Why Aren't Workers Benefiting from Labour Productivity Growth in the United States?

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ABSTRACT

Changes in real wages, or wages adjusted for the cost of living, are the most direct route through which labour productivity affects living standards. Yet labour productivity in the United States increased by 80 per cent between 1973 and 2011, while median real hourly wages remained virtually stagnant. This article presents a framework in which this reality is decomposed into four components: deterioration of labour's terms of trade, rising benefits as a share of wages, decline of the share of labour compensation in GDP, and rising wage inequality. Since 2000, the historically large gap between real median wages and productivity in the United States was driven by rising wage inequality and the decline of labour compensation as a share of GDP.

RÉSUMÉ

Les changements des salaires réels, ou des salaires corrigés du coût de la vie, sont la voie la plus directe de l'incidence de la productivité du travail sur les niveaux de vie. Pourtant, la productivité du travail a augmenté de 80 % aux États-Unis entre 1973 et 2011, pendant que le salaire horaire réel médian restait toutes fins utiles stagnant. Cet article présente un cadre dans lequel cette évolution est décomposée en quatre parties : la détérioration des termes d'échange des travailleurs, l'augmentation des bénéfices en pourcentage des salaires, la diminution de la part de la rémunération du travail dans le PIB et l'augmentation de l'inégalité salariale. Depuis 2000, l'écart entre les salaires réels médians et la productivité aux États-Unis vient de l'inégalité croissante des salaires et la diminution de la rémunération du travail en pourcentage du PIB.

CHANGES IN REAL WAGES, or wages adjusted for the cost of living, are the most direct route by which labour productivity affects living standards. Yet gains in the real median hourly wage in the United States have lagged far behind that of labour productivity. During the 1973 to 2011 period, the real median hourly wage increased 4.0 per cent, yet labour productivity rose 80.4 per cent. If the real median hourly wage had grown at the same rate as labour productivity over the period, it would have been $27.87 in 2011 (2011 dollars), considerably more than the actual $16.07 (2011 dollars). The objective of this article is to provide a comprehensive and

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consistent decomposition of the factors explaining the divergence between growth in real median wages and labour productivity since 1973 in the United States, with particular attention to the post-2000 period.

This article is divided into four sections. The first section briefly sets out the analytical framework used in the article and discusses measurement issues, while the second section reviews trends in the various components. The third section provides an accounting reconciliation of the gap between the growth rate of median real wages and labour productivity in the United States and discusses the drivers of this gap. The fourth section concludes.[2]

Analytical Framework and Definitions

At the aggregate level, when defined consistently, long-term growth in median real compensation is determined by labour productivity growth. This relationship is mediated by changes in labour's share of income, labour's terms of trade (the price of the output produced by workers relative to their cost of living), wage inequality (average compensation relative to median compensation), and the benefits ratio (compensation, or wages and benefits, divided by wages).[3]

(1)   Labour Productivity Gap
        = Δ Labour Productivity – Δ Real Median Hourly Wage
        = – Δ Labour's Share – Δ Labour's Terms of Trade + Δ Wage Inequality + Δ Benefits Ratio

where Δ indicates a percentage change or the annual growth rate.[4]

- Nominal median hourly wage was calculated by the Economic Policy Institute (EPI) based on micro data from the Current Population Survey (CPS).[5]
- Nominal median hourly compensation was based on the median wage, adjusted for the average benefits ratio (total current dollar wages and benefits divided by total wages) taken from National Income and Product Account (NIPA) wages and benefits data from the Bureau of Economic Analysis (BEA).
- Nominal average hourly compensation was derived from total nominal labour compensation including an imputation for the labour income of the self-employed divided by total hours worked from unpublished BLS data.

All of these measures are for the total economy.

Real hourly wages are calculated by deflating nominal hourly wages by the CPI-U-RS. Nominal benefits are disaggregated into health

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2   This article is based on a decomposition framework developed by the Centre for the Study of Living Standards (Sharpe *et al.*, 2008a; Sharpe *et al.*, 2008b; Harrison, 2009).

3   Or, more formally, $[Y/(P_Y \times H)]/[W_{med}/P_C]=[Y/(C_{ave} \times H)] \times (P_C/P_Y) \times (C_{ave}/C_{med}) \times (C_{med}/W_{med})$, where C_{ave} is the average nominal hourly compensation, P_Y is the GDP deflator, H is the total number of hours worked including self-employed, W_{med} is the nominal median wage, P_C is an implicit price index for consumers, P_Y is the GDP deflator, Y is nominal GDP, and C_{med} is the nominal median compensation which includes an imputation for the labour compensation of the self-employed. Therefore, $Y/(P_Y \times H)$ is labour productivity, W_{med}/P_C is real median hourly wage, $Y/(C_{ave} \times H)$ is labour's share of nominal GDP, P_C/P_Y is labour's terms of trade, C_{ave}/C_{med} is wage inequality, and C_{med}/W_{med} is the benefits ratio.

4   A similar methodology was followed in Pessoa and Van Reenan (2012). They define net decoupling as the divergence in growth rates between productivity and real average compensation where the GDP deflator is used to deflate both nominal GDP and nominal compensation. Gross decoupling is defined as the divergence in growth rates between productivity and real median wages where the GDP deflator is used to deflate nominal GDP and the Consumer Price Index is used to deflate nominal wages.

5   To be published in Mishel *et al*, 2012.

insurance and non-health insurance components, each of which is deflated using a different price index. The health insurance component of benefits is deflated by the price index for medical services used in the BEA Personal Consumption Expenditures (PCE) Index. All other benefits are deflated by the CPI-U-RS. Total compensation in real terms is the sum of the deflated wages, health insurance benefits and other benefits. An implicit price index for compensation can be calculated by dividing nominal compensation by real compensation. This implicit price index is hereafter referred to as the consumption price index or deflator.[6] Unless otherwise indicated, all real estimates are expressed in constant 2011 dollars.[7]

- Labour productivity is calculated by dividing real expenditure-based GDP, obtained from BEA NIPA tables, by the number of hours worked for all workers, including the self-employed, from unpublished BLS data.

- Labour's share of nominal GDP is total labour compensation divided by GDP. The former is calculated by multiplying average nominal hourly compensation by the number of hours worked, both from unpublished BLS data. The latter was obtained from BEA NIPA tables.

- Labour's terms of trade are calculated by dividing the index for the GDP deflator by the index for the consumption price index, the weighted average of the CPI-U-RS and

Chart 1
Real Median Hourly Wage, United States, 1973-2011
(constant 2011 dollars per hour)
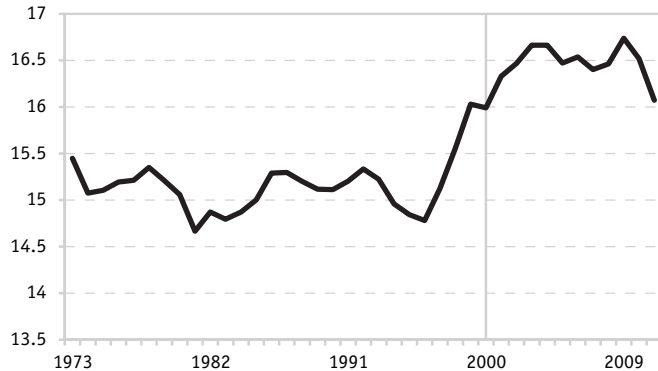
Source: Analysis of CPS U.S. Census Bureau, Current Population Survey, Outgoing Rotations Group public-use micro data in Mishel *et al.* (2012).

Chart 2
Real Median Hourly Compensation, United States, 1973-2011
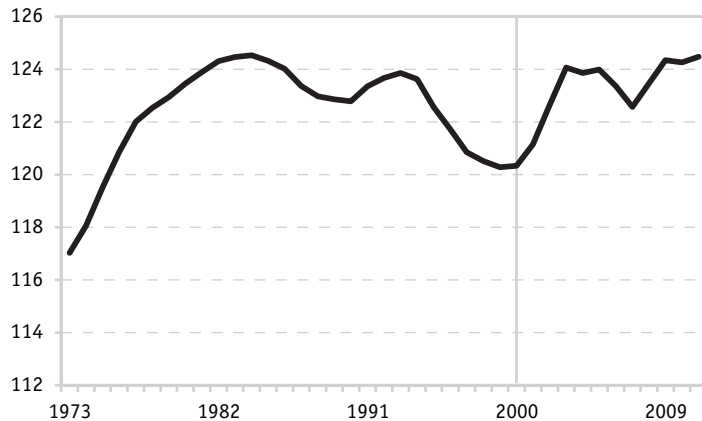(constant 2011 dollars per hour)
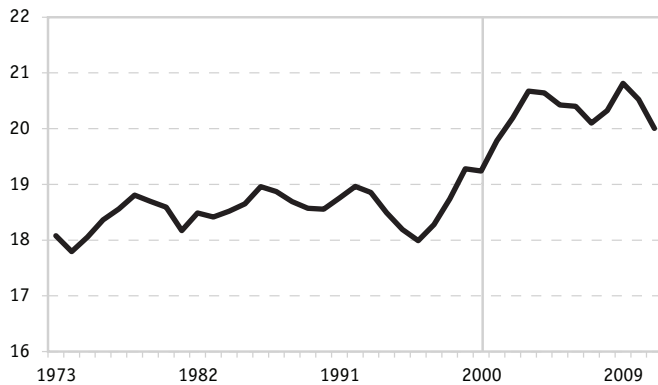
Source: Analysis of CPS U.S. Census Bureau, Current Population Survey, Outgoing Rotations Group public-use micro data and BEA NIPA tables in Mishel *et al.* (2012).

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6   This index is a weighted average of the growth rates of the CPI-U-RS and the medical services price index from the PCE, with the weight for the latter the nominal value of health insurance in total compensation (2.6 per cent in 1973 and 7.2 per cent in 2010). The small weight means that the divergence in growth rates between the CPI-U-RS and the consumption price index is small, only 0.06 percentage points per year from 1973 to 2011 (4.13 per cent versus 4.19 per cent). The rate of increase for the price of medical benefits was however much faster than the CPI-U-RS: 5.86 per cent per year versus 4.13 per cent.

7   An alternative price index to the CPI-U-RS is the Personal Consumption Expenditure (PCE) deflator used in the GDP deflator. While the CPI-U-RS measures the change in prices for a market basket of consumer goods for an urban consumer, the BEA PCE index measures the prices of goods and services in the personal sector in the United States national income and product accounts. During the 1973 to 2011 period, the average annual growth rate for the PCE deflator was 3.87 per cent, 0.26 percentage points less than the 4.13 per cent rate of increase for the CPI-U-RS. Use of the PCE deflator series would consequently raise real wage growth by this amount each year over the 1973-2011 period. For more information on the methodological differences between the two price indexes, see McCully *et al.*, 2007.

Chart 3
Benefits Ratio (Compensation/ Wages), United States, 1973-2011
(per cent)

Source: Analysis of CPS U.S. Census Bureau, Current Population Survey, Outgoing Rotations Group public-use micro data in Mishel *et al.* (2012).

Note: Calculated by dividing real compensation by real wage.

Chart 4: Average and Median Real Hourly Compensation, United States, 1973-2011
(constant 2011 dollars per hour)

—— Real Median Hourly Compensation

- - - Real Average Hourly Compensation
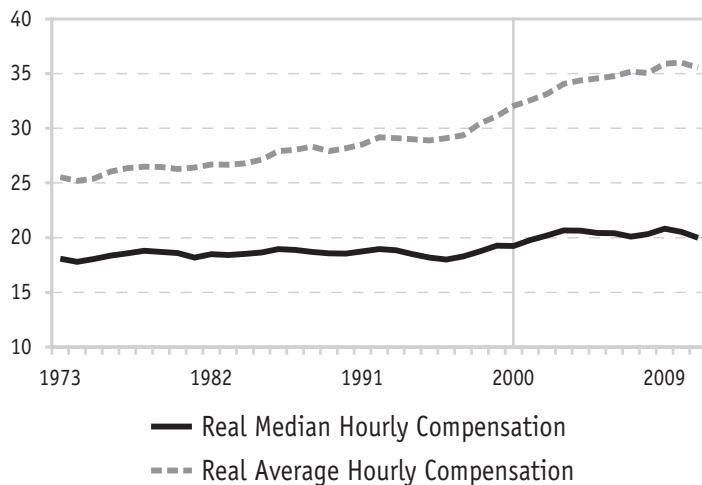
Source: Real median hourly compensation from analysis of CPS U.S. Census Bureau, Current Population Survey, Outgoing Rotations Group public-use micro data in Mishel *et al.* (2012). Real average hourly compensation from unpublished BLS data.

the medical services price index from the PCE, with the weight for the latter equal to the share of the nominal value of health insurance in total compensation.

- Wage inequality is proxied by the ratio of average hourly compensation to median hourly compensation.
- The benefits ratio is the ratio of compensation (the sum of wages and benefits) to wages derived from BEA NIPA tables.

Trends in Wages and Productivity in the United States, 1973-2011

The framework outlined above provides the basis for decomposing the gap between labour productivity and real median hourly wages. This section will examine the trends in these two variables and the factors mediating the relationship between them over the 1973-2011 period.[8]

Real Median Hourly Wage

The real median hourly wage represents the wage of the worker at the mid-point of the wage distribution. This measure increased from $15.45 per hour (2011 dollars) in 1973 to $16.07 in 2011 for an average annual increase of 0.10 per cent per year (Chart 1). In absolute terms, this amounted to an increase of 62 cents over 38 years, or 1.6 cents per year. One notes that the rate of increase was not constant throughout the period. The real median wage fluctuated around $15.00 from 1973 to 1997, at which point it began to increase sharply until 2003. Since then until 2010, it remained relatively stagnant at around $16.50. In 2011, the real median hourly wage fell 2.7 per cent. Somewhat surprisingly, this stagnation in wages was evident among those with college degrees as well as those with high school degrees.

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8   A set of tables containing the time series from 1973 to 2011 for all variables is posted with this article at http://www.csls.ca/ipm/23/appendix-mishel-gee.pdf.

Real Median Hourly Compensation

Real median hourly compensation includes total benefits as well as wages and salaries. Wages and salaries represent a much larger share of compensation than benefits, and so it is unsurprising that the real median compensation followed a similar pattern to the real median wage. Real median hourly compensation rose from $18.08 (2011 dollars) in 1973 to $20.01 in 2011, an average annual rate of increase of 0.27 per cent per year (Chart 2).[9] Real median compensation was stagnant between 1973 and 1996. It then rose significantly between 1996 and 2003 before again stagnating. It fell 2.5 per cent in 2011. Considering the two sub-periods, the real median compensation grew at 0.23 per cent per year from 1973 to 2000, and 0.35 per cent per year from 2000 to 2011.

The benefits ratio is defined as real median hourly compensation divided by real median wages. Chart 3 shows that the median real compensation was 17.0 per cent higher than the median real wage in 1973, with the gap rising to 24.5 per cent in 2011. All of this increase took place between 1973 and 1982 during which growth in real median compensation was much higher than the growth in the real median wage. Between 1982 and 2011, the rate of growth of the real median wage and median compensation has been, on average, the same.

Chart 5

Ratio between Average and Median Real Hourly Compensation, United States, 1973-2011
(per cent)
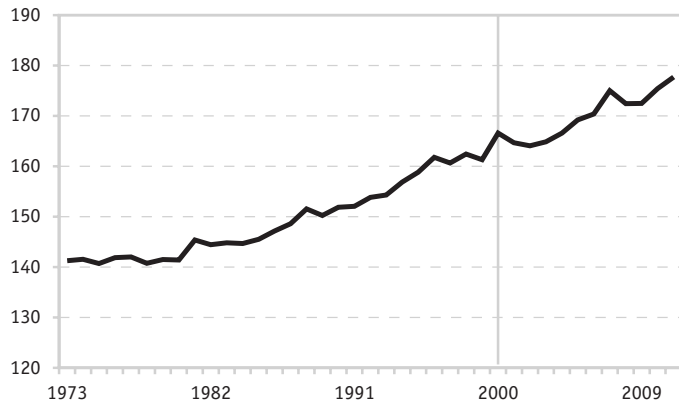
Source: Real median hourly compensation from analysis of CPS U.S. Census Bureau, Current Population Survey, Outgoing Rotations Group public-use micro data in Mishel *et al.* (2012). Real average hourly compensation from unpublished BLS nominal compensation and hours data.
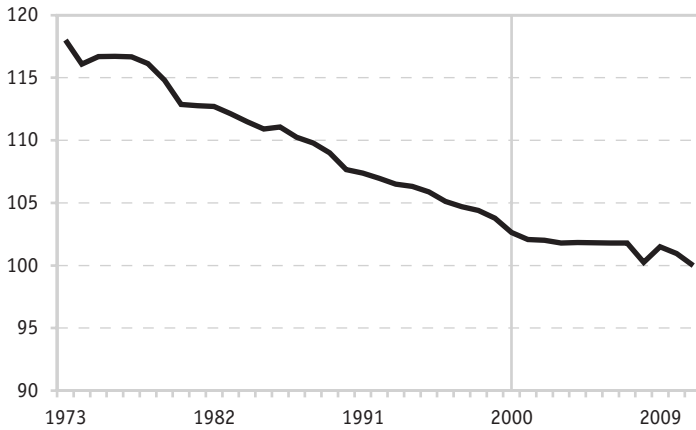
Note: Calculated by dividing average real compensation by median real compensation.

Real Average Hourly Compensation

Real average hourly labour compensation is calculated by dividing total real labour compensation by the total number of hours worked by all workers. Large increases in compensation at the top of the distribution can boost the average significantly. However, despite this increase in the average, most workers might not have seen an increase in compensation. The median, which represents the compensation of the person at the midpoint of the distribution, is generally not affected by changes at only the top or bottom of the distribution. Therefore, average

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9 Compensation is partitioned into two categories: wages and salaries, and total benefits. Total benefits, which include social insurance, health insurance, and pensions, has increased from 12.6 per cent of total compensation in 1973 to 19.6 per cent in 2010 in nominal terms (BEA NIPA table 6.11). In real terms, with health insurance deflated with a medical deflator and the remaining portions of compensation deflated by the CPI-U-RS the benefits share rose from 14.6 per cent of total compensation in 1973 to 18.7 per cent in 1979 but grew only to 19.5 per cent by 2010. This is consistent with the trend observed here of compensation increasing somewhat faster than wages.

Chart 6
Labour's Terms of Trade, United States, 1973-2011
(index 2011 = 100)

Source: BEA NIPA tables.
Note: Calculated by dividing the GDP deflator by the consumption price index.

Chart 7
Real Average Product Compensation, United States, 1973-2011
(constant 2011 dollars)
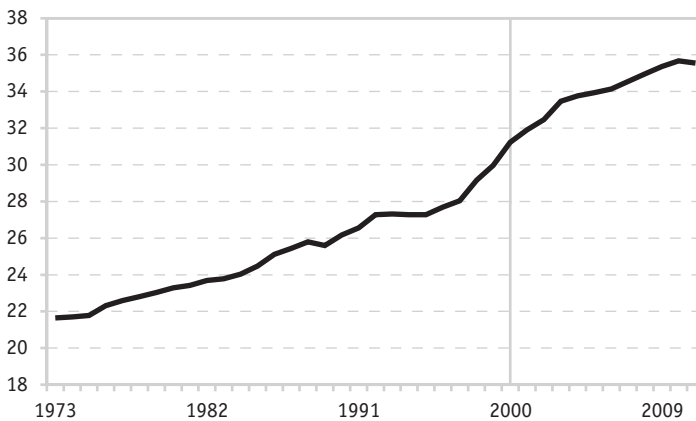
Source: BEA NIPA tables and unpublished BLS data.

compensation that rises faster than median compensation is indicative of growing inequality.[10]

Real average hourly compensation has increased from $25.54 (2011 dollars) in 1973 to $32.05 in 2000, and further rose to $35.55 in 2011, which represents an annual growth rate of 0.87 per cent per year over the whole period (Chart 4).[11] The growth rate was almost identical in both the 1973-2000 sub-period (0.84 per cent per year) and in the 2000-2011 sub-period (0.95 per cent per year). This was considerably faster than the growth in median compensation over the same period. Moreover, the ratio between the average and median real compensation has increased in an almost linear fashion over that period indicating a continuous growth of wage inequality. Real average hourly compensation was 41.3 per cent higher than the median real hourly compensation in 1973, and the gap increased to 77.7 per cent in 2011 (Chart 5).

Real Average Product Compensation

The real average product compensation or producer wage differs from the real average consumer compensation, or consumer wage, by its use of the GDP deflator rather than the consumption price index or deflator. Therefore, the ratio between the real average product compensation and the real average consumer compensation is the ratio between the GDP deflator and the consumption price index or deflator. The relationship between these two price indexes is often called labour's terms of trade. There are two ways that this divergence in prices can be viewed. One way is

10 Mathematically speaking, there is no necessary relationship between trends in wage inequality and the ratio between average compensation and median compensation. One could imagine where wage inequality increases but the median increases more than the average. For example, if the wages of workers in the 20-40th percentile of the wage distribution fell to the wage of those at the 10th percentile, the average wage would decrease, but the median would stay the same. However, wage inequality would increase. This example does not currently apply to the United States, as it is well know that wage inequality is rising due to increased wages at the top half of the distribution.

11 This measure of nominal average compensation rose by 3.63 per cent per year from 2000 to 2010. There are a number of other wage measures outlined in the *Economic Report of the President 2012* (United States Government, 2012). Over the same period, total compensation according to the Employer Costs of Employee Compensation rose by 3.01 per cent per year (Appendix Table B-47), while the nominal compensation per hour in the business sector rose by 3.47 per cent per year (Appendix Table B-49).

to dismiss the divergence as a technical difference and to treat the resulting productivity – compensation gap as unimportant and uninteresting. The second view is to note that the assumption that gains in labour productivity translate into improvements in living standards implies that these two deflators must converge in the long run. Given that this convergence has not occurred for several decades, the second view suggests that productivity is not translating fully into improved living standards and the divergence between the consumption deflator and GDP deserves serious inquiry.

As seen in Chart 6, between 1973 and 2011, the ratio between the consumption price deflator and GDP deflator has steadily decreased by 0.44 per cent per year, reflecting the faster growth in the consumption price index relative to the GDP deflator (4.19 per cent versus 3.73 per cent per year). In other words, that the prices of consumer items has risen faster than a broader index of prices that includes net exports, government goods and services, and investment goods. Therefore, for a given increase in income, the purchasing power of the consumer has fallen faster than that of business for investment goods and foreigners for U.S. exports. The deflator for private investment rose only 2.81 per cent per year from 1973 to 2011 as the price index for equipment and software only rose 1.17 per cent per year, given the absolute decline in the prices for ICT investment goods (BEA NIPA Table 1.1.4).

Given these developments, real average product compensation rose at a 0.44 per cent faster rate between 1973 and 2011, than real average consumer compensation from $21.64 (2011 dollars) in 1973 to $35.55 in 2011 or 1.31 per cent per year (Chart 7). The growth rate of the real average product compensation was slightly faster during the 1973-2000 (1.31 per cent per year) sub-period than during the

Chart 8
Labour's Share of Nominal GDP, United States, Total Compensation as a Share of GDP, 1973-2011
(current dollars, per cent)
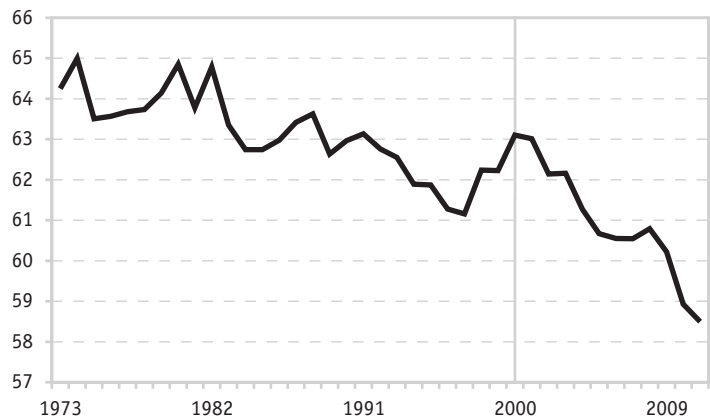
Source: BEA NIPA tables.

Chart 9
Labour Productivity, United States, 1973-2011
(2011 constant dollars per hour)
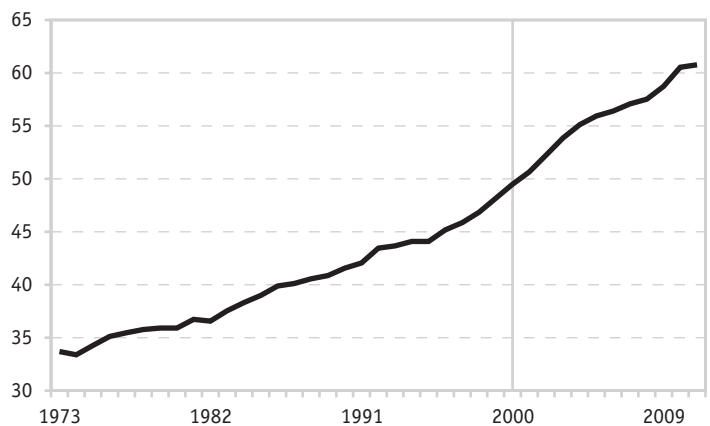
Source: GDP data from BEA and total number of hours worked from unpublished data from BLS.

2000-2011 (1.18 per cent per year) sub-period.

Labour's Share of Nominal GDP

The labour share, defined as the share of total nominal compensation in nominal GDP,[12] fell from 64.3 per cent to 58.5 per cent of GDP between 1973 and 2011 (Chart 8). The labour

Comparison of Wage, Compensation, and Productivity Measures, United States, 1973 and 2011

(constant 2011 dollars)
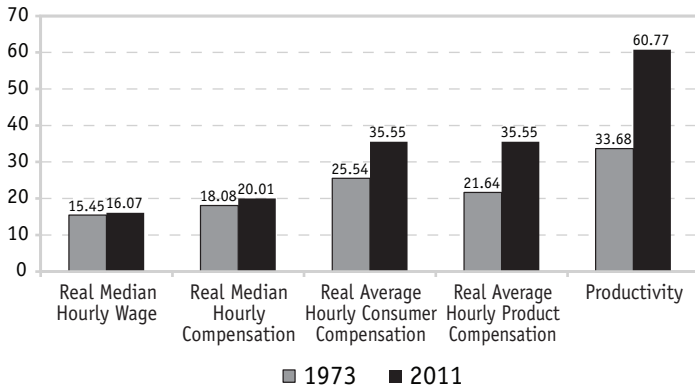
(proportion of productivity, per cent)
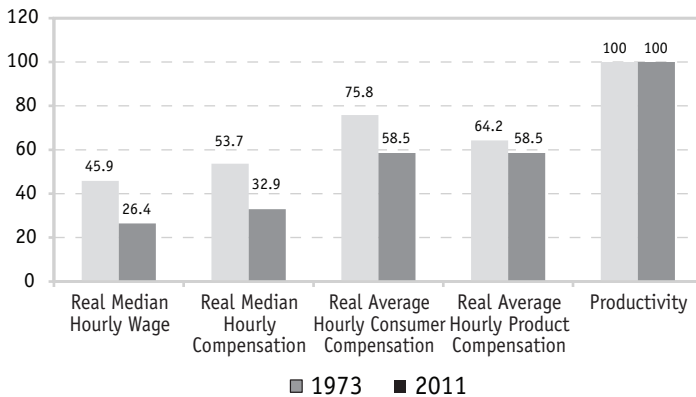
Source: EPI, BLS and BEA data.

Labour Productivity

Labour productivity is the output produced per hour by the average worker, including the self-employed, and is measured in terms of real GDP per hour worked. Labour productivity was $33.68 (2011 dollars) in 1973 and grew an average of 1.56 per cent per year to $60.77 in 2011 (Chart 9). Labour productivity growth has been steadily increasing, as it grew by 1.44 per cent per year from 1973 to 2000, and 1.88 per cent per year between 2000 and 2011.

Comparison of Wage, Compensation and Productivity Measures

Given the different growth rates of real median wages and productivity as well as the factors mediating between the relationship between these two variables, median wages as a proportion of labour productivity has greatly fallen in the last four decades. In 1973, the real median hour wage in the United States was 45.9 per cent of output per hour (Chart 10). By 2011, this proportion had fallen to 26.4 per cent. In other words, the wage of the median worker used to account for slightly less than one half of average productivity. Now it is just slightly above one quarter. [13]

An Accounting Perspective on the Gap between Median Real Wage Growth and Labour Productivity Growth

The real hourly median wage of workers in the economy has increased only 4.0 per cent (0.1 per cent per year) from $15.45 (2011 dollars) in 1973 to $16.07 (2011 dollars) in 2011, or less than two cents a year. Over the same period, total economy labour productivity rose 80.4 per

share fell from 1973 to the mid-1990s and then rebounded during the robust growth of the second half of the 1990s. Between the business cycle peaks of 1973 and 2000 the labour share fell only 1.1 percentage points. On the other hand, the fall between 2000 and 2011 was much more drastic, as it decreased 4.6 percentage points from 63.1 per cent to 58.5 per cent of GDP.

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12 This measure of labour's share is not the preferred metric to examine whether there is a redistribution of income from labour to capital. This is because changing shares of the government/non-profit sector (which have only labour compensation) and the proprietor's sector in the national economy affects this ratio. To examine such labor-capital redistribution requires examining labour's share in the corporate sector.

13 The two measures of average compensation in Chart 10 differ only in their use of deflator. The use of 2011 as the index year for both means that real average compensation will be the same in 2011. However, the average product compensation was lower than the average consumer compensation in 1973.

Table 1

Reconciling Growth in Median Real Wages and Labour Productivity in the United States, 1973-2011 and Selected Sub-Periods

	1973-1979	1979-1995	1995-2000	2000-2011	1973-2011
Productivity-median wage growth gap	**Compound Annual Growth Rate**				
Median real hourly wage	-0.26	-0.15	1.50	0.05	0.10
Labour productivity (Real output per hour)	1.08	1.29	2.33	1.88	1.56
Total productivity-median wage gap	1.34	1.44	0.84	1.84	1.46
Contribution to productivity-median wage gap	**Absolute Contribution (percentage points)**				
From median real hourly wage to median real hourly compensation	0.82	-0.02	-0.37	0.31	0.16
From median real hourly compensation to average real hourly compensation	0.02	0.72	0.96	0.59	0.61
From consumption price index to GDP deflator	0.46	0.51	0.63	0.24	0.44
Changes in labour share of nominal GDP	0.03	0.23	-0.39	0.69	0.25
Total - all factors	1.34	1.44	0.83	1.82	1.45
	Relative Contribution (per cent of gap)				
From median real hourly wage to median real hourly compensation	61.6	-1.4	-43.6	16.8	11.1
From median real hourly compensation to average real hourly compensation	1.9	50.3	114.9	32.0	41.4
From consumption price index to GDP deflator	34.4	35.2	74.8	12.9	29.9
Changes in labour share of nominal GDP	2.1	15.6	-47.0	37.6	16.9
Total - all factors	100.0	100.0	100.0	100.0	100.0

Source: calculations based on BLS, BEA and EPI data. Figures may not sum exactly due to rounding.
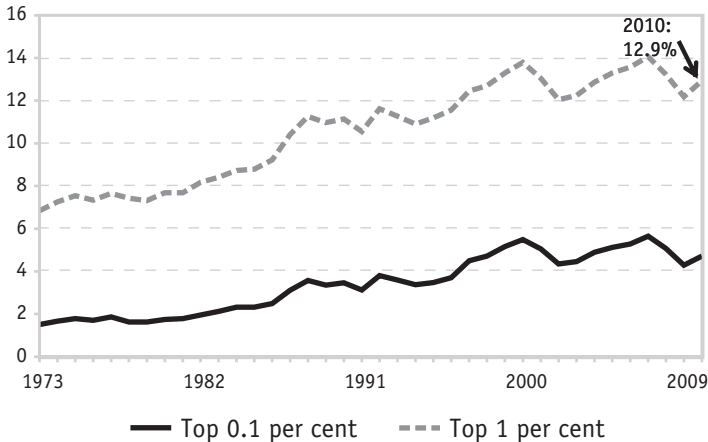
cent, or on average, 1.56 per cent per year. Therefore, on average, workers have benefitted very little from growth in labour productivity in terms of real wage growth. As discussed earlier, a number of factors mediate the relationship between labour productivity and median wage growth. Table 1 provides a decomposition to account for the growing disconnect between the median real wage and labour productivity growth for the 1973-2011 period and four sub-periods (1973-79, 1979-1995, 1995-2000, and 2000-2011).

Over the total 1973-2011 period, the gap between median wage and productivity growth was 1.46 percentage points per year. The gap varied between sub-periods, from a low of 0.84 percentage points per year in 1995-2000 to a high of 1.84 percentage points in 2000-2011.

For the total 1973-2011 period, the most important factor accounting for the divergence in median wage and productivity growth was growing wage inequality, responsible for 0.61 percentage points or 41.4 per cent of the gap. The second most important factor was the declining terms of trade of labour (that is, faster growth of the consumption price index than the GDP deflator), accounting for 0.44 percentage points or 29.9 per cent. The falling share of labour compensation in GDP was responsible for 0.25 percentage points

Top 1 per cent and 0.1 per cent Share of Total Wages and Salaries, United States, 1947-2010
(per cent of all wages and salaries)

[Chart showing Top 0.1 per cent and Top 1 per cent lines from 1973 to 2009, y-axis 0 to 16, with annotation "2010: 12.9%"]

Legend: ▬ Top 0.1 per cent   ---- Top 1 per cent

Source: Mishel *et al.* (2012).

Chart 12

Wage Growth by Wage Group, United States, 1979-2010
(per cent change from 1979 level)

[Chart showing wage growth by group from 1979 to 2009, y-axis -20 to 180]

Legend: ▬ Upper 1 per cent   ---- 90-95 per cent   ▬ 95-99 per cent   ▬▬ Bottom 90 per cent
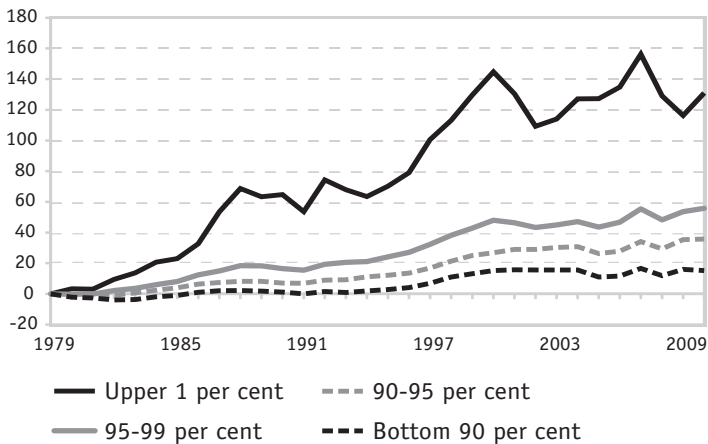
Source: Mishel *et al.* (2012).

or 16.9 per cent of the gap and the rising benefits ratio 0.16 percentage points or 11.1 per cent.

The contributions to the gap, both in absolute and relative terms, varied by sub-period.[14] During the most recent 2000-2011 period, the most important factor was the declining share of labour, which accounted for 0.69 percentage points or 37.6 per cent of the gap. Rising wage inequality was second in importance at 0.59 points or 32.0 per cent of the gap.

One particularly interesting sub-period is 1995-2000 when real median wages grew by an average of 1.50 per cent per year. Since productivity growth was at its peak during that sub-period (2.33 per cent), the productivity-median wage gap did not disappear, but did fall considerably. However, the rate of growth of wage inequality was particularly strong during his sub-period (0.96 percentage points), although this development was partially offset by a rise in labour's share (-0.39 percentage points contribution to the gap). This was a period of strong economic growth and falling unemployment, showing that a strong economy can at least offset, if not reverse, what appears to be a secular or long-run tendency for real median wages to under-perform productivity growth.[15]

The remainder of this section will examine the two most important drivers of the gap between 2000 and 2011: growing earnings inequality and labour's falling share of GDP.

Wage inequality

As noted earlier, average real hourly compensation has been increasing more rapidly

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14 Relative contributions are of course sensitive to the absolute size of the gap. The absolute contribution of a factor may remain unchanged between periods, but the relative contribution can change dramatically if the size of the gap changes.

15 A similar decomposition framework was used by Pessoa and Van Reenan (2012), who also found that a major gap developed between productivity and real median wages in the United States over the 1975-2010 period. They attribute about two-fifths of the gap to the faster growth in consumer prices relative to the GDP deflator and one-fifth each to growing wage inequality, growing benefits as a share of wages, and faster growth in productivity relative to average compensation deflated by the GDP deflator (which they label net decoupling). The key difference between the two studies is the larger relative importance given to rising wage inequality in accounting for the gap in this study: 40 per cent versus 20 per cent.

than the median real compensation for the period 1973 to 2011, as well as during each of the sub-periods chosen. This growing wage inequality has been driven by more rapid wages or earnings growth at the top of the distribution. In particular, household income at the upper limit of the first quintile saw compound annual growth rates of 1.22 per cent from 2000 to 2010, while household income at the lower limit of the top 5 per cent increased by 2.22 per cent per year. Using Social Security Administration wage data from Kopczuk, Saez and Song (2007) updated by published wage data we can examine wage trends at the very top of the wage structure.[16]

Chart 11 illustrates that the share of all wages accounted for by the top 1 per cent of wage earners has nearly doubled, from 6.8 per cent in 1973 to 12.9 per cent in 2010. This effect is even more pronounced in the top 0.1 per cent of wage earners, as their share of wages has tripled from 1.5 per cent in 1979 to 4.7 per cent in 2010. This is partially due to rising wages at the top of the income distribution, as the earnings of the bottom 90 per cent of wage earners in 2010 were 115 per cent of their 1979 wage (Chart 12). In contrast, wages have increased much more for the top 1 per cent of earners (230.9 per cent of their 1979 wage). The issue of income inequality has come to the forefront of national consciousness with the rise of various social movements, such as Occupy Wall Street.

These data show the substantial gaps that have emerged between the earnings of the top 1 percent of earners and other high earners within the upper 10 percent. Other dimensions of wage inequality have grown over the last thirty years (Mishel *et al.*, 2012 for further analysis). For instance, there has been a continuing gap between the growth of wages at the 90th and 95th percentiles and the median

wage over the entire 1979-2011 period. A third dimension of wage inequality—the gap between the middle and the bottom (the 50/10 wage gap)-- has emerged in some sub-periods but not in others: the gap grew strongly in the 1980s but remained flat in the 1990s and the 2000s, except for a re-emerging gap among men in the last few years. Any explanation or explanations of wage inequality has to account for this pattern of wage growth.

Labour's share of nominal GDP

As noted earlier, labour's share of nominal GDP fell from 64.2 per cent in 1973 to 58.5 per cent in 2011. It should be noted that with the large labour compensation increases of top earners (which include realized stock options granted to top corporate officers), the labour share of the bottom end of the distribution fell even more than what is represented by total figures.

In addition, as noted earlier, labour's share of nominal GDP is not an accurate measure of the distribution of income between capital and labour because it includes the proprietor's sector (where the types of income are not easily discerned) and the government/non-profit sector (which has only wage income). Analysis of profitability and the division of income between labour and capital have usefully focused on the corporate sector and a recent analysis shows that capital's share of income in 2010, and generally in the 2000s, has been historically high. Specifically, capital's share of corporate sector income in 2010 was 26.2 per cent, far above the average share over the 1960-2007 period of 20.5 per cent. In fact, capital's share of income in 2010 was "the highest share since the years during World War II, when national policy used wage and price controls to consciously suppress wage growth" (Mishel and Shierholz, 2011: 23).

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16 See Mishel *et al.* (2012) for details.

Factors Driving Increased Wage Inequality and the Falling Labour Share of National Income

It goes beyond the scope of this article to provide a comprehensive explanation of the complex and interrelated factors behind growing wage inequalities and the redistribution of income from labour to capital. The ratcheting up of capital's share of income in the 2000s occurred at the same time as weak growth of both college-educated and high school-educated workers' wages, suggesting that the same set of factors might be at work. In this light, the historic weakness of trade unions and the erosion of labour standards—from low minimum wages, weaker overtime provisions, eroded prevailing wage standards and weak enforcement of labour standards—play a significant role. Increased globalization (and exposure to low wage imports, most prominently from China) and high trade deficits also put increased downward pressure on wages. Moreover, the relatively weak recovery of the 2002-07 period and the high unemployment in the great recession has meant that the low unemployment that enabled workers to make great wage gains in the late 1990s was unavailable in recent years.

There is much discussion of skill-biased technical change as a cause of growing wage inequality. It is hard, however, to find the winners from technical change in the last ten years, as the wages of the bottom 70 per cent of college graduates have been flat or in decline. That would leave just 30 per cent of college graduates (6.6 per cent of the workforce) and the 11 per cent of workers with advanced degrees as the winners of technical change. It also seems unlikely that technical change has generated the upward trajectory of the top 1 per cent of wage earners.

Lastly, one contributing factor to the gap between compensation and productivity growth has been the increase in the share of GDP accounted by the consumption of fixed capital. In recent years, the proportion of short-lived capital assets, such as information and communication technologies, has increased significantly as a share of new investment. Because these assets depreciate at a faster rate than other types of capital assets, a larger share of current production must be used to replace them. As a result, the share of consumption of fixed capital in GDI increased by 1.2 percentage points between 2000 and 2010. Much of this was due to the private sector, where the share of consumption of fixed capital in GDI increased by 0.8 percentage points.

Conclusion

The median real hourly wage in the United States has been basically stagnant between 1973 and 2011.[17] In contrast, labour productivity increased by 80 per cent. The purpose of this article has been to present a framework in which the gap between the median real hourly wage and productivity is decomposed into four main factors. In order of their relative importance in

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17 Sharpe, Arsenault and Harrison (2008) also identified the emergence of a major gap in the growth of real median earnings and productivity in Canada between 1980 and 2005: 1.26 percentage points per year compared to 1.46 percentage points in the United States for the 1973-2011 period. The decomposition of this gap is similar, but not identical, betwen the two countries. The faster growth in consumer prices relative to the GDP deflator accounted for about one-third of the gap, and the falling share of labour income represented one-fifth of the gap in both countries. In contrast, growing wage inequality accounted for 28 per cent of the gap in Canada versus 42 per cent in the United States, while the growing benefits ratio was responsible for 28 per cent of the gap in Canada, versus only 11 per cent in the United States.

   As was found for the United States and Canada, Pessoa and Van Reenan (2012) show that in the United Kingdom, real median wage growth also significantly lagged labour productivity growth between 1975 and 2010. The report found that the magnitude of the growth in the gap was two-thirds that experienced in the United States. About two-fifths of the increasing divergence between real median wages and labour productivity in the United Kingdom was due to rising wage inequality, one-third due to the growing benefits ratio, and one-quarter to the fall in labour's share of national income.

explaining the productivity-median wage gap from 1973 to 2011, they are: rising wage inequality (42.3 per cent of the gap), deterioration of labour's terms of trade (29.9 per cent of the gap), decline of labour compensation in GDP (16.9 per cent of the gap), and rising benefits as a share of wages (10.3 per cent of the gap).

Evidence of growing wage inequality can be found in the large compensation increases at the top of the income distribution, compared to the rest of earners. This can be observed from various dimensions. For example, the wages and salaries of the top 1 per cent of earners, as a share of all wages and salaries, has nearly doubled from 1973 to 2010. The effect is even more pronounced for the top 0.1 per cent of earners, as their share of all wages and salaries has tripled over the same period. In general, the lower the wage, the less it grew between 1973 and 2010.

Some of the reasons behind the rise in wage inequality and the redistribution of income from labour to capital were briefly mentioned in this article, though there is evidence that the same set of factors may influence both of them. These factors include the erosion of labour standards, increase in globalization, high trade deficits, as well as the rising share of capital depreciation in GDP. It is important to understand these trends and their impact on the productivity-median wage gap. Reducing this gap is of the utmost importance in order to ensure that labour productivity gains also translate into better living standards for most Americans.

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