MINIMUM WAGES, UNIONS, BARGAINING INCOME INEQUALITY

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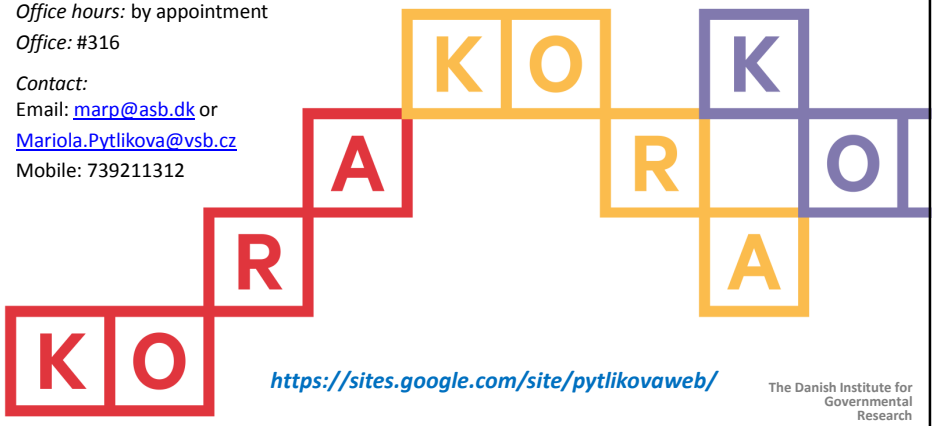

https://sites.google.com/site/pytlikovaweb/

The Danish Institute for Governmental Research

Reading list

10.30-12.00 Minimum wages, unions, bargaining
Mandatory readings:

Borjas: Labour Economics: Labour Demand, Chapter 3;
Borjas: Labour Economics: Labour Market Equilibrium, Chapter 4;
Borjas: Labour Economics: Labour Unions, Chapter 10;
Card D. and Krueger A. (1994) 'Minimum Wages and Employment: A Case Study of the Fast Food Industry in New Jersey and Pennsylvania', *American Economic Review* 84: 772–793.

Optional readings:

Neumark, David; Wascher, William (December 2000). "Minimum Wages and Employment: A Case Study of the Fast-Food Industry in New Jersey and Pennsylvania: Comment". *The American Economic Review* 90 (5): 1362–96. doi:10.1257/aer.90.5.1362.
Eriksson, T. and M. Pytlikova (2004): "Firm-level Consequences of Large Minimum Wage Increases in the Czech and Slovak Republics". *Labour*. Vol. 18, No.1, pp. 75-103.

Popular media and policy reports:

The Economist: Minimum wages: the logical floor. Dec 14th 2013: http://www.economist.com/news/leaders/21591593-moderate-minimum-wages-do-more-good-harm-they-should-be-set-technocrats-not

Further: Slides of the lectures

All materials provided on: *http://home.cerge-ei.cz/munich/labor13/*

Monday 23.2., 13.30-15.00 Income inequality

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OUTLINE

- **Policy Application to the demand theory:**
  - **Minimum Wages**
  - **Unions and bargaining**

Policy Application: Minimum Wages

- Objectives of the minimum wage
  - Improve living standards of low-paid workers
  - Protect workers in least organised sectors
  - Prevent exploitation
  - Reduce wage inequality
- Functions of the minimum wage
  - Reference wage:
    - Basis for individual and collective negotiation
  - Instrument of income policy:
    - Used to determine a number of social benefits:
      - Pensions
      - Maternity allowance
      - Unemployment benefits
      - Disability benefits, etc.

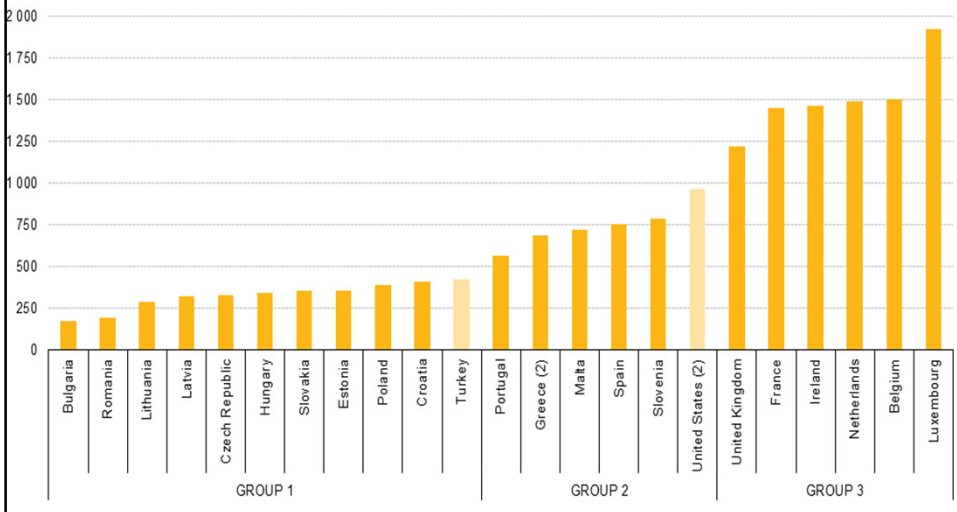
Policy Application: Minimum Wages

- Set by:
  - a government
  - an outcome of negotiations between workers and firm representatives.
- Types:
  - A national, government legislated MW
  - Industry level minimum wage
- Minima – hourly, daily, weekly and monthly basis;
- Reduced or sub-minimum wages for some groups of workers (age, qualifications..)
- What do we know about the impact – on employment and wages?

Table 2.1 Minimum Wages in OECD Countries (2005)

	Minimum wage to average wage ratio[1] (%)	Minimum wage (€ per hour)	Minimum wage[2] (€ per month) PPP	Determination[3] Setting	Determination[3] Level	Coverage[4]
Australia		7.25	1277	–	–	80
Austria				CB-L	P	95
Belgium	43	6.93	1220	CB	N	90
Canada	35	4.75	836	L	F-P	100
Czech Republic	39	1.58	278	L	N	100
Denmark				CB	–	80
Finland				CB	N	90
France	52	7.51	1322	L	N	100
Germany				CB	–	68
Greece		3.29	578	L	N	100
Hungary	38	1.28	225	L	N	100
Iceland				CB	–	–
Ireland	53	7.43	1308	CB	N	100
Italy				CB	N	80
Japan	40	4.15	731	L	P	100[a]
Korea	27	2.64	464	–	–	10
Luxembourg				L	N	100[b]
Netherlands	39	7.30	1284	L	N	100[c]
New Zealand	48	4.98	877	L	N	25
Poland	40	1.35	237	L	N	100
Portugal	53	2.08	366	L	N	100
Slovak Republic				L	N	100
Spain	40	3.40	599	L	N	100
Turkey		2.78	489	L	–	100
United Kingdom	39	6.40	1127	L	N	100[d]
United States	31	3.48	613	L	N	100

National monthly minimum wage (adult rate), 2013, in EUR



(1) Denmark, Germany, Italy, Cyprus, Austria, Finland and Sweden: no statutory minimum wage.
(2) July 2013.
Source: Eurostat (online data code: earn_mw_cur)

Minimum wage as a % of average and median gross wage, 2012

	% mean	% median		% mean	% median
Australia	44	53	Lithuania	36	48
Belgium	43	51	Luxembourg	35	42
Canada	40	45	Mexico	19	..
Czech Rep	31	36	Netherlands	41	47
Chile	43	67	Poland	38	38
France	50	62	Romania	31	45
Greece	30	43	Slovakia	37	47
Hungary	40	54	Slovenia	48	60
Ireland	44	48	Spain	35	35
Estonia	30	42	UK	39	47
Latvia	38	51	United States	27	38

See https://stats.oecd.org/Index.aspx?DataSetCode=MIN2AVE#

Source: OECD

The Effect of MW Increases: Theory

Two Extreme Cases:

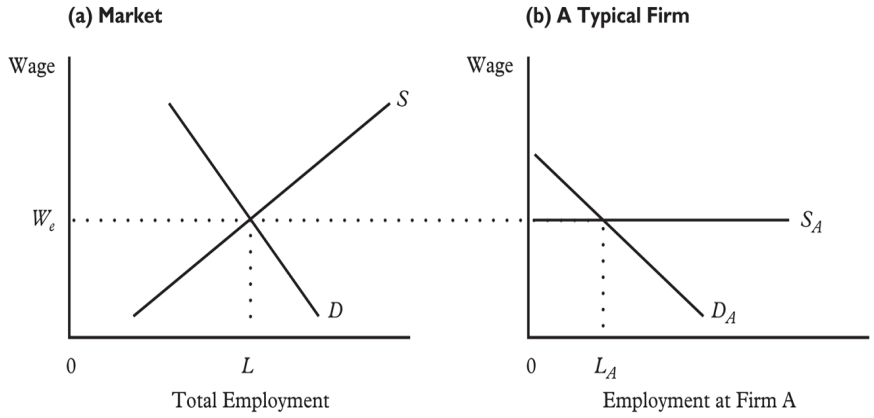
- Competitive Labor Market
- Monopsony

When agree:

- the MW is too low = not binding
- the MW is too high = employment decrease

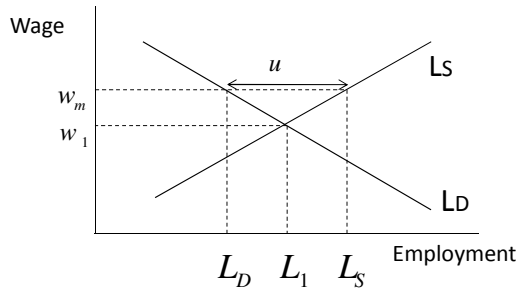
MW Increases: Theory – The Basic Competitive Model

- Assumption of labor demand theory of competitive markets : individual "price-taking firm"
- a firm that is a perfect competitor in the labor market faces a horizontal labor supply curve and can hire an unlimited number of workers at the market-clearing wage.



Increases: Theory – the Basic Competitive

What happens if we impose a minimum wage in this labor market?



MW Increases–Competitive Labor Markets, Alternative Models I

The basic competitive model -many simplifying assumtions,

Alternative models:

- **Substitution model** – allows for heterogeneity of labor => two types of workers, skilled and unskilled.
- If a minimum wage is above the market-clearing wage of unskilled workers but below the wage of skilled workers, *the ratio of skilled to unskilled workers will rise.*
- If all firms hire more skilled workers, the market wage for skilled workers *is likely to rise =>* it will dampen the increase in the number of skilled workers employed.
- The total employment effect cannot be positive in this model because the wages of at least one, and possibly both, types of workers increase.

MW Increases–Competitive Labor Markets, Alternative Models II

Substitution by importing – relaxes the assumptions of non-existence of foreign trade. Higher minimum wages leads to increase in costs =>more expensive products=>lower competitiveness => substitution of domestic production for imports. The effect strong for small open economies.

MW Increases - Monopsony

In a case of monopsonist, there can be even an increasse in an employment in reaction to an increase in a minimum wage.

A monopsonist is a firm that faces an upward-sloping labor supply curve (similarly as monopoly on the product market is facing downward sloping demand curve for its products)=> the firm must raise the wage in order to hire additional workers;

The monopsonist determines the quantity of labor to hire by setting the value of the marginal product equal to the marginal cost of labor. The marginal cost of labor is no longer equal to the wage. Instead, the cost of hiring an additional worker is the wage paid to that worker plus the increase in the wages of all current workers.

Marginal labor cost curve for this firm is even more upward sloping than the supply curve = marginal expense of labor exceeds the wage

MW Increases - Monopsony

Some critique:

Monopsony less likely for the market for low-skilled labor, which is rather characterized by a large number of small firms.

But the case of monopsony similar for firms colluding in wage setting – collusion among employers may be favoured by collective bargaining institutions.

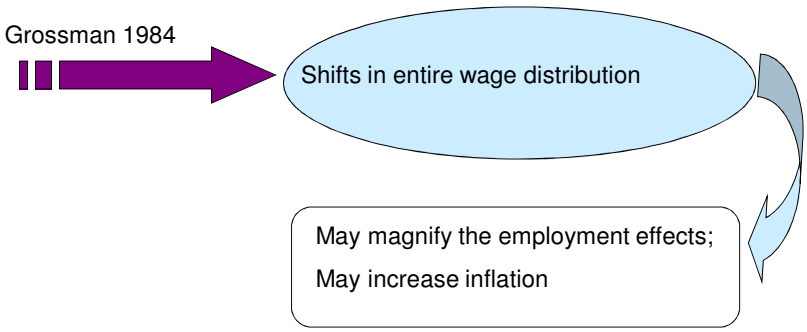
Further employers can have some degree of monopsony power also in the case of existence of *search frictions and mobility costs.* All these modern monopsony cases are rather frequent in practise (*Manning*)

- So in principle, few pure monopsonies, but many firms have some degree of monopsony power, e.g.:
  - Small "company town"
  - If skills are very specific e.g. IBM mainframe repair technicians
  - Hospital in the market for nurses, lab technicians, and radiologists
  - Fast food restaurants located in nearby towns

The Effect of MW Increases: *THEORY*

- Minimum wage forces firms to:
  - Become more efficient
  - Rationalize production process
  - Invest in training
  - => increases in labour productivity
- Surplus labour finds employment in labour-demanding sectors
- Efficiency wages (a bit problematic wrt low-wage workers)

The Effect of MW Increases: *THEORY – WAGE EFFECTS*



The Effect of MW Increases: Empirics

Card & Krueger experiment & New Jersey Minimum Wage Law

- Card & Krueger experiment – effects of minimum wage hikes in the U.S. fast-food industry
- New Jersey raised minimum wage in 1992 (from $4.25-$5.05 per hour), whereas Pensylvania did not
- The authors compare the change in NJ to the change in PA
- a difference-in-difference estimator, which allows to identify a causal effect, not just a correlation

Card and Krueger Experiment

- Widely cited study
- Huge controversy among economists
- Caused millions of workers to get a raise from the Clinton administration in 1995
- April 1, 1992: in New Jersey, the minimum wage rose from $4,25 to $5,05 per hour (19% increase)
- Pennsylvania did not raise the minimum wage
- Survey of 410 fast food restaurants
- Timing is: before (Feb.-March 1992) and after (Nov-Dec 1992)
- Most workers are teenagers
- Teenagers widely seen as potential losers of minimum wage policies

Card and Krueger Experiment

Per store employment

	before	after	Δ
NJ	20.44	21.03	$\Delta L_N = +0.59$
PA	23.33	21.37	$\Delta L_P = -2.16$

- Effect is 0.59 – (-2.16) = 2.76 (with a standard error of 1.36, meaning it is statistically significant at the 5% since the t ratio is ~ 2.0)
- 2.76 is ~ 13.5% increase in employment in NJ relative to PA

Card and Krueger Experiment: Interpretations

1. Monopsony

Other interpretations:

2. Hungry teens
   - when you put more money into workers' pockets, they go out and buy more stuff, stimulating the local economy and creating new jobs all around them
3. Motivational effects/efficiency wages (more people want to work for Burger King)
4. Confounding variables (shocks to PA that are not accounted for in this test)

The Effect of MW Increases: Empirics

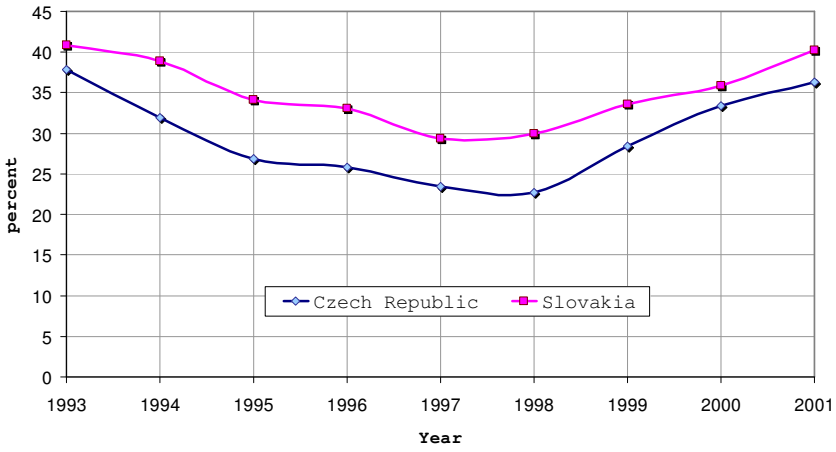
- Results mixed: mainly U.S evidence = small minimum wage changes; Early evidence that MW may reduced hiring of low-skilled, inexperienced workers -> higher unemployment among the workers.
- Results of some previous research based on firm-level data– source: Brown, Gilroy a Kohen, (1982, pg. 504).

	%change in employment (elasticity)	**Change in unemployment rate** (in %)
1. Kaitz (1970)	-0.98	-0.006
2. Adie (1971)	/	+2.525
3. Moore (1971)	/	+3.649
4. Kosters & Welch (1972)	-2.96/	/
5. Kelly (1975)	-1.204	/
6. Gramlich (1976)	-0.94	/
7. Mincer (1976)	-2.31	+0.445
8. Welch (1976)	-1.78	/
9. Ragan (1977)	-0.65	+0.75
10. Mattila (1978)	-0.84	+0.10
11. Freeman (1979)	-2.46	0
12. Wachter a Kim (1979)	-2.519	+0.512
13. Iden (1980)	+2.26	/
Range	-0.98 / -2.519	-0.006 / +3.649

The Effect of MW Increases: Empirics

- Studies based on natural experiments – using the difference-in-differences(DD) estimator – see Card &Krueger, later e.g. Steward (2004) for Britain = *critique*: focus only on a specific industry whereas competitive model apply to the labor market as a whole
- Studies using longitudinal data - *European Studies:*
  - Abowd, Kramarz & Margolis (1999)-negative effects
  - Machin, Manning & Rahman (2002) – positive on wages (less inequality), small employment effect.
- *Big changes in MW:*
  - Castillo-Freeman & Freeman (1991) for Puerto Rico
  - Rama (2001) for Indonesia
  - Portugal and Cardoso (2001) for Portugal
- no much research for new EU countries and economies in transition, where lots of labor market dynamics &changes happened
  - Estonia (Hinnossar & Rõõm, 2003): MW: + 95.5% (1995-2000); Employment of affected workers: -4.8%
  - Hungary (Kertesi & Köllö, 2002): MW: + 60%; Employment: -4%
  - *Example Czech and Slovak rep. Eriksson and Pytlikova (2004)*

Minimum Wage ratio in % of average earnings: Czech and Slovak Republic



Source: Eriksson and Pytlikova (2004)

The development of main economic and labor market indicators in CR: 94 – 06

CZECH REPUBLIC	94	95	96	97	98	99	2000	2001	2002	2003	2004	2005	2006
GDP growth at 2000 const. prices	2,2	5,9	4,0	-0,7	-0,8	1,3	3,6	2,5	1,9	3,6	4,2	6,1	6,1
Unemployment rate	4,3	4,0	3,9	4,8	6,5	8,7	8,8	8,1	7,3	7,8	8,3	7,9	7,1
Labor productivity growth	1,0	4,2	3,3	-0,9	0,9	3,9	4,0	2,2	1,6	4,6	4,1	4,6	4,4
Monthly MW	2.200	2.200	2.500	2.500	2.650	3.250 3.600	4.000 4.500	5.000	5.700	6.200	6.700	7185	7.580 7.955
Increase in MW in %	0,0	0,0	13,6	0,0	6,0	22,6 10,8	11,1 12,5	11,1	14,0	8,8	8,1	7,2	5,5 5,0
MW as %-age of average wage	**31,4**	**26,5**	**25,4**	**23,1**	**22,5**	**28,1**	**33,1**	**33,8**	**35,9**	**36,6**	**37,1**	**37,8**	**39,4**

Source: Eriksson , Pytlikova and Warzynski (2010)

Data Description

- **Trexima CR and Trexima SR matched employer-employee data set**

➢ *detail information on employees:*
  - Gender
  - Age
  - Education
  - Employment classification
  - Wage
  - Hours worked etc.

➢ *detail information on employers:*
  - Region
  - NACE
  - Type of firm
  - Number of employees
  - Legal form of firm
  - Profit etc.

Data Description

	1998		2000	
	Firms	Empl-es	Firms	Empl-es
CR	2 .185	1.049.582	3.280	1.056.724
SR	902	295.210	1.142	345.391

- Who are the "Minimum- or Low Wage Workers" ?

Czech and Slovak Republics share a similar pattern:

- *70 % are Women*
- *30 % are Young*
- *60 % are Low Educated*
- *40 % working in proceeding industry*

Model: we follow Card (1992) model:

- **(1) $\Delta \ln W(j,t) = \alpha + \beta MWI(j,t-1) + \gamma X(j,t-1) + \varepsilon(j,t)$**
  - **Δ ln W(j, t)** log wage change,
  - ***j*** denotes firm,
  - ***t*** denotes time (98/99, 99/00),
  - **X** is a vector of firm characteristics ,
  - MWI– minimum wage index, 2 MWI definitions:
    - 2/3 of the median pay of all wage earners,
    - "minimum wage gap" á la Card (1992): (10^{th} decile limit-minimum wage)/minimum wage
- **(2) $\Delta \ln E(j,t) = \chi + \phi \Delta \ln W(j,t) + \varphi X(j,t-1) + \omega(j,t)$**
  - **Δ ln E(j,t)** log change in employment
    - In the number of employees in the firm
    - In the total number of hours worked

Summary and conclusions - Eriksson and Pytlikova (2004):

- ***MW:*** + 40 and 30% (1999-2002)
- Using matched employee-employer data sets, we look at the impact of minimum wage hikes on both wages and employment.
- ***Large and positive effect on wages:*** The minimum wage increases clearly raise firms' average wages – parts of the wage distribution other than the lowest tail are affected too.
- ***Mixed evidence on employment:*** the estimated effects on employment and working hours reflects the fact that elevating the MW above the subsistence wage motivates low-paid workers to supply more of their labour.

Policy Issues: should minimum wage increase or decrease?

- It seems as setting of the minimum wage is a matter of fine-tunning:
  - if it is too low it is not binding;
  - if it is too high, it can do worse than the market failure that it was supposed to address
- Strongest arguments in favor for an increase in the minimum wages rely on equity considerations – distributional effects and effects on poverty.

Unions and Collective bargaining

- Unions
  - Historically emerged in the 18th century in th UK and the US as organizations insuring their members against unemployment, death, and old age.
  - In 19th century industrial unions;
  - 20th century increasingly national organizations aiming to represent all workers & having a stronger political power.
  - Stronger among manual workers
  - Goals – egalitarian wage policies, reduction of wage differentials
- Collective bargaining
  - National level – unions, employer's associations &politicians
  - Industry level agreements
  - Firm-level agreements
  - Hybrid or multilevel agreements

Unions and Collective bargaining

- *Bargains over:*
  - Wages, working hours, overtime, fringe benefits, employment security, health and safety standards. Power of strike threads.
  - Getting wages above reservation wages of otherwise uncoordinated individuals;
  - National labor unions bargain over minimum wages (previous slides), labor laws, age of retirements, family policies and unemployment benefits.
  - Bargains shifting product demand: unions lobby against legislation, such as e.g. free trade agreements that reduces imported goods; or directly influencing people's tastes for products, e.g. " buy Czech products"…
  - Bargains restricting substitution:
    - lobby to increase costs of inputs that could be potential substitutes for union members, e.g. prevent employment of immigrants…
    - Lobby to restrict substitution in means of e.g. staffing requirements – to prevent employers from substituting capital for labor.
  - => activity of unions interact with many other institutions

Unions and Collective bargaining

- Cross-country comparisons ;
- Numbers and coverage vary considerably
- Changes over time – increasing divergence between unions presence (number of active members) and unions influence => *excess coverage of unions increasing over time*
- In some countries non-working members (e.g. Italy – more pensioners than workers in the largest unions)
- Last 20-30 years deunionization and decentralization
- In particular in:
  - the US – halved, nowadays in private sector under 10%
  - UK, especially under the Thatcher era
  - Australia (from 48-23)
  - New Zealand (from 56 to 13),
  - Southern Europe and the new EU countries after the communist breakdown
- But demand for unionization increases with economic downturns

Unions and Collective bargaining – Union membership in OECD countries 1960-2000

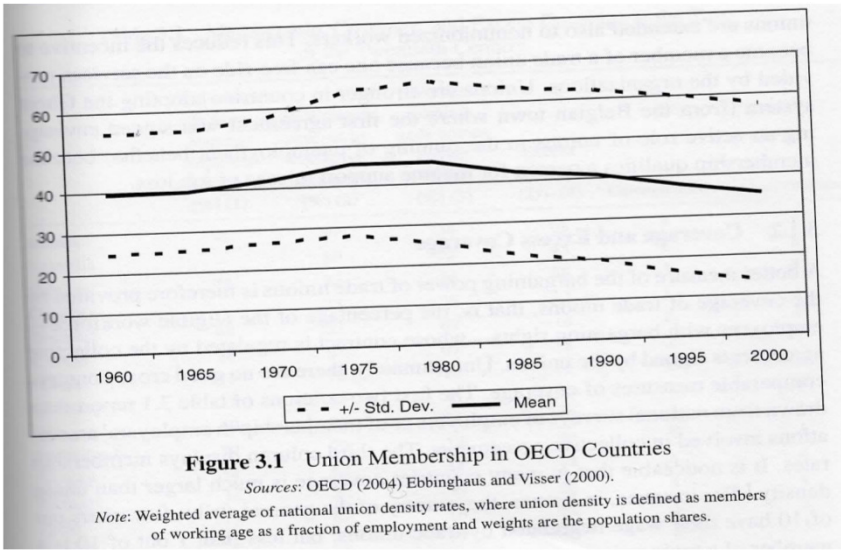
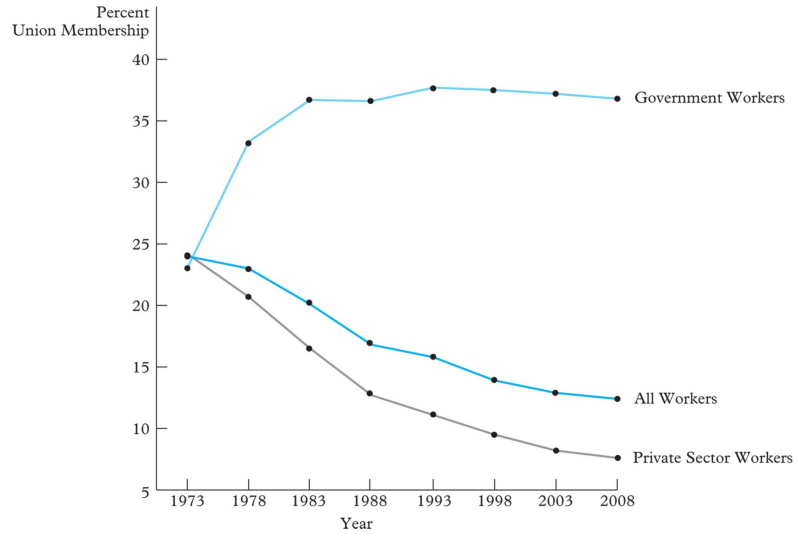


Figure 3.1 Union Membership in OECD Countries

Sources: OECD (2004) Ebbinghaus and Visser (2000).

Note: Weighted average of national union density rates, where union density is defined as members of working age as a fraction of employment and weights are the population shares.

Union Membership as a Percentage of All Workers, by Sector, United States, 1973–2008



E&S Figure 13.1

Unions –membership, coverage and excess coverage, 2000

	% Workers in firm joining employer association (%) (1)	% Workers covered by collective agreements (%) (2)	Workers joining trade unions market sector (%) (3)	Excess coverage (2) – (3)	Centralization	Coordination
Austria	96	97	34	63	3	4
Australia	–	80	35	45	2	2
Belgium	72	82	44	38	3	4
Canada	–	35	36	−1	1	1
Denmark	48	52	68	−16	2	4
Finland	58	67	65	2	5	5
France	74	75	10	65	2	2
Germany	72	80	25	55	3	4
Italy	40	81	36	45	2	4
Netherlands	79	79	19	60	3	4
Norway	54	62	44	18	4	4
Portugal	34	80	30	50	4	4
Spain	72	67	16	51	3	3
Sweden	56	72	77	−5	3	3
Switzerland	37	50	22	28	2	4
United Kingdom	54	35	19	16	1	1
United States	–	13	10	3	1	1

Sources: Ebbinghaus and Visser (2000); Boeri, Brugiavini, and Calmfors (2001); OECD (2006a).
Notes:

B&Ours Table 3.1

Union Membership and Bargaining Coverage, Selected Countries, 2004

Country	Union Membership as a Percentage of Workers	Percentage of Workers Covered by a Collective Bargaining Agreement
Austria	37	98
France	10	93
Sweden	81	93
Australia	25	83
Italy	35	83
Netherlands	23	83
Germany	25	68
Switzerland	18	43
United Kingdom	31	33
Canada	28	32
Japan	22	18
United States	13	14

Source: Organisation for Economic Co-operation and Development, http://www.oecd.org; search under "union density, 2004."

E&S Table 13.1

Unions and Collective bargaining

- Reasons for deunionization and decentralization:
- Demographic changes – females, aging;
- No incentives to join, as contracts extended also to nonunionized workers
- Changing industrial mix – growing employment in wholesale and retail, finance &insurance, services; SBTCH; small firms
- Competitive pressures – foreign competition in manufacturing etc.
- Employers resistance

Percentage of U.S. Wage and Salary Workers Who Are Union Members, by Selected Characteristics, 2009

Percentage of U.S. Wage and Salary Workers Who Are Union Members, by Selected Characteristics, 2009

Men	13.3
Women	11.3
African American	13.9
Hispanic	10.1
White	12.1
By Industry	
Mining	8.6
Construction	14.5
Manufacturing	10.9
Transportation, Public Utilities	22.2
Wholesale, Retail Trade	5.3
Finance, Insurance	1.4

Source E&S TABLE 13.2

Unions and Collective bargaining, effect on wages and employment

- Unlike minimum wages, unions act on the entire wage distribution – not only on its lower end.
- Again a possibility to apply a monopsony model
- Given the equality goal – unions tend to compress wage distribution
  - =>crowd out least skilled workers located at the low end of the distribution to unemployment
  - =>reduce skill premium that would prevail in the case of absence of unions => high-skilled workers leave unions
  - =>membership concentrated around intermediate-skill positions => further compresssion

Unions and Collective bargaining, effect on wages and employment: Empirical evidence

- Estimates of effects of unions on wages of members X non-members => union wage gaps, and on the entire wage distribution, usually drawing on individual micro-data.
  - Mincerian wage equations:

$$\log W_{it} = \beta_0 + \beta_1 D_{it} + \beta_2 X_{it} + \varepsilon_{it}$$

  - Where Di is a dummy for union membership (1 when an individual is a member; 0 otherwise), X is a matrix of personal characteristics such as age, gender, education, tenure. Beta1 represents coefficient of the estimated union wage gap.
  - Estimates of β_1 range from 12-20% in the US, 3-19% in the UK. Usually a consensus that union membership associated with higher wages.
  - Evidence of counter-cyclical union wage gap (higher in economic downturns)
  - the effect of unionization or union decentralization on the entire wage distribution: usually unions reduce wage dispersion in countries with higher centralization of bargaining (e.g. Card 2002).

Unions and Collective bargaining, effect on wages and employment: Empirical evidence

- Estimates of effects of unions and bargaining on employment /unemployment, and inflation, drawing mostly on macroeconomic time series.
- Usually found a negative relationship between a degree of coordination and unemployment is observed, with higher coordination leading to lower unemployment.
  - BUT some recent studies find the opposite.
  - Also some studies find a hum-shaped relationship with low unemployment at both low and high degrees of centralization, and high unemployment with hybrid/intermediate bargaining systems.
  - Unions and lower job turnover

Unions and Collective bargaining, effect on wages and employment: Empirical evidence

- Unions and wage dispersion:
  - wage dispersion about 25% lower in union firms than in nonunion firms (lower returns to skills, union workers more homogenous,…
  - Evidence that unionization reduces wage dispersion by about 10% (Card, 1996)
- Unions and fringe benefits
- Unions and firm outcomes:
  - Union firms more productive,
  - Negative effects of unions on profits and shareholders wealth

Reading list

13.30-15.00 Income inequality

Mandatory:

Borjas: Labour Economics: The wage structure, Chapter 7;

Optional:

Eriksson, T., Pytlikova, M. and F. Warzynski (2013): "Increased Sorting and Wage Inequality in the Czech Republic: New Evidence Using Linked Employer-Employee Dataset." *Economics of Transition,* Vol. 21, Issue 2, pp. 357-380. DOI: 10.1111/ecot.12014.
Thomas Lemieux, Bentley MacLeod and Daniel Parent, (2009): "Performance Pay and Wage Inequality." *Quarterly Journal of Economics* 124(1), February 2009, 1-49
Card, D. and DiNardo, J. (2002). 'Skill biased technological change and rising wage inequality: Some problems and puzzles', Journal of Labor Economics, 20, pp. 733–783.
John Van Reenen, Guy Michaels and Ashwini Natraj (2014): " Has ICT Polarized Skill Demand? Evidence from Eleven Countries over 25 Years, Forthcoming *Review of Economics and Statistics*
Autor, D. & Wasserman, M. (2013) "Wayward Sons" http://www.thirdway.org/publications/662
Bell, B. & Van Reenen, J. (2013) "Bankers' pay and extreme wage inequality in the UK", *Economic Journal* http://cep.lse.ac.uk/pubs/download/occasional/op035.pdf
Journal of Economic Perspectives (2013) Special Issue on The Top 1%
http://www.aeaweb.org/articles.php?doi=10.1257/jep.27.3
Van Reenen, J. (2011) "Wage Inequality, Technology and Trade: 21stCentury evidence", *Labour Economics* http://cep.lse.ac.uk/pubs/download/occasional/op028.pdf

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Reading list

13.30-15.00 Income inequality

Popular media and policy reports:
IHNED dialog about inequality in the Czech Republic (in Czech):
http://dialog.ihned.cz/machacek/c1-61661470-jaka-rizika-tkvi-v-rostoucich-nerovnostech-prijmu-bohatych-a-chudych
Blog VOX by John Van Reenen on US income inequality.
http://www.voxeu.org/article/inequality-and-us-election-elephant-room
Aghion, P. et al (2013) "Investing for Prosperity: Report of the LSE Growth Commission" (2013)
http://www2.lse.ac.uk/researchAndExpertise/units/growthCommission/documents/pdf/LSEGC-Report.pdf

Further: Slides of the lectures

All materials provided on: *http://home.cerge-ei.cz/munich/labor13/*

Monday 10.3.2014, Mini-Conference

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OUTLINE

- Income inequality
  - Measurement
  - Trends
  - Factors responsible

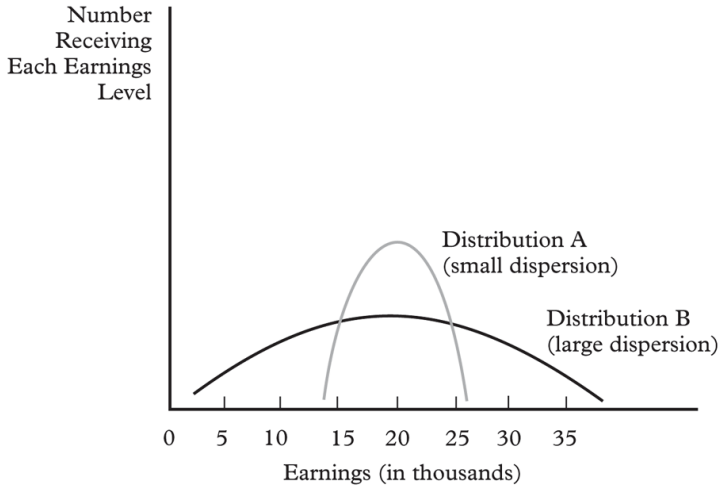
Income Inequality

- Measurement of income inequality:
  - *Variance*

$$Variance = \frac{\sum_i (E_i - \bar{E})^2}{n}$$

  - where E_i represents earnings of person *i, n* stands for number of people in the population, $\bar{E}$ is mean earnings.
  - Alternative – *coefficient of variation*= standard deviation (square root of variance) divided by the mean. If all earnings were double, the coefficient of variaion, unlike the variance, would remain unchanged.

Distributions of Earnings with Different Degrees of Dispersion



Source: E&S chapter 15

Income Inequality

- Increase in Wage Dispersion in majority of countries
- A number of reasons:
  - Increased returns to education
  - Growth of wage inequality within human capital groups
- Some descriptive data:

The Dispersion of Earnings by Gender, Ages 25 and Over, 1975–2003 (expressed in 2003 dollars)

	Earnings at		
	80th Percentile (a)	20th Percentile (b)	Ratio: (a) ÷ (b)
Men			
1975	$64,781	$25,062	2.58
1980	64,535	23,012	2.80
1990	61,473	18,087	3.40
2003	62,635	18,808	3.33
Women			
1975	33,184	7,528	4.41
1980	33,703	8,300	4.06
1990	38,448	8,366	4.60
2003	44,801	10,926	4.10

Sources: U.S. Bureau of the Census, *Money Incomes of Households, Families, and Persons in the United States,* Series P-60: no. 105 (1975), Table 49; no. 132 (1980), Table 54; no. 174 (1990), Table 29; and U. S. Bureau of the Census, http://ferret.bls.census.gov/macro/032004/perinc/new03_000.htm, Tables 127 and 253 (2003).

Source: E&S chapter 15

Earnings Ratios at Various Percentiles of the Earnings Distribution, 1980, 1990, 2005, 2008

Earnings Ratios at Various Percentiles of the Earnings Distribution, 1980, 1990, 2005, 2008

Ratio of Earnings at Given Percentiles	1980	1990	2005	2008
Men				
80:20 (see Table 15.1)	3.08	3.52	3.41	3.58
80:50	1.53	1.74	1.77	1.83
50:20	2.01	2.03	1.93	1.96
Women				
80:20 (see Table 15.1)	3.70	4.60	3.94	3.87
80:50	1.66	1.79	1.78	1.72
50:20	2.24	2.57	2.22	2.25
Men				
90:10	4.68	7.31	7.97	8.47
90:50	1.87	2.14	2.49	2.51
50:10	2.50	3.41	3.20	3.37
Women				
90:10	9.12	13.88	9.74	9.64
90:50	2.07	2.27	2.34	2.34
50:10	4.41	6.12	4.16	4.13

Source: E&S chapter 15

Mean Earnings and the Returns to Education among Full-Time, Year-Round Workers between the Ages of 35 and 44 (Expressed in 2008 Dollars)

Mean Earnings and the Returns to Education among Full-Time, Year-Round Workers between the Ages of 35 and 44 (Expressed in 2008 Dollars)

	Earnings				Earnings Ratios		
	Dropout ($)	H.S. Grad ($)	Bachelor's ($)	Grad School[a] ($)	H.S./ Drop	Bachelor's/ H.S.	Grad/ Bachelor's
				Men			
1980	38,357	53,518	75,413	86,149	1.40	1.41	1.14
1990	33,750	47,656	78,055	96,400	1.41	1.64	1.24
2005	32,247	46,431	88,621	121,573	1.44	1.91	1.37
2008	31,980	47,057	86,705	116,705	1.47	1.84	1.35
				Women			
1980	23,732	30,676	41,790	48,832	1.29	1.36	1.17
1990	23,635	32,746	52,086	61,914	1.39	1.59	1.19
2005	22,310	32,290	59,864	78,282	1.45	1.85	1.31
2008	22,108	30,574	61,713	77,303	1.38	2.02	1.25

Source: E&S chapter 15

Ratio of Earnings at the 80th to 20th Percentiles for Males, by Age and Education, 1980–2008

Ratio of Earnings at the 80th to 20th Percentiles for Males, by Age and Education, 1980–2008

	1980	1990	2005	2008
Male Bachelor's Graduates				
Ages 25–34	2.27	2.49	2.88	2.69
35–44	2.47	2.52	2.78	2.89
45–54	2.62	2.93	3.00	3.11
Male High School Graduates				
Ages 25–34	2.47	2.78	2.80	2.74
35–44	2.48	2.85	2.65	2.93
45–54	2.45	2.75	2.73	2.93

Source: E&S chapter 15

Changes in the Occupational Distributions of Men and Women, 1983–2002

	Median Weekly Earnings, 1983	Percent of Workforce in Occupation 1983	1990	2002
Men				
Highest-Paying Occupations		**24.5**	**25.8**	**30.2**
Executive, managerial, administrative	$530	12.8	13.8	16.0
Professional specialty	$506	11.7	12.0	14.2
Lowest-Paying Occupations		**21.1**	**20.8**	**17.6**
Machine operators, assemblers, inspectors	$319	7.9	7.5	5.8
Handlers, cleaners, helpers, laborers	$251	6.1	6.2	5.2
Service, except private household and protective workers	$217	7.1	7.1	6.6
All Other Occupations		**54.4**	**53.4**	**52.2**
Total		100.0	100.0	100.0
Women				
Highest-Paying Occupations		**21.9**	**26.2**	**35.3**
Executive, managerial, administrative	$339	7.9	11.1	15.6
Professional specialty	$367	14.0	15.1	19.7
Lowest-Paying Occupations		**36.5**	**34.9**	**30.3**
Sales occupations	$204	12.8	13.1	11.5
Machine operators, assemblers, inspectors	$202	7.4	6.0	3.6
Service, except private household and protective workers	$176	16.3	15.8	15.2
All Other Occupations		**41.6**	**38.9**	**34.4**
Total		100.0	100.0	100.0

Sources: U.S. Bureau of Labor Statistics, *Employment and Earnings* 31 (January 1984), Table 21; 38 (January 1991), Table 21; 50 (January 2003) Table 9. Earnings data from U.S. Bureau of the Census, *Statistical Abstract of the United States 1991* (Washington, D.C.: U.S. Government Printing Office, 1991), Table 678.

Source: E&S chapter 15

Changes in the Share of Employment for Four Major Occupational Groups, 1983–2009

Changes in the Share of Employment for Four Major Occupational Groups, 1983–2009

	Share in Total Employment		
Occupational Group (2009 Weekly Earnings)	1983 (%)	1990 (%)	2009 (%)
Managers ($1,138)	10.7	12.6	15.4
Professionals ($994)	12.7	13.4	21.9
Office and Administrative Support ($612)	16.3	15.8	13.0
Service ($470)	13.7	13.4	17.6

Source: E&S chapter 15

Employment Shares (within Gender) of Educational Groups, Workers 25 and Older: 1980, 1990, 2005, 2008

Employment Shares (within Gender) of Educational Groups, Workers 25 and Older: 1980, 1990, 2005, 2008

Groups Whose Relative Earnings Rose	1980	1990	2005	2008
A. Men with graduate degree (%)	9.1	10.5	11.6	12.2
B. Men with bachelor's degree (%)	11.4	14.0	20.5	21.0
C. Women with graduate degree (%)	5.7	8.2	11.1	12.7
D. Women with bachelor's degree (%)	10.3	13.9	21.8	22.8
Groups Whose Relative Earnings Fell				
E. Men with high school degree (%)	38.2	38.1	30.8	30.0
F. Male dropouts (%)	22.7	16.3	11.6	10.8
G. Women with high school degree (%)	46.4	42.1	28.6	27.3
H. Female dropouts (%)	17.8	12.2	7.8	7.2

Source: E&S chapter 15

Income and Wealth Inequality

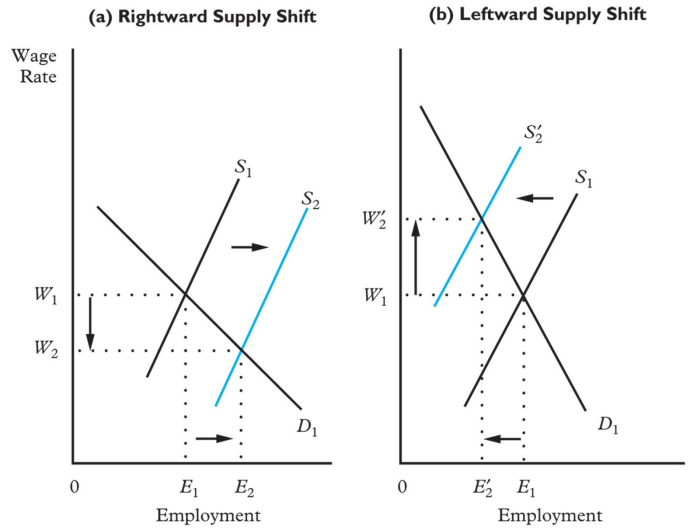
- Development in the United States – example:

http://www.youtube.com/watch?v=QPKKQnijnsM

Income Inequality

- A number of causes of growing inequality:
  - Changes in supply – e.g. Increase in immigration (low-skilled supply increases), increase in supply of college educated,...

Changes in Supply as the Dominant Cause of Wage Changes



Income Inequality

- A number of causes of growing inequality:
  - Changes in supply – e.g. Increase in immigration (low-skilled supply increases), increase in supply of college educated,...
  - Changes in demand
    - SBTCH
  - Changes in institutional forces
    - Union decline and decentralization
    - Increase in minimum wages

Example of investigating causes of wage increases

Changes in Wage Inequality in the Czech Republic – new evidence using linked employer-employee data

(Eriksson, T., Pytlikova, M. and F. Warzynski, Econ of Transition, 2013)

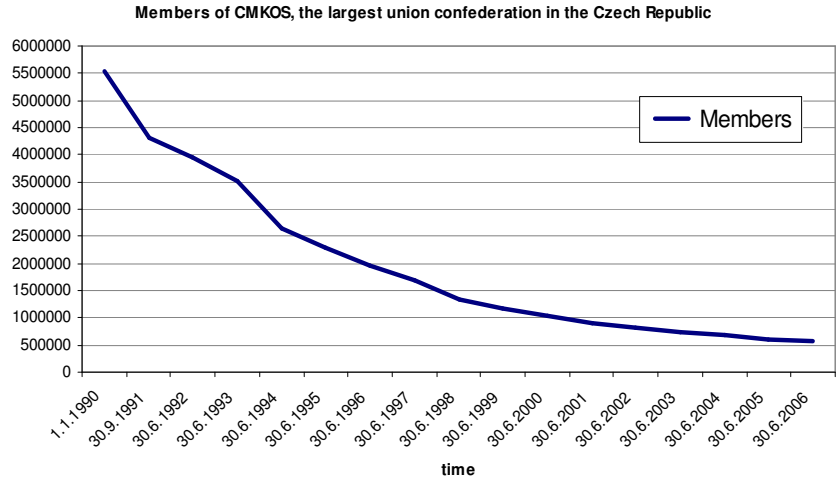
Motivation

- Substantial increase in wage inequality
- Few studies of labour market dynamics for post-transition period
- Czech Republic one of ten new EU member states
- Increased competition due to deregulation
- How have these changes affected the Czech wage structure?
- Examine changes in Czech wage structure in the late transition and post-EU accession years (1998-2006)
- Use the private sector part of a linked employer-employee data set. Firms with more than 9 employees

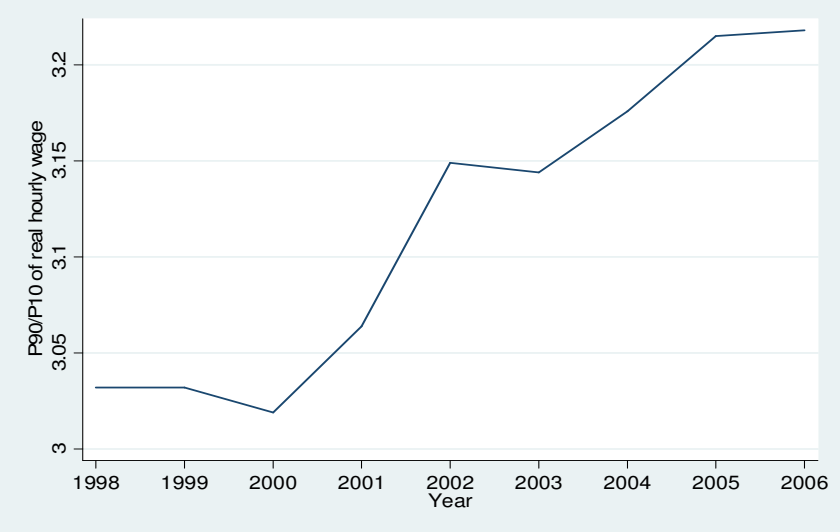
Several changes that are likely to contribute to changes in Czech wage structures:

- Increasing competition
  - Further transition, privatisation, deregulation in product markets, new firms->start-ups
  - EU membership, strengthened competition legislation, increased competition from abroad
- Decentralised wage setting
  - Industry/firm level agreements, dramatic fall in union membership
- SBTCH, Skill mismatches
  - Economic transition, skill-biased technological change (also market oriented business practices)
- Minimum wage hikes
  - Increase by about 80 per cent in 1999-2002

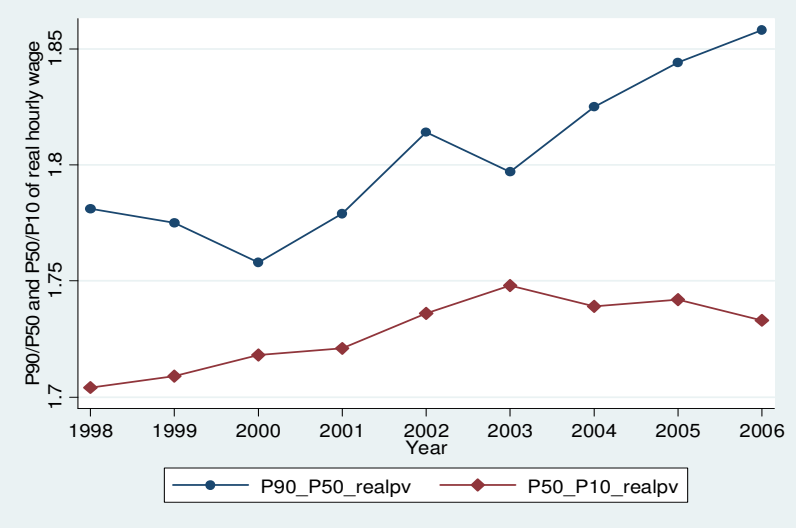
Dramatic fall in union membership, 1990-2006



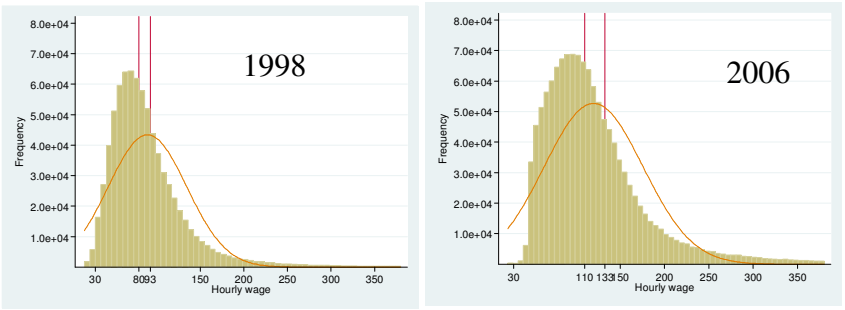
Changes in real hourly wage inequality P90/10-ratio, 1998-2006



Changes in real hourly wage inequality P90/50- and P50/10-ratios, 1998-2006



Wage distributions in 1998 and 2006, real hourly wage



Hypotheses

•*Increasing competition* erodes firms' product market rents → reduced wage dispersion between employers. Impact on within-firm inequality is ambiguous.

•*Decentralisation of wage bargaining process* removes constraints on firm-specific bargaining, increases local bargaining power → increase in both within- and between-firm wage inequality

•*SBTCH - Skill mismatches* lead to an increase in returns to observable as well unobservable skills and in within-firm wage inequality -> also *Sorting by education*

•*Increases in minimum wage and minimum wage tariffs* → compression of lower end of wage distribution

•*Sorting by education*

Data

•Source: TREXIMA. Private firm, provider of data to Czech Ministries

- Linked employer-employee data set 1998-2006
- Size restriction: private sector and min 10 employees:
- 1609 firms (unbalanced)=around 1 mil obs yearly;
- High quality information on:
  - wages,
  - detailed employee characteristics (age, gender, education, tenure, occupation)
  - firm characteristics (industry, region, ownership, size, information on unions, profits, sales,..)

•From Czech statistical office – info on exports adn imports by 3-digit NACE industry, so we can create competition measures.

Econometric analysis

•Step 1: Mincerian Regressions

•We run standard Mincerian earnings equation and look at the evolution of our parameters over time. The equation has the following form:

$$\log W_{it} = \beta_0 + \beta_1 AGE + \beta_2 (AGE)_{it}^2 + \beta_3 TENURE_{it} + \beta_4 (TENURE)_{it}^2 + \beta_5 GENDER_{it} + \\ + \sum \beta_J (EDU_J)_{it} + \varepsilon_{it}$$

We further add industry, region and ownership controls and control for time invariant firm-specific characteristics.

- Focus on returns to:
  - experience,
  - tenure,
  - education, and on
  - the gender wage gap

Results

	1998	1999	2000	2001	2002	2003	2004	2005	2006
Age	.036	.043	.040	.036	.036	.036	.038	.039	.039
Female	-.250	-.242	-.229	-.230	-.230	-.225	-.222	-.215	-.219
No or primary education	-.281	-.399	-.254	-.250	-.305	-.380	-.272	-.310	-.243
University education	.573	.563	.588	.604	.633	.623	.605	.616	.615

Other regressors: several educational dummies, industry, region and ownership dummies

Summary of results from Mincerian equation

- Few changes in returns to observables.
- Returns to schooling were increasing til 2002 then declined slightly;
- Gender gap has decreased;
- Rising returns to experience – age and tenure
- Add tenure (available from 2002) → no change in other estimates
- Add firm fixed effects → no change in other estimates

Evolution of between- and within- firm wage inequality

Step 2: Within and Between-Firms Wage Inequality

=> Decompose the evolution of wage inequality into within firm and between-firm wage inequality.

Real Wage Inequality	1998	1999	2000	2001	2002	2003	2004	2005	2006
Within-Firm									
St.Dev.	48.36	49.01	49.08	52.21	55.66	62.92	63.49	65.32	76.19
Between-Firms									
St.Dev.	48.72	43.31	41.58	44.10	48.72	56.02	54.21	55.35	63.86

Evolution of between- and within- firm wage inequality

- Within-firm real wage inequality has increased,
- And so did between-firm inequality although not as much as within-firm inequality.

=> Next, we try to explain what drives the within- and between-firm wage inequality.

Explaining within-firm and between-firm wage (within industries) inequality, 1998-2006, Summary of results

•We find that:

- within firm wage inequality is strongly associated with foreign ownership and the share of college educated individuals.
- On the other hand, the (within sector/industry) between firm inequality is mostly explained by differences in the standard deviation of the share of college educated workers within firm

•Our main findings suggest therefore that the changing **educational composition both within and between firms within industries is the most important engine driving increased inequality in the CR.**

•->the sorting can be result of increased competition as well as competition make firms adapt new technology ->firms hire more educated workers to work with the technology => increased educational sorting within and between firms

Explaining within-firm and between-firm wage (within industries) inequality, 1998-2006, Summary of results

Other important factors are:

- the increase in foreign ownership, contributing to more within-firm inequality.
- we find that higher import penetration is associated with lower within-firm wage inequality.
- We also find that higher average profit margins at the industry-level are associated with higher within-firm inequality.
- These two latest findings could be related to Syverson (2004) who finds that **more product market competition leads to lower productivity dispersion, which might in turn be associated with less wage dispersion**.

THE NEXT TIME WE MEET: 10.3.2014

- **MINI-CONFERENCE**