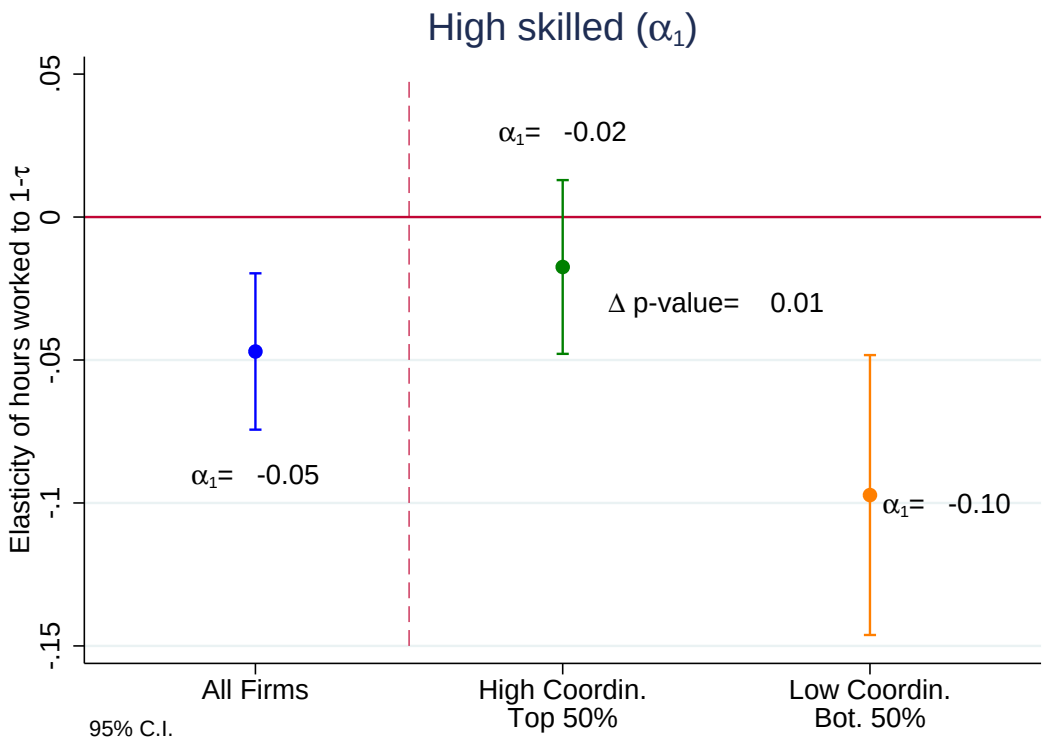
X =Ind. controls and firm controls

- Identification issues:
  - τ^H_{it+3} depends on post-reform income $(t+3)$
  - $\Delta\, log\left(h^L_{ijt}\right)$ and $\Delta\, log\left(\overline{h^H_{jt}}\right)$ correlate due to other factors
    (local labor market shocks, policy, infrastructures, other firm specific factors)

Identification

- Instrument: Simulate mechanical (M) post-reform τ^H_{Mit+3} based on pre-reform income (Gruber and Saez, 2002).
  1. Instrument: $\Delta log\left(1-\tau^H_{Mit+3}\right)$ for $\Delta log\left(1-\tau^H_{it+3}\right)$
  2. Instrument: $\Delta log\left(\overline{1-\tau^H_{Mijt+3}}\right)$ for $\Delta\, log\left(\overline{h^H_{ijt+3}}\right)$
- Potential Concerns:
  - τ^H_{Mit+3} depends on pre-reform income $\Rightarrow$ Controls for income at t
    - Mean Reversion
    - Workers at different levels of pre-reform income follow different long run trends

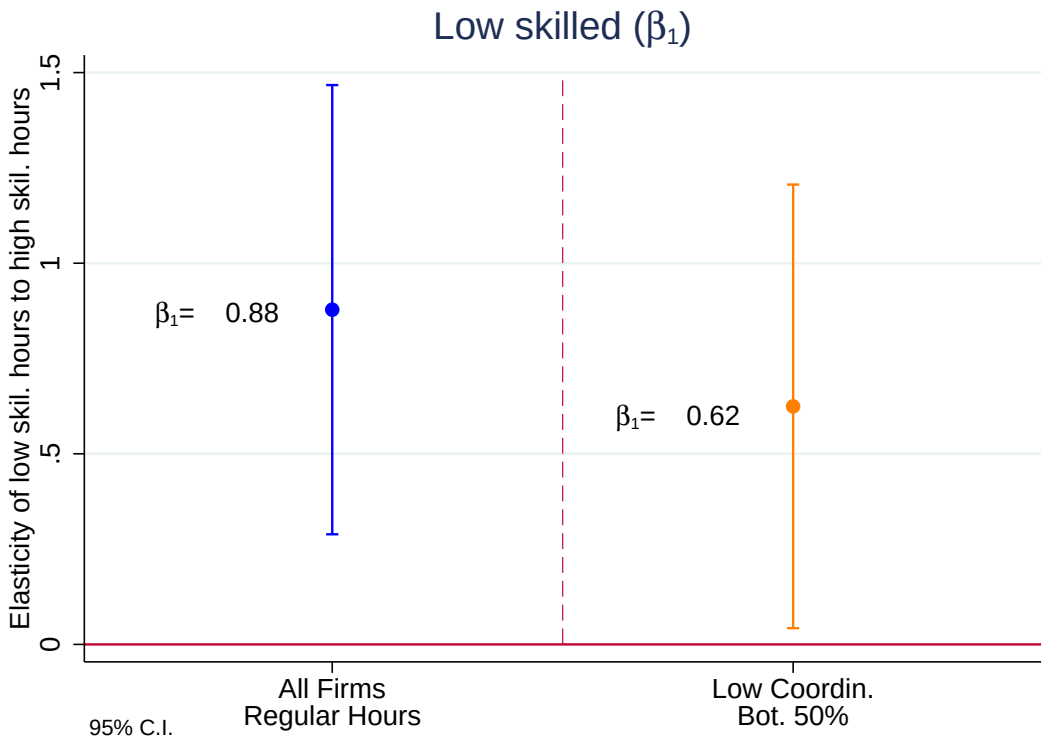
Attenuating Effect on High Skilled



- On average reduction in hours by 0.8% (15 yearly hours)
- Hours in low coordination firms go down by 1.6% (30 yearly hours)

Table HS

Spillover Effects on Low Skilled



- Implied ratio of low skilled to high skilled hours of 0.85 to 1
- Weaker spillovers in low coordination firms
- Spillovers from the reform of .5% - .8% (9-14 hours)

Table LS Graph RF

Implications

- Evaluation of tax efficiency costs:
  - Estimated 15% increase in loss revenues due to behavioural spillovers
- Estimation of labor supply elasticity:
  - Diff in Diff captures 12% of the high skilled response

DiD Efficiency

Additional Findings

1. Greater degree of coordination leads to greater attenuation
2. Stronger spillover in high skilled dominated firms (suggestive)
3. Spillovers: robust to excluding workers at the kinks (Chetty et al., 2011)

Additional 1 Additional 2,3 Additional 4,5

Robustness

1. Robust to firm and base year fixed effects

2. Robust to flexible controls of income at t

3. Robust to a different source of data on hours worked (E-indkomst, 2008-2012).

Check 1 HS | Check 1 LS | Check 2 HS | Check 2 LS | Check 3 | Salaried | Hourly | Interact

Conclusions and Future Research

- Summary:
  - Coordination of hours predicts wage differentials across differently productive firms (Sorkir, 2015; Lavetti and Schmutte, 2016)
  - Coordination is associated with spillovers and attenuating effects from tax changes
- Future research:
  - Coordination across similarly skilled workers from child care subsidies
  - Coordination and the firm component of the gender gap (Card, Cardoso, Kline, 2016; Bertrand, Goldin and Katz, 2010)
  - Coordination and broadband technology)

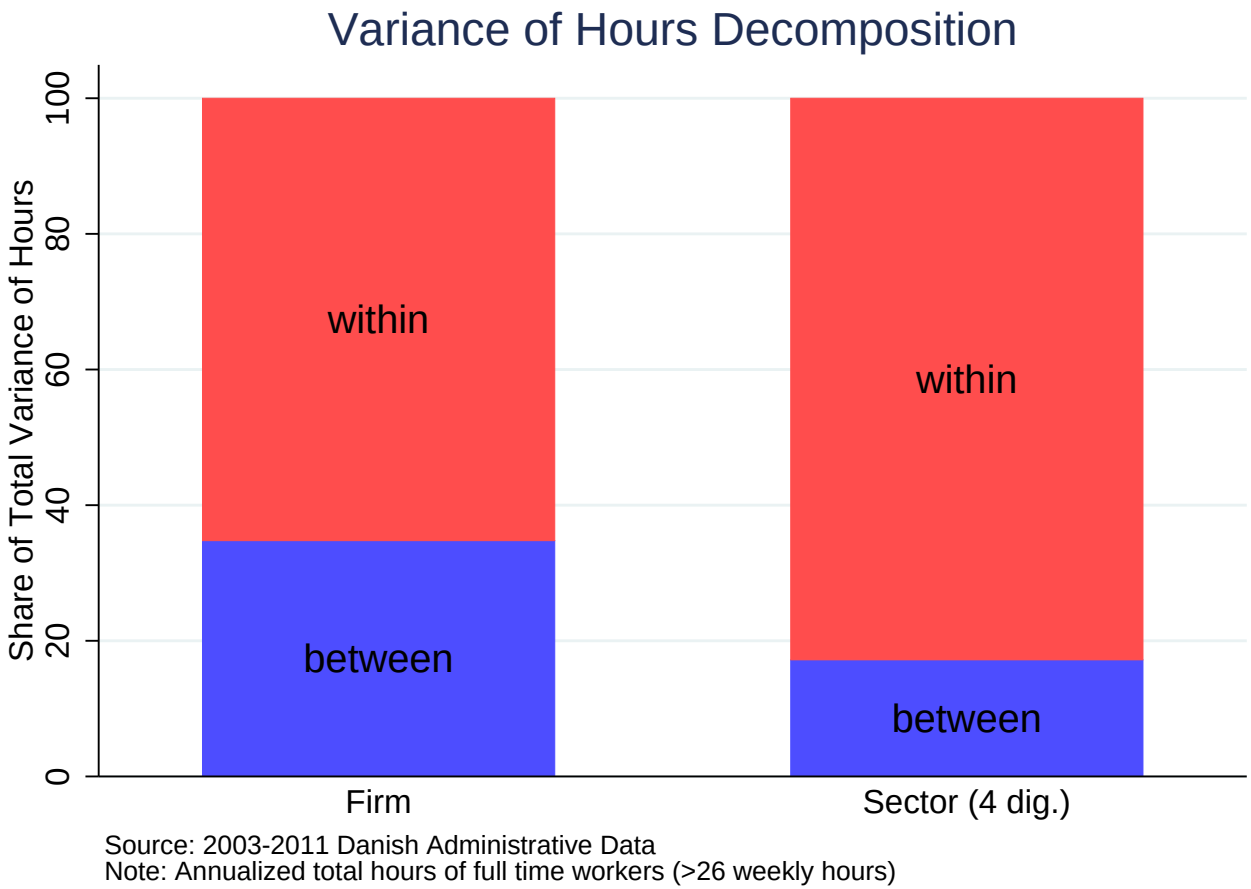
Thank you!

Why Denmark?

1. Data on hours worked, individual and firm characteristics
2. 2010 personal income tax reform that mostly affected high incomes
3. Low hiring and firing costs, flexible system of negotiation of wages and hours (Botero et al., 2004)
    - 85% of wages are negotiated directly between employers and employee (Hummels et al., 2014)
    - 60% of workers in the private sector are covered by firm-level agreements on working time
    - 1/3 of private firms are under local framework agreements with individual employer-employee negotiation of working time (Jørgensen, 2006)
    - Workers can cash-in unused hours of vacation at the standard wage rate

Back

Between-Within Hours Variation



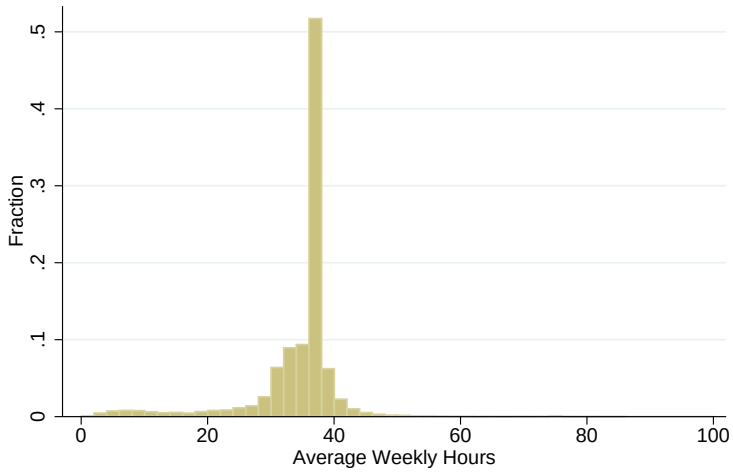
Source: 2003-2011 Danish Administrative Data
Note: Annualized total hours of full time workers (>26 weekly hours)

- Number of hours worked vary across firms within sectors

More Back

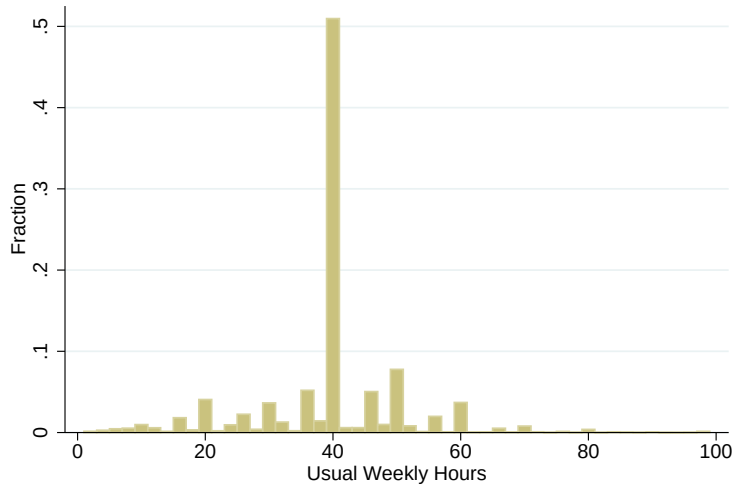
Fact 1

A substantial share of workers works a similar number of hours



Source: 2003-2011 Danish Administrative data
Note:Average weekly hours=Annualized hours/52

Denmark

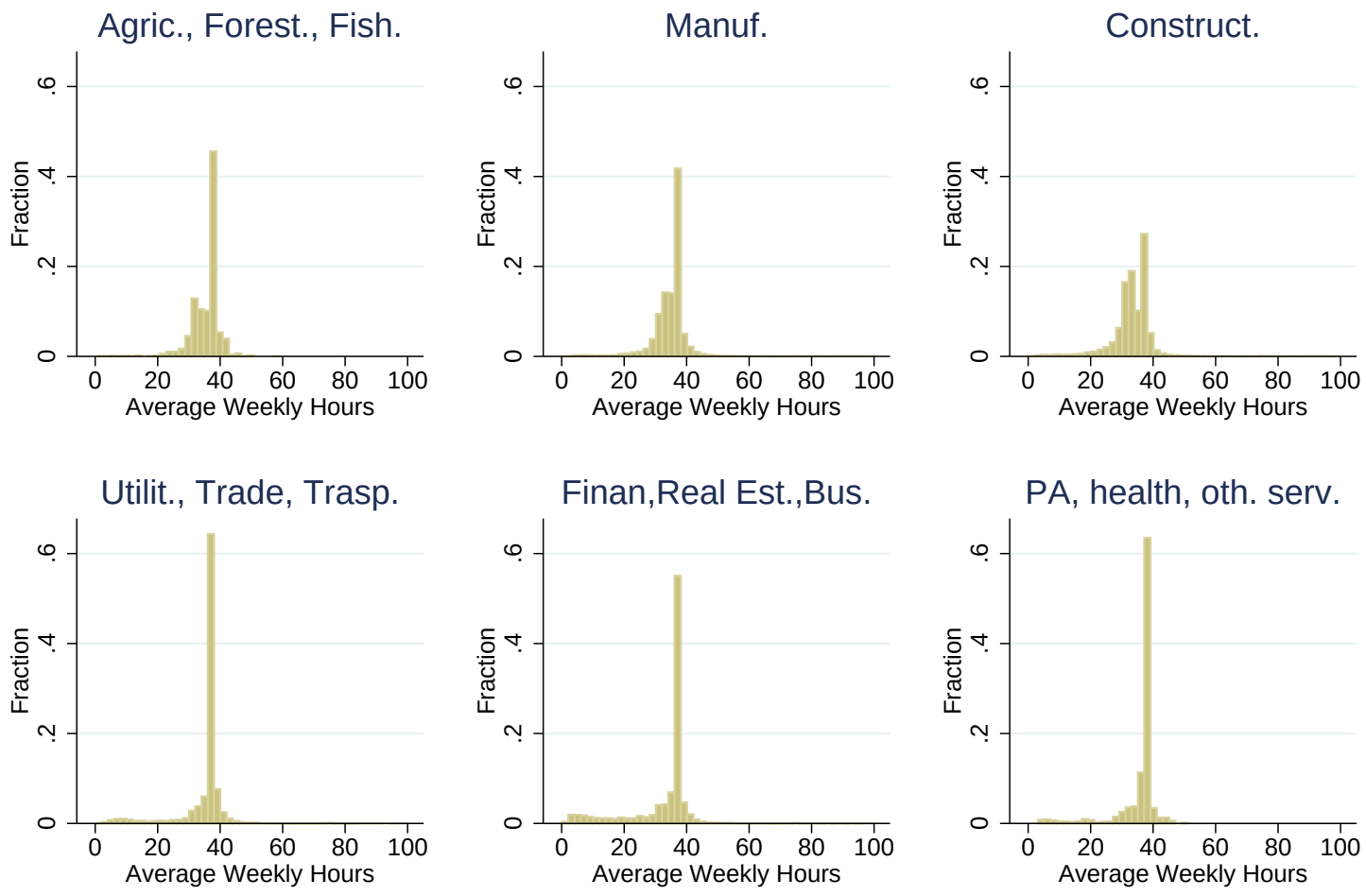


Source: 2003-2011 March CPS data

USA

Fact 2

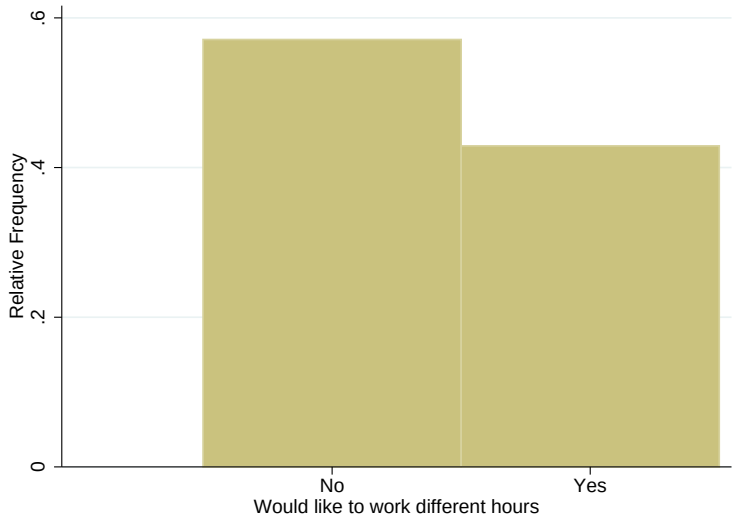
The degree of concentration varies across sectors



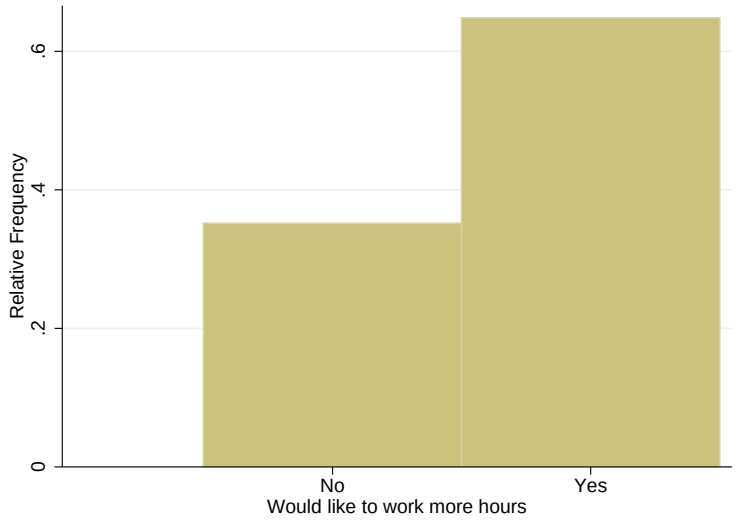
Source: 2003-2011 Danish Administrative data
Note: Average weekly hours=Annualized hours/52

Fact 4

A substantial share of workers would like to work a different number of hours



Different vs Same



More vs Less

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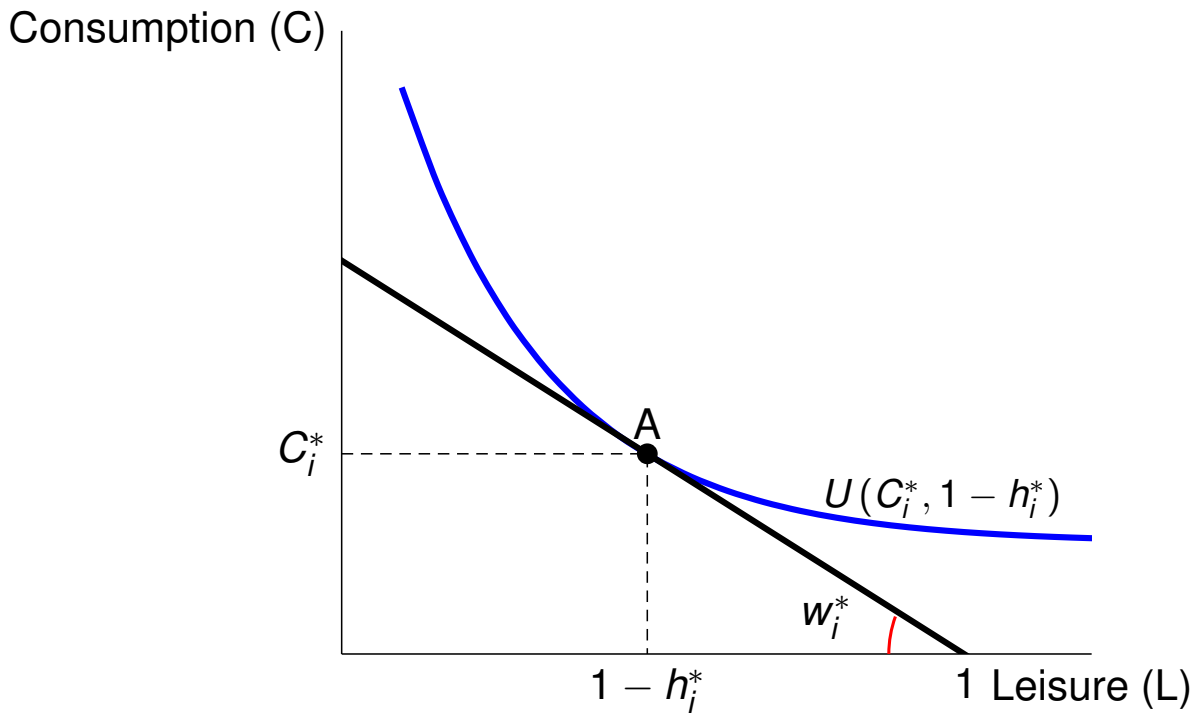
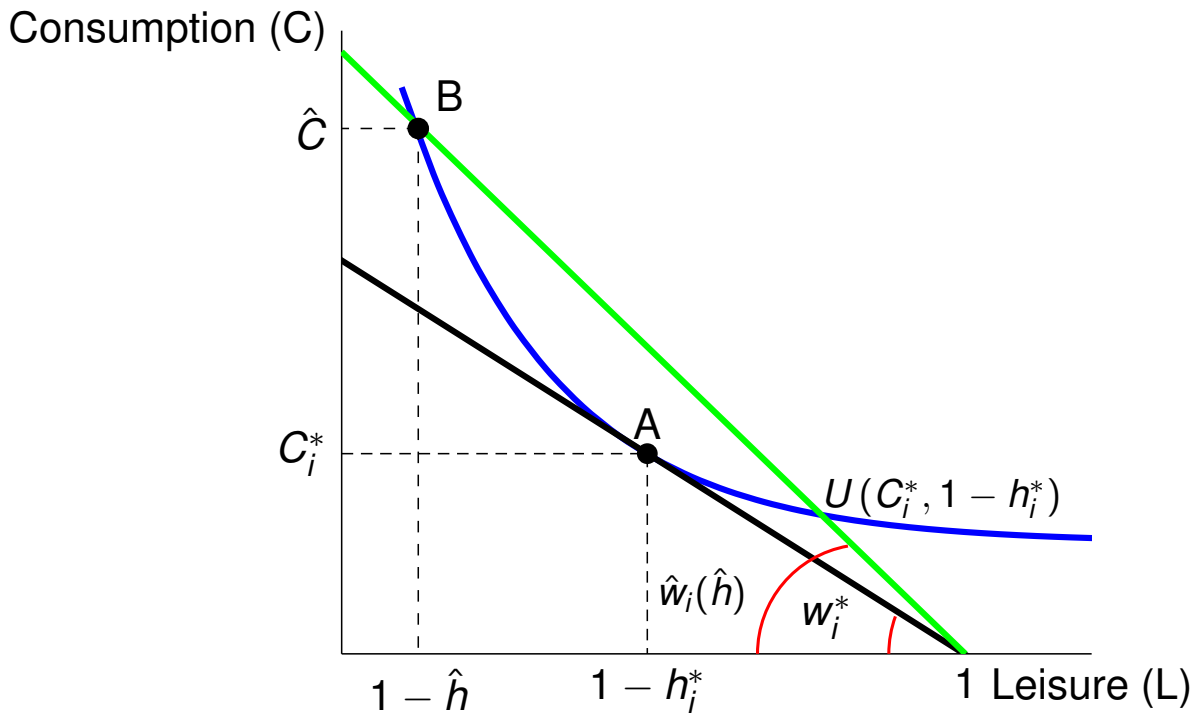
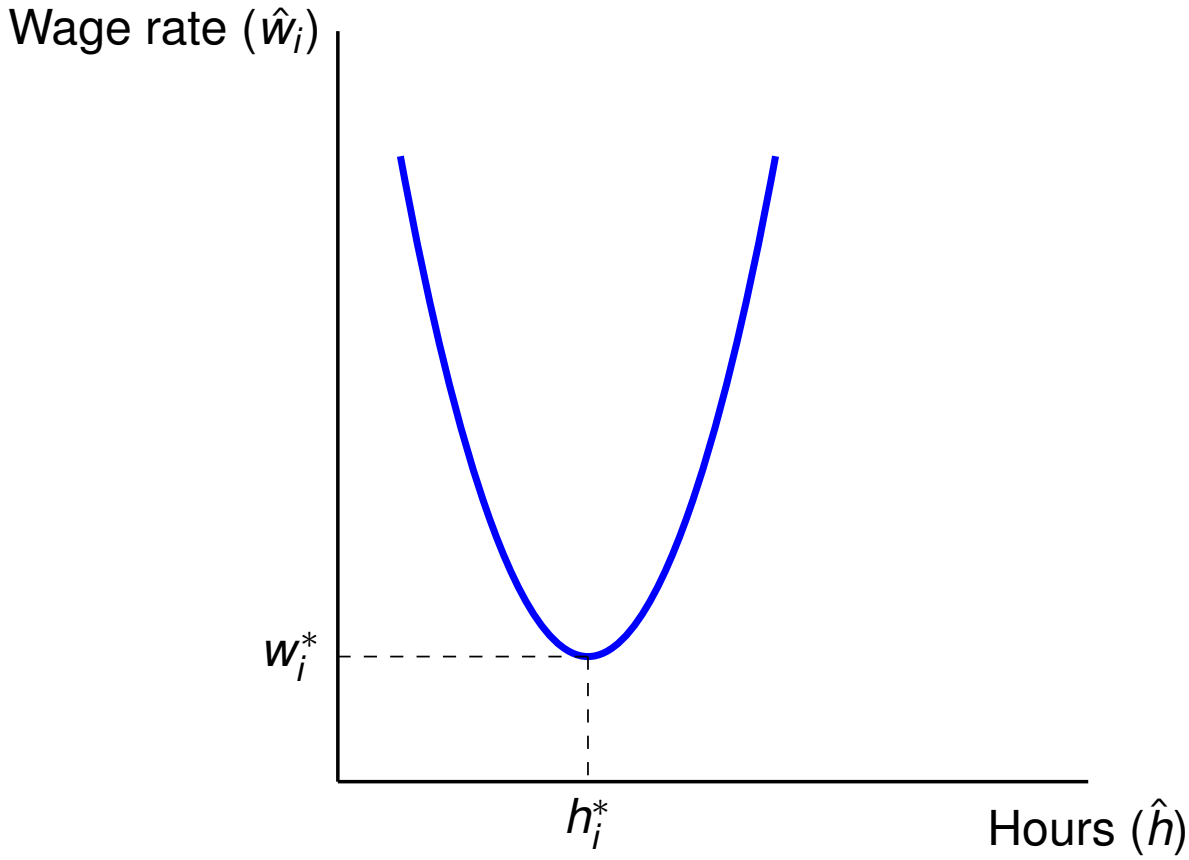
The Wage Hours Function (1)



The Wage Hours Function (1)



The Wage Hours Function (2)



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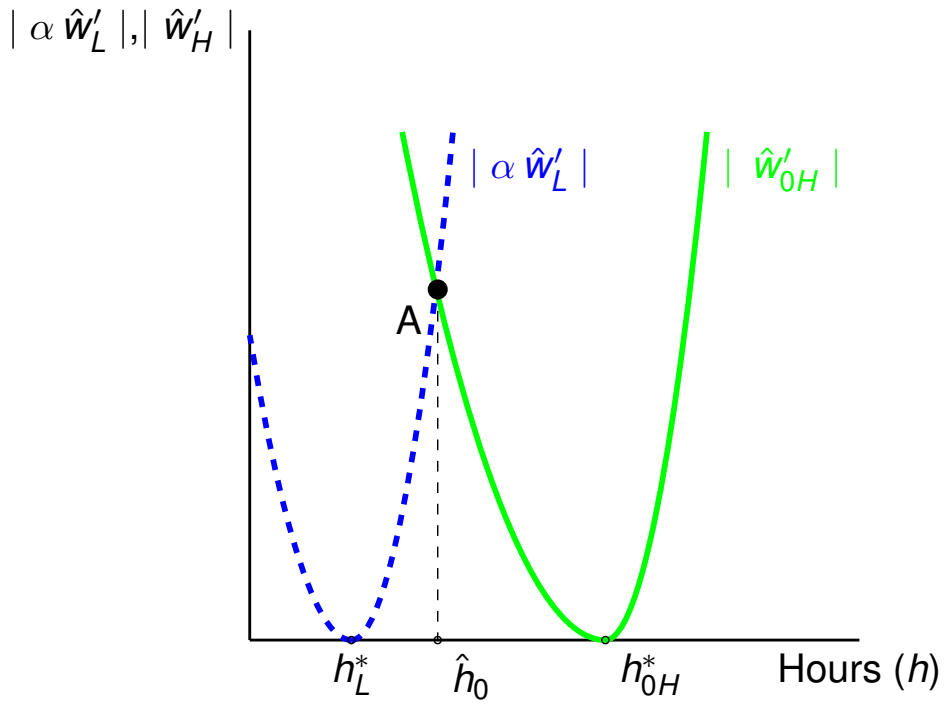
Optimal Hours in Coordinated Firms

Optimal hours: $\hat{n}_H \hat{w}'_H(\hat{h}) = -\hat{n}_L \hat{w}'_L(\hat{h})$



At $\hat{h}_0 \Rightarrow \hat{w}'_H(\hat{h}) \neq 0$, $\hat{w}'_L(\hat{h}) \neq 0 \Rightarrow$ Wage premiums in coordinated firms

Optimal Hours in Coordinated Firms

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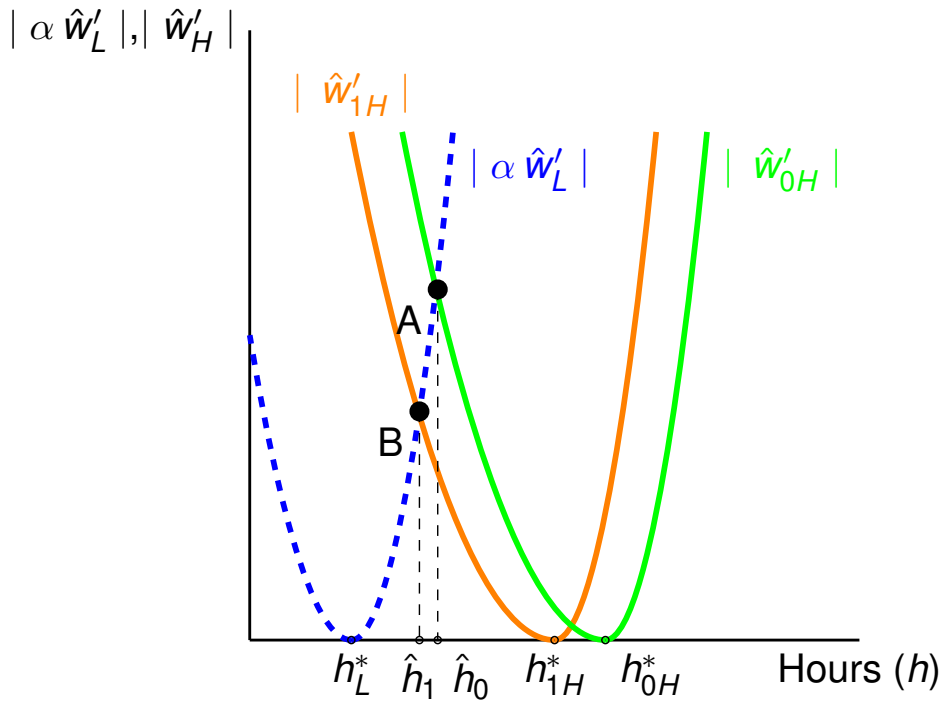


At $\hat{h}_0 \Rightarrow \hat{w}'_H(\hat{h}) \neq 0$, $\hat{w}'_L(\hat{h}) \neq 0 \Rightarrow$ Wage premiums in coordinated firms

$t_H \Downarrow \Rightarrow h^*_H \Downarrow \Rightarrow \hat{h} \Downarrow \Rightarrow$ Spillovers on hours worked by low skilled

$t_H \Downarrow \Rightarrow | h^*_{0H} - h^*_{1H} | > | \hat{h}_0 - \hat{h}_1 | \Rightarrow$ Attenuated responses of high skilled

Back

Productivity Cutoff For Coordination

$$\pi^*(\phi) = \left(\frac{\sigma-1}{\sigma}\right)^{\sigma-1}\left(\frac{P}{\mu^*}\right)^{\sigma-1}\frac{E}{\sigma}\phi^{\sigma-1},$$

$$\hat{\pi}(\phi) = \left(\frac{\sigma-1}{\sigma}\right)^{\sigma-1}\left(\frac{\hat{\gamma}P}{\hat{\mu}}\right)^{\sigma-1}\frac{E}{\sigma}\phi^{\sigma-1} - \hat{F},$$

$$\hat{\pi}(\phi) > \pi^*(\phi).$$

$$\phi > \frac{\sigma}{\sigma-1}\frac{\hat{F}^{1/(\sigma-1)}}{E^{1/(\sigma-1)}P}\frac{\hat{\mu}}{\hat{\gamma}-\hat{\mu}/\mu^*} \equiv \hat{\phi},$$

Back

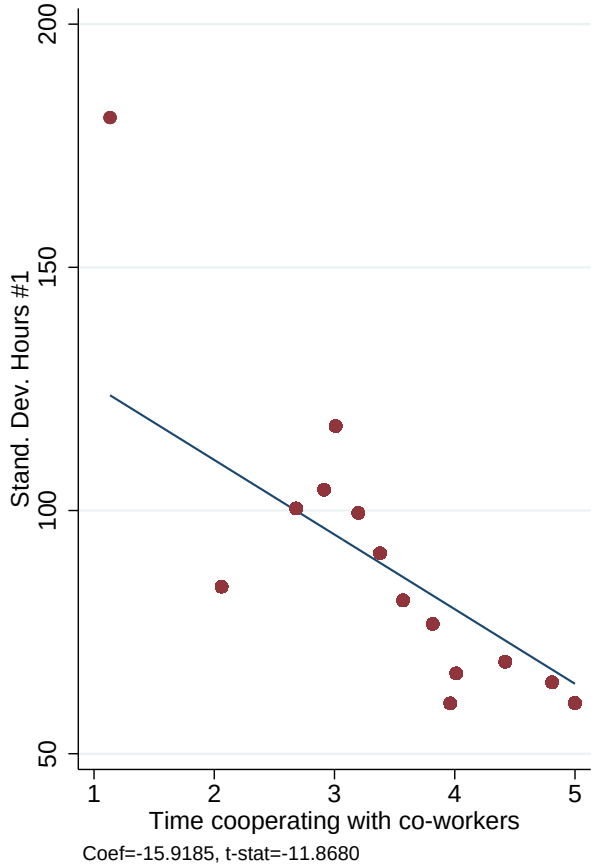
Between-Within Variance Decomposition

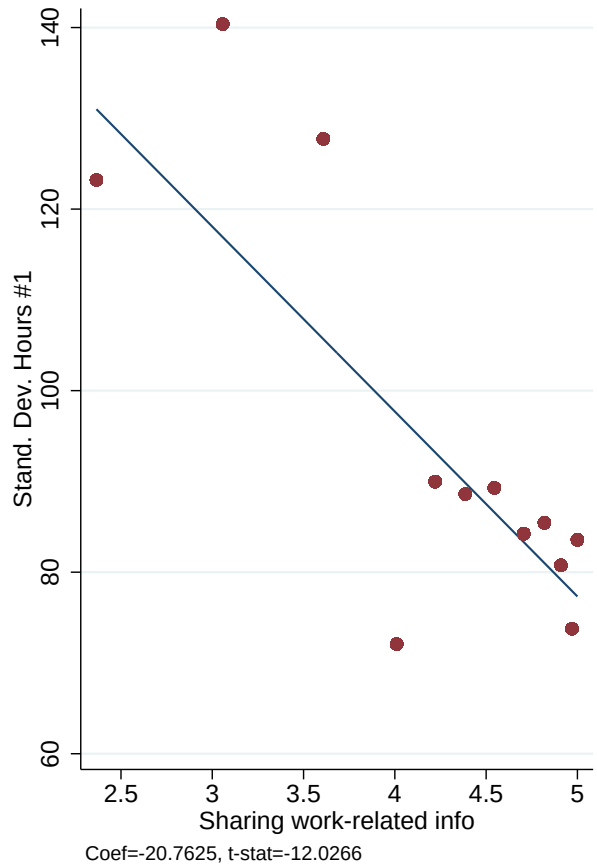
$$\frac{1}{N_t}\sum_i \left(h_{it} - \overline{h_t}\right) = \frac{1}{N_t}\sum_g \sum_{i \in g} \left(h_{it} - \overline{h_{gt}}\right) + \frac{1}{N_t}\sum_g N_{gt}\left(\overline{h_{gt}} - \overline{h_t}\right)$$

Back

Coordination and PIAAC

- Characteristics of an occupation:
  - Time cooperating with coworkers (increasing importance from 1 to 5)
  - Sharing work related information (increasing importance from 1 to 5)





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Coordination in TUS

- *Coordination index*: correlation between the share of high and low skilled workers at work at each hour of the day.

	Coordination index
Agriculture, forestry and fishing, mining and quarrying	0.833
Manufacturing	0.978
Construction	0.956
Electricity, gas, steam and air conditioning supply, trade and transport	0.982
Financial and insurance, Real estate, Other business	0.986
Public administration, education, health, arts	0.929
Observations	748

Back

Trimming

	Obs.	Workers	Firms	Obs. share tot.	Workers share tot.	Firms share tot.
1. Entire Population	22,379,298	3,518,236	266,196	1	1	1
2. Hours worked sample	12,130,358	2,649,618	39,778	54.20	75.31	14.94
3. Accounting data sample	5,211,149	1,485,789	29,957	23.29	42.23	11.25
4. Firm size greater than 2	5,209,536	1,485,478	29,576	23.28	42.22	11.11
5. Full time only	4,476,222	1,207,580	29,116	20.00	34.32	10.94
6. Outliers in hours and income	4,466,676	1,205,301	29,111	19.96	34.26	10.94
7. Not more than 5% missings	787,683	400,653	8,369	3.52	11.39	3.12

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Descriptive Statistics

	IDA Sample		IDA -Firmstat-LON sample		Final sample	
	(1)	(1)	(2)	(2)	(3)	(3)
	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.
Workers Characteristics						
Mean Age	39.82	12.87	41.11	11.09	42.05	10.91
Fraction $<$ 30 years old	0.27	0.44	0.19	0.39	0.16	0.37
Fraction $>$ 50 years old	0.27	0.44	0.25	0.43	0.27	0.45
Fraction Males	0.50	0.50	0.66	0.47	0.70	0.46
Fraction Unionized	0.70	0.46	0.73	0.44	0.77	0.15
Fraction Hourly	0.17	0.37	0.24	0.42	0.28	0.45
Fraction Primary Educ.	0.33	0.47	0.28	0.45	0.29	0.45
Fraction Secondary Educ.	0.40	0.49	0.52	0.50	0.51	0.50
Fraction Tertiary Educ.	0.27	0.43	0.20	0.39	0.20	0.39
Hourly wage (in DKK)			187.07	141.14	183.65	124.37
Annual Labor Income (in 1000 DKK)	267.00	448.30	357.93	288.35	349.36	248.68
Total Annual Hours			1907.99	213.01	1896.19	197.24
Overtime Annual Hours			27.82	95.55	27.62	87.60
Workers by sector (% of total)						
Agriculture, forestry and fishing, mining and quarrying	2.52		0.37	6.05	0.16	4.00
Manufacturing	26.60		32.48	46.83	35.73	47.92
Construction	10.35		8.67	28.15	9.43	29.23
Electricity, gas, steam and air conditioning supply, Trade and transport	30.14		43.46	49.57	40.82	49.15
Financial and insurance, Real estate, Other business	22.95		14.82	35.53	13.71	34.39
Other services	7.44		0.2	4.46	0.15	3.92
Firms Characteristics						
Mean Firm Size			51.42	328.24	43.37	302.3649
Mean Capital per employee (1000 DKK)			423.49	7339.72	963.66	43505.13
Mean Value Added per employee (1000 DKK)			436.30	3040.25	504.30	1773.43
Mean Revenues per employee (1000 DKK)			1687.35	6511.18	2132.89	8693.84
Exporters (%)			39.40	48.86	39.96	48.98
Number of observations	22,379,298		4,466,676		787,683	
Number of individuals	3,518,236		1,205,301		400,653	
Number of firms	266,196		25,249		8,369	

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Descriptive Statistics Skill Groups

Average share of workers by skill group

	Skill group def 1 (deciles of skills distr.)		Skill group def 2 (education occupation)
1st	0.08	Blue collar Pr.	0.23
2nd	0.09	Blue collar Sec.	0.05
3rd	0.10	Blue collar Ter.	0.01
4th	0.11	Middle Man Pr.	0.31
5th	0.11	Middle Man Sec.	0.18
6th	0.11	Middle Man Tert.	0.03
7th	0.11	Manager Pr.	0.02
8th	0.11	Manager Sec.	0.14
9th	0.10	Manager Tert.	0.03
10th	0.09		

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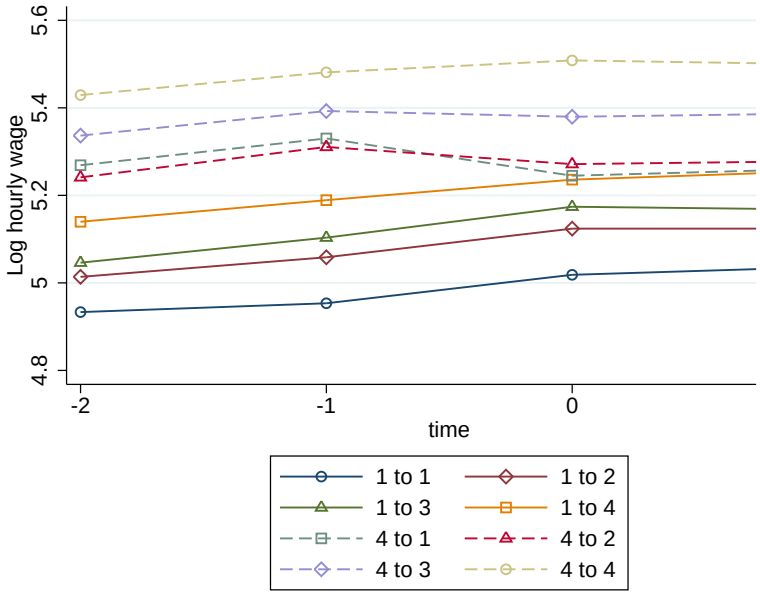
Desired Hours By Skill Groups

Skills Definion 1	Average desired weekly hours	Obs.
skill $\leq$ 10th percentile	37.34	465
10th percentile$<$ skill $<$ 20th percentile	36.78	462
20th percentile$<$ skill $<$ 30th percentile	37.69	463
30th percentile$<$ skill $\leq$40th percentile	37.72	461
40th percentile$<$ skill $\leq$ 50th percentile	38.55	461
50th percentile$<$ skill $\leq$ 60th percentile	38.33	463
60th percentile$<$ skill $\leq$ 70th percentile	38.48	463
70th percentile$<$ skill $\leq$ 80th percentile	39.33	461
80th percentile$<$ skill $\leq$ 90th percentile	38.79	462
skill $>$ 90th percentile	40.42	461
Skills Definition 2	**Average desired weekly hours**	
Primary education, blue collar	37.67	963
Secondary education, blue collar	37.73	1,512
Tertiary education, blue collar	38.31	106
Primary education, middle manager	38.39	245
Secondary education, middle manager	38.25	852
Tertiary education, middle manager	39.17	693
Primary education, manager	41.55	43
Secondary education, manager	41.72	113
Tertiary education, manager	43.97	96

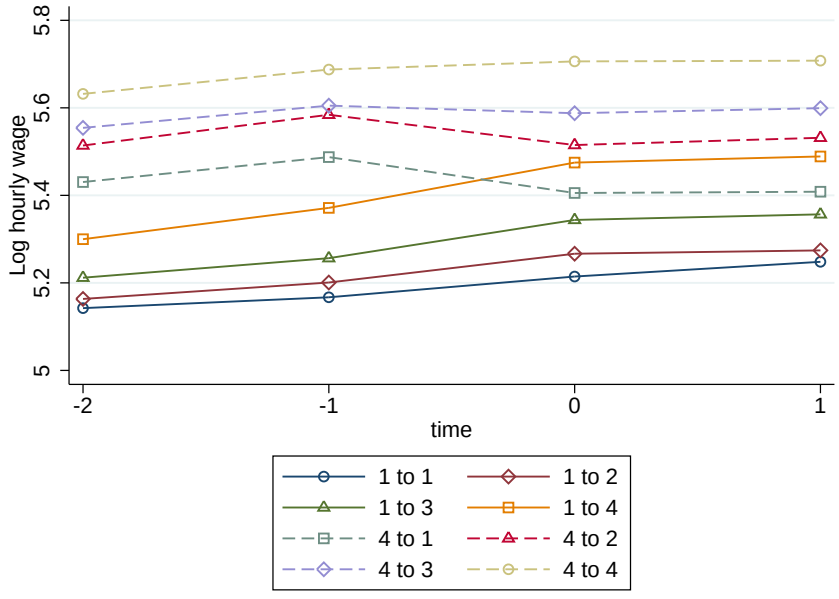
Notes: Information on desired hours is obtained from the 2008-2010 Danish labor force survey data. We focus on workers whose reference week is in November. Skills Definition 1 refers to skill groups defined as deciles of the distribution of $\alpha_i + \beta X_{ijt}$ from the AKM regression model. AKM regressions are estimated on the years 2008-2010. Skills definition 2 refers to skill groups defined at the intersection of occupational and educational category.

Back

Wage Trends of Movers



Females



Males

Back

Coordination by sector

	Std. Dev. hours Def. 1 (deciles of skills distr.)	Unionization rate
Coordination by Industry (2003-2011)		
	Mean	
Agriculture, forestry and fishing, mining and quarrying	118.69	0.71
Manufacturing	104.08	0.77
Constructions	140.70	0.72
Electricity, gas, steam and air conditioning supply, Trade and transport	76.04	0.64
Financial and insurance, Real estate, Other business	84.72	0.63
Residual services	65.20	0.71
Overall sectors	95.59	0.68
Observations	8182	

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Coordination and Firm Characteristics

	Stand. Dev. Of Total Hours (deciles of skills distr.)		Obs.
	(1)	(2)	
V.A. /employee	-0.038***	-0.013**	17807
	(0.008)	(0.006)	
Capital/employee	-0.006	-0.005***	17807
	(0.007)	(0.001)	
Sales/employee	-0.040***	-0.014	17807
	(0.007)	(0.009)	
TFP	-0.133***	-0.080***	16212
	(0.008)	(0.012)	
Firm size	-0.032***	-0.095***	17807
	(0.007)	(0.021)	
Share of tertiary educ.	-0.178***	-0.080***	17807
	(0.007)	(0.013)	
Number of plants	-0.032***	-0.085***	17807
	(0.007)	(0.017)	
Exporter status	-0.141***	-0.005	17807
	(0.007)	(0.009)	
Fraction of hourly work.	0.337***	0.257***	17807
	(0.007)	(0.016)	
Fraction of Unionized work.	0.084***	0.017	17807
	(0.008)	(0.012)	
Fraction of Females	-0.035***	0.035**	17807
	(0.008)	(0.015)	
Fraction of Part-Time work	0.225***	0.120***	17807
	(0.008)	(0.014)	
Mean Managerial Ability	-0.069***	-0.019*	16420
	(0.008)	(0.012)	
Negotiation	-0.310***	-0.146***	13441
	(0.009)	(0.016)	
Persuasion	-0.313***	-0.153***	13441
	(0.009)	(0.016)	
Social Perceptiveness	-0.289***	-0.116***	13441
	(0.009)	(0.015)	
Adjust Actions to others	-0.160***	-0.077***	13441
	(0.009)	(0.013)	
Sd Vacation Hours	0.345***	0.211***	3832
	(0.015)	(0.024)	
5 digits industry f.e.	NO	YES	

Back

Coordination and Firms Characteristics

	Std Dev. Def. 1 (deciles of skills distr.)	Obs.	Std. hours Def. 2 (education-occupation)	Obs.
VA /employee	-0.03994*** (0.00775)	17329	-0.04051*** (0.00767)	17714
Capital/employee	-0.00639 (0.00735)	17329	-0.00693 (0.00732)	17714
Sales/employee	-0.04223*** (0.00740)	17329	-0.04837*** (0.00905)	17714
Firm size	-0.03081*** (0.00731)	17329	-0.01269* (0.00732)	17714
Share of tertiary educ.	-0.19148*** (0.00754)	17329	-0.15211*** (0.00756)	17714
Number of plants	-0.03220*** (0.00731)	17329	-0.01969*** (0.00731)	17714
Exporter status	-0.17851*** (0.00760)	16486	-0.16176*** (0.00758)	16860
Fraction of hourly work.	0.36570*** (0.00715)	17329	0.36031*** (0.00711)	17714
Fraction of Unionized work.	0.07463*** (0.00841)	17329	0.09413*** (0.00805)	17714
Fraction of Females	-0.02038*** (0.00785)	17329	-0.01720** (0.00773)	17714
Fraction of Part-Time work.	0.26152*** (0.00809)	17329	0.22761*** (0.00798)	17714

The table shows standardized coefficients from a regression of the standard deviation of hours (Def. 1 or 2) on firm characteristics. Each cell is a different regression. Coefficients *, ** and *** are 10, 5 and 1 percent significance levels.

Back

Coordination and Wage Premiums

	(1) Firm f.e.	(2) Firm f.e.	(3) Firm f.e.	(4) Firm f.e.	(5) Firm f.e.	(6) Firm f.e.
Stand. Dev.	-0.075***	-0.053***	-0.066***	-0.090***		-0.041**
	(0.016)	(0.016)	(0.018)	(0.018)		(0.015)
Stand. Dev. Normal Hours					-0.070***	
					(0.016)	
Firm size		0.014*	0.010	0.033***	0.010	0.011
		(0.007)	(0.007)	(0.010)	(0.007)	(0.007)
Exporter status		0.061***	0.059***	0.054**	0.059***	0.049***
		(0.015)	(0.016)	(0.021)	(0.016)	(0.013)
Union. Rate		-0.002	0.031	0.035	0.030	0.062**
		(0.027)	(0.024)	(0.031)	(0.024)	(0.027)
Female Share		-0.055	-0.109**	-0.126***	-0.106**	-0.086***
		(0.045)	(0.043)	(0.041)	(0.043)	(0.022)
Average Hours		0.004	0.004	0.015	0.004	-0.041
		(0.025)	(0.026)	(0.024)	(0.025)	(0.028)
log(Cap/empl)		0.039***	0.024*	0.049***	0.024*	0.032***
		(0.012)	(0.013)	(0.014)	(0.013)	(0.012)
Negotiation						0.348***
						(0.105)
Persuasion						-0.259***
						(0.093)
Social Perceptiveness						0.008
						(0.036)
Adjust Actions to others						0.017
						(0.017)
Region F.E.	NO	YES	YES	YES	YES	YES
Compos. cntr	NO	NO	YES	YES	YES	YES
Ability Measures	NO	NO	YES	YES	YES	YES
Av. Hours b/w 36.5 and 37.5	YES	YES	YES	NO	YES	YES
Part. R-sq SD Hours	0.008	0.003	0.006	0.008	0.007	0.002
Part. R-sq VA and TFP	0.022	0.010	0.032	0.038	0.032	0.020
Coordination Share	0.349	0.321	0.200	0.196	0.233	0.097
R-sq	0.008	0.033	0.106	0.126	0.108	0.135
N	7312	7312	7312	4415	7299	6089

Back

Coordination and wage premiums: industry F.E.

	(1) Firm f.e.	(2) Firm f.e.	(3) Firm f.e.	(4) Firm f.e.	(5) Firm f.e.	(6) Firm f.e.	(7) Firm f.e.	(8) Firm f.e.
Stand. Dev.	-0.060***	-0.031*	-0.028*				-0.064***	-0.018
	(0.018)	(0.016)	(0.016)				(0.019)	(0.017)
Median Abs. Dev.				-0.075***	-0.045***	-0.040**		
				(0.014)	(0.014)	(0.015)		
Firm size	0.009	0.006	0.017*	0.010	0.006	0.018*	0.011	0.010*
	(0.006)	(0.005)	(0.009)	(0.007)	(0.005)	(0.009)	(0.008)	(0.005)
Exporter status	0.065***	0.030**	0.021	0.062***	0.029**	0.020	0.063***	0.032**
	(0.018)	(0.013)	(0.013)	(0.018)	(0.013)	(0.013)	(0.015)	(0.014)
Union. Rate	0.040	0.039	0.039	0.042	0.040	0.040	0.032	0.051**
	(0.025)	(0.029)	(0.030)	(0.025)	(0.029)	(0.030)	(0.024)	(0.022)
Female Share	-0.140***	-0.069**	-0.057*	-0.140***	-0.069**	-0.057*	-0.113***	-0.120***
	(0.040)	(0.027)	(0.029)	(0.038)	(0.026)	(0.028)	(0.042)	(0.034)
Average Hours	-0.006	-0.033	-0.039*	-0.018	-0.038*	-0.043**	0.001	-0.034
	(0.022)	(0.023)	(0.023)	(0.021)	(0.021)	(0.021)	(0.026)	(0.022)
log(Cap/empl)	0.028**	0.031***	0.035***	0.028**	0.030***	0.035***	0.022*	-0.089***
	(0.013)	(0.010)	(0.010)	(0.013)	(0.010)	(0.010)	(0.013)	(0.023)
log(VA/empl)								0.381***
								(0.070)
1 digit Sector f.e.	YES	NO	NO	YES	NO	NO	NO	NO
2 digits Sector f.e.	NO	YES	NO	NO	YES	NO	YES	YES
3 digits Sector f.e.	NO	NO	YES	NO	NO	YES	YES	YES
Part. R-sq SD Hours	0.004	0.001	0.001	0.006	0.002	0.001	0.009	
Part. R-sq VA and TFP	0.033	0.016	0.014	0.033	0.016	0.014		
Coordination Share	0.113	0.049	0.042	0.181	0.113	0.095		
R-sq	0.113	0.155	0.162	0.115	0.156	0.162	0.112	0.104
N	7306	7306	7306	7306	7306	7306	7060	7060

Back

Coordination and Wage Premiums

	Firm fe (1)	Firm fe (2)	Firm fe (3)	Firm fe (4)	Firm fe (5)	Firm fe (6)
Stand. Dev. Def. 1	-0.0592***	-0.0560***	-0.0296			
	(0.0139)	(0.0207)	(0.0208)			
Stand. Dev. Def. 2				-0.0355**	-0.0328*	-0.0229
				(0.0158)	(0.0181)	(0.0194)
log(Cap/empl)	0.0232	0.0208	-0.0187	0.0441***	0.0376***	0.0077
	(0.0142)	(0.0144)	(0.0175)	(0.0132)	(0.0126)	(0.0150)
Firm size	0.0187*	0.0185**	0.0184**	0.0194*	0.0189**	0.0184**
	(0.0098)	(0.0090)	(0.0076)	(0.0098)	(0.0090)	(0.0077)
Exporter status	0.0768***	0.0681***	0.0440*	0.0753***	0.0601***	0.0419*
	(0.0193)	(0.0235)	(0.0231)	(0.0172)	(0.0216)	(0.0240)
Union. Rate	0.0055	0.0065	0.0112	-0.0092	-0.0114	-0.0111
	(0.0202)	(0.0295)	(0.0267)	(0.0222)	(0.0258)	(0.0257)
log(VA/empl)			0.1317***			0.0864***
			(0.0208)			(0.0239)
log(Sales/empl)			0.0289			0.0300
			(0.0321)			(0.0254)
Average Hours	0.1776*		0.0529	0.1490	0.1245	0.0770
	(0.1044)		(0.1310)	(0.1183)	(0.1352)	(0.1324)
Av. Hours Sq.	-0.1697		-0.0735	-0.1475	-0.1280	-0.0907
	(0.1114)		(0.1258)	(0.1263)	(0.1365)	(0.1323)
Compos. cntr	YES	YES	YES	YES	YES	YES
Industry fe	NO	YES	YES	NO	YES	YES
Part. R-sq Coordinat.	0.0039	0.0028	0.0005	0.0013	0.0009	0.0003
Part. R-sq VA and Sales	0.0156	0.0148		0.0072	0.0075	
Coordination Share	0.2500	0.1892		0.1806	0.1200	
R-sq	0.0561	0.0584	0.0770	0.0254	0.0266	0.0352
N	7785	7785	7785	7677	7677	7677

All regressions show standardized coefficients. The exporter dummy is the median exporter status between 2003 and 2011.
Coordination Share is derived as the ratio of "Part. R-sq SD Hours" and "Part. R-sq VA and Sales".
"Part. R-sq VA and Sales" is from Table **??**.
Standard errors are clustered at the two digits industry level. *, ** and *** are 10, 5 and 1 percent significance levels.

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Median Abs. Deviation and Measurement Error

	(1) Firm f.e.	(2) Firm f.e.	(3) Firm f.e.	(4) Firm f.e.	(5) Firm f.e.
Stand. Dev. Tot. Hours	-0.342**		-0.069***	-0.072***	-0.061***
	(0.172)		(0.018)	(0.018)	(0.017)
Median Abs. Dev. Tot. Hours		-0.085***			
		(0.015)			
Firm size	0.003	0.010	0.009	0.148*	0.004
	(0.006)	(0.007)	(0.007)	(0.075)	(0.004)
Exporter status	0.023	0.072***	0.065***	0.059***	0.051***
	(0.029)	(0.018)	(0.016)	(0.019)	(0.015)
Union. Rate	0.068**	0.035	0.030	0.030	0.020
	(0.029)	(0.023)	(0.023)	(0.022)	(0.023)
Female Share	-0.113***	-0.108**	-0.104**	-0.087**	-0.111**
	(0.038)	(0.042)	(0.044)	(0.040)	(0.044)
Average Hours	0.024	-0.001	0.008	0.006	0.002
	(0.043)	(0.025)	(0.026)	(0.027)	(0.025)
log(Cap/empl)	0.019	0.029**	0.025*	0.038***	0.028**
	(0.015)	(0.013)	(0.013)	(0.014)	(0.013)
Numb. of skill groups					0.072***
					(0.012)
(Intang. Assets)/empl			0.019**		
			(0.009)		
O*NET IV	YES	NO	NO	NO	NO
Multi-plant firms	YES	YES	YES	NO	YES
Coordination Share		0.279	0.256	0.273	0.200
F-stat excl. instr.	8.942				
R-sq	0.020	0.118	0.101	0.101	0.105
N	6089	7374	7312	5695	7312

Back

Multi-period Regressions and Connected Set

	(1) Firm f.e.	(2) Firm f.e.	(3) Firm f.e.	(4) Firm f.e.	(5) Firm f.e.	(6) Firm f.e.
Stand. Dev. Def. 1	-0.041***	-0.021**	-0.051***		-0.030*	
	(0.011)	(0.010)	(0.018)		(0.016)	
Median Abs. Dev. Def. 1				-0.069***		-0.034***
				(0.016)		(0.012)
Firm size	0.007***	0.011***	0.010	0.011	0.009	0.010
	(0.002)	(0.002)	(0.007)	(0.008)	(0.007)	(0.008)
Exporter status	0.048***	0.022**	0.044***	0.042***	0.013	0.012
	(0.011)	(0.009)	(0.015)	(0.016)	(0.009)	(0.009)
Union. Rate	0.041***	0.040***	0.038	0.042	0.027	0.029
	(0.015)	(0.013)	(0.026)	(0.026)	(0.018)	(0.018)
Female Share	-0.150***	-0.089***	-0.131***	-0.134***	-0.055**	-0.057**
	(0.039)	(0.020)	(0.044)	(0.042)	(0.027)	(0.026)
Average Hours	-0.021**	-0.045***	-0.015	-0.028	-0.045**	-0.055**
	(0.010)	(0.010)	(0.024)	(0.022)	(0.022)	(0.021)
log(Cap/empl)	0.022*	0.036***	0.026**	0.026**	0.017	0.017
	(0.013)	(0.010)	(0.012)	(0.012)	(0.012)	(0.012)
Connected set sample	YES	YES	NO	NO	NO	NO
3 digits Sector f.e.	NO	YES	NO	NO	NO	NO
3-year sub-period f.e.	NO	NO	NO	NO	YES	YES
AKM individual controls	NO	NO	YES	YES	NO	NO
Part. R-sq SD Hours	0.002	0.001	0.003	0.003	0.001	0.001
Part. R-sq VA and Sales	0.022	0.008	0.014	0.014	0.004	0.004
Coordination Share	0.084	0.074	0.182	0.209	0.198	0.190
R-sq	0.153	0.200	0.092	0.094	0.380	0.380
N	20766	20766	7305	7305	8487	8487

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Tax Bases

Acronym	Income Type	Main Items Included
LI	Labor income	Salary, wages, honoraria, fees, bonuses, fringe benefits, business earnings
PI	Personal income	LI+ transfers, grants, awards, gifts, received alimony -Labor market contribution, certain pension contributions
CI	Capital income	Interest income, rental income, business capital income -interest on debt (mortgage, bank loan, credit cards, student loans)
D	Deductions	Commuting costs, union fees, UI contribution, other work expenditures, charity, paid alimony
PCP		Private capital pension contribution
ECP		Employer paid capital pension contribution
TI	Taxable income	PI+CI-D
SI	Stock Income	Dividends and realized capital gains from shares

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Tax System

Tax type	2008 Base	Rate	Tax Bracket (DKK)	2009 Base	Rate	Tax Bracket (DKK)
Regional tax*	TI	33.16		TI	33.21	
National taxes						
Bottom tax	PI+CI(>0)	5.48	0 - 279799	PI+CI(>0)	5.04	0 - 347199
Middle tax	PI +CI(>0)	6.0	279800 - 335799	PI +CI(>0)	6.0	>347200
Top tax	PI+CI(>0)+PCP+ECP	15.0	335800	PI +CI(>0)+PCP+ECP	15.0	>347200
Labor market contribution	LI	8.0		LI	8.0	
EITC	LI	4.0		LI	4.25	
Tax on stock income	SI	28.0, 43.0, 45.0		SI	28.0, 43.0. 45.0	
Marginal tax ceiling	PI/CI/TI	59.0		PI/CI/TI	59.0	

Tax type	2010 Base	Rate	Tax Bracket (DKK)	2011 Base	Rate	Tax Bracket (DKK)
Regional tax*	TI	33.32		TI	33.38	
National taxes						
Bottom tax	PI+CI(>0)	3.67	0 - 389899	PI+CI(>0)	3.64	0 - 389899
Middle tax	-	-		-	-	
Top tax	PI +CI(>40000)+PCP+ECP	15.0	>389900	PI +CI(>40000)+PCP+ECP	15.0	>389900
Labor market contribution	LI	8.0		LI	8.0	
EITC	LI	4.25		LI	4.25	
Tax on stock income	SI	28.0, 42.0		SI	28.0, 42.0	
Marginal tax ceiling	PI/CI/TI	51.5		PI/CI/TI	51.5	

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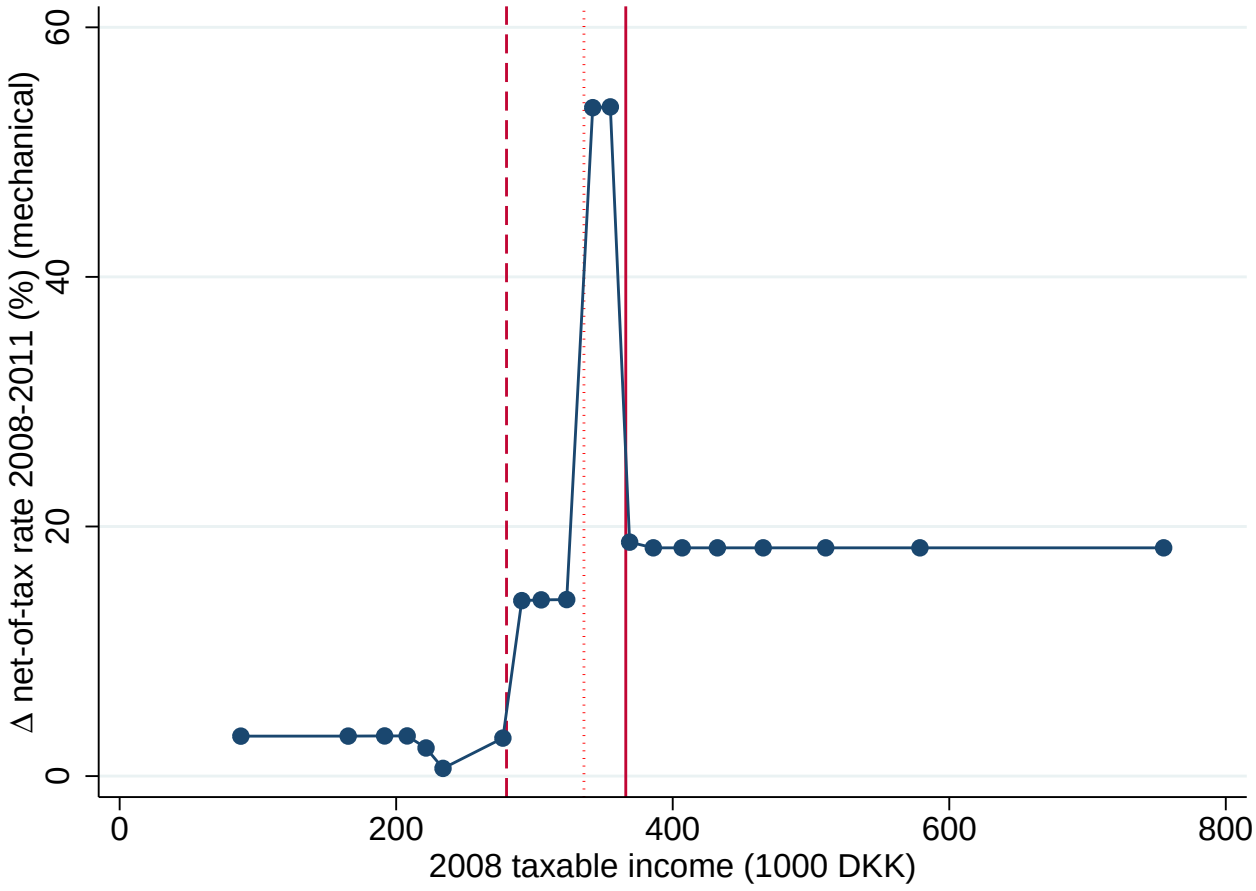
Tax Changes and Income



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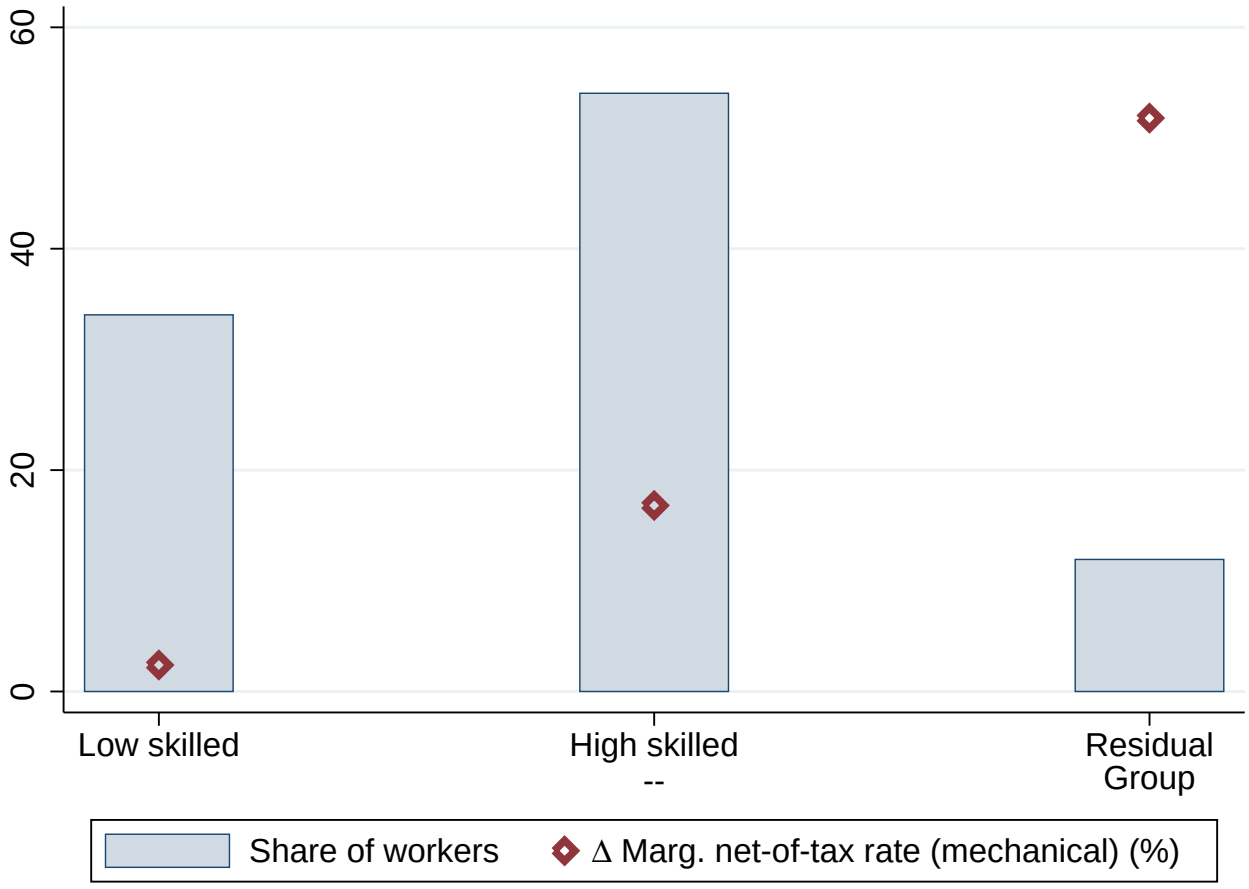
Shares of Workers By Skill Groups



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Attenuating Effects

	(1)	(2)	(3)	(4) High Coord. Top 50%	(5) Low Coord. Bottom 50%	(6) High Coord. Top 50%	(7) Low Coord. Bottom 50%
Dependent Variable	$\Delta log\, h^H$	$\Delta log\, h^H$	$\Delta log\, h^H$	$\Delta log\, h^H$	$\Delta log\, h^H$	$\Delta log\, h^H$	$\Delta log\, h^H$
$\Delta log\,(1-\tau^H)$	-0.067***	-0.069***	-0.047***	-0.017	-0.097***	-0.008	-0.062**
	(0.008)	(0.018)	(0.014)	(0.016)	(0.025)	(0.013)	(0.025)
Log base-year income			-0.008***	-0.002	-0.023***	-0.002*	-0.022***
			(0.003)	(0.003)	(0.006)	(0.001)	(0.006)
IV	NO	YES	YES	YES	YES	YES	YES
Overtime Hours	YES	YES	YES	YES	YES	NO	NO
Mean Hours	1924.47	1924.47	1924.47	1928.33	1914.91	1900.34	1858.41
Pvalue High=Low				0.01		0.06	
F-stat Excl. Inst.		1355.19	754.51	1293.74	192.94	1293.74	192.94
P-value Excl. Inst.		0.00	0.00	0.00	0.00	0.00	0.00
N Firms	1167	1167	1167	584	583	584	583
N	26488	26488	26488	18875	7613	18875	7613

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Spillovers

	(1)	(2)	(3)	(4)	(5) Low Coord. Bottom 50%	(6)	(7) Low Coord. Bottom 50%
Dependent Variable	$\Delta log\, h^L$	$\Delta log\, h^L$	$\Delta log\, h^L$	$\Delta log\, h^L$	$\Delta log\, h^L$	$\Delta log\, h^L$	$\Delta log\, h^L$
$\Delta log\, \overline{h^H_{normal}}$	0.540***	0.899***	0.878***	0.894**	0.624**		
	(0.112)	(0.304)	(0.301)	(0.373)	(0.297)		
$\Delta log\, \overline{h^H_{total}}$						1.375**	0.706**
						(0.612)	(0.345)
$\Delta log\,(1-\tau^L)$	-0.005	0.023	0.051	0.053	-0.060	0.056	-0.053
	(0.009)	(0.088)	(0.114)	(0.126)	(0.115)	(0.138)	(0.115)
IV	NO	YES	YES	YES	YES	YES	YES
Region F.E.	YES	YES	YES	YES	YES	YES	YES
Splines of log t-1 Inc. and Δlog inc. t-1-t	NO	NO	YES	YES	YES	YES	YES
Log Mean Inc. High Sk.	NO	NO	NO	YES	NO	NO	NO
Overtime Hours	NO	NO	NO	NO	NO	YES	YES
F-stat Excl. Inst.		13.09, 160.40	15.45,76.76	4.66, 55.84	11.90, 48.55	4.43, 76.72	8.39, 50.92
P-value Excl. Inst.		0.00, 0.00	0.00, 0.00	0.03,0.00	0.00, 0.00	0.04, 0.00	0.00, 0.00
Mean Hours Low Sk.	1812.51	1812.51	1812.51	1812.51	1742.05	1828.87	1760.74
Mean Hours High Sk.	1875.00	1875.00	1875.00	1875.00	1846.56	1905.60	1879.90
N Firms	968	968	968	968	484	968	484
N	10091	10091	10091	10091	4100	10091	4100

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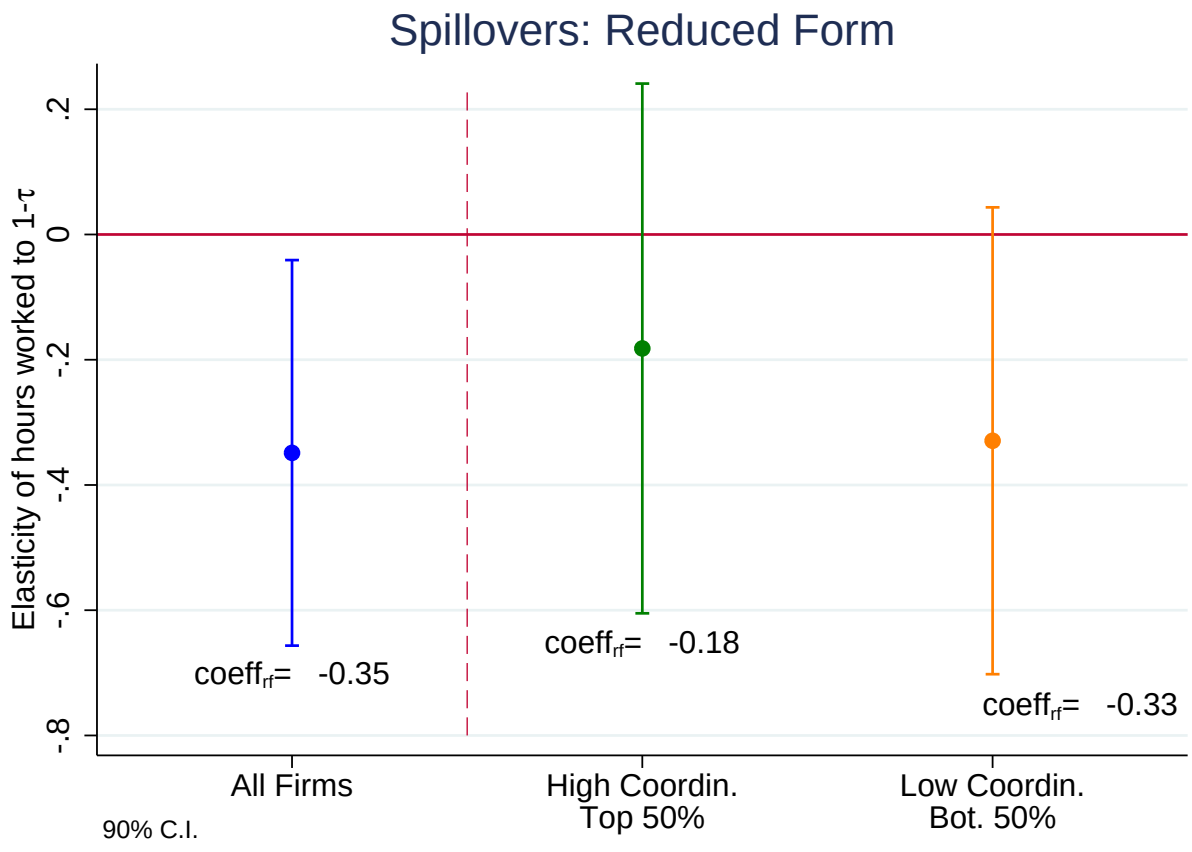
Reduced Form



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Efficiency

- No spillovers ($dB_L \approx 0$)

$$\frac{dB}{dR} = \frac{dB_H + dB_L}{dM_H + dM_L + dB_H + dB_L}$$

- With spillovers

$$\frac{dB}{dR} = \frac{dB_H + dB_L + dB_L^{Spillover}}{dB_L^{Spillover} + dM_H + dM_L + dB_H + dB_L}$$

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DiD Regression

	(1) Log Hours	(2) Log Hours
Treatment × Post	-0.007**	-0.006**
	(0.003)	(0.003)
Treatment	0.048***	0.043***
	(0.003)	(0.003)
Post	0.010***	0.009***
	(0.003)	(0.003)
Individual Controls	NO	YES

Standard errors in parentheses * p<0.10, ** p<0.05, *** p<0.01

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Robustness Check High Skilled

	(1) High Coord. Top 25%	(2) Low Coord. Bottom 25%	(3) High Coord. Top 50%	(4) Low Coord. Bottom 50%	(5) High Coord. Top 50%	(6) Low Coord. Bottom 50%
Dependent Variable	$\Delta log\, h^H$	$\Delta log\, h^H$	$\Delta log\, h^H$	$\Delta log\, h^H$	$\Delta log\, h^H$	$\Delta log\, h^H$
$\Delta log\,(1-\tau^H)$	0.003	-0.147***	-0.027	-0.075***	-0.011	-0.050*
	(0.018)	(0.055)	(0.017)	(0.026)	(0.014)	(0.027)
Log base-year income	-0.001	-0.038*	-0.006*	-0.019***	-0.003	-0.016***
	(0.003)	(0.022)	(0.004)	(0.004)	(0.002)	(0.004)
Overtime hours	NO	NO	YES	YES	NO	NO
Firm F.E.	NO	NO	YES	YES	YES	YES
Base-year F.E.	NO	NO	YES	YES	YES	YES
Mean Hours	1917.40	1870.33	1935.47	1922.85	1901.60	1864.17
Pvalue High=Low	0.01		0.02		0.06	
F-stat Excl. Inst.	566.19	133.53	1542.40	353.25	1542.40	353.25
P-value Excl. Inst.	0.00	0.00	0.00	0.00	0.00	0.00
N Firms	293	291	785	675	785	675
N	8307	2371	26497	10267	26497	10267

Back Addit. Findings Back Robustness

Females, Top Incomes and Labor Income Elasticity

	(1) $\Delta log h^H$	(2) $\Delta log h^H$	(3) $\Delta log h^H$	(4) $\Delta log(\text{ Labor income}^H)$
$\Delta log(1-\tau^H)$	0.071**	-0.063*	-0.045***	0.0336***
	(0.035)	(0.037)	(0.015)	(0.0087)
Log base-year income	-0.012	-0.003	-0.008***	-0.1988***
	(0.012)	(0.005)	(0.003)	(0.0063)
Women with kids only	YES	NO	NO	NO
Workers at kinks	YES	YES	NO	YES
Top 10\% income only	NO	YES	NO	NO
Mean Hours	1888.72	1951.85	1927.68	
F-stat Excl. Inst.	189.17	14.46	678.35	5.66e+04
P-value Excl. Inst.	0.00	0.00	0.00	0.00
N	2998	2648	24736	1865067

Back Addit. Findings

Robustness Check Low Skilled

	(1)	(2)	(3)	(4)
Dependent variable	$\Delta log\, h^L$	$\Delta log\, h^L$	$\Delta log\, h^L$	$\Delta log\, h^L$
$\Delta log\, \bar{h}^H_{normal}$	0.888***		0.870***	0.958
	(0.333)		(0.323)	(0.997)
$\Delta log\, \bar{h}^H_{total}$		1.217**		
		(0.576)		
$\Delta log\, \overline{h^H}$ x(Share High Sk.>50)				0.083
				(1.126)
Share High Sk.>50				-0.005
				(0.009)
$\Delta log\,(1-\tau^L)$	0.163*	0.151	0.018	0.020
	(0.088)	(0.094)	(0.124)	(0.115)
Overtime hours	NO	YES	NO	NO
Firm f.e.	YES	YES	NO	NO
Base-year f.e.	YES	YES	NO	NO
Workers at kinks	YES	YES	NO	YES
Mean Hours Low Sk.	1815.25	1833.23	1810.43	1813.05
Mean Hours High Sk.	1873.63	1906.57	1875.48	1875.14
F-stat Excl. Inst.	6.23, 24.55	2.45, 25.57	15.50, 69.93	1.20,71.31,37.34
P-value Excl. Inst.	0.01, 0.00	0.12, 0.00	0.00,0.00	0.27,0.00,0.00
N Firms	835	835	943	977
N	15985	15985	9415	10196

Back Addit. Findings Back Robustness

Income Controls Low Skilled

	(1) $\Delta log\, h^L$	(2) $\Delta log\, h^L$	(3) $\Delta log\, h^L$
$\Delta log\, \overline{h^H}$	1.152***	1.160***	1.115**
	(0.373)	(0.365)	(0.464)
$\Delta log\,(1-\tau^L)$	0.050	0.044	
	(0.105)	(0.123)	
$\Delta log\,(1-\tau^L_{5th})$			0.030**
			(0.015)
Log base-year income	YES	NO	NO
Splines of inc. at t	NO	YES	NO
5th ord. polynomial inc. t	NO	NO	YES
F-stat Excl. Inst. 13.65, 105.11	17.17, 62.25	3.91, 459.04	
P-value Excl. Inst.	0.00, 0.00	0.00, 0.00	0.05, 0.00
Mean Hours Low Sk.	1809.02	1809.02	1809.49
Mean Hours High Sk.	1877.51	1877.51	1877.50
N Firms	1157	1157	1151
N	14402	14402	13654

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Income Controls High Skilled

	(1) High Coord. Top 50%	(2) Low Coord. Bottom 50%	(3) High Coord. Top 50%	(4) Low Coord. Bottom 50%	(5) High Coord. Top 50%	(6) Low Coord. Bottom 50%
Dependent Variable	$\Delta log\, h^H$	$\Delta log\, h^H$	$\Delta log\, h^H$	$\Delta log\, h^H$	$\Delta log\, h^H$	$\Delta log\, h^H$
$\Delta log\,(1-\tau^H)$	-0.020	-0.082***			-0.024**	-0.072**
	(0.014)	(0.027)			(0.012)	(0.029)
$\Delta log\,(1-\tau^H_{5th})$			-0.023	-0.115***		
			(0.022)	(0.031)		
IV	YES	YES	YES	YES	YES	YES
Region F.E.	YES	YES	YES	YES	YES	YES
Splines of inc. at t	YES	YES	NO	NO	NO	NO
5th ord. polynomial inc. t	NO	NO	YES	YES	NO	NO
Splines of log t-1 inc. and Δ log inc. t-1-t	NO	NO	NO	NO	YES	YES
Pvalue High=Low	0.05		0.02		0.02	
Mean Hours	1904.10	1847.66	1904.29	1850.89	1907.00	1853.11
F-stat Excl. Inst.	1298.25	461.91	307.72	79.46	857.62	250.09
P-value Excl. Inst.	0.00	0.00	0.00	0.00	0.00	0.00
N Firms	584	583	584	581	537	519
N	19067	7421	17852	6814	15619	5649

Back Robustness

Alternative Data on Hours

	(1) High Coord. Top 50% Def. 2	(2) Low Coord. Bottom 50% Def. 2	(3) Low Coord. Bottom 50% Def. 2	(4) Low Coord. Bottom 50% Def. 2	(5) High Coord. Top 50% BFL Hours	(6) Low Coord. Bottom 50% BFL Hours	(7) BFL Hours
Dependent variable	$\Delta log\, h^H$	$\Delta log\, h^H$	$\Delta log\, h^L$	$\Delta log\, h^L$	$\Delta log\, h^H$	$\Delta log\, h^H$	$\Delta log\, h^L$
$\Delta log\,(1-\tau^H)$	-0.001	-0.092***			-0.008	-0.091**	
	(0.012)	(0.022)			(0.041)	(0.042)	
$\Delta log\, \overline{h^H_{normal}}$			0.684**				
			(0.307)				
$\Delta log\, \overline{h^H_{total}}$				0.760**			
				(0.319)			
$\Delta log\, \overline{h^H_{blf}}$							1.015**
							(0.400)
$\Delta log\,(1-\tau^L)$			-0.016	-0.077			0.187
			(0.107)	(0.113)			(0.291)
Log base-year income	-0.001	-0.022***			-0.022**	-0.010	
	(0.002)	(0.007)			(0.009)	(0.010)	
Overtime hours	YES	YES	NO	YES	NO	NO	NO
BFL hours	NO	NO	NO	NO	YES	YES	YES
Mean Hours	1905.27	1863.52	1760.44	1783.84	1901.01	1854.16	1851.93
Pvalue High=Low	0.00				0.15		
F-stat Excl. Inst.	1034.04	282.28	5.43,35.78	9.88,35.78	962.85	179.52	1.37,33.69
P-value Excl. Inst.	0.00	0.00	0.00,0.00	0.00,0.00	0.00	0.00	0.26,33.69
N Firms	583	583	489	489	477	521	802
N	15701	10788	4749	4749	15521	6330	8562

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Salaried High Skilled Workers

	(1)	(2)	(3)	(4) High Coord. Top 50%	(5) Low Coord. Bottom 50%	(6) High Coord. Top 50%	(7) Low Coord. Bottom 50%
Dependent Variable	$\Delta log\, h^H$	$\Delta log\, h^H$	$\Delta log\, h^H$	$\Delta log\, h^H$	$\Delta log\, h^H$	$\Delta log\, h^H$	$\Delta log\, h^H$
$\Delta log\,(1-\tau^H)$	-0.052***	-0.021	-0.013	-0.012	-0.026	-0.004	0.002
	(0.008)	(0.019)	(0.015)	(0.017)	(0.031)	(0.013)	(0.032)
Log base-year income			-0.003	-0.001	-0.010	-0.001	-0.007
			(0.003)	(0.003)	(0.007)	(0.001)	(0.007)
IV	NO	YES	YES	YES	YES	YES	YES
Overtime Hours	YES	YES	YES	YES	YES	NO	NO
Mean Hours	1944.03	1944.03	1944.03	1937.70	1965.55	1913.64	1928.79
Pvalue High=Low				0.69		0.87	
F-stat Excl. Inst.		926.68	545.32	1132.07	98.27	1132.07	98.27
P-value Excl. Inst.		0.00	0.00	0.00	0.00	0.00	0.00
N Firms	1098	1098	1098	576	522	576	522
N	22242	22242	22242	17183	5059	17183	5059

Standard errors in parentheses, * p<0.10, ** p<0.05, *** p<0.01

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Salaried Low Skilled Workers

	(1)	(2)	(3)	(4)	(5) Low Coord. Bottom 50%	(6)	(7) Low Coord. Bottom 50%
Dependent Variable	$\Delta log\, h^L$	$\Delta log\, h^L$	$\Delta log\, h^L$	$\Delta log\, h^L$	$\Delta log\, h^L$	$\Delta log\, h^L$	$\Delta log\, h^L$
$\Delta log\, \overline{h^H_{normal}}$	0.447***	0.113	0.047	0.927	-0.055		
	(0.137)	(0.664)	(0.685)	(0.617)	(0.584)		
$\Delta log\, \overline{h^H_{total}}$						0.136	-0.036
						(1.664)	(0.572)
$\Delta log\,(1-\tau^L)$	-0.018**	0.157*	0.240*	0.316**	0.150	0.247**	0.145
	(0.008)	(0.087)	(0.134)	(0.138)	(0.154)	(0.124)	(0.146)
IV	NO	YES	YES	YES	YES	YES	YES
Splines of log $t-1$ Inc. and log inc. $t-1-t$	NO	NO	YES	YES	YES	YES	YES
Log Mean Inc. High Sk.	NO	NO	NO	YES	NO	NO	NO
Overtime Hours	NO	NO	NO	NO	NO	YES	YES
Mean Hours Low Sk.	1889.59	1889.59	1889.59	1889.59	1882.18	1902.44	1887.82
Mean Hours High Sk.	1899.04	1899.04	1899.04	1899.04	1872.92	1929.04	1901.65
N Firms	826	826	826	826	355	826	355
N	5966	5966	5966	5966	1410	5966	1410

Standard errors in parentheses, * p<0.10, ** p<0.05, *** p<0.01

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Hourly High Skilled Workers

	(1)	(2)	(3)	(4) High Coord. Top 50%	(5) Low Coord. Bottom 50%	(6) High Coord. Top 50%	(7) Low Coord. Bottom 50%
Dependent Variable	$\Delta log\, h^H$	$\Delta log\, h^H$	$\Delta log\, h^H$	$\Delta log\, h^H$	$\Delta log\, h^H$	$\Delta log\, h^H$	$\Delta log\, h^H$
$\Delta log\,(1-\tau^H)$	-0.139***	-0.173***	-0.063	-0.058	-0.045	-0.051	0.005
	(0.021)	(0.030)	(0.040)	(0.051)	(0.051)	(0.056)	(0.043)
Log base-year income			-0.070***	-0.016	-0.116***	-0.006	-0.086***
			(0.020)	(0.019)	(0.030)	(0.015)	(0.025)
IV	NO	YES	YES	YES	YES	YES	YES
Overtime Hours	YES	YES	YES	YES	YES	NO	NO
Mean Hours	1821.55	1821.55	1821.55	1833.02	1813.96	1764.96	1718.32
Pvalue High=Low				0.87		0.43	
F-stat Excl. Inst.		447.98	251.08	141.89	139.60	141.89	139.60
P-value Excl. Inst.		0.00	0.00	0.00	0.00	0.00	0.00
N Firms	442	442	442	93	349	93	349
N	4233	4233	4233	1685	2548	1685	2548

Standard errors in parentheses, * p<0.10, ** p<0.05, *** p<0.01

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Hourly Low Skilled Workers

	(1)	(2)	(3)	(4)	(5) Low Coord. Bottom 50%	(6)	(7) Low Coord. Bottom 50%
Dependent Variable	$\Delta log\, h^L$	$\Delta log\, h^L$	$\Delta log\, h^L$	$\Delta log\, h^L$	$\Delta log\, h^L$	$\Delta log\, h^L$	$\Delta log\, h^L$
$\Delta log\, \overline{h^H_{normal}}$	0.646***	0.725	0.779*	0.891*	0.655		
	(0.100)	(0.469)	(0.464)	(0.474)	(0.568)		
$\Delta log\, \overline{h\_total^H}$						0.981*	0.928
						(0.545)	(0.677)
$\Delta log\,(1-\tau^L)$	-0.053*	-0.324	-0.194	-0.175	-0.101	-0.247	-0.081
	(0.027)	(0.202)	(0.172)	(0.180)	(0.174)	(0.187)	(0.184)
IV	NO	YES	YES	YES	YES	YES	YES
Splines of log $t-1$ Inc. and log inc. $t-1-t$	NO	NO	YES	YES	YES	YES	YES
Log Mean Inc. High Sk.	NO	NO	NO	YES	NO	NO	NO
Overtime Hours	NO	NO	NO	NO	NO	YES	YES
Mean Hours Low Sk.	1700.72	1700.72	1700.72	1700.72	1668.11	1728.31	1696.86
Mean Hours High Sk.	1840.16	1840.16	1840.16	1840.16	1832.65	1882.57	1872.02
N Firms	380	380	380	380	315	380	315
N	4117	4117	4117	4117	2684	4117	2684

Standard errors in parentheses, * p<0.10, ** p<0.05, *** p<0.01

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Interaction With Other Firm Characteristics

	(1) High Coord. $\Delta log\, h^H$	(2) Low Coord. $\Delta log\, h^H$	(3) High Coord. $\Delta log\, h^H$	(4) Low Coord. $\Delta log\, h^H$	(1) High Coord. $\Delta log\, h^H$	(2) Low Coord. $\Delta log\, h^H$	(3) High Coord. $\Delta log\, h^H$	(4) Low Coord. $\Delta log\, h^H$
$\Delta log\,(1-\tau^H)$	-0.010	-0.099**	0.045	-0.121**	0.110	0.953	0.576*	0.899
	(0.016)	(0.039)	(0.043)	(0.059)	(0.176)	(0.838)	(0.309)	(0.978)
$\Delta log\,(1-\tau^H)\times$ Size	-0.000	0.000						
	(0.000)	(0.000)						
$\Delta log\,(1-\tau^H)\times$ Export			-0.073	0.041				
			(0.048)	(0.083)				
$\Delta log\,(1-\tau^H)\times$ Sales					-0.017	-0.144		
					(0.025)	(0.116)		
$\Delta log\,(1-\tau^H)\times$ TFP							-0.107*	-0.186
							(0.056)	(0.185)
Observations	18875	7613	18875	7613	18875	7613	17829	7048

Standard errors in parentheses, * p<0.10, ** p<0.05, *** p<0.01

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