DEMAND SHIFTS AND LOW-WAGE WORKERS

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INTRODUCTION

It is widely accepted that labor demand in the U.S. labor market has shifted over the past few decades away from low-skilled workers, contributing to the plight of the working poor. The evidence for this shift in demand is based on the relative movement of prices and quantities of workers at different skill levels (in this literature, "skill" is usually synonymous with years of education; see for example, Katz and Murphy [1992]). That is, analysts examine the interactions between the supply of and demand for workers of different skill levels. Since those at the bottom of the wage/skill distribution have seen both their relative supplies and wages fall steeply, this "demand twist" view (as it is sometimes called) concludes that relative demand must have contracted even faster than relative supply.[1]

This finding that demand has shifted away from the less skilled is often interpreted to mean that the share of low-wage work in the U.S. labor market has been shrinking. In fact, as shown below, the opposite is true; low-wage workers have been an increasing share of the workforce since the late 1970s.

The question explored in this paper is whether this observation contradicts the assertion that demand for low-wage workers has fallen. Like others, I find evidence that demand has shifted away from workers with lower levels of education. However, when wage levels are substituted for education levels the story is not so clear cut. By this metric, demand for low-wage males has increased over the 1980s and 1990s. For female workers, demand has declined for both low-wage and less-educated workers, although the shift is less for low-wage than for less-educated women.

Both theory and empirical observation suggests a focus on real wage levels to measure demand shifts over time. First, it is a central principle of standard microeconomics that the hourly wage tends to equal the worker's marginal product; thus, along with education levels, wage rates are a useful measure of a worker's contribution to the firm's output. Any contradictory findings when using wage instead of skill levels has important theoretical and policy implications (discussed below). Second, focusing on absolute wage levels has the advantage of capturing changes in demand that have occurred within education groups. This is important because from one-half to two-thirds of the increase in wage inequality has taken place *within* education/experience groups [Katz and Autor, 1998], and as this paper will show, more highly-educated cohorts are receiving low wages. Finally, analysts of the working poor, especially those interested in the impact of welfare reform, are often more inter-

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ested in the absolute consumption possibilities of low-income families and less so in their relative economic outcomes.[2]

With this focus on low-wage workers as opposed to less-educated workers, this paper proceeds by first examining the trend in low-wage work over the past few decades, describing the characteristics of low-wage workers in 1996, and then measuring shifts in demand for these workers after 1979. The final section discusses policy options to address the problem of low-wage work.

Since the paper focuses mainly on absolute trends in wage levels, the alleged bias in the Consumer Price Index needs to be addressed. For reasons explained in the data appendix, I use the *CPI-U-X1* (which avoids the overstatement of inflation in the late 1970s and early 1980s in the *CPI-U*) to deflate hourly wages. Nevertheless, the recent controversy over the grwoth of consumer prices suggests this series also suffers from similar shortcomings. As noted in the data appendix, despite recent criticisms, the *CPI-U-X1* still stands as our best measure of inflation, and, like the vast majority of labor market analysts that have examined changes in real wages, I hesitate to make adjustments that are not supported by a greater body of careful research than currently exists.

The Increase in the Share of Low-Wage Jobs and the Characteristics of Low-Wage Workers

Figure 1 displays the growth in the share of low-wage workers from 1973-97. The proportion of low-wage workers is defined as the share of the workforce employed at or below the "poverty-level wage." This wage level is determined by dividing the poverty line for a family of four (about $16,000 in 1996), the number of hours of full-time, full-year employment (2080 hours). While this is an admittedly arbitrary cut-off, the results presented in this paper are not particularly sensitive to the choice. The point is to hold various absolute values in the wage distribution fixed and observe the shift in the wage density over time.

As the middle line shows, the share of workers earning low wages has increased steadily, rising from 23.5 percent in 1973 to 28.6 percent in 1997. However, the trends by gender show that this increase has been driven exclusively by men. The share of the male workforce earning low hourly wages increased from 12.8 percent in 1973 to 22.5 percent in 1997. While female workers are clearly more likely to earn low wages, as shown in Figure 1, the share of women in the workforce earning low hourly wages has actually declined over time, from 39.1 percent in 1973 to 35.3 percent in 1997.

Table 1A uses the various multiples of the "poverty-level wage" discussed above to observe workers' characteristics in 1996. Notice that while women comprise 47.7 percent of the total workforce, they make up 58.2 percent of the low-wage sector. Low-wage workers are also disproportionately members of minority groups, and not surprisingly, they have lower levels of education than workers overall. This result is most evident when viewing the top and bottom of the education distribution, i.e., low-wage workers are less likely to be college-educated and more likely to be high-school dropouts than higher paid workers. However, those with a high-school education are under-represented only in the highest wage group and those with some college are fairly evenly spread across the wage distribution. These two mid-level education

FIGURE 1
Percent of Low-Wage Earners, 1973-1997 by Gender
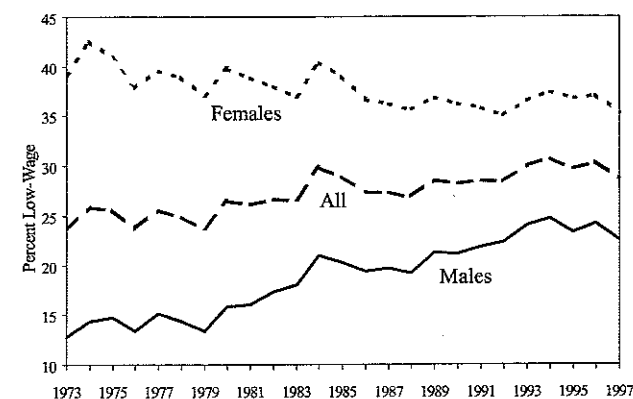
Source: See data appendix.

groups combined comprise 63 percent of the workforce and 70 percent of those in the low-wage category.

Low-wage workers are also younger, less likely to work in the manufacturing sectors and most likely to work in retail trade and other low-wage services (such as hotels). In terms of occupations, low-wage workers are disproportionately in service occupations such as food and cleaning services. Notably, low-wage workers are the least likely wage group to be covered by union contracts.

Table 1B provides initial insights into changes in the wage structure by education level. A naïve reading of the conventional demand twist argument might suggest that the share of high-paid, highly educated workers has expanded significantly while the share of poorly paid, less-educated workers has fallen. But this is only partly true (the comparison is hindered by an important coding change in the CPS education variable).[3] Comparing the last column (for the total workforce) shows the well-known educational upgrading of the workforce that has occurred over the period. The proportion of those without high-school degrees fell from 20.1 percent to 10.9 percent of the population, for example, and the proportion with at least a college degree increased from 18.6 percent to 26 percent between 1979 and 1996. Also, supporting the demand twist story, the highest paid workers are more likely to be college graduates. Note, for example, the large decline in the proportion of the workforce with less than a high-school degree in the highest wage category, from 12.5 percent to 2.2 percent, and the concomitant increase in the proportion of college graduates earning high wage rates, from 32.8 percent to 52.7 percent.

TABLE 1A
Characteristics of Workers by Wage Level, 1996

	Wage Levels[a]				Total
	Low	Low-Middle	High-Middle	High	
Share of Total	30.3%	26.2%	16.8%	26.7%	100.0%
Gender					
Male	41.8%	49.3%	56.2%	64.8%	52.3%
Female	58.2%	50.7%	43.8%	35.2%	47.7%
Race					
White	64.7%	73.8%	78.9%	84.0%	74.7%
Black	15.6%	12.1%	10.5%	6.7%	11.4%
Hispanic	15.6%	10.2%	6.7%	4.8%	9.8%
Other	4.1%	3.9%	3.9%	4.4%	4.1%
Education					
Less than High School	21.7%	10.6%	5.8%	2.2%	10.9%
High School	39.2%	39.6%	33.5%	19.6%	33.1%
Some College	30.3%	32.6%	32.5%	25.5%	30.0%
College or More	8.8%	17.2%	28.3%	52.7%	26.0%
Age					
18-25	35.6%	17.1%	7.8%	2.6%	17.3%
26-35	25.5%	32.4%	31.8%	24.1%	28.0%
35+	38.9%	50.5%	60.5%	73.3%	54.8%
Industry					
Ag., Min., Contr.	6.6%	28.5%	29.0%	27.1%	25.5%
Manufacturing	12.8%	20.4%	20.9%	20.3%	18.2%
Trans., Comm., Util.	4.1%	7.3%	9.2%	10.6%	7.5%
Wh. Trade	3.1%	4.6%	4.5%	4.0%	3.9%
Retail Trade	31.6%	13.9%	8.6%	5.8%	16.2%
Finance, Ins., Real Est.	4.1%	7.2%	6.9%	7.8%	6.4%
Services	35.5%	33.7%	34.6%	36.5%	35.1%
Public Admin.	2.2%	4.7%	7.1%	8.2%	5.3%
Occupation					
Managers and Prof.	9.9%	18.8%	32.0%	56.1%	28.3%
Technical and Sales	16.8%	13.0%	13.6%	13.5%	14.4%
Clerical	15.9%	23.6%	17.4%	7.5%	15.9%
Service Occs.	28.4%	11.2%	6.4%	3.3%	13.5%
Blue Collar	25.6%	32.1%	30.0%	19.3%	26.4%
Farm	3.5%	1.4%	0.7%	0.2%	1.6%
Union					
Union[b]	7.1%	15.0%	23.1%	25.5%	16.8%
Non-Union	92.9%	85.0%	76.9%	74.5%	83.2%

a. Wage levels represent multiples of the poverty line for a family of four, divided by 2080 hours; low: <=$7.71, low-middle: $7.72-11.56, high-middle: $11.57-15.41, high: $15.42+.
b. Includes union members as well as those covered by contracts.
Source: Current Population Survey; see data appendix for details of data construction.

TABLE 1B
Education Shares of the 1979 Workforce by Wage Level

	Wage Levels[a]				Total
	Low	Low-Middle	High-Middle	High	
Overall Wage Shares	23.7%	27.7%	19.2%	29.4%	100.0%
Less than High School	30.2%	21.3%	17.4%	12.5%	20.1%
High School	45.4%	46.6%	42.2%	35.2%	42.1%
Some College	17.7%	19.5%	19.8%	19.6%	19.2%
College or More	6.6%	12.6%	20.6%	32.8%	18.6%

a. The wage categories in 1979 are the same as those in the main table, adjusted for inflation.
Source: Current Population Survey; see data appendix for details of data construction.

However, complicating the demand twist argument is the fact that the amount of education workers received increased at all wage levels. Among low-paid workers the share with a college degree has increased slightly, and the share with a high-school degree and some college education (summing these two mitigates the non-comparability introduced by the coding change) grew, from 63.1 percent in 1979 to 69.5 percent in 1996. These shares suggest that the least well-paid workers in 1996 were comprised of a higher share of skilled workers than in 1979.

Of course, the demand for low-wage workers is a result of many factors. Most prominent is the underlying demand for products that intensively use low-wage workers, along with the role of such workers in the production process and the degree and ease with which they can be substituted by either capital and/or workers with more skill. Ultimately, these factors and others—including the supply of labor, the bargaining power of different groups of workers, market regulations such as minimum wages, and our international trade position—determine the employment and compensation of low-wage workers.

To try to untangle the role played by each of these factors would be a worthy pursuit and yield rich information regarding the job market facing low-wage workers, but this is beyond the scope of this study. Instead, I now turn to a more systematic analysis of the shifts in demand for low-wage and less-educated workers, using fixed coefficient demand indices to examine changes in the distribution of hours worked in industries and occupations by workers at different education and wage levels.

These indices use employment growth—more precisely the growth in hours worked weighted by wage levels[4]—by industry and occupation to determine how labor demand has shifted between and among different groups of workers. Workers are categorized here first by education level, as in Katz and Murphy [1992], and then by wage level in an effort to assess and compare shifts in demand for low-*skill* workers and low-*wage* workers respectively. The fact that low-wage workers have become more highly educated over time (see Table 1) suggests that the demand for low-wage workers does not necessarily correspond to the demand for low-skill workers.[5]

While the assumptions underlying this method are fairly broad, the formula is a conventional way to address how demand for particular types of workers has shifted over a given time period.[6] Intuitively, it measures whether employment in the industries and occupations where certain workers (such as low-wage and less-educated workers) reside is growing relatively faster than in other industries and occupations. If demand for workers in these occupations or industries increases, the hours worked in these occupation/industry cells will increase. The indices measure the amount of this increase in hours worked, and changes in these indices are usually interpreted as changes in demand for such workers. The method and underlying data are discussed in greater detail in the appendix.

The overall demand shift is decomposed into the part due to shifting hours of work between industries, typically attributed to shifts in product demand and trade, and the part due to shifts in the occupational distribution of hours worked within industries, broadly associated with changes in technology. This analysis incorporates 35 industries and three broad occupation groups (see the appendix for further discussion).

Table 2 focuses on the more commonly seen demand shifts by education level between 1979 and 1996. Here the pattern supports the hypothesis that demand shifted away from workers with less skill, where skill is synonymous with education level. For women in particular demand shifted significantly away from high-school dropouts and towards those with at least some college. The trend decelerated slightly in the 1990s, but over the full period, demand shifted away from female high-school dropouts by 1.45 percentage points per year, while the shift to female college graduates was only slightly slower (1.23 percentage points per year). For men, the pattern is the same but the shifts are of a smaller magnitude.

When we categorize workers by wage level rather than by education level, a somewhat different story emerges. The results for men (shown in Table 3, top panel) most clearly make the case for examining shifts in demand by wage level (the wage levels correspond to those in Table 1). Compare the male results for low wages with those for less than high-school education. Over the 1980s, while the demand for low-educated males was falling 0.44 percentage points per year, demand for low-wage male workers was *rising* by 0.73 points. This increase was almost completely due to increased demand for men in lower-paying industries. Taken together, the demand indices suggest that a non-trivial group of "low-skill" male efficiency units were in contracting industries with relatively high wages (like manufacturing), while workers of various skill levels were in expanding low-wage sectors. At the top of the male wage scale, demand was flat, due to countervailing trends between and within industries. Yet demand for college-educated men grew at about a constant rate (0.52 percent per year) over the full period.

The story for women is similar, but significantly less dramatic, because, unlike men, demand shifted away from both low-wage and low-skilled females.[7] But it is important to note that the reduced demand for low-*wage* women was slightly larger than half the magnitude of that for women with less than a high-school education. When the female workforce is categorized by wage level, female hours of work shifted out of the lowest wage group at a rate of 0.79 percentage points per year. When

TABLE 2
Demand Shifts by Education Levels, 1979-96
Annualized Percentage Changes

Education Category	1979-89	1989-96	1979-96
Males		Overall	
Less than High School	-0.44	-0.46	-0.45
High School	-0.30	-0.36	-0.32
Some College	0.25	0.01	0.15
College or More	0.49	0.56	0.52
		Between Industries	
Less than High School	-0.11	-0.25	-0.17
High School	-0.11	-0.21	-0.15
Some College	0.11	0.01	0.07
College or More	0.13	0.33	0.21
		Within Industries	
Less than High School	-0.33	-0.21	-0.28
High School	-0.19	-0.15	-0.17
Some College	0.13	0.01	0.08
College or More	0.36	0.23	0.31
Females		Overall	
Less than High School	-1.64	-1.18	-1.45
High School	-0.56	-0.72	-0.63
Some College	0.53	0.01	0.32
College or More	1.30	1.14	1.23
		Between	
Less than High School	-0.85	-0.70	-0.79
High School	0.01	-0.29	-0.12
Some College	0.40	0.10	0.27
College or More	0.05	0.44	0.21
		Within	
Less than High School	-0.79	-0.48	-0.66
High School	-0.57	-0.43	-0.51
Some College	0.13	-0.09	0.04
College or More	1.25	0.70	1.02

Source: See data appendix.

categorized by education level, hours of work declined at the rate of 1.45 percentage points per year for less-educated women. Like men, the difference between the wage and skill results is mostly explained by between-industry shifts. That is, demand shifts (and, of course, various other factors including increased female labor force experience and changing workplace norms) led to female occupational upgrading both by skill and by wage level. But shifts in demand between industries, particularly shifts from low-end manufacturing industries (such as textiles and apparel) to services, led to larger declines in demand by education than by wage levels. For females

TABLE 3
Demand Shifts by Wage Levels, 1979-96, Annualized Changes

Wage Category	1979-89	1989-96	1979-96
Males		Overall	
Low	0.73	0.31	0.55
Low-Middle	-0.04	-0.08	-0.06
High-Middle	-0.40	-0.20	-0.31
High	0.03	0.03	0.03
		Between Industries	
Low	0.66	0.53	0.61
Low-Middle	0.14	0.05	0.10
High-Middle	-0.21	-0.16	-0.19
High	-0.11	-0.11	-0.11
		Within Industries	
Low	0.07	-0.22	-0.05
Low-Middle	-0.18	-0.13	-0.16
High-Middle	-0.19	-0.03	-0.12
High	0.13	0.14	0.14
Females		Overall	
Wage Category	1979-89	1989-96	1979-96
Low	-0.92	-0.62	-0.79
Low-Middle	-0.55	-0.43	-0.50
High-Middle	0.43	0.15	0.32
High	1.49	0.91	1.25
		Between	
Low	-0.22	-0.14	-0.19
Low-Middle	-0.02	-0.09	-0.05
High-Middle	0.10	0.08	0.09
High	0.21	0.18	0.20
		Within	
Low	-0.69	-0.48	-0.60
Low-Middle	-0.52	-0.34	-0.45
High-Middle	0.34	0.07	0.23
High	1.27	0.74	1.05

Source: See data appendix.

with less than a high-school education, for example, industry demand declined by 0.79 percentage points over the full period; for low-wage females, the percentage-point decline was one-fourth this level.

These results indicate that demand shifts measured by education levels are different than those measured by wage levels, particularly for men. For male workers, industry shifts have led to an expansion in the share of hours of low-wage work, but a decline in share of hours of low-skill work. For women, industry demand shifts have moved away from low-wage workers (reducing their share of total hours) but at one-

fourth the rate that demand shifted away from low-skilled females. Occupational shifts, on the other hand, have moved firmly away from low-wage women. These results suggest that the argument that demand has declined for low-skilled workers, where skill is measured by education level, is less evident when using fixed wage levels.

Interpretation of Wage vs. Education Results

Overall, these results demonstrate:

· an increase in the share of low-wage work (See Figure 1)
· an increase in the share of low-wage workers with higher education levels than in the past (See Tables 1A and 1B)
· an increase in the relative wage-weighted hours of male workers of all skill levels in lower paying industries (See Table 3).

Taken together, these results imply a contradiction. Basic microeconomic principles argue that the wage level is a good proxy for skill. But if the demand for the least-skilled workers has collapsed, we should witness a falling share of low-wage workers. Instead, however, we see a rise in their share, driven by increasing demand for low-wage men.

What can account for this contradiction? It is possible that we are simply observing movements down a demand curve, i.e., the falling price of low-wage workers has led to an increase in their use (recall Reardon's [1997] identification concern discussed above). On the supply side, despite educational upgrading, the share of low-wage workers has increased.

The conventional understanding of supply and demand regarding low-*skilled* workers is depicted in Figure 2, panel A. Here, the supply curve for low-skill labor ($S(LS)$), driven by the decline in the share of the workforce with less than a high-school degree, contracts to the northwest. By itself, this would lower employment but raise wages. However, the collapse in the demand for skill is larger, lowering both wages (from W^* to W') and employment (from N^* to N'). The second panel provides a different picture, and one that explains both the (male) results in Table 3 and the trend in Figure 1. Here the supply of low-*wage* labor ($S(LW)$) expands and the supply curve moves down the demand curve, lower wages and raising employment. Thus, when wages are substituted for skills, we observe an increase in the supply of low-*wage* workers, who can be of any skill group. The decline in their price leads to an increase in their utilization.

An implication of this explanation is that the wage and educational structures are not the same in the post-1979 labor market. Real hourly wages, deflated by the *CPI-U-X1*, have fallen for workers at most education levels over the 1980s and 90s. Recent evidence [Mishel et al., 1999] show that even among college-educated workers with one to five years of potential experience (entry-level workers), real wages fell about 7 percent for both men and women, from 1989-97.

FIGURE 2
Supply and Demand for Low-Skilled Labor
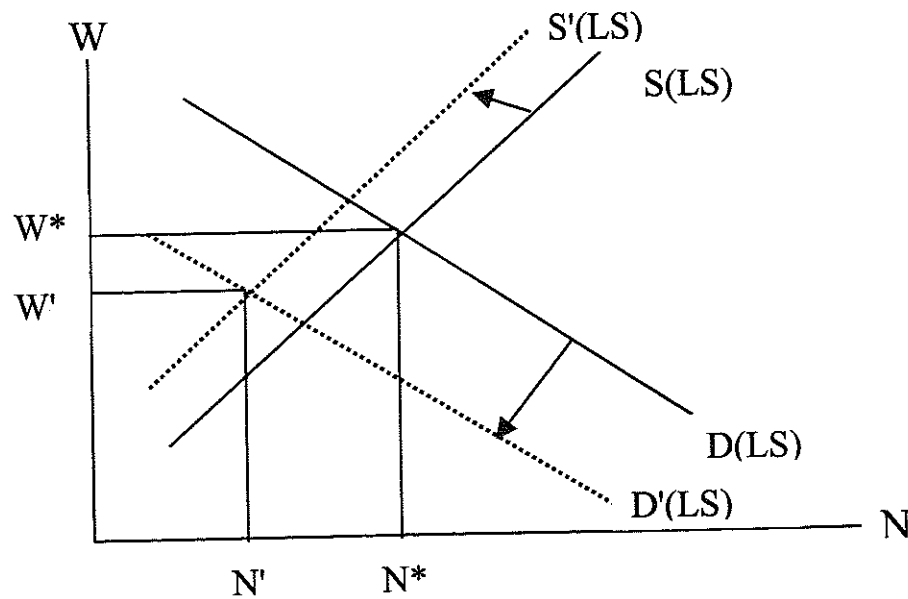
Supply and Demand for Low-Wage Labor
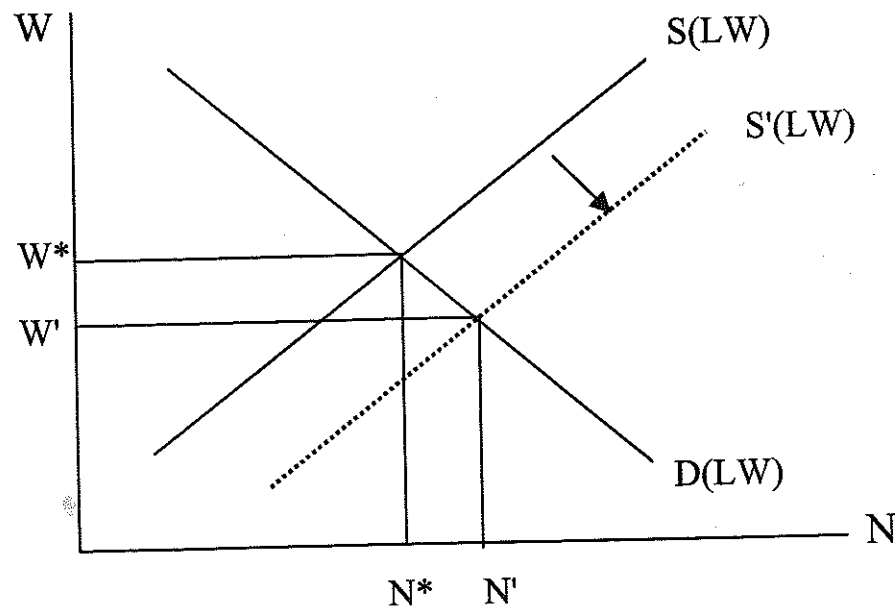
This has important implications for economic theory and policy. Wages and education levels are often assumed to be correlated with one's marginal product; hence policy has focused on supply-side economic policies that stress education and training in order to increase one's productivity and wage rates. But the results presented here indicate that other factors besides education and productivity probably also account for one's wage levels. Previous research indicates that such factors include gender and race, economic policies such as the minimum wage, and institutional structures such as labor unions [Fortin and Lemieux, 1997]. It is critical that these other factors are also addressed.

This is critical because as this paper indicates, the current labor market is generating increasing shares of low-wage work. This has led to concerns regarding the growing gap between workers at the bottom and top of the wage, income, or wealth scale, and the economic policies which might be pursued to increase the earnings of low-wage workers. This latter concern seems particularly relevant in the context of welfare reform, the goal of which is to move low-skilled individuals from the welfare rolls into the job market. The next section offers some ideas to address these concerns.

What Policies Might Raise the Wages of Low-wage Workers?

Low-wage workers have fared poorly in recent years. While the share of low-wage jobs has increased 6.6 percentage points since 1979 (see Tables 1A and 1B), their real wage rates have declined (see Figure 3). For low-wage men, the decline in their wages has coincided with their increased utilization due to the expansion of low-wage industries. This is likely due to the fact that as the price of low-wage male labor has fallen, employers have found it profitable to use more of these less expensive workers. Various analysts have criticized this approach to employment growth since it relies on poverty-level wage rates, dubbing it "the low-road approach to job creation" [Howell et al., 1998.]. The fact that the wages of low-wage workers, along with the incomes of their families, have declined during two long economic expansions raises the question of whether policy interventions should be considered to try to increase the earnings of these workers.[8]

Supply-side policies to educate and provide job training to less-skilled workers (particularly welfare recipients) have received by far the most attention from policy makers and social scientists searching for solutions to the collapse in the real wages of low-wage workers. These policies are clearly important, given the relatively large share of high-school dropouts in the poverty-level wage category (see Table 1) and the large education premium, which grew significantly in the 1980s and remains at historically high levels.[9]

But supply-side solutions are not enough. Even among workers with high-school degrees, those with some college, and those with college degrees in entry-level jobs, wages have fallen recently. Moreover, the different shifts in demand for less-educated as opposed to low-wage workers suggest a declining correlation between education levels and rising real wage rates. Thus it is important to explore other policies that can help raise the wage levels of those at the bottom of the wage scale.

FIGURE 3
10th and 20th Percentile Real Wages
for Men and Women
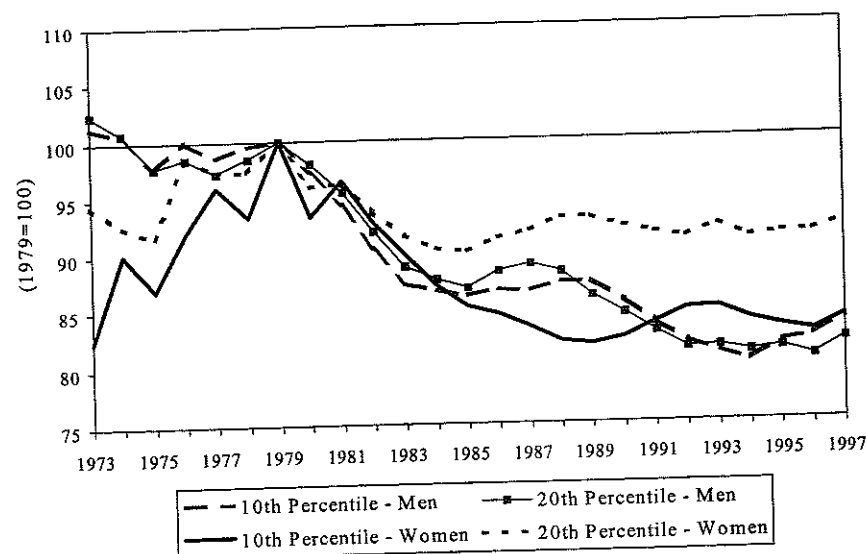
Source: See data appendix.

Federal Reserve Policy. One of the best programs to help low-wage workers is low unemployment, as the wage trends during the last few years indicate. Overall unemployment was below 6 percent for all of 1996 and has been below 5 percent since the second quarter of 1997. After falling consistently over the recovery, between 1996 and the first half of 1998, real hourly wages grew quite quickly for low-wage workers [Mishel et al., 1998]. Although the minimum wage played an important role (more on this policy below) in this growth, the tightening of the labor market has also been an important factor. This suggests that the monetary authorities at the Federal Reserve have a role in addressing the problem of declining wage rates.

The question of when wage growth threatens to become inflationary (in terms of triggering ever-increasing price growth) is currently poorly understood. In the current context, there are at least three reasons why real wage growth, particularly at the low end of the pay scale, should not cause wage-push inflation. First, nominal *average* compensation can grow at the rate of productivity plus inflation without causing any inflationary pressure, assuming factor shares (the shares of national income going to labor and capital) remain constant. In fact, the last three years (1993-96) have seen a historically large shift (3.5 percentage points) from labor's share to that of capital.[10] Another way to achieve non-inflationary wage growth is through redistribution, i.e., to increase the share of compensation going to wage earners at the middle and bottom at the expense of those at the top of the wage scale. Finally, even with flat productivity growth, there is no obvious reason why capital's share cannot fall and thus increase the share of labor compensation in total income. The long-term in-

crease in wage inequality and the recent large increases in capital's share of the growth suggest room for some degree of redistribution.

Labor Market Institutions. Historically, a number of workplace institutions protected American workers—particularly low-wage workers—from the vicissitudes of market forces. The role of such institutions, such as labor unions and minimum wages, is discussed at some length in Howell [1997], but here I note their relevance to low-wage workers.

The minimum wage has played an important historical role by providing a wage floor below which employers could not set wage rates. This floor is particularly important for women workers who are over-represented among low-wage earners. Close to 60 percent of minimum wage workers are female; in recent years, the wage rate at the tenth percentile for women has for all purposes been set by the minimum. Thus, the fact that the minimum wage was allowed to fall 30 percent in real terms over the 1980s played a major role in both the expansion of low-wage work and the increase in wage inequality, particularly among women. While the conventional wisdom among economists was that increases in the minimum led to job loss among low-wage workers, a growing body of empirical research has shown that the increases we have implemented have not caused reductions in employment [Card and Krueger, 1995; Bernstein and Schmitt, 1998]. In addition, recent analysis of the impact of the minimum wage on the distribution of wages has found evidence that the declining minimum explains at least a fifth of the increase in the growth of the gap between the 90th and 10th percentile wage [DiNardo et al., 1994; David Lee, forthcoming].

Unions have also played an historical role in increasing the bargaining power and compensation of both their members and other non-supervisory workers in unionized industries. Like the decline in the real minimum wage, labor economists have identified the decline in union density in the workforce as an important contributor to the increase in wage inequality.[11]

Trade Policy and Immigration. The past few decades have seen a significant growth in the volume of trade.[12] While expansions in trade can bring certain benefits to American consumers, there are also costs to workers who are in sectors with significant import penetration. These costs are exacerbated when the manufactured goods component of our international ledger is persistently negative, as has been the case since the early 1980s. Scott et al. [1997], for example, report that between 1979 and 1994, the $100 billion (in 1987 dollars) increase in the U.S. trade deficit eliminated 2.4 million job opportunities, compared to a counterfactual where import and export shares remain unchanged.[13] Although most of this lost employment took place in manufacturing, which is predominantly male, 44 percent of the job losses affected women, 39 percent affected low-wage workers, and two-thirds affected workers with a high-school education or less. In addition, our fast-rising trade deficit with China has resulted in large job losses for low-wage female workers; 54 percent of the total job loss has been among women [Rothstein and Scott, 1997a; 1997b].

Since a disproportionate share of immigrants have skill levels similar to low-wage workers, the increase in immigration has also led to downward pressures on wages in low-wage sectors, a supply effect much like that of welfare reform. Borjas et al. [1996] estimate that increased immigration and trade over the 1980s explain half of the decline in the wages of high-school dropouts relative to other workers, with the majority of this effect coming from immigration.

Thus, expanded, unbalanced trade and immigration have put downward pressure on wages in the low-wage labor.[14] To alleviate these problems, adjustment assistance, such as income support and job training, should be given to affected workers. The importance of trade adjustment assistance was widely acknowledged during the NAFTA debate, but has been underutilized. Even more importantly, we should avoid exacerbating these negative job and wage pressures by structuring trade policy with these potential displacement problems in mind. Thus, we should push more aggressively for open markets among our trade partners, with substantive penalties in place for non-compliance, and trade treaties should have enforceable labor and environmental standards that protect workers both here and abroad. This does not imply that trade agreements should insist that emerging economies introduce American levels of wages and workplace protections. It does, however, introduce the possibility of using trade policy as a wedge to institute more progressive human rights policies abroad and to lessen wage and employment pressures here. As one example, trade policies that we negotiate should protect workers rights to organize and forbid, or at least discourage, child labor.[13]

Because immigration has reduced wages by increasing the supply of low-wage workers, the set of demand-side and institutional approaches recommended in this section will provide a countervailing upward pressure on wages.

Wage and Income Supports. With the growth in low-wage workers, wage subsidies are needed to guarantee that those who work have adequate income. The Earned Income Tax Credit, which subsidizes low-wage workers' earnings, as well as transportation and child-care subsidies for low-wage workers, will help to raise the incomes of low-wage working families directly.

CONCLUSION

Labor economists almost universally accept that labor demand has shifted sharply away from low-wage/low-skilled workers. This proposition, however, is sensitive to how we define the group for whom demand has supposedly collapsed. If the groups are defined in terms of education levels, as in Katz and Murphy [1992], the negative demand shift is readily apparent. But if the metric is the real wage itself, then, at least for males, the demand for low-wage workers appears to have increased.

The evidence for this claim comes first from the observation of a secular increase in the share of low-wage jobs, driven by a steady increase in the share of male low-wage workers. For women, whose low-wage share is consistently higher than that of men, the trend in low-wage work has been flat, or falling slightly. The second piece of evidence comes from fixed-coefficient demand indices that show declining demand

for workers without college educations, but increasing demand for men earning the lowest wages. In addition, the demand for low-wage women fell by less than for less-educated women. These results imply that since the late 1970s, male employment has expanded in industries where more highly-educated workers are earning lower real wages. This is less the case for female employment where employment has expanded in both higher-wage and higher-skill industries and (particularly) occupations. Nevertheless, the negative wage-based demand shifts for women are about half the magnitude of the education-based shifts.

At least for male workers, these results suggest an interpretation of the current labor market which differs from the conventional wisdom. Instead of one where employers' skill demands are bidding up the wage levels of highly educated workers, we have a situation where the falling price of low-wage workers encourages their use, a strategy dubbed by other who have noted these trends as "the low-road approach to job creation." As a result, a growing number of educated workers are receiving low wages.

The skill-based demand shift argument has led policy makers to consider almost solely education and training policies as the solution to declining wage rates for our lowest-paid workers. While the supply-side solutions are important, they should not be pursued to the exclusion of other policies. Demand-side solutions and policies that strengthen institutions, such as monetary policy, unions, minimum wages, and trade policy, are also needed to increase the wages of the poorest members of our society.

DATA APPENDIX

Wage and Hours Data: These data come from the May files of the CPS for 1973-1978 and the Outgoing Rotation Group files for 1979-1996. The sample includes all wage and salary workers, age 18-64, with positive hourly wages between $0.50 and $100 in 1989 dollars. For hourly paid workers, the reported hourly wage is used; for weekly workers, the hourly wage is constructed by dividing usual weekly earnings by usual weekly hours. Top-coded weekly earnings were replaced with the estimated value of the mean weekly salary above the top-code, using the assumption that the upper "tail" of the distribution follows a Pareto format. The construction of this wage series is discussed in greater detail in Webster [1997].

Demand Indices: The fixed coefficient index is taken directly from Katz and Murphy [1992, equation 14, 60], computed as follows:

$$\Delta D_i = \frac{\sum_j \alpha_{ji} \Delta N_j}{N_j}$$

ΔD represents the shift in demand for education or wage group i. Alpha is group i's share of total employment in the base year, for which I use the average of the endpoints (e.g., for 1979-89 comparison, I use the average values for these two years).

N represents employment in a given industry/occupation cell, indexed as j. Demand shifts are then measured for each group as the summation of the weighted change in normalized (to one in each year) efficiency units, weighted by the average share of the group's sectoral employment over the time period in question. I divide the workforce into 35 industry and 3 occupational cells, and measure efficiency units (described in the text) within those cells. As noted, groups are defined both by education level and wage level.

Use of the Consumer Price Index: The analysis of real wage trends would clearly change if one were to believe the findings of the Boskin commission[Baker, 1998] on the CPI, which argued that the growth in the BLS measure of inflation is biased upward (note that the growth in inequality is unaffected). However, as pointed out in Baker's edited volume [1998], the commission's main result—that the CPI should be growing 1 percent per year more slowly—has been called into question. While there may be some truth to the commission's critique, many of their claims are exaggerated; Madrick [1998] points out that in many cases their estimates of bias are based on "thought experiments," not on empirical research. They also ignored ways in which the CPI may understate inflation. Also whatever measurement errors exist in the current CPI, they are smaller now than in the past (as is acknowledged by Robert Gordon of the CPI commission), so it is undoubtedly true that wage performance in recent years is inferior to that of earlier years. Finally, the commission's critique calls for a comprehensive re-writing of economic history; if they are correct, much of what economists understood about the nature of past, present, and future growth (including wages, productivity, budget deficits, etc.) needs to be wholly revised. Until this case is more thoroughly explored, the *CPI-U-X1* stands as our best measure of inflation, and, like the vast majority of labor market analyses that have dealt with real wage change, I hesitate to make adjustments that are not supported by a greater body of careful research of the issues then that presented by the commission.

NOTES

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1. The same could be said of their absolute real wage levels and supply. See Mishel et al. [1998, Ch. 3].
2. Of course, not all low-wage workers are members of low-income families. See Bernstein and Schmitt [1998], however, for evidence that most workers who benefited from the 1996-97 increase in the minimum wage live in families in the bottom 40 percent of the income distribution of working families.
3. In 1992, the Current Population Survey education question was changed from "years of education completed" to "highest degree attained."
4. This is standard practice (see Katz and Murphy [1992]) for measuring changes in contribution to output, known as "efficiency units." Using unweighted data does not significantly alter the results.
5. Each cell is multiplied by the average log wage of the cell taken over the three years under analysis: 1979, 1989, and 1996.
6. Reardon [1997] provides a useful discussion of the assumptions invoked. She points out that such indices potentially suffer from an identification problem. In this context, that could mean that as wages fall in a particular industry/occupation cell, employers would have an incentive to use more of these cheaper workers. This movement along a demand curve would show up in the index as a positive demand shift. This issue is dealt with below.

7. These results do not appear to be highly sensitive to the wage levels chosen for the cutoffs. I replaced the wage levels from Table 2 with the 1979 20th, 50th, and 70th percentile and the results were similar, particularly at the bottom of the wage scale.
8. Data from the March CPS show that the average income of working families in the bottom quintile fell 12 percent in real terms from 1979 to 1996 (working families are defined here as families where at least one family member has positive earnings during the year).
9. Of course, education premiums refer to relative wages, while the focus in this paper is on absolute wages. It is the case, however, that over the 1990s, the real wage for college graduates rose and the real wage for the those without college degrees fell.
10. Capital's share of income in the corporate sector grew from 17.6 percent to 21.1 percent over this period. The corporate sector, which omits sole proprietorships, partnerships, and other businesses where the factor share concept is ambiguous, accounted for 58 percent of national income in 1989 [Mishel et al., 1998, Ch. 1].
11. The general consensus is that these two factors—the decline in both unionization and the real value of the minimum wage—explain up to two-fifths of the increase in wage inequality since the late 1970s [Fortin and Lemreux, 1997].
12. Traded goods (exports plus imports) have grown from 15.9 percent to 23.5 percent of GDP over the past two decades [Economic Report of the President, 1997].
13. Of course, as Scott et al. [1997] argue, this result does not imply that the economy lost on net 2.4 million jobs over the period. The implication is, however, that the growth of trade imbalances eliminated these additional employment opportunities.
14. Economists now widely agree that the expansion of unbalanced trade has played at least some role in the problems I have documented. See, for example, Tyson [1997].
15. For a discussion of these ideas see Scott [1996] and Levinson [1996].

REFERENCES

Baker, D., ed. *Getting Prices Right: The Debate over the Consumer Price Index.* Armonk, NY: M.E. Sharpe, 1998.

Bernstein, J. and Schmitt, J. Making Work Pay: The Impact of the 1996-97 Minimum Wage Increase. Economic Policy Institute, Issue Brief. Washington DC: Economic Policy Institute, 1998.

Borjas, G.J., Freeman, R.B., and Katz, L.F. Searching for the Effect of Immigration on the Labor Market. National Bureau of Economic Research, Working Paper No. 5454. Cambridge, MA: National Bureau of Economic Research, 1996.

Card, D. and Krueger, A. *Myth and Measurement.* Princeton, NJ: Princeton University Press, 1995.

DiNardo, J., Fortin, N.M., and Lemieux, T. Labor Market Institutions and the Distribution of Wages, 1973-1992: A Semiparametric Approach. *Econometrica*, September 1996, 65, 1001-44.

Economic Report of the President. U.S. Government Printing Office, February 1997.

Fortin, N.M. and Lemieux, T. Institutional Changes and Rising Wage Inequality: Is There a Linkage? *Journal of Economic Perspectives*. Spring 1997, 75-96.

Howell, D.R. Institutional Failure and the American Worker: The Collapse of Low-Skill Wages. The Jerome Levy Economics Institute of Bard College, Public Policy Brief #29. Annandale-on-Hudson, NY: Bard Publications Office, 1997.

Katz, L. and Autor, D. Changes in the Wage Structure and Earnings Inequality. Forthcoming in Orley Ashenfelter and David Card, eds., *Handbook of Labor Economics*, Amsterdam, North-Holland, 1998.

Katz, L. and Murphy, K. Changes in Relative Wages, 1968-1987: Supply and Demand Factors. *Quarterly Journal of Economics*, February 1992.

Lee, D. Wage Inequality in the U.S. during the 1980s: Rising Dispersion or Falling Minimum Wage? Forthcoming, *Quarterly Journal of Economics*.

Levinson, J. International Labor Standards, in *Reclaiming Prosperity: A Blueprint for Economic Reform*, edited by Schafer and Faux. Armonk, NY: M.E. Sharpe, 1996.

Madrick, J. The Cost of Living: A New Myth. *New York Review of Books*, 6 March 1997.

Mishel, L., Bernstein, J., and Schmitt, J. Finally, Real Wage Gains: Lower Unemployment, Higher Minimum Wage Spur Recent Wage Growth. Economic Policy Institute, Briefing Paper #127. Washington DC: Economic Policy Institute, 1998.

_____. *The State of Working America, 1998-99.* An Economic Policy Institute Book. Ithaca, New York: ILR Press, an imprint of Cornell University Press, 1999.

Reardon, E. Demand-Side Changes and the Relative Economic Progress of Black Men: 1940-90. *Journal of Human Resources,* Winter 1997, 69-97.

Rothstein, J. and Scott, R.E. NAFTA's Casualties: Employment Effects on Men, Women, and Minorities. Economic Policy Institute, Briefing Paper #120. Washington, D.C.: Economic Policy Institute, 1997a.

_____. The Cost of Trade With China: Women and Low-Wage Workers Hit Hardest by Job Losses in All 50 States. Economic Policy Institute, Briefing Paper #121. Washington, D.C.: Economic Policy Institute, 1997b.

Scott, R.E. Trade: A Strategy for the 21st Century, in *Reclaiming Prosperity: A Blueprint for Economic Reform,* edited by Schafer and Faux . Armonk, NY: M.E. Sharpe, 1996.

Scott, R.E., Lee, T., and Schmitt, J. Trading Away Good Jobs: An Examination of Employment and Wages in the U.S., 1979-94. Economic Policy Institute, Issue Brief. Washington, D.C.: Economic Policy Institute, 1997.

Tyson, L. Inequality Amid Prosperity. *Washington Post,* 8 July 1997.

Webster, D. Appendix B: Wage Analysis Computations. In Mishel, L., Bernstein, J., and Schmitt, J., *The State of Working America, 1998-99.* An Economic Policy Institute Book. Ithaca, New York: ILR Press, an imprint of Cornell University Press, 1998.