Supplementary Materials for

Inequality in the long run

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Supplementary Online Material: The role of top tax rates in explaining income inequality.

Labor income inequality. As discussed in the main text, the race between technology and education (*30*) is not sufficient to account for the differential increase in labor income inequality between the United States and continental Europe. Therefore, it is valuable to investigate whether other factors such as taxation of high incomes play a role in this evolution.

One imperfect but simple measure of the income tax burden on high incomes is the top marginal income tax rate, i.e., the rate of tax that high income earners in the top tax bracket have to pay on each additional dollar of income. Since 2013, it is 39.6% in the United States. Figure S1 depicts the top marginal tax rate in the United States, the United Kingdom, France, and Germany. The United States and the United Kingdom had strikingly high top tax rates (in the 70-90% range and much higher than in continental Europe) from the 1930s till 1980 when the Reagan and Thatcher administrations dramatically lowered the top tax rates. Since the 1980s, top tax rates have been lower in the United States and the United Kingdom than in continental Europe.

This reversal in top tax rates between the United States vs. continental Europe is the mirror image of the reversal in income inequality that we discussed in the text (Figure 1), suggesting that top tax rate policy played a role in this evolution. Indeed, a comprehensive empirical analysis shows that there is a systematic and strong negative correlation between the evolution of top tax rates and the evolution of the pre-tax top percentile income share (*31*). In the United States, top income shares are high when top tax rates are low (before the Great Depression and after the Reagan administrations) while top income shares are low when top tax rates are high (from the New Deal to the beginning of the Reagan administration). Across countries, there is a tight correlation between the cut in top marginal tax rates since the 1960s and the increase in the top percentile income share: The United States and the United Kingdom cut their top tax rates the most, and experienced the largest increases in top percentile income shares. In contrast, France or Germany saw very little change in both their top tax rates and their top percentile income shares during the same period.

Importantly, these correlations consider pre-tax (and not post-tax) top income shares. Hence, they are not due to the mechanical effect of taxes on disposable income and must reflect responses of high-income earners to changes in top tax rates. Two scenarios can explain the strong response of top pre-tax incomes to changes in top tax rates. They have very different policy implications and can be tested in the data.

First, higher top tax rates may discourage work effort and business creation among the most talented –the 'supply-side' effect. In this scenario, lower top tax rates would lead to more economic activity by the rich and hence more economic growth. In that case, high top tax rates are not a desirable policy. Second, while standard economic models assume that pay reflects productivity, there are strong reasons to be skeptical, especially at the top of the income distribution where the actual economic contribution of managers working in complex organizations is particularly difficult to measure. In this scenario, top earners might be able to partly set their own pay by bargaining harder or influencing compensation committees. Naturally, the incentives for such 'rent-seeking' are much stronger when top tax rates are low. In this scenario, cuts in top tax rates can still increase top 1% income shares but this increase in top

1% incomes now come at the expense of the remaining 99%. In other words, top rate cuts stimulate rent-seeking at the top but not overall economic growth – the key difference with the first, supply-side, scenario. In the 'rent-seeking' scenario, very high top tax rates, such as those in place in the United States or United Kingdom in the middle of the twentieth century, are desirable.

To tell these two scenarios apart, we need to analyze to what extent top tax rate cuts lead to higher economic growth. This is a difficult empirical problem as it is challenging to trace the causal effects of top tax rates on economic growth. Let us mention two simple facts discussed in detail in (*31*). First, there is no correlation between cuts in top tax rates and average annual real GDP-per-capita growth since the 1960s. For example, countries that made large cuts in top tax rates such as the United Kingdom or the United States have not grown significantly faster than countries that did not, such as Germany. Second, in the United States, the path of growth of bottom 99% and top 1% incomes has been very different. When top tax rates were high from 1933 to 1980, bottom 99% incomes grew fast while top 1% incomes grew slowly. In contrast, after 1980, when top tax rates were low, bottom 99% incomes grew slowly while top 1% incomes grew fast. These two facts are consistent with the 'rent-seeking' scenario where a substantial fraction of the response of pre-tax top incomes to top tax rates may be due to increased rent-seeking effort at the top rather than increased productive effort.

Capital income and wealth inequality. In this main text, we have discussed the dynamics of wealth accumulation and concentration. When the rate of return to capital r is larger than the growth rate of the economy g, we expect wealth to become highly concentrated and inheritance to play a large role in wealth accumulation. Naturally, capital taxation, in the form of taxation of capital income through the income tax, or taxation of inheritances through the estate tax, mechanically reduces the net rate of return to capital that wealth holders obtain after tax. Indeed, a major factor in the drop of r in the twentieth century documented in Figure 4 is due to the development of capital taxation through corporate profits taxation, progressive income taxation, and inheritance taxation. Figure S1 showed the evolution of top income tax rates that also used to apply to capital income. Figure S2 shows that top inheritance tax rates have evolved in a similar way in the United States, United Kingdom, France, and Germany (*32*). Top inheritance tax rates were particularly high in the United States and the United Kingdom from the late 1930s to the 1980s (and much higher than in France or Germany) but have declined substantially afterwards. The tax rate on capital has also declined due to the development of lower preferred income tax rates on capital income, as well as tax competition across countries to attract corporate profits of multinational companies through lower corporate tax rates (*24*).

The lowering of capital tax rates combined with the lowering of the economy growth rate g widens the gap r-g and could lead to high wealth concentration and the return to patrimonial capital in the future (*24*). Naturally, it is possible that democratic societies will resist such an evolution by drastically changing policy. In our view, the most powerful policy to curb wealth concentration would be a properly calibrated progressive tax on individual net worth, based upon automatic exchange of bank information at the global level (or at least at the Europe-US level). It would also produce financial transparency and statistical information on wealth that could be used by economists to accurately measure wealth inequality.

In sum, this discussion on the role of taxation shows that policy plays a major factor in the distribution of income and wealth. Many other aspects of policy can affect inequality: the minimum wage, government policy towards Unions, economic regulation such as financial regulations, etc. In democracies, policies reflect society's view. Therefore, the ultimate driver of inequality and policy might well be social norms regarding fairness of the distribution of income and wealth.
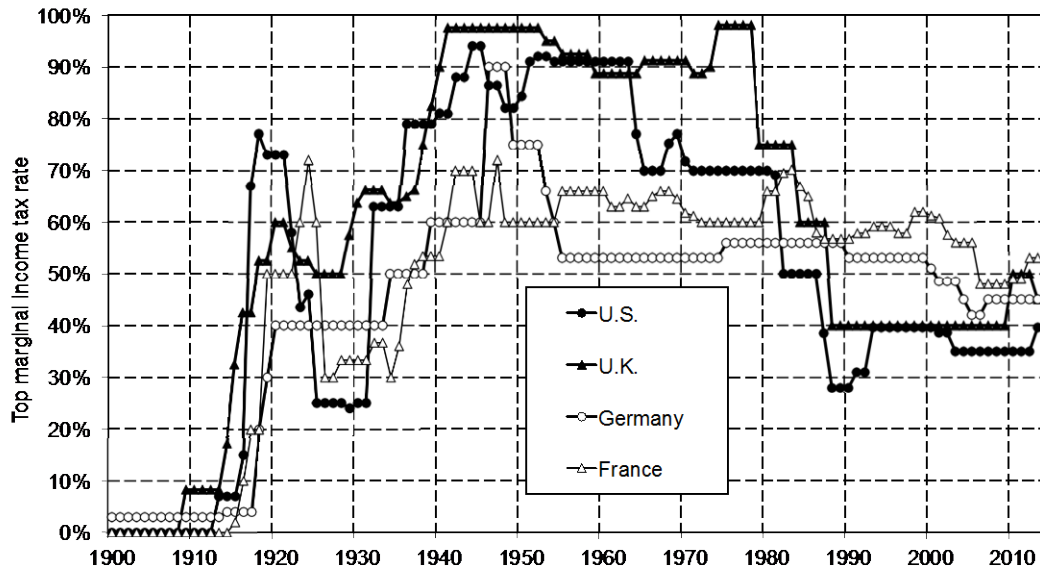
Figure S1. Top income tax rates, 1900-2013.
The top marginal tax rate of the income tax (applying to the highest incomes) has been higher historically in English speaking countries than in Continental Europe before the 1980s and lower afterwards. In the United States, it dropped from 70% in 1980 to 28% in 1988. The series constructed using country tax laws. See (*24*), chapter 14, figure 14.1. Series available on-line at piketty.pse.ens.fr/capital21c.
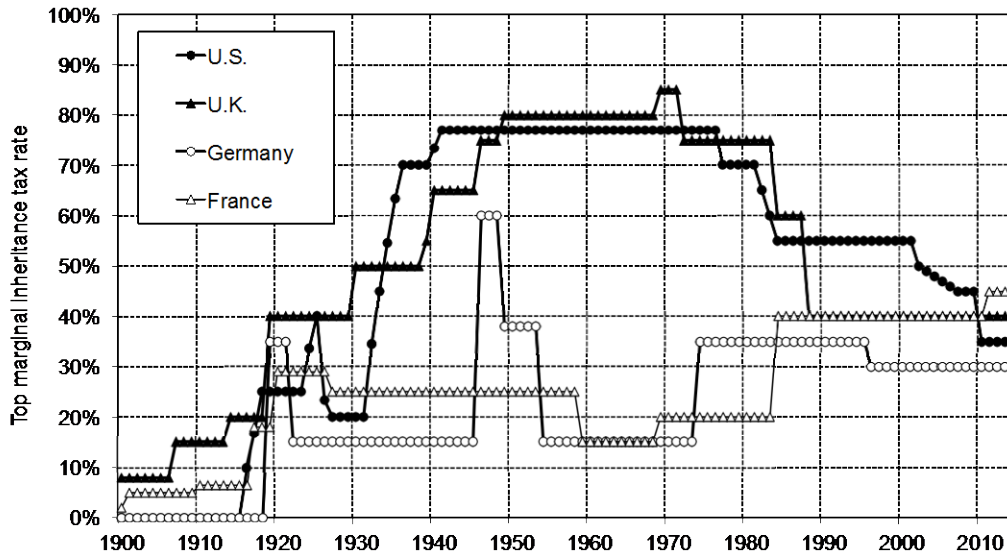
Figure S2. Top inheritance tax rates, 1900-2013.
The top marginal tax rate of the inheritance tax (applying to the highest inheritances) has been higher historically in English speaking countries than in Continental Europe. In the United States, it dropped from 70% in 1980 to 35% in 2012. Series constructed using country tax laws. See (*24*), chapter 14, figure 14.2. Series available on-line at piketty.pse.ens.fr/capital21c.

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