

**Discussion of Daron Acemoglu,  
Philippe Aghion, and Giovanni L. Violante,**

**"Deunionization, Technical Change, and Inequality"**

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## **Comment on Acemoglu, Aghion, and Violante, February 20, 2002, Page 2**

Everyone agrees that the U. S. and U. K. experienced marked increases in inequality during the past 25 years, as is well documented in the introduction to the paper by Acemoglu, Aghion, and Violante (AAV). A surprisingly uniform consensus has developed within academic economics that the primary source of rising inequality is "skill-biased technical change" (hereafter SBTC). Labor economists point to other factors that are consistent with rising inequality, including what AAV call "deunionization," as well as the decline since the early 1980s in the real minimum wage. The novelty in this paper is to link the two causes of rising inequality by converting deunionization from an unexplained exogenous factor to an endogenous event that is caused by SBTC. Thus, in the words of AAV, "although deunionization is not the underlying cause of the increase in inequality, it amplifies the direct effect of skill-biased technical change."

My comments go beyond the paper in two directions. First, I extend the historical horizon back to the 1920s in order to ask not just about the sources of *increasing inequality* from the 1970s to the 1990s, but also about the sources of *decreasing inequality* from the 1920s to the 1960s. Alternative explanations are more appealing if they work in reverse, explaining declining as well as increasing inequality. Second, I question the near-universal acceptance among economists that SBTC is the most important source of rising inequality in the past three decades.

### ***A Broader Historical Perspective***

Data are murky on inequality prior to the 1920s, but there seems to be no doubt that inequality declined significantly between the 1920s and late 1960s, remained flat for a decade, and then increased

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markedly from the mid-1970s to the late 1990s.<sup>1</sup> This "U-shaped" pattern of inequality during the twentieth century is consistent with an explanation that is political and institutional at its heart. Four ingredients seem sufficient. The rise and fall of unionization, the decline and subsequent recovery of foreign trade, the decline and subsequent recovery of immigration, and the rise and fall of the effective minimum wage. All four of these factors have U-shaped or inverted U-shaped time paths that are roughly consistent with the U-shaped path of inequality.

First, regarding unionization, to accept the AAV hypothesis that SBTC contributed to the decline of unions, one would have to show that reverse-SBTC was responsible for the rise of the unions in the 1930s and 1940s. I am unaware of any evidence that technical change was biased *against* skilled workers prior to 1970, and the authors provide none. A much simpler and more straightforward explanation is political. Except for a brief boomlet in 1920-21, labor union membership was in the relatively narrow range between 10 and 12.5 percent of payroll employment between 1915 and 1934, then suddenly jumped from 12.5 percent in 1934 to 28.7 percent in 1938, 29.8 percent in 1941, and 35.5 percent in 1957.<sup>2</sup> This sharp discontinuity between 1935 and 1938 can only be explained by politics — the passage of the 1935 Wagner Act. This political event that empowered unions, together with labor shortages during World War II, greatly increased the influence of unions and forced corporations to confront the threat of strikes, of which there

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1. The respective shares of the top 5 percent and bottom 40 percent of family personal income were 30.0 and 12.5 percent in 1929 and 20.9 and 16.0 percent in 1947 (*Historical Statistics of the United States, Colonial Times to 1957*, published 1960, series G100-105). The gini coefficient of family income inequality declined from 0.375 in 1947 to 0.365 in 1968, after which it remained below 0.37 until 1975 and then increased to 0.41 in 1999 (Mishel *et al.* 2001, Figure 1F, p. 50).

2. *Historical Statistics, Colonial Times to 1957*, employment from series D48, union membership from series D741 and D746.

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were many in the immediate postwar years. As a result, wages for union workers (in an old literature called the "semi-skilled") were boosted, and wage differentials between the top and middle were compressed, as is documented in AAV's citations to the labor economics literature on the effects of unions. The 1935-38 timing is too sudden to be explained by any contemplation of reverse-SBTC. Why invent a new answer when the old answer is so clearly appropriate?

Why then did unionization decrease after 1955, explaining the right side of the inequality "U"? Labor economics textbooks (e.g., Hamermesh-Rees, 1988) cite a set of political and economic forces. Unions were the creation of the government actions initiated during the Great Depression and waned as the prosperity of the postwar era evolved and as government support declined. As AAV recognize at the end of their introduction, outright hostility to labor unions came to a climax when President Reagan fired the air traffic controllers in August, 1981, and of course in Britain the Thatcher government was even more determined to promote "deunionization." Government macroeconomic stabilization measures reduced the volatility of the demand for labor and with it the demand for unionization, and unemployment benefits provided income maintenance for unemployed workers whether they were members of unions or not.

Two other equally important causes of the decline in U. S. unionization are largely neglected in the textbooks and in the AAV paper. One is the invention of air conditioning, which facilitated the geographic dispersal of manufacturing from the northern states into the southern states of the Old Confederacy, where "right-to-work" laws legalized hostility to union organizers (much as business firms could count on the support of the police and local politicians in suppressing union organizers in the entire country prior to the Wagner Act). The second is the steady decline in the share of manufacturing and mining in total

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employment from its mid-1950s peak; unions in the United States have been consistently unsuccessful in organizing employees in most of the service sector.

In addition to the rise and fall of the unions, the second basic U-shaped pattern was a period of autarky for the United States in the middle of the twentieth century. Restrictions on free trade in goods, notably in the Fordney-McCumber tariff act of 1922 and the infamous 1930 Smoot-Hawley act, radically reduced the share of imports in GDP over the 1930-1960 period, and this matters for income inequality if goods produced in low-income countries tend to drive down the relative wage of domestic unskilled workers. The absence of competition from low-priced imports helped American companies to remain profitable in the 1950s and 1960s, setting prices at whatever was necessary both to pay relatively high union wages and to obtain a respectable return on capital.

The third U-shaped pattern with similar timing was restrictive immigration legislation initiated in the early 1920s that reduced immigration (as a percentage of the population) from 1.3 percent in 1914 to 0.02 percent in 1933. Immigration gradually increased from the 1930s to the 1990s, but for the decade of the 1990s was less than one-third of the population ratio as at the turn of the century.<sup>3</sup> Immigration also matters for inequality if new immigrants are unskilled and drive down the wages of native unskilled labor. Finally, a fourth and perhaps minor factor with the correct U-shaped pattern was the rise in the effective minimum wage in the 1940s and 1950s, followed by its sharp decline in the 1980s as the Reagan and Bush

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3. Data on immigration are from the *Historical Statistics*, series C88 divided by A1, and for the 1990s from the *Statistical Abstract of the United States 2000*, Table 5.

administrations rejected any increase in the nominal minimum wage.<sup>4</sup>

All four of these factors are consistent not only with declining inequality during the 1929-70 period but also with the golden age of U. S. productivity growth, which I have dated as extending from 1913 to 1972 (Gordon, 2000). Unions, autarky, the absence of immigration, and the minimum wage, all boosted the relative wages of low-skilled and semi-skilled workers. This in turn stimulated rapid capital accumulation to replace these now-expensive workers, and helps to explain why productivity growth in the middle of the century was so rapid..

### ***Why Skill-Biased Technical Change Fails the Plausibility Test***

Beyond the explanatory power of the four U-shaped patterns (unions, autarky, immigration, minimum wage), proponents of SBTC face the awkward contrast between the U. S. and U. K. on the one hand and Continental Europe on the other. Both the extent of inequality and its change between the 1970s and 1990s are much greater in the U. S. than in Europe, with the U. K. somewhere in between. The 90-10 inequality measure (that is, the earnings of the 90th percentile worker divided by the earnings of the 10th percentile worker) in the mid-1990s was 4.43 in the U. S., 3.37 in the U. K., and an average of 2.73 in the three major continental European countries (France, Germany, Italy). The change in this ratio from the early 1980s to the mid 1990s was +0.78 for the U. S., +0.58 for the U. K., and -0.23 for the European

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4. A "minimum wage index" that combines the ratio of the minimum wage to average wage and the coverage of the minimum wage peaked in 1979 and fell thereafter. See Hamermesh-Rees (1988, Table 4.3). A time series on the real (adjusted by prices, not wages) value of the minimum wage reached a peak in 1968 and declined by 32 percent between 1978 and 1989 (Michel *et al.* 1999, Figure 3O, p. 190).

countries.<sup>5</sup> Economists who ride the bandwagon of SBTC as an explanation for rising inequality in the U. S. and U. K. are obliged to explain why inequality has actually *decreased* in the three major continental European countries.

There is not a word about Europe in the AAV paper. Yet technology flows freely across borders. If SBTC created deunionization in the U. S., why not in Europe to the same extent? And if SBTC was the main cause of rising inequality in the U. S., why did inequality fail to increase in Europe? Clearly, the contrast between Europe and the U. S. causes SBTC to fail even a crude plausibility test, and we must look elsewhere for an explanation.

Timing raises another problem for the proponents of SBTC as an explanation for inequality. Inequality soared in the U. S. after the mid-1970s yet technical change slowed markedly, at least as measured by the growth in multi-factor productivity (MFP). The core years for the rise in inequality, 1977-92, come close to matching the years of the MFP growth slowdown, 1972-95. Despite this persuasive evidence that technical change was slowing, not speeding up, while inequality was rising, AAV and the many economists they cite cling tenaciously to the SBTC explanation. Why? The main evidence seems to be that both the relative supply and relative earnings of college educated workers increased during this period, and so there must have been an increase in demand that was even greater than the increase in supply. Yet there is another possibility. Perhaps another factor, to be explored below, raised the relative incomes significantly for a small minority of those who happened to be college-educated, for reasons having nothing to do with technical change. This could yield the data we observe on indexes of inequality and relative earnings of

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5. Michel *et al.*, Table 7.9, p. 384.

college graduates but would not represent what most of us mean by SBTC, the development of information technology hardware and software that favors workers skilled in "knowledge-intensive" activities.

***Inequality Comes from the Top 1%: The Theory of the "Three Michaels"***

The story of rising U. S. wage and income inequality after 1970 combines the collapse at the bottom and the explosion of incomes in the top one percent, the latter publicized by Paul Krugman in 1992 with the dramatic statement that 60 percent of the real income gains between 1977 and 1991 had been earned by the top one percent of the income distribution. Separate stories explain the bottom and the top, the former accomplished by our four political/institutional factors of unions, autarky, immigration, and the minimum wage. At the top, all the action has been in the top one percent, much too narrow a group to be consistent with a widespread benefit from SBTC. To preview the argument in the rest of this comment, the rise in inequality at the top ratifies the genius of the late Sherwin Rosen, whose 1981 article "The Economics of Superstars" explains most if not all of the increase in inequality in the top half of the income distribution. The main contribution of this section of my discussion is to broaden the definition of "superstars" beyond the usual entertainment and sports figures to include Chief Executive Officers (CEOs) of corporations.

If SBTC, particularly that related to the invention and diffusion of computers, had been a major source of the rise in inequality, then we should have observed an increase in the relative wages of those most directly skilled in the development and use of computers, namely computer science graduates and computer engineers. Yet computer experts were not the main beneficiaries of the increase of incomes at the "top"

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observed between the mid-1970s and mid-1990s. Instead, the main beneficiaries were those already at the pinnacle, namely the CEOs themselves. Let us consider the following data on the cumulative 1989-97 increase in real compensation for various occupations:<sup>6</sup>

CEOs, all compensation	100.0
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CEOs, cash compensation	44.6
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Other Occupations:

Math/computer science	4.8
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All	0.6
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Sales	0.5
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Managers	-1.4
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Engineers	-1.4
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Blue-collar	-5.6
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The post-1978 period has witnessed an explosion in the ratio of CEO pay to the pay of the average workers, with a ratio that increased from 28.5 in 1978 to 56.1 in 1989 to 115.7 in 1997.<sup>7</sup> Once again economic theorists like AAV are confronted with the awkward fact that Europe does not behave like America, and thus they appear to have proposed a set of explanations involving SBTC and unions that does not have universal applicability. The ratio of CEO pay to the wages of average workers is more than

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6. See Mishel *et al.* (1999), Table 3.50, p. 210, and discussion, pp. 209-211.

7. Mishel *et al.* (1999), Figure 3P, p. 212.

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double in the United States the value of the same ratio in the large European nations (excluding the U. K.).<sup>8</sup>

Just as the top one percent of the U. S. income distribution is populated by CEOs, so is it populated by Rosen's (1981) "superstars" of the entertainment and sports worlds. The latest *Forbes* magazine "Power List" of top sports and entertainment superstars lists 73 of the top 100 as having an annual income of \$10 million or more, with two at \$100 million or more.<sup>9</sup> Major sports figures who would have earned six-figure salaries 30 years ago now earn eight-figure salaries. Why have these multiples expanded? Ironically, the underlying cause may have been technology, but not the kind of computer-based technological change imagined by the proponents of SBTC. The technological developments that boosted the ratio of superstar incomes to ordinary worker incomes included the invention of television, cable television, CDs, VCRs, DVDs, and the other equipment that has made American superstars household names not just within the U. S. but in most of the rest of the world. The CEO, entertainment, and sports-star multi-millionaires phenomena are all part of the superstar paradigm that explains most if not all of the upsurge in the share of U. S. income earned by the top one percent. In fact, to explain the soaring ratio of CEO pay to average worker pay, we would do best to treat a CEO as a superstar, enjoying a halo of reputation that leads a board of directors to shower him or her with tens of millions of compensation, including bonuses and stock options, when an equally capable but less famous alternative might have been willing to do the job at one-tenth the price.

This suggestion that we should use Rosen's approach to the economics of sports and entertainment

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8. Mishel *et al.*, Table 3.52, page 213.

9. *Forbes*, March 21, 2001.

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superstars to understand the exponential increase in the relative compensation of CEOs suggests a name for this approach to the explanation of the rising share of income in the top one percent of the income distribution. This "Theory of the Four Michaels" refers to Michael Eisner, Michael Dell, Michael Jordan, and Michael Jackson.

The remaining aspect of the increased income share of the top one percent of the income distribution is created by an obvious source of inequality that AAV do not address. Despite the enormous disparities of labor income between CEOs, as well as entertainment and sports stars, and average workers, labor income constitutes only 41 percent of the income of the top one percent. Fully 58 percent represents capital income, and in fact the top one percent owns 47 percent of all U. S. financial assets.<sup>10</sup> The stock market boom of the 1990s showered realized and unrealized capital gains on the top one percent, and most of the previously cited data on the distribution of wages and labor income exclude this source of rising inequality.

### ***Conclusion***

The increase in inequality over the past thirty years raises new questions for economists to investigate. While the dominance of the top one percent in acquiring the real income gains of the 1975-95 period has been documented, no one has yet attempted to quantify the role of mushrooming CEO, entertainment superstar, and sports superstar pay in explaining what is going on within the top one percent.

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10. Mishel *et al.* (2001), Table 4.1, p. 259.

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An interesting research project would be to start from Rosen's (1981) model and attempt to quantify what parameters would be required to explain the explosion in superstar and CEO compensation that has already occurred. And we are far from understanding the roots of American exceptionalism. CEOs in Europe are paid far less as a share of average worker incomes than in the U. S., but we don't understand why this transatlantic gap persists and grows, and whether there is a superstar explanation of CEO compensation in the U. S. that as yet does not appear to affect CEO compensation in Europe in the same way.

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