ECONOMIC COMMENTARY

Will the Dollar’s Decline Help Ohio Manufacturers?

by Amy Durrell, Philip Israilevich, and K.J. Kowalewski

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 began in 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, although industries in the state are peculiarly anxious for an economic stimulant. Many hope that the decline in the dollar may be that stimulant.

However, are the rosy expectations 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. This 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.

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 still 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.

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 level 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. Thus, Ohio’s manufacturing employment 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 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—auto, primary metal 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 metal shipments is currently only half of its 1973 level.

Federal Reserve Bank of Cleveland August 15, 1986

Address Correction Requested: Please send corrected mailing label to the Federal Reserve Bank of Cleveland, Amy Durrell is a former research assistant at the Bank. The views stated herein are those of the authors and not necessarily those of the Federal Reserve Bank of Cleveland or of the Board of Governors of the Federal Reserve System.
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 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 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 chemicals industries, for example, both exporters.

In sum, the economy has been least affected in the dollar's long-term decline as a whole in recent years because much of the benefit of the national recovery has been absorbed by the dollar. However, in the mid-1985, while the dollar rose almost 20 percent, imports rose less than 10 percent. Little of this benefit of dollar appreciation was passed on to domestic consumers, leaving foreign suppliers with wide profit margins. Such large margins could make it easier for foreigners to absorb the costs of decline in the dollar, thus preventing all domestic producers from benefiting as much from the depreciation as the CBO study suggests.


classification as very sharp and short. As a result, the response of foreign suppliers to the dollar's depreciation could make the historically-based elasticity estimate misleading if the dollar's decline effects prices for a long time. If foreigners raise the dollar's price of their products that are imported by U.S. industry, then the real cost of the fall in the dollar, they must accept a decrease in the quantity of goods sold. Alternatively, if foreigners are not willing to accept the same dollar-denominated price and reduced profit margins to maintain their market share. If the latter path is chosen, U.S. production will be less elastic than other countries that benefit the CBO study appear to be consistent with the elasticity predicted in the DRI model.

To estimate Ohio manufacturers' responsiveness to exchange-rate movements, the CBO study used the DRI's elasticity estimates. Each industry's elasticity was assumed to approximate the elasticity of the corresponding category in the nation as a whole.

Estimates based on industry elasticities calculated by the CBO:

Table 1: Elasticity of Industrial Production with Respect to Change in the Trade-Weighted Dollar

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<th>Year</th>
<th>U.S.</th>
<th>Ohio</th>
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<td>$7.32</td>
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<td>1982</td>
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SOURCE: Congressional Budget Office.

Wages represent average hourly wages for production workers. Productivity is shipments per hour. Productivity is shipments per hour.

Table 2: Wages and Productivity

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SOURCE: U.S. Census of Manufactures.

Import and Export Sensitivity of Manufacturing Industries

The dollar fell nearly 30 percent in the year following February 1985, and has continued to decline in the latter half of 1985. In theory, there are 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 suppliers of manufacturing industries raise 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 could, stimulating increases in domestic production. But how large an increase can be expected? To address this issue, we consider two different approaches. First, based on a macroeconomic model of Data Resources Inc. (DRI) and Ohio's own model, an industry analysis of the Congressional Budget Office (CBO). According to the simulation with the DRI model, a 1 percent decline in the dollar would lead to a 0.06 percent increase in total manufacturing output.

The Congressional Budget Office estimated the elasticity of U.S. manufactured goods industries with respect to the real dollar exchange rate for the 1973 to 1985 period. This study isolated the effect of changes in the dollar from factors such as cyclical changes in industrial production, 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 led to a 0.08 percent to 0.09 percent decrease (increase) in U.S. manufacturing output. Using a smaller proportion of Ohio's economy to a change in the dollar is similar to the DRI simulation for the U.S. as a whole. However, figures represent only a single change, when considered over a period such as the year following February 1985, the effect is more substantial.

The CBO study determined the national response of different manufacturing sectors to exchange rate movements. The impact of the two changes on domestic producers to replace foreign producers. The impact of the two changes will lead to a drop in the quantity of goods sold. Alternatively, if foreigners are not willing to accept the same dollar-denominated price and reduced profit margins to maintain their market share. If the latter path is chosen, U.S. production will be less elastic than other countries that benefit the CBO study appear to be consistent with the elasticity predicted in the DRI model.

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Exchange Rate Movements and Relative Competitiveness of Ohio Manufacturers

The dollar's depreciation could stimulate both higher production levels and increases in employment, but the gains may not be distributed evenly across regions. Relative wages and productivity may make a region more or less competitive than other areas in the U.S. that produce comparable products. In this section, Ohio competitiveness is analyzed in light of the dollar exchange movement.

Ohio production workers' hourly wages were calculated using the price indexes, total manufacturing, and units of output. These indexes were calculated by the CBO on the basis of the difference between the national average and the Ohio average, the 1982 difference.

The effect of wages and productivity on periods of dollar depreciation and appreciation can be better determined by dividing industries into two categories. Those industries with little or no exposure to international trade are called "traded" industries. Those industries with import or export content of their value added are called "nontraded" industries. The noncompetitive Ohio's traded industries would make Ohio less competitive. The nontraded industries would show a gain in the benefits of a lower dollar, and among the first to bear the costs of depreciation. This condition clearly threatens Ohio's position as a major exporting state.

Because the elasticities estimated by the CBO study represent an average manufacturing sector in 1973 was 7.3 percent higher than in the U.S. as a whole and, in 1979, was 5.8 percent higher. In late 1983 and early 1984, an Ohio worker earned 8.3 percent higher pay than a similar worker in the U.S. In addition to Ohio's above-average wages, the CBO study based on industry elasticities.

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