response for all states to changes in the dollar, application of these elasticities to the current period of depreciation may be misleading. If Ohio is an expensive supplier due to high wages and low productivity then, in times of a rising dollar, Ohio manufacturing may decline faster in recessions and gaining it slower during expansions. Traded industries are particularly sluggish, perhaps due to the high wages and low productivity that make Ohio firms less competitive than corresponding national firms.

Conclusion
Ohio’s mix of industries suggest that the state is slightly more responsive to exchange-rate fluctuations than the U.S. average, assuming that Ohio is equally competitive with the typical U.S. producer. We have seen that during the past decade employment in Ohio has been weaker than in the U.S. and that the weakness is most pronounced among traded industries. This may be due to low productivity and to high wage rates in Ohio. Since large changes in the dollar should eventually stimulate output and employment among the nation’s traded industries, Ohio’s uncompetitiveness may prevent the state from fully enjoying the benefits of dollar depreciation.

All this suggests to industrialists and state officials that benefits of dollar depreciation is filtered through the competition in the U.S. market. Since Ohio manufacturing firms appear to have a competitive disadvantage, one should not expect Ohio to benefit fully from the declining dollar.

A sharp drop in the value of the dollar since February 1985 has created hopes that there will be an increase in net exports that will fuel economic gains both in Ohio and the nation. The decline in the dollar has come at a time of sluggish growth in the national economy, which entered in a period of recovery after November 1982. This period featured record employment increases in the U.S. between 1983 and mid-1984. Ohio’s growth throughout the recovery, however, has been below the national average, leaving industries in the state particularly anxious for an economic stimulant. Many hope that the decline in the dollar may be that stimulant.

However, are the rosy expectations produced by the dollar’s decline warranted for Ohio and its major producers? In this Economic Commentary, we examine this question and find that both Ohio and U.S. producers of manufactured goods are, in general, only moderately sensitive to exchange-rate fluctuations. The responsiveness of individual states to the dollar’s decline, however, will vary due to the mix of industries prominent in each area. Ohio’s largest manufacturing employers are heavily involved in international trade and therefore, are generally more sensitive to dollar fluctuations than the average U.S. firm. Ohio’s disabilities that the appreciation of the dollar may have a factor depressing growth earlier, and that the recent drop in the exchange rate could encourage future gains among the state’s large manufacturers.

However, further examination of Ohio’s competitiveness suggests that the state may not be in a position to fully benefit from the falling exchange rate. High wages and low productivity make Ohio firms less likely to benefit from the recent depreciation of the dollar than firms elsewhere in the nation.

The Ohio Economic Climate
While the United States has made rapid employment increases since hitting a low point in 1982, Ohio has lagged behind, making more moderate gains. Manufacturing and nonmanufacturing employment increases in Ohio have primarily offset large declines that occurred between 1980 and 1982, and have left the state with a smaller manufacturing workforce. For example, in 1986 Ohio’s manufacturing employment was down 15 percent below its 1980 high, while United States manufacturing employment has fallen by only half that amount in the same period.

The decline in Ohio manufacturing employment is partly due to the state’s large concentration of durable goods manufacturers, including several industries which have faced serious economic difficulties throughout the nation in recent years. In 1983, 50 percent of Ohio manufacturing employment was concentrated in only four sections—primary and fabricated metals, transportation equipment, and nonelectrical machinery. Weaknesses in these industries have been a primary factor restricting growth in Ohio. For example, Ohio’s steel and primary metals employment is currently only half of its 1973 level.

The views stated herein are those of the authors and not necessarily those of the Federal Reserve Bank of Cleveland or the Board of Governors of the Federal Reserve System.

1. Non-electrical machinery includes the manufacture of metalworking, farm, and industrial machinery.
The causes of the decline are complex and beyond the scope of this paper. One possible factor to be considered, however, is substantial foreign competition, both in the import and export market. Several industries, particularly transportation and steel, have often been cited as being hit by foreign competition.

Another factor contributing to the state's decline in manufacturing employment is that Ohio is among the top three exporting states, based on the value of shipments of manufactured products. Ohio's manufacturing workers are also major exporters. While, on the average, U.S. industries exported 11.3 percent of their total shipments in 1983, Ohio's four largest employing industries exported between 11.6 percent and 20.2 percent of their manufactured products. In addition, employers in smaller industries are also large exporters. Ohio's instrument and chemical industries, for example, exported nearly 18 percent of their total exports in 1983.2 When exports dropped due to high exchange rates, manufacturing employment also dropped.

In sum, the economy has been knocked off balance in the dollar region. A small U.S. dollar's increase in manufacturing growth, such as cyclical changes, relative price changes, and the level of maturity of an industry. The estimates from the CBO study suggested that a 1 percent increase (decrease) in the dollar exchange rate would lead to an increase (decrease) in U.S. manufacturing output in the range of 0.08 percent to 0.09 percent decrease (increase) in U.S. manufacturing output per dollar.3 An increase in the dollar relative to the yen would, therefore, lead to a decline in total manufacturing output.

The Congressional Budget Office estimated the elasticity of U.S. manufactured industries with respect to the real dollar exchange rate for the 1972 to 1985 period.4 This study isolated the effect of shifts in the dollar from factors that influence manufacturing growth, such as cyclical, relative price, and other factors, including the level of maturity of an industry. The estimates from the CBO study suggested that a 1 percent increase (decrease) in the dollar exchange rate would lead to a decrease (increase) in total manufacturing output in the range of 0.08 percent to 0.09 percent decrease (increase) in U.S. manufacturing output per dollar.3 An increase in the dollar relative to the yen would, therefore, lead to a decline in total manufacturing output.


differential in the dollar exchange rate led to an 0.08 percentage point declines in manufacturing output.
Import and Export Sensitivity

The dollar fell nearly 30 percent in the year following February 1985, and has continued to generate widespread concern over its two trade-related effects on domestic industries. U.S. firms lower their foreign-currency-denominated prices, stimulating an increase in the quantity of goods demanded abroad. In addition, foreign firms raise their prices in U.S. currency, raising import prices. The price increase will lead to a drop in the quantity of imports demanded, allowing domestic suppliers to replace foreign producers. The impact of the two changes coincide, stimulating increases in domestic production. But how large an increase can be expected? To address this issue, it is necessary to consider two different approaches, one based on a macroeconomic model of Data Resources Inc. (DRI) and another on a study of the individual U.S. industries. In the DRI model, a 1 percent decline in the dollar's value would stimulate an increase in total manufacturing output of 0.9 percent. The Congressional Budget Office estimated that the U.S. manufacturing industries would experience a 1.8 percent increase in shipments in 1983. When exports rose 0.7 percent and imports fell 0.02 percent per quarter, on average, the data suggested that the DRI model would lead to a 0.06 percent increase in manufacturing output.

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Another factor contributing to the state's decline in manufacturing employment is that Ohio is among the top three exporting states, based on the value of shipments of manufactured products. Ohio's manufacturing industries are also major exporters. While, on the other hand, U.S. industries exported 11.3 percent of their total shipments in 1983, Ohio's four largest employing industries exported between 11.6 percent and 20.2 percent of their manufacturing output. In addition, employers in smaller industries are also large exporters. Ohio's instrument and chemicals industries, for example, both exported more than 50 percent of their shipments in 1983. Although the dollar fell, Ohio's major employers shifted their shipments to foreign markets. In addition, employers in the chemicals industry increased their shipments in smaller industries as well. Ohio's chemical companies also exported more than 15 percent of their shipments in 1983. When exporters receive foreign payments, the currency-denominated prices of the same products that are manufactured domestically can be lower.

Ohio's Responsiveness to the Dollar Exchange

The CBO study determined the national response of different manufacturing sectors to exchange rate movements. The response of individual state economies to fluctuations of the dollar would differ due to the variety of industries in the region. Ohio's industry mix is considerably different from the U.S. average, and the sensitivity of Ohio's manufacturers to the foreign-exchange value of the dollar should be determined by the type of industry.

The state's sensitivity to the dollar's exchange rate can be estimated by examining Ohio's competitiveness in specific industries. These elasticities are presented in the CBO study. According to the study, the industry sensitivity of the real, or effective, exchange rate of the dollar to the dollar in the foreign exchange market is ranked as high, medium, or low. Ohio's largest employers—primary metals, fabricated metal products, and nonelectrical machinery—were predominately in high or medium exchange range. The rank of elasticities derived by the CBO study appear to be consistent with the elasticity ranking from the DRI model.

To estimate Ohio manufacturers' responsiveness to exchange rate movements, the CBO study used a method that is similar to the DRI model's estimation of the price of imported goods. In this section, Ohio competitiveness is analyzed in relation to the dollar exchange movement. Ohio production workers' hourly earnings, as a share of national shipments, were above the national average in both 1977 and 1982. (See table 2.) Although the Census provides data for only those two years, another source of data confirms that Ohio manufacturing wages have been higher than the U.S. average, and, in 1979, was 5.8 percent higher than the U.S. average. In 1984, an Ohio worker earned 8.3 percent higher than a similar worker in the U.S. The impact of cyclical changes was only slightly larger. The dollar's depreciation could make it easier for foreigners to accept the devaluation of their currencies, leaving foreign suppliers with additional demand for their products. If the dollar were to continue to decline, the value of shipments of manufactured products would increase. In this section, the causes of the rise in shipments are explored.
In the economic expansion of 1976-1978 the United States economy and the Ohio economy both increased their manufacturing employment. Ohio's performance was considerably weaker in the traded industries, however, as existing firms grew only 2 percent compared to 6.5 percent of the comparable U.S. growth. The depreciation of the dollar between 1976 and 1979 should have contributed more to Ohio's growth than to that of the U.S. according to industry elasticities. Therefore, the lackluster performance in Ohio indicates a less-competitive position among the traded industries.

Similarly, during the economic decline of 1980-1982, employment in Ohio's existing trading firms declined 4 percent, while their U.S. counterpart grew over 2 percent. Since this period coincides with the dollar appreciation, it is not clear what portion of Ohio's relatively poor performance in trading industries' employment is due to the recession and what portion is due to the dollar appreciation. Similar behavior by the nontraded sector, however, is observed, but the difference between Ohio and the nation as a whole is smaller. One plausible conclusion is that Ohio's traded industries are more sensitive to dollar appreciation than are traded industries in the country as a whole.

A sharp drop in the value of the dollar since February 1985 has created hopes that there will be an increase in net exports that will fuel economic gains both in Ohio and the nation. The decline in the dollar has come at a time of sluggish growth in the national economy, which coincides with a period of recovery since November 1982. This period featured record employment increases in the U.S. between 1983 and mid-1984. Ohio's growth throughout the recovery, however, has been below the national average, leaving industries in the state particularly anxious for an economic stimulant. Many hope that the decline in the dollar may be that stimulant.

However, are the rosy expectations produced by the dollar's decline warranted for Ohio and its major producers? In this Economic Commentary, we examine this question and find that both Ohio and U.S. producers of manufactured goods are, in general, only moderately sensitive to exchange-rate fluctuations. The responsiveness of individual states to the dollar's decline, however, will vary due to the mix of industries prominent in each area. Ohio's largest manufacturing employers are heavily involved in international trade and, therefore, are generally more sensitive to dollar fluctuations than the average U.S. manufacturer. Ohio's states that the appreciation of the dollar may have been a factor depressing growth earlier, and that the recent drop in the exchange rate could encourage future gains among the state's large manufacturers.

However, further examination of Ohio's competitiveness suggests that the state may not be in a position to fully benefit from the falling exchange rate. High wages and low productivity make Ohio firms less likely to benefit from the recent depreciation of the dollar than firms elsewhere in the nation.

ECONOMIC COMMENTARY

The Ohio Economic Climate

While the United States has made rapid employment increases since hitting a low point in 1982, Ohio has lagged behind, making more moderate gains. Manufacturing and nonmanufacturing employment increases in Ohio have primarily offset large declines that occurred between 1980 and 1982, and have left the state with virtually the same number of people employed now as in 1980. Over the same period, U.S. employment has risen more than 9 percent.

In large part, the slow growth in Ohio's employment is due to sharp declines in manufacturing employment. As chart 1 shows, while manufacturing employment in both Ohio and the U.S. has been falling, Ohio employment has fallen faster than the national average since 1979. In the periods in which U.S. manufacturing employment has increased, Ohio's has risen more slowly. The Ohio manufacturing employment rate remains 15 percent below its 1980 high, while United States manufacturing employment has fallen by only half that amount in the same period.

The decline in Ohio manufacturing employment is partly due to the state's industry mix. Ohio continues to have a large concentration of durable goods manufacturers, including several industries which have faced serious economic difficulties throughout the nation in recent years. In 1983, 50 percent of Ohio manufacturing employment was concentrated in only four sectors—automobiles and metal products, transportation equipment, and nonelectronic machinery. Weaknesses in these industries have been a primary factor restricting growth in Ohio. For example, Ohio's steel and primary metals employment is currently only half of its 1973 level.