Backgrounder

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Analyzing Economic Mobility: Compensation Is Keeping Pace with Rising Productivity

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There is a widespread belief in America that productivity is rising but workers are not receiving the fruits of their labor. Citing government data that wages have lagged far behind increases in worker productivity in recent years, many politicians and journalists contend that America is becoming less economically mobile. This mistaken belief is the result of two misunderstandings.

First, it is incorrect to focus on workers' cash income instead of their total compensation. Total compensation includes such increasingly important components of workers' pay as health benefits, contributions to retirement plans, and paid vacations. These and other employer-provided benefits are not cash income, but they do contribute to workers' well-being.

Second, those claiming reduced mobility often use the wrong measure of inflation to calculate inflation-adjusted pay. By using the consumer price index (CPI) instead of the implicit price deflator (IPD), these calculations overstate inflation and understate wage growth. The result of this mistake is that wage growth will almost always appear to lag far behind productivity growth, even when workers are making gains.

When compensation is used instead of income and the correct inflation measure is used to calculate inflation-adjusted compensation, the data show that total compensation has actually increased in tandem with worker productivity. Contrary to the critics' arguments, the data on compensation do not indicate any reduction in economic mobility.

Talking Points

- Many commentators report that incomes have lagged far behind increases in workers' pay, but this is not the case. In fact workers' total pay has increased 46 percent since 1987.
- Studies in this area too often ignore employee benefits, such as paid vacation days, 401(k) matched contributions, and health insurance, that provide real value to workers and are an increasingly large portion of employee compensation.
- These studies also account for inflation incorrectly because they adjust pay and productivity for inflation differently. This introduces into the comparison differences that have nothing to do with how much workers are earning.
- Counting everything that workers earn—both cash income and employee benefits—and using the same measure to adjust both wages and productivity for inflation shows that compensation and productivity actually have grown in tandem.

This paper, in its entirety, can be found at:
www.heritage.org/Research/Labor/bg2040.cfm

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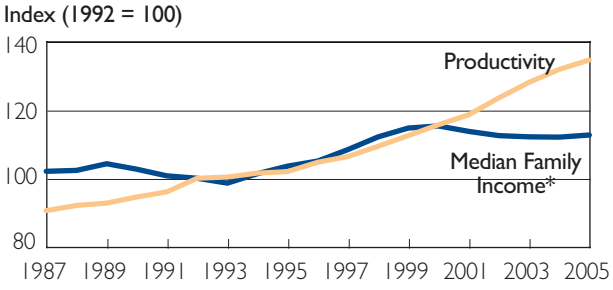
Stagnant Income?

Commonly used data appear to support the claim that workers' earnings have not grown as fast as their productivity, suggesting that many workers are being left behind as the economy moves ahead. Chart 1 shows the growth in productivity and inflation-adjusted median family income since 1987. In this chart, income was adjusted for inflation using the CPI.

Chart 1 B 2040

Median Family Income and Productivity Growth



* Adjusted for inflation using CPI-U-RS.

Source: Heritage Foundation calculations using nonfarm business productivity data from the U.S. Department of Labor, Bureau of Labor Statistics, and family income data from the U.S. Census Bureau.

The chart shows that, using these measures, productivity has grown much faster than family income since 1987. While the median family income rose by 10 percent between 1987 and 2005, productivity increased 49 percent.[1] This has led many to conclude that workers are losing ground. However, this particular choice of data masks the true picture.

More Than Just Cash

Economic theory suggests that as workers become more productive, firms must pay them more or risk losing them to competitors who offer more money. Chart 1 seems to contradict that theory. Economic theory, however, does not specify what form worker compensation will take: It need not be cash.

INCOME, COMPENSATION, AND EARNINGS DEFINED

Reporters and pundits often use the terms "income," "compensation," and "earnings" interchangeably without appreciating the differences between them. Though closely related, these terms are separate and distinct measures of financial well-being, and using them interchangeably can create misimpressions that present a distorted picture of workers' financial health.

Income consists of most forms of cash income to workers. This measure includes wages, salaries, tips, commissions, and bonuses, as well as interest payments and dividends. It also includes pension payments, Social Security income, and any government welfare benefits paid in cash. It does not include fringe benefits and other non-cash payments.

Total compensation consists of both cash payments and non-cash benefits that workers receive from their jobs. As with income, this measure includes wages and salaries, but it also includes non-cash compensation, such as health insurance, employer contributions to employee retirement plans, and paid vacation days. In addition, it excludes income from non-work sources such as interest from bank accounts and Social Security income.

Earnings is the sum of wage or salary income and net income from self-employment. This measure represents cash income earned by working: the amount of income received regularly before deductions for personal income taxes, Social Security, union dues, Medicare deductions, etc.[1] It does not include unearned income such as pension payments or government benefits, nor does it include non-cash benefits such as paid time off.

1. U.S. Department of Commerce, Census Bureau, American FactFinder, Glossary, "Earnings," at *http://factfinder.census.gov/home/saff/main.html?_lang=en*.

1. 2005 is the most recent year for which the Census Bureau reports median family income data.

The definition of income used in Chart 1 and in most reports of family and household income comes from the U.S. Census Bureau. It includes wage and salary income, bonuses, commissions, tips, and most other forms of cash income,[2] but it does not include non-cash benefits.

This income measure omits all of the other benefits that employers provide, such as paid time off, health insurance, and retirement contributions. These benefits contribute to workers' wealth and well-being and should be included in any measure of financial well-being. The measure of pay that includes these benefits, along with wage and salary income, is total compensation.[3]

A Rising Portion of Compensation

Benefits have risen much faster than wages in recent years, both in absolute terms and as a share of total compensation. Benefits represent a very real cost to employers and provide equally real gains to employees. Leaving them out of the picture ignores this fact.

Table 1 shows the percent increase between 2001 and 2006 in employer spending on several benefits that are important to workers: paid time off work, health coverage, and retirement account and pension contributions. Contrary to the popular impression that only health care spending has increased, spending in all of these categories increased at double-digit rates.

Table 1 B 2040

Percent Increase in Employee Benefits from Q1 2001 to Q4 2006

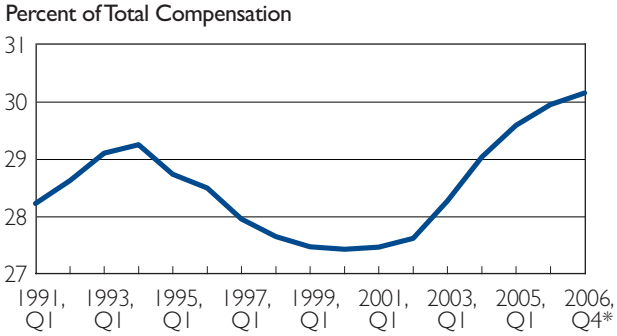
Paid Leave	14.4%
Health Insurance	40.5%
Retirement Benefits	38.1%

Note: Figures were adjusted for inflation using the Implicit Price Deflator.

Source: U.S. Department of Labor, Bureau of Labor Statistics, Employer Components of Employee Compensation for Nonfarm Businesses, All Civilian Workers.

Chart 2 B 2040

Benefits as a Share of Total Compensation



* The figure for the fourth quarter of 2006 is included because the figure for the first quarter of 2007 is not yet available.

Source: U.S. Department of Labor, Bureau of Labor Statistics, Employer Components of Employee Compensation, All Civilian Workers.

All of these benefits cost money. Each dollar an employer contributes to a 401(k) plan is a dollar that it does not pay as wages. Chart 2 shows the proportion of total compensation that workers receive as non-cash benefits. Since 2000, employers have increased the proportion of workers' compensation that is paid out in benefits and so decreased the proportion that workers receive as cash.

Looking only at cash income ignores the real gains that workers have seen in the form of rising benefits. Chart 3 shows productivity growth and total compensation growth since 1987. The gap between productivity and pay, though still large, is significantly narrower than in Chart 1. While productivity has risen 53 percent, workers' total compensation has risen 28 percent.[4]

2. See U.S. Department of Commerce, Census Bureau, "Current Population Survey (CPS)—Definitions and Explanations," January 20, 2004, at *www.census.gov/population/www/cps/cpsdef.html*.
3. U.S. Department of Labor, Bureau of Labor Statistics, *BLS Handbook of Methods*, Chapter 10, at *www.bls.gov/opub/hom/homch10_c.htm*.
4. Because compensation data come from surveys of firm payrolls, not individual employees, only the average compensation for the entire economy (or within a specific industry) can be calculated; it is not possible to calculate the total compensation paid to the median worker.

Measuring Inflation Accurately

Any serious look at changes in workers' pay over time must compensate for the effects of inflation. The government measures inflation in many ways, and it is important to use the appropriate measures. Most attempts to compare income or compensation with productivity, including Charts 1 and 3, adjust pay for inflation using the consumer price index (CPI). This is a serious mistake for two reasons.

First, the CPI is based on changes in the prices of goods that Americans consume, while productivity is based on changes in the prices of goods that American workers produce. These are not identical, so using one measure to adjust compensation and another to adjust productivity is like mixing apples and oranges.

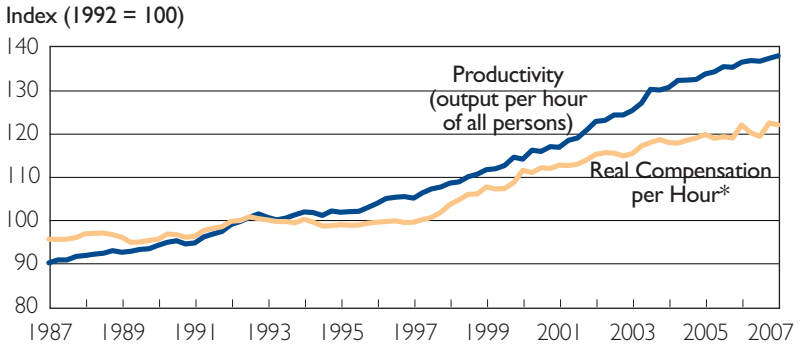
Second, the methodology used to calculate the CPI differs from the methodology used to adjust productivity data for inflation, and the CPI's methodology reports higher inflation estimates. Therefore, the standard income–productivity comparison will artificially suggest that inflation-adjusted productivity is increasing more rapidly than inflation-adjusted compensation.

Comparing Apples to Oranges

The government measures productivity using the value of the output that American workers produce. To calculate real changes in output, the Bureau of Labor Statistics adjusts for inflation using the implicit price deflator, a price index based on changes in the prices of the produced goods. The CPI is based on the prices of goods that Americans consume, not the goods they produce.

Chart 3 B 2040

Productivity and Compensation Growth



* Adjusted for inflation using the Consumer Price Index.

Source: U.S. Department of Labor, Bureau of Labor Statistics, "Productivity and Costs," Nonfarm Business Sector.

CONSUMER PRICE INDEX VS. IMPLICIT PRICE DEFLATOR

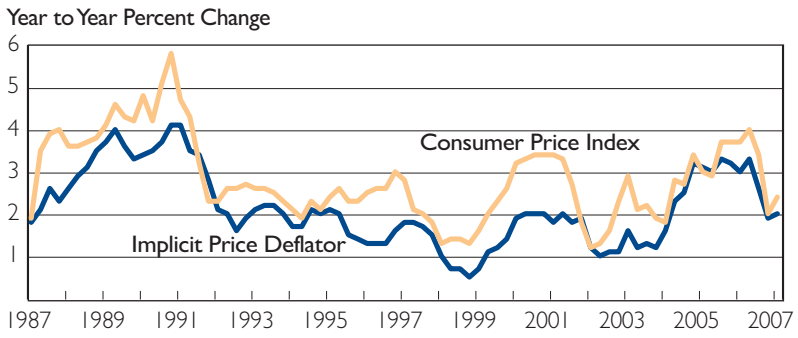
As an example of how the consumer price index differs from the implicit price deflator, consider that America exports professional business services (e.g., accounting, advertising, and management consulting) to foreign companies and imports oil. The prices of these services have been fairly stable, while the price of oil has risen. If all else is held constant, adjusting wages using the CPI would suggest that real wages are falling because the price of the good that U.S. workers consume—oil—has risen; but IPD-adjusted real wages would be constant because the prices of the goods that workers produce—business services—have not increased.

The IPD adjustment is more appropriate because productivity has not changed. Thus, a drop in CPI-adjusted wages because the rising cost of oil boosts the CPI would not mean that workers are being denied the value of what they have produced: Their employers are not somehow earning more and paying less because of the higher price of oil. In this example, the employers' business services have not become more valuable, so worker productivity has not increased. Thus, the employers are not withholding the fruits of productivity gains from their workers, even though CPI-adjusted measures of pay would misleadingly suggest otherwise.

Though the categories of goods produced and goods consumed do overlap, they are not identical. Americans produce many goods and services for export, and they import other goods rarely produced by U.S. workers. This difference matters because, for the purposes of comparing wages to productivity, the CPI will overstate inflation when the prices of consumer goods rise faster than the goods Americans produce. Adjusting inflation with a productivity-based price index instead of the CPI allows an apples-to-apples comparison of pay and productivity.

Chart 4 B 2040

Increases in the Consumer Price Index and Implicit Price Deflator



Source: U.S. Department of Labor, Bureau of Labor Statistics, "Productivity and Costs," Nonfarm Business Sector, and "Consumer Price Index Research Series Using Current Methods."

Inferior Methodology and Inherent Bias

The IPD measures inflation more accurately than the CPI. The CPI measures inflation by surveying how the price of a basket of goods that consumers purchase changes over time; it does not reflect changes in consumption patterns that occur after the basket was selected. Economists widely agree that this causes the CPI to overstate the true level of inflation.[5]

As an illustration, consider that the current CPI basket was used to measure consumption in 2001 and 2002.[6] Cell phone use has increased sharply since then, while the price of cell phones has fallen, leaving consumers much better off. The CPI does not account for much of this, however, because relatively fewer consumers bought cell phones five years ago than do today.

A chained price index, by contrast, takes into account changing consumption patterns from year to year and is a more accurate measure of inflation. Chained price indices also usually report lower inflation rates than are reported by the consumer price index. The IPD used for calculating productivity growth is a chained index and reports noticeably lower inflation rates than does the CPI.

Chart 4 shows year-on-year percent changes in both the implicit price deflator and the consumer price index. The CPI is consistently higher than the implicit price deflator. Between 1987 and 2006, the CPI increased by an average of 0.7 percentage point a year more than the IPD. While the CPI increased 74 percent over this time, the IPD increased just 53 percent.

If wages are adjusted for inflation using a measure that overstates inflation and productivity is adjusted using a more accurate chained index, compensation will appear to grow more slowly than productivity, even if compensation and productivity grow at the same rate. This is because the less accurate CPI records higher inflation rates than the IPD, making compensation appear smaller once it is adjusted for inflation.

This is very important in the debate over earnings. As an example, suppose that total compensation doubled over the past 20 years before adjusting for inflation. Also suppose that the CPI reported that the price level had doubled over those two decades and that a chained index reported that price levels increased just 50 percent. Adjusting

5. See, e.g., Robert J. Gordon, "The Boskin Commission Report: A Retrospective One Decade Later," National Bureau of Economic Research *Working Paper* No. W12311, June 2006, at *http://ssrn.com/abstract=910843*.
6. U.S. Department of Labor, Bureau of Labor Statistics, "Consumer Price Indexes: Frequently Asked Questions," May 10, 2007, at *www.bls.gov/cpi/cpifaq.htm*.

total compensation for inflation using the CPI would indicate that inflation-adjusted pay had not changed at all over the 20 years, but adjusting total compensation for inflation using the chained index would indicate that inflation-adjusted compensation had increased by one-third, leaving workers much better off. In this way, an artificially high measure of inflation overcompensates for price increases and makes inflation-adjusted compensation appear lower than it actually is.

Other Important Factors

Comparing median wages to average productivity does not necessarily reveal whether workers' pay is rising in step with their productivity, because the Bureau of Labor Statistics does not calculate median productivity growth, only average productivity levels. If productivity growth were concentrated among one group of workers, such as college graduates, those workers' wages would rise. This would cause average wages to rise, but median wages would move little if non-graduates' productivity did not also improve. In this way, comparing average productivity to median wages gives the misleading impression that workers are not receiving the fruits of increased productivity when in fact those workers who have become more productive are earning higher wages.

Recent research suggests that this may be happening. A substantial portion of the increased inequality in America in recent years can be explained by the fact that the use of performance-based pay has increased.[7] Especially productive workers are getting raises that match their productivity. This increases average compensation but has little effect on median pay.

In addition, demographic shifts can skew median family income figures. Divorce rates have risen since the early 1970s. A two-income family with the husband earning $50,000 and the wife working part-time and earning $25,000 has a total family income of $75,000. After a divorce, government statistics would report the couple as two separate families, one with an income of $50,000 and a second with an income of $25,000. A rise in divorce rates or a drop in marriage rates tends to lower median family income, even if wages and salaries remain unchanged.

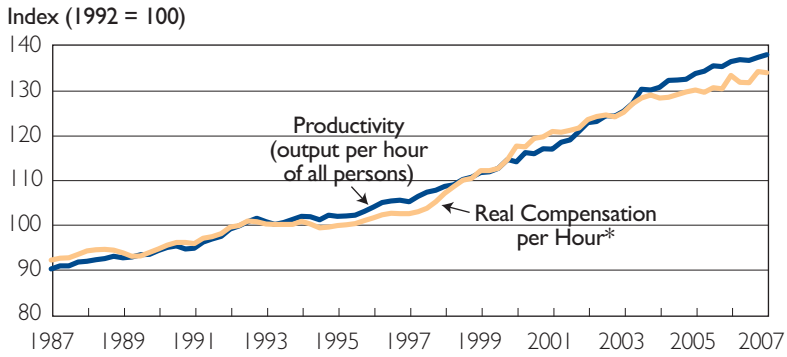
The Complete Picture: Compensation Has Grown with Productivity

Using the more accurate implicit price deflator to calculate productivity growth and compensation growth reveals that compensation has grown in line with productivity, not lagged, during the past 20 years. Chart 5 shows productivity and compensation growth over the past 20 years, using the IPD to adjust compensation for inflation.

As the chart shows, using the right measure of inflation and looking at total compensation—not just cash income—almost eliminates the difference between compensation growth and productivity growth. Productivity has grown 53 percent since 1987, while real compensation has grown

Chart 5 B 2040

Productivity and Compensation Growth



* Adjusted for inflation using the Implicit Price Deflator.

Source: U.S. Department of Labor, Bureau of Labor Statistics, "Productivity and Costs," Nonfarm Business Sector.

7. Thomas Lemieux, W. Bentley MacLeod, and Daniel Parent, "Performance Pay and Wage Inequality," National Bureau of Economic Research *Working Paper* No. 13128, May 2007, at *http://papers.nber.org/papers/w13128*.

46 percent. At several points during the late 1990s, compensation growth even exceeded productivity growth.

It is true that productivity has risen somewhat faster than compensation since 2003, but this also happened in the early 1990s and is not an unusual long-term pattern. Wages caught up to productivity in the late 1990s, when low unemployment forced employers to compete for increasingly productive workers. There is every reason to expect a similar outcome in the near future.

Conclusion

Workers are not missing out on the fruits of their rising productivity. Compensation appears to have fallen relative to productivity only when analysts, journalists, and politicians use the wrong price index to adjust it for inflation and overlook the difference between cash income and total compensation.

Using the implicit price deflator—the same measure that the government uses to adjust productivity figures for inflation—shows that there is no large gap between compensation growth and productivity growth. It is time for policymakers and others to retire erroneous and misleading measures that suggest that American workers are falling behind and instead present the data and their conclusions honestly and fairly.

—James Sherk is Bradley Fellow in Labor Policy in the Center for Data Analysis at The Heritage Foundation.