

The Political Economy of Redistribution in the U.S. in the Aftermath of World War II and the Delayed Impacts of the Great Depression – Evidence and Theory

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Overview

- Motivation
- Evidence of ratchets in transfers and taxes around WW-II
- Theory: political-economy framework with executive setting defense spending and agenda setter (S) in Congress and median voter (MV) interacting in determining redistribution
 - Full employment
 - Before-war unemployment
- Why was there no ratchet following WW-I?

Motivation

- Major wars tend to cause upward ratchet in size government
- Less attention has been paid to effect of wars on *composition* of spending
 - Dudley and Witt (2004): permanent increase in the total share of civilian public expenditures in 5 belligerent countries during WW-I: increased willingness to share plus introduction mass communications
 - Atkinson and Piketty (2007): evidence that the necessary higher taxes during WW-I were obtained mainly by raising the tax burden on high incomes
 - “Conscription of wealth” (1918 Manifesto U.K. Labour Party, advocating highly progressive tax schedules)

Motivation

- We investigate the relation defense spending and transfers in U.S. from onset of Great Depression (GD) until post-World War-II (WW-II)
 - Start by documenting substantial ratchets in relation defense share and share of federal transfers and taxes – consistent with
 - GI Bill for WW-II veterans
 - Substantial increases in social security benefits and minimum wages shortly after war
 - Followed by political-economy explanation
 - Central role for war-induced change in status-quo taxes (documented by Scheve and Stasavage for WW-I, here for WW-II) providing room for more transfers
 - Model predicts upward ratchets in transfers and taxes in

post-war period

Interpretation history in terms of model

- GD substantially raised median voter's demand for redistribution and, by implication, for the taxes required to finance it.
- Response was creation of social security system.
- Due to opposition of the wealthier agenda setters in Congress accommodation of popular demand for transfers was incomplete.
- Outbreak of WW-II: taxes went up dramatically to finance the defense effort.
- WW-II ended, therefore, with a substantially higher tax burden than the status quo burden prior to the war.

Interpretation history in terms of model

- New status quo taxes were too high for *both* S and MV.
- S could successfully propose package to cut taxes to some extent and use the remaining “peace dividend” from fall in defense spending to increase redistribution.
- Upshot is that post-WW-II ratchets in transfers and taxes constituted long-delayed reaction of political establishment to partially unsatisfied demand for redistribution in aftermath of GD.
- By raising the status quo tax schedule (mainly on high incomes) WW-II provided the “supply” of taxes to satisfy this demand.

Background data from onset GD through WW-II and its aftermath

- Data: annual from NIPA.
- Rise unemployment during early thirties, reaching maximum of about 25% in 1933
- During entire thirties defense spending remained at a level of barely over 1.5% of GDP
- Took off rapidly from 1940, reached maximum of 43% of GDP in 1944
- In ensuing years, defense spending declined, but with minimum of 6.8% in 1948 it remained substantially above the pre-war levels.
- While share of transfers rose during first years of GD, it remained substantially lower than after the war.
- Even more striking in view of fact that rise in thirties occurred when output was falling or low, while post-war increase took place when output was rising.

T.1: Key figures during/around GD and WW-II

<i>year</i>	<i>u</i>	<i>DEF</i>	<i>NDEF</i>	<i>TRANS</i>	<i>UNINS</i>	<i>TAX</i>	<i>REV</i>
1929	3.2	0.87	0.77	0.77	0.00	3.38	3.67
1930	8.9	0.99	0.99	0.88	0.00	3.07	3.29
1931	16.3	1.18	1.18	2.61	0.00	2.35	2.61
1932	24.1	1.53	1.53	1.70	0.00	2.56	2.90
1933	25.2	1.60	2.48	1.95	0.00	4.26	4.61
1934	22.0	1.21	3.79	3.33	0.00	4.85	5.30
1935	20.3	1.36	3.14	3.14	0.00	4.77	5.32
1936	17.0	1.43	5.13	3.22	0.00	5.01	5.97
1937	14.3	1.41	4.13	1.63	0.00	5.44	7.62
1938	19.1	1.63	5.11	2.09	0.46	4.99	7.43
1939	17.2	1.63	4.88	2.17	0.43	4.77	7.16
1940	14.6	2.47	3.94	2.07	0.49	6.11	8.38
1941	9.9	11.29	2.92	1.50	0.32	9.79	12.08
1942	4.7	31.56	1.85	1.30	0.25	11.86	14.02
1943	1.9	42.40	1.16	0.96	0.05	17.32	19.59
1944	1.2	42.99	1.09	1.09	0.05	16.06	18.47
1945	1.9	36.75	0.94	2.33	0.27	16.05	18.92
1946	3.9	11.34	1.66	5.35	1.17	14.71	18.08
1947	3.9	7.45	1.80	4.87	0.66	15.19	17.85
1948	3.8	6.80	2.19	4.75	0.48	13.97	16.08
1949	5.9	7.41	2.96	5.69	0.82	12.27	14.44
1950	5.3	6.67	2.21	5.34	0.51	14.74	16.81

Figure 1

- Plots shares of transfers and defense spending 1929-2003.
- Clear negative relationship during and around WW-II and Korean War.
- To a lesser extent so for the Vietnam War.

Fig 1: Shares of fed. transfers and defense spending

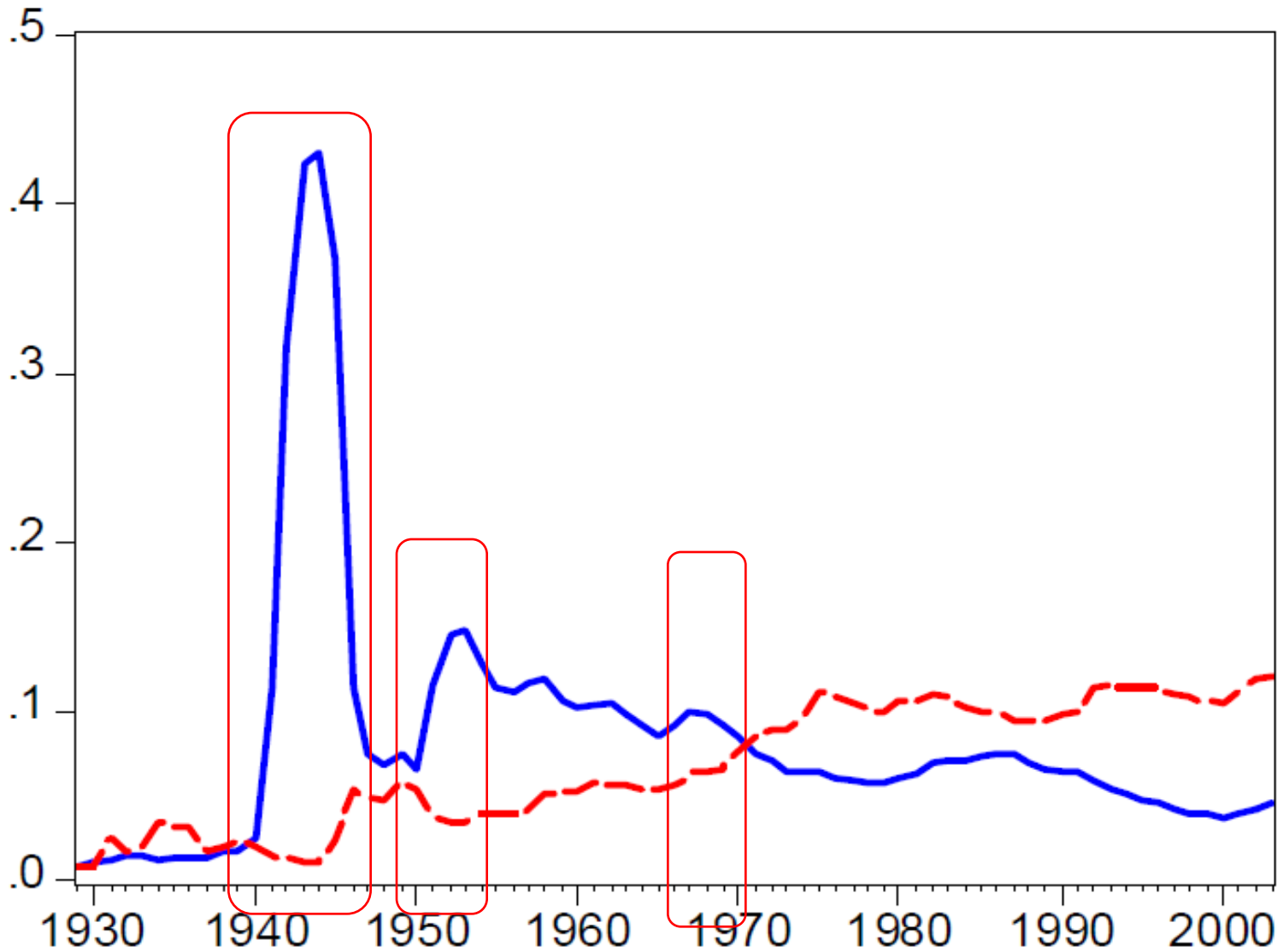


Table 2: Regressions of transfers on defense spending

- Major movements in defense spending are associated with war (threats) and are assumed exogenous (e.g. Ramey, 2011, etc.)
- Col. (1): defense spending exerts negative effect on federal transfers
- Col.(2) – (4): split in up and down movements defense
 - Col.(2): total federal transfers
 - Col.(3): exclude veteran benefits (partly “automatic” result of war)
 - Col.(4): exclude federal transfers and grants-in-aid to state and local govt (not all may be “true” transfers)
- Negative effect of defense on transfers only present when defense falls → evidence of ratchet (F-tests equality coefficients)

T.2: Effects defense spend. on alt. measures of transfers

	ΔTR	ΔTR	ΔTR_{EXV}	ΔTR_{EXVSL}	ΔTR	ΔTR
Period	1931-2003	1931-2003	1931-2003	1931-2003	1937-2003	1948-2003
Const	0.0024 (2.30)	0.0026 (2.62)	0.0028 (3.25)	0.0018 (2.68)	0.0025 (2.31)	0.0032 (2.75)
ΔDEF	-0.068 (-1.97)					
ΔDEF_U		0.0033 (0.15)	0.014 (1.15)	-0.001 (-0.076)	0.0057 (0.22)	-0.17 (-2.08)
ΔDEF_D		-0.110 (-16.1)	-0.063 (-12.4)	-0.065 (-14.3)	-0.12 (-20.4)	0.054 (0.29)
$\Delta Y_U(-1)$	-0.026 (-0.73)	-0.057 (-2.01)	-0.054 (-2.95)	-0.026 (-2.24)	-0.060 (-1.59)	-0.056 (-1.46)
$\Delta Y_D(-1)$	0.0068 (0.20)	0.017 (0.48)	0.023 (0.88)	0.041 (1.92)	0.080 (3.59)	0.027 (0.28)
AR(1)	0.039 (0.32)	0.028 (0.22)	0.068 (0.77)	0.069 (0.58)	0.12 (0.88)	0.10 (0.58)
R^2	0.25	0.34	0.23	0.28	0.44	0.18
DW	1.90	1.89	1.96	1.96	1.84	1.99

H_0 : no ratchet

F=27.4 p=0.00 F=42.1 p=0.00 F=51.6 p=0.00 F=20.6 p=0.00 F=1.01 p=0.32

Table 2: Regressions of transfers on defense spending

- Excluding period of GD does not change results
- Excluding WW-II, the ratchet vanishes (robust to ...) → ratchet appears to be strongly related to WW-II
- Lengthening series by appending with Census data to before start of WW-I retains presence of ratchet.
- However, counterfactually setting defense changes during WW-II to zero, ratchet vanishes, indicating there was NO ratchet associated with WW-I
- Counterfactual suggests that transfers ratchet associated with WW-II is approximately 4% of GDP

Table 3: Ratchets in revenues and taxes

- To control for effect of debt servicing costs incurred from war, TAXADJ (or REVADJ) is defined as total federal taxes (or revenues) *minus* interest payments on the public debt, *minus* debt repayment, and *minus* defense expenditures as shares of GDP
- These adjusted taxes/revenues measure resources left to finance transfers and civilian government spending after debt service and defense spending have been taken care of
- There is evidence of ratchet in TAXADJ and REVADJ
 - Preserved when GD is left out
 - Vanishes when WW-II is left out

T.3: Ratchets in federal taxes and revenues

	ΔTAX	ΔREV	ΔTAX_{ADJ}	ΔREV_{ADJ}
Period	1931- 2003	1931- 2003	1931- 2003	1931- 2003
Const	-0.0027 (-1.89)	-0.0025 (-1.75)	0.0058 (2.17)	0.0059 (2.13)
ΔDEF_U	0.19 (4.58)	0.15 (3.55)	0.13 (1.21)	0.087 (0.77)
ΔDEF_D	0.048 (5.65)	0.034 (3.21)	-0.18 (-3.52)	-0.21 (-3.61)
$\Delta Y_U(-1)$	0.062 (1.91)	0.10 (2.89)	-0.27 (-2.14)	-0.23 (-1.73)
$\Delta Y_D(-1)$	-0.065 (-2.04)	-0.047 (-1.15)	-0.13 (-2.36)	-0.10 (-1.36)
AR(1)	-0.23 (-1.16)	-0.20 (-1.05)	-0.14 (-1.10)	-0.085 (-0.59)
R^2	0.40	0.36	0.43	0.41
DW	2.03	2.04	1.99	1.98
H_0 : no ratchet	11.3 p=0.00	6.69 p=0.01	5.81 p=0.02	4.62 p=0.04

Table 4: Evidence on income tax rate during and around WW-II

- As U.S. went into war, tax burdens at all income levels increased and tax base widened as well.
- Reversed only marginally after war: at all income levels average income taxes in 1948 were substantially higher than in 1939.
- Similar picture for statutory tax rates
- Thresholds for highest tax brackets came down in run-up and during war; this was reversed only partially afterwards
- Extension of filing requirements (Revenue Act of 1942)

T.4: Average income tax by income groups (Wallis, 2006)

year	1000	2000	5000	10,000	25,000	50,000	100,000
1939	0.0	1.6	2.8	5.6	11.2	18.7	33.4
1940	0.4	2.2	3.4	6.9	17.0	29.4	44.3
1941	2.1	5.9	9.7	14.9	28.9	41.8	53.2
1942	8.9	13.7	18.4	23.9	38.5	51.6	64.6
1943	10.7	16.7	22.1	27.8	42.6	56.1	69.7
1944	11.5	17.3	22.1	27.6	42.4	55.9	69.9
1945	11.5	17.3	22.1	27.6	42.4	55.9	69.9
1946	9.5	14.3	18.4	23.5	37.5	50.3	63.5
1947	9.5	14.3	18.4	23.5	37.5	50.3	63.5
1948	6.6	11.6	16.2	21.2	34.4	46.4	58.8

Model: general structure

- Decentralised spending decisions
 - Large number of individuals: leisure / consumption
 - Executive branch: defense spending (war emergency made President first mover in allocation “guns and butter”)
 - Redistr. determined by game agenda setter – median voter

- Gov. spending: transfers and defense spending – consolidated GRC:

$$R + G_d = \left(t_r + \frac{t_d}{f}\right)Y, \quad 0 \leq t_r, t_d \leq 1, \quad 0 < f \leq 1. \quad (1)$$

$$t = t_r + t_d \quad r = R$$

Note: and (population normalised)

- Three periods: pre-war, WW-II and post-war

- Threat to national security captured by “war shock”

Extensions of Meltzer and Richard (JPE, 1981)

- Incorporation of defense into analysis.
- Endogenous changes defense spending across periods due to changing security threats.
- Determination transfers through game agenda setter and median voter:
 - Outcomes depend on status quo (Romer and Rosenthal, 1978, 1979): important role for changes in status quo tax rates during and after war.

Roadmap model solution

- Individual choices each period
- Executive's choices each period
- Choice of r and t_r when median voter decisive.
- Choice of r and t_r with agenda setter
- Legislative interaction S(etter) and MV
- Derive political equilibria:
 - Shift in political equilibrium pre-war to war period
 - Shift in political equilibrium war to post-war period
 - Different post-war equilibria possible
- Proof of ratchets in transfers and taxes

Individuals

- Utility individual i (first two terms cf. Persson and Tabellini)

$$c_i + v(x_i) + h(s), \quad (2)$$

National security s is public good – identical in utility

- Consumption individual i :

$$c_i = (1 - t)l_i + r, \quad (3)$$

- Effective leisure individual i :

$$x_i = 1 - q_d + e_i - l_i, \quad (4)$$

e_i is ability with average e and cumulative distr. $F(.)$

Individual choices and full-employment output

- Individual chooses l_i and x_i taking r , t_r , q_d and t_d as given. Hence, it maximises subject to (3) and (4):

$$c_i + v(x_i), \quad (8)$$

- Internal maximum:

$$l_i = 1 - q_d + e_i - v_x^{-1}(1 - t), \quad (9)$$

- Aggregation over all individuals

$$\int_0^1 l_i dF(e_i) = 1 - q_d + \int_0^1 e_i dF(e_i) - v_x^{-1}(1 - t) = 1 - q_d + e - v_x^{-1}(1 - t) = Y^s. \quad (10)$$

Individual choices and full-employment output

- Substituting (9) into (4) yield equil. level effective leisure

$$x_i = v_x^{-1} (1 - t) \equiv x, \text{ for all } i's. \quad (11)$$

- Using (11) in (4) and rearranging:

$$l_i = 1 - q_d + e_i - v_x^{-1} (1 - t) = Y^s + e_i - e \equiv Y_i^s, \quad (12)$$

Difference individual and average output equals
difference individual from average ability

Defense and national security

- National security:

$$s = \gamma \frac{G_d}{Y^s} + q_d - w, \quad \gamma > 0, \quad (5)$$

q_d is fraction drafted into army (unpaid, involuntarily),
 Y^s is full-employment output and w is a “war shock”

- Production of goods for army (by private sector)

$$G_d = q_d Y^s, \quad (6)$$

q_d is also fraction employed by this sector

- Substituting and simplifying : $s = (1 + \gamma) q_d - w, \quad \gamma > 0.$

Choices by Executive

- Executive is Benthamite, choosing q_d and t_d to maximise

$$\int_0^1 [c_i + v(x_i) + h(s)] dF(e_i). \quad (13)$$

- Assuming entire deficit used for defense spending implies:

$$t_d = fq_d. \quad (16)$$

- Using this and other equations, (13) reduces to choosing q_d to maximize taking as given w , r and t_r :

$$W(q_d) \equiv (1 - fq_d - t_r)Y^s + r + v(v_x^{-1}(1 - fq_d - t_r)) + h((1 + \gamma)q_d - w). \quad (17)$$

First term is average net labour income; first two terms together is average consumption

Choices by Executive

- First- and second-order conditions for internal maximum

$$\frac{\partial W}{\partial q_d} = -fY^s - (1 - fq_d - t_r) + (1 + \gamma) h'(\cdot) = 0, \quad (18)$$

$$\frac{\partial^2 W}{\partial^2 q_d} < 0 \Leftrightarrow (1 + \gamma)^2 h'' < -f \left(2 + \frac{f}{|v_{xx}|} \right). \quad (19)$$

Assume second-order condition fulfilled

(sufficient concavity $h(\cdot)$ or sufficiently strong effect γ defense spending on national security).

Choices by Executive

- Claim 1: For a given level of t_r , under full employment an increase in the war shock:
- (i) raises q_d and t_d .
 - (ii) reduces total output.
 - (iii) raises the share of defense expenditures in GDP.

Choice of r and t_r

- Redistribution and taxes to finance it are determined through interaction general public and agenda setter.
 - Median in general public is represented by median of full Congress floor.
 - Real-life counterparts of setter are Appropriations and Ways and Means Committees
- To avoid further complication, two Houses of Congress take decisions in unison.
- Determination political equilibrium
 - First derive outcome of majority voting (median; single peakedness)
 - Use this as input construction political equilibrium in presence of agenda setter

Choice of r and t_r when median voter decisive

➤ IUF voter i :

$$(1 - t_d - t_r) l_i^* + r + v(1 - q_d + e_i - l_i^*) + h((1 + \gamma) q_d - w), \quad (20)$$

Maximise subject to budget constraint $r = t_r Y^s$

➤ First- and second-order conditions:

$$\frac{1 - t_d - v_x}{v_{xx}} + (e - e_i) = \frac{t_r}{v_{xx}} + (e - e_i) = 0, \quad (23)$$

$$\frac{v_{xx}^2 + (1 - t_d - v_x)v_{xxx}}{v_{xx}^3} = \frac{v_{xx}^2 + t_r v_{xxx}}{v_{xx}^3} < 0, \quad (24)$$

Assume (24) fulfilled for all t_r . Sufficient, not necessary, is $v_{xxx} \geq 0$.

Hence, single-peakedness in t_r holds.

Choice of r and t_r when median voter decisive

- Rearranging (23) for median voter:

$$t_r^{Im} = -v_{xx} \cdot (e - e_m). \quad (25)$$

- Assumption 1: Mean-median spread is positive or

$$e - e_m > 0. \quad (26)$$

We shall focus only on cases $\frac{t_r}{v_{xx}} + (e - e_m) > 0$

Choice of r and t_r when median voter decisive

Claim 2: Given Assumption 1 and provided $v_{xxx} \geq 0$

- (i) Holding t_d constant, t_r^{Im} is an increasing function of the mean-median spread.
- (ii) t_r^{Im} is a non-increasing function of t_d . It is strictly decreasing in t_d when $v_{xxx} > 0$ and independent of t_d when $v_{xxx} = 0$.
- (iii) The impact of t_d on t_r^{Im} , dt_r^{Im}/dt_d , is smaller than one in absolute value.

Choice of r and t_r with agenda setter

- Specialised committees in Congress typically possess power to set legislative agendas
- In current context, Appropriations and Ways and Means Committees are most relevant
- We assume agenda setter who possesses gate keeping authority of legislative agenda concerning t_r and is more conservative than median in full house:
 - Latter represents preferences MV in population
 - Former represents more fiscally responsible / wealthier:

Assumption 2: $e_s > e_m$

Choice of r and t_r with agenda setter

Claim 3: Given Assumption 2 jointly sufficient conditions for the ideal point of the agenda setter in the t_r space (denoted t_r^{Is}) to be lower than that of the MV (t_r^{Im}) are $v_{xxx} \geq 0$, if $e - e_s \geq 0$, and $\frac{v_{xxx}}{v_{xx}}(e - \tilde{e}) < 1$ for all $\tilde{e} \in [e_m, e_s]$, if $e - e_s < 0$.

Legislative interaction S(etter) and MV

- Each period there is status-quo redistributive tax rate t_r^{sq}
- S has gate-keeping power over proposals concerning alternative t_r :
 - If he does not make proposal, existing status quo prevails.
 - If he does, MV votes for or against new tax rate – if it votes yes, new rate replaces SQ, otherwise SQ prevails.
- When $t_r^{Is} < t_r^{sq} < t_r^{Im}$, (27)

SQ is stable equilibrium: S abstains from bringing up proposal to reduce transfers, while it is not in his interest to bring up proposal to raise transfers.

Shift in political equilibrium pre-war to war period

- Establishment of social security program in 1936 → lower bound on redistribution \bar{t}_r
- GD created high demand for redistribution, kept in check by S:

Assumption 3a: $t_{r1}^{Is} < \bar{t}_r < t_{r1}^{Im}$.

Hence, $t_{r1} = \bar{t}_r$ is stable equilibrium in period 1

- w went up from w_1 to $w_2 > w_1$

For given t_r , $t_{d2} > t_{d1}$ Claim 1-(i))

Hence, t_{r2}^{Im} did not change or went down (Claim 2-(ii))

Further, t_{r2}^{Is} moves up or down (proof of Claim 5)

Shift in political equilibrium pre-war to war period

- Assume differences $\bar{t}_r - t_{r1}^{Is}$ and $t_{r1}^{Im} - \bar{t}_r$ large enough to preserve ordering after rise in defense spending between periods 1 and 2

Assumption 3b: $t_{r2}^{Is} < \bar{t}_r < t_{r2}^{Im}$.

- Claim 4 $t_{r1} = t_{r2} = \bar{t}_r$. (29)

- Together, Claims 1 and 4 imply that, as a result of the increase in the war shock ($w_2 > w_1$), defense spending increases between periods 1 and 2.

Shift in political equilibrium war to post-war period

- We assume that with victory of Germany and Japan, war shock recedes, but that it does not go all the way to pre-war level:

$$w_3 < w_2 \text{ and } w_3 > w_1$$

- To understand evolution tax rates between periods 2 and 3, we need to explore political interactions between MV, S and E
- Interaction MV and S depends on status-quo tax in period 3. Because t_2 and t_{d3} are taken as given by MV and S, it is

$$t_{r3}^{sq} = t_2 - t_{d3} = t_{r2} + t_{d2} - t_{d3} = \bar{t}_r + t_{d2} - t_{d3}, \quad (31)$$

- Different eventual relative positions of t_{r3}^{Is} , t_{r3}^{sq} and t_{r3}^{Im} are possible, leading to potentially different equilibrium outcomes for t_{r3}

Shift in political equilibrium war to post-war period

➤ Proposition 1:

There are, in principle, four possible configurations for the relative positions of t_{r3}^{Is} , t_{r3}^{sq} , t_{r3}^{Im} and t_{r3}^{em} in the t_{r3} space:

$$\text{Case 1: } t_{r3}^{Is} < t_{r3}^{sq} < t_{r3}^{Im},$$

$$\text{Case 2: } t_{r3}^{Is} < t_{r3}^{em} < t_{r3}^{Im} < t_{r3}^{sq},$$

$$\text{Case 3: } t_{r3}^{em} < t_{r3}^{Is} < t_{r3}^{Im} < t_{r3}^{sq},$$

$$\text{Case 4: } t_{r3}^{sq} < t_{r3}^{Is} < t_{r3}^{Im},$$

where t_{r3}^{em} is the value of t_{r3} that provides the same utility as t_{r3}^{sq} to the MV given t_{d3} .

➤ Under conditions of Claim 3, Case 4 can be excluded

Characterisation equilibrium post-war period

➤ Assumption 4: $\bar{t}_r < t_{r3}^{em}$ (IUF of MV must not be too flat)

➤ Case 1: $t_{r3}^{Is} < t_{r3}^{sq} < t_{r3}^{Im}$

If $t_{r3}^{sq} > \bar{t}_r$ (prop.2), t_{r3}^{sq} becomes equil. redistribution tax rate

➤ Case 2: $t_{r3}^{Is} < t_{r3}^{em} < t_{r3}^{Im} < t_{r3}^{sq}$

MV and S have common interest in reducing tax rate as long as MV not worse off than under SQ

As agenda setter, S appropriates all surplus, hence $t_{r3} = t_{r3}^{em}$

Characterisation equilibrium post-war period

➤ Case 3: $t_{r3}^{em} < t_{r3}^{Is} < t_{r3}^{Im} < t_{r3}^{sq}$

S and MV have common interest in reducing tax rate below SQ

However, S does not want to reduce it below his ideal point

Hence, $t_{r3} = t_{r3}^{Is}$

➤ Note that $t_{r3}^{sq} > \bar{t}_r = t_{r2} = t_{r1}$ hence Claim 1 can no longer be applied; hence t_{r3} , t_{r3}^{sq} and t_{d3} are all determined simultaneously

Characterisation equilibrium post-war period

➤ Total impact of w on q_d is

$$\frac{dq_d^T}{dw} = \frac{dq_d}{dw} + \frac{dq_d}{dt_r} \frac{dt_r}{dq_d} \frac{dq_d^T}{dw}, \quad (33)$$

where $\frac{dq_d}{dw}$ is the direct effect of w on q_d

$\frac{dq_d}{dt_r}$ is the partial effect of t_r on q_d

$\frac{dt_r}{dq_d}$ is the partial effect of q_d on t_r

Since by Claim 1, $\frac{dq_d}{dw} > 0$, the total impact of w on q_d is positive if and only if

$$B \equiv 1 - \frac{dq_d}{dt_r} \frac{dt_r}{dq_d} > 0, \quad (34)$$

Proposition 2: conditions under which defense spending increases as war shock increases

Let $v_{xxx} \geq 0$. Then, $\frac{dq_{d3}^T}{dw_3} > 0$ and $t_{r3}^{sq} > t_{r2}$ when either of the following cases occurs

(i) $t_{r3} = t_{r3}^{sq}$,

(ii) $t_{r3} = t_{r3}^{em}$ and

$$\left[\frac{t_{r3}}{v_{xx}} + (e - e_m) \right] > [\Delta Y^s + (1 - t_{d3}) / f], \quad (35)$$

(iii.a) $t_{r3} = t_{r3}^{Is}$ and $e - e_s \geq 0$,

(iii.b) $t_{r3} = t_{r3}^{Is}$ and $e - e_s < 0$,

while $\rho \equiv \frac{v_{xxx}}{v_{xx}} \leq 0$ is not too large in absolute value.

Which equilibrium was more likely?

➤ There are three possible distinct equilibrium outcomes

$$\begin{aligned}t_{r3} &= t_{r3}^{sq}, \\t_{r3} &= t_{r3}^{em}, \\t_{r3} &= t_{r3}^{Is}.\end{aligned}\tag{36}$$

During war SQ transfer-tax rate \bar{t}_r smaller than t_{r2}^{Im}

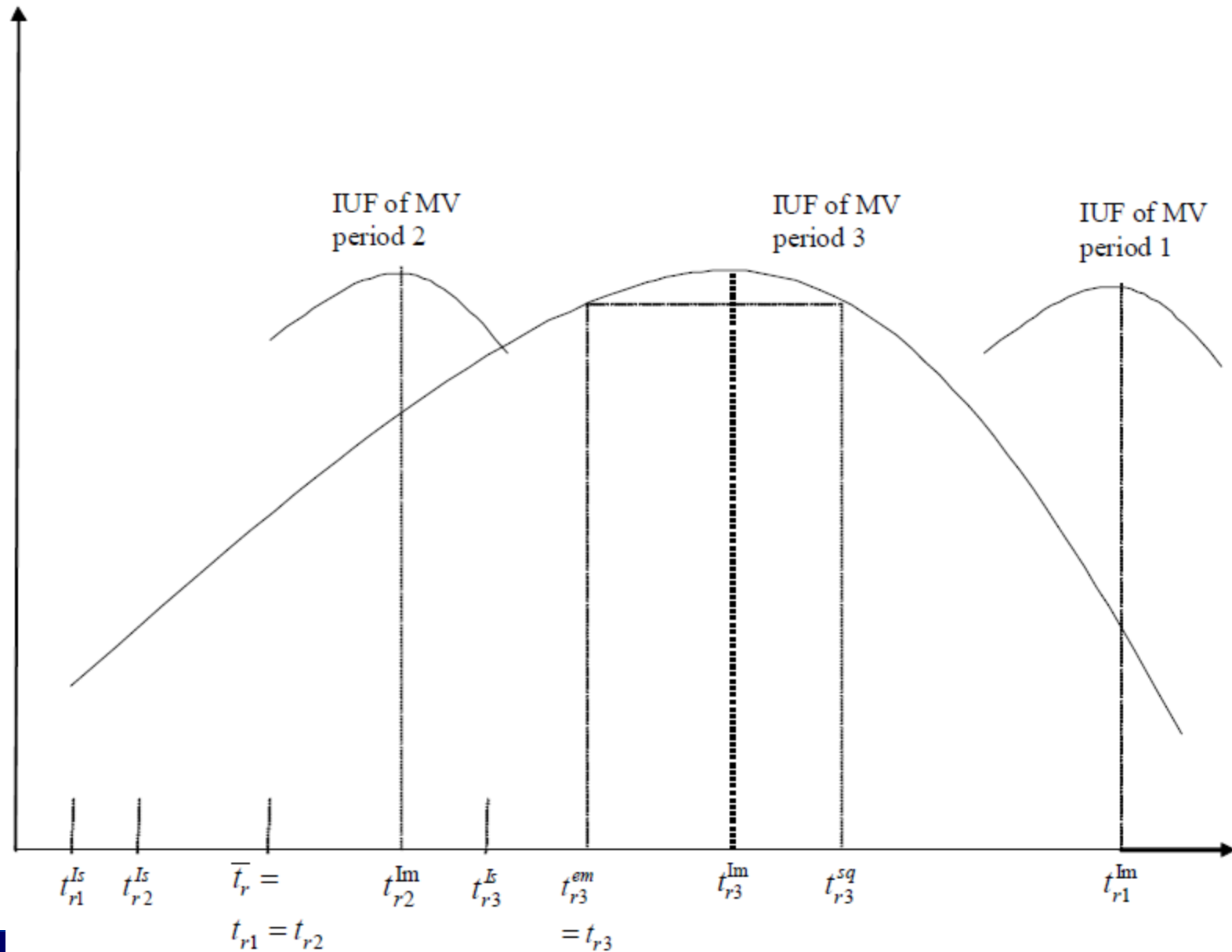
Fall in t_d raises both MV's ideal point and SQ transfer-tax rate, while latter goes up faster (Claim 2-(iii))

If magnitude of fall in w not too large then $t_{r3} = t_{r3}^{sq}$

Which equilibrium was most likely?

- Between war and post-war defense spending went down a lot making first equilibrium less likely
- Third equilibrium excluded when $e_s > e$ (Proposition 3)
- Public Opinion Quarterly (Fall 1945) shows strong demand for redistribution making steep decline IUF more likely
- Taken together, second equilibrium seems more likely (Fig 2)

Fig 2: Post-WW-II equil. redistrib. tax rate (P.1, C.2)



Political economy of post-war ratchet in transfers

➤ Why was not demand for redistribution already satisfied before war?

➤ Proposition 4:

There is a ratchet in the share of transfers between the pre-war and the post-war period (i.e. $t_{r3} > t_{r1} = \bar{t}_r$) whenever either one of the following possible equilibrium outcomes arises:

(i) $t_{r3} = t_{r3}^{sq}$,

(ii) $t_{r3} = t_{r3}^{em}$.

Intuition for equilibria in Proposition 4

- First equilibrium: $t_{r3} = t_{r3}^{sq}$
 - New SQ larger than ideal point S, lower than ideal point MV
 - Both want to move from SQ in opposite directions
 - Because new SQ exceeds \bar{t}_r , there is a post-war transfers ratchet
- Second equilibrium $t_{r3} = t_{r3}^{em}$
 - New SQ exceeds ideal of MV, which exceeds ideal of S
 - Both have interest in reducing tax rate, as long IUF of MV does not fall below t_{r3}^{sq} at
 - This results in $t_{r3} = t_{r3}^{em}$ which exceeds redistribution tax in period 1

Intuition

- Upshot is that post-WW-II ratchet in transfers constituted a long-delayed reaction of political establishment to increased popular demand for redistribution in aftermath of GD
- Popular demand for transfers exceeded actual transfers already before the war, but S used gate-keeping power to keep lid on pre-war transfers
- By changing the SQ regarding available taxes WW-II created a higher post-war SQ tax burden
- This raised bargaining power of MV, so some of unfulfilled popular demand for redistribution could be satisfied belatedly

There is also a post-war ratchet in taxes

Proposition 5:

- (i) There always is a ratchet in total taxes.
- (ii) The share of total taxes in the post-war period is bounded from above by their share during the war period. Formally,

$$t_2 \geq t_3 > t_1. \quad (37)$$

Robustness: excess capacity in pre-war period

➤ Years preceding WW-II were characterised by high unemployment (19% in 1938 and 10% in 1941); we relax full employment for period 1 and derive under what conditions our results still hold.

➤ Aggregate demand $Y^d = \bar{C} + \beta Y^d + G_d < Y^s, 0 < \beta < 1,$ (38)

which using (6) can be rewritten as

$$Y^d = C^d + mG_d = C^d + mq_d Y^s < Y^s, \quad (40)$$

$C^d \equiv m\bar{C}$ and $m \equiv \frac{1}{1-\beta}$ is the simple Keynesian multiplier

where

➤ Note that when defense spending goes up, Y^d / Y^s increases

Robustness: excess capacity in pre-war period

- Fraction Y^d / Y^s of individuals works at individually optimal level, fraction $1 - Y^d / Y^s$ is involuntarily unemployed and earns only r
- Leisure of unemployed is

$$x_{ui} = 1 - q_d + e_i. \quad (39)$$

Robustness: excess capacity in pre-war period

➤ Executive:

$$W(q_d) \equiv \eta [(1 - t_d - t_r)Y^s + v (v_x^{-1} (1 - t_d - t_r))] + (1 - \eta) \left[\int_0^1 v(1 - q_d + e_i) dF(e_i) \right] + r + h((1 + \gamma)q_d - w), \quad (41)$$

- Assumption 5: Executive cares little about utility of unemployed from leisure, so η is close to zero \rightarrow Executives problem same as under full employment and Claim 1 still holds.
- Justified by Executive being mainly concerned with national security, while maintaining reasonable level of activity.

Choices of r and t_r in period 1 under direct democracy

- Unemployed do not pay taxes → their best tax rate t_r^{Iu} maximises the per-capita transfer (note there is a Laffer curve)
- Due to the unemployed, voter at median of ability distribution is no longer same as voter at median of ideal points
- As long as all IUFs are single-peaked the voter at the median of ideal points is still decisive
- Three groups of voters: unemployed, high ability workers, lower ability workers.

Choices of r and t_r in period 1 under direct democracy

➤ Claim 6:

- Sufficient condition single-peakedness unemployed is $v_{xxx} \geq 0$
- Their ideal point is given by:

$$t_r^{Iu} = -\frac{v_{xx}Y^d}{mq_d} > 0. \quad (42)$$

Choices of r and t_r in period 1 under direct democracy

➤ IUF of employed individual is

$$(1 - t_d - t_r)(e_i - e) + (1 - t_d)Y^s + t_r [C^d - (1 - mq_d)Y^s] + v(v_x^{-1}(1 - t_d - t_r))$$

➤ First-order condition is:

$$FOD(t_r) \equiv \frac{mq_d t_r}{v_{xx}} + C^d - (1 - mq_d)Y^s + e - e_i = 0, \quad (43)$$

➤ Rearranging, ideal point of employed voter i is:

$$t_r^{Ii} = \frac{1}{mq_d} \left\{ -v_{xx} \cdot [(e - e_i) - (Y^s - Y^d)] \right\}. \quad (44)$$

Choices of r and t_r in period 1 under direct democracy

➤ Second-order condition is

$$\frac{1}{v_{xx}} \frac{v_{xxx}}{v_{xx}} > \frac{1 - 2mq_d}{mq_d t_r}. \quad (45)$$

Assuming $v_{xxx} > 0$, marginal utility from leisure decreases sufficiently slowly and/or coeff. of absolute prudence $\left| \frac{v_{xxx}}{v_{xx}} \right|$ is sufficiently high

➤ Not all ideal points of employed are internal

- For voters with sufficiently high ability, $FOD(t_r) < 0$ for all t_r
- Their IUF has single peak at
- This is $e_i \geq C^d - (1 - mq_d)Y^s + e \equiv e_c$. (46)

Choices of r and t_r in period 1 under direct democracy

Assumption 6: For individuals with abilities in the range $e_i < e_c$

- (i) The condition in equation (45) holds for all t_r in the range $(0, t_r^{Iu}]$.
- (ii) Let e^{\min} be the ability of the lowest ability individual in the population.

This individual's optimal labor supply at t_r^{Iu} may be small but is still positive.

The formal condition for this restriction is

$$e^{\min} > v_x^{-1} (1 - t_r^{Iu}) - (1 - q_d). \quad (47)$$

Choices of r and t_r in period 1 under direct democracy

Claim 7: The IUF of any employed voter with ability below e_c has a single internal peak, t_r^{Ii} , whose explicit form is given by equation (44).

This ideal tax rate satisfies

$$0 < t_r^{Ii} < t_r^{Iu}. \quad (49)$$

Choices of r and t_r in period 1 under direct democracy

➤ **Proposition 6:** Under excess capacity and given Assumption 6 the

IUFs of all voters are single peaked implying the existence of a

decisive voter under direct democracy. The ideal transfer tax rate

$$t_r^{Id}$$

of the decisive voter is given by the median of ideal points in the

space of ideal points.

Choices of r and t_r in period 1 under direct democracy

- We assume that decisive voter is employed, which is reasonable given that unemployment at peak of GD was not above 25%
- We also assume that his ability e_d exceeds e
- Then the equilibrium transfer tax rate under excess capacity and direct democracy is given by equation (44) with $e_i = e_d$

Choices of r and t_r in periods 1 and 2 with agenda setter and existence of ratchets

- Analogous of full-employment case, we assume

$$\text{Assumption 3u: } t_{r1}^{Is} < \bar{t}_r < t_{r1}^{Id} \text{ and } t_{r2}^{Is} < \bar{t}_r < t_{r2}^{Id}.$$

- Hence, $t_{r1} = t_{r2} = \bar{t}_r$ and t_r is unchanged in period 2
- Hence, increase in w raises t_d between pre-war and war periods (Claim 1)
- Since both the war and the post-war periods are characterized by full employment the analysis of ratchets in transfers and taxes from the previous sections remains unaltered.

Why was there no ratchet in transfers after WW-I?

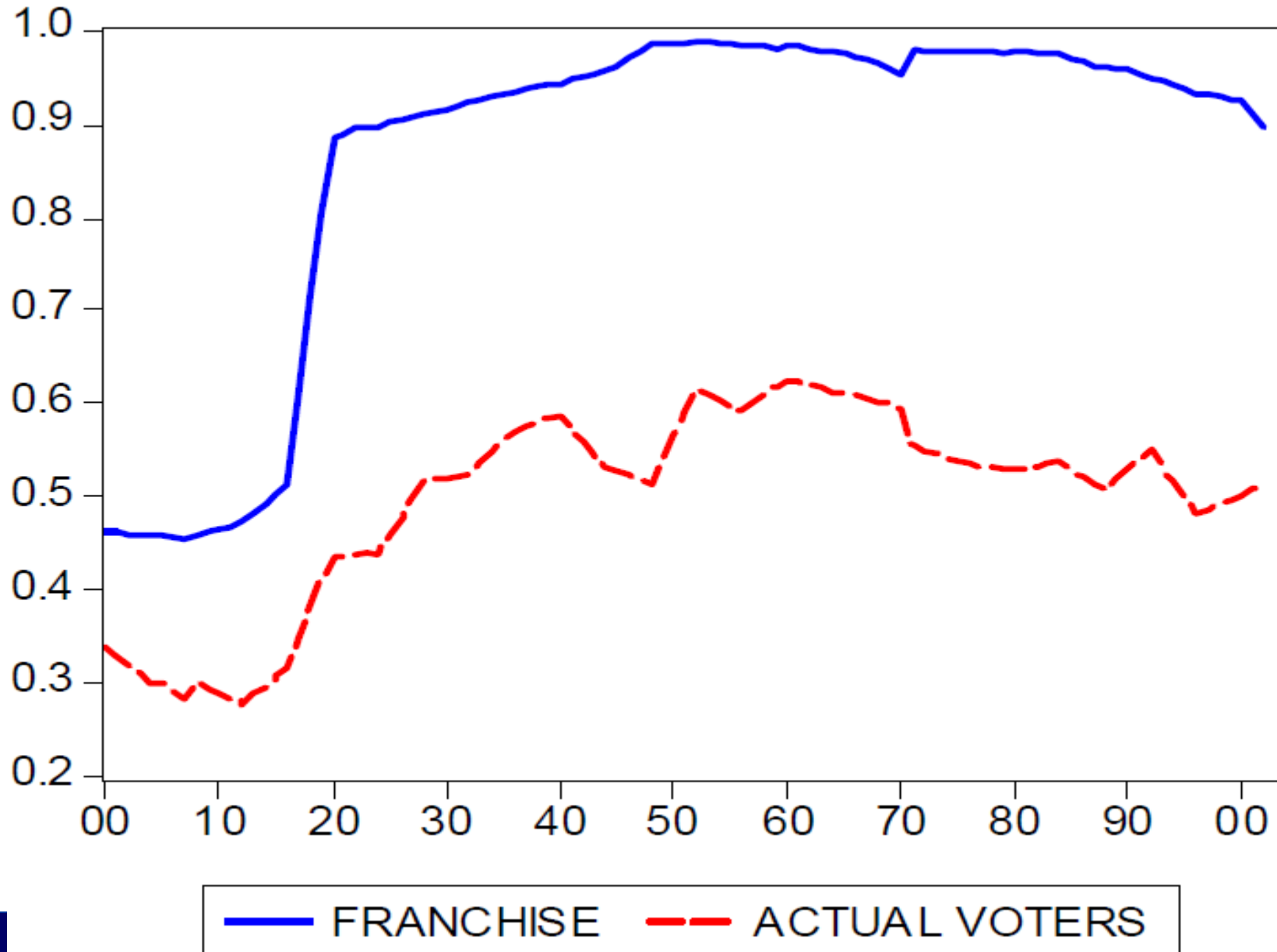
➤ Evidence in Beetsma et al. (2005) shows there was no ratchet in transfers following WW-I → our theory identifies a number of potential factors:

(1) War shock was smaller, hence need for higher taxes and potential room for peace dividend were smaller.

(2) Following the GD and prior to WW-II, there was an unsatisfied popular demand for transfer – there was no event of similar proportions prior to WW-I.

(3) Between world wars voting franchise and political participation roughly doubled → political participation of lower income groups and blacks ↑ → pushed median further below mean → reinforced impact of increased demand due to GD

Fig 3: Franchise and actual voters (share voting age pop.)



Why was there no ratchet in transfers after WW-I?

- Public Opinion Quarterly (Fall 1945) shows
 - 75% in favor of extending social security to cover everyone that had a job
 - two thirds in favour of reduction of taxes on personal income
 - Accommodation of both higher transfers and lower taxes was made possible by the post-war peace dividend that raised SQ transfer tax rate → bargaining power of MV ↑
- (4) Establishment of income tax withholding during WW-II → eased collection of taxes and may have reduced awareness of amount of taxes collected

Political economy of post-war ratchet in transfers

- GD created large increase in demand for redistribution
- Creation social security only partially met this higher demand
- Ideal of S was lower than $\bar{t}_r \rightarrow \bar{t}_r$ became stable equilibrium in game between S and MV
- Because ranking of ideal points and \bar{t}_r remained unchanged during war, pre-war level of redistribution persisted during war
- End of war brought reduction in defense spending \rightarrow status-quo redistributive tax rate went up by peace dividend $t_{d2} - t_{d3}$ and became larger than \bar{t}_r .

Political economy of post-war ratchet in transfers

- Also, ideal points of S and MV (weakly) increased
- Change in relations ideal points and status quo created new legislative bargaining opportunities
- Any of the new equilibria is associated with post-war ratchet in transfers