

Does Productivity Growth Still Benefit Working Americans?: Unraveling the Income Growth Mystery to Determine How Much Median Incomes Trail Productivity Growth

Stephen Rose

June 2007

*Contrary to the
conventional
explanation
embraced by
many on the
left, the fruits of
productivity
growth have
actually been
harvested by
most working
Americans.*

In the last few years many researchers, commentators, and elected officials have bemoaned the fact that the middle class has not been receiving its fair share of income growth.¹ Given the increased work effort of female spouses, it is claimed that the middle class has been treading water while working longer. When contrasted with the rise in productivity, CEO pay and corporate profits, the natural conclusion of this middle class stagnation story is that the system is rigged and needs changing. As a result, the focus of many, particularly those on the left, has shifted from promoting growth, particularly productivity growth, to redistribution. Since growth no longer appears to benefit “working” Americans, it’s better, they argue, to focus on policies like universal health care, stronger retirement security, a more progressive tax system, and other redistributionist programs as a way to raise living standards for this group of Americans.

This change in political mood, particularly among Democrats, represents a significant and troubling shift. Since the time of FDR, Democrats have been the party of growth, albeit growth that is widely shared, but growth nonetheless. As a result, Democrats from FDR through Clinton saw robust and vibrant economic growth as progressive and advocated policies that led to it. In contrast, in recent years, many Democrats appear to have lost the faith they once had in growth as a “rising tide that lifts all boats.” Indeed, it’s been an article of faith among many on the left to state scathingly that JFK’s famous phrase no longer applies, if it ever did.

This loss of faith in productivity as an engine of middle class prosperity matters because it means that it will become harder to gain support for government policies to spur productivity growth. And government policies can help boost productivity growth. Indeed, government support for R&D and the digital transformation of the economy are particularly critical for ensuring robust growth in the future.² If, in contrast,

government gives short shrift to policies that boost productivity in favor of social policies to distribute an already fixed pie, then growth, and middle class opportunity, will suffer. The stakes are not small, for maintaining the productivity rates of the last decade for the next 25 years will mean that per capita incomes will more than double (105 percent) instead of growing just 44 percent if productivity growth slips to pre-1995 levels.

This paper examines carefully the trends over the last 25 years in income growth and finds that, contrary to the conventional explanation embraced by many on the left, the fruits of productivity growth have actually been harvested by most working Americans. Much of the difference in productivity and median income growth can be explained largely by demographic change and rising non-wage benefits. This is not to say that growth in recent years has not been more inequitable than it should be, or that recent tax and social policies have not exacerbated this inequality. Both are true. However, the historical link between productivity growth and wage growth is not broken and it would be a grave mistake for our future if our nation gave up on growth.

At First Glance It Looks Like the Left Is Right

Those making the argument that productivity no longer helps working Americans point first and foremost to the fact that productivity growth as measured by real GDP per person is up 63 percent from 1979 to 2005, while real median household income (the place on the distribution where 50 percent are above and below) is up a mere 13 percent over the same period.³ This 50 percentage point difference is thought to represent a substantial amount of “lost

income” for the middle class. Median household income grew just \$5,311 since 1979 (in 2005 dollars). However, if it had grown at the level of GDP per person growth, median income would have been \$25,967, or a whopping \$20,656 more than what actually happened. No wonder most progressives have lost faith in growth.

A simple premise of growth accounting is that all growth must be allocated to some group. If any group is getting less than their fair share, then some other group must be getting more than their proportional share. A common culprit is corporate profits. This, after all, must be where the productivity went. However, the share of corporate profits is mainly cyclical and only up slightly since 1979. Moreover, the share of personal income out of GDP has just dipped a bit (from 84.7 percent in 1979 to 83.2 percent in 2005).⁴

If it's not corporate profits, it must be the rich that are reaping most of the growth. As Table 1 shows, the growth at the upper rungs of the income ladder was indeed higher than either the middle or lower end of the scale. Consequently, slow growth at the lower end of the income ladder through the median is offset by outsized gains for those at the top of the income ladder. Those who decry growing income inequality are not wrong. It has gone up and a compelling case can be made that the nation as a whole, and most Americans in particular, would be better off with less inequality.

However it should be noted that even at the 95th percentile the income gain was 42 percent, 21 percentage points below the productivity growth rate of 63 percent.⁵ Could it be that the top five percent of the population raked in the lion's share of our nation's growth? Or are there factors that

Table 1: Change in Real Household Income, By Place on Income Ladder⁶

Percentile	1979 (2005 \$)	2005	% Change
10	\$10,228	\$11,288	10.4
20	\$17,442	\$19,178	10.0
50	\$41,015	\$46,326	12.9
80	\$72,259	\$91,705	26.9
90	\$93,535	\$126,090	34.8
95	\$116,760	\$166,000	42.2

are not included in this comparison that skew the numbers?

The purpose of this paper is to show that much of the \$20,656 difference between median income growth and productivity growth can be explained largely by demographic change and rising benefits.

Once the appropriate adjustments are made, median income is estimated to have grown by 33 percent instead of the 13 percent according to Census numbers, leaving \$6,120 unexplained. Because of data limitations about the incomes of the very rich, one cannot do a complete accounting for growth. It is assumed, however, that the slower than average growth at the median is offset by higher than average income growth for wealthier families with a small portion going to rising corporate profits. In addition to the analysis of income growth, the last section of the paper will show what happened to earnings and why real median male earnings stagnated during these years.

Other Estimates of Median Income Growth Using IRS Data

The principal source of data which economists use to measure income changes is the March supplement of the Census Bureau's Current Population Survey (CPS).⁷ However, two studies that have been widely cited by those claiming that most growth has not gone to average Americans used IRS income tax data to track income growth at different points on the income scale.⁸ Both

found very high growth among the top one and top tenth of one percent of the income scale and very modest or no growth for people in the middle of the income scale.

However, it is important to note that the IRS data are quite different from the CPS data. A key advantage is that the raw data provided by the IRS has a disproportionately large number of high income cases, which permits much better analysis of what is happening among the wealthiest one percent of the country.

However, it also suffers from many deficiencies. First, there are no data on the social characteristics of the filers, as opposed to the very detailed data on family composition in the CPS. Second, there are 30 percent more tax units than households, because some households have husbands, wives, and children filing separately; consequently the tax unit does not include all household members that share income. Third, as a result of these extra filers, the income distribution of IRS data has many more low income units. For example, incomes at the 10th percentile were \$4,000 in the IRS data but double that in the CPS data. Furthermore, 17 percent of CPS households in 2004 had incomes above \$100,000 while only 10 percent of IRS tax units surpassed this level. A key finding of this paper is that demographic change affects income distribution very much, so missing this factor means that one cannot adjust for its impact.

The first group of researchers, Thomas Piketty and Emanuel Saez, are often cited to show that the incomes of households of the bottom 90 percent of the income distribution have stagnated from 1973 to 2002.⁹ This dramatic finding has gotten a lot of media attention because it would seem to imply that working Americans got none of the economic growth over this period.¹⁰

However, as they note in a methodological footnote, their results are very sensitive to the assumptions used in creating the data.¹¹ First, there is a significant debate on how to adjust for inflation. Currently, Census publications adjust for inflation using the price deflator CPI-U-RS (the RS stands for research series) and most researchers have moved to adopt this practice because it is seen as more accurate. Piketty and Saez note that growth would be higher by 13 percent for all people if they used this price deflator instead of the old CPI-U.

Second, they exclude all government income transfers (Social Security, unemployment insurance, welfare, etc.) in their definition of income. Furthermore, employer benefits are included in compensation in GDP accounts but excluded from the Piketty-Saez definition. If these factors had been included, incomes of the bottom 90 percent of the income distribution would have grown by an additional 17 percent.

Third, Piketty and Saez do not address demographic changes, which they realize has led to the number of households growing faster than population (see discussion below). They estimate that, if they used a per capita approach rather than tax unit approach, the income growth of the bottom 90 percent would have been an additional 20 percent higher. This is because the average tax unit has been getting smaller.

Thus, when these three factors are combined, income growth for the ninety

percent of the income ladder would have been 50 percent, instead of the zero percent they reported. Furthermore, because transfer payments and changing household size affect households at the bottom and middle of the income distribution more than those at the top, income inequality would have still grown but not nearly at the rate that it appears in their published results.

Another group of researchers, Robert Gordon and Ian Dew-Becker, address the same issue of “Where did the Productivity Growth Go?”¹² They conclude that their “most surprising result is that over the entire period 1966-2001, as well as over 1997-2001, *only the top 10 percent of the income distribution enjoyed a growth rate of real wage and salary income equal to or above the average rate of economy-wide productivity growth* [italics in original].”

As opposed to Piketty and Saez who report that the bottom 90 percent receive virtually none of productivity gains, Gordon and Dew-Becker find that the top 10 percent received half of the gains in incomes and that the bottom 80 percent received 35 percent of the increase. Thus, they find a lot of growth in inequality but moderate gains in real incomes for those at the median.

There are reasons to believe, however, that they too have understated the share of income growth that has gone to the broad swath of families in the middle three quintiles. Because IRS data do not have demographic information, these researchers cannot account for demographic change. They note that the number of yearly hours worked per household is down but don't tie this to the demographic shift to single adult households. This has a big effect on the lower end of the income distribution but they make adjustments for changes in hours to all households along the entire income ladder. Consequently, their findings should be taken as one piece of the puzzle (the huge increase in incomes among the top one

percent of the income ladder) and used with great care.

New Ways at Looking at Productivity and Median Family Income Growth

One of the reasons why there has been such a large gap between productivity growth and median income is that in many ways these are comparing apples to oranges. While it might seem natural to use GDP per capita growth as the basis of productivity growth, this is not appropriate if the goal is to link it to changes in household income. In fact, the number of households has grown at a much faster rate than population growth. The increasing number of single parent households, more young single people living outside their parents' houses before they marry, more elderly widows, and fewer children per family have all contributed to faster growth in households than population. Consequently, the growth of income per household (which is the demographic unit that income is based on) is naturally much less than the growth of GDP per capita. If a husband and wife are both working and make \$50,000 each, their household income is \$100,000, but per capita income is \$50,000. If they get divorced, their average household income drops to \$50,000, while per capita income stays at \$50,000. This drop in size of the average household is why from 1979 to 2005, real personal income per household rose by 48 percent and not the 63 percent of GDP per person.¹³

So, if all households shared equally in the available growth, then the real median household income would have grown by 48 percent, not the 63 percent of GDP per person, and reached \$60,784 in 2005. This is a more appropriate measure to simulate growth than the growth based on GDP per person measure because incomes are based on households and not total population. The \$60,784 is still \$14,458 more than the actual 2005 median, but the gap has shrunk by 30

percent compared with the one that used GDP per capita growth as the comparison point.

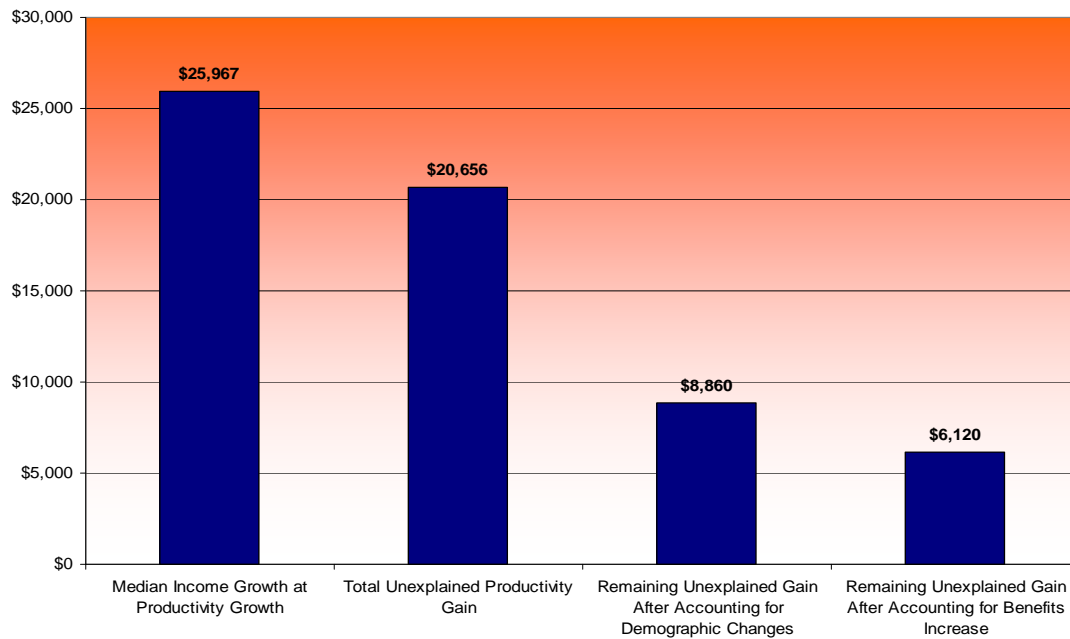
Another aspect of the demographic shift is that the extra households that have been formed are often low income households. For example, in 2005 the median income of single women-headed households with or without children was \$25,000 while the median for couples was \$62,550. Similarly, the share of adults who were in married couples fell from 76 percent in 1979 to 68 percent in 2005.¹⁴

Since these new households had much lower incomes, there is an independent demographic effect causing there to be many more low income households. According to a simple mathematical simulation,¹⁵ the median income would have been \$51,924 if the distribution of household types between married and singles had not changed. This demographic shift explains another \$5,598 of the difference between productivity growth and the growth of median household income.¹⁶ When this factor is combined with the effect of more households, only \$8,860 of the extra productivity remains unaccounted for.¹⁷

Finally, there is the issue of benefits that are included in GDP data as going to people but are not included in household income as reported in Census surveys. Because of rising health care costs, the employer share of health insurance premiums alone rose from 4.2 percent to 9.0 percent of earnings between 1979 and 2005. Over this same period, the combined FICA and Medicare taxes for employers went from 6.13 percent to 7.65 percent.¹⁸ The increase in these non-cash benefits raises the median income in 2005 by an extra \$2,740.¹⁹

Figure 1 sums up the effects of all of these changes. After accounting for benefit growth and controlling for the shift to lower income

Figure 1: Where Did the Unexplained Productivity Growth from 1979 to 2005 Go?²¹



households, the median income in 2005 would have been \$54,664 or 33.3 percent higher than its 1979 level. This gain is much more substantial than the 12.9 percent gain from the unadjusted numbers even though it is not as large as the 48 percent that it would have been if productivity had growth been evenly distributed across all of the rungs of the income ladder (see Figure 2).²⁰

Demographic changes are the most important factors in explaining where productivity growth went. In essence, the United States used some of its growth dividend in the form of more people living alone. Prior to 1960 in the United States and in many countries today, three generation households were/are quite common – a married couple may have children and one or more of their parents under one roof or a young married couple may start out living in one of their parents’ houses along with other siblings.

It is a sign of progress that most new couples and most retired couples live on their own. In addition, the long-term trend has been for older children to pursue their independence by forming their own households (sometimes with non-related roommates). While in the last ten years, there has been a slight return of older children living with parents – and this has led to headlines about the poor shape of the economy – the trend has been modest.

Finally, divorce and single parent households have both become more prevalent in the United States and in all of the advanced economies of Western Europe. In addition, the number of children per family has declined in all of these economies. While many people think that it would be better if people made the best choice for a life partner on the first try and if families had more children, this has not been the world created by people making their own choices in affluent societies where independence is very much prized.

The other factor accounting for some of the unexplained difference between income and productivity growth is higher benefits, primarily in the form of rising employer contributions for medical insurance and

retirement savings. With the increase in the share of the population aged 65 and above, coupled with more people retiring at earlier ages, it should come as no surprise that more of national income is going to retirees (and more will in the future). Thus the “stagnant income” story is explained in part by the need for a growing share of productivity gains to go to the elderly (in the form of retirement savings and medical benefits) and less to the workers generating them.²³

The remaining \$6,000 discrepancy can be explained by many factors, the largest of which is the rising pay for top managers and professionals. Other components include: rising retained earnings by corporations,²⁴ and rising hours and pay of female spouses (the median income of two-earner couples was \$81,000 in 2005, a figure which means that most two-earner couples are above the median).²⁵

Changes in Earnings and Hourly Wages

The previous analysis focused on household income. A related claim in the middle class stagnation story focuses on hourly wages. In particular, some argue that hourly wages, particularly for males, have not grown despite huge gains in productivity. It’s not uncommon for some commentators or elected officials to focus on those that have been displaced by international trade and claim that many male workers make as much as 20 percent less than males did a generation ago. Again, judging the validity of this claim requires careful analysis to deconstruct what has happened.

Instead of using GDP growth, most commentators who address this issue start with the 68 percent increase in productivity per hour in the non-farm business sector from 1979 through 2005. While this is the leading government indicator of productivity, it does not encompass the entire economy, with the government, farm, and non-profit sectors being excluded. For many years, this exclusion did not make

Figure 2: Real Gain in Household Incomes, 1979 to 2005²²

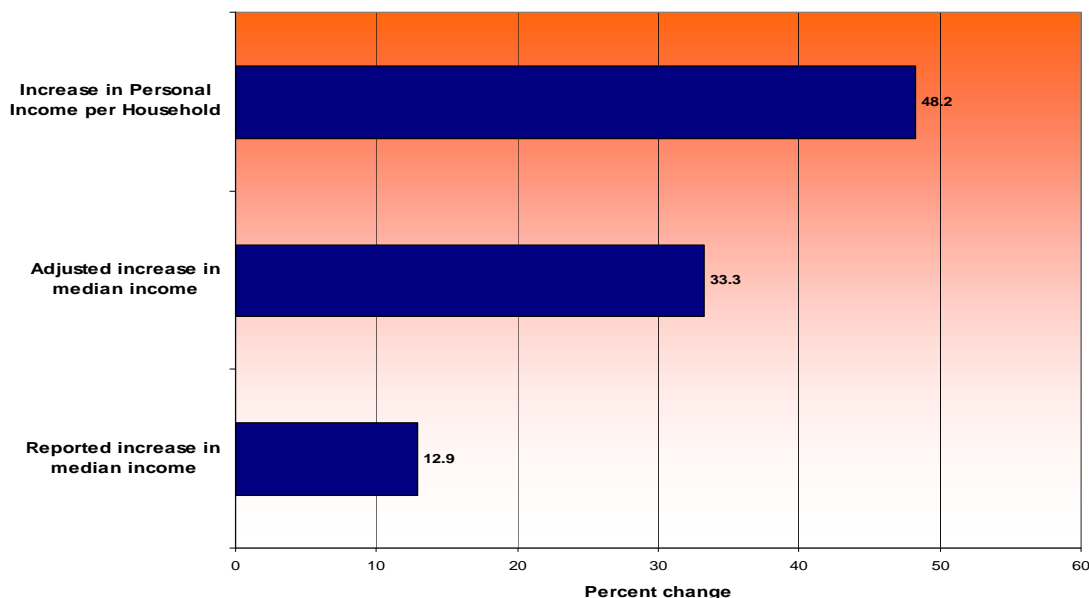
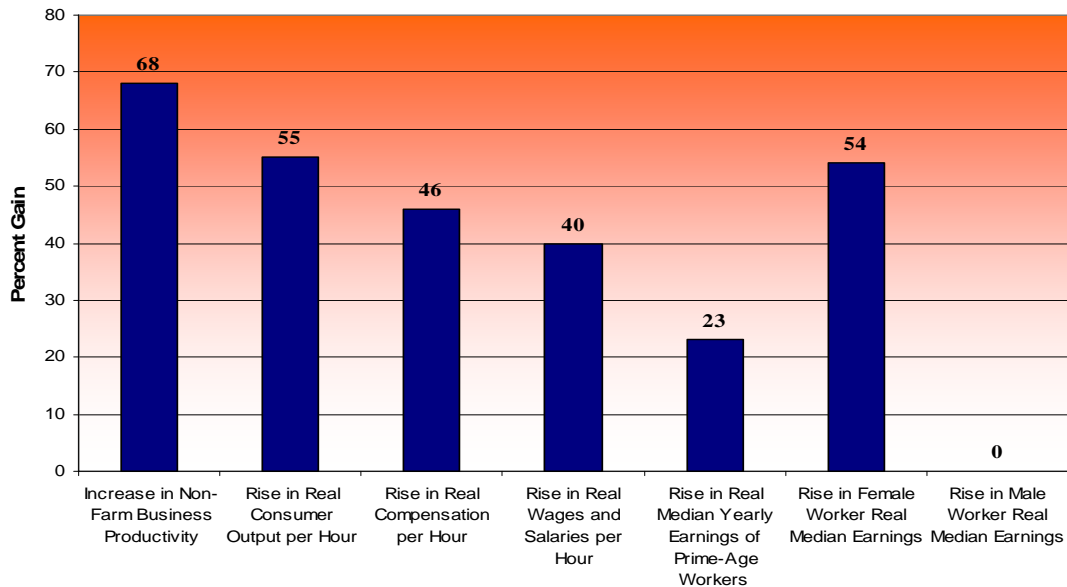


Figure 3: Different Measures of Productivity Growth and Change in Earnings, 1979-2005²⁸



much of a difference, but over the last ten years, the combined productivity growth in these three sectors has been lower than the productivity growth in the non-farm business sector.

Another issue in aligning productivity growth with rising earnings is that the inflation adjustment on earnings (e.g., the Consumer Price Index) has risen faster than the inflation adjustment for total output. This odd combination results from productivity gains in the capital goods sector outpacing the gains in the consumer goods sector.

Consequently, the effective productivity growth that is available to increase wages per hour is 55 percent, not 68 percent.²⁶ This 55 percent is lower than the 63 percent rise in GDP per person because there are more women in the work force, and because women are working longer hours than before (men's hours have remained flat).

The next step involves moving from output per hour to the 46 percent rise in real compensation per worker. The reduction from 55 to 46 percent is due to rising corporate profit shares and income transfers, primarily to support the increasing share of the population that is retired (the total of private pension payouts, Social Security, Medicare, and payments to the elderly from Medicaid increased from 10 to 15 percent of personal income).

Finally, because benefits (primarily the cost of health insurance) grew faster than wages and salaries, real average earnings per worker hour grew by 40 percent. Many workers have focused on cash payments even though from a company point of view total compensation – wages and benefits – is the more important measure.²⁷

All of the previous data are based on average figures produced by the Bureau of Economic Analysis of the Commerce Department. If we want to estimate what

happened in the middle of the earnings distribution, we have to turn to the Current Population Survey.

According to that source, real *median* yearly earnings of prime-age workers (ages 25-59) grew by 23 percent from 1979 to 2005, 17 percentage points lower than the 40 percent growth in real *average* earnings.²⁹ However, this is a far cry from a story of stagnation or one where the highest earners are getting almost all the gains.

The experience of male and female workers, however, was very different. As women have increased their labor force presence (the share of female workers in the labor force increased from 40 percent in 1979 to 46 percent in 2005) and increased their hours, they have also earned more, and as the economy expanded they moved into many high-paying occupations and jobs that had been mainly held by men.

The gender pay gap, while large, is shrinking: real mean earnings of male workers grew by 24 percent while the gain for female workers was 72 percent.³⁰ Since men's annual hours were basically constant over these years, all of the change was due to changing hourly pay. For women, however, about one-fifth of the gain was due to working more hours per year and four-fifths was due to higher pay per hour.

Because of rising inequality, median earnings growth was less than the average numbers just cited: there was no growth in real *median* earnings for prime-age male workers while women's *median* earnings grew by 54 percent.³¹ In other words, women's median earnings increased faster than the total average earnings in the economy while men's wages at the median

stagnated (see Figure 3 for a summary of all of the different computations).

There has been a huge debate among economists about the causes of the poor performance of male earnings, particularly for those with less than a four-year degree.³² In the women's labor force, inequality also increased, but across the board women had sizable earnings gains. There is a temptation to connect these two movements, but gender segregation in occupations makes the exact mechanism of how women's rising wages led to men's non-rising wages harder to specify. Nonetheless, as women have worked longer and as gender barriers in various occupations have fallen, it is hard not to conclude that this has had some effect on reducing male earnings gains because male workers in the past faced less competition from women for the better paying jobs.

Another side of gender segregation is that men, especially those with at most a high school diploma, have been concentrated in blue collar manual jobs in manufacturing, construction, longshoring, and transportation. Through the 1970s, many of these jobs were unionized with quite high pay for workers with these educational credentials. Economists have studied inter-industry wage differentials to identify "rents" captured by these workers.

Over time, market economies tend to wipe out these labor and sectoral rents through either internal and foreign competition or technological change. Hence, it is not surprising that these rents would be greatly reduced and that employment in these industries would decline as a share of the labor force.³³ Approximately 30 percent of male workers in 2005 were in these "sunset industries," and even though there were pockets of strength, earnings for these workers were not keeping up with inflation,

The main reason compensation per hour could grow at such a robust pace (86 percent) in the prior 26 years (1953 to 1979) was that productivity grew by 85 percent.

let alone productivity growth. This change in relative pay is a key factor in driving rising male earnings inequality and stagnating male earnings at the median.

The rise in inequality among female workers along the same skill lines as male workers shows that there are structural factors that changed the pay structure dramatically over these years. On the one hand, there have been key institutional changes such as the decline of unionization, stagnation of the minimum wage, immigration, and increased foreign competition. Secondly, many economists have argued that the new computer-based technologies have favored the more educated over the less educated. Carnevale and Rose, however, point to the increased importance of administrative, financial, and executive activities as the cause of rising inequality.³⁴

Finally, several economists have talked about the expansion of “winner-take-all” labor markets in which the super stars earn considerably more than others in the same field.³⁵

Finally, it is important to put these numbers into historical context. Many progressives compare the current era to the post war period and see this one lacking when it comes to helping average American workers. After all, then the average worker saw real income almost double. But what many progressives overlook is that the main reason compensation per hour could grow at such a robust pace (86 percent) in the prior 26 years (1953 to 1979) was that productivity grew by 85 percent. From 1979 to 2005, real mean compensation per hour grew by just 46 percent – almost half the rate of the prior period. But real output per hour grew by 68 percent (in the non-farm business sector), which was also less than in the golden age period. Moreover, productivity gains had been slow from 1973 to 1997 (less than one half the rate of either 1946 to

1973 or 1997 to 2005). If we go back 26 years from 1997, compensation per hour had grown just 33 percent because productivity growth was also relatively anemic. Clearly, productivity has been and is the central driver of compensation growth.

In sum, economics can be thought of as both positive sum (growth driven by productivity increases expands the size of the pie) and zero sum (once the size of the pie is set then increasing shares going to one group have to be offset by decreasing shares elsewhere) processes. Many commentators have lamented the slow growth in median earnings, particularly for men. But by combining male and female workers into a common group, some commentators miss the strong growth in women’s pay. In fact, because the share of women in the work force has risen and because women tend to have lower earnings than men, the median pay of all workers is lower.

Moreover, the stagnation of male median earnings is often attributed to rising corporate profits and growing inequality. While it is true that the share of corporate profits out of national income is currently at a high level and has grown since 2001, there is no long term trend of rising corporate profits. The corporate profit share has mostly been cyclical, varying in a narrow range band. Were corporate profits to remain at this level or grow to a higher share of national income, it might be a cause of concern. But this is unlikely and the effect of an increase of a few points in the share of corporate profits would limit the growth in earnings by only a relatively small amount. Growing wage inequality is a more serious factor contributing to male median wage stagnation. This rise in inequality is partially driven by the erosion of the high pay of unionized blue collar workers in industries now operating in a very different

*Productivity has been
and is the central driver
of compensation
growth.*

climate from the one they faced in the fifties and sixties. Furthermore, other factors are cited here that play a big role in the male median earnings stagnation – lower productivity growth over the period compared to earlier periods; growing shares of national income going to women, the elderly and health care; and growing earnings inequality, particularly through the increase in “winner take all” markets.

Conclusion

The purpose of this paper has been to conduct a careful deconstruction of where productivity growth went and why different measures of median well-being changed at the levels that they did. Certainly, inequality has risen since 1979, but many of the claims about the size of that growth have been greatly exaggerated.

Productivity growth has to be deconstructed into changes in earnings, profits, and government transfers. All too frequently some commentators have not done the arithmetic and instead made sweeping statements about how all of the productivity growth over the last 25 years has gone to the richest 10 percent of the population.

The absurdity of this position can be shown with the following simple calculation: personal income per capita was \$31,000 in 2005, which was \$11,500 higher than it was in 1979 (in 2005 dollars); if all of the growth went to the top 10 percent, then their share of total income would have grown by 30 percentage points from approximately 30 percent to 60 percent. Combining this value with the share of income received by the second decile would lead to the top quintile receiving approximately 75 percent of all income. This figure is considerably out of

the range of any estimate (mid fifties) that we have from different data sources.³⁶ Gordon and Dew Baker estimate that 50 percent of the growth went to the top ten percent and this should probably be considered the upper limit of what this group received.³⁷

As is shown here, part of the income growth was absorbed by forming more single person households. After adjusting for this factor and for rising benefits, median household incomes were estimated to rise by 33 percent. While this growth rate is still less than the 48 percent that it might have grown at, it is not an insubstantial amount during a period of only moderate productivity growth.

The old lesson of economics, embraced by a generation of Democratic leaders, that a rising tide lifts all boats is still true, and it's even more true that without a rising tide it is very difficult to raise the boats of average working Americans. This means that if progressives want to help raise the incomes of average American workers, a robust economic growth strategy with a strong focus on the key drivers of productivity growth – technological innovation and digital transformation of the economy – will be critical. This does not mean that other strategies to ensure more equal distribution of that productivity (e.g. higher minimum wages, more progressive taxes, universal health care, and the like) are not needed to more closely match median and average income growth. But the lesson from this analysis is that progressives ignore productivity growth at their own peril, and more importantly, at the peril of average working Americans.

Technical Appendix 1: How much income growth is available using Current Population Survey (CPS) data?

According to NIPA accounts, personal income per household grew by 48 percent from 1979 to 2005. Using the reported incomes in the two relevant CPS surveys, average income grew by just 30 percent; another 4 percent can be added to this amount because of increases in benefits that are part of the NIPA definition of income but not the CPS definition of income. This leaves 14 percent of growth (equivalent to \$7,000 per household) that is unaccounted for.

There are three reasons for this discrepancy:

First, high incomes in CPS are not fully reported. As research using IRS files shows, the incomes of the super rich grew much faster than average during these years.

Second, incomes in CPS are not reported accurately. In particular, incomes from transfer payments, pensions, dividends, and interest payments received tend to be significantly underreported. Since these income components grew faster than wages and salaries (which tend to be accurately reported), some income growth is missed.

Third, interest payments on workers' retirement savings are included as income in the NIPA approach and not in the CPS.

Most of these factors affect incomes at the bottom and top of the income ladder. Since this analysis is concerned with movements in the median household, the effects of these CPS omissions are not as large as the 14 percent gap would indicate. Nonetheless, there are some gains that do affect the median income that are not properly accounted for because of these factors. There is no way to estimate accurately how much added income at the median is missing. A guess of the lower and upper limits would be between several hundred and two thousand dollars. Since this would reduce the amount left unexplained by rising inequality, the \$6,120 figure cited above should be considered an upper limit of the effect of rising inequality.

Endnotes

1. There is a huge literature on rising inequality during these years: see studies by the Economic Policy Institute, the Center for Economic and Political Research, and Demos; Lou Dobbs has a nightly show (and book of the same name) on the “War on the Middle Class”; for magazine articles see *The Nation* and *The American Prospect*; and Elizabeth Warren leads a Web discussion on the declining status of the middle class on TPM Café.
2. See Robert D. Atkinson and Andrew S. McKay, “Digital Prosperity: Understanding the Economic Benefits of the Information Technology Revolution,” (Washington, D.C.: Information Technology and Innovation Foundation, Feb. 2007): <www.itif.org/files/digital_prosperity.pdf>, 13; and Robert D. Atkinson, “The Research and Experimentation Tax Credit: A Critical Policy Tool for Boosting Research and Enhancing U.S. Economic Competitiveness,” (Washington, D.C.: Information Technology and Innovation Foundation, Sep. 2006): <www.itif.org/files/R&DTaxCredit.pdf>.
3. Median incomes are reported by the Bureau of the Census while real GDP per person is computed by the Bureau of Economic Analysis at the Department of Commerce using “chain weighting” to adjust for inflation. There are two ways to report what is “typical:” medians represent the middle of the distributions and are used in most presentations of incomes or earnings; the alternative is the “average” which is just the total divided by the number of people or households in the nation – GDP per person is an average.
4. Some people might argue that some of this difference is due to corporate profits, which grew from 9.9 percent to 12.4 percent of national income during these years. However, the share of corporate profits out of national income is very volatile, rising and falling with the business cycle. For example, starting from the 9.9 percent level in 1979, the share of profits was lower in the 1980s and early 1990s before rising to 11.9 percent in 1997. With the onset of the recession in 2001, the profit share fell to 8.5 percent before rising to 12.4 percent in 2005. Therefore, since productivity and inequality exhibited steady rises over this period, it is probably not appropriate to connect changes in profit share with the productivity-median income gap. Moreover, most of this increase went to dividends which are included in personal income and rose from 2.6 percent to 4.7 percent of national income over these years; retained earnings grew modestly from 3.4 to 4.2 percent. The other two flows that go to “owners” of capital are proprietor’s income and net interest: From 1979 to 2005, the share of national income going to proprietor’s income grew slightly from 8.0 to 8.6 percent while the share of net interest contracted sharply (due to lower interest rates) from 6.2 to 4.6 percent. Consequently, the combination of retained earnings, proprietor’s income, and net interest was basically flat. Finally, it should be noted that national income accounts have a variety of aggregate totals – GNP, GDP, National Income, and Personal Income – that can be used. It is beyond the purpose of this paper to carefully explain the conceptual differences of each of these concepts.
5. This occurs because average household income in the CPS data was only 30 percent; see Technical Appendix 1 for a discussion of the limitations of CPS data and the effect this has on comparing median income and productivity growth.
6. Income, Poverty, and Health Insurance Coverage in the United States: 2005: <www.census.gov/prod/2006pubs/p60-231.pdf>.
7. U.S. Census Bureau, “Current Population Survey,” <www.census.gov/cps/>.
8. Thomas Piketty and Emmanuel Saetz, “The Evolution of Top Incomes: A Historical and International Perspective,” *American Economics Review* 96 (2006): 200-205; and Robert Gordon and Ian Dew-Baker, “Where did Productivity Growth Go? Inflation Dynamics and the Distribution of Income,” *Brookings Papers on Economic Activity* 2 (2005): 67-127.

9. In their work, they do not track what happens at the median because they construct an historical series back to the early twentieth century. In the early years of the income tax, only about ten percent of the population filed returns, and therefore these researchers combine the bottom 90 percent of the income ladder into one group over the entire period. They present no information about what is happening at the median, but we know from CPS studies that incomes in the 70th to 100th percentiles of the income range have grown faster than those in the bottom half of the distribution. Therefore, one could conclude that the median household in their study would have had negative income growth over these years.

10. See Eric Konigsberg, "A New Class War: The Haves and the Have Mores," *The New York Times* (19 Nov. 2006):

<select.nytimes.com/search/restricted/article?res=F00B12FC3E5A0C7A8DDDA80994DE404482>.

11. Unfortunately, this footnote is buried in one of their last spreadsheets in the Excel file that they provide online (elsa.berkeley.edu/~saez/) and few readers are likely to notice.

12. Gordon and Dew-Baker, op cit. 67-127.

13. Personal incomes were deflated by the price index for personal consumer expenditures. This index shows more inflation and less growth than the GDP price deflator because of high productivity gains in investment versus consumer goods.

14. Adults here are defined as those people over 18 years old who are living on their own and not in group quarters or in their parents' home; married couples include cohabiters – two persons of opposite sexes sharing living quarters (in 2005, the two adults were identified as the "reference person" and "unmarried partner").

15. First, take the population in 2005 and set the distribution of household types at their 1979 levels; second, use the 2005 distribution of income within each household type to determine the simulated number of households at each income level; and third, determine the median family income of the population.

16. Another way to isolate the effect of demographic changes is to look at the change in median income of husband/wife couples over these years: in 1979, the median income of couples was \$50,875 while the comparable figure in 2005 was \$62,550. This 23 percent gain is considerably greater than the 13 percent gain of the median income of the entire population.

17. These calculations are based on numbers from all households. In other research, I argue that there are strong life cycle effects and that it is better to look just at prime-age people to best translate income into well-being. Further, by looking at all households, there is no adjustment for single adult households, which usually has at most one earner, compared with two adult households, which progressively has contained two earners. In the vast majority of cases, the two earner households will have incomes above the median incomes of all households.

18. The issue of who benefits from the rise in Social Security and Medicare taxes is complicated. From the point of view of today's economy, various taxes including these are collected to provide money and services to the elderly. The size of this effect has been growing as the share of the population over 65 grows, as cash benefits rise, and Medicare costs explode. Over the longer term, current workers are given the promise of benefits in the future for their contributions today. It is only in this sense that the rise in employer social insurance taxes on workers' pay can be attributed to those employers today.

19. In fact, one way to present raw CPS income figures is to include all of these benefits. With this approach, real median "total income" was \$49,013 in 1979 and rose to \$57,676.

20. All of these analyses are presented for the population as a whole. In other research, I track the experiences of prime-age adults (25-59) in order to focus on changes in “permanent income.” The median income figures for prime-adults was \$60,000 in 2005 for all adults, \$70,000 for married couples, and \$81,000 for couples in which both husband and wife had at least some earnings during the course of the year.

21. Author’s computations based on March Supplement, Current Population Survey, 1980 and 2006.

22. Ibid.

23. The Congressional Budget Office recently studied the difference of productivity and income growth in the years 2001-2005 and concluded that “Personal income gains in recent years have been concentrated mostly in benefits and transfer payments, whereas labor and capital income have stagnated.” See Marc Labonte, “Why is Household Income Falling While GDP is Rising?,” RL33519 (July 2006).

24. It is important to note that retained earnings by corporations do not constitute a rise in inequality. Inequality can only occur between people, not people and institutions. If corporations retain more earnings they may use the funds to invest in new equipment or more R&D, which in turn boosts productivity and leads to new products and services.

25. Robert Lerman makes the interesting argument that inequality is connected to movements in immigration. In a society in which there has been a substantial influx of the foreign born, one could either track income changes for the native born alone or include the foreign born and use their incomes in their old countries as part of the base year. See Robert Lerman, “U.S. Income Inequality Trends and Recent Immigration,” *Inequality, Welfare and Poverty: Theory and Measurement*, Vol. 9 of *Research on Income Inequality*, John A. Bishop ed., (2003): 289-307.

26. Dean Baker uses the term “usable productivity” to define this concept in *The Productivity to Paycheck Gap: What the Data Show*, Center for Political and Economic Research, (April 2007). Economists have not agreed on how to treat the high productivity in capital goods that does not immediately reflect itself in current personal income. It probably makes the most sense to treat this as preparing the way for more growth in future years.

27. Some will argue that even though benefits have increased, it does not really represent an increase in real income because health care costs have also gone up. But this ignores the fact that growth in productivity already includes the slow growth in medical productivity (a key factor in medical inflation).

28. Author’s calculations based on Bureau of Economic Analysis, *National Income and Product Account Tables*, accessible at <bea.gov/national/nipaweb/Index.asp>.

29. Prime-age workers are used in this comparison because they are the ones most responsible for maintaining family standards of living. However, if all workers were used the gains would be quite similar.

30. Heidi Hartmann and Stephen Rose show that the long-run (15 year average earnings through prime age) is much greater than the single year figure computed yearly by the Census Bureau. Heidi Hartmann and Stephen Rose, *Still a Man’s Labor Market: The Long-Term Earnings Gap* (Washington, D.C.: Institute for Women’s Policy Research, 2004).

31. Because the baby boomers were young in 1979 and more experienced in 2005, median earnings for all male workers increased by 8 percent. In order to avoid this demographic shift, the data here are reported for prime-age workers.

32. Anthony Carnevale and Stephen Rose, "Inequality in the New High-Skilled Service Economy," *Unconventional Wisdom: New Perspectives in Economics*, Jeff Madrick, ed., (The Century Foundation Press, 2000). See also Daniel Autor, Lawrence Katz, and Melissa Kearney, "Trends in U.S. Wage Inequality: Revising the Revisionists," (2007): <www.economics.harvard.edu/faculty/katz/papers/AKK-ReStatRevision.pdf>.

33. For a quantification of this phenomenon, see Jessica Cohen, William Dickens, and Adam Posner, "Have New Human-Resource Management Practices Lowered the Sustainable Unemployment Rate," *The Roaring Nineties: Can Full Employment Be Sustained?*, Alan Krueger and Robert Solow eds. (New York: Russell Sage Foundation, 2002).

34. See Anthony Carnevale and Stephen Rose, *Education for What? The New Office Economy* (Princeton, N.J.: Educational Testing Service, 1998) for a division of the work force into five functional areas. They used this analysis to explain earnings inequality in Carnevale and Rose, op cit. (2000).

35. See Robert Frank and Philip Cook, *The Winner-Take-All Society* (New York: Free Press, 1995).

36. According to the Census Bureau, the share of the richest ten percent out of total income in 2005 was approximately 38 percent; Gordon and Dew-Baker, cited above, find that 43 percent of income according to 2001 IRS incomes went to the top 10 percent.

37. All of the estimates of growth accounting are based on comparing two snapshots many years apart. From longitudinal panel studies, we know that incomes are quite volatile which means that the share of the population at the extremes of low and high income in any given year is much higher than these shares would be if a multiyear average were used (statisticians call this movement the "return to the mean"). With IRS data, the yearly spikes in income would lead to overestimating the share of long-term incomes going to the very richest groups.

Acknowledgments

The author acknowledges the support and comments of Rob Atkinson, Christina Cerna, Dan Correa, William Dickens, David Fasenfest, Jim Klumpner, and Robert Lerner. In addition, much of the original research for this paper was done for the Middle Class Project at The Third Way. The usual disclaimers apply and the author is responsible for the final content.

About the Author

Stephen Rose has published a series of monographs and articles on the changing state of the middle class, the nature of the new service economy, earnings and income mobility, the economic gender gap, and the determinants of who attends highly-selective universities. His findings have been often cited in the *New York Times*, *Washington Post*, *Wall Street Journal*, *Business Week*, and other mass media outlets.

Currently, Dr. Rose is the principal at Rose Economic Consulting and is writing a book on changing social conditions (*Number Games: The Declining Middle Class and Other Economic Myths*). Previously, Rose served in a number of research and policy positions at Third Way: A Strategy Center for Progressives, U.S. Department of Labor, National Commission for Employment Policy, Joint Economic Committee, ORC Macro, and Educational Testing Service.

Rose has a bachelor's degree from Princeton University and a doctoral degree in economics from The City University of New York.

About the Information Technology and Innovation Foundation

The Information Technology and Innovation Foundation (ITIF) is a nonprofit, non-partisan public policy think tank committed to articulating and advancing a pro-productivity, pro-innovation and pro-technology public policy agenda internationally, in Washington and in the states. Through its research, policies proposals, and commentary, ITIF is working to advance and support public policies that boost innovation, e-transformation and productivity.

For more information contact ITIF at 202-449-1351 or at mail@itif.org, or go online to www.innovationpolicy.org

ITIF • 1250 I St. N.W. • Suite 200 • Washington, DC 20005