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1 February 2004

Online at <https://mpra.ub.uni-muenchen.de/4351/>

MPRA Paper No. 4351, posted 03 Aug 2007 UTC

# BACKGROUND PAPER

February 2004, Number 42

## Manufacturing Employment, Productivity and the Business Cycle

By

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The U.S. manufacturing sector has become the poster child of the jobless recovery, portrayed by columnists and politicians as the latest victim of the Bubble Economy. Manufacturing employment has fallen 2.6 million since the last recession began in March 2001, accounting for the lion's share of the 2.7 million decline in payroll employment from March 2001 to its trough in August 2003. The overall decline in manufacturing employment has actually been even larger, 3.0 million, because it began in July 2000, eight months before the recession began.

On Labor Day 2003 President Bush called for the creation of a new position of Assistant Secretary for Manufacturing in the Department of Commerce. The National Association of Manufacturers has called for a new strategy for renewal of U.S. manufacturing, referring to the sector as being in "jeopardy." Congress is even considering legislation, such as the American Jobs Creation Act (H.R. 2896), that would lower the corporate income tax rate for the nation's manufacturing sector.

Treasury Secretary Snow has succeeded in

reversing long-standing U.S. exchange rate policy, calling for "flexibility" of Chinese and Japanese exchange rates. Notice that the focus is on two countries where he believes that flexibility would lead to a lower value of the dollar (and not, for example, Hong Kong, where it would not). The new U.S. policy has succeeded in pushing down the dollar sharply against the currencies of nearly all our major trading partners.

The administration has certainly been responsive to manufacturers' concerns, notably by imposing steel tariffs despite the evidence that they hurt U.S. manufacturing and employment overall. Duesterberg (2003) provides a long list of factors that have contributed to "industrial decline," including Japanese and Chinese currency manipulation and relatively high taxes.

The political and economic policy situation is becoming critical. In the 1980s, the "deindustrialization" of America and the hollowing out of the American corporation supposedly threatened to turn us into a nation of hamburger flippers and promised a Day of Reckoning.<sup>1</sup> The irony was that manufacturing and the economy as a whole

<sup>1</sup> The view that the U.S. was losing its competitive advantage and that the manufacturing sector was in permanent decline or disappearing was popular in the 1980s. See Marris (1985), Cline (1986) and Peterson (1987) for some earlier examples. NAM (2003) and Duesterberg (2003) provide updated reincarnations of these earlier claims. Strauss (2003) points out many of the recent claims' shortcomings.

were enjoying a surge of policy-induced economic growth that had not been seen for two decades and that was restoring some faith in the continuing promise of the American Dream. Nevertheless, the 1990–91 recession and subsequent jobless recovery led to a drumbeat for “America First” and calls to “Rebuild America.” Along the way there were numerous policy errors and setbacks to the private economy, but the economy nevertheless survived. There were many changes, including a change of parties in the White House, and major tax increases, but little came of threats to the corporate structure or from threats to nationalize the nation’s infrastructure or its medical sector.

Pundits are always looking for a new whipping boy to symbolize U.S. economic decline. In the mid-1980s it was the “deindustrialization” of America reflected in the massive current account deficit. When the deficit disappeared in the early 1990s, attention shifted to the recession and its subsequent “jobless recovery.” But that too was sent packing in 1992 as the economic expansion accelerated.

But this time things could get nastier. A large current account deficit is back and has remained in the face of another jobless recovery, i.e., an economic expansion without a recovery in employment. And the decline in overall employment is heavily concentrated in manufacturing sector job losses. A more patient and optimistic perspective could be offered by reflecting on the euphoria of the new economy with its rapid productivity growth, advances that appear to be continuing. But instead, memories of recent boom times have apparently simply reinforced concerns about the demise of U.S. manufacturing. As a result, the rhetoric of industrial decline and political intervention to protect industry and jobs is growing.

Has there been a structural shift in the U.S. economy that has doomed the manufacturing sector? Are government policies necessary for renewal? This paper attempts to provide some perspective on the decline in manufacturing employment and whether it represents a fundamental structural shift that requires public policy assistance to halt and/or reverse. It also assesses some potential policy efforts to aid the sector and the outlook for manufacturing employment.

## **I. How Severe Are the Losses in Manufacturing Employment?**

A loss of 2.8 million jobs in manufacturing that continues for 39 months is huge by any standard. For example, it is a loss of 16 percent of such employment since its peak. But does it represent a fundamental break with past trends and presage the death of the sector?

Chart 1 shows manufacturing employment in millions of jobs and as a percentage of total non-farm payroll employment since 1947. Three points stand out.

First, the recent decline in manufacturing employment, while relatively large, should be considered against the backdrop of secular decline since the late 1970s and little growth throughout the post-World War II period. This sector has not offered expansive employment opportunities since the late 1940s except for a brief growth spurt in the 1960s.

Secondly, as a share of overall payroll employment, manufacturing employment has been declining throughout the period since 1947, falling from almost one-third of the labor force in 1947 to about 11.2 percent at the end of 2002. So this is not a sector where expansive employment gains can be expected under the best of conditions.

The third point to note is that manufacturing is cyclical. In fact the swings in employment visible in both measures in Chart 1 are closely related to the business cycle. The latest case is no exception, as much of the decline in manufacturing employment, 1.1 million jobs, occurred in the eight months of recession from the business cycle peak in March 2001 to the cycle trough in November 2001.

But the recession ended two years ago and manufacturing employment has continued to decline. Is this a break from the past? Actually it is not. While the number of jobs lost and the length of the period of decline are unusual, the pattern is not unprecedented.

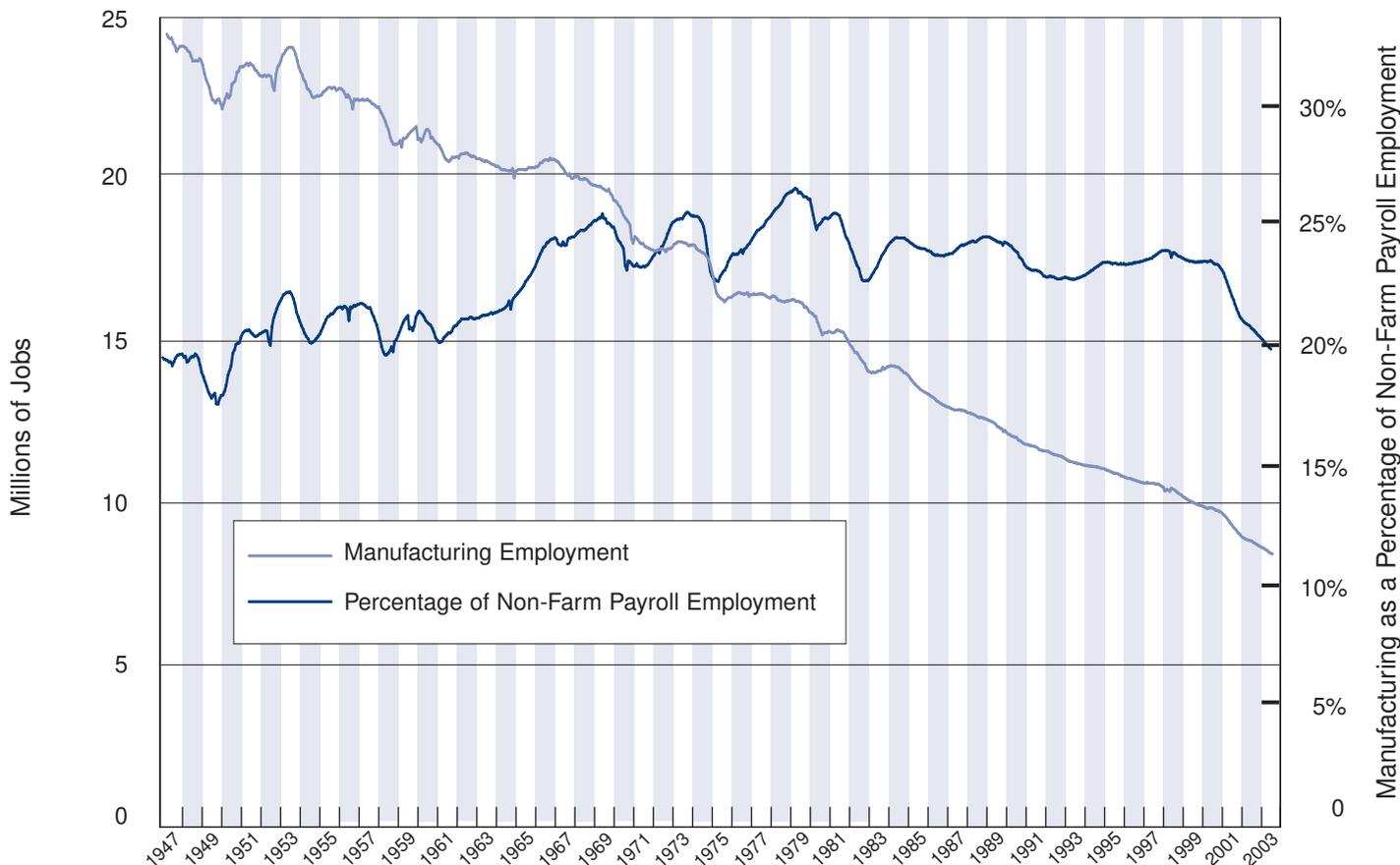
Table 1 indicates the peaks and troughs of manufacturing employment before, during and after the past ten recessions. It is quite common for manufacturing employment to reach a peak and begin falling before the actual onset of its associated recession. In only two of the nine

previous cases did this not occur. It is also not unusual for manufacturing employment to continue falling after a recession was over. This occurred in two-thirds of the previous recessions. Clearly the latest experience is more extreme and only one recession, the previous one in 1990-91, appears to rival the length of time that manufacturing employment declined before and after the recession. In that recession, however, manufacturing employment fell for 16 months prior to the onset of recession, twice as long as in the recent case. Manufacturing employment also declined for a long time following the previous recession, falling for 19 months after the recession ended, not much less than the current decline that reached 26 months through January 2004. Closer inspection of the previous two recessions reveals similar developments. During the year between the 1980 and 1981-82 recessions, manufacturing employment only partially recovered, not

reaching its June 1979 peak before the next recession began. When the two periods are combined, as in the last row of Table 1, the 42 months of decline were the same as in the latest case (at least through January 2004).

The table also shows the length of decline of manufacturing employment from its own peak to its own trough surrounding each recession. The latest case, at 42 months so far, rivals the last when such employment fell for 43 months and the previous combined case of 42 months, but exceeds the average of the previous postwar recessions. To provide some perspective on the size of recent cyclical decline in employment, the last two columns in the table show the size of the peak-to-trough decline in payroll employment and in manufacturing employment around each recession. Note that the terms peak and trough again refer to those for the respective employment measure, not the business cycle dates.

*Chart 1  
Manufacturing Has Not Been a Growth Engine for Employment in over Fifty Years  
Calendar Years 1947-2003*



*Table 1*  
*Manufacturing Employment Cycles Are Lengthening*

Business Cycle Contractions		Additional Months of Decline in Manufacturing Employment		Total Months of Manufacturing Employment Decline	Percentage Decline in Payroll Employment	Percentage Decline in Manufacturing Employment
Peak to Trough	Number of Months	Months Before the Business Cycle Peak	Months After the Business Cycle Trough			
11/48 – 10/49	11	2	1	14	– 5.2%	– 10.8%
7/53 – 5/54	10	0	3	13	– 3.4	– 9.7
8/57 – 4/58	8	6	2	16	– 4.4	– 9.9
4/60 – 2/61	10	2	0	12	– 2.3	– 6.1
12/69 – 11/70	11	4	0	15	– 1.2	– 9.3
11/73 – 3/75	16	– 1	4	19	– 2.8%	– 11.4%
1/80 – 7/80	6	7	0	13	– 1.3	– 6.5
7/81 – 11/82	16	1	1	18	– 3.3	– 10.9
7/90 – 3/91	8	16	19	43	– 1.5	– 7.3
3/01 – 11/01	8	8	26	42	– 2.1	– 17.5
Average 1948 – 1982	11	2.6	1.4	15	– 3.0%	– 9.3%
Combined 1/80 – 11/82	34	7	1	42	– 2.9	– 14.6

The recent recession experience was relatively mild judged by its length (eight months versus an average of 11 for earlier recessions) and by the size of the associated decline in payroll employment. The latter was slightly worse than that in the 1990–91 recession, but only a little more than half that in the eight previous recessions.

The decline in manufacturing employment in the latest recession was almost twice as large as earlier, however. It also appears that the cyclical decline in manufacturing employment has become relatively larger compared with the decline in overall payroll employment. In the first eight recessions in the table, the decline in manufacturing was a little less than three times as large as for payroll employment in total, but in each of the last two recessions this multiple has exceeded five times as large. Chart 1 and Table 1 show that there was a large decline in manufacturing employment around the 1990–91 recession and that an earlier decline associated with the 1980 and 1981–82 recession is comparable, though it was interrupted by a temporary cyclical recovery. In particular, the decline in the 42 months ending in January 2004 was 3.0 million jobs, or 17.5

percent. In the earlier comparable period, June 1979 to December 1982, the decline in manufacturing employment was 2.9 million jobs or 14.6 percent.<sup>2</sup> One would have to go back to World War II to find a comparable decline. In the 27 months ending in February 1946 manufacturing employment fell 3.0 million or 20.4 percent. While not unprecedented, and certainly largely related to a deteriorating relationship of manufacturing employment to the business cycle, the recent decline does stand out.

The principal reason for the decline in manufacturing employment is unusually rapid productivity growth. This is explained below, but Table 2 shows that the productivity advances in the past two recessions far exceeded the average gain or any individual past gain. That is why both recessions were mild in terms of output losses, but not in terms of the decline in manufacturing employment. Indeed, in the 1990–91 case, manufacturing output had actually risen somewhat over the period. Even in the full 1979–82 period, shown in the last row, productivity rose during the downturn in manufacturing employment, something that had not occurred since the late-1940's recession.

<sup>2</sup> This period gave rise to the earlier deluge of claims that the manufacturing jobs and the sector itself were in permanent decline. On the earlier decline see Tatom (1986).

### Is the Decline Due to Measurement Error?

Before exploring the changing cyclical performance of manufacturing further, it is important to point out another potential explanation for some of the apparent heightened cyclical sensitivity, measurement error. At least for payroll employment, estimated in the same survey as manufacturing employment, there is a strong argument that employment loss measures are biased upward surrounding recessions. The reason is that in recessions and afterwards an unusually large number of new small companies are formed that are not picked up in the monthly survey. Thus employment in new small firms is not picked up in small firms until quite some time after a recession has ended.

For example, following the 1990–91 recession that ended in March 1991, payroll employment losses were substantially over-estimated and the period of decline was thought to be much longer than is now known to have been the case. Data revisions released in June 1992 put the estimated decline in payroll employment at 2.2 million jobs and showed that employment had declined for 18 months, falling from June 1990 until January 1992. These estimates remained in place for the next year and only later was the loss put at 1.6 million and the period of decline was found to have been half as long, ending in May 1991, shortly after the March recession end. Many analysts are expecting comparable revisions in the future. Will today's estimates of 2.8 million job losses eventually be cut by 20 percent and the length of the decline cut in half and moved back to May 2002?

### Measured Job Loss Is Not a Measure of the Nation's Unemployment

Another related issue is that payroll and manufacturing employment data do not reflect the extent of unemployment. These data measure jobs in the non-farm payroll sector. Thus they exclude farm employment and the large number of self-employed who are not on payrolls, including small business owners, newly created firms and consultants. But the inaccuracy of job loss figures is not due only to what they miss; they also double-count multiple jobholders whose employment is more cyclical than the employment of single job holders. Civilian employment, the estimated number of employed in the whole civilian economy adjusted for breaks in the series, is currently above its peak in January 2001, two months before the business cycle peak. Actually it fell for only 12 months, not the 29 months that payroll employment declined, with the decline ending two months after the business cycle trough. It has rebounded by 2.7 million people working over the past 24 months, not fallen as the payroll and manufacturing employment data suggests.

## **II. The New Economy and the Changing U.S. Business Cycle**

While the recent decline in manufacturing employment fits the secular and cyclical patterns of the past and is not unprecedented, the size and length of the recent decline is severe, rivaling the worst cyclical decline since

*Table 2*  
*Unusual Productivity Growth Explains the Large Cyclical Decline in Employment 1948–2001*

Business Cycle Peak–Cycle Trough	Percentage Decline in Manufacturing Employment	Percentage Decline in Manufacturing Output	Productivity Increase
11/48 – 10/49	– 10.8%	– 6.9%	+ 4.2%
7/53 – 5/54	– 9.7	– 9.8	– 0.1
8/57 – 4/58	– 9.9	– 10.9	– 1.1
4/60 – 2/61	– 6.1	– 9.2	– 3.3
12/69 – 11/70	– 9.3	– 10.0	– 0.8
11/73 – 3/75	– 11.4%	– 13.1%	– 1.9%
1/80 – 7/80	– 6.5	– 8.3	– 1.9
7/81 – 11/82	– 10.9	– 8.8	+ 2.4
7/80 – 3/91	– 7.3	+ 3.0	+ 11.1
3/01 – 11/01	– 16.0	– 4.6	+ 13.6
Average 1948 – 1982	– 9.3%	– 9.6%	– 0.3%
Combined 1/80 – 11/82	– 14.6	– 11.1	+ 4.1

(a) See Footnote 1  
Source: Tax Foundation

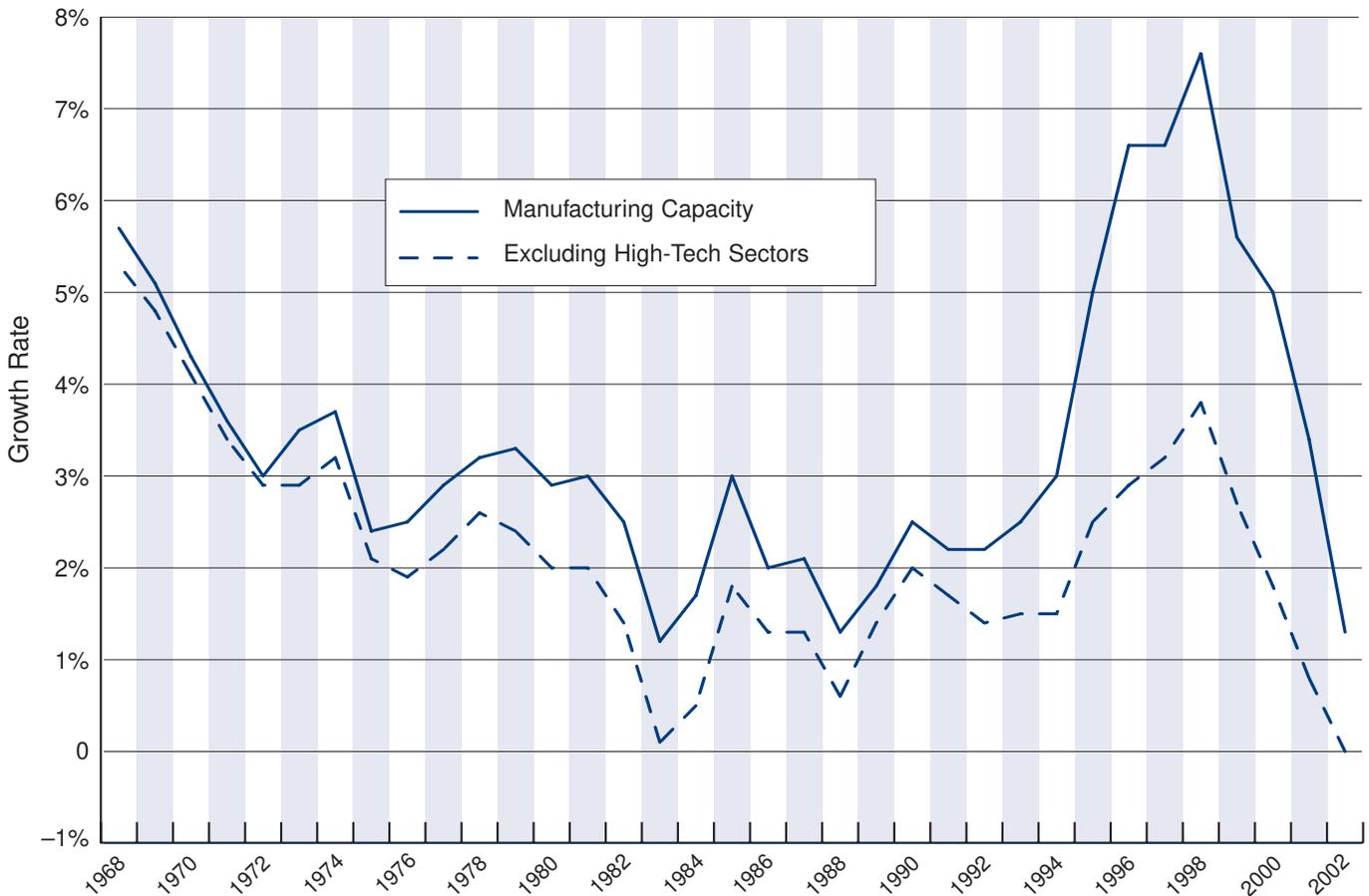
World War II. Yet the recent recession is not usually regarded as especially severe, judging by its length, the decline in overall output or even the size of the overall decline in payroll employment. So something does seem at least qualitatively different and not just in the recent experience. The 1990–91 recession shared many of the same features of manufacturing employment decline. What is different is the New Economy and in particular the dramatic growth of the high-tech sector. This has made the whole manufacturing sector, the center of business cycle activity in the past, more cyclical than it has ever been. While the frequency of U.S. recessions, and sometimes their length and severity, have declined, the manufacturing sector itself has become more cyclically sensitive than before 1990 and this has been reflected in longer swings in manufacturing employment.

Chart 2 shows the growth rate of manufacturing capacity including and excluding the high-tech sector: computers, semiconductors and communication equipment. The latter series begins in

1968. The large and growing gap between the total series and that excluding the high-tech sector shows the increasing relative importance and much more rapid growth of the high-tech sector. In 2002 both measures are quite comparable to their performance in 1983, a period when manufacturing employment growth had been as weak as recently. From 1995 to 1998, however manufacturing capacity grew rapidly, whether the high-tech sector is included or not.

Chart 3 shows comparable figures for output growth. The rapid pace of growth in high-tech output stands out. The growth rates are higher in the late 1990s, but they have been high since the late 1960s (earliest available data), especially high in the 1970s and 1980s. So the New Economy is not really so new. The chart also shows that high-tech output, while highly correlated with the rest of manufacturing output, is much more cyclical, as its growth rate swings are larger than the changes in the growth rate excluding this sector.

*Chart 2*  
*Manufacturing Capacity Is Dominated by the High-Tech Sector*  
*Calendar Years 1968–2002*



The greater cyclical volatility and increasing size of the high-tech sector have increased the cyclical sensitivity of the manufacturing sector, and this could account for the larger and longer cycles of manufacturing employment than were the case earlier.<sup>3</sup>

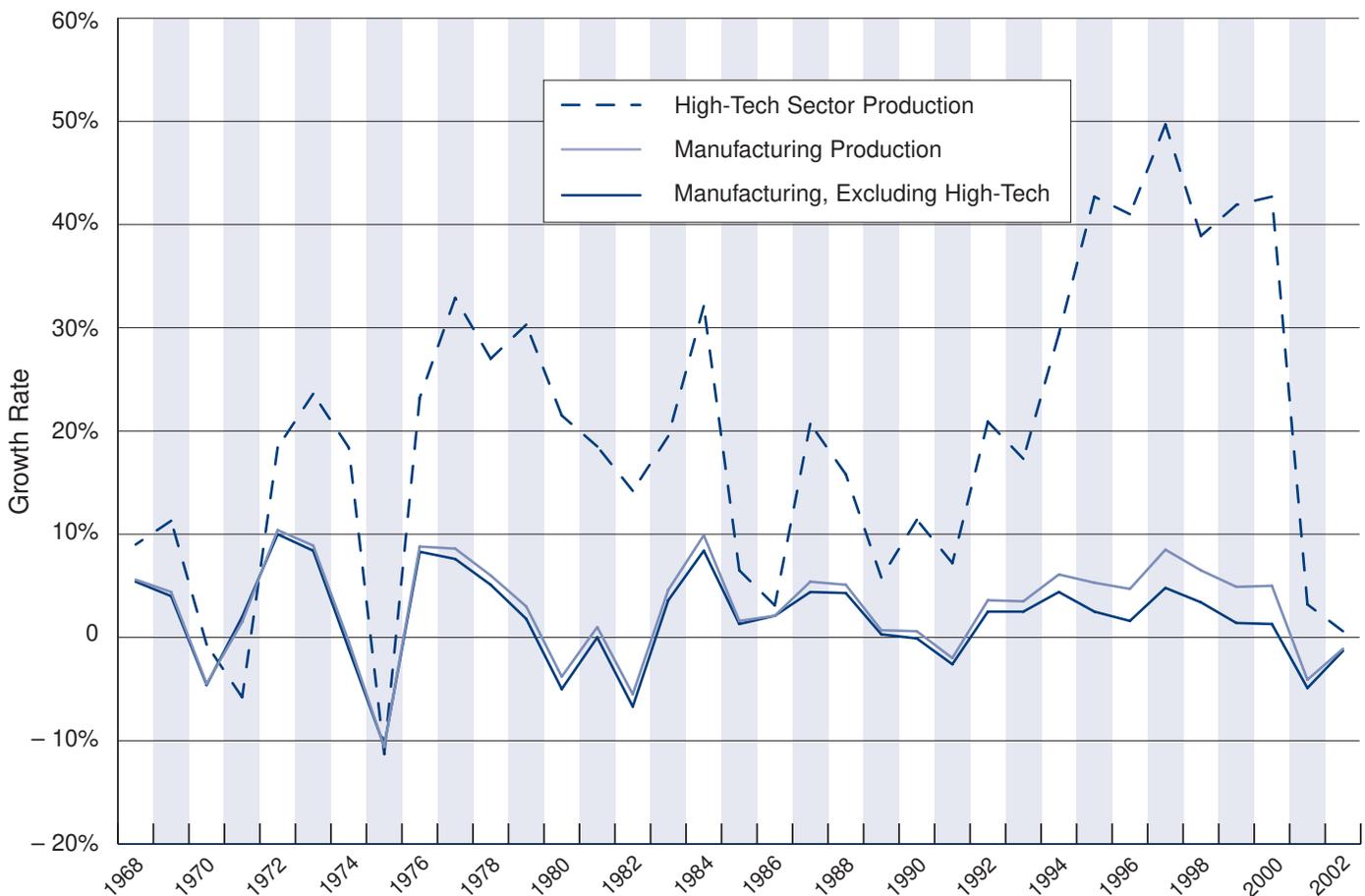
The decline in high-tech output growth in 2001–02 is large, so it is not surprising that employment in this sector should also have declined unusually. From the peak of payroll employment in January 2001 to October, employment in the comparable sector called computers and electronic equipment by the Bureau of Labor Statistics, fell from 1.874 million workers to 1.379, or 495 thousand

(26.4 percent). This decline directly accounts for almost 20 percent of the decline in payroll employment over the period. In the 1990–91 recession high-tech output growth fell in half compared with the pre-recession pace.

Employment data for this sector begin in January 1990, but from that point until its trough in September 1993, long after the March 1991 business cycle trough, employment fell by 298 thousand jobs (15.3 percent) to 1.643 million. So there were parallels in terms of the very large declines in employment and capacity growth in the sector as well as the length of time necessary for employment to reach a trough and begin to recover.

<sup>3</sup>A regression of the logarithm of the high-tech capacity utilization rate on that for manufacturing excluding high-tech shows that the elasticity of the former is 1.3, using annual data for 1967–2002. This implies that a 10 percent decline in manufacturing output and capacity utilization in manufacturing or the total excluding the high-tech sector, until recently about the same, would reduce high-tech output and utilization by relatively more, about 13 percent.

**Chart 3**  
*High-Tech Output is More Cyclical than the Rest of Manufacturing*  
Calendar Years 1968–2002



### III. The Proximate Reasons for the Secular Decline in Manufacturing Employment

The principal factors behind the secular stagnation of manufacturing employment are the relatively rapid productivity growth in the sector and the unwillingness of purchasers to buy the increasingly abundant and cheap output of the manufacturing sector.<sup>4</sup> Chart 4 shows the faster growth of manufacturing productivity compared with that for the overall business sector. Productivity growth in manufacturing is generally faster, though more cyclical, and both features are especially pronounced since 1996.

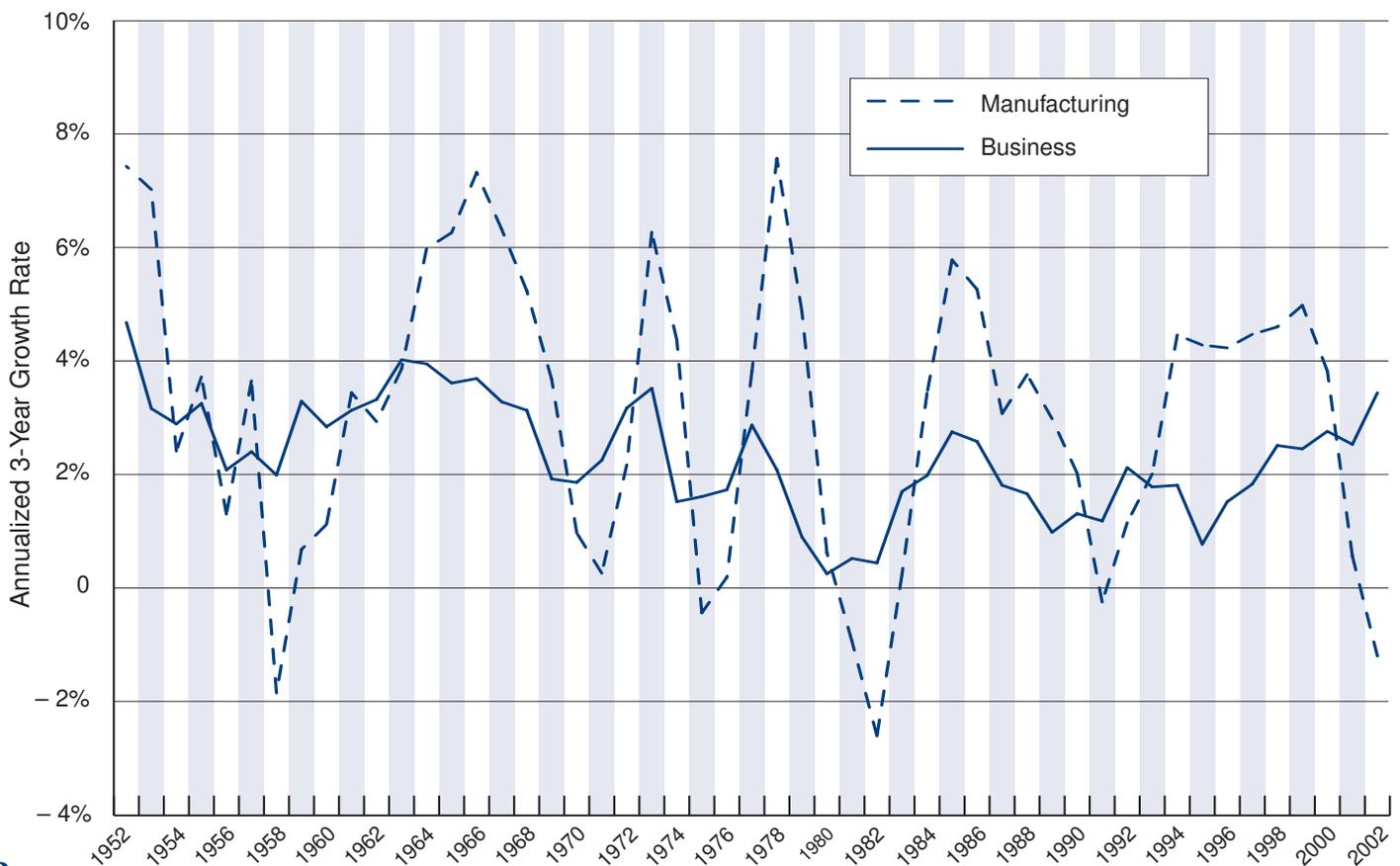
The effects of such rapid productivity growth are to boost supply and depress prices. As the relative prices of manufactured goods fall, the incentive to expand production is diminished somewhat, though relative price reductions are

necessary to induce purchasers to buy more. There may also be some tendency for producers to bid up the wages or costs of other resources to take advantage of the profit potential offered by productivity advances and that too would limit output and employment expansion.

Chart 5 shows some of the proximate causes of the relative decline in manufacturing employment as a share of business sector employment for the period 1949 to 2002 (nearly the same downward trend shown in Chart 1). Relative productivity, the ratio of manufacturing productivity to business sector productivity, and relative prices, the ratio of the implicit price deflators, are shown along with the ratio of hourly wages in the two sectors. Data on prices are not available after 2000. These factors are important in understanding manufacturing employment because they affect the incentive of employers to demand workers.

<sup>4</sup> The economic theory used in this section, and an earlier application to manufacturing, can be found in Tatom (1987).

**Chart 4**  
*Manufacturing Productivity Growth Was Unusually Rapid from 1994 to 2000*  
 Calendar Years 1952-2002

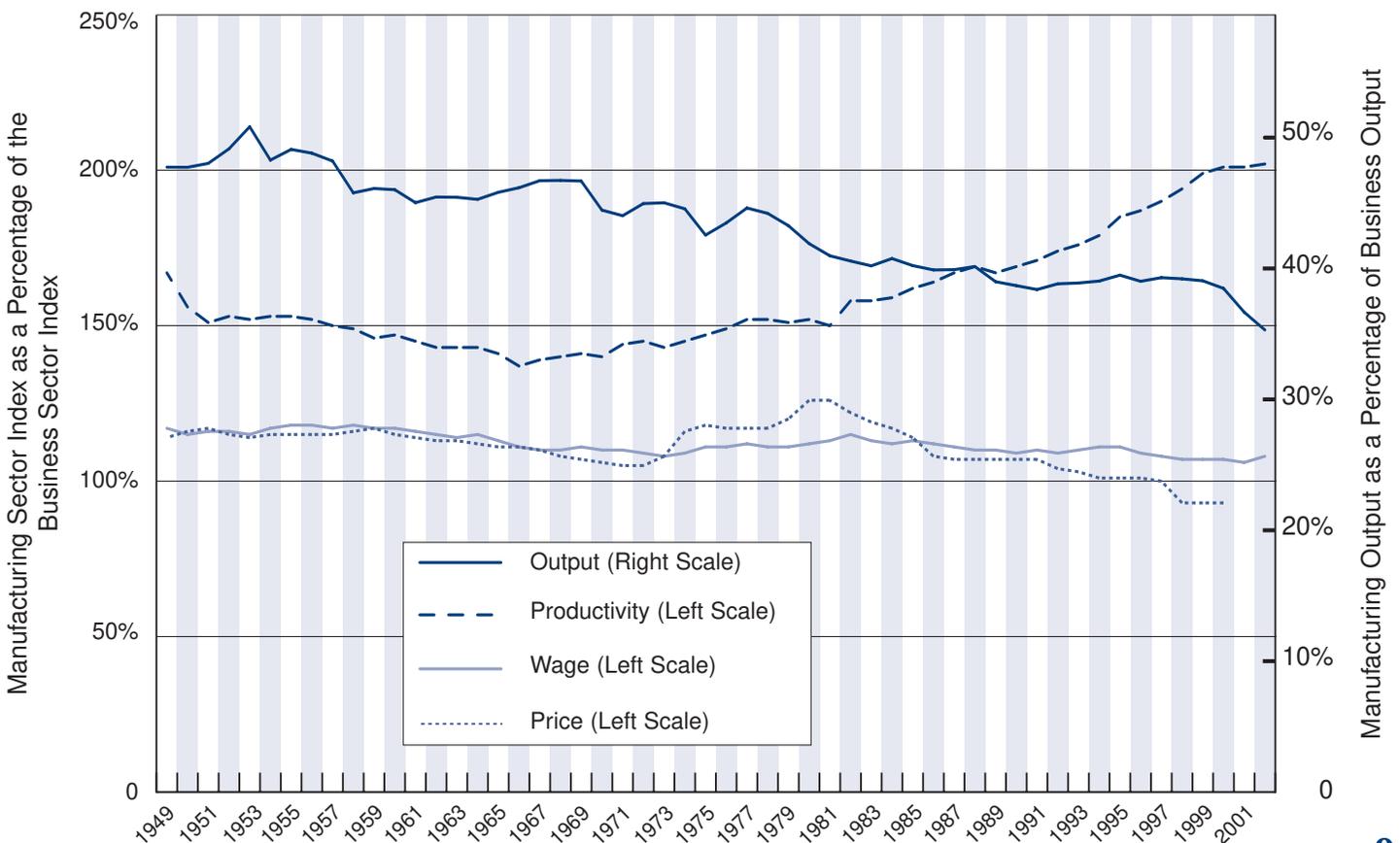


Suppose for example that productivity in manufacturing rises 10 percent. This reduces unit labor cost or the marginal cost of production by 10 percent while allowing unchanged employment to produce 10 percent greater output. For the sake of the argument, suppose that competition among producers pushes prices down by 10 percent (or pushes up relative wages by 10 percent). Then producers' incentives to hire more workers and produce even more manufactured goods are neutralized. But they are still attempting to produce and sell 10 percent more output at 10 percent lower prices. If purchasers are unwilling to buy this much more output at these lower prices, employment in manufacturing declines and employment elsewhere goes up as well. This is a simple version of how faster productivity growth in manufacturing reallocates employment and real income gains across the rest of the economy.

Productivity growth accelerated in manufacturing relative to the overall business sector beginning in 1981 and this accelerated growth

continues at least until 2000. This faster productivity growth was reflected in a decline in the relative price of manufactured goods. Moreover, since purchasers of manufactured goods did not expand the share of output they purchased, manufacturers reduced their relative share of employment. From 1981 to 2000, the relative price fell 25.7 percent, leading to a comparable reduction in the share of employment. This accounts for the lion's share (74% of the decline from 25.4% of business sector employment in manufacturing to 18.8 percent in 2000). The rest of the decline is due to a slight shrinkage in the share of output in manufacturing due to relative demand differences. The share of manufacturing output declined slightly over time, but mostly before the early 1980s. There was a cyclical decline in 2000-02 that contributed to the fall in the share of manufacturing employment, however. While there has been some erosion in the premium paid to manufacturing workers over the years, it has not played a major role in boosting manufacturing employment.

**Chart 5**  
*Relative Manufacturing Productivity, Prices, Wages and Output*  
*Calendar Years 1949-2002*



These manufacturing phenomena describe the well known and quite similar story of agricultural development. Since the nineteenth century, productivity growth in agriculture has dominated productivity growth in developed countries. In the 20th century, male employment in “primary occupations,” (farmers, fishermen, forestry workers, miners, and others, but mainly agriculture), fell from 42 percent of the total male employment in 1900 to 4 percent in 1998.<sup>5</sup> The number of farm operators fell from 5.7 million in 1900 and about 6.5 million at the peak in 1920 to 1.9 million by 1997, one-third the number at the beginning of the century. Nevertheless, the population rose from 76 million in 1900 to 275 million by 2000. And agricultural output kept pace, producing huge net exports by the end of the century.

The reason that agricultural employment declined is that agricultural productivity outstripped productivity growth in other sectors and consumers were unwilling to spend the gains in their real income on food and fiber. Instead they demanded other goods and services so that consumers had more food as well as other goods and services. To do so, resources had to move out of the very productive agricultural sector. This story applies as well, though with less force, to the manufacturing sector, especially since World War II. And it is not simply a U.S. story.

#### IV. The Secular Weakness in Manufacturing Employment is not Restricted to the U.S.

Manufacturing employment has been declining in all developed countries for many years, not just in the U.S. Table 3 shows the declines since 1979 expressed as an annual rate of growth, but it also shows the cumulative decline from each country’s peak level to the level of employment in 2002 along with the date of this previous peak level.<sup>6</sup> The annual rate of decline since 1979 is smaller in the U.S. than in the U.K., Sweden, France and Belgium and slightly larger than most of the others. Only Canada shows a rise in employment on both bases, but this hides the volatility of the sector because Canadian manufacturing employment was only slightly above its 1989 peak in 2000–02 and was lower in every other year in between. Similarly its 1989 peak and 1988 level were only slightly above the previous 1979 peak and employment was again lower in every year in between.<sup>7</sup>

The decline in the U.S. since its peak is actually smaller than that in all the other developed countries except Italy, which is only slightly smaller, and in Canada. Even South Korea and Taiwan showed declines in manufacturing employment since 1990 (not shown). These declines were not caused by the Asian financial crisis in 1997–98. Taiwan’s peak level of employment occurred in 1988 and Korea’s occurred in

<sup>5</sup> See Caplow, Hicks, and Wattenberg (2001).

<sup>6</sup> See the Bureau of Labor Statistics (2002). This release covers the countries in Table 3 and South Korea and Taiwan.

<sup>7</sup> Carson (2003) has pointed to a decline in manufacturing employment in 20 countries since 1995. But this decline predates 1995 and is a secular phenomenon that began much earlier in most developed countries.

**Table 3**  
*Manufacturing Employment Has Declined in Most Industrial Countries*

Country	1979–02 compound annual rate	Change from Peak to 2002 (peak year)	Country	1979–02 compound annual rate	Change from Peak to 2002 (peak year)
U.S.	- 1.1%	- 21.8% (1979)	Germany	- 1.0%	- 27.0% (1965)
Canada	+ 0.2%	+ 5.0% (1989)	Italy	- 1.0%	- 20.1% (1980)
Japan	- 0.7%	- 25.5% (1992)	Netherlands	- 0.8%	- 20.1% (1965)
Belgium	- 1.5%	- 42.8% (1970)	Norway	- 0.8%	- 24.8% (1974)
Denmark	- 0.7%	- 29.8% (1970)	Sweden	- 1.4%	- 32.9% (1970)
France	- 1.4%	- 32.3% (1974)	U.K.	- 2.7%	- 54.6% (1966)

\*\* West German data end in 1998

Source: U.S. Bureau of Labor Statistics

1989. In Taiwan employment fell at a 0.5 percent rate from 1990 to 2002 (14.4 percent since its peak) and in South Korea the rate of decline was 1.0 percent for the same period (11.7 percent since its peak).

Of the developed countries in Table 3, manufacturing output rose the fastest from 1979 to 2002 in Sweden (3.4% per year), Japan (2.5% per year), Canada and the U.S. (2.4% per year). It rose even faster in the Tiger countries of Taiwan and South Korea. Except for Sweden, U.S. output growth nearly matched or exceeded that of all 12 developed countries. The eight slower-growing countries ranged from Belgium, France and Netherlands, about 2 percent per year, down to Germany, Italy and the U.K. with growth rates of 0.6 percent per year or less. For a mature economy with the highest overall output per capita among developed countries, it is impressive that the U.S. performs more like an emerging market, with relatively rapid growth even in its manufacturing sector.

## V. Comparative U.S. Manufacturing Performance – Is There a Case for Policy Intervention?

While the cyclical performance of manufacturing remains weak, policy-makers must keep in mind that this does not detract from the outstanding performance of the

sector compared to other developed nations. As the data above indicate, U.S. manufacturing output has grown faster since 1979 than in most developed countries and since 1990 faster than in some emerging markets. Nevertheless some industry spokesmen and some policy-makers have insisted that the U.S. is losing out to foreign competitors and policy retaliation is necessary. Industry spokesmen can be forgiven for pursuing favorable intervention on their own behalf, regardless of circumstances. But there is no basis for the idea that international competition is damaging U.S. manufacturing output or employment.

One version of this view is that a rising value of the dollar reduces U.S. competitiveness, slowing U.S. growth and boosting that abroad. But usually when the value of the dollar rises, it reflects a policy shock such as a tax cut or anti-inflation policy that is expected to boost U.S. investment and productivity or a favorable productivity shock.<sup>8</sup> In either case, productivity and output should accelerate following an exchange rate appreciation, and the reverse should be the case abroad.

Table 4 assesses whether large movements in the value of the dollar have impaired U.S. manufacturing growth and benefited U.S. competitors. It shows the annual rate of increase of the real value of the U.S. dollar for various periods since 1960.<sup>9</sup> It also shows the growth rate of industrial production for the

<sup>8</sup> See Tatom (1987), (1988) and (1995). Glick and Hutchison (1990) argue that fiscal stimulus could account for strong manufacturing output in 1980–85, when the dollar rose sharply.

<sup>9</sup> The value of the dollar series is the broad measure, price-adjusted trade-weighted exchange rate measured by the Board of Governors of the Federal Reserve System.

*Table 4*  
*A Higher Value of the Dollar Reflects Relative Gains in U.S. Manufacturing, Not Lost Competitiveness*  
*Average Annual Growth Rates, 1960–2002*

Period	Real Exchange Rate	U.S. Industrial Production	Rest-of-OECD Industrial Production	EU-15 Industrial Production
1960 – 73	—	+ 5.2	+ 6.5	—
1973 – 80	– 1.3	+ 1.4	+ 1.9	—
1980 – 95	+ 6.4	+ 1.6	+ 1.6	+ 0.7
1985 – 90	– 5.5	+ 2.4	+ 3.4	+ 3.0
1990 – 96	– 0.6	+ 3.1	+ 0.8	+ 0.7
1996 – 00	+ 4.2	+ 5.5	+ 3.1	+ 3.5
2000 – 02	+ 3.0	– 2.1	– 1.6	– 0.4

Source: Based on OECD data

U.S. and for the 23 other members of the OECD (Rest-of-OECD or R-OECD). After 1976 the table includes the growth rate for output in the fifteen countries of the European Union (EU-15). Data come from the OECD.

U.S. manufacturing output has outperformed R-OECD since the 1970s. For example, for the whole period used above, 1979–02, U.S. growth annually averaged a 2.3 percent rate, more than one-third faster than the 1.7 percent R-OECD rate and nearly 50 percent faster than the 1.6 percent growth rate for the EU-15. In the early period when nominal exchange rates were fixed, R-OECD grew faster, reflecting the expected convergence of poorer OECD countries with the more productive and higher income U.S. The oil price shock in 1973–74 lowered productivity in the U.S. and elsewhere, but the slowing was larger abroad. During this period the dollar generally fell reflecting the breakdown of the earlier fixed-exchange rate system and the fall of the over-valued dollar.

In 1980–85, the dollar rose rapidly. Nevertheless U.S. output accelerated and output growth in R-OECD actually slowed. This is contrary to the expectation of those who believe that the rise in the dollar should boost output growth abroad and slow it in the U.S. Subsequently when the dollar fell sharply, the U.S. output accelerated, but not as much as R-OECD. This is the only period when the rest of the OECD grew faster than the U.S. after 1980, but the values of currencies abroad were appreciating rapidly. The period from 1980 to 1985 saw the value of the U.S. dollar climb sharply while many analysts claimed the higher dollar was destroying the competitiveness of U.S. manufacturing. If proponents of the view that a falling dollar is good for the manufacturing sector were correct, then R-OECD output growth should have slowed between 1980 and 1985, but it did not. It rose and by more than output growth in the U.S.

In the 1990–96 period the dollar changed little. While foreign currencies stopped appreciating so rapidly, output growth slowed. The pace of decline of the dollar slowed to near zero, but output growth accelerated. Finally when the value of the dollar began to rise rapidly in 1996–2000, U.S. manufacturing growth accelerated and growth in R-OECD slowed sharply, despite rapidly declining currencies. All of these episodes suggest that advocates of

a weak dollar are incorrect. Instead, as explained above, a rising dollar tends to reflect changes that would lead one to anticipate accelerated growth in the U.S. and slower growth abroad. Even between 2000 and 2002 when U.S. output did slow, R-OECD growth slowed as well, though by less than in the U.S. One example that is roughly consistent may be reassuring, but it is likely that this brief period is dominated in both regions by the global recession and a flight to the dollar as a safe haven.

Driving down the dollar is not a prescription to boost U.S. manufacturing. The policies necessary to push down the dollar, such as inflationary monetary policies or fiscal policies that lower the rate of return to U.S. investment can lower the dollar, but they reduce U.S. competitiveness, at least as indicated by the U.S. share of output.

Another more direct version of the competitiveness story is that rising imports reflect the shifting of U.S. jobs abroad. Even if this were true, it would not make a case for policy intervention. Americans gain by acquiring cheap imports, if in fact they are cheap, and the gains from trade more than offset any losses due to disruptions in U.S. resource allocation and employment. But the basic premise that jobs are lost due to foreign competition is weak as well.

Chart 6 shows U.S. manufacturing output, and real exports and imports on a national income and product accounts basis (1996 prices) since 1979.<sup>10</sup> The chart suggests that imports have played little role, overall, in declining manufacturing output. Manufacturing output began to decline in the second quarter of 2000, one quarter earlier than the peak in imports and exports and nearly a year before the business cycle peak. Since then imports have changed very little, first declining as the economy fell into recession and then rising slightly. Overall, real imports were consistently lower than they were in the third quarter of 2000 until the second quarter of 2003. In that quarter they rose to about 1.5 percent more than their previous peak almost three years earlier. Even then imports were only about \$23.1 billion (1996 prices) higher, or less than one percent of recent manufacturing output.

The trade weakness that has contributed to the rising current account deficit is on the export side. Since their earlier peak when imports also peaked, exports have declined about \$90 billion

<sup>10</sup> The data are quarterly, so the label “January 1979” refers to the first quarter of the year.

(1996 prices), or 9.4 percent. Some would blame this on the rise in the value of the dollar over the period and others would point to the global recession since 2001. In any event, few countries gained at the expense of the U.S. as the rest of the world's output and imports have been extremely weak. The large gap between imports and exports opened up from the first quarter of 1998 until mid-2000 when manufacturing output peaked. Since then exports have declined while imports kept pace with the growth of U.S. real GDP. Imports rose at a 1.6 percent annual rate over these three years, not much faster than that of real GDP (1.5 percent).

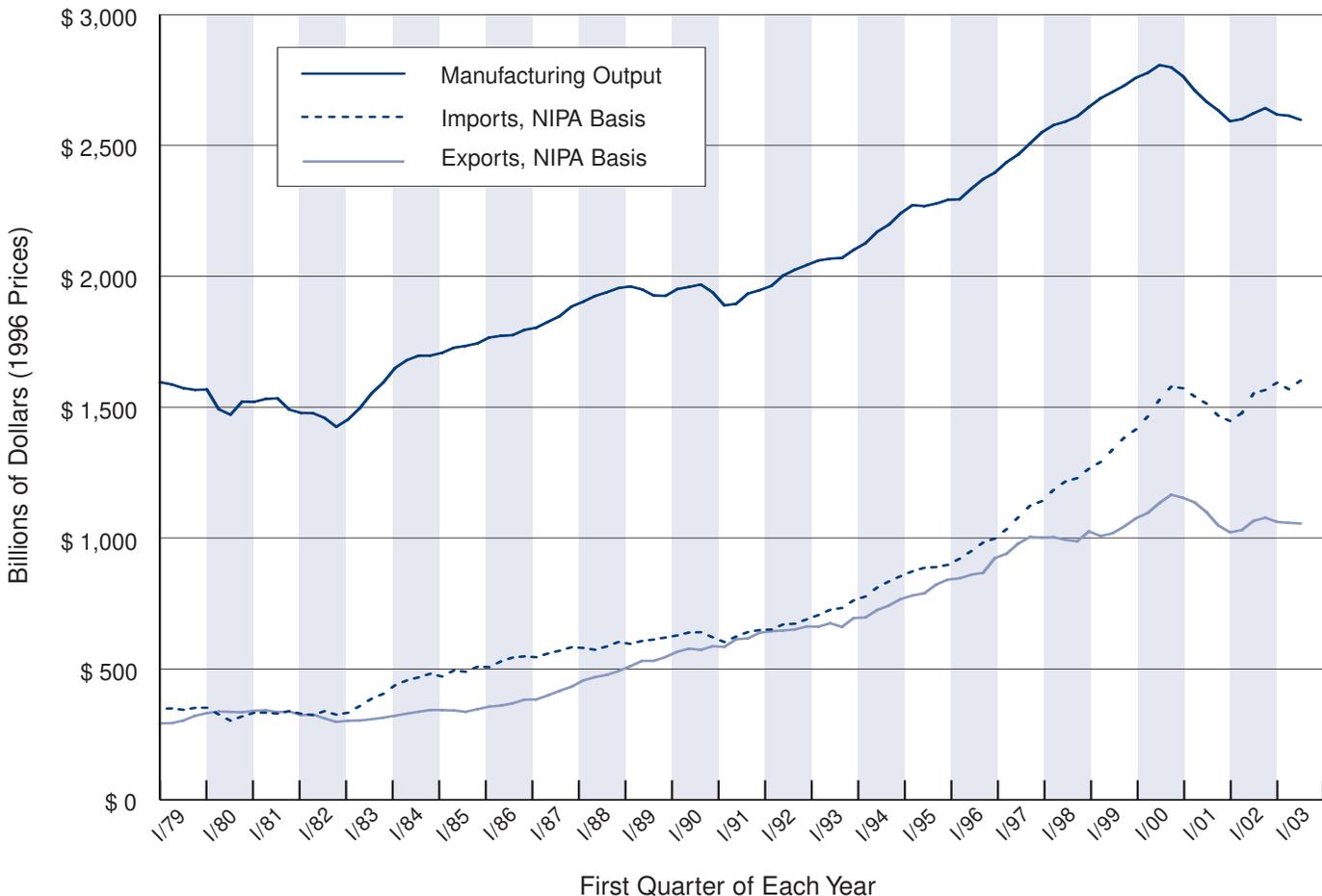
**The Policy Outlook**

Despite evidence that trade and the value of the dollar have not impaired U.S. manufacturing, including employment, there are strong interest groups who wish to use the secular decline in manufacturing employment and the aftermath of the cyclical decline to back their case for favorable policy support. The view that Japan

and China have pushed up the value of the dollar, creating essentially a tax on U.S. exports and subsidizing our imports, has gained wide support. This is ironic because China has not changed its exchange rate in nine years, while experts have argued the necessity of a Japanese depreciation for many years.

An appreciation of the yen could halt the budding expansion in Japan and throw the country back into recession. This would again be a setback to Japanese demand for U.S. goods and services. It is most unlikely that Japan will allow a sustained appreciation driven by speculative demand for Japanese assets, especially if it jeopardizes the expansion. But Japan has a history of smoothing exchange rate fluctuations, not stopping them. When the current rush to Japanese assets and yen dies away, many currency analysts expect the yen to resume its depreciation, which Japan could accomplish either through outright declines or by maintaining lower inflation than their trading partners. Either way, or through some combination of the

*Chart 6  
The Decline in Manufacturing Output Was Not Associated with a Rise in Imports*



two, the yen will continue to depreciate. Even if these analysts are wrong and the yen is already near its long-term equilibrium level, it is not likely that the yen will appreciate very much. Appreciation is driven by the growth surge and higher expected returns. Once the cyclical surge encounters capacity constraints, which could happen quickly, any tendency for yen appreciation will end.

The Chinese have strong currency controls, a successful fixed exchange rate system and very weak financial institutions. Their unsustainable cyclical expansion is attracting record capital inflows and a build-up of dollar currency reserves, but appreciating the currency or raising its peg would create expectations of further appreciation. And this would exacerbate the inflows and reserve appreciation. In 1999 when the aftermath of the Asian currency crisis was making it difficult for the Chinese to achieve the dollar reserve build-up they desired, capital controls were severely tightened on the ability of Chinese to acquire assets abroad. If capital inflows become excessive (by Chinese standards), some relaxation of capital controls can be expected, not currency appreciation.

The Chinese have a long way to go to create viable financial institutions that could survive in an internationally competitive environment. Maintaining fixed exchange rates and capital controls insulates these weak institutions, reducing their incentives for reform, but the reform agenda is in the hands of the government, not the banks. One thing is clear about Chinese policy-makers, however. They will not allow external forces to pressure them into accelerating reform. Since U.S. pressures on China began in earnest in September, the Chinese have halted planned steps to open capital markets and they have made clear that they will not be rushed in altering exchange rate policy or reforming financial institutions.

Perhaps the most egregious problem with the view that foreign governments are forcing up the dollar, and that this is hurting U.S. manufacturing, is that such a dollar appreciation would benefit the industry, not hurt it. Pushing down a foreign currency requires policies that destroy investment and productivity, such as

inflationary monetary policies, costly regulations, or increases in tax rates. These actions hurt domestic industry and benefit foreign competitors. In Tatom (1995), for example, the effect of a nominal dollar appreciation on the rest of OECD manufacturing output was shown to be strongly negative. Similar work on individual countries finds that a country's currency value is positively related to its growth, contrary to the mantra of manufacturing trade groups. Notwithstanding the upcoming political season, the pressure on countries to push down the dollar is likely to diminish, because the dollar has already fallen about 10 percent in the eighteen months ending in October 2003 and was close to its long-term average value. This decline occurred before recent efforts to drive the dollar down through political pressures. Other currencies are beginning to appear to be over-valued.

Another view that is frequently heard today is that manufacturers are at a competitive disadvantage internationally because of high U.S. taxes. The repeal of tax breaks on foreign corporate income, mandated by the WTO, will raise taxes on international firms, reinforcing this view and providing tax revenue that could be used for tax relief. The America Job Creation Act and similar proposals intend to provide such relief. But these proposals are short on incentives for new production and employment and they are discriminatory, favoring capital employed by manufacturers and not in the rest of the economy.

Tax discrimination is wasteful; it will discourage investment in the rest of the economy as it increases incentives to the manufacturing sector. Moreover, it is not even supportable by credible arguments that the manufacturing sector is in need of special support. Some new tax relief for manufacturing is likely. It is unfortunate that the opportunity to reduce taxes may not be used to provide as many new incentives to expand the nation's output, real wages and employment as possible. Special tax handouts almost invariably reduce economic efficiency in the affected sector. Manufacturing is not in decline in the U.S., but with enough grants from the U.S. taxpayer, it could lose its strong international competitive position.

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## VI. Conclusion

Manufacturing employment has declined over the past three years, reinforcing concerns about the overall weakness of the economy and support for economic policies to aid the manufacturing sector. The situation has become reminiscent of the argument in the 1980s that the U.S. was losing its industrial base, in part due to the budget and current account deficits and the strong value of the U.S. dollar. Most of those arguments and warnings proved false, as manufacturing output strengthened and outperformed major U.S. competitors. The current account deficit and budget deficits went away and there was no obvious adverse impact on manufacturing at the end of the day. The recent decline in manufacturing employment has brought back these old arguments. The emergence of the budget deficit, the continuation of current account deficits and, until early 2002, the relatively high value of the U.S. dollar have reinforced concern.

Manufacturing employment has declined for both secular and cyclical reasons. The benchmark for employment performance is declining employment because of rapid technological change. Against this benchmark, employment has declined for normal cyclical reasons. The decline is somewhat larger and has lasted longer than around past cyclical downturns, but similar declines, especially in the last recession suggest that this is not some new phenomenon threatening the existence of the manufacturing sector.

What does seem to be different is that the high-tech sector in manufacturing has grown to a size that its cyclical features are coming to dominate the manufacturing cycle. The most important features of the high-tech sector in this regard are its greater cyclical variation and its longer employment cycle. This argument is contingent on two observations, but the basis for it is of longer standing. The high-tech sector produces capital goods, especially equipment. The growing importance of this sector means that manufacturing is becoming more durable,

equipment oriented, and therefore more cyclical. Thus the relatively slow bottoming out of manufacturing employment, while undesirable is not a cause for policy concern, at least not beyond the general concern for whether the early years of the expansion have been unacceptably slow.

The decline in manufacturing employment has been larger and started earlier in most other developed countries. Moreover, U.S. manufacturing output has grown rapidly compared to overall national output and it has expanded more rapidly than in other industrial countries at least since the late-1970s. Thus it is hard to justify claims that U.S. manufacturing is in need of special support. The cyclical decline in manufacturing has not been associated with a rise in imports, nor has U.S. manufacturing output been adversely affected, recently or in the 1980s, by a strong dollar. Instead, in periods when the dollar has risen sharply, it has reflected unusually rapid growth in U.S. manufacturing due to economic policy changes or technical change that increased the rate of return to investment in the U.S. compared with returns abroad. Viewed in this light, one is hard pressed to conclude that manufacturing is in need of life-support.

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