WID.world WORKING PAPER N° 2020/08

What Determines the Capital Share over the Long Run of History?

Erik Bengtsson, Enrico Rubolino,
Daniel Waldenström

April 2020

World Inequality Lab

What Determines the Capital Share over the Long Run of History?*

Erik Bengtsson† Enrico Rubolino‡ Daniel Waldenström§

April 29, 2020

Abstract

This paper analyzes the determinants of the labor-capital split in national income for 20 countries since the late 1800s. Our main identification strategy focuses on unique historical quasi-experimental events: i) the introduction of universal suffrage, ii) close election wins of left-wing governments, iii) decolonization, iv) unionization shocks, and v) wars. We also run instrumented panel regressions. Our findings show that the capital share decreased in response to radical institutional and political shifts, such as the introduction of universal suffrage in the early 1900s, the undoing of colonialism and the implementation of redistributive policies during the post-war period. By contrast, the capital share increased following the erosion of trade unionism since the 1980s. Wars, despite destroying the capital stock, generated windfall profits that increased the capital share.

Keywords: Inequality, Factor shares, Event study, Economic history, Institutions
JEL classification: D33, E02, N00

*We thank Cecilia Garcia-Peñalosa and seminar participants at Lund University, LISER, IFN Stockholm, and Aix-Marseille School of Economics for comments. Waldenström gratefully acknowledges the Swedish Research Council for financial support. Rubolino thanks the ESRC Research Centre on Micro-Social Change (MiSoC) for financial support. Bengtsson's work on this paper has been supported by grants from the Swedish Research Council (grant # 2018-01853) and Handelsbankens Forskningsstiftelser (grant # P18-0197).

†Lund University and Gothenburg University. erik.bengtsson@ekh.lu.se.

‡Institute for Social and Economic Research (ISER), University of Essex. Email: rocco.enrico.rubolino@essex.ac.uk

§IFN Stockholm (Research Institute of Industrial Economics), CEPR, CESifo, IZA, WIL. daniel.waldenstrom@ifn.se.

1 Introduction

What determines the division of national income between the two factors of production, labor and capital? This long-standing question, raised already by nineteenth century classical economists, is attracting renewed attention following observations of falling labor shares in many countries and research linking this trend to other economic and political changes such as globalization, automation of production and labor market deregulation (see, for example, Azmat et al. 2012; Karabarbounis and Neiman 2014; Autor et al. 2018; Acemoğlu and Restrepo 2018; Barkai 2019; Autor et al. 2020a).

A challenge when linking factor shares to other societal outcomes is that all these variables are determined by a complex mix of contemporary processes and deep-rooted institutions. The previous literature on the determinants of labor and capital shares has focused almost exclusively on relatively recent developments during the past few decades. Although short-run effects are informative, their significance can be difficult to measure if trends in labor and capital shares also depend on institutions determined a long time ago. In a famous account of the causes of long-run economic growth, North and Thomas (1973) developed a framework that was later extended by Acemoğlu et al. (2005b), which separates *proximate* from *fundamental* causes. Briefly speaking, proximate causes are more immediate factors that are themselves caused by the fundamental causes. In the context of factor shares, likely proximate causes are capital accumulation, educational attainment, technological development and government redistribution policies, whereas fundamental causes center around institutions governing democratic rule or property rights. An inquiry into the different roles of either short- and long-run effects or proximate and fundamental causes would thus require an analysis of outcomes spanning the very long run.

This paper studies the evolution of the capital share and its determinants in 20 countries for up to 130 years, starting in the late nineteenth century and going to present day. We use a new dataset that extends the historical factor shares data first presented in Bengtsson and Waldenström (2018), in which historical national accounts were compiled in a uniform manner, and combine it with other newly collected economic and political variables.

Our identification strategy is twofold. The main identification relies on implementing *event studies* rooted in a set of extraordinary historical institutional shocks: i) the staggered introduction of universal suffrage across countries: a profound constitutional reform that our extensive dataset allows us to capture for most countries; ii) elections narrowly won by left-wing parties whose effect on capital shares is estimated using a regression discontinuity design; iii) the breakdown of Western overseas empires, which we measure by exploiting fifty episodes of colony independence from six different colonizer countries; iv) the sharp change in trade unionism following the 1984 Trade Union Act in the UK v) all the wars fought since 1870. The idea of studying these events is that they bring unique exogenous variation, many times close to a

quasi-experimental setting, in potentially relevant determinants of capital shares, thus offering a way to come closer at estimating causal effects.[1] Some important drivers of factor shares, for example, shifts in production technology or product market competition, are not covered here simply because we were unable to find any suitable matching distinct historical events.[2] In a second, complementary, analysis, we run panel regressions linking capital shares with economic and political variables that are observed continuously in all countries. Imminent endogeneity concerns are met by including country fixed effects, year fixed effects and country-specific trends, but we also propose instrumental variable estimation for two key policy variables: top marginal income taxation and government spending.

The main results of the paper are the following. The introduction of universal suffrage in the beginning of the twentieth century was associated with a significant drop in the capital share: granting less affluent citizens the right to contribute to the political process lowered the capital share by about 15 percent. This corresponds to a drop by around four percentage points in net capital share compared to the sample average observed during the period before the introduction of universal suffrage. Looking at the evolution over time, we find a significant measurable effect up to nearly a decade after the electoral reform but beyond that our limited country sample prevents precise estimates. Universal suffrage, and the new political climate that engendered, facilitated new regulatory reforms which lowered capital incomes and skewed investor confidence downwards. Our finding could be seen as evidence for the role of deep-rooted institutions for distributional outcomes, lending support both to classical political economy models, such as that of Meltzer and Richard (1981), and to institutional analyses of long-run developments, such as Acemoğlu et al. (2005b).

We find that government politics matter for the evolution of the capital share. In an event study, we show that close left-wing party election victories during the democratic era depresses the capital share by on average eight percent (about 1.6 percentage points). In our panel regressions, we find significant negative associations between capital shares and top marginal income taxes and government spending, both broad proxies of redistributive policies. These results align with previous studies of the role of government policies, such as Azmat et al. (2012), who show that the privatization of utilities (such as electricity and communications) since the 1980s led to lower aggregate wage shares in OECD countries.[3]

Our study of the breakdown of Western overseas empires shows that decolonization significantly reduces capital shares of colonial powers. Our empirical approach

[1] See Cantoni and Yuchtman (2020) for a discussion of how historical natural experiments offer grounds for causal inference in economics.

[2] In an analysis of US manufacturing industry, Autor et al. (2020a) point to the role of distinct market concentration among firms that contributes to suppress labor costs across the entire industry (see also Blanchard et al. 1997, Blanchard and Giavazzi 2003 and De Loecker et al. 2020).

[3] Besley and Case (2003) offer an excellent review of the literature on the material impact of political partisanship on fiscal outcomes. In particular, they provide evidence that a higher fraction of Democrat party seats in the state legislature lead to larger spending in social expenditures.

compares the capital share in a country that experienced decolonization with the other countries in our dataset, before and after each independence episode in a stacked event study. The loss of a colony had the largest depressing effect on capital share during the first five years after the event, when capital shares declined by around seven percent on average. This magnitude of the effect gradually declined over time, but we can still find a significant effect when measured over the whole post-decolonization period (by around 1.2 percent). Crucially, we do not find any pre-trend in capital shares of countries experiencing decolonization, suggesting that the timing of the colony independence was not systematically correlated with changes in capital shares of these countries. As shown by Buelens and Marysse (2009) and Chabot and Kurz (2010), this result suggests that investments in colonies were very profitable, until decolonization nullified this source of profit.

The more recent erosion in trade unionism seems to explain part of the upward surge in the capital share registered over the last decades. Our event study of the 1984 Trade Union Act in the UK shows that unionization dropped more in the UK than in comparable countries. As a result, the UK capital share increased by around five percentage points with respect to other countries. We confirm this result in cross-country panel regressions, where we regress the net capital share on trade union density. The finding of a link between weakened unions and larger capital shares is in line with the literature emphasizing the effect of unionism on workers' bargaining power.[4]

Finally, we find that wars have generated windfall profits that ultimately increased the capital share. Both when focusing on all the wartime episodes registered in the last 150 years and when specifically analyzing the World Wars, we document that the capital share increases during wars. On average, we estimate that a war raises the capital share by around two percentage points, or roughly seven percent. This contrasts with the argument that wars lead to equalization (Scheidel 2017) but chime with studies of profit booms during especially World War I, and the entanglement of wars and policies in their shaping of the distributive outcomes (Kocka 1973; Arnold 2014; Roine and Waldenström 2015; Gómez León and De Jong 2019).

The paper is related to the literature on the long-run determinants of income inequality (see an overview in Roine and Waldenström 2015). Bengtsson and Waldenström (2018) document a significant correlation between top income shares, Gini coefficients and the capital share for the same data as we use in this paper. Roine et al. (2009) show that the equalizing effect of taxation and public spending on the income distribution is mostly due to the effect on capital accumulation. Scheve and Stasavage (2010) focus on wage bargaining institutions and left governments as potential redistributive factors in a study of top income shares 1916–2000. They find little effect of

[4]Whether trade unionism can affect the distribution of national income between workers' wages and profits or entrepreneurial income has been long discussed since Kerr (1954). Our finding relates with a recent study by Knepper (2020), which uses firm-level data to compare changes in employee compensation at firms whose establishment barely won a union election against those that barely lost an election. Following unionization, average employee compensation increased, raising the labor share.

either of these variables, but on the other hand find that trade unionism decreases the income shares of the rich. Piketty (2014), Rubolino and Waldenström (2017) and Rubolino and Waldenström (2019) provide clear evidence of a negative effect of income tax progressivity on top income shares. In particular, they provide historical cross-country evidence that most of the effects of taxation on inequality arise from the top of the pre-tax income distribution where capital is the main source of income.

The rest of the paper is structured as follows. Section 2 outlines the historical capital shares dataset and also the other variables used in the analysis. Section 3 presents the empirical results, beginning with event studies of democratization, left-wing party election wins, decolonization, unionism and wars, followed by panel regression results in section 4. Finally, section 5 concludes and points to thoughts for future research.

2 Data

The capital share studied here is defined in the standard way, namely as the ratio of the sum of total operating surplus in the corporate sector and a share of mixed income of households to national income at factor cost.[5] Together with the labor share – the share of total labor income of national income – this adds up to national income.

We retrieve data on capital shares from the *Historical Factor Share Database*, which is an updated version of the Capital Shares Database presented in Bengtsson and Waldenström (2018). This database relies on previous research and sources on historical national accounts and provides comparable data for 20 countries at least since the 1930s. Specifically, the sample covers the following countries, with earliest observation in parenthesis: Argentina (1932), Australia (1927), Austria (1913), Belgium (1920), Brazil (1920), Canada (1919), Denmark (1876), Finland (1900), France (1896), Germany (1891), Ireland (1938), Italy (1893), Japan (1906), the Netherlands (1923), New Zealand (1939), Norway (1910), Spain (1900), Sweden (1875), the United Kingdom (1891), and the United States (1929). This is by far the richest available source on the long-run evolution of labor and capital shares, making possible, thus, our historical investigation.

All series are homogeneously adjusted for the mixed incomes of self-employed and are presented both gross and net of capital depreciation.[6] The adjustment for self-employed is important since trends in self-employment could otherwise distort the estimated factor shares. Accounting for capital depreciation is also important since the consumption of fixed assets is not an income to capital owners, but rather a reflection of technological aging and the replacement costs needed to keep the capital stock unchanged (see further Bridgman 2018). Capital depreciation is also trending upwards over time (it is trending upwards throughout the past century), so the adjustment can

[5]Some recent studies (for example, Rognlie 2016; Barkai 2019; van Vlokhoven 2020) argue for a separation of the capital share into a capital share in a strict sense (harking back to a returns to capital corresponding to the degree of risk and the interest rate) and a profit share (profits above that level).
[6]For further information see our appendix to the Historical Factor Shares Database, available online.

therefore be quantitatively important. In our analysis, we focus on the share of capital income net of depreciation as share of national income, since this is closer to the actual source of capital income that enriches capital owners. In the appendix, we also show our main results using capital shares including depreciation as share of GDP.

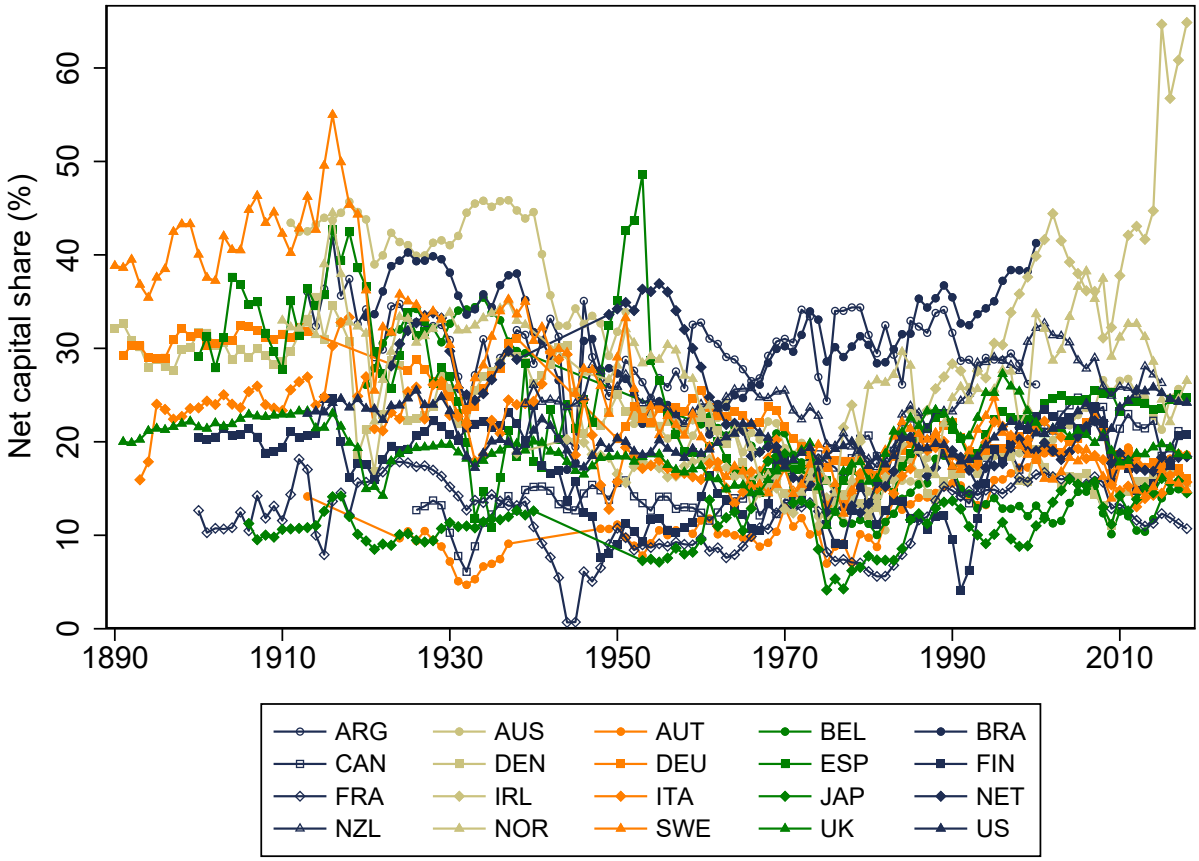
Figure 1 shows the evolution of the *net* capital share in our country sample since the late nineteenth century. Several interesting patterns emerge. One is that there seems to be a difference in levels before and after the Second World War. During the early era, capital shares were higher, ranging between 20 and 40 percent with a median of 27 percent. During the postwar era, capital shares are lower, ranging between 10 and 30 percent with a median of 19 percent. There has thus been a global decline in the capital share over the course of the past century, but the extent of this decline depends on which countries one looks. Moreover, there does not seem to be a striking within-period trend when looking at the two historical eras separately. A second result in the figure is that the largest international variation in capital shares does not appear within countries over time but rather *between* countries. At any point in time during this long time span, there is at least a 20 percentage-point difference in capital shares between the country with the lowest and highest capital share, which is a much larger variation than for almost any country over time.[7]

We also collected data on economic and political variables for all countries and years. *Capital stocks* are available for eleven of the 20 countries, merging postwar data from the Penn World Tables with a number of statistical and research-based sources over older series. The capital stock data are somewhat less comparable across countries than our capital share data are, but they are broadly consistent over time within each country.

The analysis also employs historical data on GDP per capita, marginal income tax rates (statutory top marginal tax rate on personal taxable income), central government spending (as percent of GDP), political competition (measured as one minus the share of votes received by the largest party), number of domestic patents, trade openness (share of imports and exports as a share of GDP), trade union density (percent of employees), war episodes (along with information on the number of battle deaths), indicators of government party ideologies, decolonization episodes, and year of universal suffrage reform. We motivate and discuss the variables in the respective analyses below and we describe data sources in Appendix A and summary statistics in Table A2.

[7] The coefficient of variation (defined as the standard deviation divided by the mean) is around 0.3-0.4 between countries during the entire period but only 0.1-0.2 within any country over time.

Figure 1: The net capital share in international and historical perspective



Note: The figure reports trends in net capital shares. Data come from the Historical Factor Share Database (Bengtsson and Waldenström 2018).

3 Event study analysis

Our main empirical analysis pertains to running historically informed event studies from which we can estimate the relationship between potential determinants and the capital share. The historical events were selected based on our own reading of historical institutional economic and political conditions of the countries in our dataset. The motivation for using an event-study approach is that some of these events offer a unique source of variation, often close to a natural experimental setting. That allows for identifying causal effects (as also pointed out by Cantoni and Yuchtman (2020) in their survey of natural experiments in economic history), which is otherwise a difficult challenge in analyses of societal outcomes that are simultaneously determined over long periods of time.

Specifically, we study the following historical events: i) The staggered introduction of universal suffrage across countries; ii) Close wins in general elections by left-leaning parties; iii) Decolonization episodes; iv) The role of trade unions as refleced in the 1984 Trade Union Act in the United Kingdom; v) The impact of wars.

3.1 Universal suffrage

It has long been recognized that the imposition of universal suffrage entails a potential shift of power in society that can have profound effects on economic development (see, for example, Acemoğlu and Robinson 2000, Acemoğlu and Robinson 2006, Lindgren et al. 2019 and Acemoğlu et al. 2019). In voting systems where income and wealth are the basis for the right to vote, the interests of the wealthy rule politics by definition. When universal and equal suffrage is imposed, the median voter becomes something resembling the median citizen rather than the median-rich individual among society's wealthiest. Meltzer and Richard (1981) famously showed that this shift would significantly change the policy outcomes in terms of more redistribution and a growth of government. Studies have found that public spending increased as a consequence of this democratic transition (see Aidt et al. (2006) on European countries and Husted and Kenny (1997) on US states).

The distributional consequences of the extension of suffrage have also been studied extensively. For example, Boix (2003) analyze the complex links between democratic transitions and equality outcomes, finding that they are in general positively related. However, the relationship may also depend on what exact distributional outcome one studies (see a discussion in Scheve and Stasavage 2017), and historical evidence shows several examples on labor parties gaining representation in parliament and managing to shift policies towards redistribution often many years before the universal suffrage was introduced (Pittaluga et al. 2015).

We ask here whether the imposition of universal suffrage affects capital's share of national income. Given the effective redistribution of power from the economic elites, which are disproportionally often capital owners, we hypothesize that democratization should have a negative effect on the capital share.[8] To analyze this empirically, we re-arrange the data into an event study framework to exploit the staggered implementation of the universal suffrage reforms across countries. This allows us to present graphically the evolution of the capital share around the reform time, exploiting cross-country differences in the timing of the reform implementation.[9] We run regressions of the following form:

$$\log CapitalShare_{it} = \sum_{j \neq -1} \beta_j \cdot 1(t = t_j) + \gamma_i + \delta_t + \gamma_i \cdot t + u_{it}, \tag{1}$$

where the the log of net capital share in country i at time t is regressed on country fixed effects, γ_i, time fixed effects, δ_t, and country-specific time trends, $\gamma_i \cdot t$, to account for any common and country-specific trends. β_j is the parameter of interest and it measures the average effect of implementing the universal suffrage on capital shares.

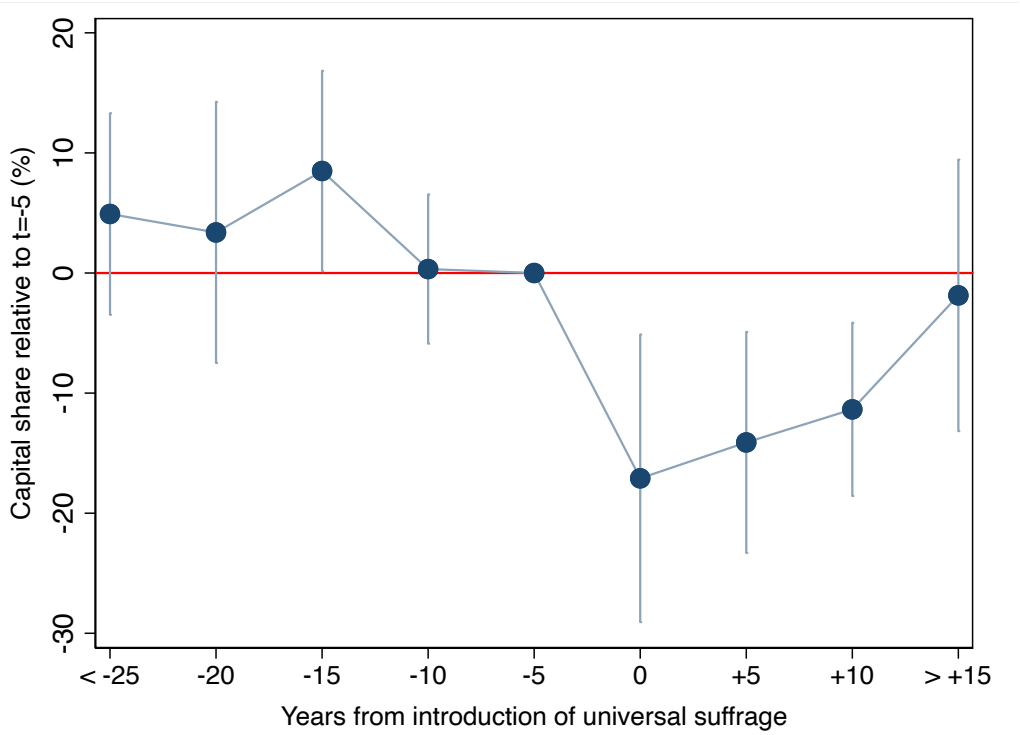
Figure 2 shows the estimated β_j coefficients and confidence intervals in 5-year aver-

[8] Karl Marx claimed in 1852 that universal suffrage would entail the "political supremacy of the working class" (Claeys 2017, p. 132).

[9] See Appendix A for country-specific details on the timing of the universal suffrage reform.

age periods: each point depicts the effect of having implemented universal suffrage for j years (if $j \geq 0$) or starting the reform in j years (if $j < -5$) relative to the period just before ($j = -5$). Looking at the pre-reform period, there are no pre-existing differences in the capital share; β_j is not significantly different from zero throughout the pre-reform period covered in our dataset, which validates the parallel trend assumption. Looking instead at the post-reform period, the capital share exhibits a significant drop of around 12-17 percent during the 10-year period after the implementation of universal suffrage (see Table B1 for coefficient estimates and standard errors over the whole post-universal suffrage reform period). The negative effect arises instantaneously and lasts for at least a decade, which translates in multiple governmental terms considering the average duration of democratic parliamentary terms.

Figure 2: The impact of universal suffrage reform on capital share



Note: This graph presents the effects of the implementing universal suffrage on log of net capital share. The figure plots the estimated β_j coefficients from equation (1) and the 95 percent confidence intervals: each point shows the effect of having implemented the program for j years (if $j > 0$) or of starting the reform in j years (if $j < -5$) relative to the 5-year period just before the starting year. The empirical specification includes country fixed effects, time fixed effects and country-specific linear time trends. Standard errors clustered at country level.

While we find a negative effect of democratization on the share of income accruing to capital owners, this reduced-form effect says little about the mechanisms through which it operates. Maier (1981) and Tooze (2015) have pointed out that the immediate aftermath of democratization was often turbulent when economic and political elites gave in to many popular demands in order to accommodate the newly represented material interests of citizens under the new democratic regime. In general, granting legal voting rights to new segments of the population will raise the demand for public goods

provision or reallocation of existing budgets towards items benefiting previously disenfranchised voters.[10] Accordingly, the change in electorate preferences would lead to new political equilibria and to commitment to more redistributive taxes and spending.[11] Below, we first focus on the role of politics by studying whether government ideology influences capital shares and then we analyze the effect of government spending and progressive taxation in section 4.

3.2 Election victories of left-wing parties

Does governments' ideological profile affect the capital share? Answering this question is difficult since no political parties are selected randomly to govern countries. They may even gain power for reasons directly related to the distribution of income. For example, voters may elect governments that propose redistributive policies when inequality – and thus capital share - is on upward trend, which would generate a spurious relationship between the ideology of governments, the type of policies implemented, and, in turn, economic outcomes.

We examine the role of government politics for the capital share by focusing on the political ideology of the leading party in government coalitions. To overcome the endogeneity problems outlined above, we exploit the fact that government control in many countries tends to change discontinuously at a 50 percent vote share. By implementing a *regression discontinuity* (RD) design, we compare capital shares in countries where governments gained election vote shares "just below" or "just above" 50 percent. These countries have similar characteristics except for the treatment (that is, the elected government), and the treatment can therefore be considered "as good as random" in a neighborhood of the 50 percent vote share. Lee (2008) shows that this strategy provides quasi-random variation in party winners, because when an election is narrowly decided, victory of a specific party is likely to be determined by pure chance as long as there is some unpredictable element of the ultimate vote.

We retrieve data on the ideology of the leading party from the Head of Government dataset (Brambor and Lindvall 2018), which provides information for all the countries in our dataset since 1870. We follow their coding of head-of-government ideology by distinguishing between left, center and right-wing governments. These data are then merged with information on vote share obtained by the leading party collected from the Polyarchy dataset. This large panel data makes it possible to implement a regression discontinuity design as we have enough "mass" in a neighborhood of the

[10] For instance, Aidt and Dallal (2008) provide evidence that social spending significantly increased as a response to women's suffrage using historical data from six Western European countries. Bertocchi et al. (2017) show that youth enfranchisement raised education spending by 5 percent in the US.

[11] Acemoğlu and Robinson (2000) state that the extension of voting franchise can be viewed as strategic decisions by the political elite to avoid social unrest and acted as a commitment to redistribution.

cutoff. Following Lee (2008), we estimate regressions of the following form:

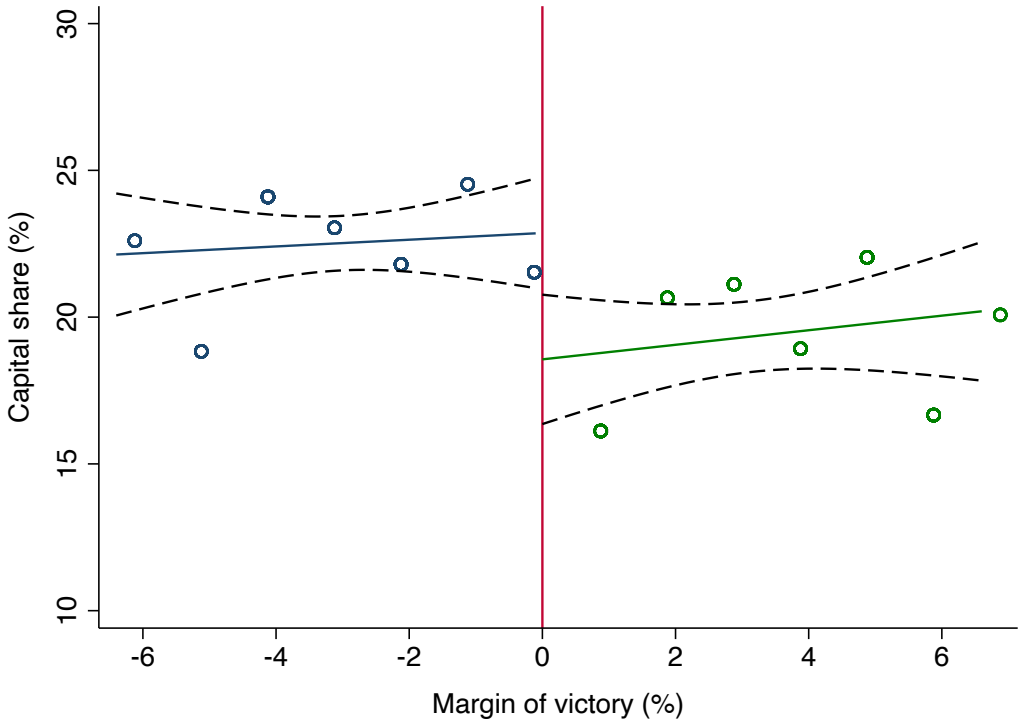
$$\log \textit{Capital Share}_{it} = \beta \cdot \textit{LeftGov}_{it} + \gamma_i + \delta_t + \gamma_i t + f(\textit{LeftVote\%}_{it}) + u_{it}, \tag{2}$$

where $\textit{LeftGov}_{it}$ denotes the treatment status, which is whether the head of the government ideology is classified as left-wing, while $f(\textit{LeftVote\%}_{it})$ is the control function defined as a low-order polynomial of Left vote share. The coefficient of interest, β, measures the local average effect of government ideology on capital shares when the left-wing government barely won an election, compared to capital shares when the election is barely won by a party with a different political ideology. In some specifications, we also include country fixed effects, γ_i, time fixed effects, δ_t and country-specific trends, $\gamma_i t$. Although these fixed effects are not necessary to consistently estimate β, they account for any systematical heterogeneity in measuring government ideology across countries and electoral systems.[12]

Figure 3 scatters average values and polynomial fits of the capital share in a window surrounding the margin of victory in elections when the winner party's ideology is classified as left-wing. The running variable is the normalized share of votes obtained by the leading party, where each observation is the average capital share in a one-vote share bin. The graph shows a clear discontinuity in the capital share at the margin when a left-wing government won the election. To the left of the margin, the fitted level of capital shares is around 23 percent and to the right of the margin the fitted level is around 18 percent.

[12]When country fixed effects are included, our empirical strategy is closer to a local difference-in-differences approach, as the identifying variation stems from variation across close elections *within*-country rather than *across* countries that is formally required in a regression discontinuity design (Lee and Lemieux 2010).

Figure 3: The effect of left-wing government on the capital share



Note: This graph presents the effects of government ideology on net capital share. Each observation is the average capital share in a 1 percent vote share bin. The red vertical line denotes the margin of victory in elections won by left-wing governments. The central line is a linear fit; the lateral lines represent the 95 percent confidence interval.

Table 1 presents baseline RD estimates on the effect of election won by left-wing government on capital share. We first show that without restricting the analysis on a narrow window around the cutoff (column 1), the estimated effect is rather small and not statistically significant. Columns (2)-(4) then report RD coefficient estimates including fixed effects and first-, second- and third-order polynomials of left-wing vote share. On average, we find that the capital shares drop by at least 7.4 percent when a left-wing government barely won an election, which is roughly what pure inspection showed in the figure. This result also holds when using different functional forms and suggests that left-wing governments are, on average, able to reduce the capital share by at least 1.6 percentage points (from a sample mean of 21 percent).[13]

[13]We compute optimal bandwidth using Imbens and Kalyanaraman (2012)'s algorithm and test the sensitivity of our results with respect to bandwidth choice in Figure B2, finding that the main results are not sensitive to bandwidth length.

Table 1: Party ideology and capital share

	log*Capitalshare*			
	OLS	RD	RD	RD
	(1)	(2)	(3)	(4)
$LeftGov_{it}$	0.003	-0.084**	-0.074**	-0.077**
	(0.021)	(0.031)	(0.029)	(0.027)
Observations	1,963	416	416	416
Country FE	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes
Country-specific trends	Yes	Yes	Yes	Yes
Polynomial order		1	2	3
Mean dependent (%)	21.8	21.0	21.0	21.0

Note: This table presents the effects of government ideology on the log of net capital share by comparing elections barely won by left-wing governments. The first column reports OLS regressions on the full sample of elections. Columns (2)-(4) report regression discontinuity estimates from close elections won by left-win governments. We follow Imbens and Kalyanaraman (2012) for selection of optimal bandwidth. Standard errors clustered at country level in parenthesis.

The implication of this result is that, for a given macroeconomic and social setting, when the political left narrowly gains the majority in parliament, they impose policies that lower the relative yields for capital compared to labor. A direct effect might be the compressing effect of larger public spending and redistributive taxation on returns of capital owners.[14] For instance, Sattler (2013) argues that the election of left-wing governments causes the stock markets to drop, because of a higher probability that policies that are harmful for investors' returns, such as higher taxes on capital returns, will be enacted under left-wing governments.[15]

3.3 Decolonization

Whether colonial possessions generated surpluses for imperial powers or not has been widely debated in the past economic history literature (see, for example, Foreman-Peck 1989 and Offer 1993). While this question encompasses many different dimensions, we are primarily interested in the less-studied link between a country's institutional characteristic of being a colonial power and the private returns to capital owners as reflected in the capital share.

In his famous study of historical national balance sheets, Goldsmith (1965) showed that foreign assets comprised around one-fifth of total domestic assets in the large colonial powers France, UK and Belgium, and that this share dropped to almost zero in the postwar era, which was also in many countries the post-colonial era. More recently, Goetzmann and Ukhov (2006) studied stock market returns on British overseas invest-

[14] See Besley and Case (2003) for a review of the literature on the material impact of political partisanship on fiscal outcomes.

[15] Relatedly, Girardi and Bowles (2018) explore the effects on the Santiago stock market of the abrupt political shifts in Chile in the 1970s. The (unexpected) election victory of the socialist Allende in 1970 lowered the stock market, while Pinochet's coup in 1973 boosted it.

ments using share prices on the London Stock Exchange up to the 1920s, finding that foreign assets offered higher rates of return as well as significant diversification benefits. Studies of wealthy Parisians and Britons at the time before World War I have shown that foreign financial investments made up an important share of their assets. In the early 1910s Paris, foreign financial assets were 20 percent of total wealth (Piketty et al., 2014). Scott and Walker (2020) argue that changing political context regarding foreign investments played a crucial role in leveling income inequality in Britain in the 1910s, but without discussing decolonization. However, the literatures on the macro dynamics of colonial investments and on portfolios of the wealthy suggest that decolonization, a so far overlooked factor in the analysis of the functional income distribution, could indeed have mattered for the capital share.

To identify the link between colonial assets and the capital share in colonizing countries, we study *decolonization events* during our studied period. The advantage of analyzing decolonization is that it offers a sharp and well-defined point in time when the relationship between the colonial power and its colony changed. An obvious concern with this identification strategy is that the undoing of colonialism was not random and instead likely correlated with economic conditions in both colonized and colonizing countries. For example, falling profits could have lead the colonizer to weaken its control over the colony, thus facilitating for independence movements.

We deal with the endogeneity concerns by employing a "stacked" event study, which compares capital shares in colonial powers with the other countries before and after the colony-independence event. We start by creating separate datasets for each of the 50 colony independence events covered in our original sample. In each dataset, we define event years relative to the colony independence year and we consider colonial powers as treated countries, and countries that experience a decolonization in the future or that did not experience any decolonization episode as control countries. Finally, we stack all the datasets into a final dataset and we create a variable that identifies the event each observation belongs to. This final datasets has 50×20 (decolonization events $\times$ country) cells for each year.[16] We use data on decolonization history from the ICOW Colonial History Dataset, which provides information on colonial dependency relationships for each state over the last centuries. In particular, we retrieve information on whether a country had ruled a colony and the length of the colonial relationship. Out of the 50 decolonization episodes we registered, 31 comes from the UK, 10 from France, 3 from the Netherlands and the US, 2 from Belgium and 1 from Spain (See Appendix A for details).

We estimate the effect of decolonization on capital shares in the final dataset:

$$\log CapitalShare_{i,d,t} = \beta \cdot (Treated_{i,d} \cdot Post_{d,t}) + \gamma_{i,d} + \delta_{post,d} + \eta_{i,post} + u_{i,d,t}, \quad (3)$$

where the outcome is the log of the net capital share for country i, decolonization event

[16] A similar approach has been recently implemented in Deshpande and Li (2019).

d and year t. $Treated_{i,d}$ is a dummy equal to 1 if country i is a treated country for decolonization event d, while $Post_{d,t}$ is a dummy equal to 1 if year t is after colony independence in the decolonization event d. The inclusion of country-by-decolonization event fixed effects, $\gamma_{i,d}$, dummies for the post-period specifically for each decolonization event, $\delta_{post,d}$, and country-by-post decolonization event period fixed effects, $\eta_{i,post}$, allows us to control for several common shocks and general trends. The coefficient of interest is β, which measures the effect of decolonization on capital share of treated countries.[17]

Table 2 shows that capital shares fall by 1.2 percentage points as a result of decolonization. In columns 3 and 4, we show that the effect is substantially larger when measured over a time window around 5-10 years before and after the decolonization event. On average, we find that decolonization decreased the capital share by around 6.9 percent over the first 5 years and by 2.5 percent in the first decade. This result implies that capital shares fall by 1.3 percentage points over the first 5 years, and by around 0.5 percentage points when measured over the first decade after decolonization (from a sample mean of 19.3 and 19.6 percent, respectively). As most of the variation in our data comes from decolonization episodes where the UK was the treated country, we test the sensitivity of our results to removing the UK from the sample. Column (2) shows that our coefficient estimate is qualitatively similar even when the UK is excluded from the sample.

Table 2: Decolonization and capital share

	log$Capitalshare$			
	Full period	Without UK	± 10 years	± 5 years
	(1)	(2)	(3)	(4)
$Treated_{id} \times Post_{dt}$	-0.012***	-0.018***	-0.025**	-0.069***
	(0.003)	(0.005)	(0.013)	(0.020)
Observations	104,200	97,800	19,087	9,982
Post × Decolonization event	Yes	Yes	Yes	Yes
Country × Decolonization event	Yes	Yes	Yes	Yes
Country × Post	Yes	Yes	Yes	Yes
Mean dependent (%)	21.8	21.9	19.6	19.3

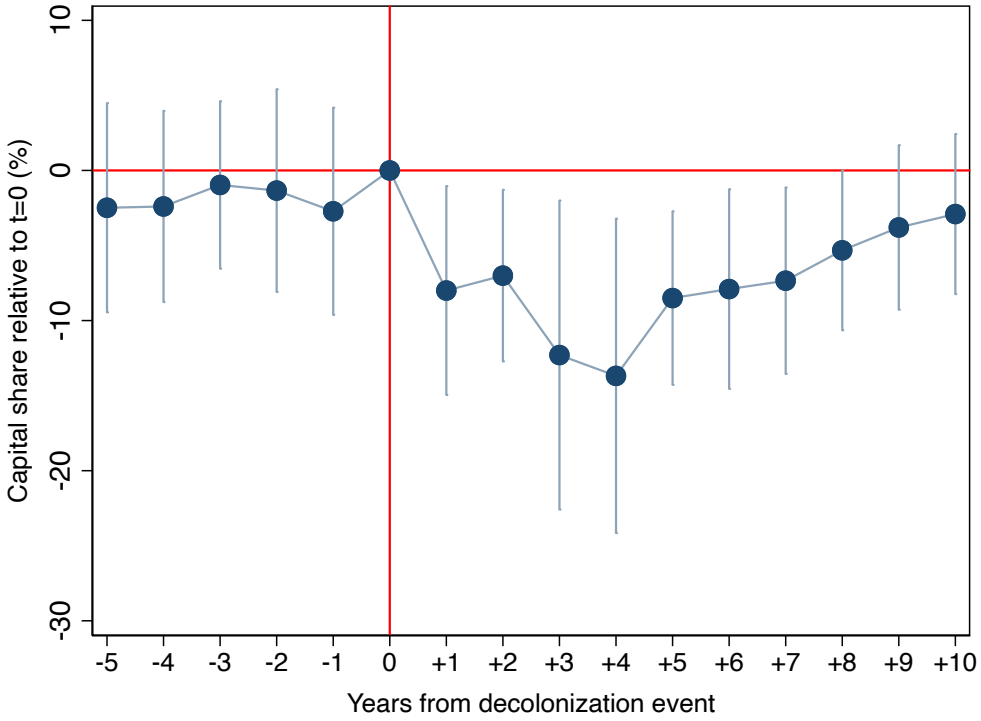
Note: This table presents the effects of decolonization on capital share of colonial powers. The sample is composed of 50 decolonization events. The empirical specification includes post × decolonization event, country × decolonization event, and country × post-decolonization period fixed effects. Standard errors clustered at country-year level in parenthesis.

Our identifying assumption is that the exact timing of colony independence is uncorrelated with changes in capital shares of the colonizer country. Therefore, in the

[17]Note that the interaction between treated countries and the post-decolonization period, $Treated_{i,d} \cdot Post_{d,t}$, is not collinear with $\eta_{i,post}$ because the same country can appear as control and a treated country in the data. As in our strategy a country appears 50 times (i.e., for each decolonization event) in every year, we cluster the standard errors at the country × year level.

absence of decolonization, capital shares would have evolved similarly in treated and control group countries. In Figure 4, we test the parallel trend assumption and present the timing of the effect over a time window from 5 years before the decolonization event up to 10 years after. The graph shows that capital shares in the two groups were on parallel trend over the pre-decolonization period. Then, capital shares immediately decreased by around 10 percent in the first couple of years after decolonization. The effect further increased in the successive two years up to around 15 percent, while it gradually restored to pre-decolonization levels after nearly a decade. These results confirm the evidence provide in Table 2 that decolonization depresses capital shares mostly in the first five years after the decolonization event.

Figure 4: Decolonization and capital shares



Note: This figure plots estimates and 95 percent confidence intervals for the effect of decolonization on capital shares in years before and after colony independence. The sample contains 50 decolonization events and the empirical specification controls for country-by-decolonization event, country-by-post period, and decolonization event-by-post period fixed effects. Standard errors are clustered at country-year level.

3.4 Unionization and the 1984 Trade Union Act in the UK

The role of labor market institutions appears to be key for understanding the distribution of income in modern economies, including the labor-capital division of national income. An institution that has attracted a large attention is trade unions, which often play an active role in wage setting and therefore also matters for aggregate wages and salaries. However, while many studies point out the importance to study the role of unions, few have coped with the fact that factor shares and trade union activity are

often determined simultaneously by some external factor and they may even directly influence each other.

We analyze the link between trade unionism and the capital share by focusing on one of the most comprehensive legal events in history with respect to the role and effective functioning of trade unions: The 1984 Trade Union Act in the UK. This Act limited the intensity of industrial action by strengthening the requirements for a strike to be considered lawful. Specifically, it required all trade unions to hold a secret ballot before calling a strike (see Trade Union Act 1984, Part II). The executive committees were directly elected by secret ballots at least once every five years (see Trade Union Act 1984, Part I) and a ten-year ballot approved the continuance of trade union political funds (Trade Union Act 1984, Sections 12 and 13).[18] Prior to the implementation of the act, the law safeguarded any union calling a strike in relation to a trade dispute; there was no requirement for a ballot or need to communicate to the employer about the timing of the strike.[19]

Our identification strategy is the following. We leverage the deep change in unionism that happened in the UK with the 1984 Trade Union Act by comparing capital shares in the UK with capital shares in a "synthetic UK", which is a linear combination of other countries similar to the UK around the reform episode (weighted together using the synthetic control methodology developed by Abadie et al. 2010).

Figure 5 depicts the results from the synthetic control group analysis. The average level of unionization (top panel) and net capital share (bottom panel) in the UK relative to the synthetic UK since the 1940s. The graph clearly shows that the 1984 Reform was a radical change in the degree of unionization in the UK: trade union density fell by around 10 percentage points in the UK and the effect lasted up to 25 years after. As a result, we observe a reduction in capital share up to 5 percentage points in the UK compared to its synthetic control. Capital share in the UK raised from 20 to around 25 percentage point until the late 1990s.[20]

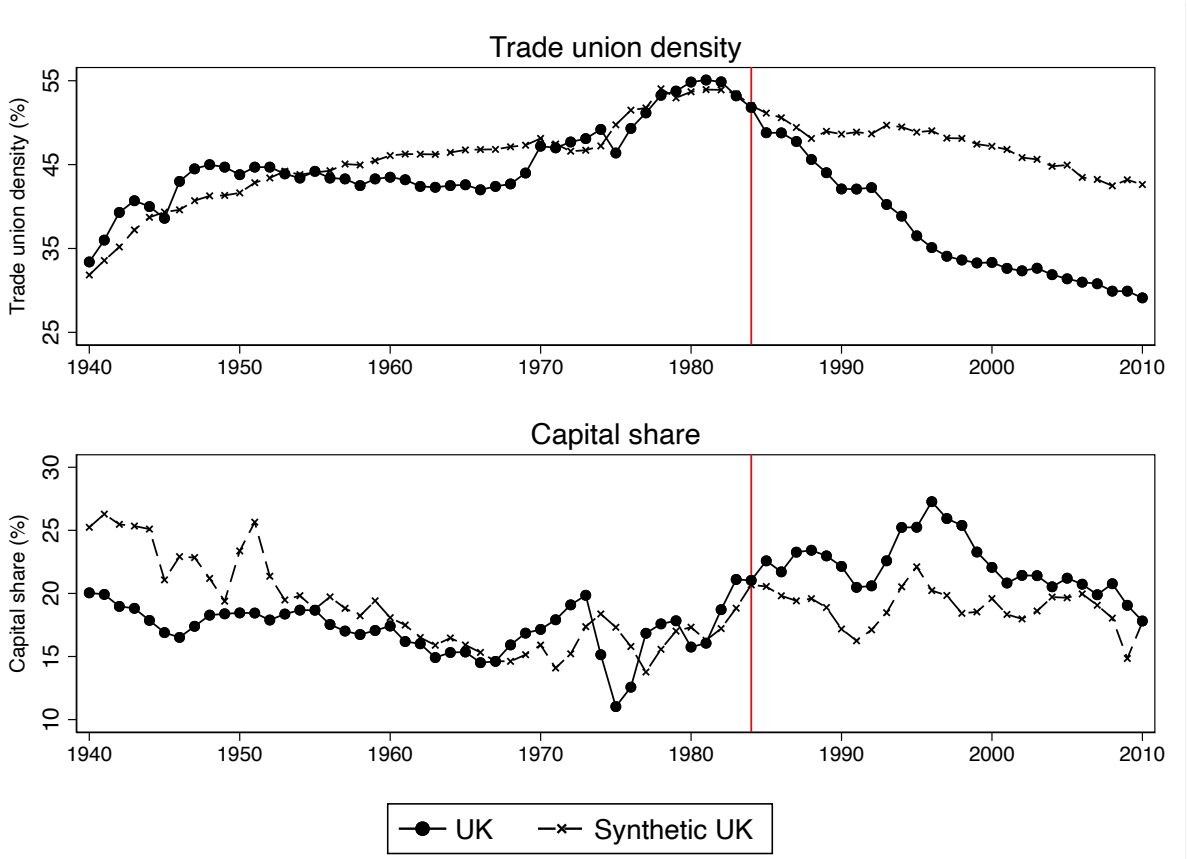
The synthetic control group-methodology has proven quite useful in a number of settings to estimate a counterfactual development in a single-country setting that would otherwise be impossible to depict. That being said, the method also has come caveats. One is that other contemporaneous policy changes, implemented contemporaneously in the UK, could influence the post-reform trend. So, one may ask the question: do the results above then reflect a unique British phenomenon, or can they extended to other countries as well? In order to shed some light on the external validity of the UK Trade Union Act reform-effect, we run cross-country panel regressions of the capital share on trade unionization rates (and country and year fixed effects) for eight countries, pre-

[18] The implementation of the Trade Union Act spurred the famous UK miners' strike actions, which are considered to be one of the largest strikes in British history (van der Velden et al. 2007).

[19] See Dorey (2016) for a historical account of the evolution of the Thatcher government's policies vis-à-vis the unions.

[20] Crafts (2012) notes that the observed lower wage increases due to the weakening of trade unions were a part of this process.

Figure 5: The impact of the 1984 Trade Union Act on capital share



Note: The graph depicts the evolution of trade union density as a share of employees (top graph) and net capital share (bottom graph) in the UK, as it actually happened, and in the "synthetic" UK, which is a weighted average of different countries. The red vertical line refers to the 1984 Trade Union Act. The synthetic control is generated based on pre-reform characteristics, which means that post-reform developments is supposed to reflect the counterfactual UK development had the 1984 Trade Union Act not been implemented.

sented in the appendix table Table B2. The estimations indicate a significant negative relationship between union density and the net capital share: a 1 percent increase in the share of employees enlisted in trade unions decreases the capital share by on average 1.7 percent. This supports findings in previous research on the post-1960 period, indicating that flows and ebbs in trade union influence have correlated with the factor shares of national income (Checchi and Garcia-Peñalosa 2008; Kristal 2010; Bengtsson 2014a). The results also resonate with the findings of Drautzburg et al. (2020), that the introduction of anti-union laws in US states increased capital shares by 1.5 percentage points compared to states which did not introduce such laws. In the appendix section B.1, we also make suggestive tests (on this small eight-country sample) for heterogeneous effects over time and across countries, finding a relatively larger impact of unions on the capital share in the post-1980 period and in the Nordic countries.

3.5 Wars

The research on historical income and wealth has shown that wars are important events for the long-term evolution of the economic distribution. Wars directly affect the distribution through the deaths of people and the destruction of capital, but also indirectly via their impact on policies of redistribution and regulation. Scheve and Stasavage (2016) argue that the wartime hikes in progressive income taxation and capital taxation stems from political pressures for redistribution that arouse in response to the mass mobilization and warfare sacrifice that the broad population had to make. Immediately after the Second World War, moreover, the level of intensity increased further in the progressiveness of income taxation and strictness of capital market regulation and taxation.

We analyze the effect of wars as follows. First, we retrieve information on all the wars fought since 1870 from Sarkees and Wayman (2010). This dataset offers information on all the wars episodes (listed in Appendix A), participating countries, time periods, and the number of deaths at the war-country level. Next, we use the collected data on capital stocks to calculate log values of the capital stock and log capital-output ratios, which allows for an closer examination of how potential war effects on capital shares.[21] Letting *War participant* as a dummy for war participants and *War* as a dummy for war periods, we exploit variation in capital share over time and across belligerent and non-belligerent countries by running regressions as the following:

$$\log Capital_{it} = \beta_1(War\ participant \times War) + \gamma_i + \gamma_i t + u_{it} \tag{4a}$$

$$\log Capital/Output_{it} = \beta_2(War\ participant \times War) + \gamma_i + \gamma_i t + u_{it} \tag{4b}$$

$$\log CapitalShare_{it} = \beta_3(War\ participant \times War) + \gamma_i + \gamma_i t + u_{it} \tag{4c}$$

where *War* can be either all wars that took placed during the studied period or any of the two world wars.[22] Capital incomes are the average return to capital times the capital stock, and so the capital stock, as one of the constituent parts of capital income, is key in the determination of the capital share.[23] By investigating both the stocks and the income shares as dependent variables, we can get at whether capital shares are affected through destruction of the capital stock or changing returns to capital.

Table 3 reports the effect of wars on the log of capital-output ratio (columns 1-3) and on the log of capital shares (columns 4-6). In columns 1, 4 and 7, we show the effect of every war happened over the period of interest involving at least one of the countries in our sample, while columns 2-3,5-6 and 8-9 focus on the two World Wars. Overall, we find that wars did influence the capital share. Concerning the capital stock, countries

[21] In a simple framework writing the log capital share as $\log \frac{rK}{Y}$, the log capital stock as $\log K$ and the log capital-output ratio as $\log \frac{K}{Y}$, we gain information about the relative importance of returns and asset stocks for the observed patterns.

[22] Differently from previous specifications, we drop time fixed effects as they are almost perfectly collinear with world wars dummies.

[23] See Piketty (2014), pp. 52–55, for a discussion on distinguishing between capital shares and stocks.

that participated in warfare experienced decreases in both the value of the stock of national capital and the capital-output ratio. When looking at all the wars in our study period, the capital stock depreciates by between one-fourth and one-third. Looking only at the World Wars, there is no clear wartime estimate for the First World War but a dramatic estimate for the Second World War, with falls in capital values by between one-half and two-thirds.

Turning to the capital share, we estimate an *increase* of almost 8 percent, in the net capital share in belligerent countries during wars. However, during the First World War the estimate is more than twice as large, 18 percent, while it is slightly lower for the Second World War, 6.5 percent.

Table 3: Wars and the capital share, capital stock and capital-output ratio

	log*Capital*			log*Capital/Output*			log*CapitalShare*		
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
War participant									
$\times$ *All wars*	-0.301**			-0.270*			0.077*		
	(0.134)			(0.131)			(0.040)		
$\times WWI$		0.165			0.011			0.182***	
		(0.150)			(0.106)			(0.042)	
$\times WWII$			-0.649***			-0.506**			0.065
			(0.148)			(0.195)			(0.039)
Observations	1,159	1,159	1,159	1,159	1,159	1,159	1,159	1,159	1,159
Country FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Country-trends	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Note: This table shows the effect of wars on (log of) capital stock (columns 1-3), (log of) capital-output ratio (columns 4-6), and (log of) net capital share (columns 7-9). We first look at all the wars' episodes registered since the 1870 (columns 1, 4 and 7) and then specifically at the World War I (columns 2, 5 and 8) and World War II (columns 3, 6 and 9). Regressions are weighted by the intensity of wars, proxied by a function of the number of war deaths. The sample includes 20 countries over the 1870-2015 period. Standard errors clustered at country-level in parenthesis.

Reconciling these results, a negative war estimate for the capital stock/capital-output ratio and a positive war estimate for the capital share, suggests a specific role for wartime capital returns. Indeed, historical evidence shows several instances on super-normal returns to capital owners during wars. As has been pointed out by several previous studies (for example, Kocka (1973), classical study for Germany; Prados de la Escosura (2008) on Spain; Bengtsson (2014b) on Sweden), the First World War saw a huge increase in inequality in several countries.[24] Windfall shortages lead to profiteering and the infamous "goulash barons"; these figures were, as shown by Arnold (2014), a motivating factor for increase in tax progressivity (Scheve and Stasavage 2010). This

[24]Gómez León and De Jong (2019) provide a fascinating comparison of inequality in Britain and Germany during First World War. In authoritarian Germany, inequality increased during the war, while it decreased in Britain. In Germany, there was instead massive equalization after the war, when a new democratic constitution was imposed, and throughout the 1920s.

effect appears to have been especially important during the First World War. In that sense, the destruction of capital stock, the growth in the capital share, and the growing progressivity of taxation can be considered outcomes of the same underlying cause: wartime disruption of societies. In short, wartime strains and windfall profit gains benefited capital relative to labor (or rather: harm labor more than capital).

4 Panel regression analysis

Our second approach to identify determinants of the capital share is running panel regressions. This allows us to estimate parameters of interest on the full historical dataset for several relevant economic and political variables. We first run OLS estimations and then use instrumented regressions. Focus lies on *bivariate specifications* (the appendix presents multivariate regression specifications):

$$\log Capitalshare_{it} = \beta X_{it} + \gamma_i + \delta_t + \gamma_i t + u_{it}, \tag{5}$$

where the log capital share in country i at time t is regressed on the (log of) economic and political variables in X_{it} and, as before, country fixed effects, time fixed effects and country-specific linear time trends. The parameter of interest is β, which is interpreted as the approximate percent change in capital share as X_{it} changes by 1 percent.

Table 4 presents the results separately for each explanatory variable and divided across different time periods: the full period 1870-2015 (columns 1-4) and the periods before and after the Second World War (columns 5-6) in order to examine if relationships are stable over time. Government spending and top marginal income taxation, both proxies for policies of redistribution and government intervention, are negatively associated with the capital share, although the precision of the estimates deteriorates when accounting for country-specific trends. Notice how top marginal taxes have a significantly larger negative estimate in the postwar period, which resonates with previous findings of tax policy having an increasing influence on income inequality in the postwar era, particularly the post-1980 period (Rubolino and Waldenström 2017). Looking at the other variables offer only little guidance. Real income, as measured by GDP per capita, seems to have a positive association with the capital share, and the same seems to be true for patenting activity, especially in the early historical era.[25]

Endogeneity concerns prevent a causal interpretation of the above estimates. For example, policy measures may themselves be a response to changes in the capital share. Many previous studies have used generalized method of moments (GMM) estimation to solve the endogeneity issue, but that is not recommendable in our setting with relatively few countries and because the explanatory variables are likely to be correlated

[25] We found similar results even regressing the capital share on all the covariates listed in Table 4 simultaneously (see Table B3).

Table 4: Panel regressions of capital shares on economic and political variables

	log*Capitalshare*					
	Full period				Pre-WWII	Post-WWII
	(1)	(2)	(3)	(4)	(5)	(6)
log Gov. spending	-1.723***	-1.760***	-1.066**	-0.369	-0.441**	-0.779
	(-0.413)	(-0.423)	(-0.406)	(-0.234)	(0.188)	(0.508)
Obs.	1,825	1,825	1,825	1,825	548	1,164
log Top marginal tax	-1.008***	-0.922***	-0.434	-0.179	0.172	-0.643**
	(-0.172)	(-0.126)	(-0.254)	(-0.195)	(0.245)	(0.267)
Obs.	1,804	1,804	1,804	1,804	468	1,175
log Trade openness	0.039	0.183	0.176	-0.053	0.260	-0.047
	(-0.031)	(-0.193)	(-0.220)	(-0.140)	(0.300)	(0.340)
Obs.	1,818	1,818	1,818	1,818	548	1,162
log GDP/capita	-0.141***	-0.126**	0.183	0.290	0.484***	0.298
	(-0.044)	(-0.053)	(-0.174)	(-0.200)	(0.130)	(0.204)
Obs.	1,875	1,875	1,875	1,875	560	1,171
log Patents	-0.059	-0.015	0.130***	0.066	0.166**	-0.049
	(-0.038)	(-0.051)	(-0.040)	(-0.058)	(0.057)	(0.057)
Obs.	1,471	1,471	1,471	1,471	450	899
Country FE	No	Yes	Yes	Yes	Yes	Yes
Year FE	No	No	Yes	Yes	Yes	Yes
Country trends	No	No	No	Yes	Yes	Yes

Note: The table reports the regression coefficients of (log of) central government spending (Govspend), top marginal tax rate on personal income, trade openness (sum of imports and exports as a share of GDP), GDP per-capita, and stock of domestic patents on the (log of) capital share of income. Our sample is composed of 20 countries over the 1870-2015 period. "Pre-WWII" denotes the period before 1940 and "Post-WWII" denotes the period from 1950 onward. Standard errors clustered at country level in parenthesis.

with future values of the error term.[26] Instead, we propose two instruments for our policy variables, marginal taxation and government spending, that allow for two-stage least squares regressions.

The instrument for marginal tax rates is based on the cross-country correlation in tax rates. We assign an equal weight to all the other countries in our sample and then calculate the average tax rate. The spatial correlation should help satisfying the relevance condition, and there are several channels through which it may arise such as tax competition (Wilson 1999) and policy diffusion (Shipan and Volden 2008).[27]

[26] Roodman (2009)) shows that system GMM works badly when N is small and T large. Furthermore, our explanatory variables are probably correlated with future values of the error term, which violates the system GMM assumptions. For example, studies show that capital shares are correlated with inequality (Milanovic 2017; Bengtsson and Waldenström 2018) and policymakers expecting increasing capital shares may therefore implement more redistribution.

[27] We cannot test the exclusion restriction and rely on intuitive arguments. For example, one could argue that capital inflows in response to higher tax rates in neighboring countries means that competitors' tax rates have a direct effect on one's own capital share, which violates the exclusion restriction. However,

The instrument for government spending is constructed by taking its initial level and then extrapolate the variation using the growth rate of government debt (used historical public debt data from Reinhart and Rogoff 2011). This instrument is exogenous in the sense that we do not use the actual observed annual level but we extrapolate based on the initial level. The exclusion restriction holds under the assumption that, conditional on country and time fixed effects, the capital share trends are uncorrelated with the growth rates of government debt.

Table 5 presents the results from these instrumented estimations. We find a significant negative effect of both policy variables on the capital share. On average, a 1 percent increase in the top tax rate reduces the capital share by around 0.8 percent, and a 1 percent increase in government spending as a share of GDP reduces the capital share by around 1.2 percent. To put these numbers in perspective, consider that, since the average top marginal tax rate has decreased of around one-third (from 58 to 40 percent) from the 1980s, this coefficient would translate into an increase of about 26 percent in net capital share, which accounts for a large portion of the total increase in net capital shares we observed over the same period (from around 16.4 to 21.4 over the 1980-2015 period). This back-of-the-envelope calculation, although subject to some degree of uncertainty, relates with the literature emphasizing institutional and political factors as determinants of income inequality (Roine et al. 2009).

Table 5: Redistribution and the capital share: Instrumented regressions

	log*Capitalshare*			
	OLS	2SLS	OLS	2SLS
	(1)	(2)	(3)	(4)
log Government spending	-1.066**	-1.151**		
	(0.406)	(0.421)		
log Top marginal tax rate			-0.434	-0.837**
			(0.254)	(0.318)
First stage t-stat		20.87		2.09
Observations	1,823	1,823	1,786	1,786
Country FE	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes

Note: This table compares OLS regressions (columns 1 and 3) with 2SLS regression coefficients (columns 2 and 4) of log capital share on log of top marginal income tax rate (columns 1-2) and central government spending as a share of GDP (columns 3-4). The marginal tax rate is instrumented by the average tax rate set by the other countries in our sample and central government spending is instrument with an extrapolation based on the growth rate of national debt (see text for details). The sample is composed of 20 countries over the 1870-2015 period. Standard errors clustered at country level in parenthesis.

this assumption holds only if we expect that the top tax rate differentials only affect capital owners and not workers, and this is not likely. Taxation can affect the labor supply (also through migration responses) and eventually wages. Therefore, there is little a priori reason to believe that cross-country differences in marginal tax rates exclusively influence the capital share.

5 Conclusions

This study has documented long-run trends in the capital share of national income and its relationship with a number of economic and political institutions as well as real economic factors. The analysis was based on a new dataset collected in part for this study containing historical cross-country factor shares and other variables for 20 countries, spanning a period of up to 130 years. This long time span is the key contribution of the analysis, allowing us to study not only modern ”proximate” factors but also more ”fundamental” determinants of factor shares.

Our main finding is that institutional factors are central to the evolution of the capital share over the long run of history. We find that unionization, top marginal taxation and central government spending, as well as party politics, all stand out as central determinants of the capital share in the long run. But what is more, we contribute with a move from these “proximate” causes of variations in factor shares, to a “fundamental” cause (in the terminology of North and Thomas 1973 and Acemoğlu et al. 2005a): the power balance in society, as captured by the study of societies where universal suffrage was imposed. Our event study of the advent of universal suffrage shows that this political balance of power has fundamental consequences for the distribution of income between capital and labor. The investigation of effects of policies in the panel setting, and of Left election victories in the event study setting, indicates that the political system affects the factor shares via imposed policies.

These results thus speak for the importance of institutions in determining variation in the functional income distribution over time. We provide evidence in line with a recent stream of the literature that has emphasized the role of rents, industry mark-ups and, thus, power relations in the labor and product markets as crucial determinant of the capital share (Barkai 2019; De Loecker et al. 2020; Autor et al. 2020b). Our findings indicate that the welfare state in the shape of government spending and taxation push down the capital share and call for additional research. It would be highly interesting to develop this issue by disaggregating public spending and looking more closely at what it is that the state does which causes the capital share to fall. Similarly, our results on union density point to that it would be important to look at specific episodes of how unions affect functional income distribution. Such further studies would require more fine-grained data than those used in this study, which employs more of a helicopter perspective, but could also be furthered with an event study analysis, which we have used here.

References

Abadie, A., Diamond, A., and Hainmueller, J. (2010). Synthetic Control Methods for Comparative Case Studies: Estimating the Effect of California’s Tobacco Control Program. *Journal of the American Statistical Association*, 105(490):493–505.

Acemoğlu, D., Johnson, S., and Robinson, J. A. (2005a). Institutions as a Fundamental Cause of Long-Run Growth. In Aghion, P. and Durlauf, S., editors, *Handbook of Economic Growth*. Amsterdam: North-Holland.

Acemoğlu, D., Johnson, S., and Robinson, J. A. (2005b). The Rise of Europe: Atlantic Trade, Institutional Change, and Economic Growth. *American Economic Review*, 95(3):546–579.

Acemoğlu, D., Naidu, S., Restrepo, P., and Robinson, J. A. (2019). Democracy Does Cause Growth. *Journal of Political Economy*, 127(1):47–100.

Acemoğlu, D. and Restrepo, P. (2018). The Race between Man and Machine: Implications of Technology for Growth, Factor Shares, and Employment. *American Economic Review*, 108(6):1488–1542.

Acemoğlu, D. and Robinson, J. A. (2000). Why Did the West Extend the Franchise? Democracy, Inequality, and Growth in Historical Perspective. *Quarterly Journal of Economics*, 115(4):1167–1199.

Acemoğlu, D. and Robinson, J. A. (2006). *Economic Origins of Dictatorship and Democracy*. New York: Cambridge University Press.

Aidt, T., Dutta, J., and Loukoianova, E. (2006). Democracy comes to Europe: Franchise extension and fiscal outcomes 1830–1938. *European Economic Review*, 50(2):249–283.

Aidt, T. S. and Dallal, B. (2008). Female voting power: the contribution of women's suffrage to the growth of social spending in Western Europe (1869–1960). *Public Choice*, 134(3-4):391–417.

Arnold, A. J. (2014). 'A paradise for profiteers'? The importance and treatment of profits during the First World War. *Accounting History Review*, 24(2-3):61–81.

Autor, D., Autor, D., Salomons, A., and Salomons, A. (2018). Is Automation Labor Share-Displacing? Productivity Growth, Employment, and the Labor Share. *Brookings Papers on Economic Activity*, 2018(1):1–87.

Autor, D., Dorn, D., Katz, L. F., Patterson, C., and Van Reenen, J. (2020a). The Fall of the Labor Share and the Rise of Superstar Firms. *Quarterly Journal of Economics*.

Autor, D., Dorn, D., Katz, L. F., Patterson, C., and Van Reenen, J. (2020b). The Fall of the Labor Share and the Rise of Superstar Firms. *Quarterly Journal of Economics*, 135(2):645–709.

Azmat, G., Manning, A., and Reenen, J. V. (2012). Privatization and the Decline of Labour's Share: International Evidence from Network Industries. *Economica*, 79(315):470–492.

Barkai, S. (2019). Declining Labor and Capital Shares. *Journal of Finance*. forthcoming.

Bengtsson, E. (2014a). Do unions redistribute income from capital to labour? Union density and wage shares since 1960. *Industrial Relations Journal*, 45(5):389–408.

Bengtsson, E. (2014b). Labour's share in twentieth-century Sweden: a reinterpretation. *Scandinavian Economic History Review*, 62(3):290–314.

Bengtsson, E. and Waldenström, D. (2018). Capital Shares and Income Inequality: Evidence from the Long Run. *Journal of Economic History*, 78(3):712–743.

Bertocchi, G., Dimico, A., Lancia, F., and Russo, A. (2017). Youth Enfranchisement, Political Responsiveness, and Education Expenditure: Evidence from the U.S. *American Economic Journal: Economic Policy*. forthcoming.

Besley, T. and Case, A. (2003). Political Institutions and Policy Choices: Evidence from the United States. *Journal of Economic Literature*, 41(1):7–73.

Blanchard, O. and Giavazzi, F. (2003). Macroeconomic Effects of Regulation and Deregulation in Goods and Labor Markets. *Quarterly Journal of Economics*, 118(3):879–907.

Blanchard, O. J., Nordhaus, W. D., and Phelps, E. S. (1997). The Medium Run. *Brookings Papers on Economic Activity*, 28(2):89–158.

Boix, C. (2003). *Democracy and Redistribution*. New York: Cambridge University Press.

Brambor, T. and Lindvall, J. (2018). The ideology of heads of government, 1870–2012. *European Political Science*, 17(2):211–222.

Bridgman, B. (2018). Is Labor's Loss Capital's Gain? Gross Versus Net Labor Shares. *Macroeconomic Dynamics*, 22(8):2070–2087.

Buelens, F. and Marysse, S. (2009). Returns on Investments During the Colonial Era: the Case of the Belgian Congo. *Economic History Review*, 62(S1):135–166.

Cantoni, D. and Yuchtman, N. (2020). Historical Natural Experiments: Bridgning Economics and Economic History. In Bisin, A. and Federico, G., editors, *Handbook of Historical Economics*. Amsterdam: North-Holland.

Chabot, B. R. and Kurz, C. J. (2010). That's Where the Money Was: Foreign Bias and English Investment Abroad, 1866-1907. *Economic Journal*, 120(547):1056–1079.

Checchi, D. and Garcia-Peñalosa, C. (2008). Labour market institutions and income inequality. *Economic Policy*, 23(56):602–649.

Claeys, G. (2017). *Marx and Marxism*. London: Pelican Books.

Crafts, N. (2012). British relative economic decline revisited: The role of competition. *Explorations in Economic History*, 49(1):17–29.

De Loecker, J., Eeckhout, J., and Unger, G. (2020). The Rise of Market Power and the Macroeconomic Implications. *Quarterly Journal of Economics*, 135(2):561–644.

Deshpande, M. and Li, Y. (2019). Who Is Screened Out? Application Costs and the Targeting of Disability Programs. *American Economic Journal: Economic Policy*, 11(4):213–248.

Dorey, P. (2016). Weakening the Trade Unions, One Step at a Time: The Thatcher Governments' Strategy for the Reform of Trade-Union Law, 1979–1984. *Historical Studies in Industrial Relations*, 37:169–200.

Drautzburg, T., Fernández-Villaverde, J., and Guerrón-Quintana, P. (2020). Bargaining Shocks and Aggregate Fluctuations. *SSRN Electronic Journal*.

Foreman-Peck, J. (1989). Foreing Investment and Imperial Exploitation: Balance of Payment Reconstruction for Nineteenth-Century Britain and India. *Economic History Review*, 42(2):354–374.

Girardi, D. and Bowles, S. (2018). Institution shocks and economic outcomes: Allende's election, Pinochet's coup and the Santiago stock market. *Journal of Development Economics*, 134(C):16–27.

Goetzmann, W. G. and Ukhov, A. D. (2006). British Investment Overseas 1870-1913: A Modern Portfolio Theory Approach. *Review of Finance*, 10(2):261–300.

Goldsmith, R. W. (1965). *Comparative National Balance Sheets. A Study of Twenty Countries, 1688-1978*. Chicago: University of Chicago Press.

Gómez León, M. and De Jong, H. J. (2019). Inequality in turbulent times: income distribution in Germany and Britain, 1900–50. *Economic History Review*, 72(3):1073–1098.

Husted, T. A. and Kenny, L. W. (1997). The Effect of the Expansion of the Voting Franchise on the Size of Government. *Journal of Political Economy*, 105(1):54–82.

Karabarbounis, L. and Neiman, B. (2014). The Global Decline of the Labor Share. *Quarterly Journal of Economics*, 129(1):61–103.

Kerr, C. (1954). Trade-Unionism and Distributive Shares. *American Economic Review*, 44(2):279–292.

Knepper, M. (2020). From the Fringe to the Fore: Labor Unions and Employee Compensation. *Review of Economics and Statistics*, 102(1):98–112.

Kocka, J. (1973). Klassengesellschaft im Krieg. Deutsche Sozialgeschichte 1914-1918. In Berding, H., Kocka, J., Schröder, H.-C., and Wehler, H.-U., editors, *Kritische Studien von Geschichtswissenschaft*. Göttingen: Vandenhoeck and Ruprecht.

Kristal, T. (2010). Good Times, Bad Times. *American Sociological Review*, 75(5):729–763.

Lee, D. S. (2008). Randomized experiments from non-random selection in U.S. House elections. *Journal of Econometrics*, 142(2):675–697.

Lee, D. S. and Lemieux, T. (2010). Regression Discontinuity Designs in Economics. *Journal of Economic Literature*, 48(2):281–355.

Lindgren, E., Pettersson-Lidbom, P., and Tyrefors, B. (2019). The Political Economics of Growth, Labor Control and Coercion: Evidence from a Suffrage Reform. *IFN WP No. 1172*.

Maier, C. S. (1981). The Two Postwar Eras and the Conditions for Stability in Twentieth-Century Western Europe. *American Historical Review*, 86(2):327.

Meltzer, A. H. and Richard, S. F. (1981). A Rational Theory of the Size of Government. *Journal of Political Economy*, 89(5):914–927.

Milanovic, B. (2017). 10. Increasing Capital Income Share and Its Effect on Personal Income Inequality. In Boushey, H., DeLong, J. B., and Steinbaum, M., editors, *After Piketty*, pages 235–258. Harvard University Press, Cambridge, MA and London, England.

North, D. C. and Thomas, R. P. (1973). *The Rise of the Western World: A New Economic History*. New York: Cambridge University Press.

Offer, A. (1993). The British Empire, 1870-1914: A Waste of Money? *Economic History Review*, 46(2):215–238.

Piketty, T. (2014). *Capital in the Twenty-First Century*. Cambridge, MA: Harvard University Press.

Piketty, T., Postel-Vinay, G., and Rosenthal, J.-L. (2014). Inherited vs Self-Made Wealth: Theory and Evidence from a Rentier Society (Paris 1872–1927). *Explorations in Economic History*, 51(1):21–40.

Pittaluga, G. B., Cama, G., and Seghezza, E. (2015). Democracy, extension of suffrage, and redistribution in nineteenth-century Europe. *European Review of Economic History*, 19(4):317–335.

Prados de la Escosura, L. (2008). Inequality, poverty and the Kuznets curve in Spain, 1850-2000. *European Review of Economic History*, 12(3):287–324.

Reinhart, C. M. and Rogoff, K. S. (2011). From Financial Crash to Debt Crisis. *American Economic Review*, 101(5):1676–1706.

Rognlie, M. (2016). Deciphering the Fall and Rise in the Net Capital Share: Accumulation or Scarcity? *Brookings Papers on Economic Activity*, 2015(1):1–69.

Roine, J., Vlachos, J., and Waldenström, D. (2009). The Long-Run Determinants of Inequality: What Can We Learn From Top Income Data? *Journal of Public Economics*, 93(7-8):974–988.

Roine, J. and Waldenström, D. (2015). Long-Run Trends in the Distribution of Income and Wealth. In Atkinson, A. B. and Bourguignon, F., editors, *Handbook of Income Distribution, Volume 2A*. Amsterdam: North-Holland.

Roodman, D. (2009). How to do Xtabond2: An Introduction to Difference and System GMM in Stata. *The Stata Journal: Promoting communications on statistics and Stata*, 9(1):86–136.

Rubolino, E. and Waldenström, D. (2017). Tax Progressivity and Top Incomes: Evidence from Tax Reforms. *Journal of Economic Inequality*. forthcoming.

Rubolino, E. and Waldenström, D. (2019). Trends and gradients in top tax elasticities: cross-country evidence, 1900–2014. *International Tax and Public Finance*, 26(3):457–485.

Sarkees, M. R. and Wayman, F. (2010). *Resort to War, 1816-2007*. CQ Press, 2300 N Street, NW, Suite 800, Washington DC 20037 United States.

Sattler, T. (2013). Do Markets Punish Left Governments? *Journal of Politics*, 75(2):343–356.

Scheidel, W. (2017). *The Great Leveler: Violance and the History of Inequality from the Stone Age to the Twenty-First Century*. Princeton, N.J.: Princeton University Press.

Scheve, K. and Stasavage, D. (2010). The Conscription of Wealth: Mass Warfare and the Demand for Progressive Taxation. *International Organization*, 64(4):529–561.

Scheve, K. and Stasavage, D. (2016). *Taxing the Rich: A History of Fiscal Fairness in the United States*. Princeton, N.J.: Princeton University Press.

Scheve, K. and Stasavage, D. (2017). Wealth Inequality and Democracy. *Annual Review of Political Science*, 20:451–468.

Scott, P. and Walker, J. T. (2020). The Comfortable, the Rich, and the Super-Rich. What Really Happened to Top British Incomes during the First Half of the Twentieth Century? *Journal of Economic History*, 1(80):38–68.

Shipan, C. R. and Volden, C. (2008). The Mechanisms of Policy Diffusion. *American Journal of Political Science*, 52(4):840–857.

Tooze, K. (2015). *The Deluge: The Great War, America, and the Remaking of the Global Order, 1916-1931*. Penguin.

Tyrefors, B. and Pettersson-Lidbom, P. (2014). Democracy, Redistribution, and Political Participation: Evidence From Sweden 1919–1938. *Econometrica*, 82(3):961–993.

van der Velden, S., Dribbusch, H., Lyddon, D., and Vandaele, K. (2007). *Strikes Around the World: Case-Studies of 15 Countries*. Amsterdam: Amsterdam University Press.

van Vlokhoven, H. (2020). Estimating the Cost of Capital and the Profit Share. *SSRN Electronic Journal*.

Wilson, J. D. (1999). Theories of Tax Competition. *National Tax Journal*, 52(2):269–304.

Appendices

A Data and summary statistics

A.1 Data sources

In the following, we report the sources of the data used in our empirical analysis:

- Gross and net capital shares: Bengtsson and Waldenström (2018).
- Capital stock: for the 1950-2015 period, data are retrieved from Penn World Table, version 9. For the earlier period, we collect data from the following sources:
  - Australia from Bernard and Butlin (1984, table Aa6);
  - Canada from Crozier (1983, p. 29);
  - Denmark from Abildgren (2006, Table A12, p.91);
  - Finland from Hjerppe (1989, Table 9A, Column 6);
  - Germany from Maddison (1995, Table 7b);
  - Italy from Giordano and Zollino (2015, Table A3, column 7, p. 56);
  - Japan from Maddison (1995, Table 7c);
  - Norway from Aukrust and Bjerke (1959, Appendix Table 1, p. 115);
  - Sweden from Edvinsson (2005, Table K, column 8, p. 347);
  - UK from Hills et al. (2015, Table A32);
  - US from Maddison (1995, Table 7f, column c).
- GDP per-capita from The Maddison Project.
- Top marginal tax rate on personal income (statutory rate) from Genovese et al. (2016); Scheve and Stasavage (2016); Rubolino and Waldenström (2019).
- Government spending (as a share of GDP) from Mitchell (1998a); Mitchell (1998b); Roine et al. (2009); Jordà et al. (2017).
- Trade openness (sum of import and export as a share of GDP) from Mitchell (1998a); Mitchell (1998b); Roine et al. (2009); Jordà et al. (2017).
- Patents (stock of domestic patents) from Roine et al. (2009).
- Left-wing government from the Head of Government dataset (Brambor et al., 2017), available at `https://heads-of-government.github.io/`
- Vote share obtained from the leading party from Vanhanen (2015), The Polyarchy Dataset, available at

  `https://www.prio.org/Data/Governance/Vanhanens-index-of-democracy/`

- Trade union density (share of employees) from Bain and Price (1980) for the earlier period; OECD database from the more recent years.
- War and battle deaths from Sarkees and Wayman (2010), Correlates of War dataset, available at `https://correlatesofwar.org/data-sets/COW-war`
- Universal suffrage from V-Dem Dataset, Version 9, available at `https://www.v-dem.net/en/`

A.2 War episodes

Here we report all the wars' episodes collected from Sarkees and Wayman (2010) dataset and relative to the period 1970-2010 where at least one country among those in our dataset was actively involved. We list the year and name of the war, followed by the countries involved with number of battle deaths in parenthesis.

- 1882 Conquest of Egypt: UK (79).
- 1884-1885 Sino-French: France (400).
- 1894-1895 I Sino-Japanese: Japan (400).
- 1898 Spanish American: Spain (775); US (2,910).
- 1900 Boxer Rebellion: Japan (622); France (24); UK (34); US (21).
- 1904-1905 Russo-Japanese: Japan (80,378).
- 1909-1910 II Spanish-Moroccan: Spain (2,000).
- 1911-1912 Italian-Turkish: Italy (6,000).
- 1914-1918 World War I: Austria (1,200,000); Belgium (13,716); France (1,385,000); Germany (1,773,770); Italy (650,000); Japan (300); Portugal (7,222); UK (908,371); US (116,516).
- 1918-1920 Estonian Liberation: Finland (150).
- 1918-1919 Latvian Liberation: Germany (1,200).
- 1919-1921 Franco-Turkish: France (5,000).
- 1931-1933 II Sino-Japanese: Japan (10,000).
- 1935-1936 Conquest of Ethiopia: Italy (4,000).
- 1937-1941 III Sino-Japanese: Japan (270,526).

- 1939-1945 World War II: Australia (33,826); Belgium (9,600); Brazil (1,000); Canada (41,992); Finland (65,000); France (214,024); Japan (1,740,000); Germany (3,500,000); Italy (236,900); Netherlands (7,900); New Zealand (12,200); Norway (3,000); UK (418,765); US (405,400).
- 1939-1940 Russo-Finnish: Finland (24,923).
- 1950-1953 Korean: Australia (291); Belgium (97); Canada (309); France (288); Netherlands (111); UK (710); US (54,487).
- 1956 Sinai War: France (10); UK (22).
- 1957-1958 Ifni War: France (0); Spain (122).
- 1965-1973 Vietnam War: Australia (494); US (58,653).
- 1982 Falkland Islands: Argentina (746); UK (255).
- 1991 Gulf War: Canada (0); France (2); Italy (0); US (376).
- 1999 War for Kosovo: France (0); Germany (0); Italy (0); Netherlands (0); UK (0); US (2).
- 2001 Invasion of Afghanistan: Australia (0); Canada (0); France (0); UK (0); US (2).
- 2003 Invasion of Iraq: Australia (0); UK (33); US (140).

A.3 Universal suffrage introduction

We retrieve information on the year the universal suffrage was introduced from the from the V-Dem Dataset, Version 9, available at `https://www.v-dem.net/en/`. Out of the 20 countries in our dataset, we are able to cover the introduction of the universal suffrage for 15 countries: Argentina (1948); Australia (1963); Austria (1924); Belgium (1960); Brazil (1988); Canada (1961); Denmark (1916); Finland (1907); France (1945); Germany (1925); Italy (1946); Japan (1953); Norway (1914); Spain (1932); Sweden (1922); UK (1919).

A.4 Colony independence

Our data on decolonization come from the ICOW colonial history dataset, Version 1.1, available at `https://dataverse.harvard.edu/dataset.xhtml?persistentId=doi:10.7910/DVN/5EMETG`. This dataset identifies the date on which each country achieved independence and the name of the colonial power(s) that influenced the colonized country. A state is considered independent in this dataset if it was generally regarded as "being able to make its own decisions over both domestic and foreign policy." This definition implies that any colonizer power must have *de facto* withdrawn its

governing authority over the administration of the former colony, even if it does not officially recognize the independence of the new state.

Given the time span and the countries covered in our sample, we exploit the following decolonization events (colonial power and year of independence in parenthesis):

Table A1: Decolonization events

Belgium
Congo, 1960; Rwanda, 1962; Burundi, 1962
France
Lebanon, 1943; Syria, 1946; Laos, 1953; Cambodia, 1953; Vietnam, 1954; Guinea, 1958; Cameroon, 1960; Togo, 1960; Madagascar, 1960; Benin, 1960; Congo, 1960; Niger, 1960; Ivory Coast, 1960; Burkina Faso, 1960; Chad, 1960; Gabon, 1960; Mauritania, 1960; Central African Republic, 1960; Algeria, 1962; Comoros, 1975; Djibouti, 1977; Vanatu, 1980
The Netherlands
Indonesia, 1949; Suriname, 1975, Belize, 1981; Antigua, 1981; Barbuda, 1981
Spain
Equatorial Guinea, 1968
United Kingdom
Australia, 1901; New Zealand, 1907; South Africa, 1910; Afghanistan, 1919; Ireland, 1922, Iraq, 1932; Jordan, 1946; Pakistan, 1947; India, 1947; Myanmar, 1948; Sri Lanka, 1948; Israel, 1948; Libya, 1951; Sudan, 1956; Ghana, 1957; Malaysia, 1957; Cyprus, 1960; Nigeria, 1960; Sierra Leone, 1961; Tanzania, 1961; Kuwait, 1961; Trinidad and Tobago, 1961; Jamaica, 1961; Uganda, 1961; Zanzibar, 1963; Kenya, 1963; Malawi, 1964; Zambia, 1964; Malta, 1964; Gambia, 1965; Maldive Islands, 1965; Zimbabwe, 1965; Guyana, 1966; Lesotho, 1966; Botswana, 1966; Barbados, 1966; Yemen, 1967; Mauritius, 1968; Swaziland, 1968; Tonga, 1970; Fiji, 1970; Bahrain, 1971; United Arab Emirates, 1971; Qatar, 1971; Bahamas, 1973; Granada, 1974; Seychelles, 1976; Solomon Islands, 1978; Tuvalu, 1978; Dominica, 1978; Santa Lucia, 1979; Kiribati, 1979; Saint Vincent, 1979; Grenadines, 1979; Saint Kitts and Nevis, 1983; Brunei, 1984
United States
Cuba 1902; Philippines, 1946; Micronesia, 1986; Marshall Islands, 1986; Palau, 1994

A.5 Summary statistics

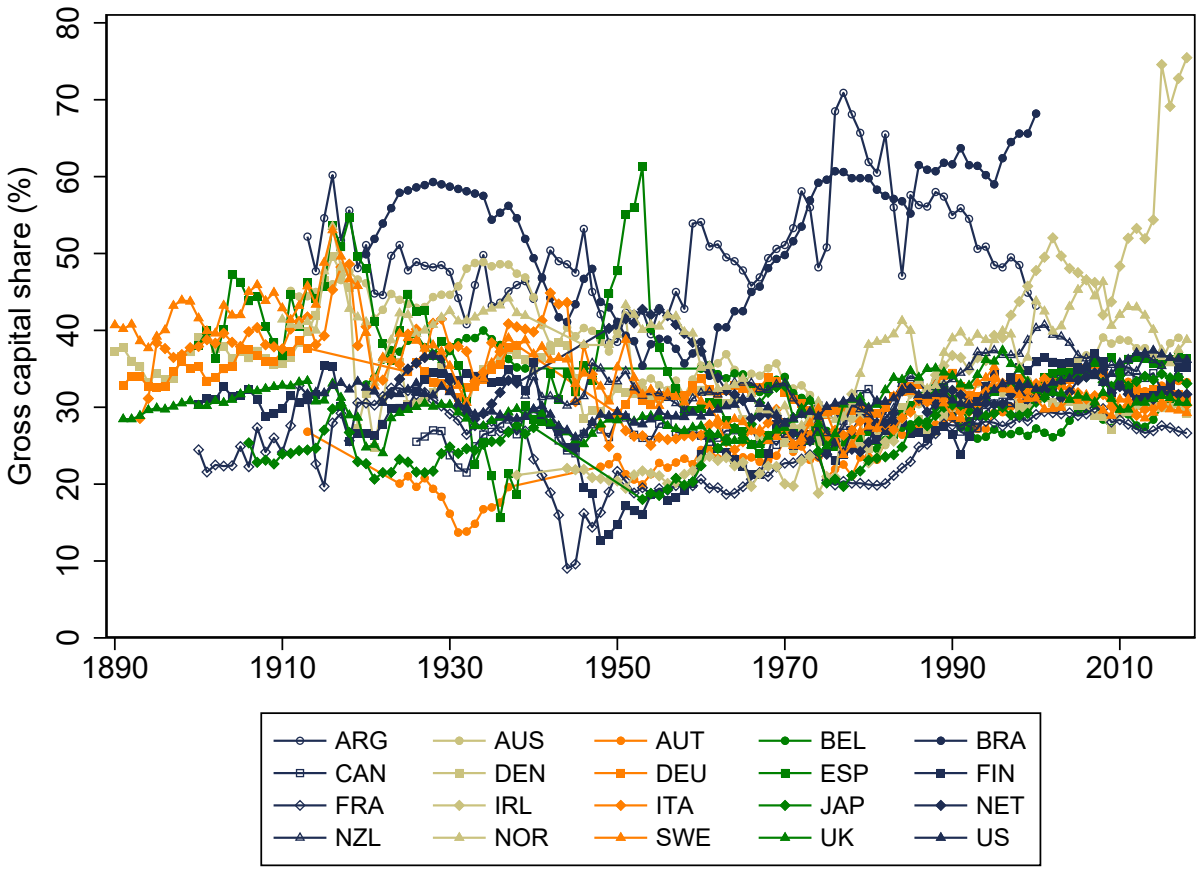
Table A2: Summary statistics

	Obs (1)	Mean (2)	St. dev. (3)	Min (4)	Max (5)
Gross capital share (%)	2,084	33.299	8.677	9.046	75.472
Net capital share (%)	2,804	21.775	8.604	0.678	64.865
Capital stock	1,714	3,891,686	1.57e+07	299	1.50e+08
GDP per-capita	1,875	9,957	7,198	963	33,265
Top marginal income tax rate (%)	1,804	47.605	21.875	1	97.5
Government spending (% of GDP)	1,825	19.491	9.921	1.422	64.403
Openness (imp. + exp. % of GDP)	1,818	4.458	17.301	.041	187
Patents (stock)	1,471	16,264	47,841	29	384,201
Left-wing government (0/1)	1,964	.255	.436	0	1
Vote share	1,588	53.247	13.616	.1	70
Trade union density (% of employees)	827	40.431	22.173	.7	100
War (0/1)	2,084	0.075	.264	0	1
World War I (0/1)	2,084	0.029	.167	0	1
World War II (0/1)	2,084	0.047	.210	0	1
Battle deaths (#)	2,084	11,564	93,027	0	1,385,000
Universal suffrage (0/1)	2,084	.690	.462	0	1
Decolonization (0/1)	104,200	0.024	0.153	0	1

Note: This table presents summary statistics of the variables used in our empirical analysis. Sample is composed of 20 countries observed over the 1870-2015 period.

B Additional results

Figure B1: Gross capital share



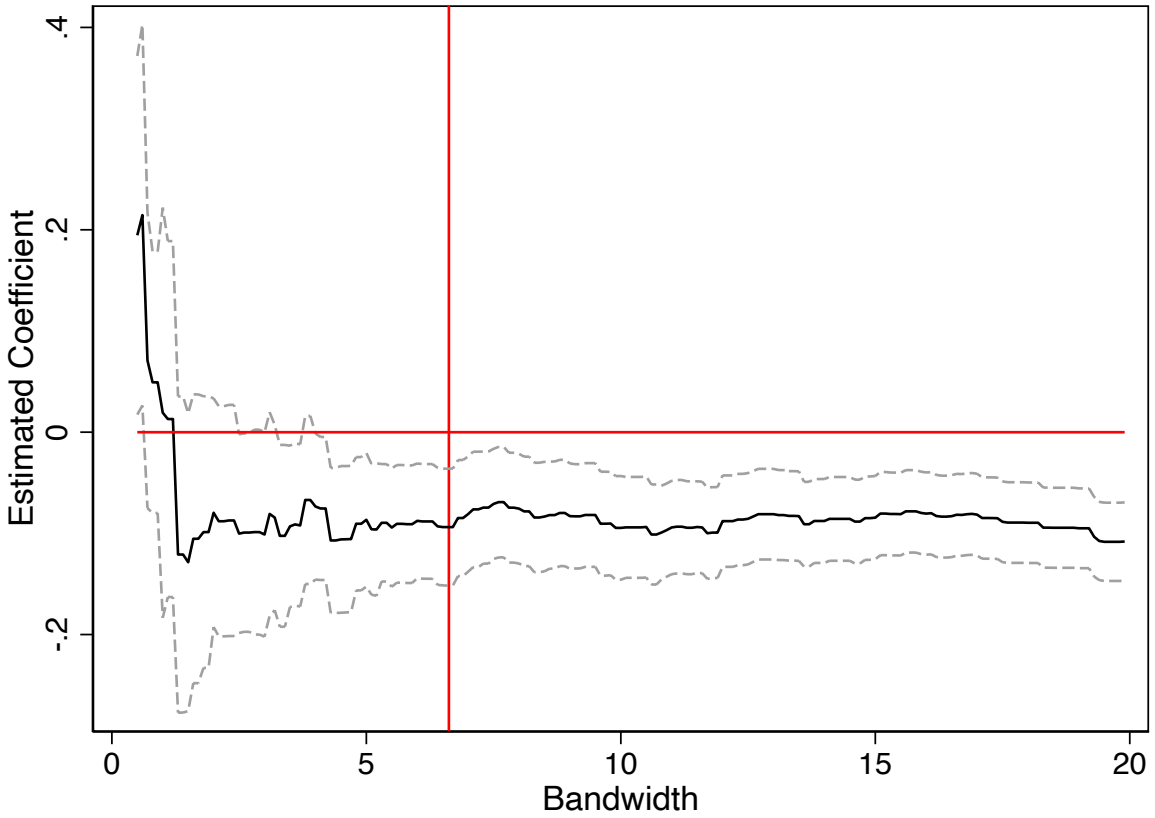
Note: The figure reports trends in gross capital shares (source: Bengtsson and Waldenström, 2018).

Table B1: The impact of introducing universal suffrage

	log of capital share			
	(1)	(2)	(3)	(4)
$1(t > t_{reform})$	-0.24***	-0.27***	-0.06***	-0.07***
	(0.019)	(0.015)	(0.024)	(0.025)
Observations	2,084	2,084	2,084	2,084
R-squared	0.079	0.570	0.675	0.824
Country FE	No	Yes	Yes	Yes
Year FE	No	No	Yes	Yes
Country time trends	No	No	No	Yes
Mean dependent (%)	25.877	25.877	25.877	25.877

Note: This table presents the effect of introducing universal suffrage on the log of net capital share, measured over the full post-electoral reform period. Sample is composed of 20 countries observed over the 1870-2015 period.

Figure B2: Sensitivity to bandwidth selection



Note: The figure reports regression discontinuity coefficient (vertical axis) on the impact of government ideology on capital share using different bandwidths (horizontal axis). The red vertical line is the optimal bandwidth used in the main analysis.

B.1 Additional results on unionization

Do these results reflect a unique British phenomenon or can they extended to other countries as well? In Table B2, we shed light on the external validity of this finding by relating capital shares with cross-country over time variation in trade union density (percent of employees), conditional on country and year fixed effects.

Table B2: Trade unionism and the capital share

	log$Capitalshare$		
	(1)	(2)	(3)
$log(TradeUnionDensity_{it})$	-0.076***		
	(0.025)		
... $\times 1(t < 1950)$		0.181***	
		(0.033)	
... $\times 1(t > 1980)$		-0.149***	
		(0.024)	
... $\times 1(i \in AngloSaxon)$			0.234***
			(0.034)
... $\times 1(i \in Nordic)$			-0.107***
			(0.017)
Observations	825	825	825
Country FE	Yes	Yes	Yes
Year FE	Yes	Yes	Yes
Mean dependent (%)	23.0	23.0	23.0

Note: The table shows the effect on trade union density (% of employees) on the log net capital share. Column (1) includes all countries in our dataset. Column (2) shows heterogeneities over time by interacting trade union density with dummies for periods before 1950 and after 1980. Column (3) analyzes cross-country heterogeneity by interacting trade union density with dummies for Anglo-Saxon countries (Australia, Canada, the UK and the US) and Nordic countries (Denmark, Norway and Sweden).

We find a significant negative relationship between union density and net capital shares: a 1 percent increase in the share of employees enlisted in trade unions decreases capital share of about 1.7 percent, on average. These results support findings from previous research on the post-1960s period, that flows and ebbs in union strength have indeed correlated with the income distribution between capital and labor (Kristal 2010; Bengtsson 2014). In column 2, we investigate whether any time variation emerges over time: we find a relatively larger impact over the post-1980 period, while the effect over the pre-1950 appears to be less intense compared to the baseline 1950-1980 period.

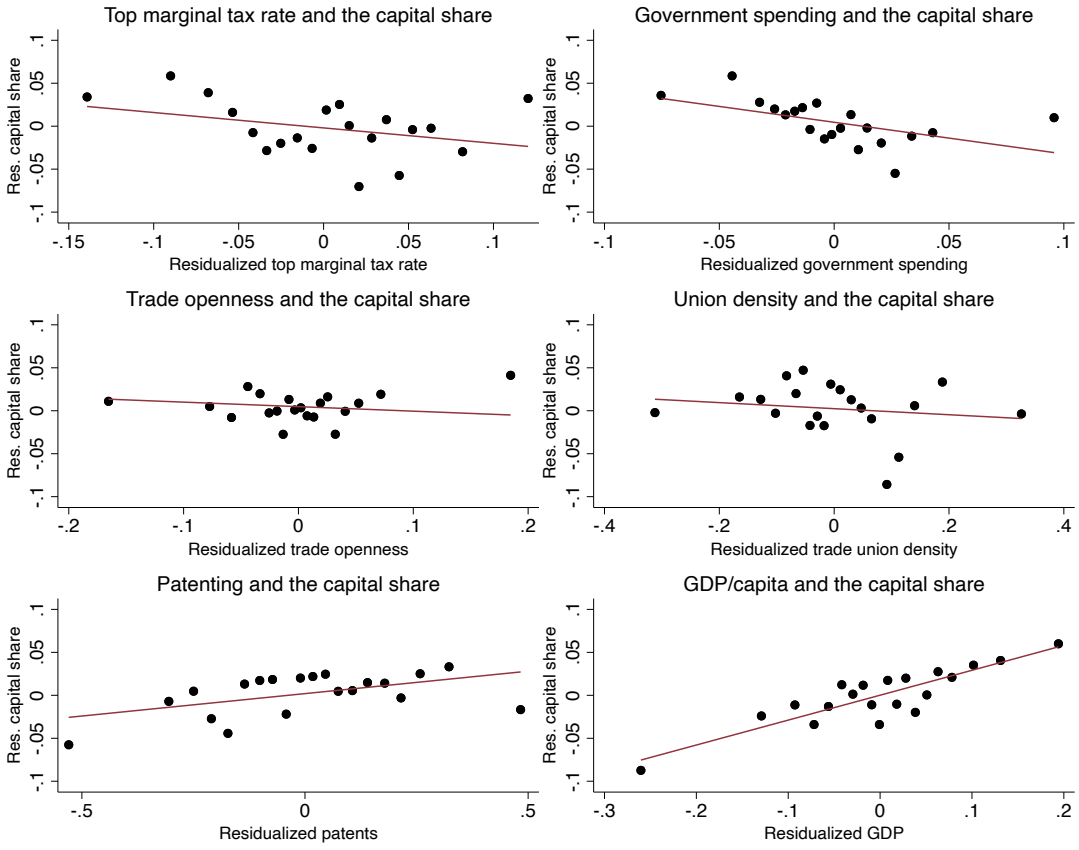
Finally, in column 3 we test for country-groups heterogeneity. While the sample becomes significantly smaller in this investigation, the eight countries represented in this analysis – Australia, Canada, Denmark, Germany, Norway, Sweden, the UK, and the US – cover Anglo-Saxon, Continental European and Nordic groups. Using Germany as baseline, we find a significant larger negative effect in Nordic countries, while the link appears to be positive for Anglo-Saxon countries. This cross-country heterogeneity is in-line with some previous studies. For instance, Kerr (1954) argued in the 1950s that trade unions in the UK but not in the US increased the wage share, since the British unionists had political clout in a way that their American colleagues lacked. This contrast between Anglo-Saxon and Nordic countries emphasizes the differential effect of the country-specific institutional setup on capital shares. In short, the capital share has fluctuated more due to social forces in Nordic countries than in Anglo-Saxon countries, and, especially, the lows have been lower. This might be illustrated with

a comparison of the Social Democratic "poster-child" Sweden and the liberal United States. Over the 1913-2015 period (that is, the period in which data are available for the US), the average net capital share in the US was 25 percent, while it was 22 percent in Sweden. Moreover, the capital-labor split has been much more volatile in Sweden: the standard deviation was in Sweden 6.6 and in the US 2.5. This implies that the division between capital and labor has fluctuated much more in Sweden than in the US over the last century, oscillating along with social and political variables such as trade unionism and public policy.

B.2 Additional regression results

The bivariate results in the main analysis are depicted graphically in Figure B3 as binned scatter plots of residualized (from regressions on country and time fixed effects and country-specific trends) logged capital shares and residualized logged values of the regressors.

Figure B3: The relationship between capital share and other variables



Note: This figure depicts the relationship between the net capital share and siz variables: top marginal income tax rate, central government spending, trade openness, trade union density, patents and GDP per capita. We construct the figures by regressing the log net capital share on country fixed effects, year fixed effects and country-specific time trends to obtain residuals. The six other variables are residualized in a similar manner. The sample includes 20 countries over the 1870-2015 period.

Table B3: Multivariate regressions

	log$Capitalshare$					
	(1)	(2)	(3)	(4)	(5)	(6)
log GDP per-capita	-0.079*	0.153	0.135	-0.146***	0.135	-0.089
	(0.040)	(0.134)	(0.177)	(0.049)	(0.179)	(0.172)
log Government spending	-0.620	-0.703	-0.787**	-0.408	-0.757*	-0.582**
	(0.457)	(0.529)	(0.362)	(0.341)	(0.361)	(0.264)
log Top marginal tax rate	-0.704***	-0.391	-0.615*	-0.673***	-0.604*	-0.168
	(0.202)	(0.413)	(0.289)	(0.147)	(0.284)	(0.208)
log Openness	0.052	0.055	0.224	0.283	0.211	0.537
	(0.035)	(0.037)	(0.204)	(0.180)	(0.186)	(0.415)
log Patents	0.018	-0.011	0.053	0.078	0.058	-0.004
	(0.038)	(0.045)	(0.098)	(0.075)	(0.097)	(0.048)
Observations	1,269	1,269	1,269	1,269	1,269	1,269
R-squared	0.232	0.379	0.679	0.581	0.682	0.808
Country FE	No	No	No	Yes	Yes	Yes
Year FE	No	Yes	Yes	No	Yes	Yes
Country-specific trends	No	No	Yes	No	No	Yes

Note: This table reports regressions of the log of net capital share on the log of the following variables: GDP per-capita, government spending, top marginal tax rate on personal income, openness (sum of imports and exports as a share of GDP) and stock of domestic patents on the (log of) capital share of income. Our sample is composed of 20 countries over the 1870-2015 period. Standard errors clustered at country level in parenthesis.

Table B4: Panel regressions of gross capital shares on economic and political variables

	log*Gross Capital share*					
	Full period				Pre-WWII	Post-WWII
	(1)	(2)	(3)	(4)	(5)	(6)
log Gov. spending	-0.836***	-0.677***	-0.650**	-0.284*	-0.364*	-0.805**
	(0.264)	(0.178)	(0.229)	(0.159)	(0.173)	(0.299)
Obs.	1,825	1,825	1,823	1,823	548	1,164
log Top marginal tax	-0.613***	-0.501***	-0.208	-0.130	0.115	-0.290*
	(0.113)	(0.093)	(0.128)	(0.154)	(0.169)	(0.164)
Obs.	1,804	1,804	1,786	1,786	468	1,175
log Trade openness	0.015	0.259**	0.159	-0.061	0.246	-0.162
	(0.037)	(0.123)	(0.171)	(0.116)	(0.213)	(0.273)
Obs.	1,818	1,818	1,816	1,816	548	1,162
log GDP/capita	-0.063*	-0.022	0.066	0.088	0.492**	0.141
	(0.034)	(0.031)	(0.113)	(0.110)	(0.171)	(0.160)
Obs.	1,875	1,875	1,874	1,874	560	1,171
log Patents	-0.013	0.041	0.114***	0.079	0.194***	-0.014
	(0.018)	(0.036)	(0.026)	(0.046)	(0.063)	(0.032)
Obs.	1,471	1,471	1,471	1,471	450	899
Country FE	No	Yes	Yes	Yes	Yes	Yes
Year FE	No	No	Yes	Yes	Yes	Yes
Country trends	No	No	No	Yes	Yes	Yes

Note: The table reports the regression coefficients of (log of) government spending, top marginal tax rate on personal income, trade openness (sum of imports and exports as a share of GDP), GDP per-capita, and stock of domestic patents on the (log of) capital share of income. Our sample is composed of 20 countries over the 1870-2015 period. "Pre-WWII" denotes the period before 1940 and "Post-WWII" denotes the period from 1950 onward. Standard errors clustered at country level in parenthesis.

Appendix References

Abildgren, K. (2006). "Monetary Trends and Business Cycles in Denmark 1875-2005 – New Evidence Using the Framework of Financial Accounts for Organising Historical Financial Statistics." Danmarks Nationalbank Working Papers. Danmarks Nationalbank. Copenhagen.

Aukrust, O., J. Bjerke (1959). "Real capital and economic growth in Norway, 1900–56." *Review of Income and Wealth*, 8(1), 80-118.

Bain, G. S., R. Price (1980). *Profiles of Union Growth: A Statistical Portrait of Eight Countries*. Basil Blackwell, Oxford.

Bengtsson, E. (2014). "Do unions redistribute income from capital to labour? Union density and wage shares since 1960." *Industrial Relations Journal*, 45(5):389–408.

Bernard and Butlin (1984). "Australian Public and Private Capital Formation, 1901-1975." Economic Record 57: 354-367.

Brambor, T. and Lindvall, J. (2018). "The ideology of heads of government, 1870–2012." European Political Science, 17(2):211–222.

Crozier, R. F (1983). "Gross National Product, the Capital Stock, and Productivity." In M. C. Urquhart (Ed.), Historical Statistics of Canada (2nd ed.). Ottawa: Statistics Canada.

Edvinsson, R. (2005). "Growth, Accumulation, Crisis: With New Macroeconomic Data for Sweden 1800-2000." Doctoral dissertation, Acta Universitatis Stockholmiensis.

Genovese, F., K. Scheve, D. Stasavage (2016). "Comparative Income Taxation Database." [Computer file]. Stanford, CA: Stanford University Libraries.

Giordano, C., F. Zollino (2015). "A Historical Reconstruction of Capital and Labour in Italy, 1861-2013." *Rivista di Storia Economica*, 31(2), 155-224.

Hills, S., R. Thomas, N. Dimsdale (2010). "The UK recession in context: what do three centuries of data tell us?" *Bank of England Quarterly Bulletin*, 50(4), 277-291.

Hjerppe, R. (1989). "The Finnish Economy 1860-1985: Growth and Structural Change." Bank of Finland.

ICOW colonial history dataset, Version 1.1, available at `https://dataverse.harvard.edu/dataset.xhtml?persistentId=doi:10.7910/DVN/5EMETG`.

Jordà, O., M. Schularick, A. M. Taylor (2017). "Macrofinancial History and the New Business Cycle Facts." in NBER Macroeconomics Annual 2016, volume 31, edited by Martin Eichenbaum and Jonathan A. Parker. Chicago: University of Chicago Press.

Kerr, C. (1954). "Trade-Unionism and Distributive Shares." *American Economic Review*, 44(2):279–292.

Kristal, T. (2010). "Good Times, Bad Times." *American Sociological Review*, 75(5):729–763.

Maddison, A. (1995). "Standardised Estimates of Fixed Capital Stock: A Six Country Comparison," in Explaining the Economic Performance of Nations: Essays in Time and Space, ed. by Angus Maddison, Economists of the Twentieth Century

series (Brookfield, Vermont: Edward Elgar).

Mitchell, B. (1998a). International Historical Statistics: Europe 1750–1993, Basingstoke: Macmillan.

Mitchell, B. (1998b). International Historical Statistics: the Americas 1750–1993. Basingstoke: Macmillan.

OECD and J. Visser, ICTWSS database (Institutional Characteristics of Trade Unions, Wage Setting, State Intervention and Social Pacts, 1960-2010), version 3.0 (http://www.uva-aias.net/).

Roine, J., J. Vlachos, D. Waldenström (2009). "The long-run determinants of inequality: What can we learn from top income data?" *Journal of Public Economics*, 93(7), 974-988.

Rubolino, E., D. Waldenström (2019). "Trends and gradients in top tax elasticities: Cross-country evidence, 1900-2014." *International Tax and Public Finance* 26(3): 457–485.

Sarkees, M. R., F. W. Wayman (2010). Resort to War: A Data Guide to Inter-State, Extra-State, Intra-state and Non-State Wars, 1816-2007. Washington, DC: CQ Press. Available at `https://correlatesofwar.org/data-sets/COW-war`

Scheve, K., D. Stasavage (2016). *Taxing the rich: A history of fiscal fairness in the United States and Europe*. Princeton University Press.

The Maddison-Project. (2013). http://www.ggdc.net/maddison/maddison-project/home.htm, 2013 version.

The Polyarchy Dataset, available at `https://www.prio.org/Data/Governance/Vanhanens-index-of-democracy/`

Vanhanen, T. (2015). "Political Competition", available at `http://hdl.handle.net/10622/4ZDPWP,IISHDataverse,V1.`

V-Dem Dataset, Version 9, available at `https://www.v-dem.net/en/`