Macro Implications of Inequality-driven Political Polarization

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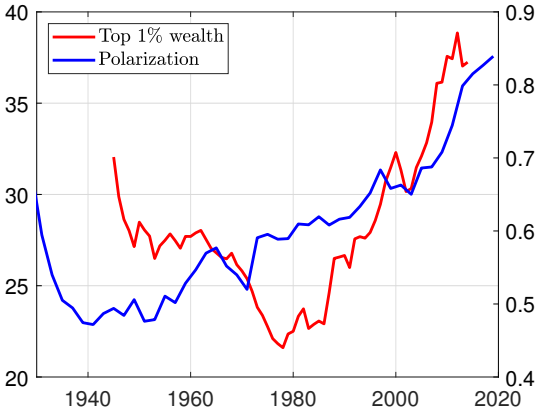
The views expressed in this paper do not necessarily represent those of the Central Bank of Chile or its Board.

Inequality and Politics

- Significant variations of inequality across time and space
- Economic and political implications
- Median Voter Theorem: Downs (1957), Meltzer and Richard (1981)
- Evidence:
  - conflict vs redistribution
  - Inequality and polarization; policy swings
- This paper studies the effect of inequality on the macroeconomy through politics
  - Politics: party competition, polarization of preferences and policy
  - Economics: role of heterogeneity and empirically realistic inequality

Inequality and Political Polarization



McCarty et al. (2016): "In the middle of the twentieth century, the Democrats and the Republicans did dance almost cheek to cheek in a courtship of the political middle. But over the past forty years the parties have deserted the center of the dance floor in favor of the wings ... just as American politics became increasingly divisive, economic fortunes diverged." ▸ panel evidence

Model Overview

Main features

- HA model, idiosyncratic risk and incomplete markets
- Distortionary taxes financing lump-sum transfers
- Political mechanism: repeated elections and political parties with Wittman (1973) preferences and electoral uncertainty (Roemer, 2001)

Main Exercise

- Calibrate two economies: high inequality (hi) matches inequality in 2020; low inequality (li) matches inequality in 1978

Main results

- Inequality leads to political polarization
- Policy uncertainty and negative macro effects from policy uncertainty

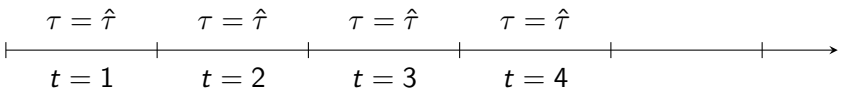
Related Literature

- Political Business Cycles and Policy Uncertainty
  - Azzimonti & Talbert (2014); Canes-Wrone & Park (2012); Julio & Yook (2012); Aguirre (2023)
- Political economy in HA models
  - Krusell & Ríos-Rull (1999); Corbae, D'Erasmo & Kuruscu (2009); Bachmann and Bai (2012)

Set-Up

- Continuum of agents of mass 1 with assets and labor efficiency units (a, e); Φ denotes distribution over individual state variables
- Borrowing limit $a \geq 0$
- Ex-ante and ex-post (Markov) heterogeneity in labor efficiency units
- GHH period utility function $u(c, \ell)$
- Assets' returns and labor income taxed at rate τ, finance lump-sum transfers T
- There is an election every 4 periods, and two parties compete proposing τ

Timing of Events



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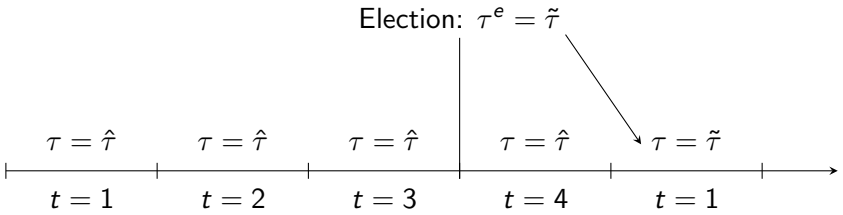

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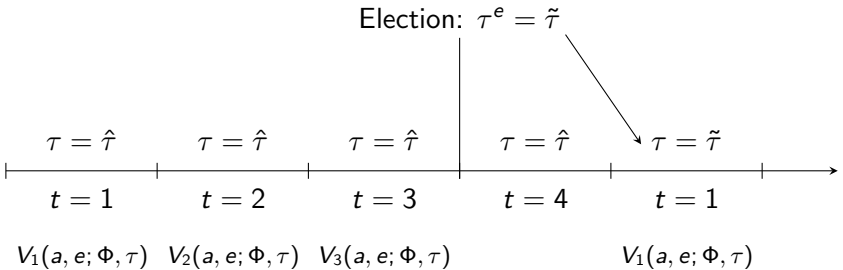

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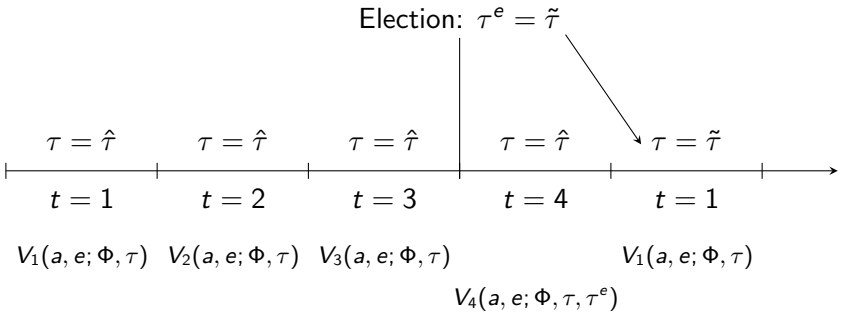

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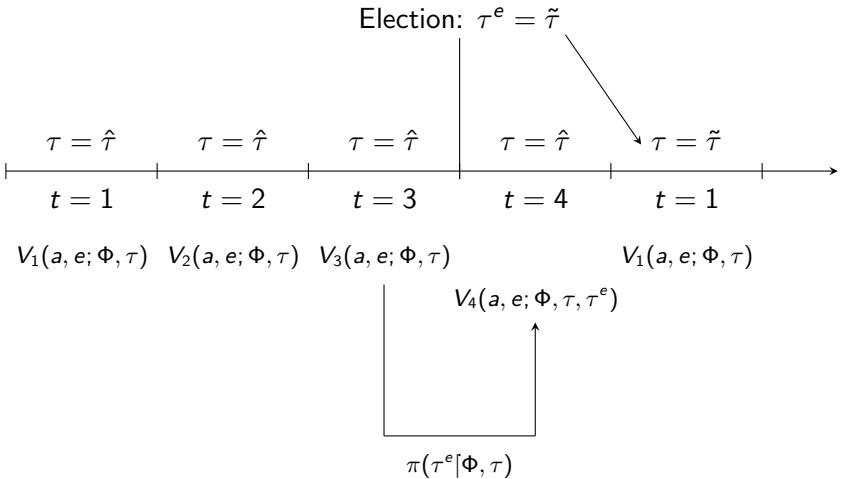

Household's Problem

$$
\begin{aligned}
V_{t=1,2}(a, e; \Phi, \tau) &= \max_{c,\ell,a' \geq 0} u(c, \ell) + \beta E \left[V_{t+1}(a', e'; \Phi', \tau) | e \right] \\
\text{s.t. } c + a' &= w(\Phi, \tau) \ell e (1 - \tau) + (1 + (1 - \tau) r(\Phi, \tau)) a + T(\Phi, \tau) \\
\Phi' &= H_t(\Phi, \tau)
\end{aligned}
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$$

$$
\begin{aligned}
V_3(a, e; \Phi, \tau) &= \max_{c,\ell,a' \geq 0} u(c, \ell) + \beta \sum_{\tau^e} \pi(\tau^e | \Phi, \tau) E\left[V_4(a', e'; \Phi', \tau, \tau^e) | e\right] \\
\text{s.t. } c + a' &= w(\Phi, \tau)\ell e(1-\tau) + (1 + (1-\tau)r(\Phi, \tau))a + T(\Phi, \tau) \\
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$$

$$
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V_4(a, e; \Phi, \tau, \tau^e) &= \max_{c,\ell,a' \geq 0} u(c, \ell) + \beta E\left[V_1(a', e'; \Phi', \tau^e) | e\right] \\
\text{s.t. } c + a' &= w(\Phi, \tau) \ell e (1 - \tau) + (1 + (1 - \tau) r(\Phi, \tau)) a + T(\Phi, \tau) \\
\Phi' &= H_4(\Phi, \tau, \tau^e)
\end{aligned}
$$

Competitive Equilibrium

Given $\pi(\tau^e|\Phi,\tau)$, a RCE is a set of functions V_t, a'_t, ℓ, c_t, r, w, T and H_t such that

1. Given $w(\Phi,\tau)$ and $r(\Phi,\tau)$, $V_t(a,e;\Phi,\tau)$, $a'_t(a,e;\Phi,\tau)$, $\ell(a,e;\Phi,\tau)$ and $c_t(a,e;\Phi,\tau)$ solve de hh's prob.
2. Given $w(\Phi,\tau)$ and $r(\Phi,\tau)$, $K(\Phi)$ and $L(\Phi,\tau)$ satisfy
$$\begin{aligned} r(\Phi,\tau) &= F_K(K(\Phi),L(\Phi,\tau)) - \delta \\ w(\Phi,\tau) &= F_L(K(\Phi),L(\Phi,\tau)) \end{aligned}$$
3. Government Budget Constraint
$$T(\Phi,\tau) + \Psi(\tau) = \tau\left(w(\Phi,\tau)L(\Phi,\tau) + r(\Phi,\tau)K(\Phi)\right)$$
4. Market Clearing
$$K(\Phi) = \int a d\Phi \quad ; \quad L(\Phi,\tau) = \int \ell(a,e;\Phi,\tau) e d\Phi$$
$$\int c_t(a,e;\Phi,\tau)d\Phi + \int a'_t(a,e;\Phi,\tau)d\Phi + \Psi(\tau) = F(K(\Phi),L(\Phi,\tau)) + (1-\delta)K(\Phi,\tau)\ \forall$$
5. The agg lom $H_{t=1,2,3}(\Phi,\tau)$ and $H_4(\Phi,\tau,\tau^e)$ are generated by trans. prob. and $a'_t(\Phi,\tau)$.

Political Mechanism (1/2)

- There are two parties: $P = R, L$, each implements a tax rate τ^P when gaining power
- An agent with individual state (a, e) when the agg state is (Φ, τ) votes for R if

$$V_4(a, e; \Phi, \tau, \tau^R) > V_4(a, e; \Phi, \tau, \tau^L)$$

- Define $I^R(a, e; \Phi, \tau, \tau^R, \tau^L) = 1$ whenever this is true, and 0 otherwise.
- The fraction of votes obtained by R is

$$\theta^R(\Phi, \tau, \tau^R, \tau^L) = \int I^R(a, e; \Phi, \tau, \tau^R, \tau^L) d\Phi$$

- The probability of R winning the election is strictly increasing in θ^R

$$\Pi(\Phi, \tau, \tau^R, \tau^L) = \frac{1}{1 + \exp\{-\lambda(\theta^R(\Phi, \tau, \tau^R, \tau^L) - 0.5)\}}$$

Political Mechanism (2/2)

- Defining consumption equivalent gains from voting for party R as

$$g_R(a, e; \Phi, \tau, \tau^R, \tau^L) = \left(\frac{V_4(a, e; \Phi, \tau, \tau^R)}{V_4(a, e; \Phi, \tau, \tau^L)} \right)^{\frac{1}{1-\sigma}} - 1,$$

  party R objective function is

$$W(\Phi, \tau, \tau^R, \tau^L) = \Pi(\Phi, \tau, \tau^R, \tau^L) \frac{\int g_R(a, e; \Phi, \tau, \tau^R, \tau^L) I^R(a, e; \Phi, \tau, \tau^R, \tau^L) d\Phi}{\theta^R(\Phi, \tau, \tau^R, \tau^L)}.$$

- Party L solves a similar problem. Then, defining

$$\begin{aligned} \tau^{R*} &= argmax_{\tau^R} \{W(\Phi, \tau, \tau^R, \tau^{L*})\} \\ \tau^{L*} &= argmax_{\tau^L} \{W(\Phi, \tau, \tau^{R*}, \tau^L)\}, \end{aligned}$$

  $\pi(\tau^e|\Phi, \tau)$ is given by

$$\pi(\tau^e|\Phi, \tau) = \begin{cases} \Pi(\Phi, \tau, \tau^{R*}, \tau^{L*}) & \text{if} \quad \tau^e = \tau^{R*} \\ 1 - \Pi(\Phi, \tau, \tau^{R*}, \tau^{L*}) & \text{if} \quad \tau^e = \tau^{L*} \\ 0 & \text{ow} \end{cases}$$

Political Equilibrium

A PE is a CE with $\pi(\tau^e|\Phi,\tau)$ consistent with party's objective function maximization.

Computation: Political Quasi-Aggregation

- Aggregate risk prevents the exact compuation of the model
- On the political side $\pi(\tau^e|\Phi,\tau)$ needs to be forecasted by agents using an approx. of Φ
- Since $\pi(\tau^e|\Phi,\tau)$ is composed by three functions of (Φ,τ), Π, τ^{R*} and τ^{L*}, I use

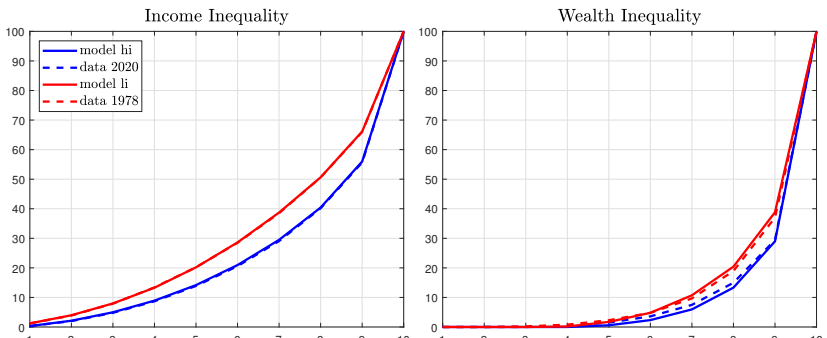
$$\begin{aligned} \Pi &= H_{\Pi}(k,\tau) \\ \tau^{R*} &= H_{\tau^{R*}}(k,\tau) \\ \tau^{L*} &= H_{\tau^{L*}}(k,\tau) \end{aligned}$$

  where H are polynomials.
- On the economic side I use

$$\begin{aligned} k' &= H_k(k,\tau,q) \\ T &= H_T(k,\tau,q) \end{aligned}$$

Calibration: Inequality

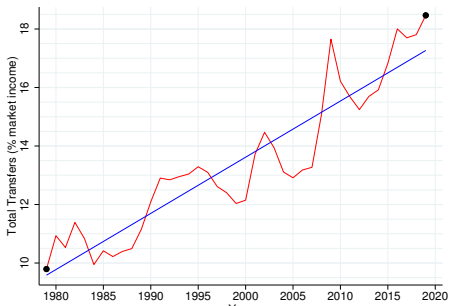
- Efficiency units: 10 groups ex-ante heterogeneous with same parameters of the AR(1) stochastic process



Data for the US from WID.

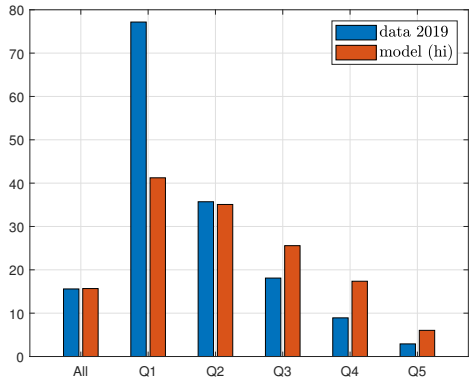
Calibration: Transfer Rates in the US

- Tax rates 11.7% and 21.4% generate transfer rates in the data for 1979-2019
- Inefficiency Ψ calibrated so these taxes are the preferred by median voters



Constructed using data from CBO. Includes mean-tested transfers and social insurance payments.

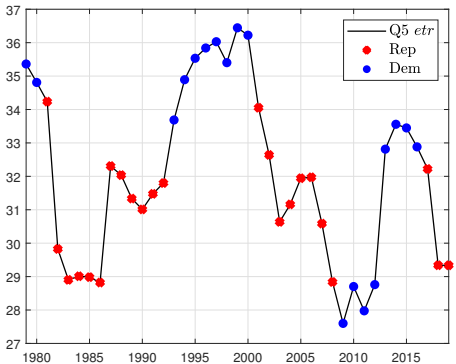
Calibration: Transfer Rates by Quintile in the US



Constructed using data from CBO. Includes mean-tested transfers and social insurance payments.

Calibration: US Effective Tax Rates

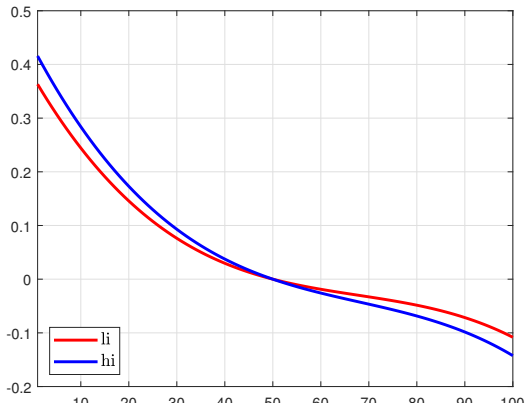
	Q1	Q2	Q3	Q4	Q5
Mean	-71.5	-17.6	6.1	18.1	32.0
SD	3.6	9.2	7.6	4.8	2.6
Mean Dem gov	-72.5	-20.2	4.8	17.4	33.3
Mean Rep gov	-70.6	-15.6	7.2	18.7	31.0



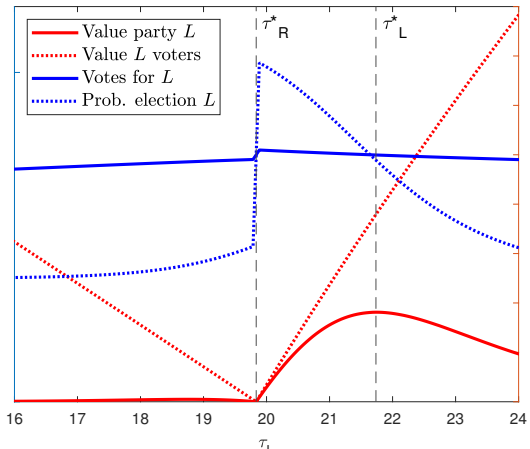
Constructed using data from CBO. Fraction of disposable income that is paid in taxes minus the fraction received as transfers. Includes federal tax payments, mean-tested transfers and social insurance payments.

Tax Preferences

- Gain/Lost from a 1% increase in τ from the level preferred by the median



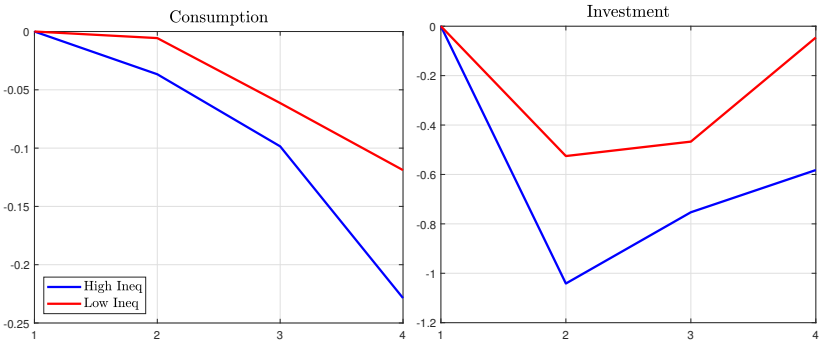
Equilibrium



Policy Volatility: Macroeconomic Effects

		τ	Y	N	K	C	w	r
High-Inequality Economy	Mean	21.5 %	0.28	0.27	0.59	0.16	0.40	5.8 %
	St. Dev.	3.3 %	1.8 %	1.7 %	3.2 %	2.3 %	0.9 %	0.2 %
Low-Inequality Economy	Mean	11.4 %	0.30	0.31	0.63	0.17	0.41	5.2 %
	St. Dev.	1.5 %	1.4 %	1.5 %	2.0 %	1.9 %	0.6 %	0.1 %

Policy Uncertainty: The Economy around Elections



Conclusions

- I build a model of HA with a political mechanism that generates policy swings and allows for realistic party competition
- Use the model to quantify the macro effects of inequality
- Inequality leads to a polarization of preferences to which parties respond distancing from each other, and from median voter preferences
- This leads to larger policy swings and higher policy uncertainty, with negative macroeconomic effects (consistent with empirical evidence)
- The model is solved using political quasi-aggregation, and it can be extended to analyze different policies and institutional settings.

Inequality and Political Polarization; Panel Estimations

- Time and fixed-effects panel estimations
- Political polarization based on data from party positions (Manifesto)
- Large and non-violent protests (The Mass Mobilization Data Project)

	Political Polarization	Protests
	(1)	(2)
Income Inequality	1.45***	0.007**
	0.33	0.004
Obs	104	1805
Countries	17	23

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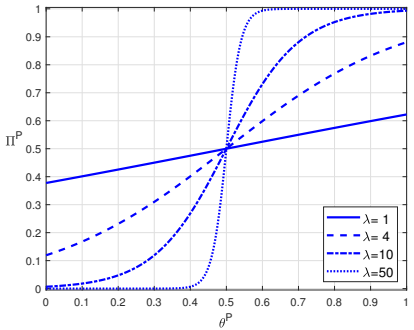
Winning Probability



Note: Function Γ, which maps the fraction of votes obtained by a party θ^P and the probability of winning an election Π^P, for different vales of λ.

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