

**Inequality and Institutions:
What Theory, History, and (Some) Data Tell Us**

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ABSTRACT:

Many scholars argue that political institutions affect economic and social inequality, while others claim that inequality affects institutions. Following most historical literature, we suggest that exogenous changes in technology, trade, or demography alter the value of factor endowments and thus change *both* inequality and institutions. We support this assertion with a welfare-maximizing model of endogenous institutional choice, with a series of historical case studies, and with an empirical examination of the history of franchise extension in nineteenth- and twentieth-century Europe.

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That institutions co-vary with political and economic inequality seems obvious. Societies with feudal or clientelistic politics are characterized by extreme economic inequality, and democracies are associated (despite some notable exceptions) with greater economic equality than autocracies. Even within the set of democracies, institutions and inequality seem to move together. Controlling for just about everything else, countries with proportional methods of election (PR), for example, display greater economic equality than countries like the United States that have majoritarian electoral institutions. But do the institutions cause the (in)equality, does inequality constrain institutions, or is this link caused by some more fundamental source of change, such as technology or trade?

We emphasize how changes in economic and military technology, trade, and factor endowments influence the evolution of political institutions. We note how, in standard production functions, changes in technology, trade, or factor endowments can dramatically increase or decrease social and economic inequality. Where these exogenous changes increase inequality, political entrepreneurs have incentives to adopt less representative political institutions; or to do away with democratic institutions altogether. By contrast, decreasing inequality creates incentives for political entrepreneurs to broaden political participation. To support this argument, we present several historical case studies where substantial changes in factor endowments or technology quickly led to more or less inclusive political institutions. We also present quantitative evidence that increasing labor force participation and the demand for labor created by the two World Wars encouraged European countries to expand the right to vote during the late nineteenth and early twentieth centuries.

Most political scientists and economists who have addressed the issue have argued that political institutions affect inequality.¹ G. Bingham Powell demonstrates that, even controlling for the position of the median voter, majoritarian regimes redistribute less and yield policies that are farther to the "Right" politically than those using proportional representation. (Powell 2002) Alesina, Glaeser, and Sacerdote demonstrate that PR independently increases both redistribution and equality; but also find support for

¹ There are of course important exceptions, most of them recent. We return to these below.

a quite different argument, to which we return below. (Alesina, Glaeser, and Sacerdote 2001) Iversen and Soskice develop a stylized three-party model (Left, Center, Right) in which PR systematically makes Center-Left governments – and hence redistributive policies – more likely. (Iversen and Soskice 2003) Not to exclude present company, Rogowski and Kayser claim, with at least a whiff of supporting evidence, that PR electoral systems benefit producers and disadvantage consumers. (Rogowski and Kayser 2002)

But a second line of recent work among economic historians and some political scientists – with strong precedents running at least back to Tocqueville² – has argued the opposite causal direction: that inequality influences institutions. (Tocqueville 1969) In their study of the uneven history of franchise extension in the countries of the New World, Engerman and Sokoloff argue that colonial-era inequality of wealth – particularly large grants of land to privileged elites in many Latin American countries – led directly to narrow participation and continued political inequality, extending down to the present day. (Engerman and Sokoloff 2002) Similarly, they argue that the franchise was extended earliest in U.S. states with high land-labor ratios; and hence, in their view, with high wages and low social inequality. (Engerman and Sokoloff 2001) Carles Boix also shows a strong link between rising income equality, as measured by the Gini index, and the emergence and survival of democracy after 1950³. (Boix 2003; Boix and Garicano 2002) Prior to 1850, Boix also finds that reasonable proxies for social equality⁴ predict the probability of transition to, and the survival of, democracy. This result holds even when he controls for wealth, as measured by per capita GDP. Boix's game-theoretic model of political transitions also specifies the expected direction of causation: "increasing levels of economic equality bolster the chances of democracy" (Boix 2003, 10).

In *Democracy and Development*, Przeworski *et. al.* famously found that higher GDP per capita made democracy likelier to survive in the period 1950-1990. But an

² Russett (1964, 453) noted the seemingly strong correlation between equal land distribution and stable democracy.

³ See especially Boix (2003) chapters 2 and 3.

⁴ These proxies are the percentage of land held by family farms, an index of educational attainment, and the average of urban and non-agricultural population percentage.

important sub-finding, somewhat downplayed because the data were sparse, reinforces the impression that inequality affects institutions. According to Przeworski *et al.*, greater equality produced higher odds of democratic survival, while an increase in equality made it likelier that dictatorship would yield to democracy. (Przeworski *et al.* 2000)

Specifically, they find that democracies with Gini indices⁵ above the median were over four times as likely to fail as those with below-median inequality. In addition, dictatorships that experienced a decrease in inequality were more than twice as likely to yield to a democracy as dictatorships that experienced an increase in inequality.⁶

Within the set of democracies, a number of scholars argue that changing inequality affects the choice of democratic institutions. In a recent pioneering paper, Ticchi and Vindigni argue that economic inequality likely constrains democracies' choices of electoral systems. (Ticchi and Vindigni 2003) Based both on a cunning model and on an anecdotal survey of twentieth century history, they contend that high inequality leads the median voter to choose a majoritarian electoral system, while low inequality leads to a rational preference for proportional representation (PR).

On a narrower but important front, a number of authors have shown, however counter-intuitively, that higher income inequality leads to less demand for some types of redistributive spending. (Moene and Wallerstein 2003; Moffitt, Ribar, and Wilhelm 1998) This finding is contrary to the traditional Meltzer-Richard model, in which demand for redistribution rises with the gap between median and average voter, i.e. precisely with income inequality. (Meltzer and Richard 1981)

⁵ The Gini coefficient is a standard measure of income inequality.

⁶ For unequal democracies, the probability of a transition to authoritarian rule was .0131. For more equal democracies, the probability of failure was only .0028. For dictatorships, the respective transition probabilities (this time, to democratic rule) were .0542 for those that experienced a decrease in inequality and .0221 for those that experienced an increase. See Przeworski *et al.* (2000) tables 2.15.B1 and 2.15.C1

We incline, however, on logical and historical grounds, to a third possibility: that both equality and institutions are affected by exogenous social change; usually occasioned by innovations in technology, trade, demographics, or some combination of these three. In our view the causal sequence is almost always:

- 1) social change, which leads to
- 2) change in inequality, followed (usually in short order) by
- 3) change in institutions; which, in turn, may occasion
- 4) further change in inequality.

To support our contention, we shall advance a rudimentary model and two kinds of evidence. On the modeling front, we argue that standard production functions and utilitarian welfare maximization lead logically from equality of skills and endowments to economic, social, and political equality. Empirically, we first present a series of nine historical cases, which range from the rise of democracy in ancient Greece to the effects of the two World Wars. For each, we summarize the mainstream opinion among historians. In every case, but with slight nuance, we observe changes in technology or trade leading to changes in economic inequality and political institutions. Second, we survey previous work on democracy and franchise expansion and supplement those analyses with an empirical analysis of the expansion of the right to vote in nine European countries between 1840 and 1944. We conclude, in line with previous historical work, that the expansion of the franchise around World War I and World War II in Europe was probably brought on by two main factors: (a) changes in technology and trade that diminished social and economic inequality; and (b) the war-driven entry of new groups, including women, into the labor force.

A. A Simple Model of Political Inequality

We break little new theoretical ground here, but chiefly emphasize two points that follow from existing models: (a) exogenous shifts in demography, investment, cross-border trade, or technology can profoundly affect economic inequality; and (b) the greater the economic inequality that prevails in a society, the greater are the welfare losses from democracy.

(a) Exogenous changes in inequality. The ratio of labor wages (w) to the rent of capital (r) serves as a plausible measure of equality that has been used empirically to good effect in recent economic history. (O'Rourke and Williamson 2000, esp. chap. 4) In the simple Cobb-Douglas production function shown in Equation 1 we see that the ratio of the wages of labor to the rent of capital (w/r) will rise linearly with the capital-labor ratio (K/L). If, in the standard notation, $Y = AK^\alpha L^{1-\alpha}$, $0 < \alpha < 1$, then w/r , the wage-rental ratio, is just⁷

$$\frac{w}{r} = \frac{(1-\alpha)}{\alpha} \left(\frac{K}{L} \right) \quad (1)$$

Any exogenous event that decreases the supply of labor while holding the supply of capital constant, such as the Black Death (discussed below), raises the wage-rental ratio and makes society more equal. On the other hand, a major war that destroys capital but leaves most labor intact – and this is what happened during World War II in most belligerent countries – will (all else equal) increase inequality.

The standard theory of *international trade*, embodied in the Heckscher-Ohlin and Stolper-Samuelson theorems, simply puts the same point in a context of cross-border exchange. When trade opens between a capital-abundant and a labor-abundant country, inequality increases in the former (which, by importing labor-intensive goods, has tapped into a larger pool of labor) and diminishes in the latter (which, by importing capital-intensive goods and services, has effectively increased its supply of capital).

Similarly, any *technological change* that increases the relative importance of capital in production – that raises the value of α – lowers the wage-rental ratio and increases inequality. By contrast, any change that makes labor relatively more productive (decreases α) would make for greater equality, i.e. an increased wage-rental ratio.

We expand this last point to consider what seems particularly crucial within and between states, namely the production of *military power*.⁸ If some shift of technology,

⁷ Labor's wage is its marginal productivity, i.e. $w = (1-\alpha) A (K/L)^\alpha$. The rent of capital is capital's marginal productivity, or $r = \alpha A (K/L)^{\alpha-1}$. The ratio of these is self-evidently as stated above.

⁸ Recall Max Weber's defining characteristic of the modern state: that it possesses a monopoly, within its territory, of the legitimate use of force. That military power is crucial as between states is the standard perspective of so-called Realist theories of international relations.

like the introduction of better infantry tactics, increases the marginal productivity of labor in the production of military force, labor will become more valued relative to capital. The wage of this labor, whether in monetary or political terms, will rise and inequality will decrease. Similarly, any technological shift that increases the relative marginal productivity of capital will increase inequality. As we shall see below, the rise of armored knights at the advent of feudalism seems to have been exactly such a shift.

Now it is standard to note that any change in the return to a factor (e.g. wage of labor or rent of capital) also affects the value of *endowments* of that factor, unless the change is assumed to be transitory. When imports from the New World lowered European grain prices to a fraction of their former levels in the latter half of the nineteenth century, for example, both land rents and land prices collapsed in all countries that remained open to trade (O'Rourke and Williamson 2000, chaps. 3 and 4). In short, returns to factors affect *factor prices*, the value of individuals' endowments.

(b) Welfare consequences of changes in inequality. We begin our model by recalling a general and important proposition, namely that social welfare is usually maximized by adopting the policy preferred by the *average*, rather than the *median*, citizen. Based on this proposition, we will show that increasing the distance between the average income and the median income – i.e., increasing social inequality – will also increase the welfare loss from representative democratic institutions which, we assume, enact the preferences of the median citizen.

Following Persson and Tabellini in both notation and substance, let citizens be of different types indexed by i . (Persson and Tabellini 2000, 48-9) Each citizen has quasi-linear preferences expressed in Equation 2. In this setup, c^i is the private consumption of the i^{th} individual, g is either a "pure" public good or a publicly-provided private good that must be provided in exactly the same non-negative amount to every citizen, and $H(\cdot)$ is a continuous and concave function ($H_g > 0$, $H_{gg} < 0$), identical among all citizens.

$$w^i = c^i + H(g) \quad (2)$$

For simplicity, we assume that that government supplies g by imposing a flat-rate tax τ on each individual's income y^i , so that $c^i = (1 - \tau)y^i$. We further assume that the population is of size (mass) unity, so that the government budget constraint (letting y

denote average income) is simply $\tau y = g$ (whence it of course follows that $\tau = g/y$).

Finally we assume that y^i is linear in some endowment (e.g., land or skill) d^i , so that $y^i = ad^i$ and $y = ad$, where a is some positive constant and d is average endowment. Thus we can transform our original statement of citizen welfare to:

$$w^i = \left(1 - \frac{g}{ad}\right) ad^i + H(g) \quad (3)$$

This is maximized where $\partial w^i / \partial g = -d^i/d + H_g(g) = 0$, implying that individual i 's optimal level of supply of the publicly-provided good g is given as:

$$g^i = H_g^{-1}\left(\frac{d^i}{d}\right) \quad (4)$$

Since H is stipulated as concave, H_g is positive but decreasing in g ; this implies that H_g^{-1} is also positive and decreasing. Thus we know that, the greater a citizen's endowment (and hence income), the *less* g she prefers.

By the standard utilitarian criterion, social welfare is taken as identical to the summed welfare of all individual citizens; but this is maximized when (and only when) the welfare of the *average* citizen, i.e. the one of *average* endowment, is maximized.⁹ Thus the socially optimal level of g is given by:

$$H_g^{-1}\left(\frac{d}{d}\right) = H_g^{-1}(1) \quad (5)$$

In a democracy, however, the level of g provided under majority rule will be that of the citizen of median endowment – the one at exactly the 50th percentile of endowment – which we denote d^m . In virtually all known circumstances, the income of the median voter is less than that of the average voter ($y^m < y$) implying (in this set-up) that the endowment of the median voter is also less than that of the average voter ($d^m < d$). Thus it follows that $d^m/d < 1$ and hence normally democracy *over-provides* the public good from a social welfare perspective. In a simple-minded partial-equilibrium sense, this insight leads to the Meltzer-Richard prediction that, since under democracy the median

⁹ Average welfare is simply $w = \sum w^i/n = 1/n \sum w^i$; obviously what maximizes w maximizes $\sum w^i$, and vice-versa. In the simplified notation adopted here, $n=1$, making the point even more obvious.

voter prevails, greater inequality (and consequently greater distance between the median and the average voter) will entail more redistribution. (Meltzer and Richard 1981)

If instead we seek to endogenize institutional choice, we gain a quite different insight: that the greater the difference between the median and the average voter, the greater the welfare gains from making institutions less democratic. Less democratic institutions move policy toward the position of the richer and less redistributive average voter. As a result, greater inequality of endowments increases the incentives of, and the potential resources available to, political entrepreneurs¹⁰ to bring about institutional change.¹¹

Figure 1: Relative Positions of Median and Average Incomes for Different Institutional Choices

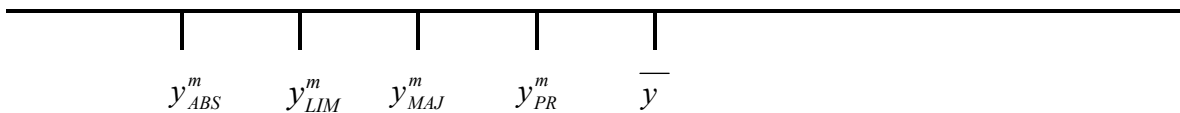


Figure assumes fixed average income (\bar{y}) and displays the ordinal location of median income under proportional representation (y^m_{PR}), majoritarian democracy (y^m_{MAJ}), democracy with limited franchise (y^m_{LIM}), and absolutism (y^m_{ABS}).

In a highly equal society, where by definition the median and the average voter are almost identical, there is little or no welfare loss from adopting a PR democracy; the system that we now know empirically most reliably yields the policy desired by the median voter. (Huber and Powell 1994) As society becomes more unequal, the gap between the mean and median incomes grows.

As a practical matter the income distribution can change shape in any number of different ways. Greater inequality, for example, may come about because of gains at the top of the income distribution, or losses at the bottom, or both. But the point we wish to emphasize is that an increasing gap between the median and mean incomes moves the

¹⁰ See Becker (1983) for more on the role of political entrepreneurs.

¹¹ In the case of extremely unequal societies, resources might also be devoted to military suppression of popular demands.

average income (and endowment) "up" the distribution to a higher percentile in every case.

Growing inequality thus makes the average voter less favorable to redistribution. If a highly equal society were to become less equal there could be welfare gains from adopting (or retaining) a *majoritarian* democracy. Majoritarian institutions have been shown empirically to produce policies on average to the (less redistributive) "right" of the median voter.¹² As inequality rises further, and the policy distance between average and median citizen increases again, there can be welfare gains from a restricted, typically property-based, franchise. Again, this restricted franchise would yield a policy that is closer to the ideal point of the average citizen. At the extreme of inequality, where the citizen of "average" endowments might be literally in the top percentile, the welfare-maximizing franchise might become indistinguishable from aristocracy or monarchy.

Suppose that, as in the case of pre-democratic ancient Greece¹³, all political power is vested in some small fraction, say the top twentieth, of the income distribution. If initially this group faithfully represents the person of average income in the society, welfare will be maximized. Now suppose, as the historians believe happened in the Greek case, exogenous technological and commercial changes so devalue traditional endowments, like land and military skills, that the average citizen is suddenly to be found in the seventieth percentile of the income distribution rather than in the top twentieth. Under this scenario, continuing a policy that embodies the bliss point of the top twentieth will entail severe welfare losses. Presumably society as a whole would be better off moving to a system of governance that brought policy closer to what the new average citizen wanted. In our picture, political entrepreneurs, and sometimes professional revolutionaries, do exactly that; essentially speculating on their share of the welfare improvement that would result.

If, as at the rise of feudalism, the average endowment suddenly moves from something not too distant from the median (say even the 70th percentile) to the 99th percentile, then again there will be welfare improvements from an institutional change

¹² See Powell (2002) on the tendency of PR produce more left-leaning policy than majoritarian systems and the tendency of majoritarian systems to form governments that are even more conservative than the median voter.

¹³ See the historical case studies for further discussion of pre-democratic ancient Greece.

that guarantees a policy closer to that of the new average citizen. As before, political entrepreneurs can be expected to work toward such a change, producing a less democratic society.

Drawing all of this into the present, we suspect, exactly as do Ticchi and Vindigni in "Endogenous Constitutions," that increasing equality in many countries during the twentieth century was associated not only with enfranchisement, but with the shift to PR; while increasing inequality in recent years may push for a change to majoritarian methods of election. In our view, the mechanism that does the work is technological, demographic, and trade-pattern change that alters the relative value of endowments. The historical discussion below will provide what we hope are illuminating examples.

B. What Historians Tell Us

We might expect that historians, including economic historians, would simply remain agnostic on the question of cause and effect; but, at least as we read them, scholars in these disciplines accept almost unanimously that social changes cause changes in inequality and institutions. More precisely, historians generally argue that major changes to institutions are usually explained by exogenous shocks that increase or decrease inequality of endowments.

We set these stories of rapid *change* in institutions against explanations that invoke "destiny," or perhaps "original sin," to explain enduring patterns of institutions, policy, and (often) economic stagnation or growth. A leading example of the latter is the brilliant and hugely influential Acemoglu-Johnson-Robinson paper, "Reversal of Fortune," which argues that greater pre-colonial wealth, population density, and inequality of conquered territories gave colonial powers incentives to impose extractive institutions. (Acemoglu, Johnson, and Robinson 2002) The evil legacies of these institutions – continued inequality, governmental predation, and bad policy – allegedly hinder economic growth down to the present day. In some sense, all seems to have been determined by conditions at the moment of European conquest. Here we consider a series of historical accounts in which traditional, and seemingly unchangeable, political institutions in fact transformed rapidly. We proceed roughly in chronological order.¹⁴

¹⁴ We apologize for the dearth of citations here. They will appear in a subsequent version.

Ancient Greek Democracy

Over about a century and a half, many of the ancient Greek city-states, starting probably with Corinth and culminating in Athens, shifted from the kind of aristocratic exclusiveness and arrogance so unselfconsciously portrayed in the *Iliad* to a form of democracy¹⁵ (albeit limited to free males) far more extreme than anything known to the modern world.¹⁶ Historians almost unanimously, and in our opinion quite persuasively, explain this rapid change of institutions as a result of two factors. First, a rapidly growing population density induced an economic change from self-sufficient agriculture to extensive trading and manufacture for export. This economic change reduced the value of land and increased that of labor and human capital, giving rise to both a prosperous middle class and vastly better-off wage-earners. Second, military technology shifted from the use of armored knights – which only the rich could become because training and armor were privately supplied – to the use of *hoplites*, or lightly armored infantry working in close formation. Naval power – with ships financed from state revenues or by forced “contributions” from the rich – also began to play a larger role, especially in Athens. These changes in military technology made the middle class and wage earners crucial to successful warfare. The considerable investments of the elite in training and armor became almost insignificant militarily. Technological and economic changes, in short, greatly reduced the previous inequality of endowments and of income; and institutional change quickly followed.¹⁷

The Rise and Fall of the Roman Republic

Pre-Republican Rome had an aristocratic governance structure similar to that of pre-democratic Greece. Rome also initially experienced a military revolution similar to the one in Greece, but witnessed very little economic change. As a result, Roman institutions democratized to a lesser extent than Greek ones. In the Roman Republic, the

¹⁵ Often there was, as at Athens, an intervening period of “tyranny,” actually more akin to “boss rule.”

¹⁶ For one thing, what we would regard as the legislature was chosen by lot, like a modern jury, not by election. This form of government still finds some advocates. William F. Buckley, Jr., for example, once wrote that he would rather be governed by the first hundred names drawn at random from the Boston telephone directory than by the faculty of Harvard University.

¹⁷ At the same time, most authorities emphasize that the political changes further diminished inequality, particularly via provision of public goods like roads and clean water.

powers of the plebeian *comitia tributa* and *comitia centuriata* expanded. Commoners – mostly small-holding farmers producing for urban markets – gained Tribunes and Plebiscites. And the Senate ceased to be purely aristocratic but retained far more power than the analogous Athenian Areopagus. Traditional elite endowments in land became militarily less valuable but retained their economic worth. Political institutions changed, but only within limits.

This quasi-democratic, or “mixed,” constitution persisted only until the Second Punic War. This conflict ruined the smallholding peasantry by conscripting the peasant infantrymen for years at a stretch and assuring Roman access to cheap slave-produced grain from North Africa. The war also proved the military superiority of professional Legions, paid and equipped by the state, over conscript citizen-soldiers. Smallholders’ endowments lost both economic and military value. Valiant efforts to combat the growing inequality politically, e.g. through radical land reform, failed.¹⁸ Increased inequality ultimately led to Caesarism, in which the only institutions that mattered were the plutocratic Senate and, increasingly, the professional army. In the Roman case, endowments first became more equal and then, after the Second Punic War, radically less equal. These changes in turn altered income inequality and caused political institutions to first become more democratic and then more autocratic.

The Rise of Feudalism

Contrary to our usual impressions, the long decline of the Roman Empire was not paralleled by a slow evolution toward feudalism. Rather, the main institutions of feudalism – benefice, commendation, and vassalage – arose with startling rapidity between about 700 and 750 CE from what had been a much more egalitarian society. (Ganshof 1952; Pirenne 1936) Moreover these feudal institutions emerged virtually full-blown in the Merovingian Frankish kingdom governed by Charles Martel.¹⁹ After much dispute about the causes of this sudden change, the eminent medieval historian Lynn White, Jr., offered a bold hypothesis: that the direct source of the rapid economic and

¹⁸ The efforts at land reform were led by the Gracchi, two aristocratic but radical brothers who would probably have won the requisite majorities for their proposals but were successively assassinated. Fortunately, nothing of this kind ever happens in modern democracies.

¹⁹ Martel was nominally Mayor of the Palace and also the grandfather of Charlemagne

political change had been a new revolution in the technology of warfare, which made armored knights once again – and for the first time since the rise of the *hoplites* – the overwhelmingly dominant type of warrior. The crucial technological change, White argued, was the introduction (probably from the Near East) of the stirrup. This innovation permitted mounted warriors to lunge against targets with the full momentum of horse and rider without running the risk of being thrust off over the horse's tail. (White 1962, Ch. 1)

But knights capable of exploiting this new technology were extremely expensive to train and equip, just as they had been in ancient Greece. Martel solved the problem by changing endowments: giving huge estates, mostly carved out of Church lands, to his principal followers in return for their provision of fixed quantities of properly equipped knights. This reduced the formerly independent peasants to the status of tenants or forced laborers on the newly-created estates. Martel demonstrated the great superiority of the new technology and his new institutions in a long series of successful conflicts, culminating in the (Huntingtonian) Battle of Poitiers. Virtually all of the rest of Europe quickly emulated him. Again, the short version is: technological change drives changes in inequality and in institutions.

The "Democratizing" Black Death

Between 1347 and 1351, Bubonic Plague killed at least a third of Europe's total population. It killed an even higher fraction of the skilled craftsmen and merchants who lived in the nascent cities. In simple economic terms, labor suddenly became scarce relative to capital – which, of course, the Plague did not destroy – and skilled urban labor became particularly scarce. The result, even in a still rather tradition-bound economy, was a sharp increase in real wages, and particularly in the returns to skill. Servile peasants soon fled their feudal lords for the higher wages of the cities. Often lords found that they could retain their tenants only by commutation of traditional service dues – so many days of labor each week on the lord's lands – to cash rents on generous terms. The lords' political control over their tenants also diminished. Within the cities, workers' and artisans' relative scarcity, and their consequent more favorable bargaining position and higher wages, led to increasing demands for a greater share of political power. An

exogenous²⁰ disaster led to increasing social and economic equality, which led in turn to greater political equality and participation.

The Reformation

In the traditional iconography, the Reformation – that great democratizing movement within Christianity, characterized above all by the doctrines of individual salvation, individual access to the Scriptures, and the “priesthood of all believers” – is captured in images of individual reasoning, courage, and revolt: Wycliffe translating the Bible into the vernacular, Huss dying at the stake, Luther nailing his Ninety-Five Theses (in Latin, but quickly translated into German and broadcast throughout Germany) to the church door. In fact, most historians now accept that the Reformation grew directly out of three interrelated socio-technical changes that radically equalized societies. (Eisenstein 1979)

The first of these changes was growing lay literacy from about 1350. Literacy increased particularly among merchants and skilled artisans, itself probably an outgrowth of the Black Death and the growing returns to skill. For obvious commercial reasons, literacy expanded chiefly in vernacular tongues, much less so in Latin. Demand for written works in the vernacular grew rapidly. The supply of written works, however, was constrained by labor-intensive hand-copying and had been traditionally focused on the reproduction of works in Latin. Book prices of course skyrocketed, leading directly to Gutenberg’s invention of moveable type, and hence of modern printing and mass production of written works around 1450. Printing drastically cheapened written works and made books more available to the public, which further increased literacy. Finally, the rapid translation and printing of the Bible into most leading European vernaculars permitted the increasingly literate lay population direct access to the sacred texts. It also revealed to many of them how ignorant of Scripture many priests and bishops actually were.

As Eisenstein and others have shown, the geographical link between capitalism and Protestantism is tenuous (*pace* Weber) but the link between printing and

²⁰ Some authorities, most notable among them Douglass North, have argued cogently that Europe became vulnerable to plague only because of growing food shortages, a result of population growth having pushed the “Malthusian limits” of the then-available agricultural technology. (North and Thomas 1973)

Protestantism is extremely strong. Social and technological changes that created greater equality between clergy and laity led directly to institutional changes that recognized that equality.

The Rise of Absolutism

In a very short interval between about 1625 and 1660, the weak and decentralized states typical of European feudalism rapidly gave way, in very many cases, to a highly centralized and powerful monarchy. This occurred most notably in France under Richelieu, in Prussia under the Great Elector, and in Sweden under Gustavus Adolphus. Traditionally powerful councils or parliaments of feudal elites were tamed or abolished. What quickly emerged became known, with some justice, as "absolutist" monarchy.²¹ Virtually every student of the period, including the estimable Samuel Finer, has linked this sudden institutional change to yet another major change in military technology, the so-called "military revolution of the seventeenth century."²² (Downing 1992; Eltis 1995; Finer 1975)

The combination of longbows, crossbows, and firearms had earlier broken the military monopoly of the mounted knights; but now the new tactics (actually pioneered by the Swiss) of the *tercio* proved superior to all rivals, particularly in the incessant combat of the Thirty Years War (1618-48). Like the Roman legions of the Imperial period, the new military technique depended on well-drilled infantry. It also permitted, and competitive pressure soon required, much larger armies.²³ Both the numbers and the more extensive training of the newer troops required vast new revenues that traditional bodies would never approve, indeed which could only be imposed by force. Nef, for example, estimated that the total burden of taxation in France increased by more than an order of magnitude between 1540 and 1640, and grew two-and-one-half times between

²¹ Many historians interpret the reign of Charles I, ultimately deposed and executed by Parliament, as a failed attempt to establish absolutism in England.

²² Probably equally important were preceding changes in tactics in the sixteenth century: see, for example, Eltis 1995.

²³ Previously never more than 75,000, total French troop strength rose to 150,000 in 1635, and to over 400,000 by the end of the seventeenth century. (Lynn 1994) Swedish troop strength tripled, from 15,000 in the 1590s to 45,000 in the 1630s; and rose again to 70,000 in the 1650s. (Maddison 2001, 81).

about 1600 and 1640. (Nef 1940, 126-9, cited in Finer 1975, 128) But once the monarch had gained those revenues, and suppressed the traditional bodies, he possessed a standing army that could, and normally did, make him absolute. Here the change in military technology increased inequality of endowments and income. The monarch became not just the richest and most powerful of nobles but, by his control of the new state apparatus, orders of magnitude greater than his strongest potential rival. Political influence, consequently, was restricted to a far smaller circle. This change of course did not come without resistance. In the bloody *frondes*, both noble and popular resistance almost overthrew the French monarchy.

The "Age of Democratic Revolution"

From about the 1780s, at least in the economically most advanced societies, political participation began to broaden. Parliaments again became more powerful and the parliamentary franchise was extended, leading ultimately – and certainly with authoritarian reversals along the way – to the representative democracies that now prevail almost universally in the wealthy industrial economies. The most perceptive contemporary observers of this "first wave" of democratization, including above all Tocqueville, saw its source unambiguously in the gradual and progressive development of social equality. (Tocqueville 1969, 9-20) The more individuals grew to be equal in such endowments as capital, literacy, military contribution, and knowledge, the less could they tolerate inequality of political participation.

Subsequent historians have confirmed Tocqueville's claim of rising equality, at least for pre-revolutionary French rural society where peasants' ownership of land was expanding. (Tocqueville 1955) Across Europe more broadly, historians have pointed to three major sources of rising equality, two of which closely parallel those of ancient Greece. The first of these sources of equality was the "Napoleonic" military revolution. The armies of both the French Republic after 1792 and of Napoleon proved the military superiority of the *levée en masse*. These were the enormous armies of citizen-soldiers that forced rival powers to turn large numbers of their own subjects into willing – or, at least, not rebellious – recruits. The second source of equality was the huge expansion of

maritime commerce in the eighteenth century²⁴ which worked to the benefit of commercial elites and, in labor-abundant Europe, of workers.²⁵ Trade increased both within Europe and overseas because of greatly improved shipbuilding and navigation. Finally, the possibility of emigration to the high-wage New World, even if the trip was hard and risky, put a floor under European wages.²⁶ It therefore limited the political oppression that European masses found tolerable. Within the New World itself, high wages and the open frontier reduced inequality. These high wages also increased pressure for broader political participation; at least in traditional accounts, going back to Frederick Jackson Turner.²⁷

The trend toward greater equality of endowments received a powerful new impetus from the further revolution in shipping and communication of the nineteenth century, and particularly of the period 1870-1914. Steamships, railways, canals, the telegraph, and the telephone drastically reduced both the cost of transporting goods and people and the cost of transmitting information. As O'Rourke and Williamson have shown, one strong and rapid effect was a rise in European wages and a reduction in European inequality; as measured, for example, by wage/rental ratios. (O'Rourke and Williamson 1999) And, as we show below, the expansion of the European franchise seems to have gone hand-in-hand with these economic changes.

The Two World Wars of the Twentieth Century

World Wars I and II were "total" in a way that no wars of the eighteenth or nineteenth century had been; except, perhaps, for the U.S. Civil War. Vast civilian populations were mobilized. Industries were created virtually overnight. New

²⁴ Maddison estimates that world carrying capacity of sailing ships nearly tripled between the 1670s and the 1780s, rising from 1.45m to 3.95m tons. (Maddison 2001, 95)

²⁵ These trends of course accelerated in the nineteenth century, particularly with the advent of railroads and steamships. (O'Rourke and Williamson 1999)

²⁶ Real wages increased also by virtue of *cheaper foodstuffs*: grain imported from Eastern Europe, sugar from the Caribbean, and (perhaps most importantly in this period) the introduction into European agriculture of new and more productive crops from the New World, above all the potato and maize. (Braudel 1973; Langer 1963)

²⁷ "The frontier individualism has from the beginning promoted democracy. The frontier states that came into the Union in the first quarter-century of its existence came in with democratic suffrage provisions, and had reactive effects of the highest importance on the older States whose peoples were being attracted there." (Turner 1893)

populations were brought into the workforce and the military. In virtually all of the warring powers, for example, women were mobilized into industrial workforces to replace men called away to the front. And in many countries, previously isolated or disadvantaged groups, like African-Americans in the U.S. and peasants in continental Europe, were drawn into urban industry and the military.²⁸ The overwhelming need for workers drastically raised real wages and forced concessions to organized labor even, notably, in Imperial Germany during World War I (Feldman 1966). Elites, including the traditionally powerful European landed elites, submitted to crushing new tax burdens, capital levies, rent controls, and combat-related destruction of capital; which, in some cases, had long-lasting effects on overall measures of income inequality.²⁹

In short, military and industrial needs made traditionally inferior endowments worth more, traditionally superior ones worth less, and broke down "cultural" barriers to mobility. African-Americans, ill-educated peasants, and women who had been traditionally confined to the home were suddenly needed for the war effort. The overall result was a great equalization of society which played out politically as a "second wave" of democratization. This "second wave" included, but was by no means limited to, substantial extensions of the franchise. We analyze the statistical evidence later on.

Table 1 presents a synopsis of this sprint through history in tabular form. Two major messages emerge from this table, at least for us. First, equality of endowments usually changes with, or even before, political institutions in the standard historical accounts. And second, the main exogenous sources of change in inequality and institutions have been changes in military technology, trade and/or migration, disease, and information technology.

Now we may of course have gone astray in either of two ways. We may simply have read selectively among historians, embracing those who take the "inequality determines institutions" perspective. Alternatively, historians may still be burdened with a watered-down Marxist perspective in which change in "conditions and relations of

²⁸ In the U.S., of course, African-American males were drafted into the armed forces in large numbers in both World Wars but remained in segregated units under "White" officers.

²⁹ Piketty (2003) presents perhaps the best-documented case of this in his discussion of French income inequality.

production" conditions all else, and institutions are simply assumed to be "epiphenomenal." We do not, however, think either of these two possibilities is true. While we are willing to debate the point, we believe that we have accurately summarized, and offered examples of, the standard thinking among historians about major institutional change, including such emphatically non-Marxist historians as Lynn White, Jr. (White 1962)

Table 1: Some Major Historical Changes in Institutions and Inequality

<i>Institutional Change</i>	<i>Antecedent Change in Inequality</i>	<i>Exogenous Shock(s) that Changed Inequality</i>
Rise of Ancient Greek Democracy	Decreased inequality between aristocrats and commoners	Military technology (rise of <i>hoplites</i>), trade (esp. with Magna Graecia, Black Sea regions, Egypt)
Rise of Roman Republic	Decreased inequality between Senatorial and other classes	Military technology (rise of infantry; parallels Greece)
Fall of Roman Republic, rise of Caesarism	Increased inequality between rich and poor, military and non-military	Trade (imports of slave-produced grain), military technology (superiority of professional soldiers)
Rise of feudalism	Increased inequality between lords and peasants	Military technology : stirrup, mounted knights
Decline of feudalism, democratization of Renaissance cities	Decreased inequality between lords and peasants, urban elites and masses	Disease (Black Death): sudden fall in capital/labor, land/labor ratios
Reformation: democratization of Church	Decreased inequality between laity and clergy	Information technology : literacy, printing, vernacular literature
Rise of absolutism	Increased inequality between state elites, subjects	Military technology ("military revolution"), crushing burden of taxation
"Age of Democratic Revolution" in Europe and North America	Decreased inequality between traditional elites (esp. landed elites), masses	Military technology (<i>levée en masse</i>), trade (within Europe and overseas), possibility of emigration
"Second Wave" of Democratization: Broadening of Franchise and Participation in Europe, U.S. from 1910-	Further decrease in inequality between owners and workers, males and females, majorities and minorities	Two World Wars : insatiable demand for soldiers, workers

C. The Expansion of the Franchise in Europe

So we entertain a third possibility: historians may be taking the long view while political scientists, sociologists, and economists take an appropriately more myopic one. Historians are right about huge sweeping changes like the Black Death or the invention of printing; but perhaps the view that "institutions determine inequality" is right for the shorter and more realistic term that we normally face. Again, we think, not so. For one thing, exogenous changes in technology and trade that shift the value of endowments, and hence raise or lower inequality, are hardly a thing of the past. These changes have occurred in recent centuries, and are occurring today.

As we shall see below, changes in inequality appear to have had a significant effect on political institutions in the nineteenth and twentieth centuries. Specifically we argue that increased labor force participation – an indicator of changing inequality of endowments and of the bargaining power of workers – was strongly associated with an expansion of the right to vote in nine European countries between 1840 and 1944.³⁰ We then proceed to show that inequality has continued to change rapidly in recent decades.

Some impressive studies have begun to entertain the previously heretical opinion that inequality may determine institutions, or at least ideology and policy. As discussed earlier, Przeworski *et al.* and Boix and Garicano show that reasonable proxies for social equality predict the probability of transition to and/or survival of democracy. (Boix and Garicano 2002; Przeworski *et al.* 2000) Other scholars have examined the link between inequality and franchise expansion (a more specific indicator of democratization), both across countries and among the U.S. states. Acemoglu and Robinson,³¹ with typical brilliance and technical finesse, develop a nice model that links franchise expansion to elites' fear of revolution. (Acemoglu and Robinson 2000) The upshot of this is that the likelihood of a democratic *transition* bears an "inverse U" relationship to economic inequality. Democratization is completely unlikely in the most equal societies *and* in the most unequal, where elites will repress demands, but likeliest at middle ranges of

³⁰The nine countries included in this sample are Belgium, Denmark, France, Germany, Italy, the Netherlands, Norway, Sweden, and the United Kingdom

³¹This argument is extended and refined in Acemoglu and Robinson's new book manuscript, *Political Origins of Dictatorship and Democracy*.

inequality. (Acemoglu and Robinson 2003, 11-10) By contrast, Engerman and Sokoloff (2001) develop an empirically grounded account, particularly for the U.S. states, which locates early expansion of the franchise precisely in those jurisdictions with high land-labor ratios; and, they argue, with high wages and low social inequality. Again, none of this settles the question of causal priority empirically and neither, at least at this point, do we.³²

The model and case studies presented above argued that increasing equality of endowments in a society makes democracy more likely in late nineteenth century and early twentieth century Europe. Increasing industrialization raised the level of capital per worker and increased the returns to skill. As in the Reformation, diffusion of skills and education among the population created a more equal society where workers had the ability to bargain for political power.³³ This increase in bargaining power resulted in significant increases in political enfranchisement as measured by the fraction of the adult population eligible to vote.

This process of political enfranchisement accelerated during World Wars I and II. These "total" wars, as is evident even in American history, dramatically affected the demand for labor, raising wages and drawing minorities and women into the labor force in large numbers. The exogenous shock of war thus decreased inequality of endowments and – at least in our interpretation – led to increased political participation. The effect was not limited to the belligerent countries. Neutral Sweden, for example, was a major exporter of high-quality ores and steel and also experienced a wartime "boom" that greatly increased the demand for labor.

Prior to this period of increasing industrialization, the right to vote, if it existed at all, was quite exclusive in most of Europe. Usually the franchise was restricted to men who met particular criteria: property ownership, payment of a specified minimum in taxes, literacy, or some combination of these. But between roughly 1850 and the end of

³² One of the present authors, however, has established a strong link between changes in *inequality* and changes in *government ideology*. In the advanced economies for which data are available over the last thirty years, rising inequality appears to have led consistently to more Right-wing (i.e., less redistributive) governments. In addition, changes in inequality levels tend to occur prior to changes in ideology. This leads to the conclusion that, at least over the short term, it is inequality which causes changes in government ideology and not the other way around. (MacRae 2004)

³³ See Huber *et. al.* (1993) for a similar argument based on the organizational ability of social classes,.

World War I, the right to vote was extended – gradually in most cases, rapidly in some – to all adult males. In the Netherlands, for example, the right to vote was restricted between 1849 and 1887 to male citizens aged 23 and over who exceeded a relatively high tax threshold. As a result, only about 5 percent of the adult population – about 11.3 percent of men aged 20 and over – were allowed to vote in 1870. The restrictions on male suffrage, however, were gradually reduced in the Netherlands until all men 25 and over were given the right to vote in 1918. With a few exceptions, European countries granted women the right to vote shortly after men had achieved universal suffrage, generally between World War I and the end of World War II. The Netherlands is again fairly typical of the pattern, women aged 25 and over having achieved the franchise in 1922.³⁴

To assess the extent of the franchise consistently across countries and time, we adopt the measure found in Flora (1983), namely the fraction of the population aged 20 years or over that is legally entitled to vote. Figure 2 shows the relationship between this measure of political enfranchisement and the fraction of the population in the labor force.³⁵ The graphs in Figure 2 confirm both of the intuitions about the relationship between labor force participation outlined above. First, we see a fairly strong positive correlation between ($r=0.62$) between time trends in labor force participation and enfranchisement. In Belgium, for example, labor force participation increased from 60.2 percent of the population to 68.6 percent of the population between the periods 1885-89 and 1940-44. At the same time, enfranchisement increased from 3.9 percent of the population aged 20 and over to 45.4 percent of the population. Shortly after World War II, enfranchisement increased again in Belgium to over 90 percent of the population. We observe similar trends in, for example, Norway.

³⁴ Switzerland is the obvious exception. It is not, however, included in the sample due because we lacked labor force participation data. Men in Switzerland achieved universal suffrage in 1848, women only in 1971. This may have something to do with the fact that the country remained neutral in both world wars, and so was not exposed to quite the same pressures as other European countries.

³⁵ Each of the points in the graphs in Figure 2 represents a five-year average value. The enfranchisement data series is reported in Flora (1983). The labor force participation variable is unpublished data that was kindly provided by Jeffrey Williamson.

Figure 2: Enfranchisement and Labor Force Participation in Nine Countries, 1830-1975

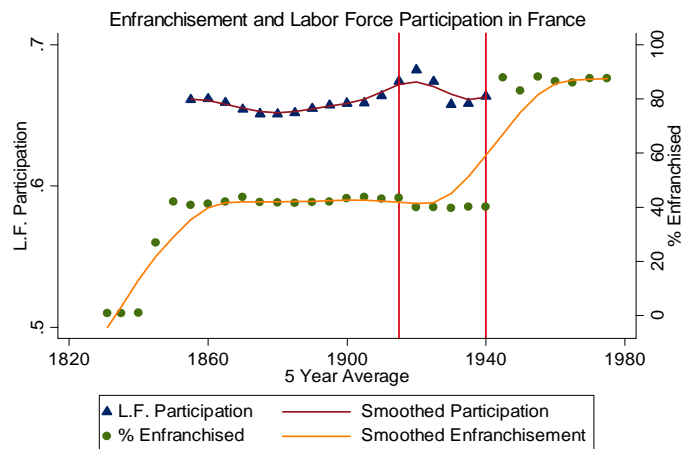
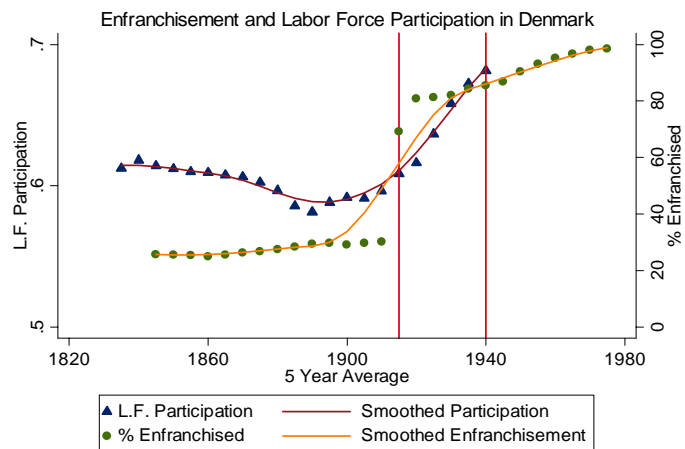
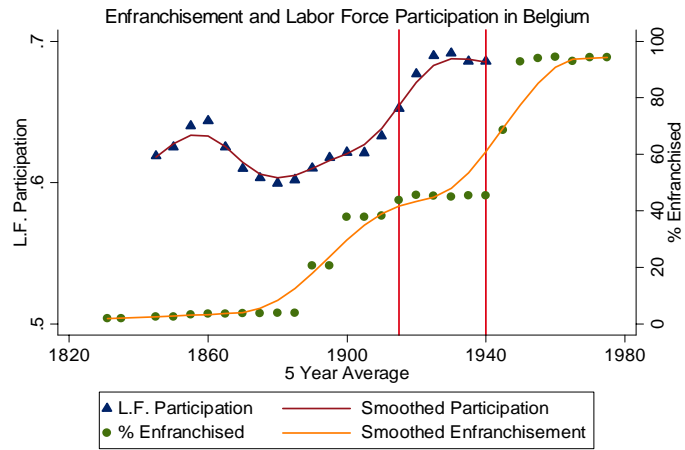


Figure 2 (Cont.): Enfranchisement and Labor Force Participation
 in Nine Countries, 1830-1975

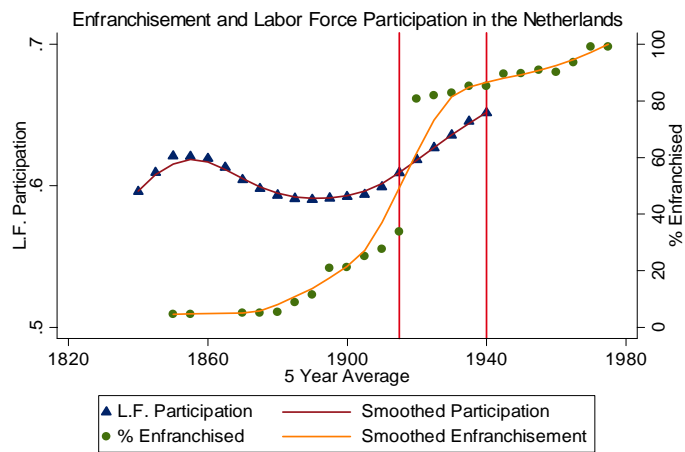
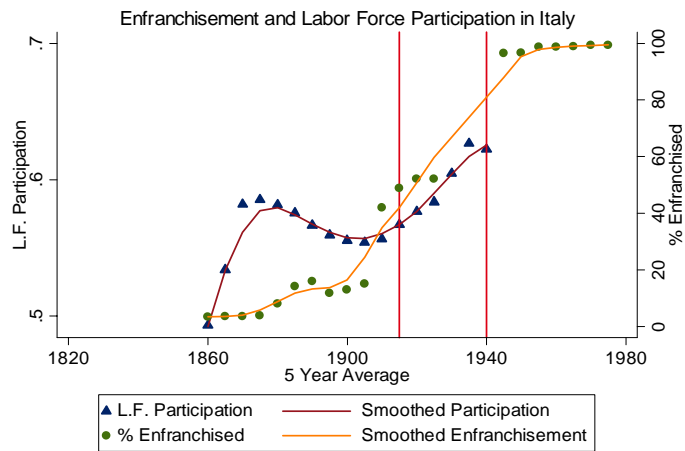
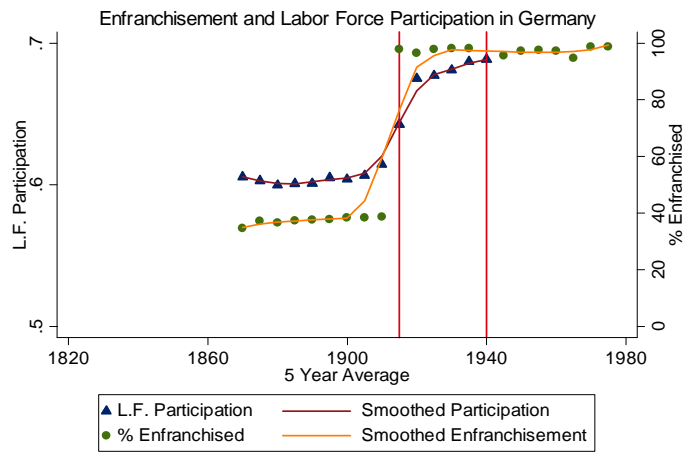


Figure 2 (Cont.): Enfranchisement and Labor Force Participation in Nine Countries, 1830-1975

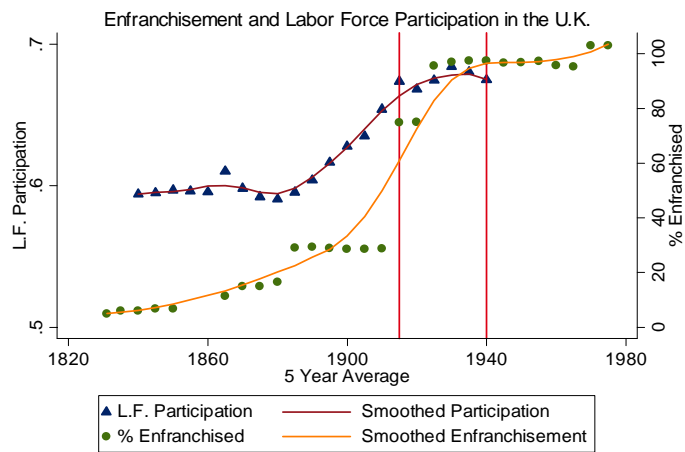
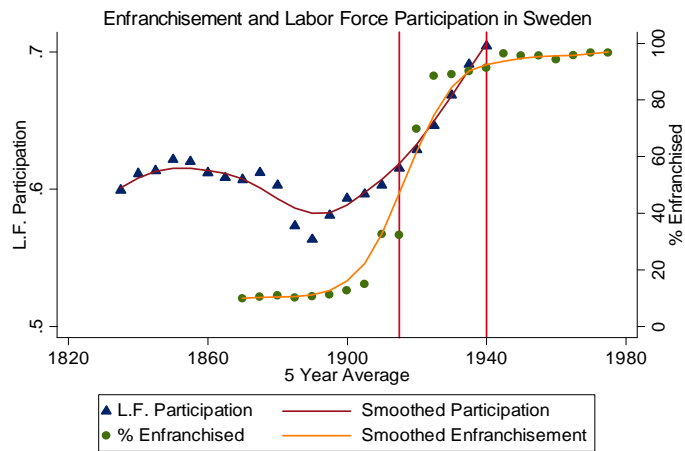
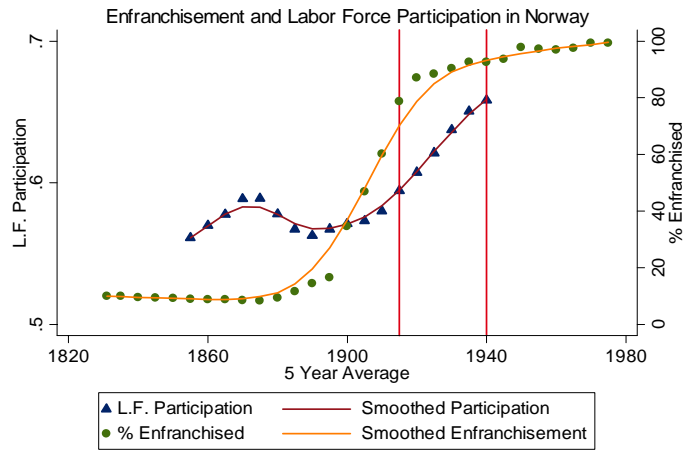


Figure 2 also provides further evidence that the two World Wars, and especially World War I, had a dramatic effect on the level of political enfranchisement in Europe. Germany is one of the most impressive examples of this effect. Labor force participation and the fraction of the population able to vote both jumped substantially during World War I in Germany. Between the period just before World War I (1910-14) and the period just after the war (1920-24) labor force participation increased from 61.4 percent of the population to 67.5 percent. And the fraction of the population able to vote increased from 38.7 percent to 96.5 percent during the same decade.³⁶ Other countries – among them the United Kingdom, the Netherlands, and Denmark – also significantly expanded the franchise around World War I.

To model expanding political rights in Europe better, we present the regressions in Table 2. In addition to labor force participation, the regressions include controls for per-capita gross domestic product.³⁷ A number of studies going back to Lipset (1959) find a strong correlation between wealth and democratic institutions, although the exact cause of this relationship has been debated in the literature. (Przeworski and Limongi 1993) We also include dummy variables for the inter-war and World War II period³⁸, and a full set of country fixed effects.

³⁶ From 1871 to 1919 only men aged 25 and over could vote in Reichstag elections; in the Weimar Republic, women were enfranchised and the voting age was lowered to 20. See, for example, <http://www.politische-bildung-brandenburg.de/links/wahlen/landtagswahlen5.htm>

³⁷ Data on GDP per capita are from Maddison (2003).

³⁸ The "Inter-War" period variable is equal to one for years between 1915 and 1939. The World War II variable is equal to one between 1940 and the last year in the sample, 1944.

Table 2: OLS and GLS Estimates of Labor Force Participation and Wealth on Political Enfranchisement in Nine Countries, 1840-1944

	OLS				GLS			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Log(GDP/Capita)	0.265** (0.082)	0.317** (0.095)	0.407*** (0.114)	0.303*** (0.078)	0.263** (0.101)	0.321** (0.123)	0.429** (0.152)	0.311** (0.105)
L.F. Participation	2.953* (1.493)	3.831*** (1.031)	4.642*** (0.986)		3.572* (1.681)	4.470*** (1.170)	5.662*** (1.255)	
Inter-War Period	0.221* (0.112)	0.149** (0.063)		0.334*** (0.085)	0.199* (0.106)	0.138* (0.063)		0.327*** (0.084)
World War II	0.198 (0.138)			0.374*** (0.096)	0.168 (0.141)			0.358** (0.107)
Constant	-3.713*** (0.698)	-4.667*** (0.450)	-5.879*** (0.638)	-2.204*** (0.643)	-4.092*** (0.768)	-5.116*** (0.729)	-6.737*** (1.153)	-2.272** (0.869)
Observations	153	153	153	153	153	153	153	153
R-squared	0.83	0.82	0.80	0.80	0.76	0.74	0.71	0.74

Robust standard errors clustered on country in parentheses. * Significant at 10%; ** significant at 5%; *** significant at 1%. Countries in regressions include Belgium, Denmark, France, Germany, Italy, the Netherlands, Norway, Sweden, and United Kingdom. Observations are five year averages. All models include a full set of country dummies.

One technical issue, of course, is the fact that the fraction of the population that can be allowed to vote is bounded between zero and one; between zero and 100 percent.³⁹ Ordinary least squares (OLS), however, does not necessarily obey this restriction and so may produce unreasonable predicted values. Also, we expect that the effect of the independent variables changes depending on the level of enfranchisement. It seems unlikely, for example, that growing labor force participation would produce as much of an increase in enfranchisement when close to 100 percent of the population can already vote as when only 30 percent of the population can vote. As a result, OLS should underestimate the effect of the causal variables on enfranchisement.

In practice OLS does a reasonably good job of predicting levels of enfranchisement in this sample. But to compensate for this potential problem, we also produce estimates using a linear probability model. To do this, we first produce predicted values for the regression using OLS. We then censor the predicted values to be between zero and one and use generalized least squares (GLS) to estimate the coefficients. We weight the results by $p^*(1-p)$, where p is the censored predicted level of enfranchisement from the OLS regression. This procedure places more weight on intermediate levels of political enfranchisement. It places almost no weight on observations that approach zero and 100 percent, which compensates for the problems outlined above and should more accurately estimate the effect of the independent variables on enfranchisement.

(Hanushek and Jackson 1977, 194)

We draw the following conclusions from these regressions. First, increasing labor force participation led to significantly higher levels of political enfranchisement in these nine European countries, even controlling for increasing wealth and the effect of the two world wars. In both the OLS and GLS models, labor force participation remains a significant predictor of enfranchisement at above the 90 percent level in every version of the model. Second, increasing per capita wealth also led to increases in the franchise, even prior to World War I. This effect is consistently significant at better than the .05

³⁹ Actually, in the Flora (1983) measure the enfranchised fraction of the population can exceed 100 percent because the divisor is the population aged 20 and above. If, for example, all people 18 and older were allowed to vote this population would exceed 100 percent of those 20 and older. In practice, however, the value never exceeds 100 percent by a large amount, and in our sample it does not happen at all. The fraction enfranchised in the sample used in Table 2 varies between 2.5 percent and 98.1 percent of the population.

level. Finally, and independent of these other effects, countries expanded the franchise after World War I.

As is often the case, the small sample size and relatively large confidence intervals make it difficult to draw meaningful conclusions about the relative importance of these variables. But it is still interesting to illustrate how large an effect the point estimates suggest. Between the 1885-89 period and 1925-29, the average level of labor force participation in the sample increased from 59.4 percent of the population to 64.8 percent. The point estimate in Model 5 predicts that this change produced a 19.3 percent increase in the fraction of the population allowed to vote. Put another way, the estimates suggest that growing labor force participation caused slightly more than 35 percent of the total increase in the extent of the voter franchise during this period. Real per capita GDP increased substantially, from an average of \$2510 per person in 1885-89 to \$4238 per person in 1925-29⁴⁰ According to the model, this increase in wealth expanded the franchise by 14.3 percent, or more than a quarter of the total change in the proportion of people who were allowed to vote. Even controlling for these two factors, the inter-war dummy in Model 5 picks up an almost 20 percent increase in enfranchisement between the period prior to World War I and the period directly after the conflict. Presumably, this variable picks up the leveling effects of the war-time experience that are not captured by either growing wealth or growing labor force participation.

D. Income Inequality in the Late Twentieth Century

But rapid changes in inequality are not limited to the late nineteenth and early twentieth centuries. It is common knowledge that, after a long period of stability, the last two decades have seen a persistent, and by all accounts mostly exogenous, increase in income inequality in many of the advanced economies.⁴¹ Table 3 displays Gini coefficients, derived from the Luxembourg Income Study (LIS), which measure the degree of inequality in disposable income in 26 countries between 1975 and 2000. Many of the "Anglo" countries, as we would expect, have seen persistent increases in inequality in the last quarter-century. According to the LIS figures, income inequality in the United

⁴⁰ In 1990 International Geary-Khamis dollars: see Maddison (2003).

⁴¹ Gottschalk and Smeeding (1997) present a magisterial overview of recent research and trends in inequality.

States increased by 23 percent between the early-1970s and late-1990s. Over the same period, income inequality increased by 28 percent in the United Kingdom, by 11 percent in Israel, and by 7 percent in Norway. A number of the post-Communist countries experienced rather dramatic increases in inequality just during the 1990s. Between the early and late 1990s, income inequality increased by about 12 percent in both Russia and Poland and by 25 percent in the Czech Republic. Admittedly some countries, especially within Continental Europe, have remained more equal in their income distributions.

**Table 3: Gini Indices Measuring Inequality
 of Disposable Income, 1975-2000**

Country	1975- 1979	1980- 1984	1985- 1989	1990- 1994	1995- 2000
Australia		0.281	0.298	0.311	
Austria			0.227	0.280	0.272
Belgium			0.230	0.224	0.250
Canada	0.289	0.284	0.283	0.283	0.298
Czech Republic				0.207	0.259
Denmark			0.254	0.236	0.260
Finland			0.209	0.210	0.232
France	0.293	0.293	0.287	0.288	
Germany	0.264	0.251	0.247	0.261	0.252
Hungary				0.303	0.295
Ireland			0.328	0.333	0.331
Israel	0.303		0.308	0.305	0.336
Italy			0.306	0.289	0.342
Luxembourg			0.237	0.238	
Mexico		0.448	0.467	0.491	0.486
Netherlands		0.260	0.256	0.260	
Norway	0.223		0.233	0.231	0.238
Poland			0.271	0.274	0.306
Russia				0.393	0.441
Slovak Republic				0.189	0.241
Spain		0.318		0.303	
Sweden	0.215	0.197	0.218	0.229	0.237
Switzerland		0.309		0.307	
Taiwan		0.267	0.269	0.271	0.277
United Kingdom	0.270		0.303	0.338	0.345
United States	0.301		0.335	0.346	0.370

Source: Authors' calculations based on Gini coefficients from Luxembourg Income Study Key Figures, <http://www.lisproject.org/keyfigures/ineqtable.htm>.

Even some countries that had relatively flat income trends in Table 3, such as the Netherlands, saw increases in *earnings* inequality. Earnings inequality in the Netherlands increased by about 5 percent between the early 1980s and early 1990s.⁴² While part of this is due to policy change, much is not. Indeed, the usual disagreement is only over how *much* of this change is due to increased trade, how much to change in technology. Certainly little of the increasing inequality in the Western countries can be due to change in institutions, which have remained relatively stable.

If we are right, growing inequality of endowments in developed countries today, and in particular devaluation of unskilled labor, will lead to institutional changes that make policy less representative of the median voter. These changes may include more frequent use of majoritarian electoral institutions or delegation of political authority to unelected political organizations, either domestic (banks, courts) or supranational (WTO).

E. Conclusion

In this paper we emphasize how exogenous changes in factor endowments, trade, and technology affect democratic political institutions. We argue that these exogenous changes can alter overall levels of income inequality by, among other things, raising or lowering the wage of labor relative to capital. We advance a welfare-maximizing model which argues that these changes in income inequality create incentives for political entrepreneurs to adopt new institutional arrangements. If technological, social, or economic factors create growing income inequality, then countries will quickly adopt less representative, and less democratic, political institutions. Changes in factor endowments that produce greater equality, by contrast, foster more inclusive political institutions that bring policy closer to the position of the median citizen.

To support this point, we review a series of nine historical case studies, ranging from ancient Greece to the twentieth century. In ancient Greece, for example, historians argue that the rise of a prosperous middle class coupled with a change in military technology from knights to infantry played a role in the spread of democracy. Similarly, both growing lay literacy and the printing press decreased inequality between clergy and

⁴² Earnings inequality figures are based on authors' calculations of 90th percentile earnings divided by 10th percentile earnings in OECD (2001).

laity during the Reformation, resulting in more participatory religious institutions. In ancient Rome, by contrast, economic and military pressures dramatically increased inequality, leading to the rise of the Caesars.

But quite obviously rapid changes in technology, factor endowments, and trade are not features only of past centuries. During the twentieth century we find that the two World Wars and growing labor force participation helped expand the franchise in Europe. We also predict that recent increases in income inequality in some developed countries will lead to institutional changes that make policy less representative of the median voter, including the abandonment of proportional representation. Finally, we predict strong democratizing effects in labor abundant countries, such as China or India, that open themselves to trade. Both the theory and the empirical evidence on labor force participation suggest that as expanded trade increases the returns to less skilled labor, and as more people join the labor force, institutions in these countries will become more democratic.

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