Unequal Political Business Cycles: Inequality, Policy Uncertainty and the Macroeconomy

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Inequality, Policy Uncertainty and Macro Dynamics

- Widening in income and wealth inequality in many countries
- Meltzer and Richard (1981): rising inequality leads to votes for redistribution
- But it also leads to political polarization (McCarthy et al. 2016)
  - More extreme political preferences
  - Greater political power of the rich who push for less redistribution
- Polarization may lead to sharp swings in policies: policy uncertainty
- Macro effects: consumption (prec. savings), investment (fixed costs) and GDP.

This paper

Does inequality affect macro outcomes, in particular consumption, through a political channel?

$$\text{inequality} \rightarrow \text{political polarization} \rightarrow \text{policy uncertainty} \rightarrow \text{consumption}$$

Plan:

1. Macro evidence using elections as triggers of policy uncertainty
   - Negative effects when inequality is high
   - Some evidence on pol. uncertainty and polarization
2. Micro evidence to explore the effect on consumption
   - Larger effects for wealth-poor households

Related Literature

- Inequality and Growth
  - Redistribution; Alesina & Rodrik (1994), Persson & Tabellini (1994)
  - Socio-Political Instability: Alesina & Perotti (1996), Perotti (1996)
- Polarization:
  - Pontusson & Rueda (2008), Garand (2010), Grechyna (2016), Duca & Saving (2016), McCarty et al. (2016)
- Policy Uncertainty and the Macroeconomy
  - Consumption: Ravn & Sterk (2017) Den Haan et al (2017) Bayer et al (2019)
- Political Business Cycles
  - Recessions: Azzimonti & Talbert (2014), Canes-Wrone & Park (2012), Julio & Yook (2012)

Macro Evidence

Macro outcomes around elections, conditioning on inequality

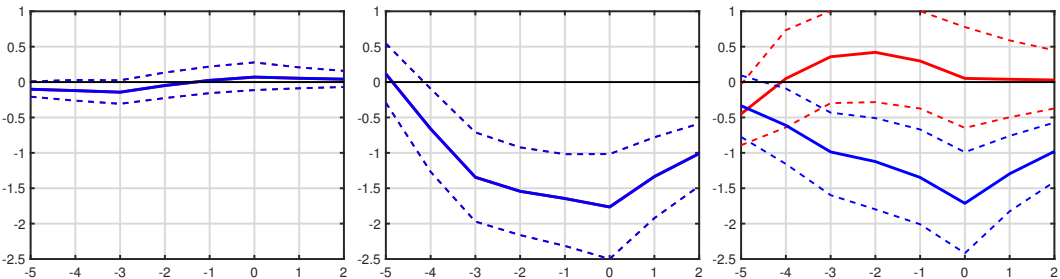
1. Panel estimations
   - 25 countries, 142 elections, 2302 obs. ▸ sample
   - Time and fixed effects
   - Income inequality, within country
   - Some evidence on polarization (no pol. uncertainty)
2. Time-series for US, 1947-2018
   - Longer period of time: 70 years and 18 presidential elections.
   - Wealth inequality; large and persistent swings. ▸
   - Index of policy uncertainty

Empirical Specification, Panel Estimations

$$
\begin{aligned}
x_{tj} \quad = \quad & \alpha_j + \delta_t + \beta_1 x_{t-1j} + \sum_{l=-Lg_e}^{Ld_e} \beta_{2l} e_{t+lj} + \sum_{l=-Lg_e}^{Ld_e} \beta_{3l} (e_{t+lj} \times (i_{t+lj} - \bar{i}_j)) \\
& + \sum_{l=-Lg_e}^{Ld_e} \beta_{4l} (e_{t+lj} \times \bar{i}_j) + \beta_4 i_{tj} + \epsilon_{tj}
\end{aligned}
$$

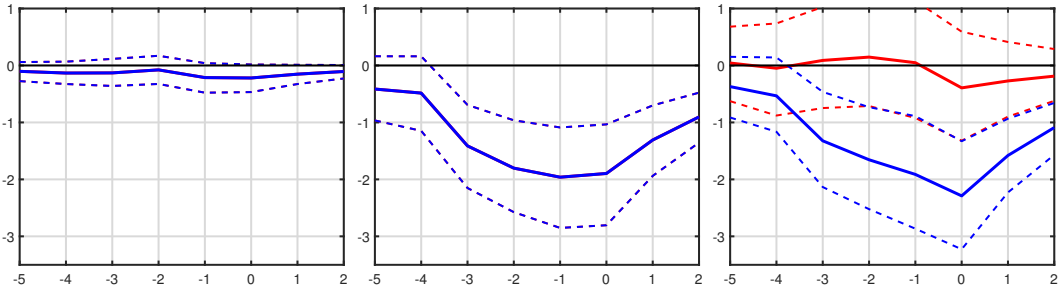
- x_{tj} is the outcome of interest:
  - HP-adjusted quarterly sa GDP, C, I and G (IFS)
- $e_t = 1$ if there is an election in quarter t.
- i_{tj} is income inequality (LIS)
  - p90/10 (harmonized, frequency)
- 2008 out, high polity scores, at least 10 years of obs.

Panel Estimations, Results for GDP



- From 5th to 95th percentile: max fall 1.76% (approx 1 sd); total 11.9%.
- One sd in within country ineq: max fall 0.6%; total 4%.

Panel Estimations, Results for Private Consumption



- From 5th to 95th percentile: max fall 1.96% (approx 1 sd); total 12%.
- One sd in within country ineq: max fall 0.65%; total 4%.

▸ Demand components investment and public expenditures ▸ Sensitivity fixed elections, gini, trend, 2008-2009, 15 or 20 years ▸ Groups parliamentary, advanced, no transition, 15 richest ▸ Partisian right vs left, incumbent and winner ▸ Trans mech

Transmission Mechanisms, Panel Estimations

- Significant relationship between inequality and political polarization and protests (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

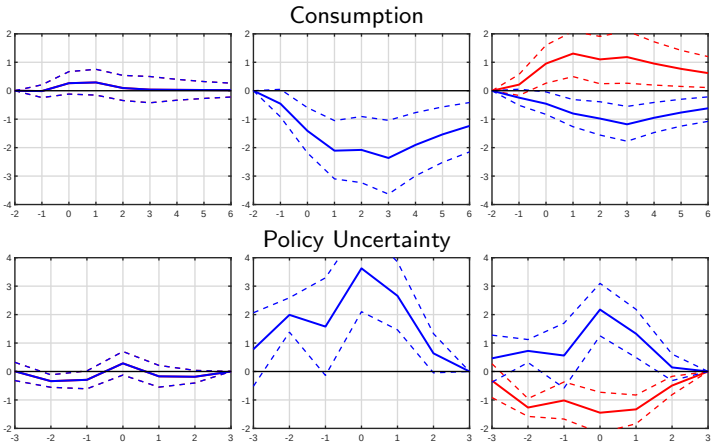
Note: Political polarization and inequality are normalized by the within-country standard deviation.

Empirical Specification, US Time-series: 1947-2016

$$x_t = \beta_0 + \beta_1 x_{t-1} + \sum_{l=-Lg_e}^{Ld_e} \beta_{2l} e_{t+l} + \sum_{l=-Lg_e}^{Ld_e} \beta_{3l}(e_{t+l} \times i_t) + \beta_4 i_t + \epsilon_t$$

- x_t is the outcome of interest:
  - HP-adjusted quarterly sa GDP, C, I and G.
  - HP-adjusted Policy Uncertainty Index
- $e_t = 1$ if there is an election in quarter t.
- i_t is top 1% wealth share (0,1) is min-max

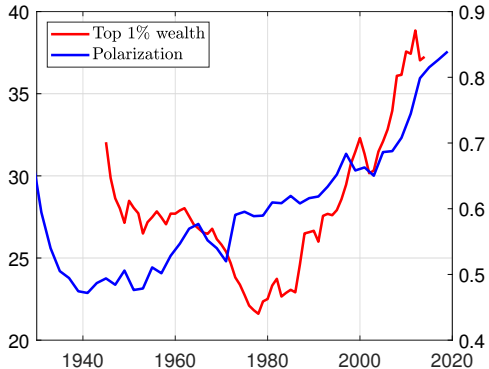
Baseline Results, US Time-Series Estimations



- From min to max: GDP max fall 2.6% (approx 1 sd); total 16.5%.
- One sd: max fall 0.7%; total 4%.

▸ Y,I,G ▸ sensitivity 10% wealth, income inequality, HP trend ineq, dummy ineq, trend ▸ influential elections

US Inequality and 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."

Microeconomic Evidence

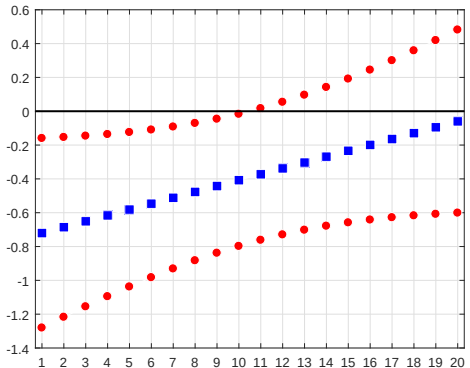
- Link between private consumption and policy uncertainty less studied
- Significant results for private consumption here, just indirect effect through income?
- Precautionary savings: consumption-income ratio should fall around elections (under high inequality) for wealth-poor agents
- PSID data from 2005 only, don't use interaction with inequality

Empirical Specification, Microeconomic Evidence

$$\Delta x_{g,t} = \gamma_0 + \gamma_1 e_t + \gamma_2 \left(e_t \times g\right) + \gamma_3 \, I_{t=2008} + \gamma_4 \left(I_{t=2008} \times g\right) + \eta_g + \nu_{g,t}.$$

- x is the variable of interest: consumption, disposable income and their ratio
- g is wealth group (20 groups)
- $\Delta x_{g,t}$: change in x_g from year t to year $t+2$ (avg. of changes)
- 6 periods of data (2005-2007-2009-2011-2013-2015-2017)
- $e_t = 1$ if election between t and $t+2$ (2008-2012-2016)
- $I_{t=2008} = 1$ for the 2008 election
- η_g is the fixed-effect

Change in Expenditure Rate, by Wealth Quintile



Note: effect of elections on expenditure rate for each of the 20 wealth quintiles. In blue the point estimate and in red the 90% confidence interval. The dependent variable is normalized by its standard deviation.

Conclusions

- Unequal Political Business Cycle: quantitatively large in a panel of 25 mostly developed countries, and in the US 1947-2016
- Evidence on polarization and policy uncertainty as transmission mechanisms
- Significant effect on consumption and micro evidence in line with surge in precautionary savings

Conclusions

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Current project:

- HA model with political mechanism to explore quantitatively the macro implications of inequality-driven political uncertainty
  - Politics: polarization of preferences, political conflict
  - Economics: role of heterogeneity and empirically realistic inequality

Baseline Results, Panel Estimations

	GDP	Private Consumption	Investment	Public Expenditures
	(1)	(2)	(3)	(4)
$\beta_{3,-5}$	0.12	−0.41	−1.59	0.60
$\beta_{3,-4}$	-0.75^{***}	−0.20	−1.79	0.79^{**}
$\beta_{3,-3}$	-0.84^{***}	-1.08^{***}	-2.06^{**}	0.54
$\beta_{3,-2}$	-0.53^{***}	-0.83^{***}	-2.25^{**}	0.29
$\beta_{3,-1}$	-0.48^{**}	-0.72^{**}	-3.26^{***}	−0.30
$\beta_{3,0}$	−0.52	-0.54^{*}	−0.67	−0.49
$\beta_{3,1}$	0.21	−0.28	-2.86^{***}	−0.09
Max effect	-1.76^{***}	-1.96^{***}	-6.35^{***}	−0.36
Total effect	-11.9^{***}	-12.0^{***}	-32.8^{***}	3.3
R^2	0.80	0.60	0.62	0.46
Obs	2302	2274	2274	2274
Elections	142	141	141	141
Countries	25	25	25	25

Note: Only the coefficients on the interaction between elections and inequality are shown (first seven rows). The eight row shows the maximum difference between the impulse-response functions derived from the estimation for high and low inequality benchmarks. The ninth row shows the total difference between these two impulse-response functions. ***, **, and * indicate significance at 1%, 5%, and 10% levels computed using the Wild bootstrap.

Sample, Panel Estimations

	Country	Years	Elections		Country	Years	Elections
1	Australia	1981 - 2013	12	14	Israel	1990 - 2015	8
2	Austria	1996 - 2012	4	15	Italy	1995 - 2013	5
3	Canada	1971 - 2012	13	16	Luxembourg	1995 - 2012	3
4	Switzerland	1982 - 2012	8	17	Netherlands	1996 - 2012	6
5	Czech Republic	1996 - 2012	4	18	Norway	1979 - 2012	8
6	Germany	1991 - 2014	6	19	Slovenia	1997 - 2011	4
7	Spain	1995 - 2012	5	20	Sweden	1993 - 2004	3
8	Estonia	2000 - 2012	3	21	United States	1974 - 2015	10
9	Finland	1990 - 2012	6	22	Chile	1996 - 2014	4
10	France	1978 - 2009	8	23	Hungary	1995 - 2014	5
11	United Kingdom	1969 - 2015	12	24	Mexico	1997 - 2011	2
12	Greece	1995 - 2012	6	25	Poland	1995 - 2015	6
13	Ireland	1995 - 2009	3				

Note: countries included in the panel baseline estimation. Years are the initial and final year the country appears in the sample and Elections is the number of elections included for each country in the sample.

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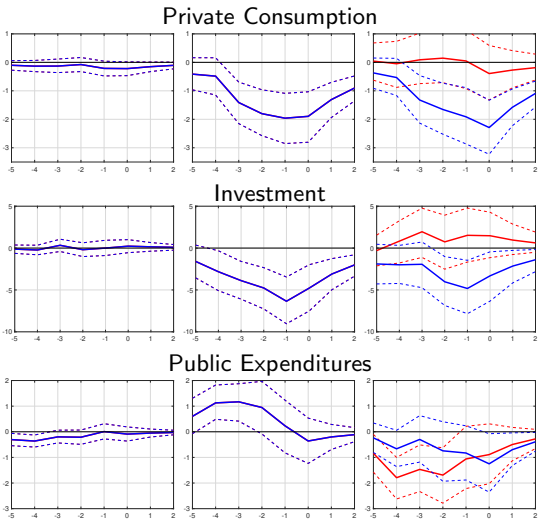
Baseline Results, Panel Estimations



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Sensitivity, Panel Estimations

	Baseline	Only fixed elections	Only countries with fixed elections	Gini inequality	Linear trend	With 2008-2009 elections	15 years of observations	20 years of observations
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
$\beta_{3,-5}$	0.12	0.15	−0.24	0.12	0.13	0.13	0.15	0.27
$\beta_{3,-4}$	−0.75***	−1.06***	−1.42***	−0.55**	−0.79***	−0.79***	−0.76***	−0.60**
$\beta_{3,-3}$	−0.84***	−1.09***	−0.31	−0.64**	−0.92***	−0.83***	−0.78***	−0.76**
$\beta_{3,-2}$	−0.53***	−0.62***	−0.88***	−0.55***	−0.50**	−0.60***	−0.50***	−0.64***
$\beta_{3,-1}$	−0.48**	−0.64**	−0.45	−0.41*	−0.61**	−0.47**	−0.37*	−0.24
$\beta_{3,0}$	−0.52	−0.76**	−0.09	−0.37	−0.59*	−0.44	−0.51	−0.79*
$\beta_{3,1}$	0.21	0.39	−0.43*	0.12	0.20	0.27	0.20	0.32
Max effect	−1.76***	−2.37***	−2.09***	−1.43***	−1.96***	−1.73***	−1.56***	−1.65***
Total effect	−11.9***	−12.2***	−14.5***	−9.6***	−12.9***	−11.9***	−10.3***	−9.3***
R^2	0.80	0.81	0.86	0.80	0.81	0.81	0.80	0.79
Obs	2302	2302	772	2302	2302	2302	2032	1398
Elections	142	106	43	142	142	154	128	92
Countries	25	25	10	25	25	25	20	11

Note: Only the coefficients on the interaction between elections and inequality are shown (first seven rows). The eight row shows the maximum difference between the impulse-response functions for high and low inequality benchmarks. The ninth row shows the total difference between these two impulse-response functions. ***,**, and * indicate significance at 1%, 5%, and 10% levels computed using the Wild bootstrap.

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By Groups, Panel Estimations

	Baseline	Only parliamentary	Only Advanced Economies	No Transition Economies	Richest 15 Economies
	(1)	(2)	(3)	(4)	(5)
$\beta_{3,-5}$	0.12	0.44	0.31	0.11	−0.29
$\beta_{3,-4}$	-0.75^{***}	-0.61^{**}	−0.43	-0.69^{***}	0.02
$\beta_{3,-3}$	-0.84^{***}	-0.93^{***}	-0.81^{***}	-0.87^{***}	-0.58^{*}
$\beta_{3,-2}$	-0.53^{***}	-0.57^{**}	-0.41^{*}	-0.51^{***}	-0.56^{*}
$\beta_{3,-1}$	-0.48^{**}	-0.67^{**}	-0.55^{**}	-0.44^{*}	-0.69^{*}
$\beta_{3,0}$	−0.52	-0.73^{*}	−0.63	−0.51	−0.23
$\beta_{3,1}$	0.21	0.47	0.37	0.26	−0.23
Max effect	-1.76^{***}	-2.06^{***}	-1.72^{***}	-1.59^{***}	-1.42^{**}
Total effect	-11.9^{***}	-12.1^{***}	-10.3^{**}	-10.3^{***}	-7.6^{**}
R^2	0.80	0.80	0.81	0.79	0.80
Obs	2302	2004	2010	1968	1594
Elections	142	128	126	121	100
Countries	25	22	21	20	15

Note: Only the coefficients on the interaction between elections and inequality are shown (first seven rows). The eight row shows the maximum difference between the impulse-response functions derived for high and low inequality benchmarks. The ninth row shows the total difference between these two impulse-response functions. ***, **, and * indicate significance at 1%, 5%, and 10% levels computed using the Wild bootstrap.

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Transmission Mechanisms (1/2), Panel Estimations

- Significant relationship between inequality and political polarization and protests (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

Note: Political polarization and inequality are normalized by the within-country standard deviation.

Transmission Mechanisms (2/2), Panel Estimations

	GDP	Private Consumption	Investment	Public Expenditures
	(1)	(2)	(3)	(4)
		A. Income Inequality		
Max effect	-1.76^{***}	-1.96^{***}	-6.35^{***}	-0.36
Total effect	-11.9^{***}	-12.0^{***}	-32.8^{***}	3.3
Obs	2302	2274	2274	2274
Countries	25	25	25	25
		B. Political Polarization		
Max effect	-0.71^{**}	-1.04^{**}	-3.14^{**}	-1.12
Total effect	-4.6^{**}	-5.2^{**}	-15.1^{**}	-1.3
Obs	1549	1541	1541	1541
Countries	17	17	17	17
		C. Protests		
Max effect	-0.76^{**}	-0.84^{**}	-4.27^{**}	-0.77
Total effect	-4.0^{*}	-2.7	-17.1^{**}	-1.1
Obs	1732	1732	1732	1732
Countries	23	23	23	23

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Partisan Effects, Panel Estimations

	Baseline	Incumbent Left	Incumbent Right	Winner Left	Winner Right
	(1)	(2)	(3)	(4)	(4)
$\beta_{3,-5}$	0.12	-0.15	0.69^{*}	0.52	-0.02
$\beta_{3,-4}$	-0.75^{***}	-1.11^{***}	-0.64^{**}	-1.24^{***}	-0.40
$\beta_{3,-3}$	-0.84^{***}	-0.59^{**}	-1.23^{***}	-1.23^{***}	-0.64^{***}
$\beta_{3,-2}$	-0.53^{***}	-0.50	-0.62^{**}	-1.05^{***}	-0.07
$\beta_{3,-1}$	-0.48^{**}	-0.57^{***}	-0.22	-0.53^{***}	-0.34
$\beta_{3,0}$	-0.52	-0.65	-0.95^{**}	-0.63	-1.01^{***}
$\beta_{3,1}$	0.21	-0.04	0.85^{**}	0.45	0.03
Max effect	-1.76^{***}	-1.80^{***}	-1.87^{***}	-2.34^{***}	-1.60^{***}
Total effect	-11.9^{***}	-11.8^{***}	-9.8^{***}	-13.6^{***}	-8.1^{***}
R^2	0.80	0.78	0.78	0.78	0.78
Obs	2302	1984	1984	1994	1994
Elections	142	119	119	119	119
Countries	25	22	22	22	22

Note:

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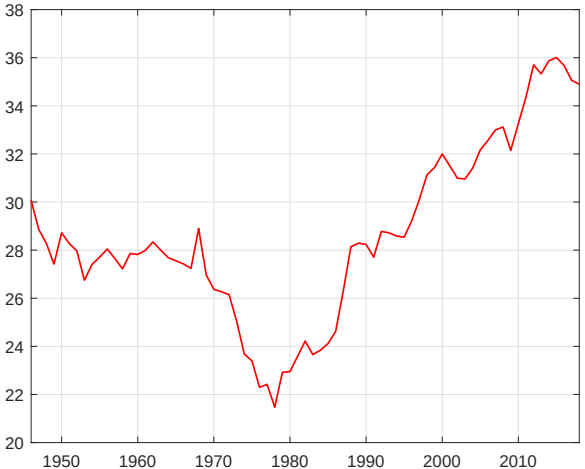
Wealth Inequality in the US, 1947-2016



Note: fraction of total wealth held by the richest 1% of the population.
Source: WID.

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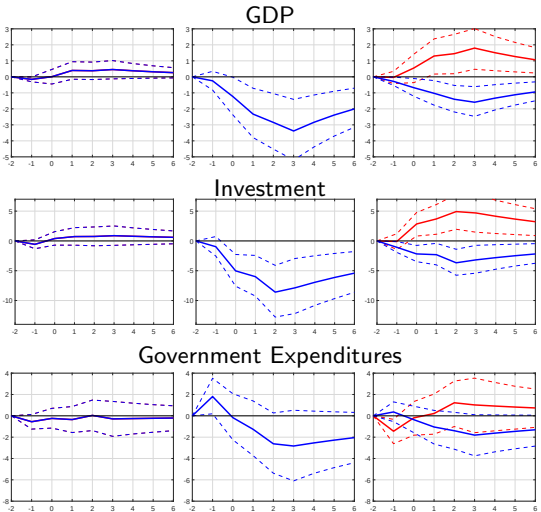
Demand Components, US Time-Series Estimations

	GDP	Policy Uncertainty	Private Consumption	Investment	Public Expenditures
	(1)	(2)	(3)	(4)	(5)
$\beta_{3,-3}$		0.78			
$\beta_{3,-2}$		1.99^{***}			
$\beta_{3,-1}$	-0.25	1.58	-0.46	-0.97	1.81^{*}
$\beta_{3,0}$	-1.02^{*}	3.62^{***}	-1.04^{***}	-4.17^{***}	-1.79^{**}
$\beta_{3,1}$	-1.30^{**}	2.66^{***}	-0.97^{***}	-1.56	-1.11
$\beta_{3,2}$	-0.89	0.64	-0.38	-3.30^{***}	-1.49^{**}
$\beta_{3,3}$	-0.99^{*}		-0.69^{*}	-0.29	-0.48
Max effect	-3.38^{***}	3.62^{***}	-2.36^{***}	-8.59^{***}	-2.83
Total effect	-23.4^{***}	11.3^{***}	-16.5^{***}	-65.8^{***}	-19.4
R^2	0.74	0.21	0.68	0.82	0.82
Obs	287	287	287	287	287
Elections	18	18	18	18	18

Note: Only the coefficients on the interaction between elections and inequality are shown (first seven rows). The eight row shows the maximum difference between the impulse-response functions derived for high and low inequality benchmarks. The ninth row shows the total difference between these two impulse-response functions. ***, **, and * indicate significance at 1%, 5%, and 10% levels computed using the Wild bootstrap.

Demand Components, US Time-Series Estimations



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Sensitivity, US Time-Series Estimations

	Baseline	Top 10% wealth	Top 1% income	Top 10% income	HP Trend Inequality	Inequality high-low	Linear trend
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
$\beta_{3,-1}$	-0.25	-0.22	-0.53^{*}	-0.36	-0.36	-0.17	-0.42
$\beta_{3,0}$	-1.02^{*}	-1.55^{**}	-0.79	-0.91	-0.57	-0.48	-1.35
$\beta_{3,1}$	-1.30^{**}	-0.47	-2.00^{***}	-1.68^{***}	-1.77^{***}	-0.59	-1.85^{*}
$\beta_{3,2}$	-0.89	-0.83^{*}	-1.29^{**}	-0.90^{**}	-1.07^{**}	-0.27	-1.61^{*}
$\beta_{3,3}$	-0.99^{*}	-0.59	-1.20^{**}	-0.83^{*}	-0.92^{*}	-0.46	-1.61^{***}
Max effect	-3.38^{***}	-2.65^{**}	-4.37^{***}	-3.46^{***}	-3.57^{***}	-1.48^{**}	-5.28^{***}
Total effect	-23.4^{***}	-19.5^{**}	-29.7^{***}	-24.3^{***}	-24.3^{***}	-10.6^{**}	-35.9^{***}
R^2	0.74	0.74	0.75	0.75	0.75	0.75	0.75
Obs	287	287	287	287	287	287	287
Elections	18	18	18	18	18	18	18

Note: Only the coefficients on the interaction between elections and inequality are shown (first seven rows). The eight row shows the maximum difference between the impulse-response functions for high and low inequality benchmarks. The ninth row shows the total difference between these two impulse-response functions. ***,**, and * indicate significance at 1%, 5%, and 10% levels computed using the Wild bootstrap.

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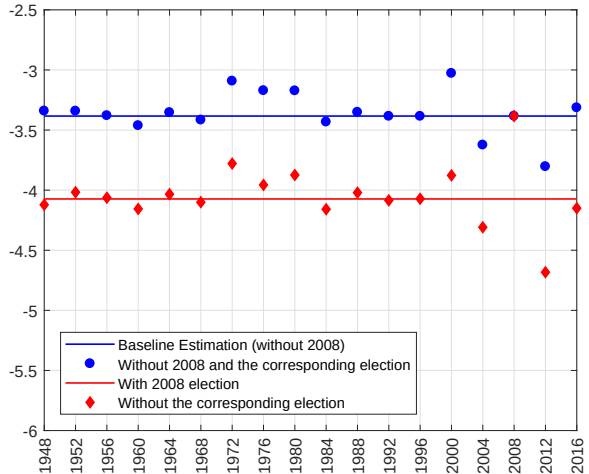
Influential Elections, US Time-Series Estimations



Note: maximum difference between the high and low inequality benchmarks of the impulse-response functions. The solid blue line is the baseline estimate. Blue circles show the estimates when controlling for the election marked in the horizontal-axis. The solid red line is the estimate when not controlling for the 2008 election. Red diamonds show the estimates when controlling for the election marked in the horizontal-axis but not for the 2008 election.

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Results, Microeconomic Evidence

	$\Delta\ c_{g,t}$	$\Delta\ y_{g,t}$	$\Delta\ (c/y)_{g,t}$
e_t	-0.27	0.37	-0.76 **
	0.43	0.25	0.36
$e_t \times g$	-0.01 †	-0.03	0.03 ‡
	0.03	0.02	0.03
Obs	120	120	120

Note: The dependent variable is normalized by its standard deviation. †: makes the overall effect significant at the 90% confidence level for quintiles 11-18. ‡: makes the overall effect not significant for quintiles 11-20 and 7-20 for 90% and 95% significance levels, respectively. Coefficients on 2008 election dummies and fixed effects included but not shown. Robust standard errors, below the estimated coefficients, are clustered at wealth groups. ***,**, and * indicate significance at 1%, 5%, and 10% levels.