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ECONOMIC COMMENTARY

Labor Cost Differentials: Causes and Consequences

by Randall W. Eberts and Joe A. Stone

Labor costs are often cited as the primary hindrance to economic development in cities where wages are high and as a spur to development in cities where wages are low.[1] The relationship between labor costs and growth is complex, however. Many high-wage cities do experience a decline in growth, but others do not. Similarly, many low-wage cities grow rapidly, but some do not.

These patterns are illustrated in table 1 for selected cities in the United States, including some of the major cities in the Fourth Federal Reserve Bank District.[2] Akron, Detroit, Chicago, Gary, and Cleveland were all *high*-wage cities in 1974, and they experienced *lower*-than-average employment growth in the subsequent decade. Similarly, Dallas, Fort Worth, Greensboro, and Tampa were all *low*-wage cities in 1974, and they experienced *higher*-than-average employment growth over the same period. Contrary patterns are equally evident. San Francisco, San Jose, Seattle, Los Angeles, Minneapolis-St. Paul, and Columbus were *high*-wage cities in 1974, but they continued to experience *higher*-than-average employment growth. Similarly, Birmingham and Norfolk experienced *lower*-than-average employment growth despite *low* labor costs in 1974.

In this *Economic Commentary,* we examine the complex relationship between labor costs and economic growth—first, by exploring some of the major causes of labor cost differentials; and second, by investigating their consequences. Our central point throughout is that labor costs not only help determine rates of economic growth, but also respond to growth.

Table 1 Labor Costs and Employment Growth for Selected Cities

	Low Labor Costs (1974)	High Labor Costs (1974)
High Employment Growth (1974-84)	Dallas Fort Worth Greensboro Tampa	San Francisco San Jose Seattle Los Angeles Minneapolis-St. Paul **Columbus**
Low Employment Growth (1974-83)	Birmingham Norfolk	**Akron** Detroit Chicago Gary **Cleveland**

NOTE: Cities in bold are in the Fourth Federal Reserve Bank District.
SOURCE: Eberts and Stone (1986a).

Many of the issues we discuss were raised by participants in a recent conference of labor economists, community business leaders, and union representatives sponsored by the Center for Regional Economic Issues at Case Western Reserve University and by the Federal Reserve Bank of Cleveland.[3] We conclude with a brief discussion of local policy issues related to labor cost differentials and economic development.

Causes of Labor Cost Differentials

Like most prices, wages are determined primarily by market forces. Two persistent and powerful forces affect wages. People move to places that improve their well-being through higher income and a more amenable environment. Firms seek locations that minimize costs and increase productivity. If, for some reason, wages and other employment compensation are higher in one region than another, people will have increased incentives to move to the higher-wage area. When

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1. Labor costs and wages are used interchangeably. Differences between the two are discussed later in the paper.

2. Measures of wage differentials are from Eberts and Stone (1986a) and are adjusted for skill differences in the work force.

3. The papers presented at this conference and the conference discussions are summarized in Eberts and Stone (1986b).

they do move, the number of workers declines in the place they left and increases in their new location. If all other factors are constant, the result is a wage increase in their hometown and a wage decrease in their destination. But the same high wages that attract workers may deter business formation. As firms leave an area, labor demand falls and wage rates decrease. Both forces, working together, tend to equalize wages across regions.

If this simple explanation of regional wage determination is accurate, then why would we ever observe wage differences in different parts of the country? Indeed, if we do observe differences, why not just attribute them to some temporary disturbance, which eventually will dissipate as workers seek higher-paying jobs and firms seek lower-wage areas? The answer to both questions is that although this simple explanation is a useful starting point, it rests upon a number of unrealistic assumptions.

One such assumption is that workers and firms respond only to wage incentives when deciding where to move. Workers seek locations that increase their well-being. In addition to wages, workers consider climate, recreational features, quality of the school system, income maintenance programs, and other local attributes. Consequently, people may be willing to accept lower wages in an area that offers positive amenities and may wish to be compensated with higher wages for living in an area with disamenities.

Firms view site characteristics in a similar manner. They are able to offer higher wages in areas that provide attributes that improve productivity and that still remain competitive with low-wage areas that do not have the same productivity advantages.

It is also assumed that workers are perfectly mobile. In reality, workers become attached to their jobs, families, and friends, or find it difficult to sell their houses even when job opportunities look much brighter in another area. A firm's mobility also has limitations, due to its capital investments and proximity to customers and supplies. Before a firm decides to locate in an area, it weighs benefits such as proximity to markets, availability of raw materials, and quality of public services.

Table 2 Skill Differentials for Selected Cities
(Percentage above or below national average)

City (SMSA)	1974	1983	Change
Seattle	15.3	7.2	-8.1
San Jose	10.3	10.3	0.0
Cleveland	6.9	1.9	-5.0
Detroit	6.5	-0.2	-6.7
Birmingham	4.8	1.8	-3.0
Minneapolis-St. Paul	4.7	0.6	-4.1
Fort Worth	3.9	-0.4	-3.5
Los Angeles	2.4	2.3	-0.1
San Francisco	2.3	7.3	5.0
Dallas	2.0	4.2	2.2
Chicago	0.4	4.1	3.7
Columbus	-0.4	0.1	0.5
Greensboro	-0.5	-1.9	-1.4
Norfolk	-0.5	0.0	0.5
Tampa	-2.0	-1.0	1.0
Gary	-2.4	-4.8	-2.4
Akron	-4.1	2.7	6.8

NOTE: Cities in bold are in the Fourth Federal Reserve Bank District.
SOURCE: Eberts and Stone (1986a).

Another assumption is that there is perfect information to match jobs with job-seekers. A job-seeker can find considerable information about nearby employment opportunities in local newspapers and employment offices. However, it is much more difficult to discover openings in other cities and states. The firm is in a similar situation. It may know that wages are lower in another area, but it may not know whether that area also has the right level and mix of skills.

Because of factors limiting mobility and the nonwage aspects of the location decision, migration between areas may not completely equalize wages. Can wages that are higher than the national average be sustained over time? Or will an area lose firms and gain workers, perhaps in excess of available jobs, until wages fall back in line? In some periods of United States history, notably from 1919 to 1929, regional wage differentials not only were sustained, but also continued to grow. Capital and other resources continued to flow into high-wage areas, but worker in-migration was not large enough to lower or even hold relative wages constant. Cleveland, Pittsburgh, Detroit, Chicago, and other North Central cities continued to grow, even with high wages.

Why did wage differentials continue to increase? The most likely explanation lies in the dominance of very large-scale, capital-intensive industries, combined with proximity to markets, high relative rates of technological change in the geographically concentrated industries, and increasing importance of site-specific characteristics. In more recent decades, some of these forces have been reversed — efficient firm size has been declining in most industries; proximity to markets and suppliers is a less critical issue for plant location; and relative rates of technological change have shifted in favor of previously lower-wage regions.

Skills and technology. At the most fundamental level, labor cost differentials arise primarily from differences in labor skills and technical productivity.

Worker skills are acquired through formal education, on-the-job training, and the worker's own talents and ingenuity. Many skills can be transferred from one job to another, but others are specific to particular jobs. When comparing wage differentials between regions, one should account for skill differences in the labor force. In a labor market context, "skill" has two components: the specific talent or training held by the worker, and the valuation of that talent or training by the market.

Table 2 presents estimates of labor skill differentials for the sample of cities listed in table 1. The four cities with the highest skill differentials in 1974 are Seattle, San Jose, Cleveland, and Detroit. By 1983, however, both Cleveland and Detroit are much closer to the national average, with the four highest cities now being San Jose, San Francisco, Seattle, and Dallas. The four cities with the lowest skill differentials in 1974 are Akron, Gary, Tampa, Norfolk, and Greensboro (Norfolk and Greensboro are tied). By 1983, Akron and Norfolk are no longer in the bottom four, and are replaced by Fort Worth.

Technical productivity depends upon a number of factors: the number of machines and other resources available to workers, the level of technology contained in these machines, and the scale of operation when the return to scale is not constant. Luce (1986) has found significant regional variations in technical productivity.

For example, workers in highly automated steel mills that utilize the latest technology are much more productive, as measured by output per worker, than workers in turn-of-the-century steel mills. Therefore, the newer, more technologically advanced mills pay workers more than the older, less efficient mills. If the newer mills are concentrated in certain regions and the older mills in others, then wage differentials may arise between these regions.

In addition, if geographically concentrated industries that were once subject to strong economies of scale decline (or undergo changes that reduce the economies of scale), labor cost differentials arising from the economies of scale in these industries will erode.

Unionization differences. Of course, factors unrelated to labor productivity may also influence wages. In this case, firms may not be getting a dollar's worth of productivity for a dollar's expenditure on labor. In particular, labor unions may bargain wages that exceed the value of labor's contribution to output. Unions may also restrict employment. Therefore, one would expect heavily unionized areas to have higher-than-average wages, but lower-than-average employment growth.

Clearly, union membership is not distributed evenly across the country. The percentage of Ohio's manufacturing workers unionized, for example, is nearly three times the percentage unionized in the high-growth states of California, Florida, Georgia, and even Massachusetts.

Table 3 presents the proportion of all workers organized in our sample of major cities. If unions do have a significant effect on wages, then we would observe significant wage differentials between Ohio and the high-growth states and among the cities in table 3, other factors the same. In fact, a number of researchers (including Jackson [1986] and Medoff [1986]) have found that unionization rates are a significant determinant of regional labor cost differentials.

Supplemental labor costs. The wage differentials that we have considered so far do not include supplemental labor costs. Supplemental labor costs make up, on average, 20 percent of total labor costs and include such expenses as the employer's contribution to Social Security, worker's compensation, and health and life insurance. Luce (1986) has estimated a total labor cost index for the 20-largest metropolitan areas. He finds, for example, that Cleveland's supplemental labor costs are 15 percent higher than the national average, while its simple wage index is only 9 percent higher. When these two costs are combined, Cleveland's total labor costs are 10 percent above the national average.

Cleveland is not the only city whose supplemental labor cost differential exceeds its simple wage differential. The supplemental labor costs of the five cities sampled in the North Central region average 10 percent higher than the nation, while their wages average only 9 percent higher. Metropolitan areas in the Northeast, on the other hand, have lower supplemental labor costs than in the rest of nation, while wages are only slightly higher. In the South and West, wages and supplemental labor costs are on a par and average slightly less than in the rest of the nation.

The result of all of this is that total labor costs are dramatically higher in the North Central region than in the rest of the country, largely because of the high employer expenditures on worker's compensation and health and life insurance benefits. These results are somewhat overstated, however, since the data available cannot account for differences in skills. Nonetheless, the reduction in regional wage differentials when variations in skills are controlled for may be offset somewhat by the region's higher supplemental labor costs.

Convergence of labor costs. There is substantial evidence that regional differences in labor costs are converging. According to Eberts and Stone (1986a), the variation in observed wage differentials across metropolitan areas declined by almost half from 1974 to 1983, and the variation in the skill-adjusted differentials fell about one-fifth.

The observed wage differential is composed of the skill-adjusted wage differential and a differential related to differences in observed skills. Therefore, the fact that observed wages converged more than twice as much as skill-adjusted wages suggests that variations across metropolitan areas in observed skill levels also declined during the period.

Why do we observe relatively strong wage convergence during the 1974-1983 period? Earlier wage convergence in the first decade after World War II appears to have been the result of shifts in labor supply resulting from regional migration. More recently, however,

wage convergence appears to be related to factors associated with labor demand. These factors include investment mobility, the expanding scope of most product markets (both domestically and internationally), the declining importance of geographic proximity (both in production and in sales), increased competition faced by geographically concentrated firms that may have had some power to influence price, the relative decline of industries whose products use relatively large amounts of local natural resources, and the emergence of manufacturing industries that require smaller-scale plants.

The results of wage convergence tend to help high-wage cities for two reasons. First, as wages converge, firms searching for a new location will not view these cities as exceptionally high-wage labor markets. Second, the overall reduction in regional wage variation makes it less advantageous for firms to search for low-wage areas, since the relative cost savings are smaller.

The causes of wage convergence, on the other hand, tend to hurt high-wage cities. If convergence occurs because productive firms leave the area, lowering the demand for workers and, consequently, lowering the wage rate, then a paradox emerges: High wage rates encourage firm and household decisions that tend to reduce the wage differential so that wage differentials are less important over time. Some people may consider this a "shaking out" of an area's less productive or desirable firms. Yet, an exodus of firms large enough to reduce noticeably the area's wage rates warns potential entrants that something may be wrong with the area.

Table 3 Unionization Rates of All Workers in Selected Metropolitan Areas

Metropolitan Area	Percent Unionized 1977	1981
Los Angeles	25.2	18.9
Chicago	28.6	23.9
Detroit	40.3	31.4
San Francisco	32.8	26.4
Pittsburgh	34.0	39.1
Cleveland	33.1	27.1
Minneapolis-St. Paul	26.6	16.0
Dallas	9.6	8.1
Seattle	27.8	33.0
Cincinnati	24.1	25.7
San Jose	20.3	15.6
Tampa	9.8	11.4
Columbus	21.6	22.3
Fort Worth	12.0	13.2
Birmingham	22.4	17.2
Norfolk	21.9	7.2
Akron	38.5	23.8
Gary	45.1	49.7
Greensboro	8.2	3.7

NOTES: Unionization rates are based on union membership for all civilian workers. Cities in bold are in the Fourth Federal Reserve Bank District.
SOURCE: Kokkelenberg and Sockell (1985).

Consequences of Labor Cost Differentials

We concentrate on three broad consequences of regional labor cost differences — their effect on the demand for labor, on the demand for equipment and structures, and on business openings. We have already discussed the effect of regional wage differentials on the supply of labor and regional migration. Now we focus on firm behavior. Our basic premise is that if wages differ significantly across regions, then firms, in seeking to maximize profits, adjust the quantity of labor and capital they employ in the short run and decide the location of their operations in the long run.

For example, firms in metropolitan areas with higher-than-average wages will use relatively less labor than firms in low-wage areas in order to minimize production costs. If costs still remain higher than they would be in lower-wage areas, then new firms will tend to choose lower-cost areas and existing firms may decide to relocate.

Unions and employment. Montgomery (1986) considers the effect of regional differences in unionism on employment. He finds that employed workers in cities where unions are stronger are less likely to have full-time jobs than workers in cities with weaker union strength. He measures union strength as the combined effect of the percentage of workers unionized in the city and the union wage premium in the area. The probability that an average employed worker has a full-time job rather than a part-time job is about 8 percent lower in Cleveland, for example, than in the city with the lowest

union strength. He interprets this finding to suggest that increases in union wages might have a larger effect on hours worked per week or on the mix of full-time and part-time jobs than on the total number of jobs.

Montgomery also finds that the union's detrimental effect on employment varies among types of workers. Men between the ages of 25 and 54, for example, are less likely to lose their full-time jobs because of strong unions than are teen-agers, men 20 to 24 years old, and women 25 to 54 years old. Placing the union effect on employment in perspective, however, Montgomery concludes that the union effect is dwarfed in importance by other factors such as schooling, experience, and local labor-market conditions.

Net capital formation. If firms cut back on labor in areas where unions are strong and wages high, then they must substitute some other factor of production if output is held at the same level. Garofalo and Fogarty (1986) consider the effect of labor costs on investment in 16 Midwestern metropolitan areas. They estimate that net investment in these cities would have been $2.8 billion higher over the period 1970-1978 if their labor costs had equaled the national average.

Business openings. Another important issue is how relative differences in input prices affect firms' expectations about the longer-run profitability of locating production in an area. Eberts (1984) looks at the effects of regional wage differentials on firms' location decisions. In particular, he uses metropolitan area data on business openings compiled by the Small Business Administration and relates them to differences across metropolitan areas in wages and unionization. Results show that areas with higher wages have fewer business openings. These estimates net out regional differences in labor quality, energy prices, tax rates, size of the labor market, right-to-work laws, unionization, and regional location.

An interesting finding is the relative strength of wage and union variables in explaining business openings. Where wages are high, numbers of openings are low; the same is true for unionization. Even with labor costs held constant, unionization has a dominant depressing effect on business openings. It appears, therefore, that the perceived total costs to management of operating in a union environment far outweigh the costs of higher union wages alone. Thus, businesses may avoid locating in highly unionized areas even when wages are the same.

Policy Issues

Where does this discussion of labor cost differentials leave us? We have found that wages differ significantly across regions, that these differentials are partly explained by regional differences in worker skills and union membership, and that wage and skill differentials appear to be diminishing over time. Significantly, high-wage areas have lower rates of investment in new equipment and structures and fewer business openings.

Is the economic decline experienced by older industrial cities a self-correcting process or is it a permanent feature to be altered, if at all, through public intervention? At least part of the relative economic decline appears to be self-correcting. As regional wage differentials narrow, they become a smaller and smaller factor in determining plant locations, expansions, contractions, and closings. Even though part of this wage convergence results from a reduction in worker skill differentials across regions, workers in many older industrial cities are still more highly skilled than the national average. The difference, however, has narrowed significantly, which should direct our attention to issues of education and training.

Furthermore, several trends adversely affecting cities like Cleveland, Gary, Akron, and Detroit have recently been reversed. High energy prices are less pernicious to growth in these cities now than in recent years for two reasons: The energy intensity of production has declined in most industries, making energy a less-critical factor in production cost; and the real price of energy has declined significantly from its previous peak. Similarly, the exchange value of the United States dollar has declined recently, which should improve the competitive position of trade-sensitive industries characterizing the economies of these cities. On these grounds, therefore, prospects look brighter than before.

Areas of concern do remain, however. Much-higher-than-average rates of unionization continue to deter new business formation, as do continuing problems induced by years of relative economic decline. These problems include an eroding tax base, strong public service demands, and central city crime.

In examining appropriate local development policies to respond to these and other problems, one can easily overlook obvious policies that would promote competitiveness and economic growth: such as offering the necessary range of public services and infrastructure at the lowest feasible tax costs; structuring the tax systems so that individuals and firms have sufficient incentives to take the risks associated with invention, innovation, and entrepreneurship; and providing individuals and firms with a relatively stable local environment conducive to long-range planning and growth. With regard to taxes, it is clear that firms look not just at what they pay, but also at what they get in return.

Encouragement of entrepreneurship, invention, and innovation (both through positive enticements and through the elimination or reduction of current impediments) would seem to be an especially crucial issue for public policy in many cities. Most economic growth in the United States occurs through technological change, and there is no apparent reason to believe that individual cities should be different in this regard.

In fact, many older industrial cities formerly experienced high rates of technological innovation in key industries, which no doubt was a central factor in their earlier growth and high wages. Even now, some industries usually characterized as unproductive and technologically obsolete are experiencing a renaissance. Cities that are home to these industries are in a position to share in this future prosperity.

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