MANUFACTURING AND STEEL PRICES

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Introduction

This paper examines recent growth, profitability and employment patterns in manufacturing and steel-using industries. It concludes that, despite its underlying strengths, U.S. manufacturing has been adversely affected by such factors as exchange rates. Steel prices have not been a significant factor affecting US manufacturing. Within manufacturing, employment is actually faring better in steel-using industries than in other durable and nondurable goods industries. The profitability of steel using industries has matched other durable goods industries. Steel is a relatively small component of cost in most steel-using industries, and recent increases in U.S. steel prices generally have been matched by price increases abroad, leaving U.S. manufacturers at no comparative disadvantage.

U.S. manufacturers are at a substantial competitive disadvantage because of other factors, including an overvalued dollar; higher health care costs than those borne by manufacturers in other countries; and various other regulatory costs. These factors, rather than higher steel prices, are the reason manufacturing jobs have been leaving the United States for other countries.

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The State of American Manufacturing

By certain key measures, including productivity, and innovation, the U.S. manufacturing sector has demonstrated its competitiveness. Manufacturers have streamlined operations, applied computers and the Internet to the critical issue of supply chain management, and improved on quality metrics, while constantly exploring, developing and commercializing new technologies and products. These efforts have been substantially offset by factors such as exchange rates and health care costs that have made it more difficult for the U.S. manufacturing sector to compete. As a result, the view is widespread that U.S. manufacturing is in a state of crisis.

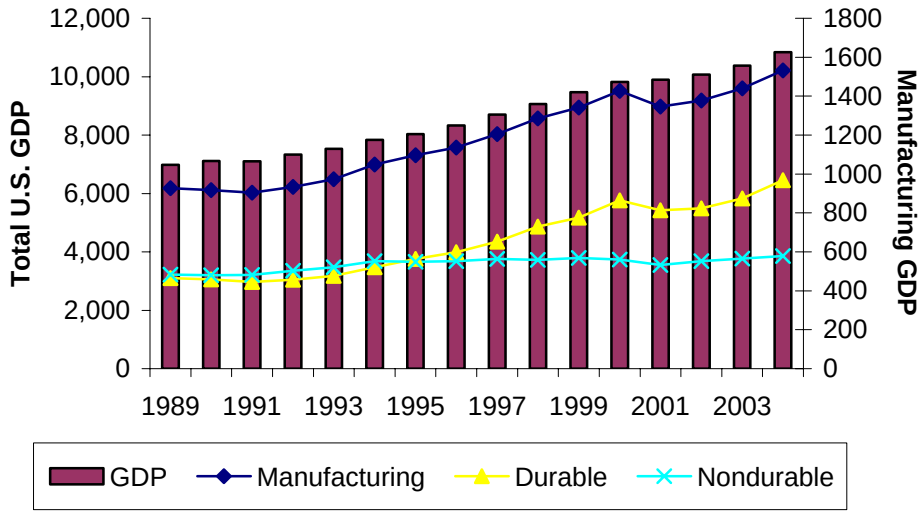
Output

An initial measure of the state of manufacturing is its share of the economy or GDP. From 1989 to 2000, manufacturing's share of nominal GDP (i.e., not adjusted for inflation) fell from 16.9 percent to 14.5 percent. The slowdown in the manufacturing activity, especially during the recession of 2001 caused its share of nominal GDP to fall to 13 percent by 2004. As this paper shows, this trend has little connection with steel pricing.

In spite of a challenging environment, manufacturing exhibits above average productivity growth, and this rate of advance has accelerated substantially over the last decade, permitting the nation's factories to produce more goods at gradually falling prices. From 1989 to 2000, the manufacturing sector's share of real (inflation adjusted) GDP increased from 13.3 to 14.5 percent. In 2001, manufacturing’s share of real GDP declined to 13.6 percent, a normal occurrence in a recession. Since then, it has partially recovered to over 14 percent, but is not yet back to its pre-recessionary levels.

The durable goods sector, where steel is mostly consumed, has performed comparatively better than overall manufacturing. As Chart 1 shows, durable goods' share of real GDP increased from 6.7 percent in 1989 to about 8.9 percent in 2004. Nevertheless, both durable and non-durable goods manufacturing should be doing much better, but are constrained by currency manipulation and other regulatory and structural burdens that are unrelated to steel pricing.

Chart 1
GDP by Industry
(Billions 2000 Dollars)



Source: Bureau of Economic Analysis:
http://www.bea.gov/bea/industry/gpotables/gpo_list.cfm?anon=995771&registere

Profitability

Despite the challenges posed by distorted exchange rates and rapidly rising health care costs, the major steel-consuming industries have been generally profitable over the past five years. As Chart 2 shows, this stands in sharp contrast to the steel industry, which was only intermittently profitable. Steel-using industries have been and remain as profitable as other durable goods industries.

CHART 2
AFTER-TAX PROFITS IN MANUFACTURING

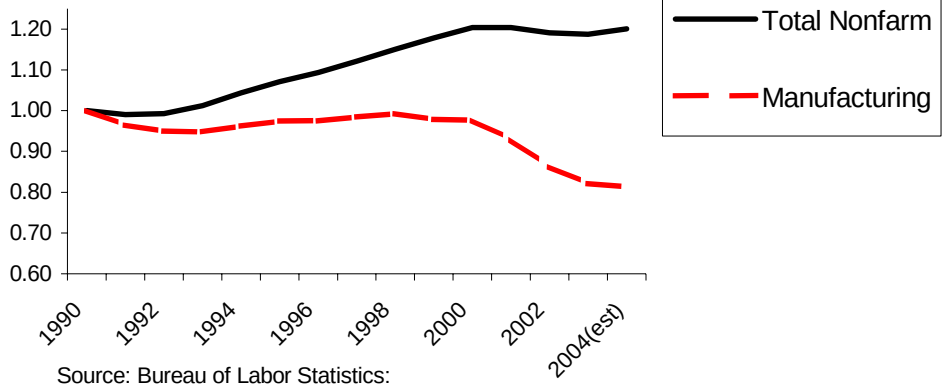
Sector	2000	2001	2002	2003	2004	Average
All Manufacturing	6.00%	0.83	3.18	5.35	6.93	4.40
All Durable Goods	5.23	-3.25	0.95	3.85	6.23	2.57
Iron and Steel	-1.95	-8.68	-2.95	-4.05	6.93	-2.54
Fabricated Metal Products	5.05	2.50	3.18	3.03	6.33	3.92
Machinery	6.10	2.68	-1.55	2.80	6.77	3.25
Electrical Equipment and Appliances	9.28	8.55	10.53	11.03	10.63	9.92
Transportation Equipment	3.60	-0.08	2.03	2.73	4.20	2.52

Source: U.S. Census Bureau, Quarterly Financial Reports for Manufacturing, Mining and Trade Corporations. http://www.census.gov/prod/www/abs/msqfr-mm.html. 2004 based on three quarters of data.

Employment

The difficulties encountered by U.S. manufacturing are most evident in employment. In the 1990s, as employment in the broad economy grew 1.4 percent a year, employment in services grew briskly, while in manufacturing it was reasonably steady. After 2000, though, overall jobs growth slowed to 0.4 percent a year, while employment in manufacturing fell sharply. Chart 3 shows the divergent tracks of total non-farm and manufacturing employment since 1990.

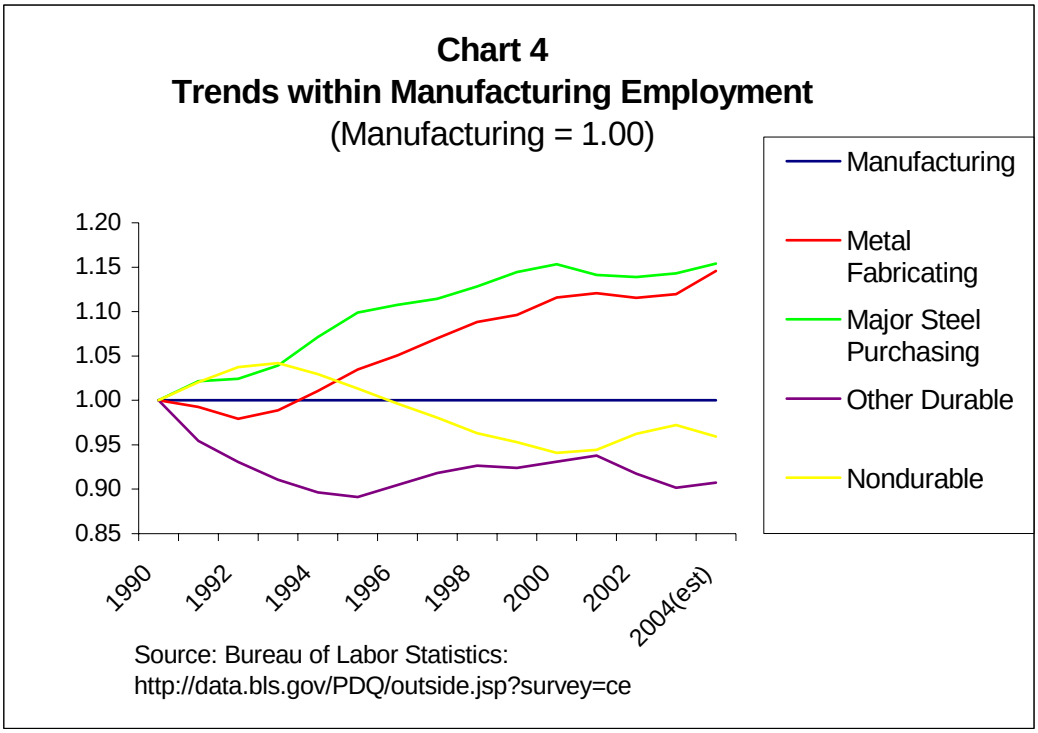
Chart 3
Trends in Manufacturing Employment
(1990 = 1.00)



Source: Bureau of Labor Statistics:
http://data.bls.gov/PDQ/outside.jsp?survey=ce

As with output, employment trends within manufacturing have differed by sector. Workers making durable goods have fared better than those in the nondurable goods industries, and workers in steel-intensive industries have done even better.[1] Normalizing sectoral trends for overall manufacturing employment best illustrates the relative employment performance of steel-consuming industries. As Chart 4 shows, since 1990 the major steel-purchasing and metal fabricating segments have increased their share of manufacturing employment, even as manufacturing employment overall has declined.

[1] Within manufacturing, the largest purchasers of steel products are fabricated metal products (North American Industrial Classification System, 332), machinery (333), electric lighting equipment (3351), household appliances (3352), electrical equipment (3353), and transportation equipment (336) less aerospace (3364), and furniture and related products (337).



The challenge of creating jobs in manufacturing is acute, but it is not centered in steel-consuming industries. Although the automotive and some individual metal fabricating industries face formidable challenges, the output, profit and employment data indicate these challenges are not particular to users of steel. Rather, declining employment in manufacturing represents the operation of other factors that have offset the efficiency and innovation of American manufacturing.

Durable Goods Manufacturing and Steel

In 2004, steel prices increased significantly. Some customers complained about rapidly rising costs and temporary shortages, and some critics charged high steel prices were driving manufacturing and jobs from the United States and causing cutbacks in production and employment. The fact is that industrial production and durable goods production increased significantly in 2004, as did employment in durable goods industries.

Even among the major steel-consuming industries, steel represents only a relatively small portion of overall costs. Rising steel prices in the United States would cause manufacturers to relocate only if prices in the United States were rising relative to those in other countries. In fact, steel prices in foreign markets have generally risen at a faster rate than those in the United States. Hence, recent price changes have not placed U.S. manufacturers at a comparative disadvantage. Combined with the fact that global steel prices do tend to swing widely over fairly short periods, this makes it unlikely that rising steel prices in the United States have been a cause for the relocation of manufacturing operations to other countries.

Steel as a Share of Total Costs

Eight industries purchase about 90 percent of the steel sold in the United States.[2] Yet, even for these industries, steel accounts for only about 3 percent of total costs. The automotive industry, for example, accounts for about 13 percent of all steel purchased; yet steel represents only about 3 percent of the cost of building a motor vehicle. Even in fabricated metal products, steel is only 14 percent of total costs. Chart 5 shows the major steel-consuming industries, with their percentage of steel consumption and the percentage of their total costs represented by steel.

[2] U.S. shipments, minus exports plus imports, and net of purchases by steelmakers (e.g., scrap, steel sold to rolling mills).

Chart 5
Steel Purchases by Sector and Share of Costs

Sector	Share of Steel Purchases	Steel Share of Industry Costs
Mining, Oil and Gas (21*)	2.4%	1.4%
Oil and Gas	1.7%	1.4%
Construction (23)	7.8%	0.7%
Furniture and Fixtures (337)	2.3%	2.9%
Fabricated Metal Products (332)	34.8%	14.0%
Industrial Machinery (333)	22.7%	4.9%
Electrical Industrial Equipment (3351-2)	2.7%	3.7%
Household Appliances (3352)	1.5%	6.3%
Transportation Equipment (336 less 3364)	15.8%	2.5%
Motor Vehicles	13.3%	2.7%
Bodies and Parts	12.8%	7.8%
Total/Average	89.9%	3.1%

Source: Bureau of Economic Analysis: I-O Use Table. http://www.bea.gov/bea/dn2/i-o_histannual.htm. Corresponding North American Industrial Classification Industries in parentheses.

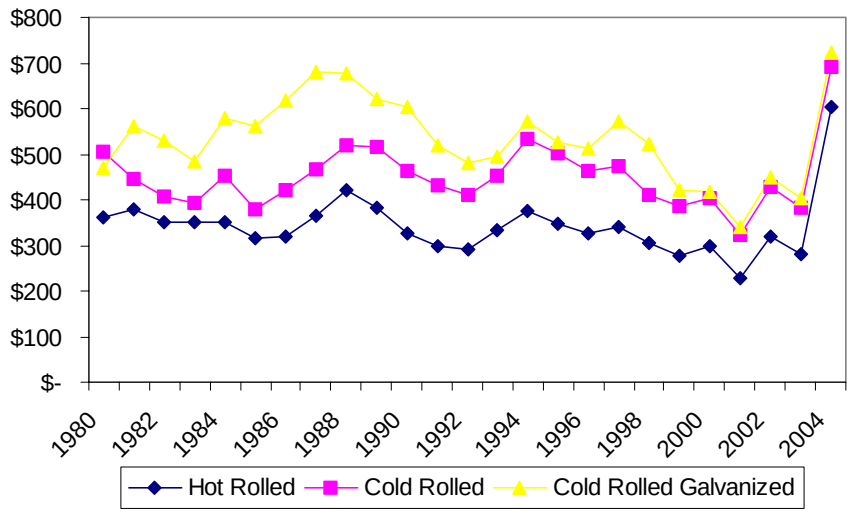
These data, combined with the data on steel profits data contained in Chart 2, indicate that the price of steel has relatively little impact on the performance of steel-consuming industries. Specifically, in the first three quarters of 2004, after-tax profits in the iron and steel industry were 6.93 percent of sales, only slightly higher than for durable goods overall at 6.23 percent. Were steel industry profits at the same level as durable goods, steel prices would have been only 0.7 percent lower, which would have a trivial impact on the cost of producing the products described above.

The Volatility of Steel Prices

In 2004, a great deal of media attention focused on spot prices. However, spot prices are volatile, and the actual prices paid by many manufacturers were moderated considerably by contracts. Spot prices for hot-rolled, cold-rolled and galvanized steel compiled by *Purchasing* magazine rose by an average of 88.8 percent from 2003 to 2004. Yet, according to the Bureau of Labor Statistics actual transactions prices for

steel mill products were up only about 34 percent.[3] This is strong evidence of the role that contracts play in dampening the effects of steel price increases on purchasers.

Chart 6
Sheet Steel Prices, 1980 - 2004
(Dollars Per Ton)



Source: Purchasing Magazine.

Anecdotal evidence confirms the spread between spot and contract prices. The fall 2004 price for coated sheet steel purchased by the Big Three were well below the prices compiled by *Purchasing* magazine.[4] Significantly, auto parts suppliers have the option of buying steel through the contracts of the major automobile producers. Those firms that do not purchase by contract generally do so by choice; they choose to speculate in steel markets as well as to fabricate steel.

Steel prices are highly volatile. As Chart 6 shows, spot prices for hot-rolled, cold-rolled, and galvanized steel all exhibited wide swings between 1980 and 2004. Prices

[3] Bureau of Labor Statistics producer prices series WPU1017. http://data.bls.gov/PDQ/outside.jsp?survey=wp.

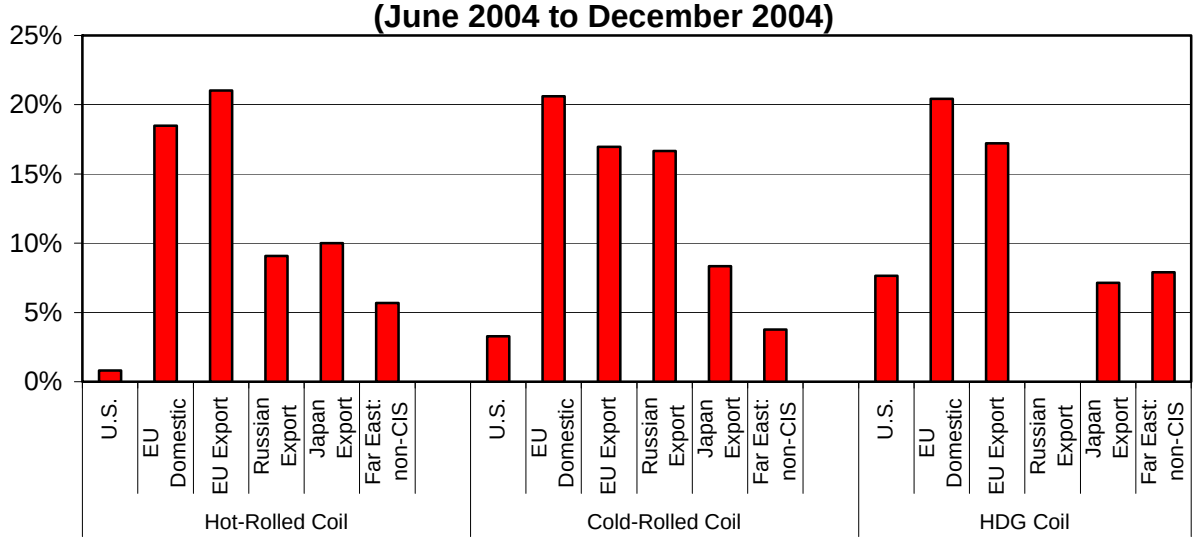
[4] *Automotive News* ("Strong sales, but no rebate relief," December 27, 2004) reported the Big Three were paying $760 per ton for hot dipped galvanized steel, whereas the average spot price reported by *Purchasing* magazine for September through November was $838.

were at 20-year lows in 2001, only to move to 24-year highs in the third quarter of 2004. Prices have since begun to fall; spot prices in the U.S. market for hot-rolled sheet, for example, fell by more than 15 percent from their highs in September 2004 to January 2005. While steel users can largely insulate themselves from wide swings in prices through long-term contracts, many users opted to buy in the spot market on the assumption that prices would fall. Indeed, with steel prices, as with apples, the rule seems to be that "what goes up must come down." Given the volatility of steel prices, it is extremely unlikely that steel-using businesses will decide that very high short-term prices justify the risk and expense of relocating operations to outside the United States – especially if, as shown below, steel prices in other countries were rising rapidly too.

Steel Prices in Other Countries

Strong worldwide demand, and in particular demand in China and Asia, have pushed up steel prices. Chart 7 shows that prices for flat products rose more rapidly outside the United States during the second half of 2004. Given the relatively low portion of total costs accounted for by steel, the volatile nature of steel prices and mechanisms available to deal with volatility, and the rapid increase in steel prices outside the United States, it is apparent that high domestic steel prices are not forcing U.S. manufacturing offshore.

Chart 7
Increases in Prices for Steel Sheet Products
(June 2004 to December 2004)



Source: CRU, Steel Sheet Products Monitor, June 2004 and December 2004.

Macroeconomic Factors Affecting Employment in Manufacturing

Since 1999, manufacturing output has increased 14 percent, while employment in manufacturing fell by 17 percent. This divergence reflects the fact that improvements in our ability to supply goods have outpaced the demand for those goods. Domestic demand has been held back by large and increasing trade deficits, with imports growing more rapidly than exports because foreign competitors have been aided by currency manipulation and higher U.S. regulatory costs.

Productivity

From 1995 to 2004, output per hour in the U.S. private business sector increased more than 3.1 percent per year—about double the rate of the previous decade. Manufacturing productivity grew 4.3 percent a year, as compared to 2.7 percent for the previ-

ous 8 years. In the durable goods industries, productivity advanced 5.4 percent per year, as compared to 3.2 percent for the same prior period.[5]

GDP growth should increase along with the growth in productivity, but in fact GDP growth has lagged behind productivity growth. From 1995 to 2004, real GDP grew 3.3 percent a year; this was not much more than the 2.8 percent pace posted from 1985 to 1995. Since 1999, through recession and recovery, GDP has grown an average of 2.7 percent a year, a bit less than the earlier norm.[6] Consequently, unemployment, after bottoming at 3.8 percent in 2000, has risen to well above 5 percent and stayed there.[7]

Some observers blame stubbornly high unemployment on stronger productivity growth.[8] However, in the past, the U.S. economy has experienced rapid productivity, employment and wage growth. During the early 1960s, for example, productivity growth was robust and unemployment fell to 3.8 percent, while real compensation in the private business sector grew 3 percent a year.[9]

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[5] Bureau of Labor Statistics manufacturing productivity data is at: http://data.bls.gov/servlet/SurveyOutputServlet?data_tool=latest_numbers&series_id=PRS30006092

[6] Bureau of Economic Analysis GDP data at: http://www.bea.gov/bea/dn/nipaweb/SelectTable.asp, Table 1.1.5 and 1.1.6.

[7] Bureau of Labor Statistics unemployment data at: http://www.bls.gov/webapps/legacy/cpsatab1.htm.

[8] James C. Cooper, "The Price of Efficiency: Stop blaming outsourcing. The drive for productivity gains is the real culprit behind anemic jobs growth," *Business Week* (March 22, 2004) and other articles in that issue focusing on the jobs drought. http://www.businessweek.com/@@1YfwzoYQsschdAEA/magazine/content/04_12/b3875603.htm and http://www.businessweek.com/magazine/toc/04_12/B38750412jobs.htm.

[9] Productivity growth is an important variable in the jobs equation, but historically, it has not been the cause of rising unemployment.

We have enjoyed periods of rapid productivity growth—caused by the practical application of major inventions. In the post Civil War period, industrialization and the consolidation of national markets accelerated through the spread of steam power, railroads, and the telegraph. In the 1910s and 1920s, the application of electricity in factories and offices and the national telephone system were critical to the pre- and post-WWI progress.

Trade Deficits and Currency Manipulation

An important difference between our recent experience and the 1960s is a large and growing trade deficit. Since 1995, the trade deficit has increased from $143 billion to more than $600 billion, while the trade deficit in manufactured goods has increased from $143 billion to more than $475 billion.[10] Although consumer demand has grown rapidly, much of that growth has been satisfied by additional imports, while exports have lagged.

These trade deficits have several causes. First, fundamental structural problems severely constrain growth in Japan and Europe. Second, in January 1993, China revalued the yuan from 5.7 to 8.7 per dollar. Since May 1995, China has kept the yuan pegged at about 8.3 to a dollar. Third, following the 1997 Asian currency crisis, governments throughout East and Southeast Asia similarly realigned their currencies downward against the dollar to promote exports. Their policy options are constrained by China's policies; if they let their currencies float freely, they risk losing important segments of their export markets to China.

(Continued . . .)

In the early- and mid-1960s, jet travel, the mainframe computer and better telecommunication were key. Automation was the buzzword. I remember, as a young student of economics, it seemed everyone was afraid of being replaced by a machine!

Looking at the early and mid 1960s, the period for which we have the most accurate data, productivity growth averaged about 4.1 percent for the six years spanning 1961 to 1966; the civilian unemployment rate fell from 6.7 percent to 3.8 percent and more than seven million jobs were created. Real compensation grew 3 percent a year.

As now, a war was heating up and income taxes were cut, a federal surplus in 1960 turned into significant deficits through 1968.

Unlike now, however, the dollar was not overvalued; the U.S. had a steady trade surplus--that's right a budget deficit and a trade surplus!

[10] Bureau of Economic Analysis international transactions data at: http://www.bea.doc.gov/bea/international/bp%5Fweb/tb_download.cfm?anon=13180&table_id=1&area_id=3; International Trade Administration: http://ita.doc.gov/td/industry/otea/usfth/tabcon.html (Table 3).

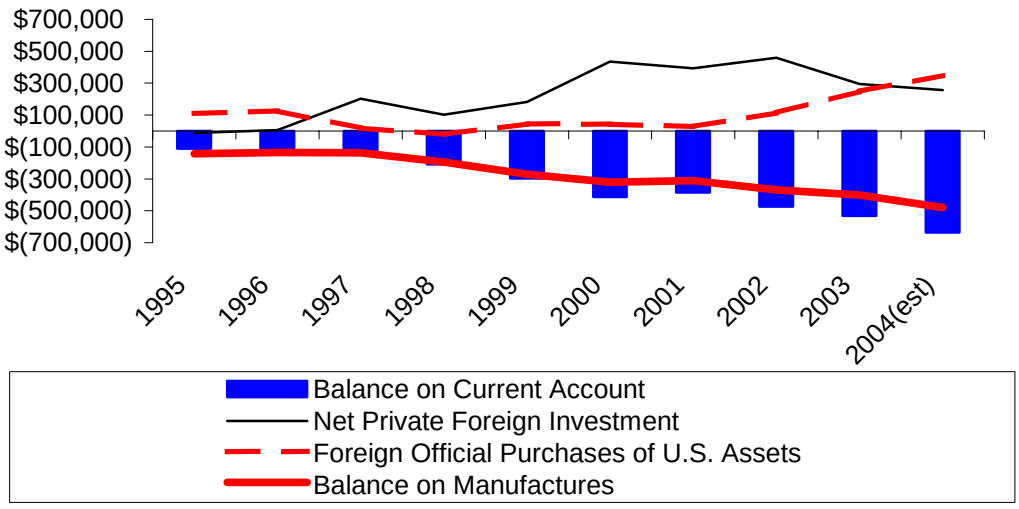
To maintain undervalued currencies and large trade surpluses with the United States, China and other Asian financial authorities purchase dollars and U.S. government securities. In 2004, China's official purchases amounted to about $185 billion, or about 33 percent of the value of China's exports[11] and about 12 percent of its GDP.[12] By keeping the value of the yuan artificially low, these purchases make Chinese exports cheaper. China's currency policies effectively provided a subsidy equal to one-third of the value of its exports.

When the tabulations are complete, official purchases by foreign (mostly Asian) governments of U.S. assets in 2004 will likely be in the range of about $350 billion, or about 23 percent of the value of all U.S. imports. Essentially, foreign governments are providing a 23 percent subsidy on their exports to the United States. Chart 8 illustrates the impact of these purchases on the U.S. trade deficit and the trade deficit in manufactures.

[11] International Monetary Fund, *International Financial Statistics:* http://ifs.apdi.net/imf/.

[12] According to the National Bureau of Statistics, China's GDP was 11.7252 trillion yuan in 2003 (*China Daily* http://www.chinadaily.com.cn/english/doc/2004-10/17/content_383022.htm); applying a 9.5 percent growth rate for 2004 and dividing by the official exchange rate of 8.28 yields $1.5506 trillion. $185 billion (which is based on eleven months of data) is 11.93 percent of GDP.

Chart 8
U.S. Balance on Current Account and Foreign Investment



Sources: Bureau of Economic Analysis:
http://www.bea.doc.gov/bea/international/bp%5Fweb/tb_download.cfm?anon=13180&table_id=1&area_id=3.
International Trade Administration: http://ita.doc.gov/td/industry/otea/usfth/tabcon.html (Table3).

Were this intervention in global currency markets reduced by $250 billion, the trade deficit would fall by a like amount. U.S. GDP would increase by as much as $500 billion and employment by as much as 3.8 percent, representing five million new jobs in the United States.[13] Nearly 40 percent—1.9 million jobs—would be in manufacturing. More than 650,000 would be in the steel-using manufacturing industries. [14]

[13] Peter Morici, *Currency Manipulation and Free Trade* (December 2004) http://www.biznuzz.com/petermorici/currency.pdf.

[14] Manufactures are 65 percent of exports and imports; hence, it would take $162 billion in additional domestic manufactured goods to reduce the trade deficit by $250; manufacturing is 13 percent of nominal GDP, and increasing GDP by another $250 billion would increase manufacturing value added by another $32.5 billion. Adding 162 and 32.5, and dividing by 500 yields 38.9 percent. Employment in 2004 was 131.281 million. Multiplying that figure by the expected increase in total employment (3.8 percent) and then by 38.9 percent yields 1.941 million. Steel-using manufacturing industries account for 33.89 percent of manufacturing; hence, their estimated gain would be 657.7 thousand jobs.

Other Regulatory and Structural Costs

The National Association of Manufacturers (NAM) has identified other regulatory and structural factors that disadvantage U.S. manufacturers in international competition. NAM has estimated the average additional costs imposed by these, as compared to conditions in nine other major manufacturing countries—Canada, China, France, Germany, Japan, Korea, Mexico, Taiwan, and the United Kingdom.[15] These factors include:

Employee benefits, including health insurance. The United States spends more than 15 percent of GDP on health care, while Germany and France spend an average of 10 percent --and the United States still has about forty-five million uninsured persons. These data imply Americans pay at least 50 percent higher prices for health care than do the Germans and French. Overall, NAM estimates that higher employee benefits costs, as compared to those borne by competitors in the nine countries listed above, add about 5.5 percent to total manufacturing costs.

More frequent lawsuits, higher legal fees and judgments. NAM estimates these add an additional 3.2 percent to U.S. manufacturers' costs.

Environmental regulation. As well as the direct costs imposed by environmental compliance, stricter environmental laws in the United States have had the effect of raising U.S. natural gas prices to artificially high levels. Overall, the NAM estimates costs of environmental regulation add another 4 percent to the costs of U.S. manufacturers.

These costs sum to 12.7 percent. This amount is much greater than the impact of higher steel prices on even the metal fabricating industry. Moreover, these higher costs apply to practically all manufacturers.

[15] Jeremy A. Leonard, *How Structural Costs Imposed on U.S. Manufacturers* (National Association of Manufacturers, December 2003) http://www.nam.org/s_nam/sec.asp?CID=201715&DID=230263.

Nor are these the only factors imposing higher costs on U.S. manufacturers; a number of other, less-evident factors raise U.S. costs even more. For example, the U.S. relies more on direct taxation of capital and labor, while many foreign governments rely more on indirect taxes, such as value-added taxes. WTO rules do not permit governments to rebate direct taxes on exports but do permit rebates for indirect taxes. This places an additional burden on the competitive performance of capital-intensive industries, such as those making and fabricating steel.

Conclusion

Despite the disadvantages imposed by currency manipulation, high health care costs, and other regulatory burdens, durable goods manufacturers and steel-using industries in the United States are generally profitable. Employment has slipped throughout manufacturing, despite strong productivity growth and rapid product innovation. Importantly, profitability in steel-using industries has matched other durable goods industries, and employment in steel-using industries has actually outperformed other manufacturing activities.

Given the worldwide escalation of steel prices and the relatively small contribution of steel to overall manufacturing costs, rising steel prices have had little impact on the competitive position of U.S. manufacturing. Even if steel were made available to U.S. steel-using industries free of charge that would only reduce costs in steel-using industries by about 3 percent. That figure pales in comparison to the 23 percent subsidy currency market intervention imparts on imports, or the nearly 13 percent in cost disadvantages imposed by costly regulations and other structural costs identified by NAM.

Manufacturers could be best helped by addressing currency manipulation and the overvalued dollar, rising health care costs, and other regulatory burdens. Dealing

with currency manipulation by China and other Asian countries alone could add nearly two million manufacturing jobs and 650,000 jobs in the manufacturing industries that make intensive use of steel.