

# FRBSF WEEKLY LETTER

August 26, 1988

## The Dollar and Manufacturing Output

Analysts have welcomed the dollar's depreciation in the foreign exchange market over the past three years as a source of long-overdue relief for U.S. firms competing with foreign producers in domestic and world markets. Indeed, recent U.S. trade data show that U.S. export growth in volume terms has been surging during the past year and U.S. import growth has been declining sharply. In addition to its beneficial effects on the trade balance, some policymakers and analysts also are hoping that the dollar's fall will breathe new life into America's industrial sector.

There is a perception that the sharp appreciation in the value of the dollar between 1982 and 1985 played a major role in "deindustrializing" the U.S. economy. Many analysts argue that the appreciation of the dollar caused economic growth to be "two-tiered." The manufacturing and other industries that faced stiff international competition experienced slow growth or even decline, but the sectors of the economy that were less sensitive to changes in the value of the dollar, such as services, construction, and transport, experienced stronger growth. It is now hoped that the dollar depreciation over the past three years will restore the fortunes of the sectors that were hurt by its appreciation. This *Letter* examines recent and longer term trends in U.S. manufacturing output and discusses the evidence concerning the link between exchange rate changes and sectoral output levels.

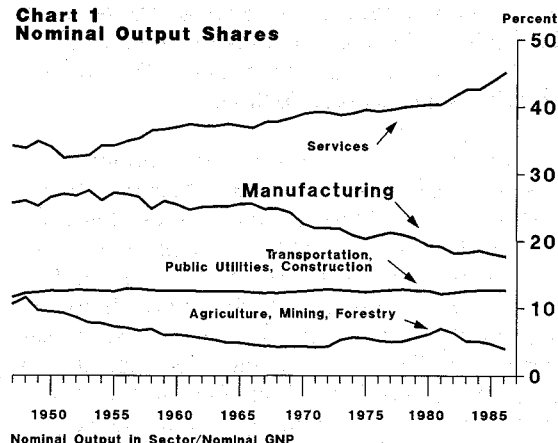
### Sectoral output trends

The decline of U.S. exports and surge in imports during the first half of the 1980s dramatically illustrates the loss of U.S. international competitiveness earlier in this decade. The total volume of U.S. exports fell more than 15 percent during the six years from 1980 to 1986, while import volume grew over 60 percent. The export volume of manufactures remained flat from 1980 to 1984 and rose by only four percent between 1984 and 1986. Imports of manufactures rose by 125 percent over the 1980 to 1986 period. The result, of course, has been unprecedentedly large U.S.

trade deficits that only recently have begun to subside.

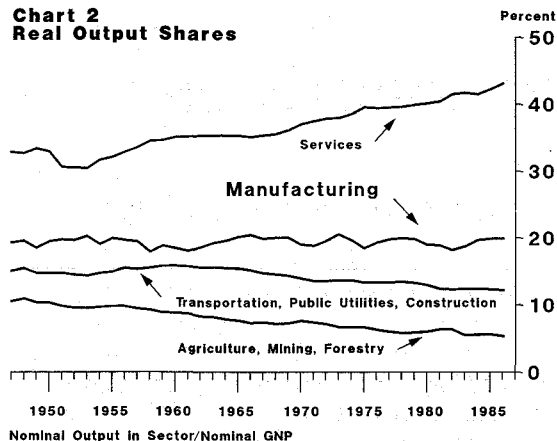
Some suggest that the dramatic decline in exports and expansion of imports intensified a longer term trend of "deindustrialization" of the U.S. economy. Beyond trade statistics, these analysts cite as evidence in support of this view data that indicate a declining share of manufactures in total GNP. In particular, they point to the secular decline in manufacturing's share of nominal output over the last thirty years and the concomitant rise in the share held by services, which include retail and wholesale trade, real estate, insurance, and financial services. (See Chart 1.) Except during the 1970s, moreover, the output of agriculture, mining, and forestry product industries also has fallen as a share of nominal GNP.

Chart 1  
Nominal Output Shares



These trends present an incomplete picture of the sectoral composition of output, however, because they combine real output and relative price effects. A decline in the nominal value of output in a given sector may result from either a fall in the real volume of output or from a decline in the relative price of that output. Chart 2 shows the output shares of each sector in real dollar terms (1982 base year).

**Chart 2**  
**Real Output Shares**



This chart presents a substantially different picture from that provided by the trends in nominal output shares. Although the upward trend in the real share of services in GNP clearly is evident, real manufactures has been remarkably stable at roughly 21 percent of GNP over the past thirty years through several business cycle swings. Moreover, no significant fall in the share of real manufactures has occurred since 1980. In contrast, the real output share of agriculture, mining, and forestry products has shown a marked secular decline. The share of transportation, public utilities, and construction in real GNP also has shown a small secular decline.

The discrepancy between manufacturing's nominal and real shares of output is due to a secular decline in the relative price of manufactures. Between 1947 and 1986 the relative price of manufactures declined by more than thirty percent. Relative gains in manufacturing productivity over the last 30 years account for this decline in relative prices. Thus, this evidence does not suggest a decline in the share of manufactures in real aggregate output, but rather a marked relative price decline over a three-decade-long period. (For more information, see the *Letter* by Brian Motley, "The Shift to Services," January 16, 1987.)

### Output levels and exchange rates

The stability in manufacturers' share of real output through the 1980s seems hard to reconcile with the decline in manufacturing exports following the appreciation of the dollar. Conceivably, real exchange rate movements and the level of manufacturing output are closely related since these two variables are both influenced by domestic and foreign economic conditions, pol-

icies, and disturbances. However, the way in which exchange rates and sectoral output are related at any point in time is determined by the nature of the underlying macroeconomic changes. Depending on the changes in these fundamental factors, an appreciation of the exchange rate may be associated with an expansion or a contraction of output in different sectors.

In fact, the observed relationship between exchange rates and sectoral output composition over time has varied considerably. Systematic investigation of real exchange rates and U.S. manufacturing output over the post-war period, holding oil price shifts and business cycle effects constant, shows that during some periods, declines in manufacturing output have been highly correlated with exchange rate appreciation, while at other times no significant link was identifiable. This suggests that although exchange rate movements have powerful effects on exports and imports, the effects on overall manufacturing and U.S. industry can be ambiguous.

Several examples should help to demonstrate how the relationship can vary. An independent increase in foreign demand for U.S.-produced manufactures would lead to a higher relative price of U.S. manufactures, expanded industrial production, and a real appreciation of the dollar. The appreciation would dampen, but not offset, the rise in exports that was stimulated by the increase in foreign demand. In this case, then, a real appreciation of the currency would be associated with an expansion of the manufacturing sector.

But such a positive correlation between exchange rates and manufacturing output is not the only possible relationship. Consider a U.S. fiscal expansion, which stimulates domestic demand for U.S. goods, and causes a real dollar appreciation which, in turn, weakens exports, including those of manufactures. Fiscal policies that stimulate non-manufactures, such as services, can exacerbate the decline in manufacturing output. In this case, the relationship between manufacturing output and a dollar appreciation is negative. On the other hand, fiscal policies that have the effect of shifting aggregate demand towards manufactures, will offset some of the decline associated with the currency appreciation and induce a resource shift towards the manufactur-

---

ing sector. Here, the relationship between output and exchange rates could range from mildly negative to mildly positive, depending on the extent to which the fiscal stimulus offsets the unfavorable movement in the exchange rate.

Recent U.S. experience reflects the effects of expansionary fiscal policies that have stimulated demand for manufactured goods. In the first half of the eighties, U.S. macroeconomic policy was marked by the largest peacetime fiscal expansion in the post-war period. A major component of the fiscal expansion was significant tax reductions, but equally important was a reorientation of federal government spending on goods and services away from non-defense towards defense. (Defense spending constituted 69 percent of total federal spending on goods and services in 1980 and 77 percent in 1984.) Moreover, within the category of defense expenditures, spending shifted towards hardware procurement. As a result, defense absorbed a larger percentage of total demand for U.S. durable goods manufactures, rising from seven percent in 1980 to almost 11 percent in 1984.

The combination of weak exports, stable manufacturing output shares, and dollar appreciation between 1982 and 1985 are the result of this policy mix, which provided overall aggregate fiscal stimulus and reoriented expenditures toward durable manufactures. The appreciation of the dollar hurt those industrial sectors most exposed to international competition. These industries experienced declining export shares. However, the adverse effects on the demand for manufacturing

output were offset by the stimulus to industrial sectors from rising domestic military expenditures.

### **Conclusions**

Rumors of the "death" of manufactures or the "deindustrialization" of America are greatly exaggerated. Indeed, the share of manufactures in real GNP has remained remarkably stable, at roughly 21 percent, over the past 30 years. The reason for the secular decline in manufactures' share of nominal GNP is that the relative price of manufactures has been falling over this period.

Although the appreciation of the dollar hurt exports of U.S. goods, including manufactures, there is little evidence to support the view that such appreciation fostered "deindustrialization." The expansion in fiscal policy that played a primary role in initiating the appreciation helped to offset the deleterious effects of the appreciation, particularly as government expenditures shifted toward military industrial procurement.

The flip side of the coin is that current and future improvements in the federal budget deficit associated with fiscal spending reductions and/or tax increases will reduce aggregate demand, including that for manufactures. But the resulting decline in the dollar likely will continue to offset a portion of this dampening effect by stimulating exports.

**Reuven Glick**  
Senior Economist

**Michael Hutchison**  
Assistant Professor  
University of California,  
Santa Cruz

Research Department  
Federal Reserve  
Bank of  
San Francisco

Alaska Arizona California Hawaii Idaho  
Nevada Oregon Utah Washington

BULK RATE MAIL  
U.S. POSTAGE  
PAID  
PERMIT NO. 752  
San Francisco, Calif.