

# Property, Inequality, and Taxation: Reflections on *Capital in the Twenty-First Century*

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## I. INTRODUCTION

In my view, *Capital in the Twenty-First Century*<sup>1</sup> is primarily a book about the history of the distribution of income and wealth, and about the violent political and economic conflicts created by inequality. Thanks to the cumulative efforts of several dozen scholars, we have been able to collect a relatively large historical database on the structure of national income and national wealth and the evolution of income and wealth distributions, covering three centuries and over twenty countries. My first objective in this book is to present this body of historical evidence, and to try to analyze the many economic, social, and political processes that can account for the various evolutions that we observe in the different countries since the Industrial Revolution. I stress from the beginning that we have too little historical data at our disposal to be able to draw definitive judgments.<sup>2</sup> On the other hand, at least we have substantially more evidence than we used to. Imperfect as it is, I hope this work can contribute to put the study of distribution and of the long run back at the center of economic thinking. In this Essay, I present three key facts about inequality in the long run emerging from this research<sup>3</sup> and I seek to sharpen the discussion about those trends. In particular, I clarify the role played by  $r > g$  in my analysis of wealth inequality. I then discuss some of the implications for optimal taxation, the relation between wealth, welfare, and power, the changing role of inheritance, and the multidimensionality of capital.

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<sup>1</sup> Thomas Piketty, *Capital in the Twenty-First Century* (Arthur Goldhammer trans., Harvard Univ. Press 2014).

<sup>2</sup> Id. at 1.

<sup>3</sup> See Figures 1-3 below; Thomas Piketty & Emmanuel Saez, *Inequality in the Long Run*, 344 *Sci.* 838 (2014).

## II. INEQUALITY AND INSTITUTIONAL CHANGE

One central reason why my book is relatively long is because the history of the distribution of income and wealth is complicated. The dynamics of inequality involve many different economic, social, political, and cultural processes, several of which are often operating at the same time within a given country. In my analysis, the size of the gap between  $r$  and  $g$ , where  $r$  is the rate of return on capital and  $g$  the economy's growth rate, is one of the important forces that can account for the historical magnitude and variations in wealth inequality. In particular, it can contribute to explain why wealth inequality was so extreme and persistent in pretty much every society up until World War I.<sup>4</sup>

That said, the way in which I perceive the relationship between  $r > g$  and inequality is often not well captured in the discussion that has surrounded my book. For example, I do not view  $r > g$  as the only or even the primary tool for considering changes in income and wealth in the twentieth century, or for forecasting the path of inequality in the twenty-first century. Institutional changes and political shocks—which to a large extent can be viewed as endogenous to the inequality and development process itself—played a major role in the past, and it will probably be the same in the future.

Indeed, the main conclusion of my analytical historical narrative is stated in the introduction of the book:

[O]ne should be wary of any economic determinism in regard to inequalities of wealth and income. The history of the distribution of wealth has always been deeply political, and it cannot be reduced to purely economic mechanisms. . . . [It] is shaped by the way economic, social, and political actors view what is just and what is not, as well as by the relative power of those actors and the collective choices that result. It is the joint product of all relevant actors combined. . . . How this history plays out depends on how societies view inequalities and what kinds of policies and institutions they adopt to measure and transform them.”<sup>5</sup>

As I wrote in a follow-up essay with a co-author: “In a sense, both Marx and Kuznets were wrong. There are powerful forces pushing alternately in the direction of rising or shrinking inequality. Which

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<sup>4</sup> Piketty, note 1, ch. 10.

<sup>5</sup> Id. at 20, 35.

one dominates depends on the institutions and policies that societies choose to adopt.”<sup>6</sup>

This also explains why I attempt to study not only the dynamics of income and wealth inequality, but also the evolution of collective representations of social inequality in public discussions and political debates, as well as in the literature and in movies. I believe that the analysis of representations and beliefs systems about income and wealth is an integral and indispensable part of the study of income and wealth dynamics, because these representations ultimately determine the extent of institutional change and the dynamics of inequality. Each country has its own intimate history with inequality, and I attempt to show that national identities play an important role in the two-way interaction between inequality dynamics and the evolution of perceptions, institutions, and policies.

In addition, from a purely economic standpoint, I certainly do not believe that  $r > g$  is a useful tool for the discussion of rising inequality of labor income: Other mechanisms and policies are much more relevant here, for example, supply and demand of skills and education. For instance, I point out in my book that the rise of top income shares in the United States over the 1980-2010 period is due for the most part to rising inequality of labor earnings,<sup>7</sup> which can itself be explained by a mixture of three groups of factors: rising inequality in access to skills and to higher education over this time period in the United States, an evolution that might have been exacerbated by rising tuition fees and insufficient public investment; and exploding top managerial compensation, itself probably stimulated by changing incentives and norms, and by large cuts in top tax rates;<sup>8</sup> changing labor market rules and bargaining power, in particular due to declining unions and a falling minimum wage in the United States.<sup>9</sup>

In any case, this rise in labor income inequality in recent decades has evidently little to do with  $r - g$  and it is clearly a very important historical development. Indeed it explains why total income inequality is now substantially higher in the United States than in Europe, while the opposite was true until World War I.

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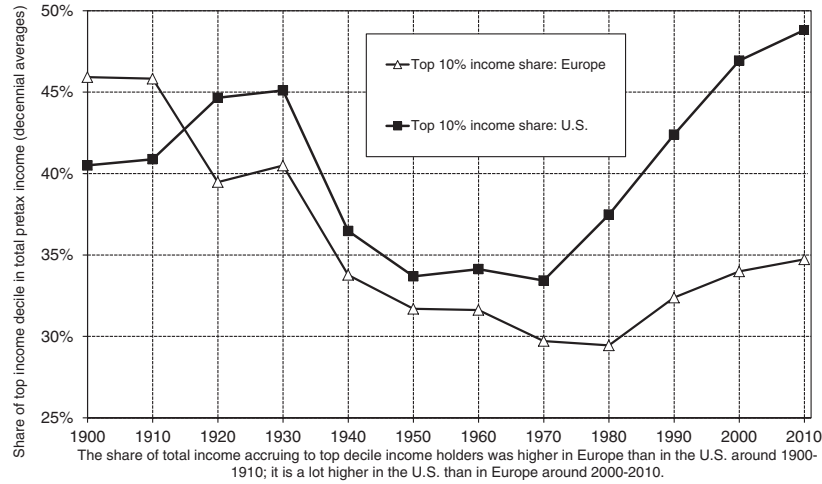
<sup>6</sup> Piketty & Saez, note 3, at 842-43.

<sup>7</sup> Piketty, note 1, at 298-99.

<sup>8</sup> Piketty, note 1, ch. 14; Thomas Piketty, Emmanuel Saez & Stefanie Stantcheva, Optimal Taxation of Top Labor Incomes: A Tale of Three Elasticities, 6 Am. Econ. J.: Econ Pol’y, no. 1, Feb. 2014, at 230, 245-48.

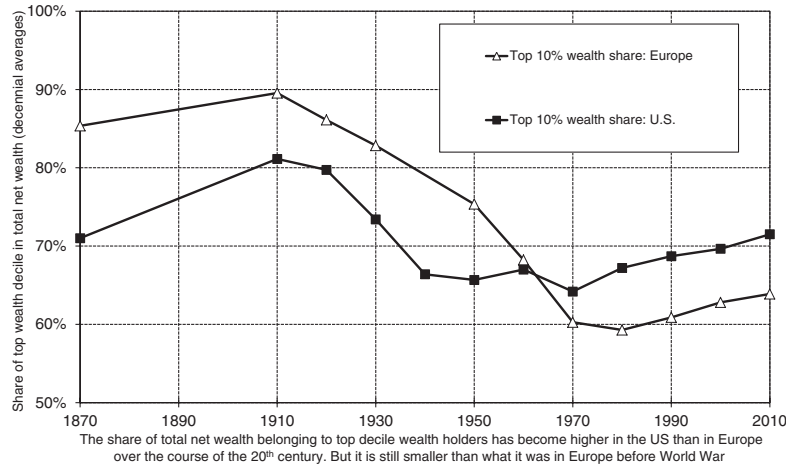
<sup>9</sup> Piketty, note 1, at 309 fig.9.1.

**FIGURE 1**  
**INCOME INEQUALITY: EUROPE AND THE U.S., 1900-2010<sup>10</sup>**



At that time, high inequality was mostly due to extreme concentration of capital ownership and capital income. Wealth inequality is currently much less extreme than a century ago, in spite of the fact that the total capitalization of private wealth relative to national income has now recovered from the 1914-1945 shock.

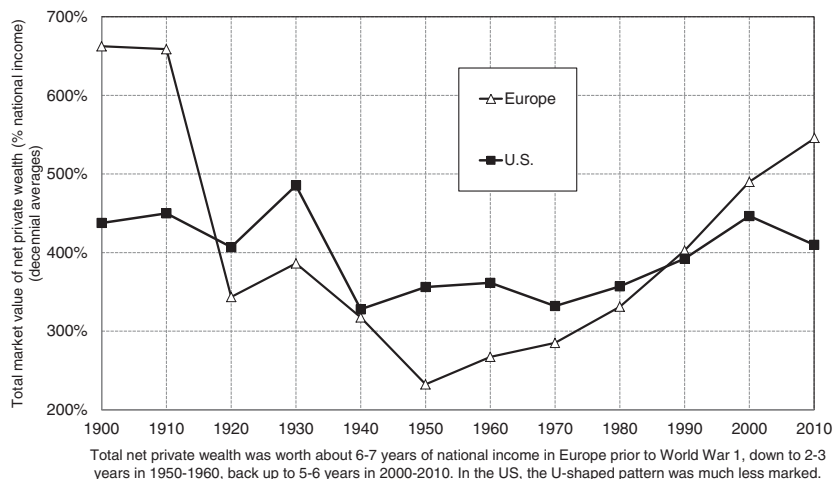
**FIGURE 2**  
**WEALTH INEQUALITY: EUROPE AND THE U.S., 1870-2010<sup>11</sup>**



<sup>10</sup> For sources and series, see Piketty.pse.ens.fr/capital21c (fig. 9.8).

<sup>11</sup> For sources and series, see Piketty.pse.

FIGURE 3  
WEALTH-INCOME RATIOS: EUROPE AND THE U.S. 1900-2010<sup>12</sup>



One central question for the future is to better understand the conditions under which the concentration of property might return to pre-1914 levels.

### III. $R > G$ AND THE AMPLIFICATION OF WEALTH INEQUALITY

I now clarify the role played by  $r > g$  in my analysis of the long-run level of wealth inequality. Specifically, a higher  $r - g$  gap will tend to greatly amplify the steady-state inequality of a wealth distribution that arises out of a given mixture of shocks (including labor income shocks).

Let me first say very clearly that  $r > g$  is certainly not a problem in itself. Indeed, the inequality  $r > g$  holds true in the steady-state equilibrium of the most common economic models, including representative-agent models where each individual owns an equal share of the capital stock. For instance, in the standard dynastic model where each individual behaves as an infinitely lived family, the steady-state rate of return is well known to be given by the modified “golden rule”  $r = \theta + \gamma g$  (where  $\theta$  is the rate of time preference and  $\gamma$  is the curvature of the utility function). For example if  $\theta = 3\%$ ,  $\gamma = 2$ , and  $g = 1\%$ , then  $r = 5\%$ . In this framework, the inequality  $r > g$  always holds true, and does not entail any implication about wealth inequality.<sup>13</sup>

<sup>12</sup> Id.

<sup>13</sup> Intuitively, in a model where everyone maximizes an infinite-horizon utility function  $U = \int_0^{\infty} e^{-\theta t} u(c_t) dt$  (with  $u(c) = c^{1-\gamma}/(1-\gamma)$ ), then  $r = \theta + \gamma g$  is the unique rate of return to capital possible in the long run for the following reason: It is the sole rate such that the agents are willing to raise their consumption at rate  $g$ , that is at the growth rate of the

In a representative-agent framework, what  $r > g$  means is simply that in steady-state each family only needs to reinvest a fraction  $g/r$  of its capital income in order to ensure that its capital stock will grow at the same rate  $g$  as the size of the economy, and the family can then consume a fraction  $1 - g/r$ . For example, if  $r = 5\%$  and  $g = 1\%$ , then each family will reinvest 20% of its capital income and can consume 80%. This tells us nothing at all about inequality. This is simply saying that capital ownership allows one to reach higher consumption levels—which is really the very least one can ask from capital ownership.

Indeed,  $r > g$  corresponds to a standard “dynamic efficiency” condition in standard economic models. In contrast, the inequality  $r < g$  would correspond to a situation that economists often refer to as “dynamic inefficiency”: In effect, one would need to invest more than the return to capital in order to ensure that one’s capital stock keeps rising as fast as the size of the economy. This would correspond to a situation of excessive capital accumulation from a social and economic efficiency standpoint.<sup>14</sup>

So what is the relationship between  $r - g$  and wealth inequality? To answer this question, one needs to introduce extra ingredients into the basic model, so that inequality arises in the first place.<sup>15</sup> In the real world, many shocks to the wealth trajectories of families can contribute to making the wealth distribution highly unequal (indeed, in every country and time period for which we have data, wealth distribution within each age group is substantially more unequal than income distribution, which is difficult to explain with standard life-cycle models of wealth accumulation). There are demographic shocks: Some families have many children and have to split inheritances in many pieces, some have few; some parents die late, some die soon, and so on. There are also shocks to rates of return: Some families make good

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economy. If the return is higher, the agents prefer to postpone their consumption and accumulate more capital, which will decrease the rate of return; and if it is lower, they want to anticipate their consumption and borrow more, which will increase the rate of return.

<sup>14</sup> As is well known,  $r > g$  cannot happen in infinite-horizon models with no shock and perfect capital markets. This is because  $r > g$  would violate the transversality condition: The net present value of future resources would be infinite, so that rational agents would borrow infinite amounts in order to consume right away, until  $r$  rises above  $g$ . In models with other saving motives, however, such as finite-horizon overlapping generation models, it is possible to have  $r > g$  and excessive capital accumulation.

<sup>15</sup> In the dynastic model with no shock, there is no force generating inequality out of equality (or equality out of inequality), so any initial level of wealth inequality (including full equality) can be self-sustaining, as long as the modified golden rule is satisfied. Note, however, that the magnitude of the gap  $r - g$  has an impact on the steady-state inequality of consumption and welfare: If  $r - g$  is small, then high-wealth dynasties need to reinvest a large fraction of their capital income, so that they do not consume much more than low-wealth dynasties.

investments, others go bankrupt. There are shocks to labor market outcomes: Some earn high wages, others do not. There are differences in taste parameters that affect the level of saving: Some families consume more than a fraction  $1 - g/r$  of their capital income, and might even consume the full capital value; others might reinvest more than a fraction  $g/r$  and have a strong taste for leaving bequests and perpetuating large fortunes.

A central property of this large class of models is that for a given structure of shocks, the long-run magnitude of wealth inequality will tend to be magnified if the gap  $r - g$  is higher. In other words, wealth inequality will converge towards a finite level. The shocks will ensure that there is always some degree of downward and upward wealth mobility, so that wealth inequality remains bounded in the long run. But this finite inequality level will be a steeply rising function of the gap  $r - g$ . Intuitively, a higher gap between  $r$  and  $g$  works as an amplifier mechanism for wealth inequality, for a given variance of other shocks. To put it differently: A higher gap between  $r$  and  $g$  allows one to sustain a level of wealth inequality that is higher and more persistent over time (that is, a higher gap  $r - g$  leads both to higher inequality and lower mobility). Technically, one can indeed show that if shocks take a multiplicative form, then the inequality of wealth converges toward a distribution that has a Pareto shape for top wealth holders (which is approximately the form that we observe in real world distributions, and which corresponds to relatively fat upper tails and large concentration of wealth at the very top), and that the inverted Pareto coefficient (an indicator of top end inequality) is a steeply rising function of the gap  $r - g$ . The logic behind this well-known theoretical result (which was established by many authors using various structures of demographic and economic shocks) and this “inequality amplification” impact of  $r - g$  is presented in Chapter 10 of my book.<sup>16</sup>

The important point is that in this class of models, relatively small changes in  $r - g$  can generate large changes in steady-state wealth inequality. For example, simple simulations of the model with binomial taste shocks show that going from  $r - g = 2\%$  to  $r - g = 3\%$  is sufficient to move the inverted Pareto coefficient from  $b = 2.28$  to  $b = 3.25$ . Taken literally, this corresponds to a shift from an economy with moderate wealth inequality—say, with a top 1% wealth share around 20% to 30%, such as present-day Europe or the United States—to an econ-

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<sup>16</sup> Piketty, note 1, ch. 10. For references to this literature on dynamic wealth accumulation models with random shocks, see the on-line appendix to chapter 10 available at [piketty.pse.ens.fr/capital21c](http://piketty.pse.ens.fr/capital21c). See also Thomas Piketty & Gabriel Zucman, *Wealth and Inheritance in the Long Run*, in *2 Handbook of Income Distribution* 1303, 1352-54 (Anthony B. Atkinson & Francois Bourguignon eds., 2015).

omy with very high wealth inequality with a top 1% wealth share around 50% to 60%, such as pre-World War 1 Europe.<sup>17</sup>

Available micro-level evidence on wealth dynamics confirms that the high gap between  $r$  and  $g$  is one of the central reasons why wealth concentration was so high during the eighteenth and nineteenth centuries and up until World War I.<sup>18</sup> During the twentieth century, it is a very unusual combination events that transformed the relation between  $r$  and  $g$  (large capital shocks during the 1914-1945 period, including destruction, nationalization, inflation; high growth during reconstruction period and demographic transition). In the future, several forces might push toward a higher  $r - g$  gap (particularly the slowdown of population growth, and rising global competition to attract capital) and higher wealth inequality. But ultimately which forces prevail is relatively uncertain. In particular, this depends on the institutions and policies that will be adopted.

#### IV. ON THE OPTIMAL PROGRESSIVE TAXATION OF INCOME, WEALTH AND CONSUMPTION

I now move to the issue of optimal taxation. The theory of capital taxation that I present in *Capital in the Twenty-First century* is largely based upon joint work with Emmanuel Saez.<sup>19</sup> In a 2013 paper, we develop a model where inequality is fundamentally two-dimensional: Individuals differ both in their labor earning potential and in their inherited wealth.<sup>20</sup> Because of the underlying structure of demographic, productivity, and taste shocks, these two dimensions are never perfectly correlated. As a consequence, the optimal tax policy is also two-dimensional: It involves a progressive tax on labor income and a progressive tax on inherited wealth.<sup>21</sup> Specifically, we show that the long-run optimal tax rates on labor income and inheritance de-

<sup>17</sup> In the special case with binomial saving taste shocks with probability  $p$ , one can easily show that the inverted Pareto coefficient is given by  $b = \log(1/p)/\log(1/\omega)$ , with  $\omega = s e^{(r-g)H}$  ( $s$  is the average saving taste,  $r$  and  $g$  are the annual rate of return and growth rate, and  $H$  is generation length). See Piketty & Zucman, note 16, at 1355-56, for simple calibrations. Anthony Atkinson, Thomas Piketty & Emmanuel Saez, Top Incomes in the Long Run of History, 49 J. Econ. Literature 3, 49-50, 53-55 figs.12-15 (2011), provides evidence on the long-run evolution of Pareto coefficients.

<sup>18</sup> Piketty, note 1, ch. 10; Thomas Piketty, Gilles Postel-Vinay & Jean-Laurent Rosenthal, Inherited vs Self-Made Wealth: Theory & Evidence from a Rentier Society (Paris 1872-1927), 51 Explorations Econ. Hist. 21, 22 (2014) [hereinafter Rentier Society]; Thomas Piketty, Gilles Postel-Vinay & Jean-Laurent Rosenthal, Wealth Concentration in a Developing Economy: Paris and France, 1807-1994, 96 Am. Econ. Rev. 236, 239 (2006).

<sup>19</sup> Thomas Piketty & Emmanuel Saez, A Theory of Optimal Inheritance Taxation, 81 Econometrica 1851 (2013).

<sup>20</sup> Id. at 1864-66.

<sup>21</sup> Id. at 1853.



pend on the distributional parameters, the social welfare function, and the elasticities of labor earnings and capital bequests with respect to tax rates.<sup>22</sup> The optimal tax rate on inheritance is always positive, except of course in the extreme case with an infinite elasticity of capital accumulation with respect to the net-of-tax rate of return (as posited implicitly in the benchmark dynastic model with infinite horizon and no shock).<sup>23</sup> For realistic empirical values, we find that the optimal inheritance tax rate might be as high as 50% to 60%, or even higher for top bequests, in line with historical experience.<sup>24</sup>

In effect, what we do in this work is to extend the sufficient statistics approach to the study of capital taxation. The general idea behind this approach is to express the optimal tax formulas in terms of estimable “sufficient statistics” including behavioral elasticities, distributional parameters, and social preferences for redistribution.<sup>25</sup> Those formulas are aimed to be robust to the underlying primitives of the model and capture the key equity-efficiency trade-off in a transparent way. This approach has been fruitfully used in the analysis of optimal labor income taxation.<sup>26</sup> We follow a similar route and show that the equity-efficiency trade-off logic also applies to the taxation of inheritance. This approach successfully brings together many of the existing scattered results from the literature.

Next, if we introduce capital market imperfections into our basic inheritance tax model, then we find that one needs to supplement inheritance taxes with annual taxation of wealth and capital income.<sup>27</sup> Intuitively, in the presence of idiosyncratic shocks to future rates of return, it is impossible to know the lifetime capitalized value of an asset at the time of inheritance, and it is optimal to split the tax burden between these different tax instruments. For instance, assume I received from my family an apartment in Paris worth 100,000\_ back in 1975. In order to compute the optimal inheritance tax rate, one would need to know the lifetime capitalized value of this asset. But of course, in 1975, nobody could have guessed that this asset would be worth millions of euros in 2015, or the annual income flows generated by this asset between 1975 and 2015. In such a model, one can show that it is

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<sup>22</sup> Id. at 1854-57.

<sup>23</sup> Id. at 1872.

<sup>24</sup> See id. at 1875 fig.1, 1878 fig.2, 1874 tbl.1. Note that the optimal inheritance tax rate can also be expressed as an increasing function of the gap  $r - g$ .

<sup>25</sup> See, e.g., Raj Chetty, Sufficient Statistics for Welfare Analysis: A Bridge Between Structural and Reduced-Form Methods, *Ann. Rev. Econ.*, Sept. 2009, at 451.

<sup>26</sup> For a recent survey, see Thomas Piketty & Emmanuel Saez, Optimal Labor Income Taxation, in 5 *Handbook of Public Economics* 391 (Alan J. Auerbach, Raj Chetty, Martin Feldstein & Emmanuel Saez eds., 2013).

<sup>27</sup> See Piketty & Saez, note 19, at 1880.

optimal to use a combination of inheritance taxation and annual taxation of property values and capital income flows.<sup>28</sup>

One difficulty is that optimal tax formulas soon become relatively complicated and difficult to calibrate. In particular, the optimal split between annual taxes on wealth stock and annual taxes on capital income flows depends on the elasticity of rates of return with respect to taxation (that is, the extent to which observed rates of return are sensitive to individual effort and portfolio decisions, as opposed to idiosyncratic, uninsurable shocks). Naturally, intertemporal substitution elasticities also play a role, as is rightly argued by Joseph Bankman and Daniel Shaviro.<sup>29</sup> Note that as long as such behavioral elasticities are not too large, the impact on socially optimal tax rates will not dramatically alter our general conclusion (namely, given the observed magnitude of wealth concentration, capital tax rates should be relatively high, especially on high wealth holders, so as to alleviate the tax burden falling on labor income.<sup>30</sup> However these various elasticities are important in order to determine the optimal tax mix. Substantial additional research is necessary before we can provide a realistic, complete calibration of the optimal capital tax system (which involves a mixture of progressive taxes on inheritance, annual wealth holdings, and annual capital income flows).

In my book, I propose a simple rule-of-thumb to think about optimal wealth tax rates. Namely, one should adapt the tax rates to the observed speed at which the different wealth groups are rising over time.<sup>31</sup> For instance, if top wealth holders are rising at 6% to 7% per year in real terms (as compared to 1% to 2% per year for average wealth), as suggested by Forbes-type wealth rankings<sup>32</sup> (as well as by recent research by Emmanuel Saez and Gabriel Zucman<sup>33</sup>), which in my view represent the best estimates that we have so far, and if one aims to stabilize the level of wealth concentration, then one might need to apply top wealth tax rates as large as 5% per year, and possibly higher.<sup>34</sup> Needless to say, the implications would be very different

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<sup>28</sup> See *id.*

<sup>29</sup> Joseph Bankman & Daniel Shaviro, *Piketty in America: A Tale of Two Literatures*, 68 *Tax L. Rev.* 453, 463 (2015).

<sup>30</sup> Piketty & Saez, note 19, at 1878-79.

<sup>31</sup> Piketty, note 1, at 529; see also *id.* at 433 *tbl.12.1*, 434 *tbl.12.2*.

<sup>32</sup> See, e.g., *The World's Billionaires*, <http://www.forbes.com/billionaires/> (last visited June 3, 2015).

<sup>33</sup> Emmanuel Saez & Gabriel Zucman, *Wealth Inequality in the United States Since 1913: Evidence from Capitalized Income Tax Data 37-38* (Nat'l Bureau Econ. Research, Working Paper No. 20265, 2014), available at <http://www.nber.org/papers/w20625>.

<sup>34</sup> See Piketty, note 1 at 530; see also *id.* at 433 *tbl. 12.1*, 434 *tbl.12.2*. I agree with Wojciech Kopczuk that there is considerable uncertainty about the measurement of recent trends in wealth inequality. See Wojciech Kopczuk, *Recent Evolution of Income and Wealth Inequality: Comments on Piketty's Capital in the Twenty-First Century*, 68 *Tax L.*

if top wealth holders were rising at the same speed as average wealth. One of the main conclusions of my research is indeed that there is substantial uncertainty about how far income and wealth inequality might rise in the twenty-first century, and that we need more financial transparency and better information about income and wealth dynamics, so that we can adapt our policies and institutions to a changing environment. This might require better international fiscal coordination, which is difficult but by no means impossible.<sup>35</sup>

An alternative to progressive taxation of inheritance and wealth is the progressive consumption tax<sup>36</sup> This is a highly imperfect substitute, however. First, meritocratic values imply that one might want to tax inherited wealth more than self-made wealth, which is impossible to do with a consumption tax alone. Next, the very notion of consumption is not very well defined for top wealth holders: Personal consumption in the form of food or clothes is bound to be a tiny fraction for those with large fortunes, who usually spend most of their resources in order to purchase influence, prestige, and power. When the Koch brothers spend money on political campaigns, should this be counted as part of their consumption? When billionaires use their corporate jets, should this be included in consumption? A progressive tax on net wealth seems more desirable than a progressive consumption tax, first because net wealth is easier to define, measure, and monitor than consumption, and next because it is a better indicator of the ability of wealthy taxpayers to pay taxes and to contribute to the common good.<sup>37</sup>

## V. WEALTH, WELFARE, AND POWER

It should also be noted that the computations about optimal tax rates that I derive in my work with Saez take a relatively narrow welfarist approach, and fail to integrate explicitly into the analysis the power dimension of property relations. That is, in our optimal tax computations,<sup>38</sup> we attempt to solve for the optimal tax rates on labor

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Rev. 545, 553 (2015). However, the 2014 Saez and Zucman estimates based upon the income capitalization method, strike me as more comprehensive and plausible than older estimates. See Saez & Zucman, note 33. In particular, they are consistent with the large rise in top billionaire wealth recorded in Forbes-type wealth rankings (unlike the estimates based on the estate multiplier method).

<sup>35</sup> Gabriel Zucman, *Taxing Across Borders: Tracking Personal Wealth and Corporate Profits*, J. Econ. Persp., Fall 2014, at 121, 136-37.

<sup>36</sup> See Bill Gates, *Why Inequality Matters*, Gates Notes, (Oct. 13, 2014), <http://www.gatesnotes.com/Books/Why-Inequality-Matters-Capital-in-21st-Century-Review>; see also Bankman & Shaviro, note 29, at 472.

<sup>37</sup> Piketty, note 1, ch. 15.

<sup>38</sup> Piketty & Saez, note 19.

income and inherited wealth (and/or capital income flows and annual wealth holdings) maximizing the lifetime economic welfare of the social groups receiving little inherited wealth, that is, their lifetime after-tax monetary resources. In practice, because the bottom half (or even the bottom two-thirds) in society receives little inheritance, the optimal tax rates appear to be almost the same for a very large social group— assuming that everybody has the same perceptions about wealth mobility, which is clearly not the case, thereby implying that beliefs and ideology necessarily play a large role in public discussions about such tax rates.

A more comprehensive approach to wealth inequality and taxation should take into account the implications of inequality not only for the distribution of welfare (as approximated by the distribution of after-tax monetary resources), but also for the distribution of power and capabilities in the broadest possible sense. In particular, extreme wealth inequality can potentially have negative implications on political voice and influence and on the functioning of democratic institutions. This is discussed in my book,<sup>39</sup> as well as the article by Suzanne Mettler,<sup>40</sup> but of course I am unable to quantify the impact for optimal tax rates and other policies. In his article, Liam Murphy argues that we should distinguish between inequality of social status and inequality of monetary resources, and that we should be concerned mostly with the former, and not so much with the latter.<sup>41</sup> I agree that these distinctions are important, but it seems to me that the frontier is not entirely clear. That is, extreme inequalities in monetary resources always tend to generate inequalities in basic social and political capabilities and status.

Needless to say, the power dimension of wealth inequality also implies that extreme inequality can be self-reinforcing, because of the political power and influence of the wealthy.<sup>42</sup> In their article, Bankman and Shaviro also point out that there are sometimes constitutional limitations to the adoption of progressive taxation. For instance, the U.S. constitution makes it impossible to have a federal wealth tax: the property tax is a local tax (it can be levied at the city level or state level, but not at the federal level), and it relies only on real estate property (not financial assets and liabilities).<sup>43</sup> I should

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<sup>39</sup> Piketty, note 1.

<sup>40</sup> Suzanne Mettler, *From Pioneer Egalitarianism to the Reign of the Super-Rich: How the U.S. Political System Has Promoted Equality and Inequality over Time*, 68 *Tax L. Rev.* 563 (2015).

<sup>41</sup> Liam Murphy, *Why Does Inequality Matter?: Reflections on the Political Morality of Piketty's Capital in the Twenty-First Century*, 68 *Tax L. Rev.* 613, 615 (2015).

<sup>42</sup> See Mettler, note 40.

<sup>43</sup> See Bankman & Shaviro, note 29, at 489 (referring to U.S. Const. art I, § 9, cl. 4).

stress, however, that this is relatively contingent, and that this probably should not be taken as given. There is extensive historical evidence showing that the fiscal provisions of constitutions can change substantially over time and across countries. In the United States, as well in other developed countries, the property tax was created more than two centuries ago, at a time when real assets (land and real estate in particular) played the dominant role, and financial assets and liabilities were relatively negligible. This probably contributes to an explanation for why the property tax was not instituted as a comprehensive tax on net wealth. Also, note that the U.S. Constitution made it impossible until 1913 to create a federal income tax, and that ultimately it was amended.<sup>44</sup>

#### V. ON THE SHARE OF INHERITED WEALTH

Generally speaking, there is too little transparency about wealth inequality, which makes it very difficult to settle a number of empirical issues regarding wealth dynamics, and tends to exacerbate political conflict. For instance, there is wide disagreement about the relative importance of inherited versus self-made wealth. In some countries, for example, in France, historical data sources on inheritance are relatively abundant, which allows us to make some progress. Recent research has shown that the share of inheritance in aggregate wealth accumulation in France has changed a lot over the past century. It was very high in the nineteenth century and up until World War I (around 80%-90%), then declined to as little as 30%-40% in the 1950's-1970's, and finally returned to higher levels during the past three decades, and is back up to about 60%-70% in the 2000's-2010's.<sup>45</sup> Ongoing work on Britain, Germany, and Sweden suggests that we observe a similar U-shaped pattern in other European countries, albeit possibly with varying magnitudes.<sup>46</sup>

In the case of the United States, it is unfortunately difficult to come up with precise estimates, in particular because available inheritance tax data is very limited (only a very small fraction of decedents is subject to federal estate tax and enters the statistics). Because of the higher population growth and migration flows, it is likely that the inheritance share in aggregate wealth accumulation was historically smaller in the United States than in Europe, and this could still be relevant today. On the other hand, higher inequality of income and

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<sup>44</sup> U.S. Const. amend. XVI.

<sup>45</sup> Piketty, note 1, ch. 11; Thomas Piketty, *On the Long-Run Evolution of Inheritance: France 1820-2050*, 126 *Q.J. Econ.* 1071 (2011) (discussing annual inheritance flow); Piketty et al., *Rentier Society*, note 18, at 22.

<sup>46</sup> Piketty & Zucman, note 16.

wealth in the United States could potentially make inheritance more important than in Europe.

In his article, Kopczuk presents interesting data on Forbes wealth rankings suggesting that the share of inheritance might have declined in the United States in recent decades.<sup>47</sup> However this might apply only to the very top, and not necessarily at the aggregate level. Also one should stress that this Forbes-type data might well tend to underestimate the share of inheritance, simply because self-made wealth is easier to spot.<sup>48</sup> Given the relatively low saving and investment flows in the United States in recent decades, it seems relatively likely that flows of inherited wealth have been higher than flows of new wealth accumulation, at least at the aggregate level.<sup>49</sup>

In their article, Gregory Clark and Neil Cummins present historical estimates on the inheritance share in Britain using data on the transmission of rare surnames used by rich families.<sup>50</sup> This is very interesting historical material. Unfortunately it is difficult to assess how representative this is. According to Clark and Cummins' baseline estimates, the share of inherited wealth in aggregate wealth accumulation in Britain has gone through a U-shaped pattern over the past century: It was about 50%-60% at the beginning of the twentieth century, down to 10%-20% in the 1950's-1960's, back up to 50%-60% around 2000-2010.<sup>51</sup> The pattern seems broadly consistent with the U-shaped pattern that we find using nationally representative data,<sup>52</sup> although the levels estimated by Clark and Cummins appear to be too small. Clark and Cummins also present alternative estimates, according to which the share of inherited wealth in Britain during the 1870-1914 period was between 18% and 48% of aggregate wealth.<sup>53</sup> Such estimates definitely seem too low. In particular, they are very difficult to reconcile with the very high flows of inheritance estimated by Atkinson<sup>54</sup> (and also reported by Clark and Cummins<sup>55</sup>) for this period using nationally representative inheritance data. With an annual flow of inheritance around 20%-25% of national income in Britain in the late

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<sup>47</sup> Kopczuk, note 34, at 551.

<sup>48</sup> Piketty, note 1, at 441-42.

<sup>49</sup> Piketty & Zucman, note 16, at 1333.

<sup>50</sup> Gregory Clark and Neil J. Cummins, *Is Most Wealth Inherited or Created?* England, 1858-2012, 68 *Tax L. Rev.* 517 (2015).

<sup>51</sup> *Id.* at 530 tbl.4.

<sup>52</sup> Piketty & Zucman, note 16, at 1339-40 (using the British inheritance series collected by Atkinson).

<sup>53</sup> Clark & Cummins, note 50, at 541.

<sup>54</sup> A.B. Atkinson, *Wealth and Inheritance in Britain from 1896 to the Present 7* (Ctr. for Analysis of Soc. Exclusion, London Sch. of Econ., Working Paper No. 178, 2013), available at <http://sticerd.lse.ac.uk/dps/case/cp/casepaper178.pdf>.

<sup>55</sup> Clark & Cummins, note 50.

nineteenth and early twentieth centuries,<sup>56</sup> and an annual flow of net-of-depreciation private saving that is generally estimated to be around 10%-15% of national income during this same period,<sup>57</sup> it is difficult to escape the conclusion that the share of inheritance in aggregate wealth accumulation was probably much higher than 50%—especially if one takes into account the fact that the saving flow partly came from the return to previously inherited wealth.<sup>58</sup> One possibility would be that the rare surname data is not nationally representative. This is an issue that would deserve further research in the future.

## VI. THE MULTIDIMENSIONALITY OF CAPITAL

Looking at the evolution of aggregate wealth and the inequality of net wealth (summing up all forms of assets and liabilities) is important, but insufficient. In my book, I also attempt to analyze the diversity of the forms taken by capital assets and the problems raised by property relations and market valorizations throughout history. I study in some length the many transformations in the nature of capital assets, from agricultural land to modern real estate, business, and financial capital. Each type of asset has its own particular economic and political history and gives rise to different bargaining processes, power struggles, economic innovations, and social compromises.

For instance, one of the important findings from my research is that capital-income ratios  $\hat{a} = K/Y$  and capital shares  $\alpha$  tend to move together in the long run, particularly in recent decades, where both have been rising. In the standard one-good model of capital accumulation with perfect competition, the only way to explain why  $\hat{a}$  and  $\alpha$  move together is to assume that the capital-labor elasticity of substitution  $\sigma$  that is somewhat larger than one (which could be interpreted as the rise of robots and other capital-intensive technologies).<sup>59</sup>

Let me make clear however this is not my favored interpretation of the evidence. Maybe robots and high capital-labor substitution will be important in the future. But at this stage, the important capital-intensive sectors are more traditional sectors like real estate and energy. I believe that the right model to think about rising capital-income ratios

<sup>56</sup> Piketty & Zucman, note 16, at 1339 fig.15.2.1.

<sup>57</sup> Thomas Piketty & Gabriel Zucman, *Capital Is Back: Wealth-Income Ratios in Rich Countries 1700-2010*, data appendix 105-24, available at [Piketty.pse.ens.fr/files/PikettyZucman2013Appendix.pdf](http://Piketty.pse.ens.fr/files/PikettyZucman2013Appendix.pdf).

<sup>58</sup> Piketty & Zucman, note 16, at 1333.

<sup>59</sup> With  $Y = F(K,L) = [aK^{(\sigma-1)/\sigma} + (1-a)L^{(\sigma-1)/\sigma}]^{\sigma/(\sigma-1)}$ , the marginal productivity of capital is given by  $r = F_K = a(Y/K)^{1/\sigma} = a\beta^{-1/\sigma}$ , and the capital share is given by  $\alpha = r\beta = a\beta^{(\sigma-1)/\sigma}$ . See Piketty & Zucman, note 46, at 1349-51; Thomas Piketty & Gabriel Zucman, *Capital Is Back: Wealth-Income Ratios in Rich Countries 1700-2010*, 129 Q.J. Econ. 1155, 1271, 1302-06 (2014).

and capital shares in recent decades is a multi-sector model of capital accumulation, with substantial movements in relative prices, and with important variations in bargaining power over time.<sup>60</sup> Large upward or downward movements of real estate prices played an important role in the evolution of aggregate capital values during recent decades, as they did during the first half of the twentieth centuries. This in turn can be accounted for by a complex mixture of institutional and technological forces, including rent control policies and other rules regulating relations between owners and tenants, the transformation of economic geography, and the changing speed of technical progress in the transportation and construction industries relative to other sectors.<sup>61</sup> In practice, intersectoral elasticities of substitution combining supply and demand forces can often be much higher than within-sector elasticities.<sup>62</sup>

More generally, one reason why my book is relatively long is because I try to offer a relatively detailed, multidimensional history of capital and its metamorphosis. Capital ownership takes many different historical forms, and each of them involves different forms of property relations and social conflict, which must be analyzed as such.<sup>63</sup> This multidimensional nature of capital creates substantial additional uncertainties regarding the future evolution of inequality, as illustrated by the examples of housing and oil prices. In my view, this reinforces the need for increased democratic transparency about income and wealth dynamics.

As I look back at my discussion of future policy proposals in the book, I may have devoted too much attention to progressive capital taxation and too little attention to a number of institutional evolutions that could prove equally important, such as asset-specific policies (housing and land-use policies, intellectual property legislation, and so on), and most importantly the development of alternative forms of property arrangements and participatory governance. One central reason why progressive capital taxation is important is because it can also bring increased transparency about company assets and accounts. In turn, increased financial transparency can help to develop new forms of governance; for instance, it can facilitate more worker in-

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<sup>60</sup> Piketty, note 1, chs. 3-6.

<sup>61</sup> See *id.*; Piketty & Zucman, note 16, at 1343.

<sup>62</sup> Loukas Karabarbounis & Brent Neiman, *Capital Depreciation and Labor Shares Around the World: Measurement and Implications*, (Nat'l Bureau of Econ. Research, Working Paper No. 20606, 2014), available at <http://www.nber.org/papers/w20606> (discussing the role played by the declining relative price of equipment).

<sup>63</sup> See, e.g., Piketty, note 1, ch. 4 (analyzing slave capital in nineteenth century United States), ch.5 (analyzing stakeholder German capitalism model, with large gaps between the social and market values of corporations).



volvement in company boards. But these other institutions must also be analyzed as such.

The last chapter of my book concludes:

Without real accounting and financial transparency and sharing of information, there can be no economic democracy. Conversely, without a real right to intervene in corporate decision-making (including seats for workers on the company's board of directors), transparency is of little use. Information must support democratic institutions; it is not an end in itself. If democracy is someday to regain control of capitalism, it must start by recognizing that the concrete institutions in which democracy and capitalism are embodied need to be reinvented again and again.<sup>64</sup>

I do not push this line of investigation much further, which is certainly one of the major shortcomings of my work. Together with the fact that we still have too little data on historical and current patterns of income and wealth, these are some of the key reasons why my book is at best an introduction to the study of capital in the twenty-first century.

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<sup>64</sup> Piketty, note 1, at 570.