

Exploring low-wage labor with the National Compensation Survey

An analysis based on the National Compensation Survey of Occupational Wages indicates that low-wage work is concentrated in jobs that require low-level skills

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A number of studies have examined the characteristics of low-wage workers and their wage trends.¹ Most of these studies analyze the earnings and characteristics of low-wage workers themselves, in large part because such data are readily available. Less work has focused on the characteristics and, in particular, the skill demands of low-wage jobs.²

This article uses a relatively new data set to examine the skill content of low-wage jobs. The data set is from the National Compensation Survey of Occupational Wages (NCS), a survey conducted by the Bureau of Labor Statistics and one in which the unit of observation is the job, not the worker.³ That is, information in the NCS relates to narrowly defined occupations and provides data on wages, industries, unionization, full- or part-time status, and other useful characteristics associated with those occupations.

A major advantage of the NCS is the assignment of so-called leveling factors to each job. The factors, described in detail in the next section, are designed to explain the content of the job on a number of dimensions, including knowledge required, complexity, and supervisory responsibilities, among others. The factors provide unique information about the skill demands, job responsibilities, and working conditions of jobs in the current economy.

After describing the low-wage labor market in terms of leveling factors, the article goes on to examine the relationship between job content and wages, focusing on jobs at the bottom of

the wage distribution. Of particular interest is explaining why the wages in such jobs are so low. Certainly, one explanation is that productivity is low in these jobs, but other explanations are possible as well—for example, that workers in low-wage jobs have limited bargaining power. The NCS data on each job's skill requirements and responsibilities, which will be seen to serve as proxies for the level of productivity, provide an opportunity to address this issue. From the data, a low-skill profile is created that groups jobs together wherein only low levels of each of the factors are required. Regression analysis then examines the question of whether the low pay of such jobs can be explained by the job content or whether, after controlling for job content, there remains a negative wage premium. The latter turns out to be the case, for which various interpretations are offered.

The NCS

The data for the analysis that follows come from the 2001 NCS. With the use of appropriate weights, the survey is designed to be representative of private establishments with 1 or more workers (with the exception of agriculture and private households) and State and local governments with 50 or more workers. The Federal Government is excluded from the scope of the survey. The Bureau of Labor Statistics uses the survey to produce statistics on mean

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wages by occupation, for the United States as a whole and for roughly 80 metropolitan areas.

The sample of the NCS is selected in three stages. First, geographic areas are chosen for study, and then, within each area, a representative sample of establishments is drawn. Within each establishment, information is collected on a sample of jobs, with the number of jobs depending on the size of the establishment. The Bureau then collects data on the hourly wage for a given job, which is an average of the wages of all workers in the job. Defined as the organization's most narrow occupational classification, the job is thus the unit of observation used in this study.

The survey contains information on establishment characteristics, as well as on attributes of the job. Of the latter, the most important for the purposes of this article are the variables that measure job content. The survey contains 10 such measures, referred to as *leveling factors*.⁴ All but one of the factors are drawn from the U.S. Office of Personnel Management's Factor Evaluation System, which is used to provide a grade level—and thus establish a pay range—for U.S. Federal Government positions. For each factor, an integer score is given, ranging from 1 up to the highest level possible.⁵ The scores are based on job descriptions and interviews with company representatives. The factors do not give information directly on the amount of education, training, and experience needed for the job, but rather describe different dimensions of the work, with most factors indicating either the level of skills needed to carry out a job successfully or the responsibilities that the incumbent has. In addition, the factors include measures relating to the working conditions of the job.

The *knowledge* factor assesses the nature and extent of information that workers must understand to do acceptable work, as well as the nature and extent of the skills needed to apply their understanding. A related factor, *complexity*, is an index of the intricacy of tasks, the difficulties involved in identifying what work needs to be done, and the degree to which high levels of analytical skills are required to carry out the work. The factor *guidelines* measures whether the employee has discretion in carrying out the work or must follow strict, detailed guidelines. The factor *scope and effect* gauges both the breadth of the work and its impact within and outside the organization. Low scores on this factor are given to those who perform routine work, the influence of which does not extend beyond the immediate organizational unit, while the highest scores are reserved for those involved in planning, developing, and carrying out programs that have a major impact on the mission of an organization. These four factors can be subsumed under the rubric “analytic skills,” although they capture dimensions of the job that go beyond that term's connotation.

Two of the 10 leveling factors serve to establish a worker's place in an organization's hierarchy. *Supervision received*

gives a sense of the autonomy of the worker with respect to his or her supervisor; *supervisory duties* assesses the extent to which the worker supervises other workers. Two other factors also relate to the nature of a worker's job-related interpersonal relationships, not, however, with those ranking directly above or below the worker. A job receives a low rating for *personal contacts* if an employee's interactions are mainly with workers in the same unit or with the public, but in highly structured settings where the worker cannot exercise any discretion. High ratings for this factor go to jobs in which the contacts are with top-ranking officials from outside the company in highly unstructured settings. *Purpose of contacts* rates the nature of the contacts, which range from those merely intended to obtain or provide factual information to those whose “purpose is to justify, defend, negotiate, or settle matters involving significant or controversial issues.”⁶

The final two factors measure physical aspects of the job. The factor *physical demands* gauges whether the work requires significant physical exertion, as well as whether specific physical abilities are required, such as agility or dexterity. Finally, as its name implies, *work environment* has to do with working conditions and is less closely related to a job's skill requirements and responsibilities than are the other factors. *Work environment* considers whether the worker has to be concerned about the risk of injury coming from potentially dangerous machinery or materials, from difficult working conditions, such as working at great heights, or from the threat of physical attack.

Defining low-paid work

In order to describe the low-wage labor market, it is necessary to define what is meant by “low wage.” Because there is no consensus among economists as to how to define the term, three different definitions are set forth in this study. In operationalizing these definitions, jobs are weighted by the number of hours the jobholder works in the course of a year. Thus, the measures presented of the prevalence of low-paid work are in terms of the share of total hours worked for low wages, rather than the proportion of jobs that pay low wages. Two of the definitions of “low wage” are *relative* measures, in that work in a given job is classified on the basis of how that job's hourly wage rate compares with the hourly wage rates of other jobs. The first defines an hour of work as being remunerated at a low wage if the hourly rate of pay is below two-thirds of the median rate of pay, which, in the 2001 NCS data, implies a cutoff of \$8.67. This definition is one that has been used in cross-country comparisons.⁷ With such a definition, a movement toward a more unequal distribution of wages will tend to increase the share of work that is low paid. The second definition defines low wages as those wage rates which fall into the bottom quintile of the wage distribution.

Clearly, with such a definition, the share of hours worked that will be classified as low paid will not change as the distribution of wages changes and will instead be fixed at 20 percent.⁸ The final definition of low paid is an *absolute* one, encompassing all hours for which earnings are below \$8 per hour. This rate was chosen because it is a characteristic wage rate of those in low-wage jobs. It is near the average earned by many welfare leavers⁹ and is also close to the average of jobs in the low-wage profile created from the data later in the analysis.

Before turning to a description of the low-wage labor market on the basis of the measures of job content, it is useful to measure the size of that market and, for purposes of comparison with past work, describe it in terms of job and establishment characteristics that are available in other data sets. As shown in the following tabulation, defining low pay on the basis of two-thirds of the median wage implies that 21.6 percent of hours worked are low paid, not far from the 20 percent that are low paid according to the bottom-quintile definition:

<i>Definition of "low paid"</i>	<i>Share of hours worked that are low paid</i>
Wage rate less than two-thirds median wage rate	21.6
Bottom quintile	20.0
Wage rate less than \$8 per hour	16.3

According to the absolute definition, the share of hours that are low paid is a bit smaller: 16.3 percent.

Characteristics of low-paid jobs

Table 1 shows, for each definition of "low paid," the share of hours worked that is low paid, by establishment characteristic. Among the major industry divisions, retail trade stands out as having by far the largest share of low-paid hours worked, with a majority (or near majority for the absolute definition of low paid) of hours worked falling into this category. The industry division with the next highest concentration of low-paid jobs, services, has a rate of low pay that is close to that for the economy as a whole. Public administration has the lowest rate, although the proportions for mining; construction; and transportation, communications, and public utilities are just a few percentage points more.

Consistent with research which shows that pay tends to increase with employer size,¹⁰ the rate of low pay is highest at small establishments and falls monotonically as establishment size rises. The difference between the smallest and the largest establishments is quite striking, with one-quarter to one-third of hours worked in establishments with fewer than 100 employees being low paid, compared with less than 1 in 20 in establishments with 2,500 or more employees. Jobs in the for-profit sector are considerably more likely to be low paid than those in the realm of nonprofit work, and the same is true for jobs in privately owned establishments relative to those in establishments owned by State and local governments.¹¹

Table 2 presents the share of hours worked that are low

Characteristic	Wage rate less than two-thirds median wage rate	Bottom quintile	Wage rate less than \$8 per hour
Major industry division			
Mining	5.0	5.0	4.6
Construction	7.8	7.1	4.4
Manufacturing	12.3	10.9	7.8
Transportation, communications, and public utilities	6.6	6.1	4.5
Wholesale trade	15.0	13.6	10.2
Retail trade	55.9	53.8	48.3
Finance, insurance, and real estate	11.1	9.6	7.1
Services	22.1	20.1	15.6
Public administration	4.4	3.7	2.3
Number of employees in establishment			
1-99	31.0	29.1	24.3
100-249	22.3	20.6	16.6
250-499	17.6	15.8	11.8
500-999	14.1	12.5	9.7
1,000-2,499	10.7	9.3	6.6
2,500 or more	4.7	4.0	2.9
Sector			
For profit	25.0	23.3	19.1
Not for profit	9.9	8.7	6.5
Ownership			
Private	24.4	22.4	18.6
State and local	5.8	5.3	3.2

paid, by a number of job characteristics. Major occupation groups can be divided into three categories in terms of the prevalence of low-wage work. The first category, comprising the three high-level white-collar groups (managers, professional specialty occupations, and technical workers) and the lone group of skilled blue-collar occupations (precision production, craft, and repair workers), has a very small share of work that is low paid. Occupations in the second category—administrative support occupations; machine operators, assemblers, and inspectors; and transportation and material-moving occupations—have a moderate share of low-paid work, ranging from about 10 percent to 20 percent, depending on the definitions. Finally, sales occupations; handlers, equipment cleaners, helpers, and laborers; and service workers, the major occupation groups with the highest share of low-paid work, ranging from 30 percent to 50 percent, make up the third category of occupations.

There is a large difference in the rates of low pay between nonunion and union jobs, with the rate for the former being roughly 3 times that of the latter. This gap is due to the twin facts that, for a given job, pay tends to be higher in the union than in the nonunion sector¹² and that the rate of unionization among the least skilled workers is lower than it is for other workers.¹³ Part-time jobs are highly likely to be low paid, with three-fifths to two-thirds of hours worked falling into that category, depending upon the definition used. In contrast, the rates for full-time work range from about 10 percent to 15 percent. As with differences in rates of low pay by union status, the gap in wages between part-time and full-time work is attributable to

two factors, in this case (1) the greater prevalence of part-time jobs in industries and occupations in which both part- and full-timers are low paid and (2) lower wage rates paid part-timers for the same jobs that full-timers do.¹⁴

Skill levels of low-paid jobs

As noted earlier, the NCS is unique in that it provides information on the skills, responsibilities, and working conditions associated with each job. Before turning to see where low-wage jobs stand in terms of the job content scores, it is useful to examine the distribution of those scores for the labor market as a whole, shown in table 3. The first factor listed in the table is knowledge, which past research has shown is the job content measure most strongly related to wages.¹⁵ There are nine different levels for this factor; those jobs at level 5 require the sort of knowledge one would acquire by obtaining a bachelor's degree or its equivalent in experience and training. Approximately one-quarter of hours worked require knowledge at level 5 or above, which is in rough accord with the share of employees with 4-year degrees. At the other end of the scale, level 1, some 12 percent of jobs require little or no previous training or experience; just above this level, nearly half of hours worked are at knowledge levels 2 and 3. The distribution of hours worked by level of complexity is broadly similar, with more than 70 percent of work at levels 2 and 3. The pattern is somewhat different for the factor called guidelines and for that titled scope and effect: about one-third of hours worked are at the lowest level, another one-

Table 2. Share of hours worked that is low paid, by definition of "low paid" and job characteristic

[In percent]

Characteristic	Wage rate less than two-thirds median wage rate	Bottom quintile	Wage rate less than \$8 per hour
Major occupation group			
Executive, administrative, and managerial	0.6	0.6	0.5
Professional specialty .....	.8	.7	.5
Technical	2.6	2.1	1.6
Sales	39.7	38.0	32.9
Administrative support	16.1	13.5	7.6
Service	52.7	50.1	44.0
Precision production, craft, and repair	3.4	3.0	2.3
Machine operators, assemblers, and inspectors	21.3	19.5	15.1
Transportation and material moving	15.0	13.1	10.4
Handlers, equipment cleaners, helpers, and laborers	40.5	37.5	29.8
Collective bargaining agreement			
Not covered	24.7	22.2	18.7
Covered	7.1	7.7	5.1
Full-time or part-time status			
Part time	67.2	64.4	58.4
Full time	15.8	14.3	10.8

Table 3. Distribution of hours worked, by level of factors

[In percent]

Factor	Level								
	1	2	3	4	5	6	7	8	9
Knowledge	12.0	29.2	20.2	13.0	6.8	12.1	5.1	1.4	0.1
Complexity	21.6	36.9	33.9	5.3	2.3	.1	—	—	—
Guidelines	36.8	36.2	22.5	4.2	.4	—	—	—	—
Scope and effect	33.6	35.9	25.8	3.5	1.1	.1	—	—	—
Supervision received	24.3	42.7	27.1	5.4	.6	—	—	—	—
Supervisory duties	79.8	7.7	11.0	1.3	.2	—	—	—	—
Personal contacts	49.4	39.7	10.7	.3	—	—	—	—	—
Purpose of contacts	66.8	25.0	7.8	.4	—	—	—	—	—
Physical demands	39.0	58.8	2.2	—	—	—	—	—	—
Work environment	48.2	50.0	1.8	—	—	—	—	—	—

NOTE: Dash indicates no such level for factor.

third are at level two, and the remainder is spread across the upper levels.

Turning to factors relating to interpersonal interactions on the job, it is evident that most jobs are structured so that employees receive a fair degree of supervision: only 6 percent of hours worked are in jobs in which the supervision received is at level 4 or above. (At level 4, the supervisor sets the overall objectives, but the employee and supervisor, in consultation, develop the deadlines, projects, and work to be done.) The flip side of the coin is that the vast majority of jobs—the 80 percent of hours rated at level 1—have no supervisory responsibilities whatsoever. More generally, in nearly 90 percent of hours worked, personal contacts are quite restricted: interaction is either with employees in the same establishment or with the general public, but in structured settings (levels 1 and 2). Consistent with this observation, the vast majority of jobs is at the lowest two levels for purpose of contacts as well.

In light of the ongoing shift of the economy from blue-collar to white-collar jobs, it may be surprising that nearly three-fifths of hours worked are in jobs that require some physical exertion, including long periods of standing; recurring bending, crouching, and stooping; and recurring lifting of moderately heavy items. Work is almost evenly divided between that involving normal safety precautions typical of such places as offices, meeting and training rooms, libraries, residences, and commercial vehicles and that involving moderate risks or discomforts requiring special safety precautions, such as those typically utilized in work with machinery, contagious diseases, or irritant chemicals. Only 2 percent of hours worked are in jobs with high risks, either from exposure to dangerous situations or because of unusual environmental stress that requires a range of safety and other precautions.

Table 4 shows the share of hours worked that is low paid

for each level of each factor. For knowledge level 1, for example, 78.5 percent of hours are paid at or below two-thirds of the median hourly wage. It is clear that individuals in a job rated at that level, which requires knowledge of only simple, routine, or repetitive tasks and little or no previous training, are highly likely to be holding positions that are classified as low paid, independently of the definition of low paid. For knowledge level 2, roughly one-quarter to two-fifths of the hours worked are low paid. Workers whose jobs have a knowledge rating of level 3 or above are highly unlikely to have low-paid jobs. The other three factors in the analytic skills category show broadly similar relationships between job level and the share of low-paid workers: at least two-fifths of hours worked at level 1 for these factors are low paid, with the share dropping quickly as one moves to higher levels.

As regards the four interpersonal factors, the patterns are somewhat different. With the exception of supervision received, the share of work at level 1 that is low paid never exceeds 40 percent. The lower share than that for factors in the analytic skills category is partly a consequence of the fact that level 1 of the interpersonal factors—again with the exception of supervision received—tends to contain a larger share of total hours worked than is the case for factors in the analytic skills category. Thus, low-paid hours are less likely to dominate the interpersonal-factor categories. This lesser prevalence is most clearly seen in the case of supervisory duties: with about 80 percent of hours worked at level 1—a level with no supervisory responsibilities—and the share of low-paid work in the neighborhood of 20 percent, the mathematical limit on the rate of low-paid work is about 25 percent.

Even so, it is still the case that, for the interpersonal factors, there is a strong negative relationship between the job level and the share of work that is low paid. This is not true, however, for the two factors gauging physical aspects of the

Table 4. Share of hours worked that is low paid, by level of factors

[In percent]

Factor	Wage rate less than two-thirds median wage rate	Bottom quintile	Wage rate less than \$8 per hour
Knowledge			
1	78.5	75.7	68.5
2	37.5	34.0	25.8
3	6.8	5.6	3.3
4 .....	.9	.7	.4
5 .....	.9	.8	.7
6 .....	.2	.2	.1
7 .....	.0	.0	.0
8 .....	.0	.0	.0
9 .....	.0	.0	.0
Complexity			
1	65.3	61.9	53.5
2	20.8	18.6	13.4
3 .....	.6	.5	.3
4 .....	.0	.0	.0
5 .....	.0	.0	.0
6 .....	.0	.0	.0
Guidelines			
1	53.8	50.4	42.1
2	6.0	5.0	3.1
3 .....	.1	.1	.0
4 .....	.0	.0	.0
5 .....	.0	.0	.0
Scope and effect			
1	53.4	50.0	42.4
2	10.9	9.6	6.3
3 .....	.3	.3	.2
4 .....	.0	.0	.0
5 .....	.0	.0	.0
6 .....	.0	.0	.0
Supervision received			
1	60.3	57.2	49.2
2	17.0	14.9	10.7
3 .....	.4	.4	.2
4 .....	.0	.0	.0
5 .....	.0	.0	.0
Supervisory duties			
1	26.4	24.5	20.1
2	7.0	6.4	4.6
3	3.0	2.6	1.5
4 .....	.1	.1	.1
5 .....	.0	.0	.0
Personal contacts			
1	36.1	33.8	28.0
2	10.3	9.1	6.9
3 .....	.2	.2	.2
4 .....	.0	.0	.0
Purpose of contacts			
1	31.7	29.5	24.1
2	3.1	2.7	1.9
3 .....	.5	.3	.2
4 .....	.0	.0	.0
Physical demands			
1	8.9	7.6	4.9
2	31.2	29.4	24.8
3	7.3	6.0	4.0
Work environment			
1	17.3	15.9	12.4
2	27.1	25.3	21.0
3	4.7	4.0	3.4

job: work requiring some physical exertion is actually more likely to be low paid than both work that is sedentary and work that requires considerable physical exertion. A similar finding is evident for the factor measuring the work environment: jobs with moderate safety risks are more likely to be low paid than both jobs with low risks and jobs with high risks.

Wage penalties and low-skilled work

As expected, the descriptive tables show a fairly clear link between lower levels of skill demands and low wages. The question remains as to the extent to which these skill factors fully explain the wages paid in low-wage jobs. That is, if we consider the hourly wage in the job to be an outcome variable, can the leveling factors, along with other characteristics of the job that are correlated with wages, explain the pay gap between low-wage and higher wage jobs? If not, then to what do we attribute the remaining gap? Is it evidence of a wage penalty suffered by those in low-wage jobs? This section uses regression analysis to examine these questions. The goal is to shed light on the question of whether the pay in less skilled jobs is in accordance with productivity (as represented by the leveling factors) or whether there is an additional wage penalty associated with low-skilled work.

To address this issue, it is necessary to designate which jobs are low skilled. Toward that end, the leveling factors are used to create a low-skill profile. That is, the scores on a combination of factors are used, with levels chosen that are consistent with less skilled job content. For example, jobs with low knowledge requirements (“simple, routine, or repetitive tasks”) and low complexity (“the work consists of tasks that are clear-cut and directly related. There is little or no choice to be made in deciding what needs to be done”) are selected to be in the profile. Jobs within this profile also have no supervisory duties and are in fact tightly controlled by supervisors. Further, the worker’s personal contacts within and without the firm are limited and involve only routine responsibilities, such as those common to a receptionist and not an architect. A complete definition of the low-skill profile is given in table 5.

On average, jobs with the low-wage profile pay an hourly wage of \$8.33, compared with a mean of \$18.37 for the rest of the jobs in the labor market. To begin to explain this gap, the logarithm of hourly wages is regressed on the profile indicator, giving a baseline wage gap between low- and higher skilled jobs. Then, establishment and job characteristics are added, in turn, to the regression, followed, finally, by the factor scores.¹⁶ With each new set of wage determinants, the magnitude and statistical significance of the negative wage premium associated with jobs that have a low-skill profile are examined, with the aim of gauging the extent to which these

other determinants explain the negative premium associated with low-skill work. If the other regressors fully explain the gap (that is, if the coefficient on the profile goes to zero), then there is arguably no wage penalty associated with low-wage work—or at least none that cannot be explained by establishment or job characteristics and skill demands.

The first row of table 6 shows the “raw differential”: the relative difference between the pay of jobs that have a low-skill profile and the pay of other jobs. (This regression contains only the profile indicator and a constant.¹⁷) The coefficient is a highly significant -0.708 ; measured in log points, it implies a negative pay differential of about 51 percent.¹⁸ Adding establishment characteristics reduces the coefficient by about 0.20 log point. The addition of job characteristics has an even larger effect, lowering the profile coefficient by another 0.25 log point. Although these reductions in the raw differential are significant, after controlling for establishment and job characteristics we are still left with a coefficient on the profile of -0.265 with a very large t -statistic, implying that jobs requiring this low-level combination of skills pay about 23 percent less than other jobs, on average. Clearly, this is a large difference.

However, the regression just carried out does not control for the full range of leveling factors. Once they are controlled for, in the fourth row of the table, the absolute value of the coefficient on the low-wage profile falls sharply, to -0.055 , although it is still highly significant. This is obviously of a considerably smaller magnitude, but it still deserves attention because, after all, among labor economists, it is widely held that an extra year of schooling raises wages by an amount only slightly greater in magnitude.

Thus, for jobs that combine low content scores—and many low-wage jobs do—hourly wages are about 5 percent lower than would be predicted by a model that includes job content scores and other highly detailed controls. How is such a result to be interpreted? One possibility is that workers in low-skilled jobs are paid even less than what one would predict on the basis of the skill demands of their jobs. This situation could arise if such workers do not have the bargaining power to

Table 5. Definitions of low-skill and high-skill profiles

Factor	Low-skill profile: level is less than or equal to—	High-skill profile: level is greater than or equal to—
Knowledge	2	5
Complexity	2	3
Guidelines	2	3
Scope and effect	2	3
Supervision received	1	3
Supervisory duties	1	2
Personal contacts	2	2
Purpose of contacts	2	2
Physical demands	2	1
Work environment	2	1

obtain wages commensurate with their productivity.

A second possibility is that the model is overstating the productivity level of those in low-skilled jobs by not taking into account the interactions among the different factors—interactions that are implicit in the definition of the low-skill profile. To take one out of many possible interactions among the factors, the increase in wages that occurs when the level of the knowledge factor rises may depend on the level of the factor for scope and effect; in other words, there may be greater returns to knowledge when work has a greater impact on the organization as a whole. Interactions will then be important in cases where productivity is not just the sum of different skills, but in fact depends on the *combination* of different skills. To take a simple example from the world of sports, to be an effective “serve and volley” tennis player, it is necessary both to have a good serve and to volley well. If one of these two components is mediocre, the serve-and-volley strategy will not work very well.

The data presented do not uniquely determine an interpretation that is most accurate. Given that the job and establishment controls, including industry, occupation, sector, union status, and size of establishment—all of which are significant in these regressions—are fairly extensive, it could be argued, on the one hand, that the model does in fact control for many important correlates of bargaining power, favoring the second, skill-based interpretation. On the other hand, because the NCS is job, and not person, based, the model lacks controls for personal characteristics, including race and gender, which might be associated with lower pay.¹⁹ Take, for example, a low-skilled job like food preparation. It could be that low knowledge and low complexity interact to lead to a less productive outcome, or it could be that such jobs incur a wage penalty even after the model controls for relevant skill demands. Again, we cannot resolve this important interpretive difference, but we can test to see whether the same analytical issue exists with regard to high-skilled jobs.

To do so, we ask whether the same type of premium exists

in reverse for jobs with high factor scores. If not, one might argue that low-wage workers fall uniquely outside of a model in which the pay in jobs is closely tied to productivity; that is, while the earnings associated with high-skilled jobs are fully explained by returns to skill, the pay in low-skilled jobs is not. (Such jobs carry an extra penalty.) Jobs that have a high-skill profile, by the definition presented here (see table 5), are high in knowledge (equivalent to the knowledge that would be acquired by earning a bachelor’s degree), are reasonably complex (“[the] work includes various duties and unrelated processes and methods”), and have guidelines that are not completely spelled out. These jobs also have at least some degree of supervisory duties and involve personal contacts that extend beyond employees in the immediate organization.

Results for the high-skill profile are shown in table 6. The raw differential, a highly significant 0.903, is even larger in absolute value than in the low-skill case. The next two rows show a similar pattern, as the addition of other determinants sharply reduces the high-skill-profile coefficient. However, in contrast to the case for low-skill jobs, when the leveling factors are added to the specification the coefficient falls to nearly zero and is not statistically significant. Unlike the pay in low-skill jobs, pay in high-skill jobs appears to be fully explained by skill content.

However, this result is not robust, in that it is sensitive to how the high-skill profile was defined, in an admittedly arbitrary manner. By changing the definition of the high-skill profile only slightly—supervisory responsibilities were no longer required—the coefficient on the profile remained significant after the leveling factors were controlled for. For example, as shown in the fourth row of the table, the low-wage-profile coefficient is -0.055 (t -statistic = -3.98); the last row shows that the analogous coefficient for the initial high-skill profile is an insignificant 0.021 (t -statistic = 1.62). If, however, the supervisory requirements are lowered slightly, that coefficient rises to 0.034, with its t -statistic of 2.79

Table 6. Regression coefficients on skill profiles¹

Profile and regression step	Coefficient	t-statistic	R squared
Low-skill profile			
Raw differential	-0.708	-61.68	0.280
Add establishment characteristics ²	-.516	-63.28	.506
Add job characteristics ²	-.265	-37.68	.724
Add leveling factors	-.055	-3.98	.825
High-skill profile			
Raw differential .....	.903	61.40	.195
Add establishment characteristics ².....	.733	54.99	.502
Add job characteristics ².....	.365	21.13	.718
Add leveling factors .....	.021	1.62	.825

Number of observations = 122,081

¹ See text for definition.

² See note 16 in text for a description of specific regressors.

indicating significance at the 1-percent level.

Unfortunately, here again, two legitimate, but contradictory, interpretations remain. The results could support the case that, unlike high-skilled jobs, low-skilled jobs carry a unique wage penalty that remains once skill is controlled for (although this result is sensitive to how we define high-skilled jobs). But the results are also consistent with the argument that the wage penalty is simply a function of skill interactions, an explanation in keeping with pay being commensurate with productivity.

USING THE NCS, THIS ARTICLE HAS EXAMINED the extent of low-wage work in the current labor market. The descriptive analysis presented reveals that, under various definitions of the term, a significant share of hours is devoted to *low-wage work*. For example, just under 22 percent of all hours worked in 2001 paid less than two-thirds the median wage rate (\$8.67), one widely used measure of low earnings. An important feature of the NCS is its *leveling factors*, which delineate in some detail the skill requirements of the jobs in the U.S. labor market. The analysis shows that low-wage work is disproportionately concentrated among low scores on these measures of skill content.

The leveling factors, along with a set of other useful controls, allow some of the determinants of low pay to be tested. A hypothetical low-skill profile aids in examining whether a variable indicating that a job is low skilled has

explanatory power after controlling for skill demands. The analysis reveals that it does, which is consistent with the presence of a penalty to low-skilled work beyond what can be explained by factors describing the skills and knowledge required for the job. Alternatively, low skill levels on a combination of factors (as measured by the postulated low-skill profile) may indicate an interaction effect that leads to productivity levels lower than what is implied by a consideration of the factors in isolation.

An issue that arose during the analysis was whether the finding that the low pay associated with low-skill jobs was not fully accounted for by the level of skill demands was unique to low-skilled workers or whether an analogous situation held for high-skilled workers. A high-skill profile created for the purpose lent some support to the notion that high-skilled jobs do not earn a premium relative to other jobs, after skill content is taken into account. However, this result was not robust to a slight change in the way the high-skill profile was constructed.

In sum, the approach presented in this article does not allow a definitive determination of whether low-skilled jobs are low paid even after taking account of their low skill content or whether such jobs pay less because their combination of low-skill requirements generates a lower productivity and thus a lower wage. Yet, along with the prevalence of low-wage work, the results clearly show that, in accordance with either interpretation, workers in these jobs face significant hurdles.

Notes

¹ See Jared Bernstein and Heidi Hartmann, "Defining and Characterizing the Low-Wage Labor Market," in *The Low-Wage Labor Market: Challenges and Opportunities for Economic Self-Sufficiency* (Washington, DC, U.S. Department of Health and Human Services, 1999), and other papers in that volume.

² An exception is Harry Holzer, *What Employers Want: Job Prospects for Less-Educated Workers* (New York, Russell Sage Foundation, 1996).

³ The survey provides comprehensive measures of occupational wages, compensation cost trends, the incidence of benefits, and detailed benefit provisions. The analysis that follows uses data only from that part of the survey concerned with occupational wages.

⁴ The description of the factors is based on *National Compensation Survey: Occupational Wages in the United States*, Bulletin 2552 (Bureau of Labor Statistics, January 2003).

⁵ One factor, *knowledge*, has nine possible levels, but all the other factors have six or fewer, with two having only three levels.

⁶ *National Compensation Survey*, p. 167.

⁷ See, for example, "Making the Most of the Minimum: Statutory Minimum Wages, Employment and Poverty," *Employment Outlook* (Paris, Organization of Economic Cooperation and Development, June 1998).

⁸ Given that the sample is designed to be representative of local areas, it is possible to define the two relative measures in terms of the local distribution of wages or the national one. That is, one can classify hours as low paid when the rate of pay is below two-thirds of the median wage for the Nation or for the area; a similar choice is available for definitions based on the bottom quintile of the wage distribution. It turns out that the results obtained from the local wage distributions are quite similar to those based on the national distribution, so, for the sake of brevity, only the latter are reported.

⁹ See, for example, Elise Richer, Steve Savner, and Mark Greenberg, *Frequently Asked Questions about Working Welfare Leavers* (Washington, DC, Center for Law and Social Policy, 2001), a review of studies of those families leaving welfare.

¹⁰ See, for example, Walter Y. Oi and Todd L. Idson, "Firm Size and Wages," in Orley Ashenfelter and David Card (eds.), *Handbook of Labor Economics, Vol. III* (Amsterdam, North-Holland, 1999), chapter 33, pp. 2166–2214.

¹¹ Establishments owned by State and local governments (recall that the Federal Government is outside the scope of the survey) are not identical to those in public administration, because government-owned institutions, such as schools and hospitals, are classified in the industry division for services.

¹² See H. Gregg Lewis, "Union Relative Wage Effects," in Orley C. Ashenfelter and Richard Layard (eds.), *Handbook of Labor Economics, Vol. II* (Amsterdam, North-Holland, 1986), chapter 20, pp. 1139–81.

¹³ See David Card, "The Effect of Unions on the Structure of Wages: A Longitudinal Analysis," *Econometrica*, vol. 64, no. 4, July 1996, pp. 957–79.

¹⁴ See Michael K. Lettau, "Compensation in Part-Time Jobs versus Full-Time Jobs: What if the Job Is the Same?" *Economics Letters*, vol. 56, no. 1, September 1997, pp. 101–6.

¹⁵ See Brooks Pierce, "Using the National Compensation Survey to Predict Wage Rates," *Compensation and Working Conditions*, winter 1999, pp. 8–16.

¹⁶ The establishment characteristics are the geographic area in which the establishment is located, the two-digit industry it is a part of, whether the establishment is privately owned or is part of a State or local

government, whether it is in the nonprofit sector, and the logarithm of the number of employees working in the establishment. The job characteristics are the two-digit occupation, whether the job is part or full time, whether the job is covered by a collective bargaining agreement, and whether any portion of compensation in the job is tied to incentives.

¹⁷ For all regressions, the calculations of standard errors take account of the survey design of the NCS.

¹⁸ The calculated effect of the profile indicator is $e^a - 1$, where a is the coefficient of the variable indicating whether a job has a low-skill profile.

¹⁹ This omission can be partially rectified by adding, for example, the share of minorities or women in each occupation as variables in the regression.