The Secret behind American Export Success

Andrew Warner

For about the past two decades exports have grown faster that the rest of the American economy, and this growth has accelerated in recent years. Since 1972, while gross domestic product has grown on average by about 2.3 percent per year, merchandise exports have grown by more than twice that rate, about 5.4 percent per year. Between 1986 and 1992, while the economy grew an average of 1.7 percent per year, exports grew by 9.2 percent per year. Even during the recession year of 1991, while the economy achieved zero growth, exports increased by 7.4 percent. It is not hard to argue that the export sector has been one of the most dynamic sectors of the U.S. economy in the past quarter century.

With such a record of rapid export growth, it may seem odd to hear doubts expressed about our ability to compete in the world economy, yet such doubts persist. Speaker Yoshio Sakurauchi of the lower house of the Japanese Diet caused a firestorm in early 1992 by questioning the quality and effort of American workers. Prime Minister Kiichi Miyazawa echoed the same theme a few weeks later. Implicitly conceding the substantive point, American commentators focused instead on the lack of tact shown by those comments on such a sensitive issue.

Of course, facts about rapid export growth by themselves do not clinch the case that we really are competitive despite the public perception, but they do point out a suggestive anomaly. After all, as growth rates go, those growth rates are dramatic. If the economy kept growing at 1.7 percent per year and exports kept growing at 9.2 percent, in just thirty-one years the American economy would resemble that of Singapore—exporting 100 percent of our output of goods and services and spending the proceeds on imports. Such a dramatically open economy would have been unthinkable ten or twenty years ago.

Maybe it is time to pay attention to exactly what lies behind this export boom. Why did exports grow despite the recent global recession? What caused the more sustained export boom of the late 1980s? On the premise that the future will resemble the recent past, what do recent trends suggest about the future of American industry? Are we really headed toward an economy of low-wage, dead-end, service-sector jobs rather than high-technology jobs? And what do recent trends suggest about the way the economy is becoming integrated with the global economy and about what kinds of global economic events are likely to become important in the 1990s?

What Caused the Late 1980s Export Boom?

Washington policy analysts tend to view our exports as being a function of two economic variables: the real level of the dollar and GNP growth

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of major economies in Western Europe and Japan. When explaining export changes over long periods of time, analysts often discuss longer-term trends in labor productivity. But to analyze short-run changes in exports, analysts typically focus on the dollar and the GNP growth of major economies.

Let us first consider the dollar as a possible explanation for the export boom of the late 1980s. At the beginning of 1985 the dollar began a dramatic decline that lasted until the end of 1987. After correcting for price-level changes in each country and weighing individual country exchange rate movements by their importance in our trade, the real price of our exports was about 30 percent lower in December 1987 than in January 1985. Naturally, that price change is part of the reason for strong exports after 1986. If we assume that causality ran from the dollar to exports and allow for delivery and adjustment lags, we can certainly attribute some of the export growth several years after 1985 to the sharp decline in the dollar.

But that major decline in the real value of the dollar had pretty much run its course by the end of 1987. Since then the dollar has fluctuated around a slightly declining trend but has not changed substantially. Yet, despite the roughly constant dollar, export growth was 8.1 percent in 1990 and 5.8 percent in 1991, fully three and four years after the last major change in the value of the dollar. One has to tell a rather farfetched story about phlegmatic economic agents to continue using the dollar to explain strong export growth. Something else must have been going on.

If the low dollar by itself cannot quite explain strong export growth, maybe the rest of the global economy was growing unusually rapidly in the late 1980s. While possible, that explanation also seems to be missing something, since GNP growth in the rest of the world was not unusually high during that period, but growth in American exports was unusually high.

The analysis fails to note that most of the export increase in recent years has been in machinery, equipment, and intermediate goods rather than in consumer goods. Merchandise exports increased by $200 billion (in constant 1982 dollars) between 1984 and 1990, and an impressive $157 billion of that was in capital goods and industrial supplies—accounting for almost 80 percent of the total increase.

This suggests a simple point with important implications that the conventional analysis overlooks. If much of export growth is in capital goods rather than consumer goods, it must be the case that other countries' investment spending rather than consumption spending has played an important role in export growth.

This simple point helps to explain the strong export growth in recent years. Global investment spending outside the United States grew more strongly than other kinds of spending during the late 1980s, and that coincided exactly with our export boom. If we total data from the top thirty-one of our major trading partners, we find that global investment spending grew an average of 7.1 percent per year between 1984 and 1990, while global consumer spending grew by only 4.1 percent per year. In sum, the conventional analysis fails to take into account that the kind of foreign spending matters for our export performance. A shift in the composition of global demand toward investment can help our exports because we continue to be a leading producer in the global capital goods market.

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Some Historical Perspective

It is interesting that the pattern that was apparent in the late 1980s appears to have prevailed in earlier years. Figure 1 shows exports of capital goods and industrial supplies (top line) together with exports of consumer goods and raw materials (bottom line) since 1967. One can see that capital goods exports are more volatile than consumer exports and thus have a disproportionate effect on year-to-year movements in total exports. What was true in the late 1980s seems to have been true at least since 1967, the first year when such data are available.

A second point, perhaps more significant, is that the close association between exports and global investment also has obtained over a longer time period. Figure 2 shows total exports and global

Figure 1: Two Kinds of Exports

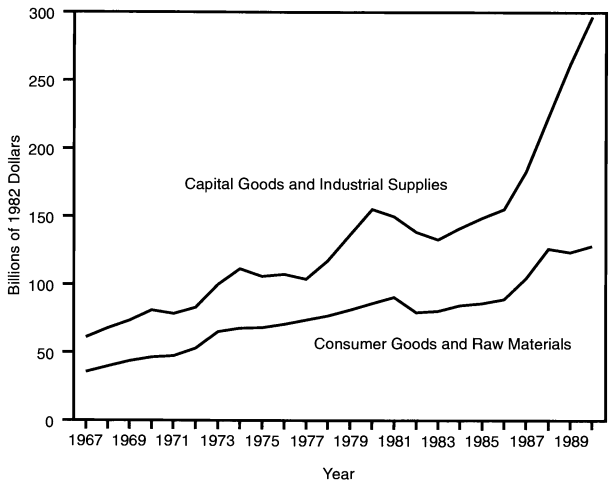
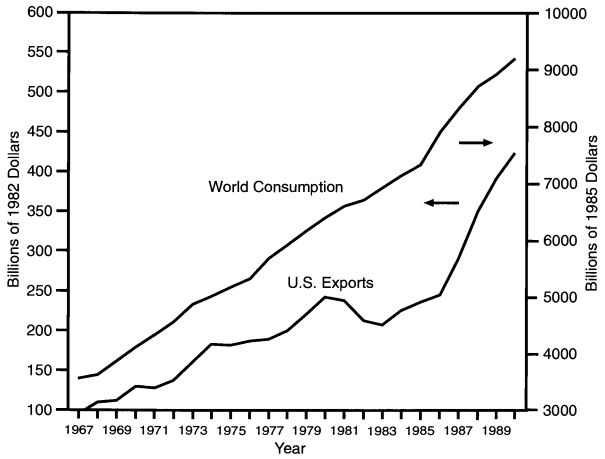


Figure 3: American Exports and Consumption Spending in the Rest of the World

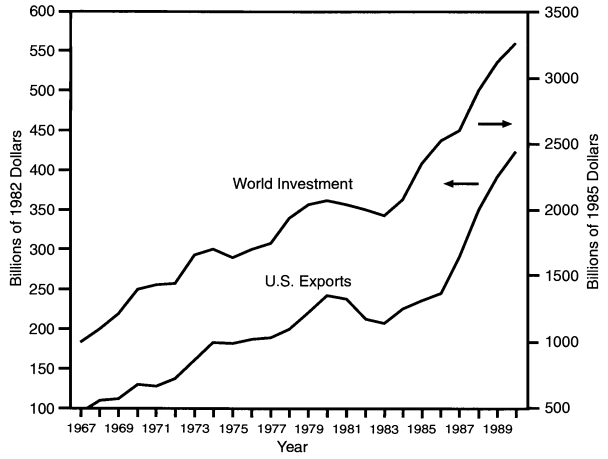


investment spending of our thirty-one main trading partners. The striking fact is that our exports and other countries' investment spending have virtually moved in tandem over the past quarter of a century. That fact seems to have escaped the attention of policymakers throughout the period.

To put this picture in perspective, Figure 3 shows the association between our exports and global consumption spending. In contrast to investment, global consumption spending is nearly a straight trend line, and shows no relation with our exports.

More sophisticated statistical analysis confirms that global investment spending accounts more for our exports than global consumption spending. Indeed, the strong relationship between exports and world investment and the weak relationship between exports and world consumption stand up to a wide variety of statistical tests. If we hold the real value of the dollar constant, every 1 percent increase in global investment in the past twenty-five years was associated on average with a 1.5 percent increase in our exports of capital goods.

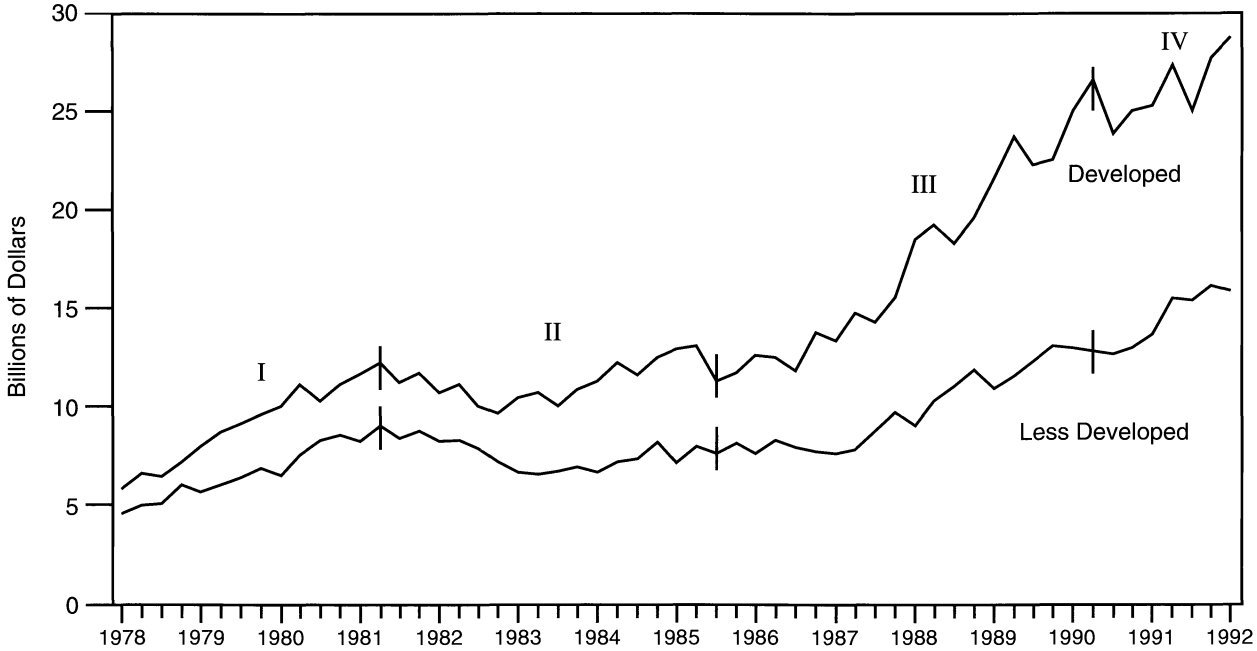
Figure 2: American Exports and Investment Spending in the Rest of the World



Global Investment Spending

A glance at world investment spending in Figure 3 provides some insight into the kinds of global events that affect world investment and ultimately our exports. The effect of the first oil price shock and the global recession that followed in 1975 are clearly visible. The recovery from that recession was associated with a steady increase in world investment spending through 1979, when aggressive bank lending to recycle petrodollars pushed world real interest rates down and helped a large, debt-financed investment boom across the Third World. One then sees world investment begin to taper off in 1979, as a number of events coincided to depress global investment for about four years. Those events include the second oil shock of 1979, the change in Federal Reserve policy that pushed global interest rates to unprecedented levels, the collapse of world prices for developing country exports, which either caused or exacerbated debt problems in those countries, and severe recession in the industrialized world.

Figure 4: Exports of Capital Goods to Developed Countries and Less Developed Countries



The slump broke around 1983 and 1984, as investment spending recovered in industrialized countries and pulled up global investment by itself. Later in the 1980s the anticipation of Europe's restructuring for a more integrated future led to high investment. Asia invested heavily. And even Latin America, depressed for much of the decade, began to recover late in the decade as export prices recovered, serious economic reform began to take hold, and global debt problems began to be resolved.

Which Countries Receive Our Capital Goods?

To determine exactly how important various regions are for capital goods exports, Figure 4 shows capital goods exports to the relatively rich developed countries and the relatively poor developing countries. Back in the late 1970s, when major international banks were lending heavily to the less developed regions, exports of capital goods to those regions were only slightly below exports to the developed countries. The poorer countries really were big players in our exports at that time. But Figure 4 shows that the long economic slowdown in the poorer countries in the 1980s also depressed our exports. It was as late as 1987 before we registered any substantial increase in capital goods exports to those regions. As a result, poorer regions were less important at the end of the 1980s than they were at the beginning, but the figure also shows that once again they appear to be regaining importance in the early 1990s.

Poorer regions were less important to our export of capital goods at the end of the 1980s than they were at the beginning, but they appear to be regaining importance in the early 1990s.

To show more precisely which countries lie behind those trends, Table 1 reports the change in capital goods exports to several countries and regions during four recent periods: the export increase of the late 1970s, the export slump of the early 1980s, the major export boom of the late 1980s, and the recession of the early 1990s.

The table suggests several points that may be surprising to the casual observer. First, Canada and Mexico account for a substantial share of recent increases in capital goods exports and often are more important than much larger economies such as France, Germany, and Japan. Second,

Table 1: The Change in Capital Goods Exports (million dollars)

Region	Period I	II	III	IV
Canada	1688.5	−602.6	4389.6	76.3
United Kingdom	786.7	−114.3	2374.9	−181.4
France	574.2	−191.4	968.6	713.8
Germany	592.1	−182.4	1705.3	299.5
Other Europe	1231.8	−52.8	3788.5	240.9
Japan	698.4	78.5	1787.0	903.1
Other Asian	2903.1	−631.9	3415.8	1499.0
Africa	362.4	−472.4	463.6	133.9
Mexico	1493.9	−777.4	1093.1	1006.1
Other Western Hemisphere	1018.3	−961.7	825.2	1046.3
Former Soviet Bloc in Europe	−10.6	−63.2	65.4	73.3
Total	11338.8	−3971.6	20877.0	5810.8

Period I: first quarter 1978 to second quarter 1981.
Period II: second quarter 1981 to third quarter 1985.
Period III: third quarter 1985 to second quarter 1990.
Period IV: second quarter 1990 to second quarter 1992.

among developing countries, Latin America and Asia, particularly China and the newly industrializing countries of the Far East, are important players, while Africa is a relatively small player. Finally, the countries of the former Soviet bloc in Europe have played a trivial role in recent changes in capital goods exports but could be substantially more important in the future.

In the past twenty-five years, capital goods exports averaged 35 percent of all exports, and their share of the economy grew an impressive 4 percent per year.

It is important to note that we do sell capital goods to advanced economies such as Germany and Japan, although those two economies are quite good at producing capital goods themselves. Indeed, at the global level Germany and Japan, along with the United States, dominate the global market in capital goods. Yet, despite their ability to produce capital goods, it still appears that when German and Japanese investment demand expands, they pull in specialized machinery from the United States.

The table also shows that the explosion in capital goods exports in the late 1980s was mainly a Canadian, European, and Asian phenomenon. In contrast, during the boom and bust of the late 1970s and early 1980s, exports were distributed more evenly across countries.

A more interesting regional disparity occurred during the recession in the early 1990s. The table shows that traditional export markets such as Canada, the United Kingdom, and Western Europe (except France and Germany) dried up during that period. Instead, less traditional export markets in Asia and Latin America accounted for much of the export growth. While exports were the silver lining of the 1990 recession, most of those exports were capital goods to relatively poorer regions. That may have been the first time in our history that the severity of a recession was relieved by demand from poorer countries.

What Exactly Are Those Capital Goods?

One may wonder why the media and policy debates do not pay more attention to such high growth in capital goods exports. We hear lot about the plight of our domestic auto industry and its difficulty selling abroad but relatively little about our capital goods sector, which seems to be much more successful. In the past twenty-five years, auto exports averaged just 11 percent of all exports, and their share in the overall economy grew a paltry .4 percent per year. In contrast, capital goods exports averaged 35 percent of all exports, and their share of the economy grew an impressive 4 percent per year.

The skewed perceptions probably result from the poor visibility of capital goods exports. By definition, consumers do not buy capital goods. Nor is it common for American tourists vacationing abroad to visit factories, airplane hangars, and construction sites, where such goods end up. We simply do not see most of what we export. As a result, most casual observers are surprised to learn that only about one-third of world trade is in consumer products like cars, shirts, and shoes that draw all the attention.

So let us look more carefully at the kinds of products that lie behind the rise in capital goods exports. First, picking at random from government statistics that detail capital goods, one finds

gas turbines, conveyor belts, poultry vision control devices, sorting machines, construction machinery, crushers, grinders, elevators, escalators, stacking carts, robots, brushing machines, jig boring machines, riveting machines, scales, generators, looms, embroidery machines, envelope printing presses, juice extractors, peanut roasting machines, hat making machines, oil pumps, gas compressors, industrial ovens, microcomputers, tape storage units, automatic teller machines, refrigerators, water filters, transformers, electric switches, condensers, traffic lights, telephone switches, television tubes, photovoltaic devices, powered brooms, aircraft, helicopters, rocket motors, barges, towboats, pontoons, space vehicles, radar systems, gyroscopes, laboratory incubators, thermostats, buoyancy instruments, surgical instruments, dental equipment, X-ray plates, and clocks. In sum, they are goods that build nations, increase infrastructure, and lay the foundations for increased productivity and wealth.

Second, more detailed statistics reveal that exports of a wide variety of machinery and equipment increased during the capital goods export boom of the late 1980s. The image of a rising tide's raising all boats is the best single way to characterize the more detailed export data. In the late 1970s, when capital goods exports surged, virtually all categories rose together. Similarly, in the early and mid-1980s, when slumping investment demand abroad and the high dollar caused exports to falter, most categories faltered together.

The evidence that capital goods exports tend to grow and fall together is further evidence that demand-side forces such as world investment demand were the prime movers of those export trends rather than special technological or supply-side forces. Specifically, it was not the case that a few special products undergoing rapid technological progress, such as computers and airplanes, were solely responsible for recent export trends. Exports of those products were among the most rapidly expanding categories of exports, but many other products also did well.

For example, between December of 1986 and March of 1992, export sales of farm machinery increased by 394 percent (in current dollars). During the same period, sales of electric lighting equipment increased 351 percent, sales of industrial air conditioning, refrigeration, and heating equipment increased 231 percent, sales of aircraft and parts increased 349 percent, and sales of computer and office equipment increased 65 percent.

The Export Engine

Although we sell only about 10 percent of the goods and services we produce to foreigners, export growth has recently been a more important part of economic growth. During the 1980s, for example, growth in real exports was 20 percent of total real growth in the economy. Since 1986, when the export surge really began, nearly half of real growth was in exports. In the recession year of 1991, while the economy basically did not grow, exports still increased by 7.4 percent—relieving what would otherwise have been an even more severe recession.

That evidence does not mean that if export growth had been zero during the 1980s, then economic growth would have been exactly 20 percent lower than it was. Without export growth in the 1980s, other economic variables such as the real value of the dollar would have been different, and those in turn would have affected growth. But the evidence does suggest that exports have become an important source of economic growth, and their importance seems to be increasing. Moreover, given constraints on fiscal policy and continued commitment by the Federal Reserve to low and stable inflation, exports will probably continue as an important demand stimulus for the American economy in the early 1990s. And given recent history, the prospects for global investment may continue to be an important indicator of the prospects for American exports.

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The Shifting Domestic Manufacturing Base

Our export performance has mirrored a restructuring of our manufacturing base that also has escaped wide attention. In the late 1960s much of our manufacturing base was devoted to national defense production and to consumer goods such

as shirts and autos. Capital goods production outside of defense and autos amounted to just 28 percent of total manufacturing production. Only 20 percent of our capital goods production was exported, and those exports amounted to just 1.4 percent of total economic output.

Today, capital goods production outside of the defense and auto sectors has increased its share of manufacturing production to 38 percent. We export almost 50 percent of our capital goods production, and now exports of capital goods are 4 percent of total economic output—about three times as much as in the late 1960s.

Although the shift of the manufacturing base over the past twenty-five years into capital goods is impressive, there are also signs that it may not continue so vigorously during the next twenty-five years. The reason is that imports of capital goods have risen strongly in recent years and have offset the impact of growth in capital goods exports. In the late 1960s just 5 percent of all the machinery and equipment invested in the American economy was produced abroad. In the second quarter of 1992, that number had climbed to about 34 percent. While exports of capital goods still exceed imports of capital goods by about 20 percent, the gap has diminished in recent years.

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The rise in imports need not cause alarm but does suggest that we are in the midst of an interesting economic transformation. Greater imports and exports of capital goods at the same time means that production of those goods is becoming more internationally specialized. Plant and equipment investment today may simply require more specialized machinery produced in a variety of countries than it did before. That raises several possibilities concerning the links between domestic investment determination and international economic issues that have not yet attracted attention but may become important in the 1990s.

For example, the received wisdom holds that a change in the real value of the dollar will affect the composition of investment spending across industries but will not necessarily alter the level of total investment. Whether the level of investment is affected depends on the capital intensity of the expanding and declining sectors. It is hard to say anything about this without more detailed evidence.

When we import much of our capital equipment, however, a strong dollar can make the equipment relatively cheaper and stimulate investment across the board. Hence, a rising import share introduces an effect of the dollar on the level of investment that has not been previously important but may well become important in the future.

The rising import share also diminishes the power of Federal Reserve interest rate changes and an investment tax credit in stimulating domestic industry. This is so since an increasing share of any investment stimulus from lower interest rates will fall on foreign capital goods rather than domestic capital goods. By the same token, with more of our capital goods being sold abroad, foreign central bank policy that stimulates foreign investment demand will fall on our goods to a greater extent than before. In sum, on both the export and import sides, the international transmission of economic shocks through the channel of the capital goods sector is becoming more important.

Implications for U.S. Industrial Competitiveness

The assertion that greater international trade has been shifting American manufacturing into low-tech, low-skilled activities is difficult to defend in light of evidence that we are net exporters of capital goods and that exports of capital goods continue to grow. Casual examination of the activities included under the capital goods umbrella certainly casts doubt on the notion that those industries are dominated by low-tech, low-skilled labor. But can we be more precise about the exact nature of those industries?

Merging various micro data sets from around 1984, a study by Lawrence Katz and Lawrence Summers examined the characteristics of export-intensive and import-intensive industries. The six industries in their study with the highest export-to-sales ratios were all capital goods industries: aircraft and aircraft parts, construction machinery, electronic computing equipment, railroad

equipment, scientific instruments, and engines and turbines. In those industries export sales ranged from 37 to 21 percent of all shipments.

Katz and Summers found that workers in the nine industries with high export-to-sales ratios (six of which are the capital goods industries above) had more education that the typical manufacturing worker. The average years of schooling for such workers was 13.3, compared with 12.1 for all manufacturing industries. Those industries also paid higher wages than average ($10.33 versus $8.91 per hour in 1983) and had a lower proportion of female workers (24.6 versus 33.2 percent) and black workers (7.2 versus 10.3 percent).

A particularly interesting finding was that even after adjusting for the effect on wages of observable characteristics such as education, experience, and occupation, wages in those industries were about 11 percent above wages for the typical manufacturing worker. One interpretation of that finding is that those workers, far from being engaged in low-wage activities, actually benefit from a wage premium over and above a level that would be justified by their observable characteristics. The study also found that such wage premiums were remarkably stable over time and across countries. Those data suggest that export-intensive capital goods industries provide classic examples of "good jobs at good wages."

A second striking finding from the Katz and Summers study was that the capital goods industries were particularly heavy investors in research and development. For example, research and development expenditures were about 7 percent of total sales for the capital goods industries and only 2.9 percent for all of manufacturing. It is hard to determine whether such industries could afford high R&D because they were successful or whether they were successful because they had high R&D expenditures. In any case, the high fraction of R&D expenditures is not inconsistent with the view that those industries are technologically sophisticated.

It is interesting that on the import side Katz and Summers found industries with opposite characteristics. For example, industries with high imports as a percent of domestic sales tended to have low R&D expenditures, low wages, and low wage premiums. The image of the American auto and steel industries' protecting high-wage jobs from the onslaught of imports simply is not representative of the import-competing sector in general. Import-competing industries are more

accurately characterized by low wages, low wage premiums, low R&D, and low-skilled workers.

Summing up

Perhaps the most important broad conclusion from such facts about exports and the importance of the capital goods component is that increased international trade over the past quarter of a century has helped transform the American economy

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in ways that many would consider benign. While the fraction of the economy devoted to manufacturing has remained fairly stable at about 23 percent, the fraction of the manufacturing sector devoted to capital goods production has risen from 28 percent to 38 percent. The growth of exports of capital goods is an important driving force behind that industrial transformation, and the growth in world investment demand is an important driving force behind the growth in capital goods exports. Evidence from data in 1984

indicates that capital goods industries tend to have high-wage jobs and are intensive in research and development. Those facts stand in sharp contrast to assertions that greater international trade is eroding our manufacturing base and transforming us to a nation of janitors and hamburger flippers.

There is an interesting foreign policy twist on those results because they suggest that we benefit by promoting global economic development. That is, the evidence of the past twenty-five years suggests that we can stimulate our exports by encouraging other nations to shift their spending from consumption to investment. In that sense the capital goods sector of the American economy benefitted from the economic restructuring in Western Europe unleashed by anticipation of unification. Today that sector is benefitting from continuing economic reform in Latin America. Looking ahead to the next five to ten years, global forecasts predict that investment demand will grow rapidly in China and East Asia. While the trade data above indicate that the countries of the former Soviet bloc are now very small trading partners, they could become much larger if and when they begin serious economic restructuring. Overall, it is encouraging to find that the United States has benefitted from precisely the same kinds of economic activities that build nations, promote economic development, and raise labor productivity in foreign economies.

Export promotion through encouraging worldwide investment spending may be a particularly enlightened and effective form of industrial policy.

When viewed as an export promotion policy, the policy of encouraging global investment spending does not have the beggar-thy-neighbor undercurrents that undermine some of the alternatives such as export subsidies or dollar depreciation. Critics often contend that dollar depreciation is infeasible, inflationary, or ineffective. In addition, the rising import content of our own capital goods spending suggests that depreciation may have the unintended consequence of depressing investment at home by making imported capital equipment more expensive. That would further undermine our performance on that front. Furthermore, after taking into account the role of global investment in promoting our exports during the last five years of the 1980s, the evidence suggests that dollar depreciation after the Plaza Accord in 1985 was less important than analysts thought at the time. In sum, export promotion through encouraging worldwide investment spending may be a particularly enlightened and effective form of industrial policy.

Selected Reading

Katz, L.F. and Summers, L.H. "Industry Rents: Evidence and Implications." *Brookings Papers on Economic Activity: Microeconomics* (1989).