Chapter 6
Wages in the United States: Trends, Explanations, and Solutions

Jared Bernstein

Abstract Since the late 1970s, two major developments have occurred regarding wages in the U.S.: the stagnation of real wages for various groups of workers and the increase in wage inequality. This chapter examines these trends in some detail and finds that real wages have performed better for women than men and for the more highly educated relative to those with less educational attainment. However, particularly since 2000, few groups have been spared; even workers with 4-year college degrees have experienced some stagnation in real hourly pay. The chapter examines economic theories of wage determination and finds that while skills often play a critical role in both theory and practice, other important wage determinants, most notably the absence of full employment—the persistently slack labor markets that have prevailed over the stagnation/dispersion period—are often underemphasized. The chapter suggests a number of policy recommendations to offset the problems of wage stagnation and increased wage inequality, including greater skill acquisition as well as policies to promote full employment and strengthen eroding labor standards.

Keywords Wage trends • Wage inequality • Wage policy • Economic theories • Labor markets • Unemployment • Trade deficits • Minimum wage • Unions

Introduction

This chapter provides an in-depth look at historical wage trends in the United States. Though some of the analysis goes as far back as the post-World War II years, most begins in the latter 1970s. This is partly a function of data availability but more of the analysis itself: The two major problems revealed by the analysis—the stagnation of real wages for various groups of workers and the increase in wage inequality—are most evident over the past 35 years or so.

My goal is not simply to show these trends but to explain their movements as well as discuss policy ideas targeted at both wage stagnation and dispersion. Thus,

J. Bernstein (✉)
Center on Budget and Policy Priorities, Washington, DC, USA

I. Kirsch, H. Braun (eds.), *The Dynamics of Opportunity in America*,
DOI 10.1007/978-3-319-25991-8_6

the first part of the chapter presents empirical trends and the second attempts to explain the factors driving these trends and prescribe policy solutions to improve them.

There are, of course, many determinants of both wage levels and trends, including workers' skills and productivity, their ability to interact productively with technology, institutional factors such as unionization and labor laws (e.g., minimum wages, overtime rules), nonwage costs (e.g., employer-provided health benefits), and macroeconomic factors. While I touch on all the above, I find the latter set of factors—macroeconomic ones—to be both important and often underemphasized in wage analysis. The extent of slack in U.S. labor markets (high levels of unemployment) cannot be overlooked when attempting to explain widespread wage stagnation and dispersion, not to mention recent developments in wage trends that are the subject of considerable debate among both economists and the popular press.[1] Imbalances in trade—persistent U.S. trade deficits—are another seldom broached but germane area of analysis in this space.

Following the empirical section, I review various theories of wage determination common to contemporary economics. Some of these theories, like those that explain the correlation between education levels and wage levels (marginal product theory), have clear linkages to the data (e.g., the ever-present gradient in wage levels by educational attainment). But this theoretical review also finds that most theories assume "equilibrium," or full employment, in the labor market, meaning a tight matchup between the number of jobs and job seekers. In fact, as noted above and stressed throughout, this assumption is highly unrealistic as far as the U.S. labor market over the past few decades—a time of stagnant and diverse wage growth. It is a particularly incorrect assumption in recent years.

The policy recommendation section that follows builds off this conspicuous omission in the theoretical work by incorporating the "slack problem"—the persistent absence of full employment—into the analysis. This means that along with conventional (but still critical) policy interventions like better access to educational opportunities for those facing such barriers, I also suggest such interventions as wage targeting at the Federal Reserve, smarter fiscal policy, direct job creation, improving labor standards, reducing trade deficits, and generally speaking, reducing slack in the job market, which I identify as a key determinant of worker bargaining power, and thus, wage pressures for many in the workforce.

[1] See Janet Yellen's speech at the Federal Reserve Bank of Kansas City Economic Symposium, Jackson Hole, WY, August 22, 2014, http://www.federalreserve.gov/newsevents/speech/yellen20140822a.htm, and David Leonhardt, "Trying to Solve the Great Wage Slowdown," *New York Times*, http://www.nytimes.com/2015/01/15/upshot/trying-to-solve-the-great-wage-slowdown.html?abt=0002&abg=1.

Empirical Trends in Wages and Compensation in the U.S.

The seemingly simple question of trends in earnings is, if not complex, then multi-faceted. Are we talking about straight wages or all-in compensation? Medians or averages? Annual, weekly, or hourly earnings? The first concept—annual earnings—invokes questions of labor supply, as in weeks worked per year and hours worked per week. The second—weekly earnings—invokes variation in hours per week. The last concept—hourly earnings—one to which I pay considerable attention to in this section, is a fundamental building block of the living standards of working families.

I also look briefly at recent developments in labor's share of national income, as this key variable has been undergoing tectonic shifts that many economists view as relevant to the important question of growing inequality.

The key findings of this review of many of these trends are as follows:

- Real wages have both become much more dispersed over time, and, for certain groups, also undergone long periods of stagnation.
- Hourly wage trends have been less favorable for men than for women, though hourly pay has undergone long periods of stagnation for middle- and low-wage women as well.
- Real wages across the wage scale received a clear lift during the high-pressure labor market of the full-employment latter 1990s.
- Wages by education reveal a clear and persistent gradient by attainment levels. However, all attainment levels, with the exception of workers with advanced college degrees but including those with four-year degrees, experienced periods of stagnation in the past few decades, with the largest losses among those with the least education.
- Annual earnings by percentile show extreme dispersion at the very top of the pay scale and stagnation among the bottom 90 %.
- To the extent that the data permit it, adding employer-provided benefits to the analysis of compensation does not broadly change these findings.
- In recent years, labor's share of national income has significantly declined.

Hourly Wage Percentiles

As noted, the hourly wage is a fundamental building block of the living standards of working families. When real hourly wages are rising throughout the pay scale, families from all walks of life do not have to work more weeks or hours to get ahead and can thus balance family obligations with less stress. Unfortunately, hourly wage trends in recent decades have not been particularly favorable for most workers, and this in turn has required more family members to work more hours per week and weeks per year to raise family incomes. Mishel et al. (2012) find that 86 % of the

increase in annual earnings for middle-income families between 1979 and 2007 was driven by more work, leaving only 14 % attributable to hourly wage growth.

Figure 6.1 shows real hourly wages at the 10th, median (50th), and 95th percentiles from 1979 to 2013, indexed to 100 in 1979 so as to be able to plot them together given their different scales (in 2013, the 10th percentile wage was about $8.40, the median about $16.70, and the 95th was about $52.80).[2]

This one simple figure captures many of the more important trends in real wages over the last 30-plus years. First, the pattern of wage inequality in the 1980s is evident as we see declining low wages, stagnant middle wages, and rising high wages. Next, the very important period of the latter 1990s, when full employment labor markets prevailed for a few years, is evident in the acceleration of all three series. Third, in a point that will become more important in a later section, while middle and low wages diverged in the 1980s, they have since generally converged. Finally, wage growth stagnated again for these lower two groups starting around 2000 and has yet to recover. In fact, real wages for low- and mid-wage workers were dealt another blow in the "Great Recession," although some stabilization can be seen in the most recent data.

Let us pause here and note a truly remarkable development: With the exception of the tight labor markets of the latter 1990s, wage earners in the bottom half of the wage scale have seen little, if any, real hourly wage growth over the past three decades. Given that the workforce has grown older, more highly educated, and more

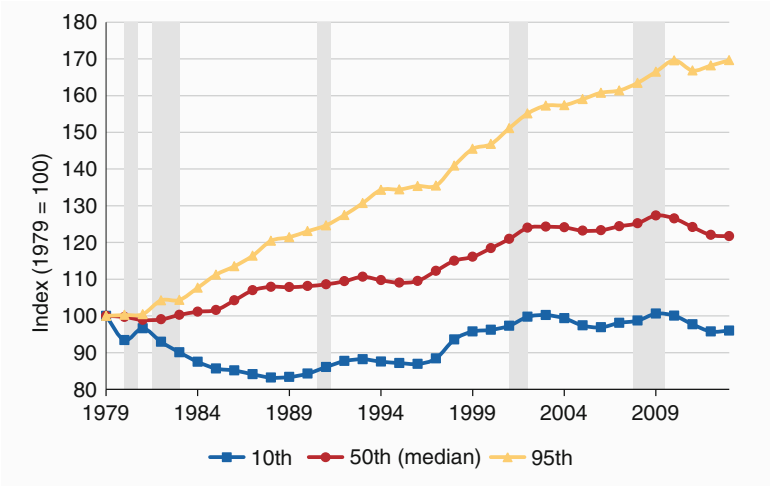

Fig. 6.1 Real hourly wage trends by decile, 1979–2013

[2] These data were provided by the Economic Policy Institute and are featured in their State of Working America (I coauthored nine earlier editions of this compendium and thus helped to develop this wage series). The data are constructed from the Current Population Survey and are deflated using the CPI-RS. The sample includes 18- to 64-year-olds.

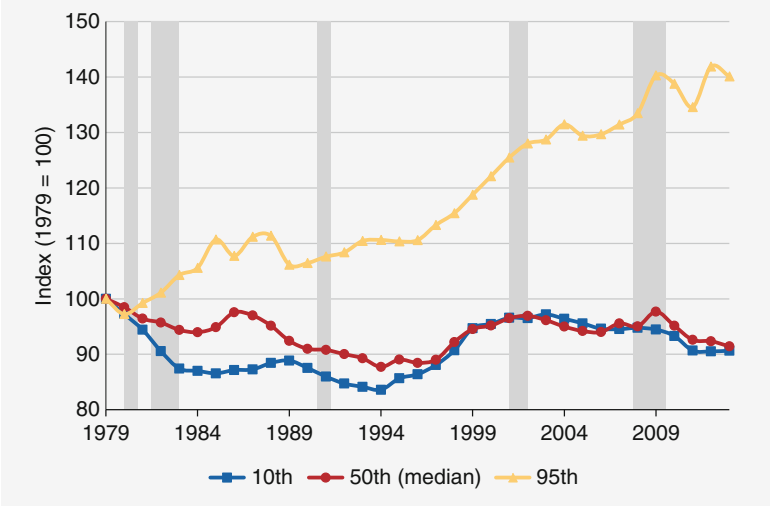

Fig. 6.2 Real hourly wage trends: men

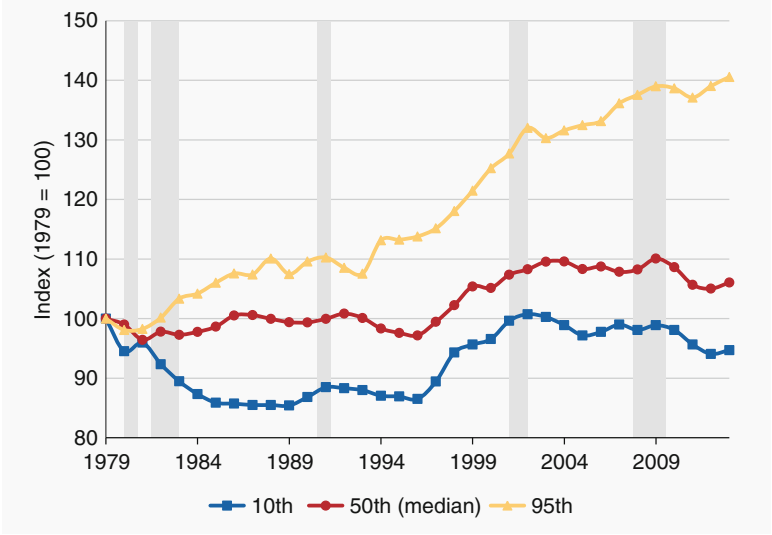

Fig. 6.3 Real hourly wage trends: women

productive over these years only increases the degree to which these trends are both unusual and problematic.

While there are, of course, many subgroups by which to break out wage trends, two of the most important are gender and education. Figures 6.2 and 6.3 are in the same format as Fig. 6.1 but are broken out for men and women. While the inequality

pattern is notable in Figs. 6.2 and 6.3, salient differences exist. First, men in the bottom half of the wage scale did worse than women did. This difference is generally associated with the shift in labor demand from production worker jobs to service sector jobs—for example, from manufacturing to health care—a shift that has been particularly tough on non-college-educated men.[3]

However, low-wage workers experienced stagnant (in the case of women) or declining (in the case of men) real hourly wages since the late 1970s. These are trends that have been associated with demand shifts against "less skilled" workers (related to but broader than the industry shifts just noted), the decline in the real value of the minimum wage (a key determinant for women in the 1980s, for example), and slack labor markets. As I discuss in the policy section, that last factor is particularly critical for low-wage workers, as labor market slack hurts them the most and full employment helps the most.

Weekly Earnings by Education

Figure 6.4 shows wage trends—in this case, real weekly earnings, by education level and gender, as plotted by labor economist David Autor in a recent analysis (indexed to "1" in 1964). A few notable developments are apparent.

First, not unlike the decile wage trends, real wages by education level fan out and have generally grown more quickly, or fallen less, for higher-skilled workers compared to lower-skilled ones. This is widely interpreted to reflect skill-biased technological change (SBTC). This is the idea that workers whose skills are complementary to new technologies that are increasingly common in the workplace can command an increasing wage premium. Information technology and computers are the classic example, and economists often invoke SBTC to explain the rising wage of college graduates, for example, compared those a high school graduate.

Though there's surely some validity to the SBTC hypothesis, it actually provides only a limited explanation of the educational wage trends in Fig. 6.4. For example, SBTC predicts a rising college wage premium as employers' unmet skill demands bid up college wages. Yet as the part of the figure for men reveals, the real earnings of men *up to and including a bachelor's degree* generally have been flat since around 2000. Similar trends appear for women, though starting later. For both genders, only those with advanced degrees (about 12 % of the workforce) have experienced steadily rising wages.

It could be that technology-induced skill demands have only been unmet in recent years for the most highly educated workers, but given that only about 12 % of the workforce are in this category, this would introduce a much narrower concept

[3] For example, back in 1990, 16 % of employment was in manufacturing and 7 % in health care. In 2014, the respective shares were 9 % manufacturing and 11 % health care.

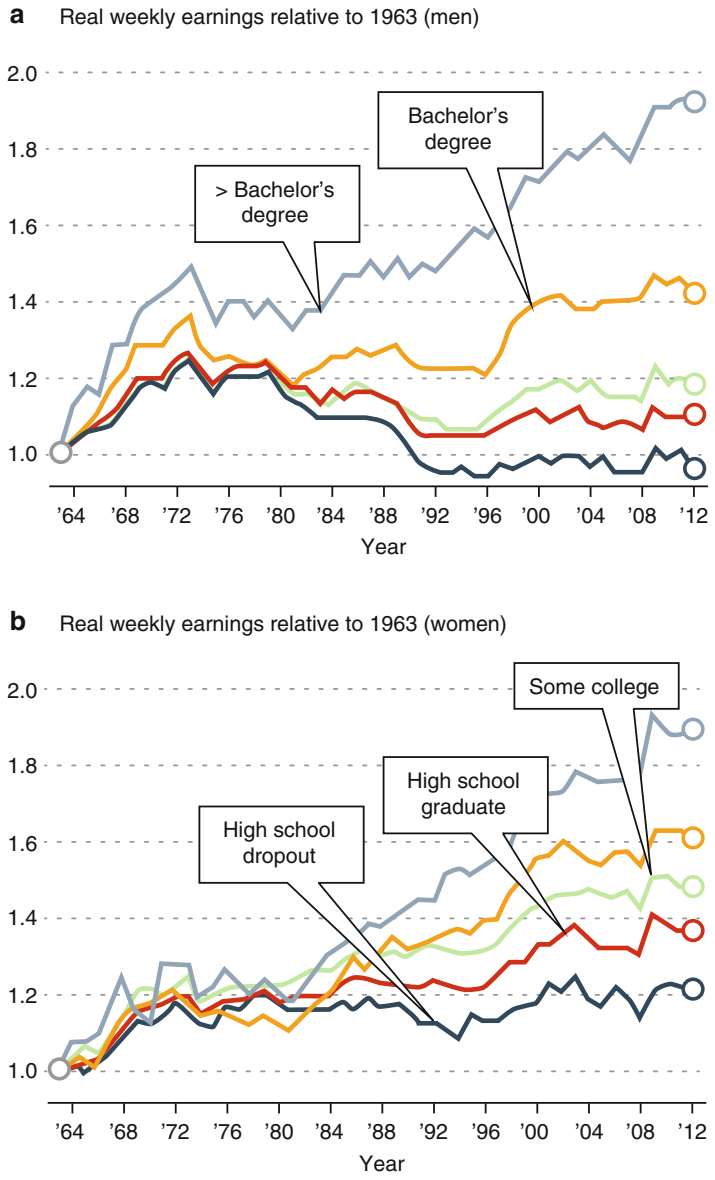

Fig. 6.4 Changes in real wage levels of full-time U.S. workers by sex and education, 1963–2012 (Reproduced from Autor 2014)

of SBTC than is generally thought to prevail.[4] Also, economists generally expect a gradient for skill bias, one that would distinguish the wage trends of more highly educated workers from those of less educated workers. But we don't see that very clearly in Fig. 6.4. Instead, other than those with advanced degrees, earnings for workers at all other education levels are pretty flat since around 2000.

In fact, according to these data, college-educated men, who did relatively well compared to other males, experienced earnings growth of less than 1 % per year. For comparably educated women, growth was 1 % per year. The earnings of non-college-educated men stagnated or lost ground since the mid-1970s.

Annual Earnings by Wage Percentile

The wage data I've presented so far show some dimensions of the increase in wage inequality, such as the relative increase for high-wage workers over middle- and low-wage workers by decile, or the increase in relative earnings of more highly educated workers. But to understand the extent of wage dispersion, it is important to examine trends that reach the very top of the earnings distribution. Fortunately, annual earnings data from a high quality source—the administrative wage records from the Social Security Administration—provide such information.[5]

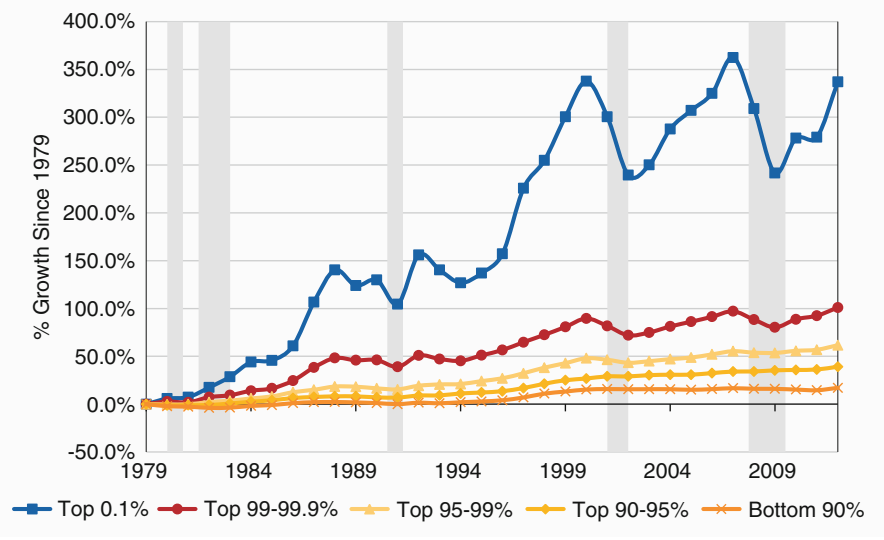

Fig. 6.5 Real annual earnings by wage percentile, 1979–2012

[4] The 12 % is the share of workers, 18 and over, in 2013, with at least a master's degree (data are from the Current Population Survey, March Supplement, graciously provided by Danilo Trisi).

[5] These are the earnings reported on employees' W-2 tax forms. They thus exclude self-employment earnings.

Table 6.1 Real annual earnings, 1947–2012 (Source: EPI analysis of Kopczuk et al. 2010 and Social Security Administration wage statistics [http://www.ssa.gov/cgi-bin/netcomp.cgi])

(2012 Dollars)	Top 0.1 %	Top 99 %–99.9 %	Top 95 %–99%	Top 90 %–95%	Bottom 90 %
1947	$316,878	$110,427	$49,737	$35,037	$14,392
1979	$569,521	$220,898	$105,519	$75,191	$27,110
1989	$1,275,327	$322,321	$124,773	$81,316	$27,596
1995	$1,349,802	$333,669	$130,993	$84,333	$27,873
2000	$2,492,254	$418,654	$156,163	$95,332	$31,248
2007	$2,633,800	$435,324	$163,927	$100,801	$31,626
2012	$2,488,525	$444,098	$170,540	$104,641	$31,741
1947–1979	80 %	100 %	112 %	115 %	88 %
1979–1989	124 %	46 %	18 %	8 %	2 %
1989–2000	95 %	30 %	25 %	17 %	13 %
1995–2000	85 %	25 %	19 %	13 %	12 %
2000–2007	6 %	4 %	5 %	6 %	1 %
2007–2012	−6 %	2 %	4 %	4 %	0 %

Figure 6.5 and Table 6.1 show the trends and levels (in 2012 dollars) from this series, with the figure starting in 1979 (and indexed to 0 in that year, thus showing cumulative percent growth) and the table going all the way back to the late 1940s.

The figure shows the dramatic increase in earnings inequality, with especially outsized gains going to the top 0.1 %: Their real earnings grew by more than a factor of 4 over these years. The rest of the top 1 %—the 99th through 99.9th percentile—about doubled, and below that, gains are consecutively diminished. The extreme cyclical movements of the top earnings trends are also notable in the figure. As I've shown in earlier analysis, these movements closely mimic those of equity markets in those years, and the correlation reflects that these high wages include exercised stock options. While many economists think of equity holdings as wealth or, if realized, as income, clearly in this context they are a part of earnings.[6]

To telegraph some of what's coming in my efforts to explain these trends, I note here that it is hard to square this equity-market-driven pattern with theories of wage determination based on, for example, workers' skills or their "marginal product" (their marginal contribution to the firm's output), and such factors could not plausibly gyrate like that (how could workers be highly skilled/productive in one quarter but not the next?). "Occam's razor" would strongly suggest we rely on the simpler explanation: By dint of the increased importance of stock options in their earnings, these workers' labor earnings have become tied to stock market prices, introducing a whole new dimension of wage determinants, including bubbles, busts, corporate governance, and market valuations made in global markets.

After having gained 88 % in the first few postwar decades, the annual earnings of the bottom 90 % grew only 17 % since 1979, from about $27,000 to close to

[6] On the Economy; "Rents, Rents, Everywhere, Rents!", blog entry by Jared Bernstein, April 17, 2014, http://jaredbernsteinblog.com/rents-rents-everywhere-rents/.

$32,000, or 0.5 % per year (one-fourth of the 2 % annualized growth rate for this wage class for 1947–79). Moreover, and this is again important to my later interpretation of these trends, most of the gains of the bottom 90 % occurred in a few short years in the latter 1990s, when the job market was unusually tight.

Adding Compensation to Wages

One counterargument to the above observations about the bottom 90 % is that those data cover just the wage part of the pay package. Because workers are known to trade off wages for benefits, to what extent does the addition of employer-provided benefits—largely health and pension coverage—change the story?

Though the data needed to answer that question are somewhat sparse, the answer appears to be "not much at all." New analysis by Bivens et al. (2014) reveals the following:

- Adding a measure of benefits to the hourly pay of production, nonsupervisory workers (blue-collar workers in manufacturing and nonmanagers in services), the trend in hourly compensation is much like that of the bottom 90 % of earnings from the Social Security Administration data: Real compensation doubled from the late 1940s to the late 1970s, and has then grown 8 % since 1979.[7]
- The share of the workforce with employer-provided pension and health coverage declined since 1980: The former was down from about 50 % to 42 %, the latter, down from about 70 % to 52 % (these data cover only private-sector workers; Bivens et al. 2014).
- According to employers' reports of their actual spending on pension and health benefits, their hourly costs for these benefits, inflation adjusted, were up by less than 4 % since 1987, or about 0.1 % per year. And this figure represents the average (as opposed to, say, the median of the 20th percentile worker, whose benefit provision is typically less generous).

In other words, there's no evidence to support the contention that adding benefits to wages changes the trends shown thus far (though it does, of course, raise the levels of pay). The real compensation trend for the occupation classes of workers that saw less wage growth since the late 1970s is much the same as the wage trend. The share of workers with employer-provided health and pension benefits has diminished, and employers' costs for those benefits, on average, have grown only slightly over time.

[7] Bivens et al. (2014) assign the average compensation package to the wage of the production, nonsupervisory worker. Generally, the value of benefit packages received by such workers is below the average, so this adjustment may bias compensation levels up to some degree.

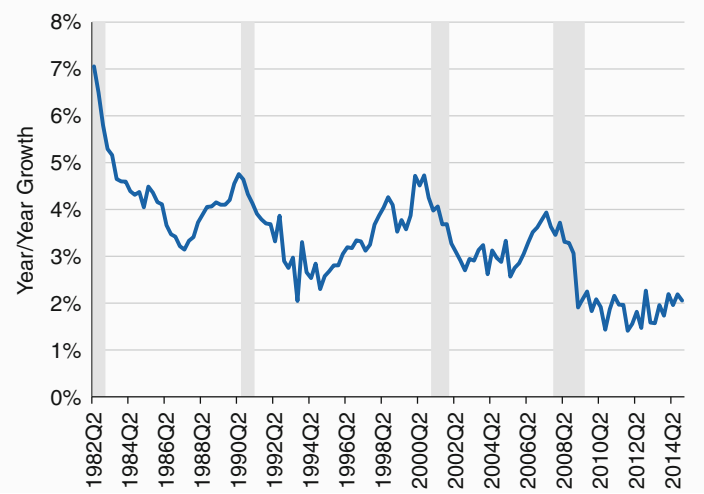

Fig. 6.6 First principal component: Five series, nominal growth

Near-Term Wage Issues

This review of wage and compensation trends would be incomplete without a look at a wage issue that has been generating intense interest in the near-term economy and presents a good example of the role of economic slack in nominal wage trends. Though as of this writing the current economic expansion is over five years old, wage growth, not accounting for inflation, has been flat at around 2 % and unresponsive to what tightening has occurred in the labor market. This persistent lack of responsiveness of wage trends to growth has caught the attention of the Federal Reserve as well as the broader media.[8] Because, until recently, consumer prices have also been growing around 2 %, the media have often framed the issue of stagnant real earnings as the recovery's missing ingredient.

In order to be careful not to "cherry pick" any one wage or compensation series to examine this dynamic, Figure 6.6 plots the first principal component of five different wage and compensation series.[9] This technique is commonly used to summarize numerous data series in a way that pulls out their common signal, in this case, yearly changes in nominal growth since the early 1980s.

The five series are:

- Employment cost index: hourly compensation

[8] See Janet Yellen 2014: http://www.federalreserve.gov/newsevents/speech/yellen20140822a.htm and, for a media account, Leonhardt 2015: http://www.nytimes.com/2015/01/18/upshot/driving-the-obama-tax-plan-the-great-wage-slowdown.html?abt=0002&abg=1.

[9] By "cherry picking," I mean that given these "high frequency" quarterly data, analysts can sometimes find one series that makes their particular case as far as whether wage growth is speeding up, slowing down, or neutral. I wanted to avoid that possibility, so I combined these quarterly series.

- Employment cost index: hourly wages
- Productivity series: hourly compensation
- Median weekly earnings, full-time workers
- Average hourly earnings, production, nonsupervisory workers

The series decelerates notably during the "Great Recession" from a peak nominal growth rate of about 4 % and stops falling when it hits about 2 % (about the rate of inflation, implying stagnant earnings), where it has remained. In this regard, the combined series reveals little in the way of wage pressure and thus serves as a useful and potent confirmation of the role of slack in wage formation. Later, I return to the information in this figure in discussing why "wage targeting" would be a useful policy for the Federal Reserve to adopt in its assessment of slack when setting monetary policy.

Labor's Share of National Income

Finally, a more complete understanding of current issues regarding earnings requires a look at a relatively recent phenomenon: the decline in the labor share of national income. One can think of aggregate income as generated by two "factors:" labor and capital. Thus, economists examine factor shares—the shares of national income attributable to each of these factors. Also relevant to this discussion is that most economists assumed factor shares to remain relatively constant over time, an assumption that is difficult to sustain in the face of the recent trend shown below.

As usual, in reality, the division of income is a lot more complicated than these two factors allow. We've already seen that realized stock options show up in earnings data of the top earners. Proprietors' income—self-employed or unincorporated businesses—is also ambiguous and now amounts to 9 % of national income (what part of the income of a physician in private practice is earnings versus profits?). I do not try to finesse these measurement issues here, in part because more careful work that does so comes up with findings similar to those that follow (see, for example, Elsby et al. 2013).

Figure 6.7 plots aggregate compensation as a share of national income since 1959. The pre-2007 average of this series is about 65 % (the straight line in the figure), a value around which the series has apparently wiggled since the late 1960s, giving rise to the widely held assumption noted above of constant factor shares. Since then, however, the series has declined almost 4 percentage points. The equivalent of $555 billion in 2013, about $4000 per worker, has shifted from the labor share to the capital (or profit) share of national income.

Summarizing, we see that real wages have stagnated for many in the workforce in recent years. While the conventional wisdom is that this unfortunate trend has exclusively beset only low-wage or low-skilled (i.e., less educated) workers, the data show otherwise. Other than a brief (but important) boost from the full-employment 1990s, annual earnings for the bottom 90 % of the workforce have

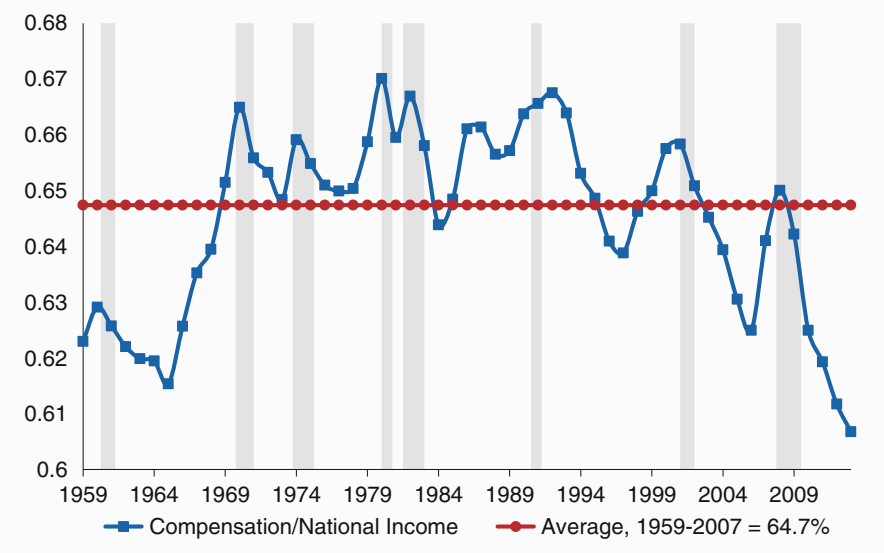

Fig. 6.7 Compensation as share of national income, 1959–2013

been flat since the late 1970s. Even college graduates, specifically men without advanced degrees, have experienced flat real earnings since around 2000. Adding in employer-provided benefits does not change the picture, and aggregating individuals' wages up to national "factor shares" reveals similarly weak outcomes. Most recently, persistent slack in the postrecession job market has led to flat wage growth, stuck at around 2 % in nominal terms, about the rate of inflation, implying flat average compensation in real terms.

In other words, the evidence clearly shows that America has a wage problem. The following sections present ideas as to why and what to do about it.

Theories of Wage Formation

Having documented the relevant trends in the prior section, the rest of the chapter turns to diagnosing what's behind wage, compensation, and labor share trends and prescribing policy solutions that might help to reverse or at least mitigate wage stagnation and inequality. A potentially useful place to start is by briefly reviewing the economic theories of wage determination. Perhaps such theories can point to useful diagnostics as to what's behind the observed trends and prescriptions regarding intervention points. As with all economic theories, the real world is considerably more complex and no single theory adequately explains wage formation.

A notable shortcoming of one group of theories, for example, is that they generally assume full employment: that wages are set at the intersection of supply and demand, either at the level of the firm or the macroeconomy (aggregating up across firms), at full employment. However, as I show below, full employment hasn't been the norm in the U.S. labor market in recent decades. In fact, according to conventional measures, the U.S. labor market has been at full employment only about 30 % of the time since 1980, and this absence of tight labor markets and the bargaining power they deliver to middle- and low-wage workers is an important explanation for the trends documented in part 1. Thus, I divide the discussion of wage-determination theories by whether or not they assume full employment.

Given how wrong that assumption of full employment has been, readers may wonder whether theories that make such an assumption can still add value to our diagnosis and prescriptions. I believe so, as we will see that even theories that ignore the reality of labor market slack offer some useful guidance regarding other aspects of wage determination.

Theories that Assume Full Employment

Perhaps the dominant theory is that in a capitalist economy with "free markets," people are paid their marginal product. The theory dictates that firms hire workers up to the point where their additional contribution to the firm's output fails to cover their cost, that is, up to the point where the marginal product of the last worker hired is zero. To hire beyond that point would be an unnecessary cost to the firm; to hire below that point would leave money on the table as the firm's technology and market share could profitably absorb more production.

While marginal product theory is obviously an abstraction—imagine a business of any magnitude trying to figure out the precise value added by its latest hire—it does have at least one important real world application: One of the most consistent findings in labor economics is that more highly educated workers receive greater pay than those with less education do. According to Bureau of Labor Statistics (BLS) data, the median weekly earnings of full-time workers with a college degree (bachelor's or higher) was $1,194 in 2013. For high school graduates, the comparable figure was $651.

On the other hand, even a passing familiarity with U.S. wage and demographic trends should engender some skepticism regarding the explanatory power of marginal product theory alone, in part because it omits labor market slack and bargaining power (and the negative correlation between the two). For example, Schmitt and Jones (2012) show that low-wage workers are considerably older and more highly educated today than was the case 30 years ago, yet relative to earlier cohorts, they earn less. Of course, it could be the case that the skill requirements of production have changed in ways to lower the marginal product of today's more highly edu-

cated low-wage workforce but, there's little evidence for that, and some evidence to the contrary.[10]

In fact, a major finding of this review is that while skill enhancement through better educational opportunities and job training measures are, of course, essential factors in raising individuals' earnings capacities, particularly for the least advantaged, these "supply side" factors are by no means the whole story in wage trends over the past few decades. Even skill acquisition that raises a worker's marginal product may not necessarily boost his or her wage. In sum, there is some evidence for marginal product theory in the differentiation of wage levels by education, though less in terms of trends. Its policy implication is a sound one: better educational opportunities, especially for those facing barriers to access quality schooling. A shortcoming of the theory is its assumption of full employment and lack of any role for bargaining power or broader market failures.

Marginal product is a microeconomic theory in that it refers to the wage formation process at the individual or firm level. In what is perhaps the dominant macroeconomic theory—the neoclassical growth model, which also assumes full employment—aggregate productivity plays a central role in wage growth.

In this theory, average compensation is expected to grow at the rate of productivity, which itself is a function of the interaction of capital (e.g., equipment, structures, hardware, and software) and technology. Things that boost productivity growth, which could be smarter workers (a linkage to marginal product theory) or innovations that speed up output per hour (i.e., productivity), will raise average compensation.

While this theory has some empirical support—there are significant time periods when average compensation grew at the rate of productivity—for our purposes it has numerous shortcomings. First, it is mathematically the case that when compensation grows at the rate of productivity, wages and the labor share of national income will remain constant. However, the previous figure shows that in recent years, this has not been the case, as compensation has declined fairly sharply as a share of income. Second, as the prior section revealed, there is great and increasing dispersion of wages at different levels such that understanding movements in the average wage is obviously insufficient for our purposes.

The neoclassical growth model's focus on productivity, capital investment, and innovation are useful reminders of the importance of these key growth factors. But the fact that neither of these developments—the decline in the wage share of national income and increased wage dispersion—are tractable within the framework (as it assumes constant shares and only includes average wages), not to mention the incorrect full employment assumption, means we will need to look elsewhere for theoretical guidance regarding wage formation.

[10] David Autor 2014, in "Polanyi's Paradox," and others argue that technology is neutral toward lower-wage workers.

Theories That Do Not Assume Full Employment

Since periods of full employment have been the exception in recent decades, it is very important to review theories of wage determination that do not assume away this critical fact.

In recent years, economists have been able to tap into larger and more nuanced datasets to build so-called "wage curve" models that explicitly link changes in labor market slack. For example, a particularly timely and useful wage curve model was recently estimated by economists David Blanchflower and Andrew Levin (2013), tracking wage movements across all 50 states for the years 1990–2012, yielding almost 1,200 observations. Their results show strong, inverse correlations between slack and wage growth, implying, for example, "that a doubling of the unemployment rate is associated with a 10 % decline in real wages."

Also relevant to our diagnostic analysis, Blanchflower and Levin find that unemployment is but one measure of slack inversely correlated with wage growth. Their wage-curve model reveals the importance of underemployment (e.g., part-time workers who would rather be full-timers) and "nonparticipation," a measure that captures the extent to which potential workers are out of the labor force, thus contributing to slack but not counted in traditional labor force measures.

"Search models" of wage formation are also instructive. These models start from the observation that unemployment is always far from zero and the matching process of workers seeking jobs is a lot trickier than "frictionless" matches of buyers and sellers on stock exchanges. As Rogerson et al. point out, "there is simply no such thing as a centralized market where buyers and sellers of labor meet and trade at a single price, as assumed in classical equilibrium theory." (2005, 960).

In these models of wage determination, bargaining power plays an important and explicit role. Potential workers and employers bargain over the wage offer, with the parties trying to get the best deal for themselves, that is, the job seekers want to maximize compensation, and the employers want to maximize profits (and thus minimize compensation). How they settle the deal is a function of their "threat points"—essentially, outside options that give them either more or less room to maximize their position in the bargaining process.

For example, a job seeker with considerable savings has the time to drive a harder wage bargain on his or her own behalf relative to someone who needs a paycheck right away. Conversely, an employer who isn't facing much in the way of unmet demand has time to "shop around" for the best worker at the lowest price (wage).

Some of the realities we see in the job market fit into this model. For example, unemployment insurance raises the job seeker's bargaining clout and can facilitate a better match from his or her perspective (more recently, analysts have suggested the new subsidized health insurance options from the Affordable Care Act will play a similar role). High unemployment strengthens employers' hands in this bargain, as workers have fewer options and thus less bargaining clout. In fact, one of the key findings of my own work in this area is that the bargaining power provided to workers

from full employment conditions—or missing in periods of slack—is an important wage determinant in contemporary U.S. labor markets.

A related theory is "efficiency wage theory," under which for a variety of reasons, employers will adjust a certain worker's wages above that worker's outside options, given their skill level and experience. The reason for the above-market wage might be to increase the worker's effort or their allegiance to the firm, or, to reduce turnover and thus avoid losing sunk costs associated with hiring and training.

The idea that paying workers more might increase their productivity (very different from the neoclassical assumption that productivity determines the wage) and lower turnover costs to the firm has been offered as an explanation why increases in the minimum wage fail to trigger the predicted job losses engendered by equilibrium wage theory (the idea that any employer who paid a worker above the market wage would go out of business). In other words, higher labor costs engendered by the wage increase are absorbed by improved productivity. On the other hand (barring a wage floor), if demand is weak, workers are plentiful, and skill demands are low—or skilled workers are amply supplied—firms may be more willing to invoke turnover or "shirking risk" rather than pay a higher "efficiency" wage.

Before closing this brief tour, it is useful to make a final stop at "institutionalist" theories of wage formation. The idea here—and parts of this were sprinkled through all of the above—is that entrenched societal institutions, laws, and norms play a key role in how earnings are distributed. Moreover, these institutionally determined outcomes have less to do with marginal product than any of the theories above would dictate. Unions, political power, the ideology of policy makers from Congress to the Federal Reserve, the setting and enforcement of labor standards (minimum wages, overtime rules, workplace safety), immigration practices—all of these are large and determinant forces outside the narrow scope of marginal product.

There's some evidence to support these more nuanced models—wage curve, efficiency wages, search models, and institutionalist approaches—some of which I show in the next section. For example, an institutionalist framework would predict that international trading regimes can pit blue-collar workers in high-wage countries against those in low-wage countries, leading to wage gains in the latter at the expense of some classes of workers in the former.[11] Below, I show evidence from my own work (with Dean Baker) on wage curve analysis. And unlike many of the other models, the role of labor market slack in these more nuanced models leads to some of the policy ideas I recommend.

A memorable quip in economic modeling is that while all models are wrong, some models are useful. While many of the theories have shortcomings in the real world, especially the assumption of full employment, there are useful ideas in all of them, ideas that I pull out and suggest in the next section on policy ideas to address the wage challenge.

[11] Actually, standard trade theory ("Stolper/Samuelson") makes this same prediction.

Diagnosis and Prescription: What's behind Wage Stagnation and Earnings Inequality and What Can Be Done to Reverse It?

The causes of the trends documented in the previous section are typically attributed to these factors:

Globalization: Increased international trade, or globalization, is frequently raised in this context because increased trade has placed American workers in the tradable goods sector in competition with their counterparts from lower-wage countries, essentially increasing the implicit supply of labor. Of course, workers displaced from the tradable sector then compete with others in the nontradable sector. This creates the potential for greater labor market slack, particularly if, as has been the case in the U.S., net exports are negative (we run trade deficits).

Technology and the Need for Greater Skills in the Workforce: Those who favor this explanation maintain that as technology has pervaded the workplace, employers' skill demands have increased to the disadvantage of those lacking such skills. This was discussed above under the rubric of SBTC. This explanation relates to marginal product theory.

Eroded Institutions: Reaching back to institutionalist theories of wage formation, others claim that the erosion of the real value of the minimum wage, union density, and labor standards has hurt many in the labor force who heretofore benefited from the protection of these institutional forces.

Absence of Full Employment: As stressed throughout, labor market slack is one of the most important problems facing middle- and low-wage workers. The full-employment 1990s, for example, were the only period since the latter 1970s when real low and median wages rose at the rate of productivity growth. In recently completed research shown below by Baker and me, we find solid evidence that lower unemployment disproportionately raises the pay of the lowest paid workers and has virtually no impact on those at the top of pay scale. In other words, full employment's impact on the patterns of wage growth is inequality reducing (Bernstein and Baker 2013).

Figure 6.8 tells an important part of this historical story. Using the Congressional Budget Office's estimates of the lowest unemployment rate consistent with stable inflation, it shows the percent of quarters when unemployment has been "too high" in the sense of being above the full employment unemployment rate. Over the period when real wages grew across the wage scale (see Table 6.1 above, specifically the trend from 1947 to 1979), unemployment was "too high" only 30 % of the time, meaning the job market was at full employment 70 % of the time. Since then, this share has flipped: unemployment has been too high 70 % of the time. And, of course, these are the years when wage growth was both stagnant for many and widely dispersed.

Of course, full employment wasn't the only difference between these two periods—I've already stressed other relevant differences, including globalization. But it

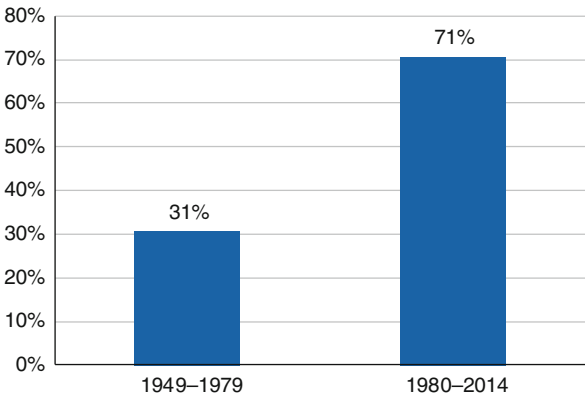

Fig. 6.8 Percent of time unemployment has been "Too High" (Source: Congressional Budget Office, Bureau of Labor Statistics)

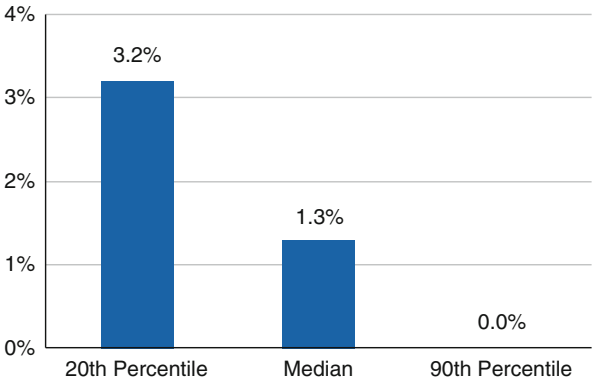

Fig. 6.9 Change in real wages by wage level given 30 % decline in unemployment rate (Bernstein and Baker 2013)

is one important factor. Figure 6.8 also poses a stark challenge to those wage determination theories that assume away the problem of labor market slack.

How important a factor is the absence of full employment? Results from Bernstein and Baker (2013) are presented in Fig. 6.9, which come from panel regressions of all states using annual data from 1979 to 2014, shows the impact on wages at different percentiles from a 30 % decline in the unemployment rate (not a 30 percentage point decline; an example of a 30 % decline would be from 7 % to 4.9 %).

These results show that such a decline raises real wages the most at the bottom of the pay scale, less than half that much at the middle of the pay scale, and not at all at the top. Moreover, other results from our work show a similar pattern for hours worked, implying that full employment boosts both hourly wages and hours worked, and does so progressively (more so at the low end of the pay scale than at the high end).

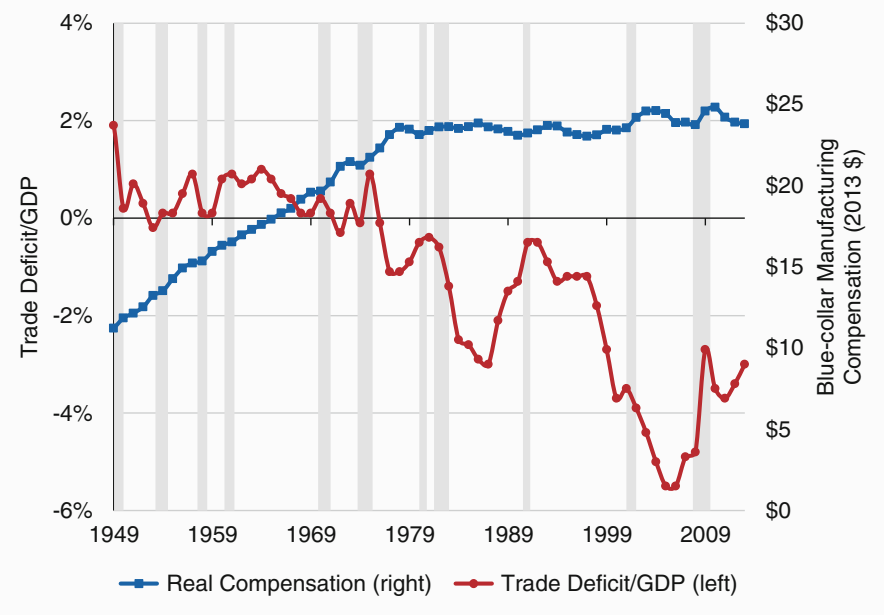

Fig. 6.10 Trade deficit/GDP and manufacturing compensation, 1949–2013

In considering policy interventions to address the impact of these various forces on wage stagnation and inequality, begin with globalization and consider the manufacturing wage. In real terms, the real hourly compensation of production workers (i.e., workers in blue-collar occupations) more than doubled from about $10 to $25 between the late 1940s and the late 1970s (see blue line with squares in Fig. 6.10). Since then, despite productivity gains in the sector, real compensation has hardly changed at all (in 2013 dollars, it was about $23.50 in 1979 and $23.80 in 2013).[12]

Economists often ascribe trade penetration to these figures—the fact that workers in the tradable goods sector were exposed to much more global competition in the latter period when pay stagnated. But I think a more nuanced story is necessary, one that points toward a policy solution: It's not more trade that has hurt blue-collar workers in manufacturing, it's trade *deficits* (the red line in Fig. 6.10 with circles). Over the period when production worker wages doubled, the trade surplus averaged 0.5 % of GDP (1947–79); since then, the trade deficit has been negative in every year, ranging from minus 0.4 % to minus 5.5 % of GDP, and averaging minus 2.6 %.

As economist Josh Bivens has shown, when we run trade deficits of these magnitudes for that long, we are exporting large numbers of manufacturing jobs and

[12] I use the same technique as Bivens et al. (2014) to convert public manufacturing wage data for production workers into compensation data, i.e., I multiply the hourly wage by the ratio of National Income and Product Accounts aggregate manufacturing compensation to wages.

significantly damaging the ability of the sector to effectively grow and provide remunerative, high-value–added jobs for production workers. Bivens finds that our persistent trade deficits have reduced labor demand for non-college-educated workers in tradable sectors, leading to an annual earnings loss of 5.5 %, or $1,800 for full-time, full-year workers.[13] Of course, if diminished labor demand in one sector was fully offset in another sector, our persistent trade deficits might not be a problem. But an inherent point in Bivens' analysis, one that ties into a theme in this review, is that displaced workers from one sector add to labor market slack (unemployment and underemployment) in other sectors, exerting downward pressure on earnings for broad swaths of affected workers.

In other words, *globalization* is a major factor in the negative wage trends shown above, and the pursuit of more balanced trade is one important way to help reverse those trends. As Bernstein and Baker argue in a *New York Times* piece,[14] exchange rate policy is key to pursuing that balance, especially given the widely accepted fact that some of our trading partners, including but not solely the Chinese, place our manufacturers at a competitive disadvantage by suppressing the value of their currencies relative to the dollar, thus making their imports cheaper in dollar terms and exports more expensive in foreign currency terms. We offer various policy ideas to push back at such currency management, from legislation treating currency management as a violation of international trading rules that leads to offsetting tariffs to explicit reciprocity arrangements. If a country wants to buy our Treasuries, we must be able to buy theirs (which is not always the case now).

Turning to *higher educational attainment*, there is, of course, no question that more highly educated workers have, on average, higher wages and lower unemployment. At the same time, Figure 6.4 shows that real trends over time have not been particularly favorable, even for those with 4-year college degrees, especially men.

This latter point poses a challenge to skills-based explanations of wage inequality, a point that has been acknowledged even by economists closely associated with those explanations. David Autor, for example, argued that education-only explanations for rising inequality "can suck all the air out of the conversation," adding that "… all economists should be pushing back against this simplistic view."

David Card, a prominent economist who has often been a skeptic of SBTC explanations, as well as someone who has consistently documented the educational wage premium, explains the rationale behind Autor's caveat: "I don't think the college-to-noncollege wage premium gives you any insight into why such a large share of the economic gains has accrued to such a tiny share of the population."[15] The phenom-

[13] Josh Bivens 2013. "Using Standard Models to Benchmark the Costs of Globalization for American Workers Without a College Degree," http://s3.epi.org/files/2013/standard-models-benchmark-costs-globalization.pdf

[14] Jared Bernstein and Dean Baker, "Taking Aim at the Wrong Deficit," *New York Times,* November 6, 2013, http://www.nytimes.com/2013/11/07/opinion/taking-aim-at-the-wrong-deficit.html.

[15] Both the Card and Autor quotes are referenced here: Jared Bernstein, "Inequality's Roots: Beyond Technology," Economix, *New York Times*, November 18, 2013, http://economix.blogs.nytimes.com/2013/11/18/inequalitys-roots-beyond-technology/?_php=true&_type=blogs&_r=1.

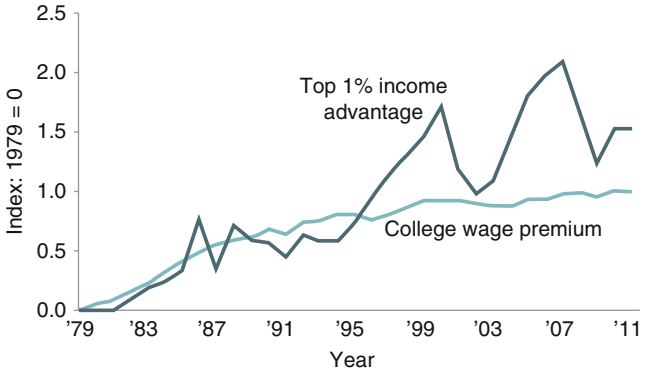

Fig. 6.11 Growth of the top 1 % income advantage and the college wage premium, 1979–2011 (Source: Mishel's analysis of Piketty and Saez [Jan 2013 update, Table A-6] and Current Population Survey Outgoing Rotation Group microdata) (Note: College wage premium reflects regression-adjusted wage advantage of those with a college degree or more)

enon Card is describing here can be gleaned from Fig. 6.5, showing the extent to which the top 0.1 % of wage earners have pulled away from the pack, including the rest of the top 1 % (i.e., the 99.0–99.9th percentiles). Surely, the vast majority of both groups are college educated, yet the differential in their wage growth rates are striking. Card is also referring to the deceleration of the (4-year) college wage premium (relative to the high school wage) observed in Fig. 6.4 (note how both high school and college weekly earnings broadly track each other since 2000).

These wage dynamics are most evident in Fig. 6.11, made by labor economist Larry Mishel.[16] The light blue line shows the flattening college premium, regression-adjusted, against the trend in income of the top 1 % relative to that of the bottom 90 %. The latter moves in the familiar pattern seen in Fig. 6.5, including cyclical gyrations that are clearly related to stock market returns, as opposed to any skill differentials. In fact, it is implausible to view these varied series of the very top fractile incomes or earnings as related to employers' skill demands. There's no conceivable model that would explain such cyclical movements within that framework.

The key insight from the perspective of this chapter is the following: Providing workers with more education or training will often translate into higher earnings. Encouraging and allowing such persons to achieve their intellectual, productive, and earnings potential must be a central goal of public policy. Moreover, higher educational attainment is increasingly important, because even if the education wage premium is not rising much, it remains highly elevated. Also, as Reeves has pointed out (see Chap. 13), educational attainment is a key mobility determinant for children from disadvantaged backgrounds.

[16] Working Economics (Economic Policy Institute blog), "Greg Mankiw Forgets to Offer Data for his Biggest Claim," blog entry by Lawrence Mishel, June 25, 2013, http://www.epi.org/blog/greg-mankiw-forgets-offer-data-biggest-claim/.

But we should also be aware that while, on average, such interventions will raise someone's earnings—assuming adequate labor demand, a key issue I explore below—it will not render him or her immune from trends that have flattened the trajectory of real wages for most education categories.

Furthermore, the stabilization of the college wage premium and the decline in the ratio of middle- to low-wage workers challenge the SBTC theory, as its prediction that technology's dissemination generates increasingly unmet skill demands predicts increased wage divergence by decile or skill level. The fact that the top 0.1 % have pulled so far from the pack while the wages of the bottom 90 % generally have stagnated is similarly inconsistent with both SBTC and simple marginal product stories.[17] In this regard, the education solution for rising inequality—versus basic wage stagnation faced by an individual—may be more limited than most advocates recognize.

In effect, the education/wage debate needs clarification. On the one hand, there clearly exists a positive wage gradient by education level. On the other, the SBTC story is incomplete in that more education alone won't solve the wage problem. It is not hard, however, to square these observations. On average, an individual is better off with more education or training, much as marginal product theory would predict. But (a) that doesn't inoculate him or her from stagnant trends within educational classes, and (b) it doesn't speak to the wage needs of those who are not likely or able to move up the education ladder. A comprehensive wage policy agenda must be mindful of all of these nuances.

Finally, it is essential to note that increasing the earnings capacity of individual workers does not simply mean "finish college," though that's a laudable goal for many. It should also include work-based learning such as apprenticeship programs and on-the-job training, as articulated in a recent paper by Holzer and Lerman (2014). These authors find that such policies can provide much needed upward earnings mobility for many who may be less likely to benefit from a 4-year college degree.

Reinstating the power of eroded labor market institutions is also necessary. The federal minimum wage remains over 20 % below its peak in the late 1960s, and while many states have acted independently to raise the wage floor, others, particularly in the South, have not. The most recently introduced proposal by White House and Congressional Democrats is to increase the federal minimum from its current level of $7.25 to $10.10 in three annual increments, and then index it to inflation. According to recent analysis by the Congressional Budget Office, which employs standard assumptions from the minimum wage literature about the impacts of the policy, the increase would raise the pay of 24.5 million low-wage workers, though

[17] Economists developed a "hollowing out" hypothesis to explain some of these patterns in ways intended to support an altered version of SBTC, but their evidence was particular to certain time periods and inconsistent with others. See Mishel 2013.

the CBO also predicts that 500,000 jobs would be lost due the mandated increase in labor costs.[18]

Policy analyst Ross Eisenbrey (2014) provides a very useful review of a broad set of other important labor standards that need attention in the interest of raising pay for workers with limited bargaining power. His recommendations include:

- Updating/increasing the salary threshold below which salaried workers are eligible for overtime pay: This threshold—the so-called "salary test"—is not indexed to inflation, meaning that unless policy makers act, nominal earnings growth will increasingly exempt salaried workers from time-and-a-half pay, even when their occupational duties mean they should be nonexempt (there is a "duties test" but it is less reliably applied in practice than the salary threshold). Simply adjusting the current threshold for inflation based on its nominal value back in the mid-1970s would more than double it from $455 to about $980.
- Improving the enforcement of "wage and hour" rules: Incidence of "wage theft" (not paying workers what they are contractually owed), misclassification (classifying regular employees as self-employed who are thus ineligible for minimum wages, overtime, and other established protections), and nonpayment of overtime has led to significant wage losses for many lower-paid workers.
- Leveling the playing field for union organizing: Eisenbrey presents extensive evidence of both legal and structural changes that have tilted the balance against those interested in boosting the number and ability of workers to engage in collective bargaining, thus blocking an essential rebalancing of bargaining power. Reversing this tilt requires allowing unions to organize subcontracted workers, crackdowns (versus "wrist slaps") on employers who illegally block organizing drives, reducing waiting periods between drives and elections, and providing union advocates the same access to potential members that employers currently enjoy.

In addition, one of economics' most unfortunate and unrealistic assumptions is that the job market is typically at full employment, barring occasional cyclical downturns, an assumption clearly belied by the second bar in Fig. 6.8. Instead, in the interest of generating balanced and lasting real wage growth, policy makers must pursue full employment. This goal is particularly germane for less advantaged and minority communities, as even when the overall job market is at full employment, their portion of the market can still be too slack to enforce a more equitable distribution of wages.

Getting back to full employment requires fiscal and monetary stimulus, particularly in periods like the recent past, where such actions are necessary to offset the residual weakness in the private sector stemming from the bursting of the housing bubble and the financial crisis. Interestingly, the monetary authorities—the Federal

[18] CBO, "The Effects of a Minimum-Wage Increase on Employment and Family Income," February 18, 2014. The budget office finds that 16.5 million workers benefit directly from the increase and projects that another 8.5 million indirectly benefit from "spillovers"—the tendency of employers to raise wages of those just above the new minimum.

Reserve—have in recent years quite explicitly stressed persistent labor market slack as a rationale for their fairly aggressive monetary stimulus. Clearly, they have been in the mode of weighting the full employment side of their dual mandate.

That said, an important idea has surfaced recently that exists right at the intersection of wage policy and monetary policy: wage targeting by the Federal Reserve. The central bank, particularly under Chair Janet Yellen, is known to use a "dashboard" of indicators to determine slack in the economy and thus to guide its macromanagement role of balancing growth and price pressures.[19] For a variety of reasons—including the difficulty assessing slack using more traditional measures such as unemployment (due to declines in the labor force), the "flattening of the Phillips curve" (i.e., price inflation has become less sensitive to unemployment), and the general stability of the Fed's most prominent price inflation gauge[20]—some analysts have suggested that tracking nominal wage trends (as summarized in Fig. 6.6 above) would improve the Fed's ability to more accurately determine when economic pressures are building in the labor market.

Researchers at Goldman Sachs, for example, in an analysis that carefully tracks the impact on inflation and unemployment of the various types of indicators or rules the Fed uses to guide interest rate policy, conclude "…that the benefits of focusing on wage inflation are substantial when slack is difficult to measure and wage growth acts as a reliable cross check for the true amount of spare capacity" (Stehn 2014, 1). Importantly, they argue that upweighting wage targeting could reduce the likelihood of a premature tightening of monetary policy that would throw the economy off the path to full employment too soon. In the interest of both stronger recoveries and more broadly shared wage growth, I judge wage targeting to be an important idea worthy of more research.

Unlike monetary policy, fiscal policy has been highly problematic, as Congress has pursued "austerity measures"—reducing budget deficits even as output gaps persist. For example, various analysts found that fiscal drag reduced real GDP growth in 2013 by 1.5 percentage points. Conventional rules of thumb imply that the unemployment rate was 0.75 of a percentage point higher than it otherwise would have been. That amounts to over 1 million jobs, and coincidentally, about 10 % of the actual 2013 unemployment rate, invoking real wage elasticities of the magnitudes in Fig. 6.9.

Especially given the slack labor markets in disadvantaged communities even in good times, another essential policy for achieving full employment is direct job creation. While the idea of direct job creation may invoke images from the 1930s of men in camps undertaking large public infrastructure projects, contemporary versions are quite different. Donna Pavetti reviews a program that was effectively implemented as part of the Recovery Act, the Temporary Assistance for Needy

[19] "Janet Yellen's Dashboard," 2014, Brookings Institution, http://www.brookings.edu/research/interactives/2014/janet-yellens-dashboard.

[20] That is, the core personal consumption deflator, which, as I show in my blog entry at On the Economy, "Price Inflation and Wage Inflation," http://jaredbernsteinblog.com/price-inflation-and-wage-inflation/, has basically moved between 1 and 2 % for over 10 years.

Families Emergency Fund, wherein the federal government significantly subsidized the pay of targeted workers who found jobs in any sector (public, private, nonprofit, etc.) (Pavetti 2014).

Not only did this program provide jobs for about 250,000 workers, it did so at a cost below that of other Recovery Act job creation measures.[21] Moreover, some follow-up evidence suggests that subsidized workers kept their jobs even after the subsidy ended. To be sure, program rules must forbid displacement (the substitution by employers of a subsidized worker for a nonsubsidized one) and be vigilantly enforced. But Pavetti (2014) convincingly argues that a scaled-up, national version of this direct job creation program would be a strong antidote for persistent labor market slack, especially for the hard to employ.

Conclusion

For much of the last 3½ decades, trends in real wages for various different groups in the workforce have been stagnant or worse. As shown above, this is true for middle- or low-wage deciles, most education levels, the bottom 90 % of annual earners, and even the national share of labor-based income. Adding compensation does not change this picture, though it does raise the level of earnings at any point in time.

However, those at the very top of the wage scale— at the top 1 % or even more so, at the top 0.1 %—and those with advanced degrees have consistently posted strong gains, even accounting for temporary losses associated with the business cycle (and the loss of equity-based earnings). Thus, two key observations that surface from the empirical analysis are real wage stagnation and increased wage inequality.

Theories of wage formation highlight the role of education and skills in promoting higher earnings, the role of macroeconomic variables—specifically labor market slack vs. tautness—the role of labor market standards and institutions, and the critical role of worker bargaining power. All of these factors are important if policy makers are to undertake measures to address the wage problems identified throughout. Research on educational premiums shows that more schooling is clearly associated with higher earnings, a fact that is already widely reflected in policy debates.

On the other hand, a problem that is both more immediate and longer lasting, as shown in Fig. 6.8, is the persistence of slack labor markets and its strong corollary, diminished bargaining power for low- and middle-wage workers. Moreover, this problem is generally missing from both many theories of wage determination, which assume full employment, as well as the broader analysis of wage trends. Remarkably, many policy discussions of what to do about wages assume full employment, which naturally elevates supply-side (versus demand-side) solutions like education and training. I've stressed throughout that these are, of course, essen-

[21] Compare, for example, cost per job values in Pavetti's Appendix Table 1 with cost per job figures discussed in this analysis. See Council of Economic Advisers 2009, Table 4.

tial weapons in the fight against wage stagnation and inequality, but they are insufficient.

Full employment and robust labor standards are equally important, perhaps even more so in the sense that absent ample job quantity, even skilled workers risk being underemployed. In that regard, I hope this review will remind policy makers that the most holistic approach to pushing back on stagnant and unequal wage trends is the best. Our interventions in this space must, of course, recognize and attack skills deficits. But they must also attack trade deficits, the absence of full employment, and the erosion of labor standards. Yes, this constitutes a highly comprehensive and challenging agenda, but that is what it will take to address the wage difficulties that have been faced by most workers in the U.S. labor force for far too long.

Finally, there are numerous aspects of wage analysis that I left out of this analysis not because they are unimportant in my judgment but because, though others may disagree, I view them as less central. Some labor market analysts believe that the pace at which technology is replacing workers has accelerated in recent years, with profound effects on jobs and incomes for many in the workforce. I've examined these arguments and found them lacking in convincing evidence, at least for now. But it is an issue very much worth tracking.[22]

Though I mentioned the role of immigration in various places, I did not give this explanation—the increased supply of low-skilled immigration as a factor depressing wages—much weight in the above analysis. There is a large literature on this question and the general consensus is that such supply effects have hurt the wages of those who are substitutes for low-wage immigrant labor while having little impact, or even a positive impact, on those who are complements. In the U.S. labor market, the latter—complements—vastly outnumber the former, though the negative impact of supply effects on the wages of, say, high-school dropouts or disadvantaged minorities, should not be overlooked.

While I focused quite closely on wage trends of various income classes, I did not examine issues around wage mobility (tracking cohorts of workers across time). Such analysis is useful but data are scarce relative to the type of information upon which I focused, and what evidence there is suggests little change in the pace of mobility over time. If that is the case, then the problems of more stagnation and more inequality cannot be said to be offset by greater mobility.

Finally, it may fairly be argued that given how "gridlocked" federal politics are today, few policy makers would be interested in tackling these issues. I acknowledge the limits of our current political system to deal with the wage problem documented throughout, but an analysis of these political constraints is beyond the scope of this chapter. However, these wage challenges are not going away anytime soon,

[22] Jared Bernstein, "Before Blaming the Robots, Let's Get the Policy Right," Economix, *New York Times,* February 17, 2014, http://economix.blogs.nytimes.com/2014/02/17/before-blaming-the-robots-lets-get-the-policy-right/?_php=true&_type=blogs&_r=0; On the Economy*;* "Where's the Automation in the Productivity Accounts," blog entry by Jared Bernstein, http://jaredbernstein-blog.com/wheres-the-automation-in-the-productivity-accounts/

and perhaps, in more cooperative times, future policy makers may find the analysis and policy recommendations to be useful.

Acknowledgments The chapter acknowledges the input of Jesse Rothstein, Ben Spielberg, the Economic Policy Institute (for much of the data on hourly wage percentiles), and the members of the ETS project of which this is a part. Any mistakes are my own.

References

Autor, David. 2014. *Polanyi's paradox and the shape of employment growth*. Draft of paper presented at the Federal Reserve Bank of Kansas City's economic policy symposium, Jackson Hole, WY (August 21–23). https://www.kansascityfed.org/publicat/sympos/2014/GD2.pdf.

Bernstein, Jared, and Dean Baker. 2013. *Getting back to full employment: A better bargain for working people*. Washington, DC: Center for Economic Policy and Research. http://cepr.net/documents/Getting-Back-to-Full-Employment_20131118.pdf.

Bivens, John, Elise Gould, Lawrence Mishel, and Heidi Shierholz. 2014. *Raising America's pay: Why it's our central economic policy challenge*. Washington, DC: Economic Policy Institute. http://www.epi.org/publication/raising-americas-pay/.

Blanchflower, David G., and Andrew T. Levin. 2013. *Labor market slack and monetary policy, full employment*. Washington, DC: Center on Budget and Policy Priorities.

Council of Economic Advisers. 2009. *Estimates of job creation from the American Recovery and Reinvestment Act of 2009*. Washington, DC (May). https://www.whitehouse.gov/assets/documents/Job-Years_Revised5-8.pdf.

Eisenbrey, Ross. 2014. Improving the quality of jobs through better labor standards. In *Center on Budget and Policy Priorities, full employment*. http://www.pathtofullemployment.org/wp-content/uploads/2014/04/eisenbrey.pdf.

Elsby, Michael W. L., Bart Hobijn, and Ayşegül Şahin. 2013, *The decline of the U.S. labor share*. Washington, DC: Brookings Institution (Fall). http://www.brookings.edu/~/media/Projects/BPEA/Fall%202013/2013b_elsby_labor_share.pdf.

Holzer, Harry J., and Robert I. Lerman. 2014. Work-based learning to expand jobs and occupational qualifications for youth. In *Center on Budget and Policy Priorities, full employment*. http://www.pathtofullemployment.org/wp-content/uploads/2014/04/holzerlerman.pdf

Kopczuk, Wojciech, Emmanuel Saez, and Jae Song. 2010. Earnings inequality and mobility in the United States: Evidence from social security data since 1937. *Quarterly Journal of Economics,* http://elsa.berkeley.edu/~saez/kopczuk-saez-songQJE10mobility.pdf.

Mishel, Lawrence, Josh Bivens, Elise Gould, and Heidi Shierholz. 2012. *The state of working America*, 12th ed. Ithaca: Cornell University Press.

Mishel, Lawrence, John Schmitt, and Heidi Shierholz. 2013. *Assessing the job polarization explanation of growing wage inequality*. Washington, DC: Economic Policy Institute, (January 11). http://www.epi.org/publication/wp295-assessing-job-polarization-explanation-wage-inequality/.

Pavetti, LaDonna. 2014. Subsidized jobs: Providing paid employment opportunities when the labor market fails. In *Center on Budget and Policy Priorities, full employment*. http://www.pathtofullemployment.org/wp-content/uploads/2014/04/pavetti.pdf.

Piketty, Thomas, and Emmanuel Saez. 2013 (update). *Income inequality in the United States, 1913–1998*. NBER Working Paper 8467. Cambridge, MA: National Bureau of Economic Research.

Rogerson, Richard, Robert Shimer, and Randall Wright. 2005. Search-theoretic models of the labor market: A survey. *Journal of Economic Literature* 43 (December). http://home.uchicago.edu/shimer/wp/search-survey.pdf.

Schmitt, John, and Janelle Jones. 2012. *Low-wage workers are older and better educated than ever*. Washington, DC: Center for Economic and Policy Research. http://www.cepr.net/documents/publications/min-wage3-2012-04.pdf.

Stehn, Jari. 2014. *The case for a wage Taylor rule*. New York: Goldman Sachs Research, June 4.