What Drove the Downswing of the First Kuznets Wave?

The first Kuznets wave in technologically advanced societies (that is, countries with rising mean incomes) lasted from the beginning of the Industrial Revolution to approximately the 1980s. This long period of some 150 years involved, as we have seen, an increase in inequality, peaking variously between the late nineteenth century and the early twentieth, and then decreasing more or less continuously during the next seventy or eighty years. Thus the upward and the downward portion seemed to have lasted approximately the same amount of time.

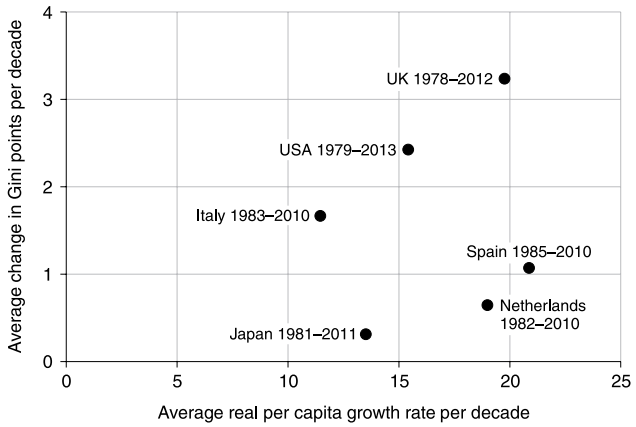

FIGURE 2.20. Relationship between change in inequality and growth during the upward portion of the second Kuznets wave

This graph shows the average per capita GDP growth rate per decade during the period of the recent upswing in inequality (starting around 1980) on the horizontal axis, and on the vertical axis, the average increase in Gini points per decade during the same period. All countries experienced increases in inequality, and those with the greatest amount of increase (the UK, USA, and Italy) registered greater increases in Gini points per unit of growth. Data sources: See sources for Figures 2.10–2.13, 2.15, and 2.18.

It is the subsequent upward swing in inequality in rich countries, which started around 1980, that is difficult to reconcile with Kuznets's original hypothesis that inequality would decline and stay at that lower level after income became sufficiently high. It is for this reason that I think that it is more appropriate to speak of Kuznets cycles, or waves, and to view the current upward swing in advanced countries as the beginning of the second

Kuznets wave. Like the first wave, it is the product of technological innovation and change, of the substitution of labor by capital (the "second machine age"), and the transfer of labor from one sector to another. In the first Kuznets wave, the transfer was from agriculture (and thus rural areas) to manufacturing (and thus urban areas); in the second, it is from manufacturing to services. As discussed before, this second wave is also driven by pro-rich changes in economic policies.

But while the factors that are currently pushing inequality up in the advanced world may be generally well understood (even if there is no consensus on their relative importance), it is much less clear what might lead inequality to go down, as in a Kuznets wave we would expect to happen. What forces may be set in motion by the system itself that would limit the increase in income inequality and ultimately overturn it? We shall look at some of these forces at the end of this chapter; and indeed when it comes to the United States (Chapter 4), I am somewhat skeptical that they can be easily identified. But before we look at the future, it is instructive to look at the past and to identify the reasons why the first upswing in inequality came to an end. For this exercise might contain implications for the second wave.

Domestic inequalities and World War I. There are two distinct views of why inequality decreased in the twentieth century. The traditional one, espoused largely by Kuznets himself, is that it was a product of various economic forces: a gradual end to the structural transformation whereby most of the population moved into urban areas and into manufacturing (thus eliminating the rural/urban gap that is one of the important contributors to inequality); increased schooling, which reduced the education premium (an explanation especially favored by Tinbergen [1975] and Goldin and Katz [2010]); the aging of the population, and thus greater demand for social services (social security, nationalized health), which in turn required greater taxation of the rich; and, possibly in the background, the need for greater social cohesion in the context of wars, including the Cold War, which meant that financing of wars should fall mostly on the rich.[35]

The second explanation, favored by Piketty, not only in his most recent

book, *Capital in the Twenty-First Century,* but also in his earlier book *Les Hauts revenus en France,* published in 2001, is, unlike Kuznets's theory, primarily a political theory. According to Piketty, the two world wars not only led to higher taxes but also destroyed property and reduced large fortunes. This was particularly true in France, which provided a template for his later work.[36] In his book on France, Piketty shows that the concentration of capital declined after the wars and the largest French fortunes never recovered: around the year 2000, the highest-valued estates were still worth less than before World War I.[37] The lower concentration of wealth combined with a lower capital-output ratio (because of the destruction of capital) resulted in a reduction of revenues from capital and a reduction of inequality. In Piketty's story, the shocks of war, as well as the ensuing "shock" of socialist and communist parties that, thanks to their new-found political influence, introduced much pro-labor legislation, are presented as exogenous events, that is as political elements outside economics proper.

It is on this question, the reason why the crest of the inequality wave broke, that the interpretation proposed here differs from Piketty's. I argue that the outbreak of World War I and thus the reduction of inequality subsequent to that war are to be "endogenized" in the economic conditions predating the war, by which I mean that domestic inequalities played an important role in the run-up to the war. In making this argument I go back to an older, and in my opinion, most persuasive, interpretation of the outbreak of World War I. According to this interpretation the war was caused by imperialist competition, embedded in the domestic economic conditions of the time: very high income and wealth inequality, high savings of the upper classes, insufficient domestic aggregate demand, and the need of capitalists to find profitable uses for surplus savings outside their own country.

In the early twentieth century, finding an external investment outlet for the surplus savings meant being in physical control of a place, and making such investment profitable required that other possible competitors be excluded even at the cost of a war. Let me quote Keynes ([1936] 1964, 381–382), an author who does not exactly spring to mind when we think of critics of imperialism: "but, over and above this [dictators as causes of

wars] … are the economic causes of war, namely the pressure of population and the competitive struggle for markets. It is the second factor, which probably played a predominant part in the nineteenth century, and might again."

This "competitive struggle for markets" led to the exploitation of the colonies.[38] Economic success required creating colonies, protectorates, or dependencies, and introducing what Paul Bairoch has called the colonial contract. The colonial contract was defined by the following elements: colonies could trade only with the metropolis, with goods transported on the metropolis's ships, and colonies could not produce manufactured goods (Bairoch 1997, 2:665–669; see also Milanovic 2002b). The scramble for colonies in Africa was fueled by the interests of European capitalists (see Wesseling 1996). A similar, almost equally brutal, scramble for new territories took place in Siberia, where Russia expanded eastward, and in the Americas, where the United States expanded westward to annex Mexican territories and southward to reinforce political control. Ghana, Sudan, Vietnam, Algeria, the Philippines, California, and Siberia are all part of the same process. In the apt terminology introduced by McGuire and Olson (1996), colonies were ruled by "roving" rather than "stationary" bandits.

The broad outline of the argument I present here is not new. Placing it within the framework of Kuznets waves is what is new. At the turn of the twentieth century, the argument linking colonialism to domestic maldistribution of income was made by John Hobson in his book *Imperialism: A Study* ([1902] 1965). It was followed by works by Rosa Luxemburg in 1913 *(The Accumulation of Capital)* and Vladimir I. Lenin in 1916 (*Imperialism, the Highest Stage of Capitalism).* As Hobson put it, "it is not industrial progress that demands the opening up of new markets and areas of investment, but *mal-distribution of consuming power* [my emphasis] which prevents the absorption of commodities and capital within the country" (p. 85). There is an entire tradition of linking domestic maldistribution of income to foreign expansion going back to Marx, even if Marx did not develop it as thoroughly as did Hobson, Luxemburg, and Lenin.[39] The objective of this book is not to discuss this view and compare

it with others, but to point out that, in this reading of the causes that led to World War I, domestic issues and especially high inequality are of key importance.[40] The Great War did not come out of nowhere, nor did it result from individuals making this or that misreading of the events; it was caused by much deeper structural factors, among which domestic "mal-distribution of consuming power" is perhaps the most important.[41] To be quite clear, because it is an important point: the malign forces that broke the first Kuznets cycle and set the rich world's inequality on its downward path for the next seventy years were contained in the unsustainably high domestic inequality that existed before.

As indirect support for the hypothesis that domestic factors were crucial for the outbreak of the war, I would like to mention Niall Ferguson's *Pity of War* (1999), which deals with the war on the western front (the eastern front is mentioned only in passing) and starts from an entirely different hypothesis: the war was the result of an accident, a malentendu, and the fact that it arrayed one set of powers against another set of powers was not preordained.[42] In other words, both the war and the combination of belligerents on each side were a product of chance. But, and this is crucial for us, at the end of his book Ferguson falls back, reluctantly and probably without fully realizing it himself, to the Marxist explanation that sees both the causes and the outcome of the war as internally driven.[43] In Ferguson's view, the domestic origin of the war lay in longer-term financial weakness in Germany, which constrained its military capacity and demanded an early "defensive preemptive war"; the domestic explanation for the outcome of the war lay in the political strength of the German upper class, which did not want to pay as much for the war as was needed to win it and was sufficiently influential to prevent the government from imposing higher taxes. Since funding the war by borrowing was not possible either domestically, because of the shallowness of the German market, or internationally, after the United States entered the war and Germany was cut off from the New York financial market, Germany basically ran out of money to pay for the war. But note that in both explanations, it is German *domestic* economic and political "correlations of forces" that explain military actions. I focus on Ferguson because his book is one of the best of

the recent books on World War I, and it serves to illustrate how even those who seem to explicitly reject domestic factors in the explanation of the war eventually come to acknowledge the importance of those factors.

Malign and benign forces in the era of the Great Leveling. If the First World War is endogenized in the economic conditions of early-twentieth-century Europe (and the world), then our reading of the downward-sloping Kuznets curve is very different from both Kuznets's and Piketty's readings. The internal contradictions between different social classes found an outlet in the war, and once the war unleashed other forces (including the growth of the socialist movement, the Russian revolution, and of course the destruction of physical and financial capital), the downward-sloping part of the first Kuznets wave occurred—not, as is implicit in Piketty's interpretation, as an event exogenous to economics, but as part-and-parcel of economics, and especially part-and-parcel of the high social and economic inequality that preceded the war. This interpretation is also different from that of Kuznets, who essentially ignores the role of wars.

Other real economic gains that came after the war and that reduced income inequality, from social democracy in Sweden, to the New Deal in the United States, to high taxation and trade union density in most of Western Europe, were indeed economic forces or, as we termed them, benign forces, that were rightly emphasized by Kuznets—but they happened because they were precipitated by the war, and the war itself happened because income inequality led to it.

This reading of history at the end of the previous era of globalization is crucial, not only because it addresses the forces that brought globalization to an end and set the Kuznets curve on its downward path, but because it helps to illuminate today's situation. Rising inequality indeed sets in motion forces, often of a destructive nature, that ultimately lead to its decrease but in the process destroy much else, including millions of human lives and huge amounts of wealth. A very high inequality eventually becomes unsustainable, but it does not go down by itself; rather, it generates processes, like wars, social strife, and revolutions, that lower it.

This perspective enables us to notice the similarity between the declines

in inequality in the preindustrial era, which were most often caused by cataclysmic events such as wars, epidemics, or natural catastrophes, and the decline of inequality during the first Kuznets wave. Between 1914 and 1980, the decrease in inequality was brought about through a wrenching process, a combination of malign forces like wars and benign economic policies that were characterized by the confluence of interests between left-wing political parties (which emphasized free education, health care, and so on) and property-owning classes that, out of fear of new socialist movements and possible expropriation of capital, accepted measures that created a broad-based middle class. I do not have in mind here only the rich world, but everybody else as well. In developmental states like Turkey, Brazil, and South Korea, the same process occurred even during right-wing dictatorships. This process was also promoted by US international development policies throughout the 1950s, 1960s, and 1970s, when the United States supported right-wing oligarchic regimes, but, in a quid pro quo for that support, urged, and in some cases pressed, these regimes to open themselves up to the middle classes. The United States backed, and even implemented, agrarian reforms in Japan, Taiwan, and South Korea, and it also supported land redistribution schemes in Latin America after John F. Kennedy created the Alliance for Progress in 1961 (not coincidentally, shortly after the Cuban revolution). The same process existed in communist countries, where left-wing dictatorships came to power by nationalizing capital and promising equality and then could not renege on these essential features; thus they continued policies that kept inequality in check, including massive expansion of education and transfer of labor from agriculture to industry—the quintessential Kuznetsian processes. It is therefore wrong to see the downward slide of the first Kuznets wave as pertaining only to rich economies. The era of broadly declining inequality—be it through nationalization, expansion of education, agrarian reform, or the welfare state—was a feature of the third quarter of the twentieth century almost worldwide.

I do not want to downplay the purely economic (or benign) elements that Kuznets emphasized, but it is important to recognize that they occurred within a specific social framework. For example, the ideology of mass

education in developing countries, which might have been predicated on the need to create a strong middle class as a bulwark against communism, led, in a purely economic reaction, to a decrease in the education premium and thus lowered inequality. But perhaps none of these developments would have occurred had high inequality not led to a paroxysm that propelled the world into war.

EXCURSUS 2.2. The Other Great Leveling: Inequality in Socialism

A great leveling that was more radical than the one that occurred in the West took place in countries that, following Russia in 1917–22, became socialist after World War II. The socialist great leveling may have influenced the Western Great Leveling through the impact of socialist and communist parties in the West, but whatever the exact relationship, the two leveling processes, together with similar processes produced by decolonization or in developmental states such as Turkey and Brazil, should all be viewed as part of the same trend, characteristic of the short twentieth century.

The socialist great leveling was produced in a simple manner. First, most enterprises were nationalized, which, as in state-owned enterprises in the West, resulted in a more compressed wage distribution. (Data on wage distributions in socialist economies are plentiful, and a number of studies have documented the wage compression.)[44] The education premium was also reduced. Since most of the countries that became socialist were less developed than Western Europe and the United States, one might expect the skill premium to have been high (say, similar to what it was in Latin America). But nationalization of enterprises changed that: wages of low-skilled workers were relatively high and wages of high-skilled workers relatively low. Massive increase in schooling on the supply side, however, would have produced some reduction in the high-skill wage premium even if these were market economies.

Nationalization of the means of production had two other effects on income distribution. It abolished income from property, income that is always heavily skewed toward the rich, and it almost eliminated the entrepreneurial return, since private entrepreneurship was banned or pushed to the margins.

Entrepreneurial income remained in existence only in small-scale service sectors (hotels, repair shops, etc.), and, in Yugoslavia and Poland, in agriculture, where land stayed largely in private hands but was divided into small parcels. In countries such as Russia and Hungary where large land holdings had dominated in the past, nationalization of land eliminated the high incomes of the landed aristocracy.

Finally, guaranteed jobs and thus the absence of unemployment (with a few exceptions), widespread pensions (often with the exception of agriculture), and subsidization of staple goods (thus ensuring that subsidies were progressive) completed this picture. It is not surprising that, according to Czech sociologist Jiři Večernik (1994), it was possible to estimate total household income by taking into account only the demographic characteristics of a household: how many members it had and how old they were. In other words, education and property ownership, the two most powerful determinants of income in market economies, were made irrelevant.

Was this radical leveling a success? In terms of inequality reduction, undoubtedly yes. But in terms of growth and innovation, no. For a long time, socialist policy-makers held that too much wage equalization eliminated incentives for acquiring new skills and working hard. In the "heroic" phase of socialism, this could be compensated for through "socialist emulation"—psychic income and social esteem acquired by those who, like the miner Aleksei Stakhanov, eponymous hero of the Stakhanovite movement, worked hard for no pecuniary return. But, in the long run, this system was unsustainable. A slew of socialist reforms in the 1960s were supposed to address defects in the system; allowing enterprises to keep more money and distribute it to the best workers was supposed to increase productivity. But the reforms failed on the bedrock of a system that, ideologically, could not afford large differences in income between people and whose political elite did not want to relinquish control of enterprises.

The socialist leveling, or *uravnilovka* in Russian, as it was known in the Eastern bloc, was also inimical to technological progress. As the years went by and the nature of technological progress itself changed, from being embodied in large network industries such as electricity and railroads to much more decentralized ones, the socialist economies fell farther behind their capitalist counterparts. They faced the so-called *zastoi,* or stagnation, of the Brezhnev era,

which ultimately brought the system to its collapse.

The example of socialist economies holds several lessons. First, there are limits to voluntaristic policies whereby inequality is reduced out of step with economic conditions. In some deeper sense, such policies were anti-Marxist because they violated the interdependency between the development of the forces of production and the relations of production. Perhaps the "original sin" was that the first Marxist revolution took place in a less-developed country like Russia. Second, equality can be pushed too far: it discourages hard work, education, and innovation. Third, ideology matters, and, contrary to the claims of modern institutionalists like Acemoglu and Robinson (2012), concentrated political power does not necessarily entail concentrated economic power.

Recognizing the role of ideology and of the economic elements that contributed to the decrease in inequality from 1950 to 1980 gives us hope that humanity, facing a very similar situation today as one hundred years ago, will not allow the cataclysm of a world war to be the remedy for the ills of inequality. Awareness of the destructive nature of increasing inequality and knowledge of the "benign" means to reduce it, combined with the ongoing process of income convergence between populous and relatively poor countries like China and India and the rich world—these factors make one optimistic that a peaceful process of decreasing global inequality could be managed in this century. We shall return to this theme in Chapter 4.

What Is Driving the Second Kuznets Wave Up, and What Might Drive It Down?

How to explain the upward portion? The second Kuznets wave has many similarities with the first. Its rise was driven by a second technological revolution (resulting primarily from progress in information technology) and by globalization (which, as we have seen, also accompanied the first technological revolution).[45] Both technological revolutions created rents; in the case of the second, these rents have been generated in telecommunications, pharmaceuticals, and the financial sector, both for technological leaders and for those who used political power to acquire monopoly power and protection. (This latter process was not in itself independent of economic success because to be able to lobby and influence policy-makers one has to be rich.)

As for labor, a transfer occurred from manufacturing activities into services (not unlike the transfer from agriculture into manufacturing that occurred during the first technological revolution). The service sector is more heterogeneous in terms of occupations and skills than is the manufacturing sector, and the wage dispersal is much greater. Figure 2.21 shows the ratio between the wages at the 90th percentile of the wage distribution and the wages at the 10th percentile of the distribution for US manufacturing and services from 1979 to 2014. In 1979–80, the gaps were almost the same in both sectors. But since then, while wage inequality has increased in both sectors, the increase has been much greater for services; in 2014, the 90–10 wage gap was 5.0 in services and 4.4 in manufacturing. Thus the shift of labor from manufacturing into services will tend to increase wage inequality, and ultimately, income inequality.

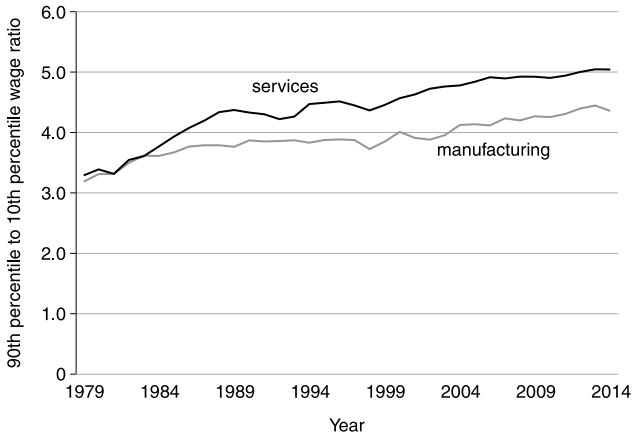

FIGURE 2.21. Wage inequality in US manufacturing and services, 1979–2014

This graph shows wage inequality among wage earners in manufacturing and services in the United States as measured by the ratio between the wage at the 90th percentile of the distribution and the wage at the 10th percentile of the distribution. It shows that wage inequality in services is greater than wage inequality in manufacturing and that the difference has been increasing. Data source: Unpublished tabulation of data from the CPS ORG (Current Population Survey Outgoing Rotation Group) kindly provided by Larry Mishel of the Economic Policy Institute. Details on the data in appendix B of http://stateofworkingamerica.org/files/book/Appendices.pdf.

The service sector involves greater physical dispersal of activity than does manufacturing and has units of much smaller size. These two features have made organization of workers more difficult or of less relevance. In an era where common interests among various groups of employees are less clear and workers are physically more dispersed, syndicalist organizations have less appeal than they did in the past, resulting in an almost universal decline in trade union densities in the rich countries. This decline is illustrated in Figure 2.22, where, together with the United States and the United Kingdom, I show data for Austria and Germany, long considered examples of the corporatist "world of welfare capitalism" (Esping-Andersen 1990), where strong unionization was supposed to be a key characteristic of the system. The level of unionization declined in all four countries from 1999 through 2013, especially strongly in the two corporatist states. The unweighted average share of unionized labor among employees in all OECD countries went down from 21 percent in 1999 to 17 percent about a decade and half later.[46] The decline of trade union density was especially strong in the private sector. In the public education and health sectors, commonality of interests among workers has remained as strong as

in the past, and union density has declined less.[47]

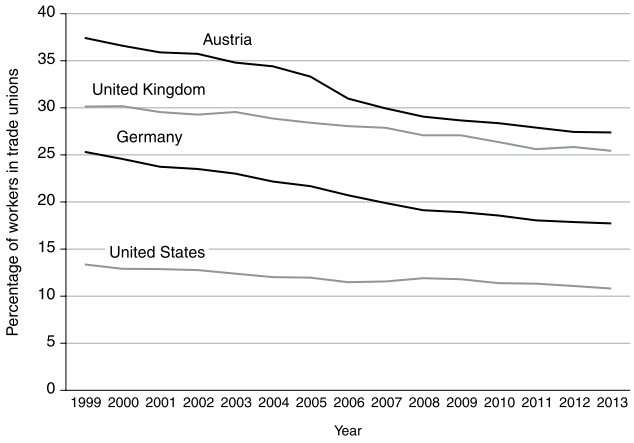

FIGURE 2.22. Trade union density in selected OECD countries, 1999–2013

This graph shows the percentage of workers who belong to trade unions in Austria, the United Kingdom, Germany, and the United States. It shows that the percentage has been decreasing since 1999. Data source: Based on OECD data available at https://stats.oecd.org/Index.aspx?DataSetCode=UN_DEN.

The decline in trade union density underpins a more general process of the weakening of the bargaining position of labor vis-à-vis capital. In a recent revisiting of his own contribution to the theory of growth, Robert Solow looked at the possibility that the declining labor share in rich countries is due to a renegotiation of rents in favor of capital owners.[48] Solow considers an economy-wide model of imperfect competition where value added is distributed between labor and capital, paid according to their marginal products plus a rent, which is the object of negotiation between the two. These rents could be monopoly rents, patent rents, rents arising from obstacles to entry, and the like. The essential point is that the distribution of the rents at the level of each enterprise, sector, and ultimately the whole economy depends on the relative bargaining power of capital and labor. The current era of globalization has witnessed a huge increase in available labor, both because world population has increased by two-thirds since 1980 and because China and the former communist countries have entered the global labor market. This growth in the availability of labor, according to Solow, has weakened labor's position worldwide and allowed

capital owners to take most of the rent for themselves. A similar idea is expressed by Chau and Kanbur (2013), who model it as a Nash equilibrium game where the fallback position of capital, because of its ability to move from one country to another in search of lower taxes, is much stronger than that of labor.

The reasons for the increase in inequality in OECD countries have been extensively studied in the last two decades, since the increase became apparent. Originally, lots of attention was paid to wage-stretching, especially, in the United States, with two main contenders as explanatory factors being skill-biased technological change and globalization.[49] After the publication of Piketty's *Capital in the Twenty-First Century,* the role of capital income (both its rate of return and the increasing capital-income ratio) has attracted more attention. Policy changes, in particular reduced marginal tax rates on the highest incomes and lower taxes on capital, have also been found (somewhat obviously) to have contributed to the increase in inequality. In other words, the redistributive function of the modern developed state has either become weaker or remained more or less the same as in the 1980s. And even in the rare instances where redistribution increased, it was not sufficient to check the increase in market income inequality (inequality in primary labor and capital incomes, that is, before social transfers and direct taxes are included). This underlying increase in market income inequality—reflecting higher wage dispersion, greater concentration of income from capital, and association of high incomes from both capital and labor in the same individuals—is crucial for understanding the upward portion of the second Kuznets wave.

Figure 2.23 illustrates the significant increase in inequality of market income that occurred in both the United States and Germany between 1970 and 2010. Consider the United States first: the graph shows that when we add social transfers to market income (to get gross income) and then deduct direct taxes (to get disposable income), the level of inequality is reduced each time; that is, both social transfers and taxes do indeed reduce inequality. However, the trend in the increase of disposable income inequality is almost the same as the trend in the increase of market income inequality. Market income inequality went up from 42 to just over 50 Gini

points (an eight-point increase), while disposable income inequality rose from about 36 to 41 Gini points (a five-point increase). Redistribution became slightly more important, or more progressive, but it failed to offset the underlying increase in market income inequality.

FIGURE 2.23. Market, gross, and disposable income inequality in the United States and Germany, 1970–2010

This graph compares inequality in market, gross, and disposable income in the United States (a) and Germany (b) between 1970 and 2013. Market, or factor, income includes labor and capital incomes before taxes but does not include any government (social) transfers. Gross income is equal to market income plus social transfers (public pensions, unemployment and child and family allowances, and social assistance). Disposable income is equal to gross income minus all (federal and state) direct taxes. All calculations are done on a per capita basis (that is, Ginis are calculated across household per capita incomes). Data source: Calculated from Luxembourg Income Study (http://www.lisdatacenter.org/).

Looking at the data for Germany, we see that government policies, especially through greater social transfers, have had a powerful effect on reducing inequality—in Germany as compared with the United States as well as within Germany over time. These policies failed, however, to fully offset the increase in German market income inequality: disposable income inequality still went up, even if by only 1 to 2 Gini points.

Some other factors have also been adduced as "culprits" for increased

inequality. One of these concerns behavioral changes, such as the greater prevalence of assortative mating, or homogamy; marriages between partners who both have high skills and high incomes have become more common than they were in the 1950s and 1960s (Greenwood et al. 2014). Another suggested cause involves vaguely defined changes in ethical or pay norms, which allow for much wider gaps between the pay of top managers and average workers (Levy and Temin 2007; Piketty 2014, chap. 9).

It is not my objective here to adjudicate between all the likely factors. I believe that because of the complexity of the process, the explanation is overdetermined in the sense that piling all these explanations up on top of each other and assigning relative importances to them would lead us to explain more than 100 percent of the change. This complexity is perhaps best seen when we contrast the two dominant explanations for the increase in US wage inequality: skill-biased technological change and globalization. It could be, as Ebenstein, Harrison, and McMillan (2015) argue, that in a head-to-head competition between these two explanations, the lower price of capital goods leading to the replacement of routine labor and greater complementarity between capital and high-skilled workers wins—namely, explains most of the rising inequality in wages. But that particular causal chain (lower price of capital goods ⇒ technological change ⇒ replacement of routine labor) could have occurred only under the conditions of globalization, where reduced prices of capital goods were made possible thanks to the existence of cheap labor in China and the rest of Asia.[50]

In simple language, it could be that SAP software, Lenovo computers, and Apple iPhones did replace the jobs or reduce the wages of travel agents, hotel clerks, accountants, and shop assistants, but what we may interpret as skill-biased technological change happened because cheap hardware for these products was produced in low-wage Asian countries. This is exactly the interpretation that we can give to the reclining S curve from Chapter 1 (Figure 1.1): these interrelated developments in Asia and the West helped increase the incomes of relatively poor people in Asia (the emerging global middle class) while slowing down to practically zero the growth of incomes of the lower middle class in advanced economies. (Those who like models can think of the world economy as composed of

three sectors—one that builds capital goods in low-wage economies, another that uses those machines to get rid of the low-skilled labor in rich countries, and a third that uses only skilled labor to produce luxury goods and services.)

Technological change and globalization are thus wrapped around each other, and trying to disentangle their individual effects is futile. Removing either of them would do away with almost all of the increased wage inequality. And conversely, adding either of them to the existing level of the other (e.g., "adding" globalization to the existing computerization) would on its own explain almost the entire increase in wage inequality. If, in addition, we regard policy changes as endogenous with respect to globalization (as I think we should), it becomes very clear that all three elements of the TOP (technology, openness, and policy), are mutually dependent and cannot be separated in any meaningful sense.

This type of endogenous technological change, where inventions do not fall from the sky but are made to replace relatively more expensive factors of production (such as labor in rich countries), is precisely the same type of technological change that, according to Robert Allen, was responsible for the first technological revolution, which ushered in the first (modern) Kuznets cycle. In a series of papers and a book, Allen (2003, 2005, 2011) argued that it was not British property rights (which were weaker than in France), or low taxation (which was actually higher than in France) that were crucial for the British take-off, but rather the high cost of labor. High wages made it profitable to try to find ways to replace labor with capital. Going further back into the past, the same mechanism was adduced by Aldo Schiavone (2002), following Marx (1965), as an explanation for why capital-intensive production never took place in the ancient world, specifically in Rome. Labor, often consisting of people who had been enslaved as the result of conquests, was too cheap for the Romans to think seriously about replacing it with machines—even if the steam engine was discovered, and used as a toy, in second-century Alexandria. Thus, today's technological progress does not "behave" differently, or respond to different incentives, than in the past, except that the scope of operations is global.

Accounting explanations for the increased inequality in rich countries, as

presented in several OECD reports (OECD 2008, 2011), are more modest, since their aim is not a causal explanation of the increase in inequality. They may be preferable in some ways, because they avoid the issue of overdetermination and are noncontentious in the sense that the factors they list can be shown to have been responsible for higher inequality (to be sure, in an accounting sense only). But their drawback is that they do not provide an analytic explanation (e.g., for what caused wages to become more unequally distributed), and they also leave a large chunk of the increase in inequality unexplained. For inequality among households, OECD (2011), using household survey data from some twenty rich economies between the mid-1980s and 2008, found that 60 percent of the increase was due to the widening disparity among men's earnings along with the greater labor participation of men (with the former factor accounting for two-thirds of this total). But we cannot tell whether this wage-stretching was a result of skill-biased technological change or globalization (in the form of displacement of domestic labor by cheaper imports and outsourcing). Assortative mating and change in family structure (e.g., more young people deciding to live alone) explained another 22 percent of the change. Women's increased participation in the labor force, however, reduced inequality by some 19 percent. In the end, about 40 percent of the increase in income inequality remained as a residual. (It is interesting to speculate whether the increased participation of women in the labor force is related to the rising importance of assortative mating, and whether the net effect of these two phenomena on income inequality may be close to zero [22 minus 19, in this case].)

One can, with some effort and simplification, allocate all these "accounting" elements to one of three groups of factors: technology, openness/globalization, and policy (our TOP). But one could argue that TOP, in turn, is directly related to the second technological revolution: technological progress and movement of labor into services are part of this revolution almost by definition; globalization has been an indispensable companion to the development of broader production networks and reduction in the costs of production; and policy, most clearly in the case of lower taxation of capital, has been an "endogenous" response to globalization, that is, to the mobility of capital.

Forces offsetting the increase in inequality. There is no doubt that the Kuznets curve started rising from the early 1980s to the second decade of the twenty-first century, and that this rise has been the key reason for the disenchantment with Kuznets's hypothesis—which predicted only a single curve, with inequality rising up and then going down. On more speculative grounds, we can now ask how long the rich countries can continue on this upward trajectory and what might ultimately check and then reverse the increase in income inequality.

I will argue in Chapter 4 that the forces pushing for a continuation of the increase in inequality seem overwhelming in the United States. They include not only the existing, and well-studied, forces of TOP, but new ones too. Especially important are the combination of high labor and capital incomes received by the same individuals or households (which increases inequality) and the greater influence of the rich on the political process and thus on rule-setting favorable to themselves. The benign economic forces that can curb increasing inequality appear to be scarce. Malign forces, which, as we have argued, set income inequality on a downward path in the early twentieth century, are impossible to predict. However, we should note that very often in history, it has been precisely the malign forces of war, strife, conquest, or epidemics that have reduced inequality. Their influence and role cannot be excluded in the future.

Here, however, I want to discuss not the prospects for any particular country but, at a very abstract level, what benign forces could hypothetically push rich countries onto the downward portion of the second Kuznets wave. They are five. The first involves political changes that may produce higher and more progressive taxation. In democracies with full franchise, this change should come "naturally," in the sense that one would expect increased inequality to result in greater demand for government redistribution. This is, for example, the implication of the median voter hypothesis, which states that in more unequal settings voters will choose a higher tax rate, but its empirical relevance is unclear (Milanovic 2000, 2010a). But we ought to be skeptical of the likelihood of such changes. If anything, globalization has been accompanied by reduced taxation; and political solutions to higher inequality are limited by the mobility of capital

as well as by the ability of people to change their jurisdictions to avoid taxation (see Zucman 2013). The increased role of money in politics is similarly pro-rich. Also, those who would benefit from greater redistribution may not be aware of it because they suffer from "false consciousness." (I will return to these themes, within the US context, in Chapter 4.)

The second force is the race between education and skills. Some of the rising skill premium, especially in the United States, could be closed by the rising supply of highly skilled workers. But here, too, we face a natural limit: the number of years of education is bounded from above because it is unrealistic to increase the average number above thirteen years. Even the fact that the US average education level is no longer the highest in the world, according to UNESCO data, is an unsatisfactory or at least an exaggerated explanation for the increase in the wage premium: the gap between the countries with the highest number of years of schooling (Switzerland and the United Kingdom) and the United States is 0.7 years (13.7 vs. 13 years). Moreover, it is not even certain that the United States has slipped from the top position. The Barro-Lee data set, which is the key source of comparative education data and measures the same thing as the UNESCO data, still shows the United States as number one in 2010, just ahead of Switzerland.[51] So, to believe that much can be accomplished by increasing the average level of schooling by about half a year or that it is a significant cause for the rise in the education premium is, I think, unrealistic.

Of course, the quality of education could be improved, but there too it seems that we face natural limits, given by the aptitude and interest of students to excel in whatever they choose to do. It cannot be expected, even if opportunities were fully equalized, that everyone would be both interested in becoming an Einstein and having the aptitude to be one.

The third force for reduced inequality is the dissipation of rents accrued in the early stages of the technological revolution. As the revolution progresses, other people and companies catch up with the early innovators, rents are reduced or eliminated, and income inequality shrinks. Indeed, lots of current wealth has been accumulated in the new technological sectors, best exemplified by Silicon Valley. James Galbraith (2012, 144) shows that

one-half of the increase in US personal income inequality between 1994 and 2006 is explained by the exceptionally high income growth in five (out of more than 3,000) US counties: New York County (comprising the borough of Manhattan), Santa Clara, San Francisco, and San Mateo Counties in California, and King County in Washington State. From what we know about these counties, it is not difficult to conclude that people working, or owning stocks, in financial, insurance, and IT sectors were the main beneficiaries. They earned huge rents. But these rents are not going to last forever: their dissipation will reduce inequality.

The fourth element that may check the increase in inequality in the rich world is income convergence at the global level, with wages in China and India rising to come close to those in today's rich countries. This movement, which is opposite to the one that we have witnessed in the past twenty-five years of globalization (see Chapter 1), would put an end to the hollowing out of the rich countries' middle classes and could set the stage for a reduction in within-nation inequalities. That of course assumes—a big and perhaps unwarranted assumption—that other poor countries like Indonesia, Vietnam, and Ethiopia do not come up and take the place vacated by China and India and maintain the pressure on US and other rich countries' wages.

The fifth and final force is more speculative: low-skill-biased technological progress, that is, technologies that would increase the productivity of unskilled workers more than that of skilled workers. Bringing this idea up now, when it is taken as almost axiomatic that technological progress is high-skill-biased or is (at least) inimical to the position of workers performing routinized tasks, sounds somewhat quixotic. But, as implied by the theory of endogenous technological change (whereby technology adapts so as to increase the use of the less costly factor of production), it is pro-low-skill inventions that we should expect if the wage gap between high-skilled and low-skilled labor continues to rise. As high-skilled labor gets relatively more expensive, there must come a point where production conducted with less-skilled labor becomes more efficient. That in turn should provide incentives to inventors to look for low-skill-biased technological innovations. (Note that this process works through incentive effects which are similar to the ones that make the acquisition of higher

education advantageous when the skill premium is high. So, the Tinbergen race and endogenous innovations have the same root cause.)

Low-skill-biased technological change would run against the grain of technological innovations that have historically been anti-low-skilled labor and have been a feature of capitalism since its beginnings. It could be argued, however, that, at least in part, the reason why technological change tended to be labor-replacing was that it was used as a labor-disciplining device, and during periods of class conflict, capitalists found it convenient to depend less on labor. A machine will always be more docile than a worker. To the extent that the power of organized labor declines and class conflict recedes, capitalists may become less fearful of stimulating pro-low-skilled labor innovations. This suggestion is, however, speculative, and I am not sure how much hope one can put in it.[52]

These, then, are the forces that we may hypothesize would lead rich countries onto the downward portion of the second Kuznets wave. One should also keep in mind that the peak level of inequality in this wave (which most countries have not yet reached as of this writing, in 2015) is very probably going to be less than the peak of the first Kuznets wave. The reason lies in the number of automatic inequality "reducers," in the form of extensive social programs and state-funded free health and education, that have been established since the latter part of the nineteenth century. If the peak of the second Kuznets cycle is less than the peak of the first, we may perhaps expect also that the downward slide (when it occurs) may not be as steep as it was in the first part of the twentieth century. Consequently, the Kuznets cycles may become less dramatic. But this is just a conjecture. The future often likes to throw curve balls.