

# **ECON 4921: Lecture 6**

Jon Fiva, 2009

# Roadmap

1. Introduction
2. Institutions and Economic Performance
3. The Firm
4. **Organized Interest and Ownership**
5. **Complementarity of Institutions**
6. Institutions and Commitment
7. Agency problems: Voters- Politicians-Bureaucrats
8. Fiscal Federalism
9. System Competition

# Productivity unaffected by ownership?

- Alchian and Demsetz claim that without a supervisor, workers have no incentives not to shirk.
  - Prisoner dilemma: it is better for all workers if all work hard, but each worker's preferred strategy is shirking.
- But repeated interaction may give cooperation
  - Fear of retaliation / hope of reciprocity

# Craig and Pencavel (1992)

- Empirical analysis of plywood industry in the US.
  - Firms operating in same industry, same region, same period of time.
    - P. 1103: "... these firms face virtually the same economic environment so that differences in outcome are more likely to reflect differences in firm's objectives. This common economic environment is described by the prices of major inputs and of output, each firm being characterized as a price-taker in these markets".
  - Co-existence of coops and conventional firms producing the same goods, over a long period of time, with similar production technology
  - Can examine the effects of property-rights structure on firm behavior

# Craig and Pencavel (1992)

- Coop features:
  - Ownership and employment is fused
  - Equal hourly pay
  - Each member typically one share, and one vote
  - Less supervisors per shift
    - *"We need more foremen because, in the old days, the shareholders supervised themselves.... They cared for the machinery, kept their areas picked up, helped break up production bottlenecks all by themselves. That's not true anymore. We've got to pretty much keep on them all of the time"* (Greenberg, 1986 p. 44).

# Response to change in prices

$$(1) \ln y_{it} = \alpha_i + \beta \ln p_{it} + \gamma \ln r_{it} + \varepsilon_{it}.$$

- Dependent variable:
  - Average hourly earnings
  - Annual hours per worker
  - Employment
  - Output
- Independent variables:
  - Firm fixed effects
  - Output price,  $p$
  - Input price,  $r$  (price of logs)
- OLS estimates obtained in separate regression for type of firms

# Response to change in prices

TABLE 5—LEAST-SQUARES ESTIMATES OF EQUATION (1) BY TYPE OF FIRM  
(ESTIMATED STANDARD ERRORS IN PARENTHESES)

Type of firm	Estimated coefficient on logarithm of plywood price ( $\hat{\beta}$ )			
	Wages	Annual hours	Employment	Output
Classical	-0.02 (0.28)	0.73 (0.48)	0.61 (0.37)	1.51 (1.01)
Union	0.19 (0.16)	0.37 (0.12)	0.70 (0.16)	1.82 (0.29)
Co-op	0.94 (0.21)	-0.01 (0.17)	0.03 (0.14)	0.91 (0.25)
All firms	0.32 (0.12)	0.39 (0.12)	0.56 (0.12)	1.52 (0.26)
Type of firm	Estimated coefficient on logarithm of log price ( $\hat{\gamma}$ )			
	Wages	Annual hours	Employment	Output
Classical	0.30 (0.28)	-0.41 (0.48)	-0.26 (0.37)	-1.23 (1.01)
Union	-0.09 (0.13)	-0.15 (0.10)	-0.25 (0.13)	-0.35 (0.24)
Co-op	-0.25 (0.16)	-0.10 (0.13)	-0.05 (0.11)	-0.49 (0.19)
All firms	-0.03 (0.10)	-0.21 (0.09)	-0.19 (0.10)	-0.51 (0.22)

# Response to change in prices

Traditional firms (with or without unions) respond differently to increase in input price (or negative shock in demand), compared to coop.

- Coop : wages down, hours & employment unchanged
- Other: wages unchanged, hours & employment down

(but large standard errors...)



# Productivity?

- There is also some evidence that coops are undervalued to capitalist firms.
- Craig and Pencavel have in more recent papers offered more evidence suggesting that coops are more productive than conventional firms.

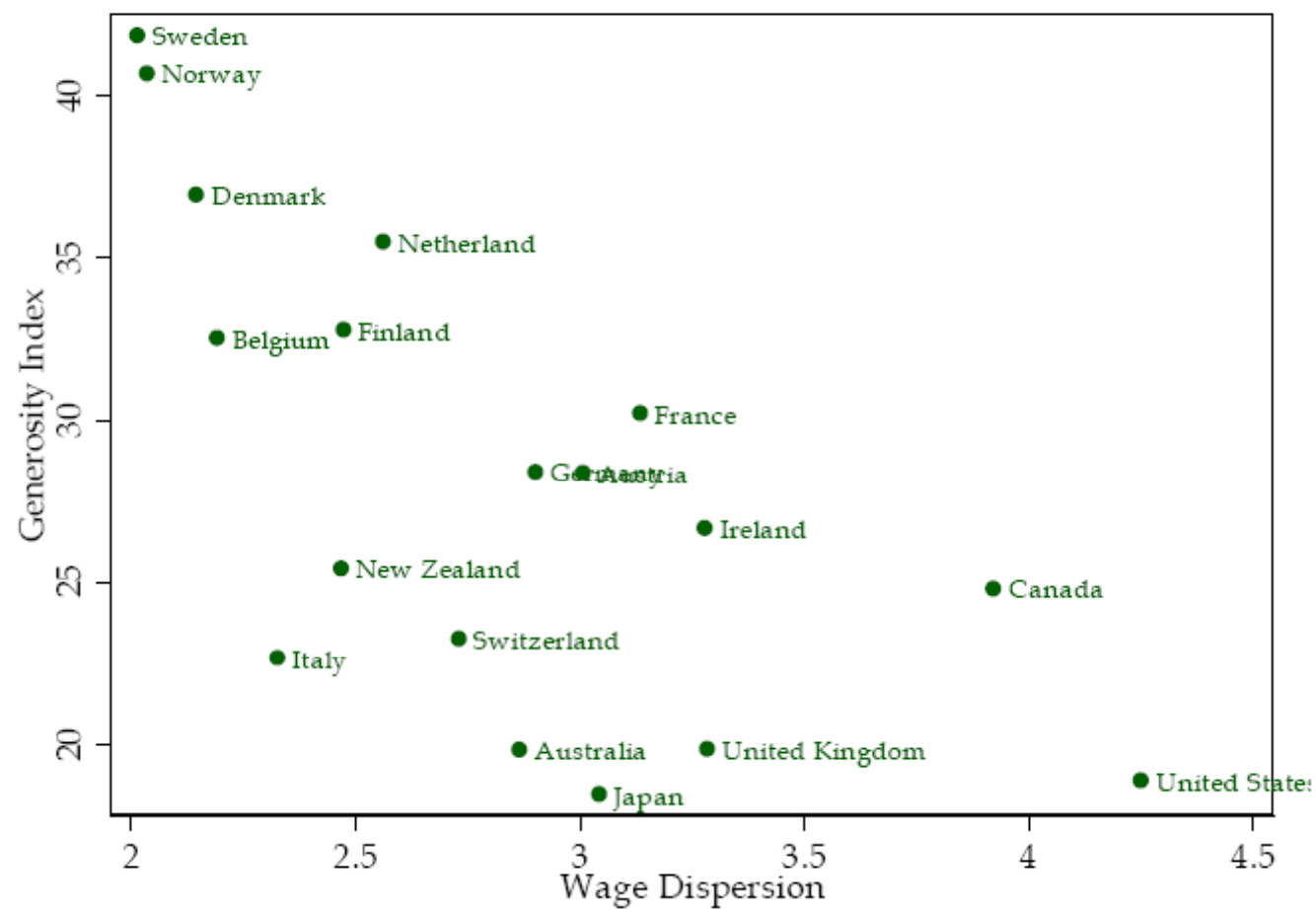
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# The Equality Multiplier

- Why do countries cluster around different societal models?
  - Scandinavian model
  - Continental model
  - Anglo-Saxon model

Figure 1: Welfare Generosity and Wage Inequality across Countries



# The Equality Multiplier

- Why do countries cluster around different societal models?
  - Scandinavian model
  - Continental model
  - Anglo-Saxon model
- Barth and Moene (2009) offer a theoretical framework focusing on complementarities between institutions
  - Wage determination
  - Welfare spending
  - Cumulative process
- Empirics from OECD countries and the US

# Equality magnifying curve

- Interests of voters shaped by pre-tax distribution of wages.

$$\ln(G_j) = A_j - a_I \ln(I_j) \quad \text{where} \quad A_j = A(z_j)$$

- $G_j$  : Welfare generosity of country j
- $I_j$  : Wage inequality of country j
- $Z_j$  : Ruling political party, income level, globalization +++
- Lower income ineq.  $\rightarrow$  more redistribution
  - Mechanism: for given income level, less inequality imply that a majority of voters become richer. Demand more insurance from the welfare state.

**Proposition 1** *The equality magnifying effect:*

(i) More **equal wages** imply that voters become more similar in their welfare state demands: With a skewed wage distribution a mean preserving wage compression implies that a majority of them wants **a higher level of welfare state generosity.**

(ii) With two competing blocks or parties the implemented generosity of welfare spending depends on **whic party wins the election.** More equal wages lead to higher welfare spending contingent upon party in power.

# Wage equalizing curve

- Welfare generosity strengthens weak groups in labor market.

$$\ln(I_j) = B_j - a_g \ln(G_j) \quad \text{where} \quad B_j = B(y_j)$$

- $G_j$  : Welfare generosity of country j
- $I_j$ : Wage inequality of country j
- $y_j$ : Wage setting system, union density, income level +++
- **Stronger welfare state → less inequality**
  - Mechanism: improve outside option



# Bargaining institutions

- Coordination in wage setting: some wages are taken out of local competition and decided on in a system of collective decision making.
- Unions have fairness norms
- Level of coordination decides where norms are applied
  - Within firms
  - Within industry
  - Nationally

**Proposition 2** *The wage equalizing effect:*

*(i) A generous welfare state lead to wage compression as the inequality between high and low wages declines with higher welfare benefits. This is the case at all levels of wage coordination.*

*(ii) Wage coordination tends to compress wage differentials over the bargaining unit—both from below and above. While workers in jobs with above average productivity obtain lower wages, workers in jobs with productivity below the average obtain higher wages relative to the non-cooperative benchmark.*

# The equality multiplier

- Equality magnifying curve:  $\ln(G_j) = A_j - a_I \ln(I_j)$
- Wage equalizing curve:  $\ln(I_j) = B_j - a_g \ln(G_j)$
- Mutual feedbacks between
  - Wage settlements
  - Welfare state adjustments
- Political economical equilibrium:

$$\ln(G_j) = m[A_j - a_I B_j] \quad \text{and} \quad \ln(I_j) = m[B_j - a_g A_j]$$

$$m = \frac{1}{1 - a_I a_g}$$

# Empirics

# Identification

$$\ln G_j = A(z_j) - a_I \ln I_j \quad \text{and} \quad \ln I_j = B(y_j) - a_g \ln G_j$$

- Heterogeneity across countries
- Classic identification problem: Simultaneity
- B&M approach
  - Fixed country effects
    - Identification obtained from within country variation over time.
  - Need exogenous factors included in each of the two equations to identify the other

# Identification

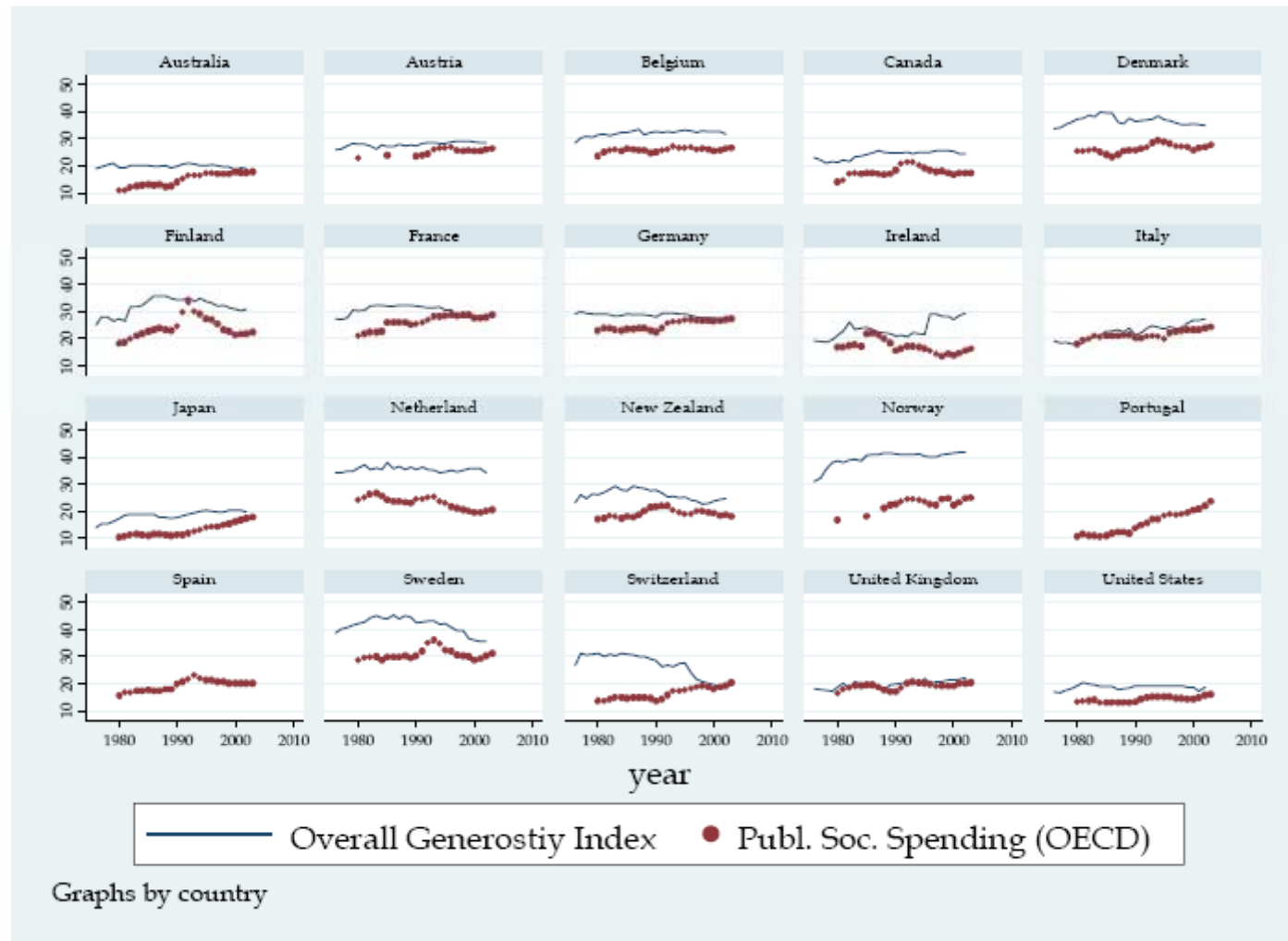
$$\ln G_j = A(z_j) - a_I \ln I_j \quad \text{and} \quad \ln I_j = B(y_j) - a_g \ln G_j$$

- Need variable in  $Z_j$  that only affects generosity (but not wage inequality directly): **Political color of government**
- Need variable in  $Y_j$  that only affects inequality (but not generosity directly): **Level of wage coordination**
- Instrument wage inequality:
  - Bargaining institutions
    - Bargaining coordination, share of workers in conflict
  - Workforce composition
    - Share of pop with tertiary education, employment rate.
- Instrument welfare generosity:
  - Right wing government
  - Trend variable

# Data

- Dep. Variables:
  - Wage inequality: ratio of 9th to 1st decile of gross hourly earnings
  - Welfare generosity: generosity of income support in the case of illness, unemployment and disability (incl. Old age).

Figure 2: Trends in Welfare Generosity.

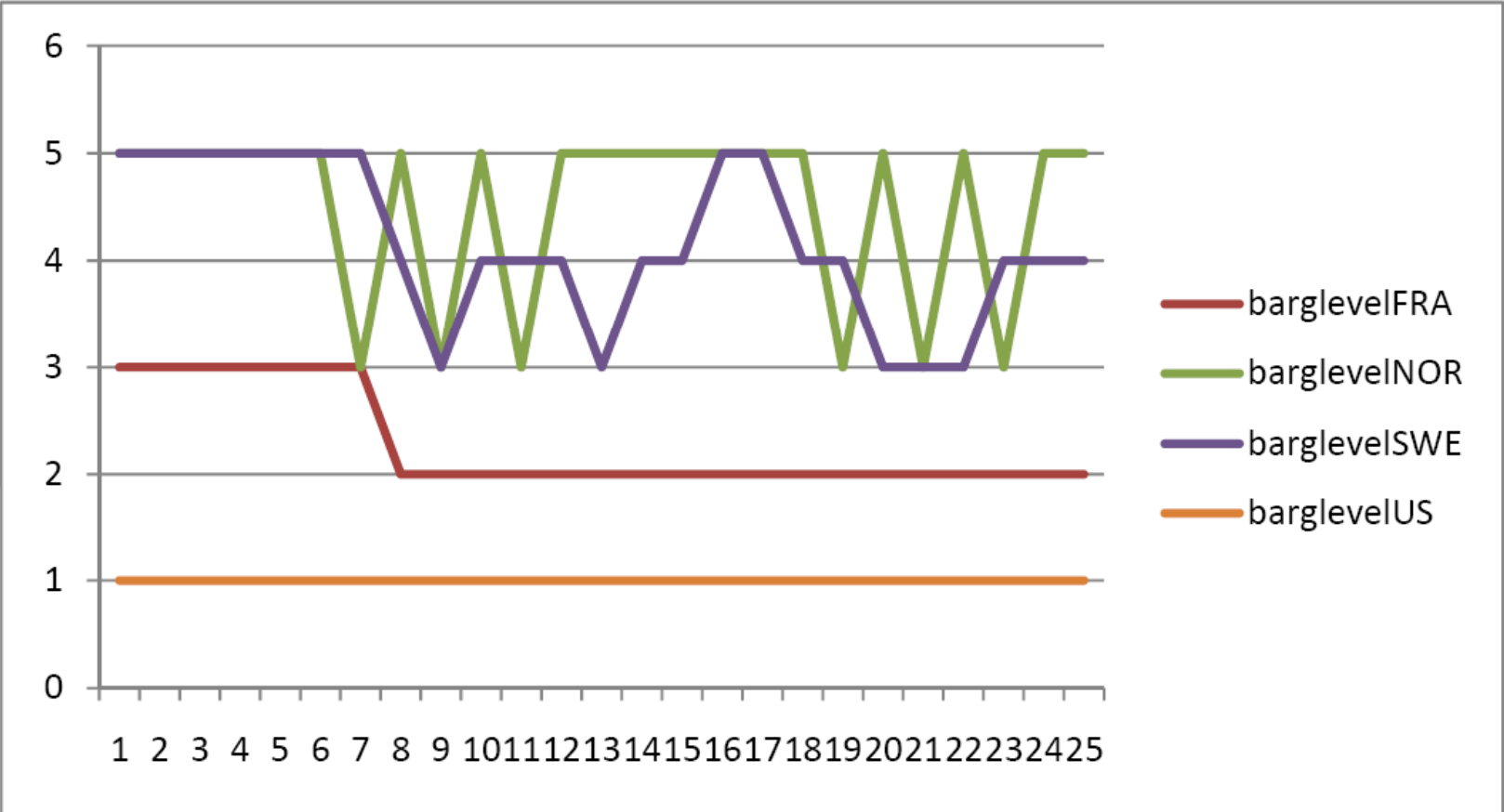




# Data

- Key indep. Var:
  - Bargaining coordination (average over 10 last years)
    - 1 = plant-level wage-setting
    - 2 = industry-level wage-setting without sanctions
    - 3 = industry-level wage-setting with sanctions
    - 4 = central wage-setting without sanctions
    - 5 = central wage-setting with sanctions
  - Right government – indicator variable =1 if right has a majority in parliament (average over last five years).

Variable	Obs	Mean	Std. Dev.	Min	Max
-----+-----					
barglevelARL	25	3.44	1.157584	2	5
barglevelAUT	25	3	0	3	3
barglevelBEL	25	4.08	.9966611	3	5
barglevelCAN	25	1.48	1.32665	1	5
barglevelDNK	25	4.84	.5537749	3	5
-----+-----					
barglevelFIN	25	3.72	.4582576	3	4
barglevelFRA	25	2.28	.4582576	2	3
barglevelGER	25	3	0	3	3
barglevelIRE	0				
barglevelITA	25	4.08	.2768875	4	5
-----+-----					
barglevelJPN	25	3	0	3	3
barglevelNOR	25	4.52	.8717798	3	5
barglevelNTH	25	3.56	.7681146	3	5
barglevelNZ	0				
barglevelPOR	0				
-----+-----					
barglevelSPN	24	2.958333	1.301476	2	5
barglevelSWE	25	4.16	.746101	3	5
barglevelSWI	25	3	0	3	3
barglevelUK	25	1.32	1.10755	1	5
barglevelUS	25	1	0	1	1



# Table 1

- 3SLS
  - Combination of 2SLS
  - Seemingly unrelated regressions (SUR)
    - Account for correlation in errors across the two equations.
- 356 country-years
  - 18 countries
  - 27 years

	3SLS FE	
	Generosity Coef./se	Inequality Coef./se
Inequality	-.6412***	
- ln(Wage Disp.)	(.1251)	
Generosity		-.5324***
- ln(Gen.Index)		(.0744)
Trend	-.0196***	
	(.0029)	
Right cab. [0,1]	-.0264**	
	(.0083)	
ln GDP per cap.	.4464***	.1642***
	(.0387)	(.0204)
Openness (pct GDP)	-.0037***	-.0043***
	(.0011)	(.0010)
Share 65+ pct	.0071	-.0084**
	(.0046)	(.0030)
Union Density	-.0024**	-.0010
	(.0008)	(.0008)
Barg. Coordination		-.0208**
		(.0065)
Conflict (pct)		.0015***
		(.0003)
Tertiary (pct pop)		-.0021*
		(.0009)
Empl.pct. 16-64		.0024***
		(.0006)
Constant	-.7411	1.4466***
	(.5218)	(.1911)
Country fixed effects	Y	Y
Year fixed effects		
P-value years		
No. of cases	356	356

# Table 1

- Instruments are clearly relevant.
  - F = 22 (generosity)
  - F = 48 (inequality)
- Less generosity
  - Over time
  - With right wing cabinet
- Less inequality
  - More centralized bargaining
  - With less workers in conflict
  - Higher pct of pop. With tertiary educ.
  - Lower pct of pop employed

	3SLS FE	
	Generosity	Inequality
	Coef./se	Coef./se
Inequality	-.6412***	
- ln(Wage Disp.)	(.1251)	
Generosity		-.5324***
- ln(Gen.Index)		(.0744)
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Country fixed effects	Y	Y
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# Table 1

These are the main coefficients of interest

- Equality magnifier
- Wage Equalizer

	3SLS FE	
	Generosity	Inequality
	Coef./se	Coef./se
Inequality	-.6412***	
- ln(Wage Disp.)	(.1251)	
Generosity		-.5324***
- ln(Gen.Index)		(.0744)
Trend	-.0196***	
	(.0029)	
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Country fixed effects	Y	Y
Year fixed effects		
P-value years		
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# Table 2: Equality magnifyer

- Baseline (IV1)
- Effect on welfare generosity of incr. Inequality.  
-0.63 → wage dispersion incr with one percent, generosity reduced with 0.6 percent.
- Sargan test, p=0.1 to p=0.2
- Alternative sets of instruments (IV2, IV3).

IV-1	IV-2	IV-3
Coef./se	Coef./se	Coef./se
-0.6343*** (.1315)	-0.7833*** (.2005)	-0.5083* (.2226)
Y	Y Emp.rate Tertiary	Y Barg. coord. Work. confl.
.2413 21.85 .0219	.0965 20.15 .0163 .5633	.1988 14.47 .3733 .2509
356	356	356

# Table 3:subamples

Table 3: The Equality Magnifying Effect. Sub-samples

Dependent variable:  $\ln(\text{Generosity Index})$  Specification IV-1 from Table 2.

Group of countries excluded:

	America	Oceania	BritIsl	LargeEU	SmallEU	Nordic
	Coef./t	Coef./t	Coef./t	Coef./t	Coef./t	Coef./t
$\ln(\text{Wage Dispersion})$	-.6353 -4.04	-.5508 -4.59	-.6308 -4.80	-.4750 -2.34	-.6664 -5.35	-.6195 -4.80
No. of cases	314	289	321	289	315	278



# Table 4: Wage equalizing

- Baseline (IV1)
- Effect on inequality of incr. Welfare generosity.  
-0.51 → welfare generosity incr with one percent, wage dispersion reduced with 0.5 percent.
- Alternative sets of instruments (IV2, IV3).
- Sargan test,  $p=0.65$
- Similar effect with using only right gov. As instrument.

	IV 1	IV 2	IV 3
	Coef./se	Coef./se	Coef./se
	-.5143***	-.5207***	-.5033**
	(.0840)	(.0854)	(.1823)
	Y	Y	Y
		Right government	Year dummies
			.9496
	.6581		
	48.11	93.43	19.98
	.0004	.0004	.0523
	356	356	356

# Table 5: subsamples

Dep.var. $\ln(d9/d1)$	Group of countries excluded:					
	America Coef./t	Oceania Coef./t	BritIsl Coef./t	LargeEU Coef./t	SmallEU Coef./t	Nordic Coef./t
Generosity	-.4539 -4.77	-.6212 -6.16	-.4777 -3.56	-.4247 -4.97	-.5738 -6.32	-.5429 -6.32
No. of cases	314	289	321	289	315	278

- Wage equalizing effect is identified through potential exogenous variation in welfare generosity driven by:
  - Political turnover
  - Time trend common in all countries
- Identifying assumption?
- Likely to hold?

# Potential problems and a solution

- Political turnover may impact omitted factors associated with wage inequality.
- Or maybe political turnover is a function of wage inequality?
- Discontinuity at 50 percent threshold may offer some test of this
- Idea ala: LeeMorettiButler (QJE2004)

» <http://www.mitpressjournals.org/doi/abs/10.1162/0033553041502153>

# RDD (detour)

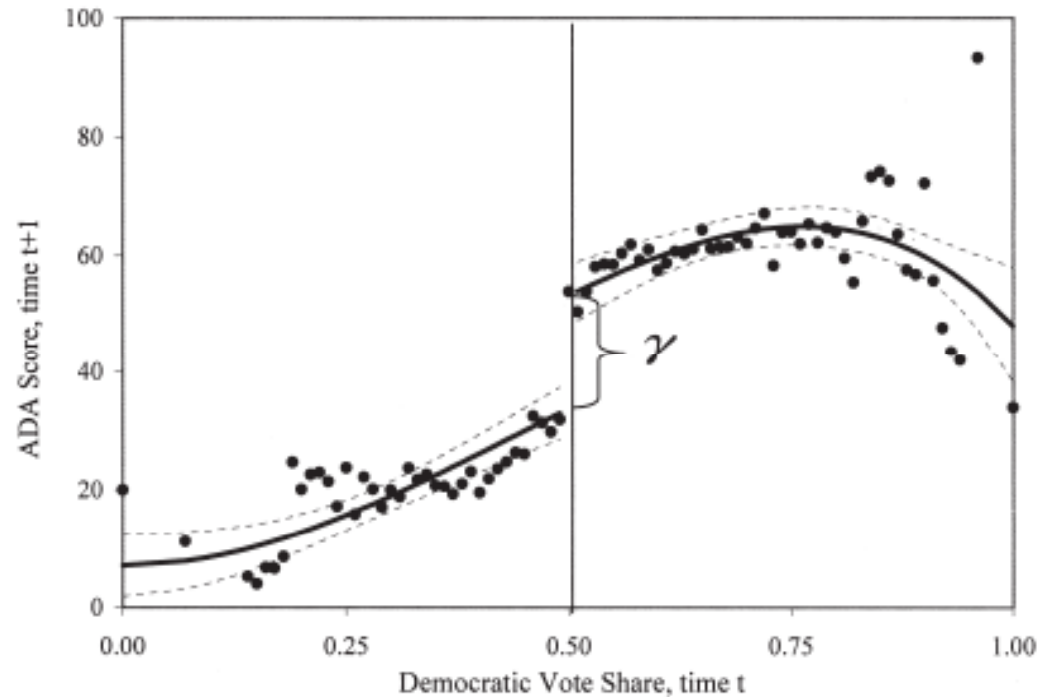


FIGURE I

Total Effect of Initial Win on Future ADA Scores:  $\gamma$

This figure plots ADA scores after the election at time  $t + 1$  against the Democrat vote share, time  $t$ . Each circle is the average ADA score within 0.01 intervals of the Democrat vote share. Solid lines are fitted values from fourth-order polynomial regressions on either side of the discontinuity. Dotted lines are pointwise 95 percent confidence intervals. The discontinuity gap estimates

$$\gamma = \underbrace{\pi_0(P_{t+1}^{*D} - P_{t+1}^{*R})}_{\text{"Affect"}} + \underbrace{\pi_1(P_{t+1}^{*D} - P_{t+1}^{*R})}_{\text{"Elect"}}$$

# RDD (detour)

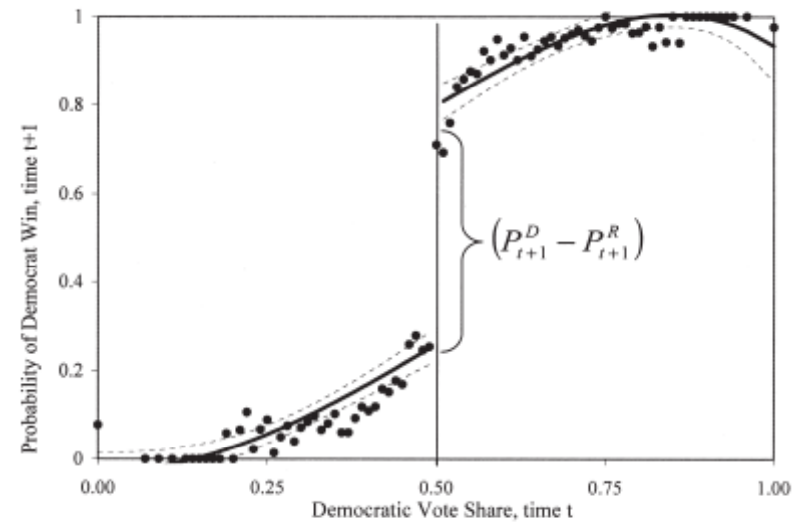


FIGURE IIb

Effect of Initial Win on Winning Next Election:  $(P_{t+1}^D - P_{t+1}^R)$

Top panel plots ADA scores after the election at time  $t$  against the Democrat vote share, time  $t$ . Bottom panel plots probability of Democrat victory at  $t + 1$  against Democrat vote share, time  $t$ . See caption of Figure III for more details.

Table 6: Robustness checks - 3SLS

	Right-tied		Weighted		Right-lead	
	Generosity Coef./se	Inequality Coef./se	Generosity Coef./se	Inequality Coef./se	Generosity Coef./se	Inequality Coef./se
Inequality	-.6315*** (.1247)		-.4346* (.1869)		-.7550*** (.1114)	
Trend	-.0199*** (.0029)		-.0219*** (.0034)		-.0178*** (.0030)	
Right tied	-.0348*** (.0101)					
Right cab.[0,1]			-.0342** (.0107)			
Right lead					.0066 (.0085)	
Generosity		-.5234*** (.0730)		-.5024*** (.0696)		-.4359*** (.0853)
Barg. Coordination		-.0204** (.0066)		-.0218** (.0074)		-.0302*** (.0069)
Conflict(pct)		.0015*** (.0004)		.0008 (.0005)		.0015*** (.0003)
Tertiary (pct pop)		-.0020* (.0010)		-.0004 (.0012)		-.0017 (.0010)
Empl.pct. 16-64		.0024*** (.0006)		.0034*** (.0008)		.0026*** (.0006)
Constant	-.7955 (.5187)	1.4359*** (.1896)	-1.3337* (.6175)	1.3974*** (.1869)	-.4380 (.4874)	1.3534*** (.2028)
Equality multiplier		1.4936		1.2793		1.4905
E.m l.t. 1:p-value		.0018		.0389		.0016
No. of cases		356		337		307

# Estimating the Equality Multiplier

- The point estimates from Table 1, give us an equality multiplier of 1.52.
- An initial effect is magnified by 52 percent.
  - E.g. effect of right wing gov.:
    - Initial effect: 2.6% reduction in generosity.
    - With multiplier: 4% reduction in generosity.
  - E.g. drop in coordination index by 4 levels
    - Initial effect: 8.3% increase in wage inequality
    - With multiplier: 12.6% increase in wage inequality



# Inequality at the bottom

- Equality magnifying effect, theory:
  - Welfare state generosity → improve outside option of less vulnerable groups → demand higher pay.
- Clearly mechanism more relevant for ineq. at the bottom than at the top.
- Is it also in the data? (if not worrbersome)

Table 8: Top and Bottom of the Wage Distribution

	Bottom		Top	
	Generosity Coef./se	Ineq. ln(d5d1) Coef./se	Generosity Coef./se	Ineq. ln(d9d5) Coef./se
Ineq. ln(d5d1)	-.7127*** (.1355)			
Ineq. ln(d9d5)			-.1698 (.4417)	
Generosity		-.3283*** (.0566)		-.1741*** (.0450)
Equality multiplier		1.3055		1.0305
E.m l.e. 1:p-value		.0013		.3535
No. of cases		355		355

- Wage equalizing effect of welfare generosity at the bottom
- Not at the top

# Summary

- Equality can multiply due to complementarities between wage determination and welfare spending.
  - Equality magnifying effect
  - Wage equalizing effect
- Can account for substantial fraction of variation between
  - Scandinavian model
  - Continental model
  - Anglo-Saxon model