

Dollar depreciation also worsens the terms of trade, so that the United States must export an increasing volume of goods to pay for a constant volume of imports. Strong productivity growth can affect relative prices sufficiently to allow domestic producers to be competitive in world markets. Moreover, productivity growth is a major source of increase in a nation's real per capita income and standard of living, and hence is of more fundamental importance than changes in exchange rates.

#### ■ Competitiveness and Trade

The strong comeback in productivity growth and unit labor costs, along with the benefits from dollar depreciation, have helped to improve the U.S. trade balance since mid-1986. Import prices have been increasing faster than domestic prices, contributing to slower import growth. U.S. exports of manufactured goods have surged because of falling foreign-currency prices of U.S. goods. The deficit in merchandise trade has gradually narrowed from \$183 billion in 1986:IIIQ to \$120 billion in 1988:IIQ (in 1982 dollars).

The improvement in relative prices of consumer goods, excluding autos, has helped to cut the trade deficit for

those goods by nearly \$7 billion since 1986:IIIQ. The trade improvement for automobiles has amounted to about \$11 billion.

#### ■ Conclusion

The recent improving trend in the U.S. trade deficit is in part associated with the comeback in manufacturing cost competitiveness. U.S. manufacturing in this expansion has achieved record performance in unit labor costs because of moderation in labor costs coupled with strong productivity growth.

As good as the achievement has been in comparison to past performance, the real test is how well domestic producers have performed relative to their major trading partners. Measured against that standard, U.S. manufacturers have managed to outperform their major industrial trading partners.

The major source of the improved cost competitiveness, however, has come from changes in the exchange value of the dollar. This is a tenuous source of strength that domestic manufacturers should not depend on. In global markets, a relative price advantage that results from productivity growth and constraint on unit costs is a more lasting foundation for competition than are changes in exchange rates. Consequently, U.S.

manufacturers must forge ahead to improve productivity and costs relative to our trading partners, independent of developments in exchange markets.

#### ■ Footnotes

1. A less common but more complete measure is multifactor productivity, which includes labor, capital, and materials used in output. This *Economic Commentary* is based on labor productivity only.

2. See Erica Groshen, "What's Happening to Labor Compensation?", *Economic Commentary*, Federal Reserve Bank of Cleveland, May 15, 1988.

3. The 11 foreign industrial countries in the index are Belgium, Canada, Denmark, France, Italy, Japan, the Netherlands, Norway, Sweden, the United Kingdom, and West Germany. The weights reflect the relative importance of each country as a U.S. manufacturing trade competitor as of 1980.

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## Productivity, Costs, and International Competitiveness

by John J. Erceg and Theodore G. Bernard

American competitiveness in world markets has greatly improved in the current business expansion. That improvement has contributed to a rising trend in merchandise net exports and a veritable boom in exports. From mid-1986 to mid-1988, the merchandise trade deficit fell by about \$63 billion, adding substantially to the revival in manufacturing production and employment since early 1987.

The improving trend in the trade balance is generally attributed to the dollar's depreciation in foreign-exchange markets since early 1985. Often overlooked, however, is the improvement in U.S. manufacturing costs in recent years, stemming from larger productivity gains and from smaller increases in unit labor costs relative to those of our major trading partners.

This *Economic Commentary* reviews the recent performance of the U.S. manufacturing sector relative both to past performance and to our major trading partners. Although the effects of dollar depreciation have been the major factor in increased U.S. cost competitiveness in world markets, record improvement in manufacturing productivity growth and constraint in compensation growth have also been significant.

■ **The Productivity Slowdown**  
Productivity is a measure of inputs (labor, capital, and materials) relative

to outputs (goods and services). A common measure of productivity is labor productivity, or output per hour worked.<sup>1</sup>

Productivity growth is vital to a nation's standard of living, its inflation rate, and its ability to compete in world markets. A variety of factors influence long-term productivity growth, particularly the quality of human capital (the education, training, and experience of the work force), production techniques, and product technology and innovation. Cyclical forces also affect growth: labor productivity rises during early stages of economic expansions because output increases faster than hours worked, and declines during economic contractions because labor tends to be hoarded.

Since at least the early 1970s, slow productivity growth has been a source of serious concern, especially among public policymakers. In the nonfarm sector of the economy, labor productivity rose at a 2.4 percent average annual rate between 1948 and 1973. It then slowed to a 0.3 percent annual rate of increase between 1973 and 1982, before rising to a 1.9 percent rate in the current expansion (see figure 1).

Analysts cannot agree on any single source for the productivity slowdown

The U.S. trade deficit has been on an improving trend recently, largely due to changes in the exchange value of the dollar. Also associated with the rising trend, however, is the comeback in manufacturing cost competitiveness, evidenced by moderation in labor costs and by rapid growth in manufacturing productivity.

in the 1970s, but a number of studies indicate such factors as energy price shocks, slow capital formation, and lack of innovation. Also cited are a shift in the composition of output from high- to low-productivity sectors of the economy, greater numbers of unskilled and inexperienced workers, and increased government regulations affecting safety and the environment.

Productivity growth has improved from the 1970s, but so far in this expansion, it still lags the trend growth of the 1948-73 period. The current expansion, now in its 72nd month, is the longest peacetime expansion on record. Some analysts expected that the reversal of some of the factors that contributed to the productivity slowdown in the 1970s should also contribute to faster productivity growth in the 1980s. In the nonfarm,

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nonmanufacturing sector of the economy, however, productivity growth continues to lag the strong performance of the 1961-69 expansion and has shown no signs of recovering to its longer-term trend rate of 1948-73.

**■ The Manufacturing Sector**  
While productivity growth in the non-farm sector in the current expansion is only slightly improved from the 1970s, manufacturing performance—including productivity, labor compensation, and unit labor costs—has matched or exceeded that of any postwar expansion.

Manufacturing productivity grew at an average annual rate of 4.3 percent between 1982:IVQ and 1988:IIQ—nearly twice the growth rate of the 1975-80 expansion (see figure 2). Some of this rapid growth was achieved by holding down employment growth, which contributed to a substantial slowing in labor compensation and a decline in unit labor costs.

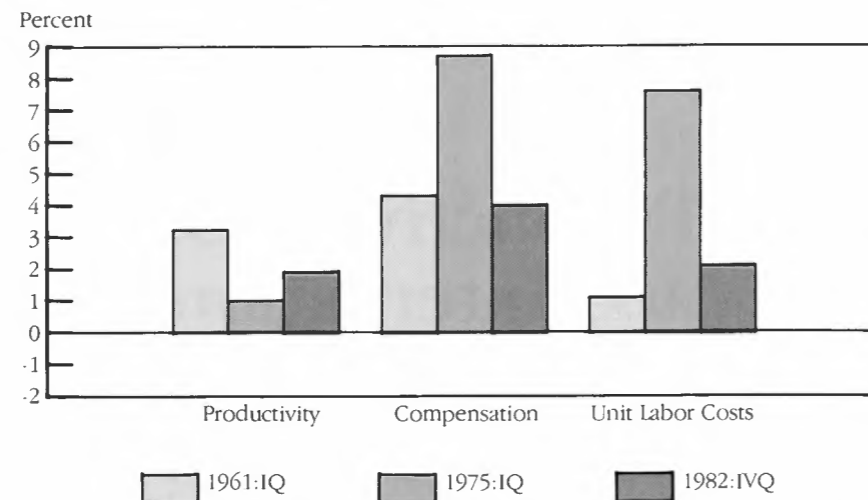
Labor costs represent the bulk of unit costs in manufacturing. In this expansion, labor compensation has risen at a moderate 3.3 percent average annual rate, and rose only 2.1 percent in 1987, even though labor cost pressures have risen strongly in advanced stages of previous expansions.

Several factors may account for this atypical behavior, including a disinflationary economic environment and intense foreign competition. One study suggests that changes in manufacturing compensation practices and a decline in unionization are among the reasons for slower growth in labor compensation in recent years.<sup>2</sup>

The combination of strong performance in productivity and moderate growth in labor compensation has resulted in the best performance in unit labor costs of any expansion in the postwar period. Unit labor costs have declined at an average annual rate of 1.0 percent over the course of the current expansion, and have shrunk somewhat more in 1987.

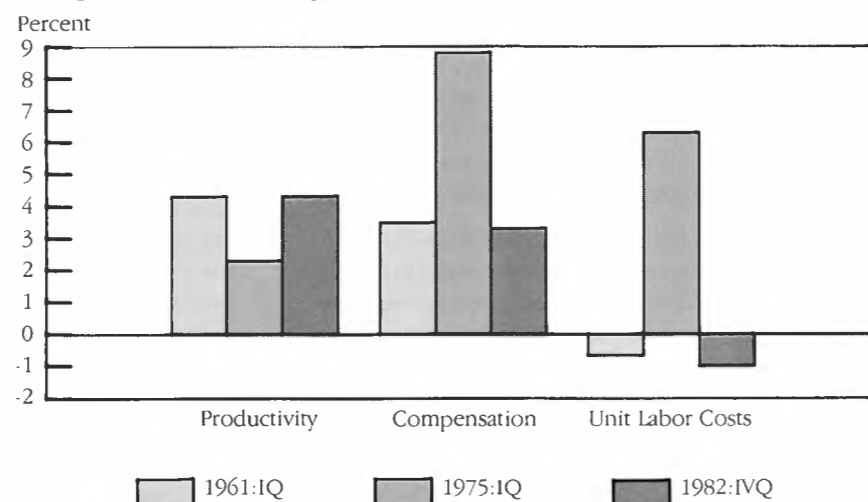
Much of the improvement in manufacturing has been in the durable-goods

**FIGURE 1 PRODUCTIVITY, COMPENSATION, AND UNIT LABOR COSTS—NONFARM BUSINESS**  
(Average annual rates of change)



NOTE: Dates represent business-cycle trough for each expansion. Data are calculated 22 quarters after trough, except for 1975:IQ, which ended after 20 quarters.  
SOURCE: U.S. Department of Labor, Bureau of Labor Statistics.

**FIGURE 2 PRODUCTIVITY, COMPENSATION, AND UNIT LABOR COSTS—MANUFACTURING**  
(Average annual rates of change)



NOTE: Dates represent business-cycle trough for each expansion. Data are calculated 22 quarters after trough, except for 1975:IQ, which ended after 20 quarters.  
SOURCE: U.S. Department of Labor, Bureau of Labor Statistics.

industries. In terms of labor compensation and unit labor costs, durable-goods industries have performed better than in any previous expansion. Productivity growth in the durable-goods sector has revived well above its trend growth, while productivity in nondurable-goods industries has lagged its trend growth since 1984.

**■ International Comparisons**  
From 1973 to 1979, manufacturing productivity growth in most of the

highly industrialized nations, including Japan, West Germany, and the United States, slowed relative to rates in the 1960s and early 1970s. In fact, productivity growth in the United States, Japan, and the United Kingdom during the late 1970s fell to about half the pace of the previous decade.

Industrialized nations have had mixed results in improving their manufacturing productivity during the

1980s (see table 1). Only the United States, Italy, Sweden, and the United Kingdom have achieved significant productivity gains that exceeded their rates during most of the 1970s. Furthermore, only the United States and the United Kingdom have raised productivity growth enough to surpass pre-1973 trend rates.

Although manufacturing price competitiveness is influenced by several factors, unit labor costs are one of the most important. The price competitiveness of U.S. products relative to foreign products will tend to improve if unit labor costs rise abroad more than in the United States.

In the current expansion, U.S. manufacturing has made significant improvement in unit labor costs relative to its major trading partners. From 1982 to 1987, U.S. unit labor costs fell at an average annual rate of 1.0 percent, compared to a 1.1 percent rise for a trade-weighted average of 11 foreign industrial countries.<sup>3</sup> During this period, the United States and Japan were the only countries (for which data are complete) within the group to register a decline in unit labor costs.

The scenario is very similar for 1987: U.S. unit labor costs fell 2.0 percent compared to the trade-weighted average. This change in relative costs consists of relative changes in both productivity and labor compensation. A less than 0.1 percent increase in the trade-weighted index of foreign productivity compared to U.S. productivity was overwhelmed by a 2.0 percent decline in U.S. labor compensation relative to a trade-weighted index of foreign labor costs.

Except for Japan, the United States held down unit labor costs in 1987 more than any other nation. However, our cost competitiveness (in national currencies) relative to the Japanese continued to deteriorate. A 1.3 percent rise in U.S. unit labor costs in comparison to the Japanese resulted from a 0.8 percent relative gain in Japanese productivity and from a slight relative increase in U.S. labor compensation.

**TABLE 1 MANUFACTURING PRODUCTIVITY, COMPENSATION, AND UNIT LABOR COSTS**  
(Average annual rates of change)

	Productivity			Labor Compensation (U.S. dollar basis)		
	1973-87	1982-87	1987	1973-87	1982-87	1987
United States	2.5	4.5	3.3	7.4	3.5	2.1
Canada	2.1	4.3	1.7	7.2	3.3	9.5
Japan	5.3	4.8	4.1	12.9	15.2	18.1
France	3.9	3.0	3.7	10.5	9.2	19.1
West Germany	3.3	3.3	1.3	10.2	11.4	25.6
United Kingdom	3.2	5.5	6.9	10.8	6.0	20.9
Weighted average, 11 foreign countries	3.8	4.3	3.4	10.4	9.6	18.3
	Unit Labor Costs (national currency basis)			Unit Labor Costs (U.S. dollar basis)		
	1973-87	1982-87	1987	1973-87	1982-87	1987
United States	4.8	-1.0	-1.2	4.8	-1.0	-1.2
Canada	7.1	0.5	2.7	5.0	-1.0	7.7
Japan	2.6	-1.4	-2.5	7.3	10.0	13.5
France	8.7	4.2	-0.2	6.4	6.0	14.9
West Germany	3.8	1.5	2.7	6.7	7.8	23.9
United Kingdom	10.5	1.7	1.1	7.4	0.5	13.0
Weighted average, 11 foreign countries	5.0	1.1	0.8	6.4	5.1	14.4

NOTE: The 11 foreign countries are Belgium, Canada, Denmark, France, Italy, Japan, the Netherlands, Norway, Sweden, the United Kingdom, and West Germany.  
SOURCE: U.S. Department of Labor, Bureau of Labor Statistics.

In addition to manufacturing costs, exchange-rate movements can affect price competitiveness in world markets. From mid-1980 until early 1985, the U.S. dollar rose strongly versus European currencies and to a lesser extent against the Canadian dollar and the Japanese yen. During that span, U.S. unit labor costs (on a national currency basis) rose much less than all but two of the countries in the trade-weighted index. After adjustment for changes in exchange rates, though, U.S. unit labor costs increased the most.

The exchange-rate movements that worsened the already deteriorating U.S. competitiveness from 1979 to 1985 have reversed direction since then. The Japanese yen and most European currencies appreciated relative to the dollar from 1985 through 1987. In terms of U.S. dollars, U.S. manufacturing unit labor costs in that period fell 22.6 percent relative to the trade-weighted average. Specifically,

U.S. manufacturing unit labor costs declined 17.8 percent compared to Japanese costs.

Productivity and unit labor cost performance by U.S. manufacturers have made a major contribution toward increased competitiveness. U.S. unit labor costs have been nearly flat or have fallen every year since 1982. Within the trade-weighted index, only Japan has come close to matching the U.S. performance on a national-currency basis. Much of the swing in competitive advantage, though, was amplified by favorable exchange-rate movements.

This is not to suggest that the United States should depend on exchange-rate changes to achieve further improvement in cost competitiveness relative to our major trading partners. Dollar depreciation has adverse effects on domestic inflation because of higher import prices, whereas higher productivity growth helps to lower unit costs and prices, benefiting consumers and businesses.