

**The US House of Representatives
Committee on Science and Technology
Subcommittee on Technology and Innovation**

November 6, 2007

Hearing on

**The Globalization of R&D and Innovation, Part IV;
Implications for the Science and Engineering Workforce**

**Testimony of
Charles W. McMillion**

Thank you Chairman Wu and the other Members of this Committee for your work in this vitally important area and for inviting me to appear before you today.

I believe the topic of these hearings is among the most important facing our country. The reason is simple: the US can compete against vastly cheaper producers in China and elsewhere but only to the extent that producers of goods and services here in the US make vastly superior products using vastly superior process technologies.

Misleading “competitiveness” indexes now invented for global firms notwithstanding, the US economy has not been competitive for a generation. Rather, our economy has worked-off the vastly superior wealth, infrastructure and production systems that it enjoyed at the end of World War II when much of the rest of the world lay in rubble.

You heard from excellent witnesses in previous hearings and you have an outstanding panel of other witnesses today. So I will emphasize just three key, but often neglected points:

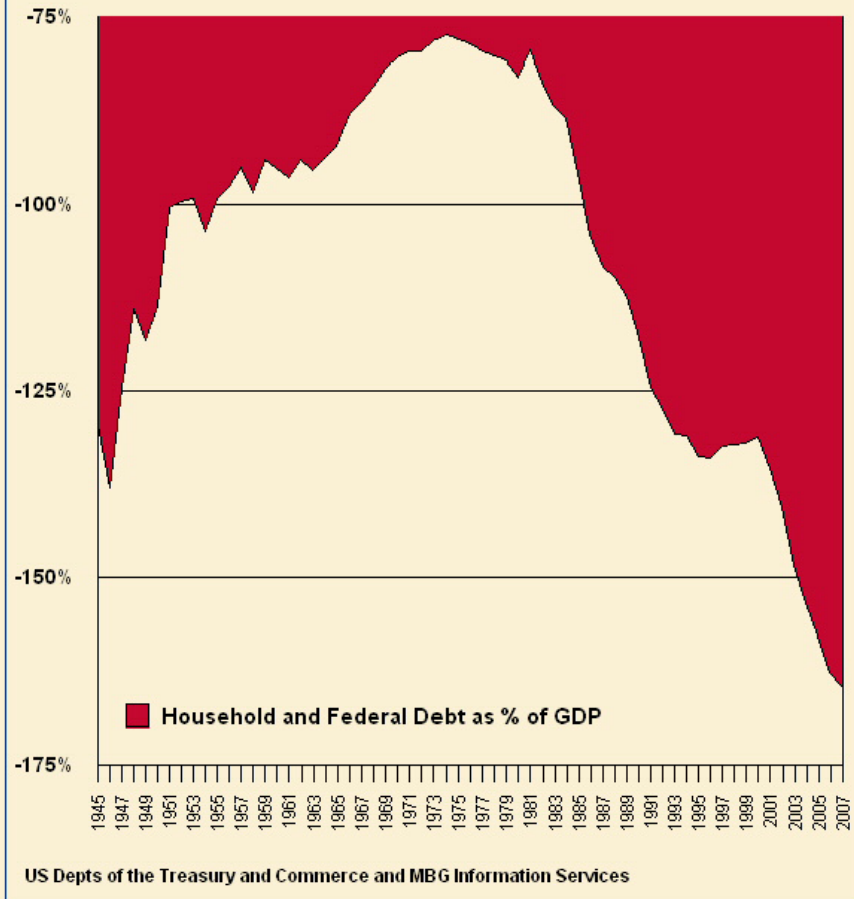
1. The US economy and the scientific and engineering workforce has been sustained by an unprecedented and unsustainable level of debt for a generation;
2. Massive and chronic US losses in global trade, a key cause of the debt explosion, have now produced enormous and unsustainable *foreign* debts and is rapidly undermining the vast technology superiority that is essential to our STEM workforce and to our economy;
3. China and other competitors are quickly creating remarkable dynamism, modernizing and integrating their innovation and production systems, posing very severe and urgent threats to the scientific and engineering workforce and to the US economy.

There is a convention in economics, often useful for theoretical work, that assumes full employment. Unfortunately this purely theoretical convention has come to be adopted as reality by many analysts in the US -- although rarely anywhere else. This often unconscious assumption leads many analysts and policy makers to complacency, focusing exclusively on shifts within a fully employed workforce rather than on job losses and the wage and other effects of significant unemployment.

Household and Federal Debt Percent of GDP:

Post-WWII Debt Levels fell but have rocketed since 1981

% Debt to GDP at end of each Fiscal Year



Sustaining the US workforce and the economy

Congress recently was forced to raise the \$9 Trillion Federal debt ceiling. I hope all of you recall that the Federal debt first reached \$1 Trillion only in 1981 -- after 200 years of world wars, a civil war, many other wars, depressions, recessions, wars on poverty, runaway inflation, rocketing oil prices, ambitious space missions and so much more.

It was an enormous economic and political issue at the time and in many ways a turning point in public policies.

The federal deficit now stands at \$9.1 Trillion, up \$3.3 Trillion over just the last seven years.

Household debt is up even more, from \$1.5 Trillion in 1981 to \$14 Trillion today -- increasing \$6.8 Trillion in just the last seven years.

That is, Federal and household debt increased by

\$10.1 Trillion in just seven years. For comparison, nominal GDP grew by \$4.1 Trillion -- just 41% as much as the growth of debt.

As a share of GDP, Federal and household debt fell from the end of World War II until the 1970s. Since 1981 the debt-to-GDP ratio has soared, breaking the WWII record of 138% of GDP in 2002 and is now in uncharted territory, reaching 165% of GDP at the end of FY2007.

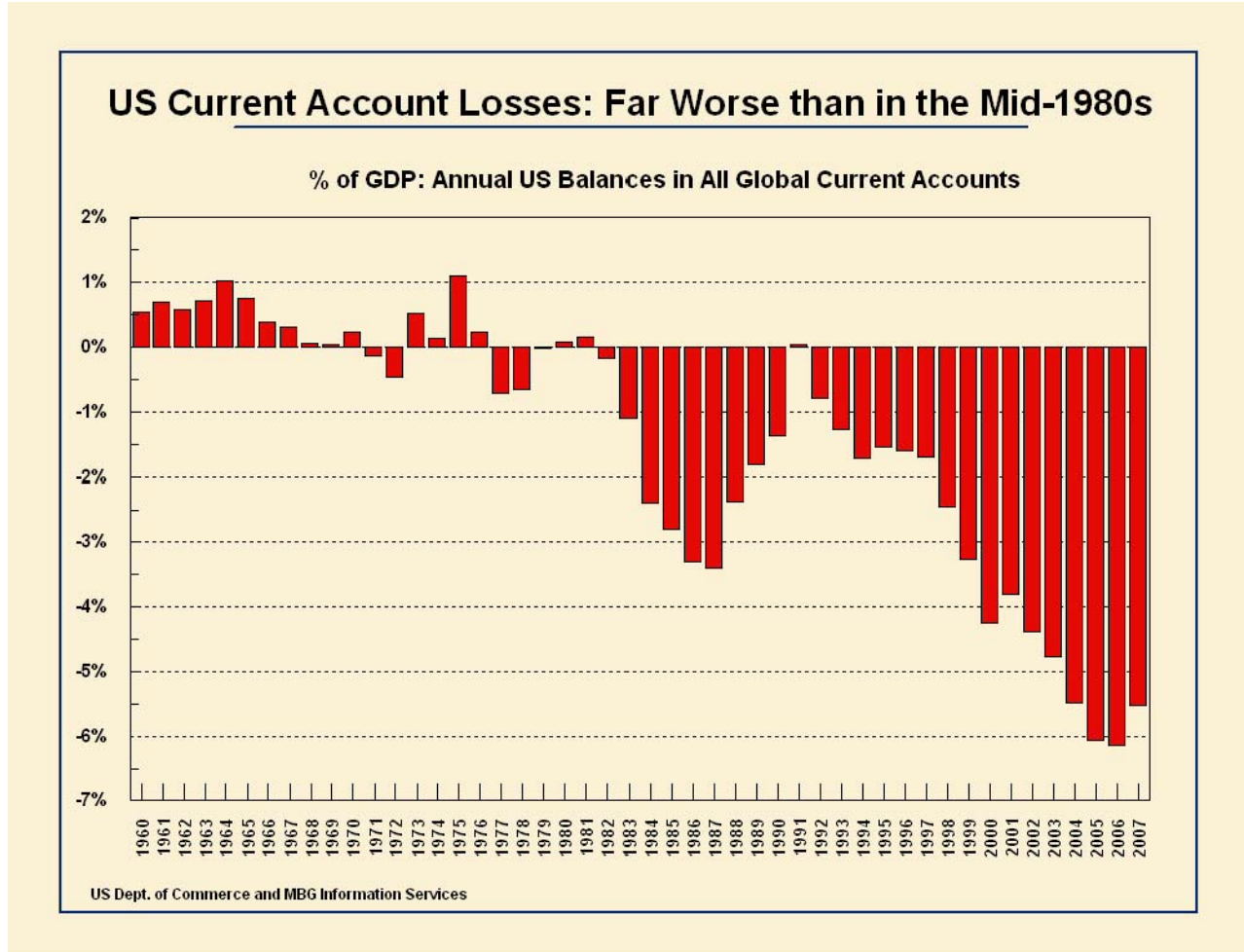
Over the past seven years the US created just 6.1 million total jobs with private sector jobs accounting for only 4.5 million of these with local public schools adding most of the public sector job growth. Even ignoring the multiplier effects of credit and job growth, this works out to over \$1.6 million in tax cuts, government contracts, credit card and other debt stimulus for each new job; over \$2.2 million for each new private sector job over the past seven years.

Even if debt had grown only at the rate of nominal GDP (and ignoring the depressing effect this would clearly have on GDP) over the last seven years, this still works out to over \$1 million per new private sector job. (a table of historical debt and GDP data is attached)

Financial innovation and the ability to accumulate debt has been the strength of the US economy. This distorts the economy in ways discussed below. Many find it unsustainable.

Global Commerce

Economic theorists often claim that importing what others can produce more cheaply automatically allows a country to concentrate on what it makes best, the sales of which will pay for imports, raising living standards for all. But chronic and massive US deficits -- now including for technology -- and borrowing show that the world is now more complex.



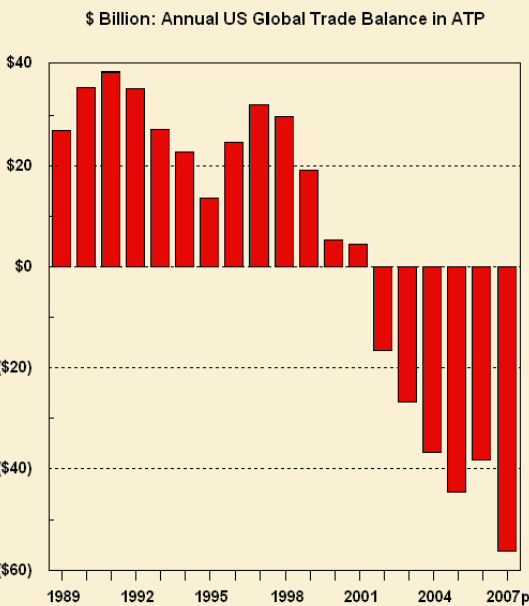
For a generation the US has produced and earned far less than it spends, importing to make up for the production shortfall and piling up worsening record levels of asset sales and debt obligations. Worsening record trade deficits for goods and services reduced US GDP in every year from 1995 to 2006 although the overall deficit is improving somewhat in 2007. US GDP growth has long been far slower than world growth --including in each of the past eight years -- but the US will nonetheless accumulated over -\$4.3 Trillion in Current Account trade deficits just between 2001 and the end of 2007.

At the worst of the “competitiveness” crisis in 1987, the US Current Account deficit briefly peaked at -3.4% of GDP. This deficit set a new record of -6.2% of GDP in 2006 and has now been worse than the mid-1980s’ peak of -3.4% of GDP in each of the past eight years. On cue, the World Economic Forum of global banking and commercial firms just named the US economy the world’s *MOST* competitive; China and India rank 34th and 48th, respectively.

Over the past seven years, 65 of the 98 US goods-producing industries in the International Harmonized Code suffered trade deficits, producing *less* than was needed for the

US Trade in Advanced Technology Goods

ATP Losses Now Much Larger Than Any Past Surplus



US economy. In total, US goods producing industries suffered a cumulative -\$4.4 Trillion in net imports and production shortfalls over the past seven years.

The worst industry shortfall, of course, is mineral fuels. But next comes vehicles and parts, electrical machinery and parts, non-electrical machinery and parts, textile and apparel, furniture and almost all manufacturing industries that employ our science and engineering workforce. The only three large manufacturing industries with net exports and surplus production are aircraft and parts, medical and optical equipment and plastics -- and the surplus in plastics is mostly for crude chemicals. Most of the goods-producing industries in which the US has global net exports are agricultural and other commodities. (see table following)

Indeed, the US lost its traditional global surplus in Advanced Technology Products in 2002 with deficits now in a majority of the more than 700 products. Even with the overall deficit

in goods trade improving by 6% yr/yr through August 2007, the ATP deficit is worsening by -45% and could reach a new annual record loss of -\$56 billion. The ATP deficit is set to again exceed the net US earnings on all Intellectual Property Royalties and Fees (including franchise fees) that appears headed for a total of about \$42 billion in 2007. This will be the worst deficit in the now fourth consecutive year that the US has suffered a global trade deficit in combined tech goods and services.

That is, for the past four years -- and increasingly -- US global net earnings on Intellectual Property are not enough even to cover the net US global payments for imported advanced technology products much less for any of the non-ATP products from autos to oil.

Labor market effects, current and future

Jobs, businesses and tax revenues lost to net imports are not automatically replaced but rather rely on various forms of debt stimulus noted above. BLS' jobs data and re-employment surveys also make clear that in the US, contrary to conventional theory, unemployed labor does not typically find more productive, higher wage employment. For a generation, new job growth in the US has been almost entirely in *less productive* but non-globally traded industries and occupations that are not easily outsourced.

In the past seven years of soaring debt, of the 6.1 million total jobs created, ALL were in non-traded, still-difficult-to-outsource public and private education and health care, and in food services and bars. During this time generally higher-wage, far more productive manufacturing firms were not adding but cutting -3.2 million jobs. Professional and technical firms did add 909,000 jobs during the period, many related to the non-globally competing boom in construction and national security.

Adjusted for inflation, wages and salaries no longer rise 3-4% per year as they did in the previous generation but have been stagnant or falling for *this* generation. The BLS reported again last week that *average* -- not just median -- real wages rose slightly in the past year but after falling sharply in 2005 this brings real wages back only to levels in 2002. As other panelists will discuss, the science and engineering workforce also has faced stagnant or declining real wages for a generation as the supply and price of talent in the US has outstripped demand.

US public policies and institutions have not kept up with fabulous technological advances, with the enormous and dynamic new capabilities of global firms or with the sophisticated and massive industrial policies of a few low cost countries, particularly China. Although China has long enjoyed a large surplus in trade with the US, China imported most of the component parts from other countries, mostly in Asia, with its economy focused on "processing" these parts into final goods. This "process trade" left China with a relatively small percentage of value-added in many modern products and only a small surplus in its global trade.

This has changed dramatically. China's global surplus in manufacturing trade was only \$31 billion in 2001 but soared to \$277 billion in 2006 and is on track to approach \$400 billion for all of 2007. In the large, parts dominated, non-electrical machinery and computer industry grouping (HS 84,) China has rocketed from a -\$7 billion global deficit in 2001 to a surplus of \$77 billion in 2006 and the surplus is on track to far exceed \$100 billion in 2007. China's global Current Account surplus reached \$249 billion in 2006, 9.4% of GDP, and will also approach \$400 billion in 2007 -- near 14% of a GDP that is growing by a price-adjusted 11.5% yr/yr.

Still, because of world-leading productivity growth, China reports that 1,440,000 (one-third) of this year's five million new university graduates were still without jobs in October. Cisco announced last week that they will expand their technology training centers in China that trained 90,000 since 2003 to train 100,000 more over the next three years. Comparable salaries for science and engineering jobs in China are reported between 10% and 30% of US salaries.

The world's leading technology firms now must be in China and must have good relations with China's authorities. This necessity is now not only because of competitive production costs but also in order to be near their customers -- the world's top producers of goods and, increasingly, services.

This gives China's authorities enormous power. For example, China requires global auto producers to have only a minority interest in any auto assembly plant in China, unless it is exclusively for export, and to provide an R&D facility. All major global auto firms are currently accelerating the amount, the scope and the quality of their R&D investments in China. Global firms in other industries are "strongly encouraged" to provide R&D before production permits are approved.

A recent UN survey of global firms found China the overwhelming choice for new R&D facilities. Controlling for purchasing power, the OECD found that China already spends more on R&D than Japan, and if current trends continue there could be more spent on R&D in China than in the US within the next FIVE years. If China's spending continues to accelerate as it is doing now and/or if US spending slows, R&D spending in China could pass that in the US even sooner.

Of course, most R&D in China remains for now a variation on the theme of reverse engineering and most global innovations remain within foreign, global firms -- although this is changing. China's vastly lower production costs allow "fast followers" and "cherry pickers" to reap much of the financial benefit from the innovations of others. With \$1.5 Trillion in foreign currency reserves, growing by \$10 billion each week, China's authorities have vastly more

power to access or acquire technologies than they had a decade ago when the House's bipartisan "Cox Commission" last investigated these matters. Indeed, one of the more urgent commercial and military technology issues today is the security of safeguards for trade and technology secrets within the Chinese joint ventures of global technology firms.

The current prospect of a US economic slowdown or recession adds urgency to concerns for the science and engineering workforce. Along with the usual concerns for public and private R&D budget cutbacks, an economic squeeze often accelerates outsourcing to lower-wage areas. Countries that depend on exports to the US for growth would be affected, of course, but middle-range countries like Mexico would likely be most adversely affected by their own outsourcing to lower-cost countries like China.

Also, difficult economic times present many fire sale opportunities to those with money to spend. China has unprecedented amounts of money to spend, both in its official \$1.5 Trillion in foreign currencies, and in its often state-owned, cash-rich firms that recently issued wildly successful initial public equity offerings. The already intense and pervasive competition for the favor of China's very savvy authorities and their retainers is likely to get far more ferocious further weakening the scientific and engineering workforce in the US.

The US faces enormous economic challenges ahead. I hope that the Congress will urgently organize itself to begin to develop the type of strong, comprehensive strategy that the scale of this challenge requires.

I would be very happy to discuss.

	Nominal GDP \$ Billions (FY)	Gross Fed Debt (FY)	Personal Debts (FY)	Federal + Personal Debt	Annual Current Account Balance	Current Account Balance Since 1960	Total Disposable Income (FY)
1945	\$223.1	-\$258.7	-\$30.3	-\$289.0	N/A	N/A	N/A
1946	222.3	-269.4	-37.1	-306.5	N/A	N/A	161.1
1947	244.2	-258.3	-46.1	-304.4	N/A	N/A	171.2
1948	269.2	-252.3	-54.7	-307.0	N/A	N/A	190.6
1949	267.3	-252.8	-63.0	-315.8	N/A	N/A	190.4
1950	293.8	-257.4	-76.3	-333.7	N/A	N/A	210.1
1951	339.3	-255.2	-85.3	-340.5	N/A	N/A	231.0
1952	358.3	-259.1	-97.6	-356.7	N/A	N/A	243.4
1953	379.4	-266.1	-110.4	-376.5	N/A	N/A	258.6
1954	380.4	-271.3	-122.6	-393.9	N/A	N/A	264.3
1955	410.9	-274.4	-132.9	-407.2	N/A	N/A	280.7
1956	434.2	-272.8	-151.0	-423.7	N/A	N/A	300.4
1957	459.2	-270.5	-165.3	-435.9	N/A	N/A	318.9
1958	458.1	-276.3	-174.4	-450.7	N/A	N/A	326.6
1959	508.4	-284.7	-193.2	-477.9	N/A	N/A	350.5
1960	526.1	-286.3	-213.9	-500.2	2.8	2.8	365.2
1961	539.0	-289.0	-230.7	-519.6	3.8	6.6	377.9
1962	583.2	-298.2	-250.3	-548.5	3.4	10.0	403.8
1963	611.2	-305.9	-276.3	-582.2	4.4	14.4	420.7
1964	658.8	-311.7	-306.4	-618.1	6.8	21.3	460.3
1965	708.1	-317.3	-335.3	-652.5	5.4	26.7	489.4
1966	779.9	-319.9	-364.3	-684.2	3.0	29.7	530.9
1967	822.5	-326.2	-381.9	-708.2	2.6	32.3	569.5
1968	904.2	-347.6	-413.1	-760.7	0.6	32.9	622.5
1969	976.3	-353.7	-444.0	-797.7	0.4	33.3	663.5
1970	1,033.2	-370.9	-460.2	-831.1	2.3	35.7	730.6
1971	1,119.1	-398.1	-492.8	-890.9	-1.4	34.2	797.9
1972	1,225.9	-427.3	-548.8	-976.0	-5.8	28.4	848.9
1973	1,371.9	-458.1	-613.8	-1,072.0	7.1	35.6	965.4
1974	1,485.3	-475.1	-674.0	-1,149.0	2.0	37.5	1,055.0
1975	1,605.6	-533.2	-718.2	-1,251.3	18.1	55.6	1,193.2
1976	1,804.9	-620.4	-797.1	-1,417.5	4.3	59.9	1,284.5
1977	2,066.8	-698.8	-943.9	-1,642.8	-14.3	45.6	1,454.3
1978	2,336.2	-771.5	-1,102.4	-1,874.0	-15.1	30.5	1,630.5
1979	2,600.7	-826.5	-1,271.9	-2,098.4	-0.3	30.2	1,813.9
1980	2,786.6	-907.7	-1,403.7	-2,311.4	2.3	32.5	2,021.2
1981	3,178.7	-997.9	-1,527.1	-2,525.0	5.0	37.5	2,289.6
1982	3,276.2	-1,142.0	-1,597.9	-2,739.9	-5.5	32.0	2,447.2
1983	3,589.3	-1,377.2	-1,739.4	-3,116.6	-38.7	-6.7	2,635.1
1984	3,978.2	-1,572.3	-1,942.9	-3,515.2	-94.3	-101.0	2,955.0
1985	4,261.3	-1,823.1	-2,254.6	-4,077.7	-118.2	-219.2	3,115.4
1986	4,493.9	-2,125.3	-2,547.2	-4,672.5	-147.2	-366.4	3,307.2
1987	4,767.8	-2,350.3	-2,809.5	-5,159.8	-160.7	-527.0	3,484.5
1988	5,146.6	-2,602.3	-3,046.0	-5,648.4	-121.2	-648.2	3,786.9
1989	5,531.9	-2,857.4	-3,351.2	-6,208.6	-99.5	-747.7	4,038.8
1990	5,849.4	-3,233.3	-3,654.1	-6,887.4	-79.0	-826.6	4,325.7
1991	6,035.6	-3,665.3	-3,851.0	-7,516.3	2.9	-823.7	4,483.7
1992	6,380.5	-4,064.6	-4,059.1	-8,123.8	-50.1	-873.8	4,768.6
1993	6,674.6	-4,411.5	-4,306.1	-8,717.6	-84.8	-958.6	4,924.3
1994	7,115.1	-4,692.7	-4,610.3	-9,303.1	-121.6	-1,080.2	5,197.5
1995	7,432.1	-4,974.0	-4,960.2	-9,934.2	-113.6	-1,193.8	5,427.1
1996	7,866.2	-5,224.8	-5,306.2	-10,531.0	-124.8	-1,318.6	5,727.5
1997	8,381.9	-5,413.1	-5,670.2	-11,083.3	-140.7	-1,459.3	6,020.8
1998	8,789.5	-5,526.2	-6,073.7	-11,599.9	-215.1	-1,674.4	6,448.1
1999	9,313.5	-5,656.3	-6,619.2	-12,275.5	-301.6	-1,976.0	6,708.2
2000	9,862.1	-5,674.2	-7,255.9	-12,930.1	-417.4	-2,393.4	7,266.4
2001	10,135.1	-5,807.5	-7,900.6	-13,708.1	-384.7	-2,778.1	7,622.8
2002	10,527.4	-6,228.2	-8,565.9	-14,794.1	-459.6	-3,237.8	7,845.4
2003	11,086.1	-6,783.2	-9,660.2	-16,443.5	-522.1	-3,759.9	8,261.0
2004	11,779.4	-7,379.1	-10,668.7	-18,047.8	-640.1	-4,400.0	8,708.9
2005	12,558.8	-7,932.7	-11,860.3	-19,793.0	-754.8	-5,154.9	9,105.1
2006	13,266.9	-8,507.0	-13,052.1	-21,559.1	-811.5	-5,966.3	9,675.8
2007	13,926.7	-9,007.7	-14,025.0	-23,032.7	-760.0	-6,726.3	10,284.8
1955 to '81	\$2,767.8	-\$723.5	-\$1,394.2	-\$2,117.7	N/A	N/A	\$2,008.9
1981 to '07	10,748.0	-8,009.8	-12,497.9	-20,507.7	-765.0	-6,763.9	7,995.2
2000 to '07	4,064.6	-3,333.5	-6,769.1	-10,102.5	-342.6	-4,332.9	3,018.4

US Balance in Global Trade of Goods: **-\$4.4 Trillion** in losses from 2001-2007

Deficits in 65 of 98 goods-producing industries led by fuels, vehicles, electrical and non-electrical machines

HS Industries: \$Millions	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007p	Totals 2001-07
Merchandise Totals.....	-\$182,615	-\$233,411	-\$331,945	-\$436,469	-\$411,899	-\$468,263	-\$532,350	-\$650,930	-\$767,477	-\$817,304	-\$772,253	-\$4,420,475
27 Mineral Fuel, Oil Etc.....	-65,632	-47,632	-65,345	-120,346	-109,264	-104,152	-139,173	-187,662	-263,071	-297,696	-287,866	-1,388,883
87 Vehicles, Not Railway.....	-54,365	-64,690	-89,566	-101,927	-100,201	-107,660	-109,633	-117,220	-115,975	-123,266	-108,620	-782,575
85 Electrical Machinery.....	-11,154	-18,573	-24,300	-37,812	-32,005	-41,379	-44,918	-59,802	-77,767	-83,293	-104,002	-443,167
84 Machinery/Computers.....	-3,289	-17,942	-28,254	-21,989	-16,565	-31,444	-39,621	-50,843	-55,388	-61,549	-53,348	-308,758
62 Woven Apparel.....	-21,447	-23,495	-25,009	-29,253	-29,104	-28,513	-31,107	-33,409	-35,695	-36,118	-37,033	-230,980
61 Knit Apparel.....	-15,080	-17,980	-19,592	-21,825	-22,976	-24,600	-26,692	-28,880	-30,707	-33,022	-37,034	-203,910
94 Furniture And Bedding.....	-8,524	-10,836	-14,468	-17,290	-17,122	-20,995	-24,070	-27,485	-30,357	-32,227	-32,598	-184,854
95 Toys, Video Games, Sports E	-12,362	-13,934	-14,324	-15,116	-16,403	-17,810	-17,086	-17,721	-19,764	-20,361	-26,277	-135,422
O Specl Impr Provisions	-5,968	-8,526	-11,788	-13,818	-13,237	-13,045	-14,067	-16,194	-18,226	-20,190	-20,927	-115,886
64 Footwear.....	-13,097	-13,029	-13,229	-13,987	-14,427	-14,685	-14,908	-15,852	-17,202	-18,330	-18,928	-114,332
44 Wood.....	-5,676	-7,391	-9,934	-9,110	-9,709	-10,624	-11,381	-17,019	-17,655	-16,368	-11,467	-94,224
71 Precious Stones, Metals.....	-7,321	-10,609	-11,883	-14,570	-11,503	-13,014	-13,000	-15,329	-15,183	-12,512	-6,151	-86,692
30 Pharmaceutical Products.....	-352	-1,363	-2,326	-1,645	-3,475	-8,474	-11,842	-11,621	-13,725	-16,860	-19,641	-85,639
98 Special.....	-2,438	-5,625	-10,389	-11,121	-11,985	-13,734	-11,548	-10,328	-11,451	-10,236	-5,887	-75,169
29 Organic Chemicals.....	-513	-2,991	-6,009	-9,472	-12,704	-13,556	-12,826	-8,002	-9,940	-9,710	-7,633	-74,370
73 Iron/Steel Products.....	-2,321	-3,396	-3,829	-5,001	-5,547	-6,347	-6,988	-10,337	-12,890	-14,906	-17,149	-74,163
22 Beverages.....	-4,325	-4,958	-5,904	-6,633	-6,939	-7,934	-8,945	-9,515	-10,747	-13,504	-14,187	-71,772
72 Iron And Steel.....	-8,622	-11,927	-8,664	-9,438	-5,501	-6,562	-3,586	-13,512	-10,825	-16,292	-9,706	-65,985
42 Leathr Art; Saddlry; Bags.....	-5,165	-5,239	-5,402	-6,428	-6,458	-6,488	-6,822	-7,404	-7,648	-8,336	-9,059	-52,214
63 Misc Textile Articles.....	-1,767	-2,377	-2,968	-3,482	-3,895	-4,733	-5,692	-6,824	-7,884	-8,686	-9,134	-46,848
76 Aluminum.....	-1,859	-2,443	-3,048	-3,596	-3,505	-4,071	-4,633	-6,618	-7,955	-8,885	-7,486	-43,153
03 Fish And Seafood.....	-4,008	-4,715	-4,743	-5,490	-5,019	-5,166	-5,737	-5,398	-5,602	-6,356	-7,174	-40,452
40 Rubber.....	-2,313	-2,999	-3,322	-3,243	-2,665	-3,742	-4,771	-5,913	-7,313	-7,912	-7,897	-40,213
48 Paper, Paperboard.....	-1,090	-2,501	-3,089	-3,782	-4,127	-4,315	-4,454	-5,334	-5,449	-5,554	-3,954	-33,187
74 Copper+Articles Thereof.....	-1,624	-1,702	-2,183	-1,698	-2,574	-2,052	-1,328	-2,145	-4,113	-7,644	-6,227	-26,083
69 Ceramic Products.....	-2,148	-2,426	-2,711	-3,030	-2,734	-3,014	-3,387	-3,682	-3,983	-4,296	-3,823	-24,920
83 Misc Art Of Base Metal.....	-982	-1,298	-1,503	-1,481	-1,571	-2,050	-2,356	-3,145	-4,011	-4,486	-4,774	-22,393
91 Clocks And Watches.....	-2,377	-2,753	-2,738	-2,968	-2,601	-2,786	-3,134	-3,231	-3,415	-3,408	-3,581	-22,156
68 Stone, Plastr, Cement, Etc.....	-1,001	-1,373	-1,830	-2,117	-2,232	-2,504	-2,716	-3,200	-3,659	-3,986	-3,835	-22,133
09 Spices, Coffee And Tea.....	-3,851	-3,361	-2,951	-2,809	-1,799	-1,847	-2,194	-2,379	-2,961	-3,243	-3,784	-18,207
82 Tool, Cutlry, Of Base Mtls.....	-974	-1,291	-1,427	-1,546	-1,440	-1,873	-2,307	-2,542	-2,521	-2,836	-2,801	-16,319
16 Prepared Meat, Fish, Etc.....	-796	-1,041	-1,310	-1,411	-1,397	-1,622	-1,824	-2,149	-2,189	-2,554	-2,408	-14,142
96 Misc. Manufacturing.....	-1,084	-1,196	-1,563	-1,634	-1,663	-1,744	-1,826	-2,073	-2,173	-2,253	-2,366	-14,097
07 Vegetables.....	-306	-698	-741	-759	-1,092	-1,210	-1,562	-1,872	-1,885	-2,111	-2,335	-12,067
97 Art And Antiques.....	-1,529	-1,228	-2,605	-2,433	-1,379	-2,630	-1,641	-1,782	-1,177	-1,048	-2,095	-11,752
28 Inorg Chem; Rare Erth Mt.....	-126	-666	-841	-975	-645	-620	-1,743	-1,848	-2,055	-2,004	-2,675	-11,589
18 Cocoa.....	-979	-1,205	-1,033	-825	-808	-1,107	-1,716	-1,697	-1,929	-1,768	-1,661	-10,687
75 Nickel+Articles Thereof.....	-749	-420	-483	-956	-478	-395	-704	-1,341	-1,379	-2,122	-3,989	-10,408
01 Live Animals.....	-960	-1,035	-984	-1,065	-1,342	-1,449	-828	-921	-1,417	-1,840	-2,095	-9,892
79 Zinc+Articles Thereof.....	-1,242	-1,046	-1,181	-1,224	-994	-991	-841	-970	-989	-1,974	-3,067	-9,826
65 Headgear.....	-747	-859	-963	-1,126	-1,156	-1,167	-1,249	-1,398	-1,364	-1,466	-1,445	-9,244
20 Preserved Food.....	-261	-156	-452	-461	-534	-671	-1,125	-1,329	-1,484	-1,578	-2,358	-9,080
17 Sugars.....	-1,085	-944	-906	-797	-811	-1,065	-1,244	-1,255	-1,541	-1,864	-916	-8,695

US Balance in Global Trade of Goods: **-\$4.4 Trillion** in losses from 2001-2007

Deficits in 65 of 98 goods-producing industries led by fuels, vehicles, electrical and non-electrical machines

HS Industries: \$Millions	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007p	Totals 2001-'07
67 Artif Flowers,Feathers.....	-830	-905	-978	-1,042	-1,069	-1,147	-1,183	-1,198	-1,233	-1,311	-1,370	-8,511
19 Baking Related.....	-56	-155	-326	-354	-429	-756	-949	-1,008	-1,086	-1,298	-1,535	-7,061
06 Live Trees And Plants.....	-720	-774	-797	-869	-871	-862	-960	-1,064	-1,041	-1,068	-1,135	-7,002
70 Glass And Glassware.....	-151	-477	-871	-578	-350	-812	-919	-1,197	-1,348	-1,257	-1,053	-6,936
57 Textile Floor Coverings.....	-80	-255	-445	-658	-683	-825	-956	-1,027	-1,067	-1,117	-1,061	-6,736
92 Musical Instruments.....	-626	-774	-865	-1,007	-859	-881	-912	-971	-931	-785	-709	-6,047
25 Salt;Sulfur;Earth,Stone.....	-203	-388	-606	-445	-400	-438	-518	-692	-1,324	-1,404	-792	-5,569
46 Straw,Esparto.....	-229	-248	-256	-278	-307	-349	-382	-404	-427	-412	-425	-2,704
66 Umbrella,Wlk-Sticks,Etc.....	-220	-238	-233	-270	-279	-264	-300	-329	-357	-369	-416	-2,314
80 Tin + Articles Thereof.....	-207	-208	-213	-232	-210	-169	-184	-413	-293	-377	-541	-2,187
04 Dairy,Eggs,Honey,Etc.....	-90	-258	-406	-255	-295	-555	-632	-342	-288	-121	420	-1,813
13 Lac;Vegetabl Sap,Extrct.....	-298	-409	-325	-238	-203	-174	-219	-195	-286	-337	-270	-1,685
50 Silk;Silk Yarn,Fabric.....	-286	-269	-248	-269	-209	-207	-216	-261	-269	-236	-241	-1,640
43 Furskin+Artificial Fur.....	29	13	-22	-118	-146	-129	-192	-226	-196	-106	-526	-1,521
51 Animal Hair+Yarn,Fabrc.....	-382	-341	-249	-280	-237	-169	-184	-235	-231	-206	-219	-1,480
54 Manmade Filament,Fabric....	26	11	103	409	175	53	-77	-101	-492	-408	-525	-1,375
45 Cork.....	-89	-100	-89	-107	-146	-146	-154	-168	-160	-153	-204	-1,130
78 Lead.....	-15	-30	-45	-41	-84	-71	5	-82	-200	-308	-373	-1,114
53 Other Veg Textile Fiber.....	-189	-185	-176	-148	-110	-98	-119	-161	-168	-184	-228	-1,068
15 Fats And Oils.....	610	1,257	560	75	229	604	483	-216	-485	-675	-358	-417
14 Other Vegetable.....	-24	-20	-22	-16	-44	-23	-23	-13	-34	-36	-131	-303
31 Fertilizers.....	1,672	1,690	1,590	772	329	633	382	250	-461	-291	-948	-106
36 Explosives.....	73	59	12	71	-3	1	70	84	48	45	125	370
05 Other Of Animal Origin.....	-47	-67	-98	-102	69	39	97	-57	22	78	151	400
58 Spcl Woven Fabric,Etc.....	92	90	230	216	295	334	89	137	26	-12	-62	806
81 Other Base Metals, Etc.....	-368	-312	-204	-67	-56	159	257	-85	214	520	21	1,028
33 Perfumery,Cosmetic,Etc.....	1,546	1,242	1,081	1,221	1,439	1,158	291	-321	-673	-288	-63	1,542
59 Impregnatd Text Fabrics.....	548	484	486	421	506	355	410	233	56	-8	12	1,564
56 Wadding,Felt,Twine,Rope.....	379	298	218	222	152	138	220	172	286	489	267	1,724
11 Milling;Malt;Starch.....	249	195	252	150	201	260	207	144	215	340	502	1,870
08 Edible Fruit And Nuts.....	895	394	-349	61	159	13	174	217	588	517	250	1,918
35 Albumins;Mod Strch;Glue.....	467	83	336	319	598	538	173	163	219	384	507	2,581
55 Manmade Staple Fibers.....	383	242	270	387	399	384	428	432	377	334	248	2,603
60 Knit,Crocheted Fabrics.....	-167	-190	-300	-199	-66	21	389	678	785	670	717	3,193
89 Ships And Boats.....	527	639	545	-65	685	-86	-568	-298	275	1,158	2,490	3,656
86 Railway;Trf Sign Eq.....	-126	-430	-702	-416	69	54	406	452	724	971	1,197	3,874
49 Book+Newspaper;Manuscrpt..	1,666	1,511	1,159	1,017	1,022	497	512	452	535	649	704	4,372
37 Photographic/Cinematogr.....	379	199	151	717	248	598	711	544	522	871	1,005	4,500
26 Ores,Slag,Ash.....	-421	-928	-596	-486	-364	-383	-111	-28	815	2,086	3,224	5,239
93 Arms And Ammunition.....	1,839	1,901	1,477	1,333	1,321	1,123	693	954	826	1,032	1,159	7,108
21 Miscellaneous Food.....	1,570	1,278	1,333	1,317	1,365	1,237	1,360	1,247	1,380	1,592	1,674	9,854
34 Soap,Wax,Et;Dental Prep.....	997	836	791	836	950	895	1,086	1,435	1,564	1,892	2,168	9,991
24 Tobacco.....	4,961	5,046	3,988	4,142	2,801	1,718	1,625	1,368	1,025	1,196	915	10,648
41 Hides And Skins.....	1,226	868	868	1,274	1,668	1,510	1,716	1,893	1,816	2,020	2,281	12,904

US Balance in Global Trade of Goods: **-\$4.4 Trillion** in losses from 2001-2007

Deficits in 65 of 98 goods-producing industries led by fuels, vehicles, electrical and non-electrical machines

HS Industries: \$Millions	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007p	Totals 2001-'07
47 Woodpulp, Etc.....	1,261	1,042	1,019	1,333	1,131	1,583	1,612	1,662	2,153	2,682	2,928	13,751
02 Meat.....	4,160	3,517	3,135	3,670	2,998	2,123	2,893	-318	980	2,066	3,569	14,309
32 Tanning,Dye,Paint,Putty.....	941	1,112	1,129	1,590	1,486	1,695	1,866	2,086	2,115	2,470	2,857	14,575
23 Food Waste; Animal Feed.....	3,844	3,350	2,712	3,073	3,516	2,983	2,948	2,664	2,948	3,284	3,772	22,115
52 Cotton+Yarn,Fabric.....	2,025	1,876	409	1,671	2,219	2,008	3,394	4,449	4,249	4,945	4,401	25,666
38 Misc. Chemical Products.....	5,997	5,938	5,716	6,290	5,977	5,748	6,051	6,361	6,721	8,069	9,250	48,178
12 Soy & Misc Grain,Seed,Fruit..	7,990	5,477	5,164	5,977	6,095	6,764	8,922	7,742	7,355	8,003	10,895	55,777
39 Plastic.....	8,682	7,617	7,108	9,060	7,414	6,844	6,087	7,274	6,540	8,445	14,614	57,217
90 Optic,Nt 8544;Med Instr.....	8,515	7,434	7,302	8,399	9,390	6,392	5,308	6,782	8,457	11,546	12,580	60,456
10 Cereals.....	10,318	9,323	9,480	8,928	8,749	9,420	9,869	12,334	10,652	12,331	16,905	80,259
88 Aircraft,Spacecraft.....	30,856	39,398	34,641	22,809	23,450	26,236	23,898	25,451	33,753	49,432	55,209	237,429

US Department of Commerce, Bureau of the Census and MBG Information Services

2007 data are projected from yr-to-August actual!

Job Growth In Industries Not Facing Outsourcing or Imports

ALL net Job growth from Public/Private Education & Health Care, Restaurants/Bars

Industry: Nonfarm Jobs (1,000)	September		Change: 2007-2000	
	2000	2007	#	%
Total nonfarm.....	132,122	138,265	6,143	4.6%
Total private.....	111,387	115,961	4,574	4.1%
Total private supervisory.....	20,747	20,511	-236	-1.1%
Total private non-supervisory.....	90,640	95,450	4,810	5.3%
Goods-producing.....	24,644	22,324	-2,320	-9.4%
Goods-producing supervisory.....	6,500	5,837	-663	-10.2%
Goods-producing non-supervisory	18,144	16,487	-1,657	-9.1%
Service-providing.....	107,478	115,941	8,463	7.9%
Private Service-providing.....	86,743	93,637	6,894	7.9%
Private Services supervisory.....	14,247	14,674	427	3.0%
Private Services non-supervisory.	72,496	78,963	6,467	8.9%
Natural resources and mining.....	605	728	123	20.3%
Logging.....	78.9	62.5	-16	-20.8%
Mining.....	525.8	665.2	139	26.5%
Oil and gas extraction.....	124.3	151.8	28	22.1%
Mining, except oil and gas.....	225.3	230.5	5	2.3%
Coal mining.....	75.6	81.0	5	7.1%
Support activities for mining.....	176.2	282.9	107	60.6%
Construction.....	6,807	7,613	806	11.8%
Construction of buildings.....	1,630.4	1,774.2	144	8.8%
Residential building.....	818.2	981.0	163	19.9%
Nonresidential building.....	812.2	793.2	-19	-2.3%
Heavy & civil engineering construction.....	941.9	988.8	47	5.0%
Specialty trade contractors.....	4,234.8	4,849.6	615	14.5%
Manufacturing.....	17,232	13,983	-3,249	-18.9%
Supervisory workers.....	4,848	3,924	-924	-19.1%
Non-supervisory workers.....	12,384	10,059	-2,325	-18.8%
Durable goods.....	10,874	8,863	-2,011	-18.5%
Supervisory workers.....	3,227	2,573	-654	-20.3%
Non-supervisory workers.....	7,647	6,290	-1,357	-17.7%
Wood products.....	607.6	520.3	-87	-14.4%
Nonmetallic mineral products.....	554	497	-57	-10.3%
Primary metals.....	617.8	449.1	-169	-27.3%
Fabricated metal products.....	1760.6	1,570.2	-190	-10.8%
Machinery.....	1456.6	1,220.1	-237	-16.2%
Computer and electronic products.....	1846.4	1,298.0	-548	-29.7%
Computer and peripheral equipment.....	303.1	197.2	-106	-34.9%
Communications equipment.....	251.3	142.6	-109	-43.3%
Semiconductors and electronic compone	697.1	457.3	-240	-34.4%
Electronic instruments.....	478.5	433.2	-45	-9.5%
Electrical equipment and appliances.....	591.6	435.5	-156	-26.4%
Transportation equipment.....	2024.7	1,699.5	-325	-16.1%
Motor vehicles and parts.....	1295.2	996.4	-299	-23.1%
Furniture and related products.....	681.4	523.5	-158	-23.2%
Miscellaneous manufacturing.....	733.5	649.6	-84	-11.4%
Nondurable goods.....	6358	5,120	-1,238	-19.5%
Supervisory workers.....	1,621	1,351	-270	-16.7%
Non-supervisory workers.....	4737	3,769	-968	-20.4%
Food manufacturing.....	1548.8	1,496.4	-52	-3.4%
Beverages and tobacco products.....	206.3	198.2	-8	-3.9%
Textile mills.....	376.2	164.9	-211	-56.2%
Textile product mills.....	215.6	152.0	-64	-29.5%
Apparel.....	485.2	212.2	-273	-56.3%
Leather and allied products.....	67.5	36.4	-31	-46.1%
Paper and paper products.....	602.6	454.3	-148	-24.6%

Job Growth In Industries Not Facing Outsourcing or Imports

ALL net Job growth from Public/Private Education & Health Care, Restaurants/Bars

Industry: Nonfarm Jobs (1,000)	September		Change: 2007-2000	
	2000	2007	#	%
Printing and related support activities.....	806.9	628.3	-179	-22.1%
Petroleum and coal products.....	122.8	116.9	-6	-4.8%
Chemicals.....	978.2	874.8	-103	-10.6%
Plastics and rubber products.....	947.8	785.2	-163	-17.2%
Trade, transportation, and utilities.....	26240	26,520	280	1.1%
Wholesale trade.....	5,909.9	6,028.5	119	2.0%
Durable goods.....	3,239.0	3,148.4	-91	-2.8%
Nondurable goods.....	2,055.5	2,070.7	15	0.7%
Electronic markets; agents/brokers.....	615.4	809.4	194	31.5%
Retail trade.....	15,315.7	15,393.3	78	0.5%
Motor vehicle and parts dealers.....	1,854.4	1,914.7	60	3.3%
Automobile dealers.....	1,221.7	1,247.6	26	2.1%
Furniture and home furnishings stores....	545.6	585.3	40	7.3%
Electronics and appliance stores.....	570.6	533.7	-37	-6.5%
Building material/garden supply stores....	1,144.5	1,290.1	146	12.7%
Food and beverage stores.....	2,989.1	2,878.4	-111	-3.7%
Health and personal care stores.....	936.3	968.7	32	3.5%
Gasoline stations.....	931.1	855.0	-76	-8.2%
Clothing and accessories stores.....	1,329.4	1,461.1	132	9.9%
Sporting goods, hobby, book, music store	679.4	671.6	-8	-1.1%
General merchandise stores.....	2,830.4	2,906.1	76	2.7%
Department stores.....	1,766.5	1,550.7	-216	-12.2%
Miscellaneous store retailers.....	1,011.6	886.0	-126	-12.4%
Nonstore retailers.....	493.3	442.6	-51	-10.3%
Transportation and warehousing.....	4,416.1	4,542.3	126	2.9%
Air transportation.....	616.9	493.5	-123	-20.0%
Rail transportation.....	232.4	229.1	-3	-1.4%
Water transportation.....	56.9	71.5	15	25.7%
Truck transportation.....	1,402.2	1,448.6	46	3.3%
Transit & ground passenger transport.....	371.2	395.9	25	6.7%
Pipeline transportation.....	45.7	40.7	-5	-10.9%
Scenic and sightseeing transport.....	26.9	27.8	1	3.3%
Support activities for transport.....	539.4	584.6	45	8.4%
Couriers and messengers.....	606.4	591.1	-15	-2.5%
Warehousing and storage.....	518.1	659.5	141	27.3%
Utilities.....	598.4	555.4	-43	-7.2%
Information.....	3,673.0	3,099.0	-574	-15.6%
Publishing industries, except Internet.....	1,042.1	903.4	-139	-13.3%
Motion picture and sound recording.....	381.4	389.8	8	2.2%
Broadcasting, except Internet.....	346.9	338.9	-8	-2.3%
Internet publishing and broadcast.....	51.1	44.2	-7	-13.5%
Telecommunications.....	1,292.9	972.2	-321	-24.8%
ISPs, search portals, data processing.....	512.4	398.5	-114	-22.2%
Other information services.....	46.4	52.0	6	12.1%
Financial activities.....	7,699.0	8,448.0	749	9.7%
Finance and insurance.....	5,690.1	6,245.6	556	9.8%
Monetary authorities - central bank.....	22.7	21.6	-1	-4.8%
Credit intermediation and related.....	2,543.0	2,916.8	374	14.7%
Depository credit intermediation.....	1,675.6	1,845.9	170	10.2%
Commercial banking.....	1,245.0	1,346.5	102	8.2%
Securities, commodity, investments.....	824.1	844.9	21	2.5%
Insurance carriers, related activities.....	2,215.4	2,367.0	152	6.8%
Funds, trusts, other financial vehicles.....	84.9	95.3	10	12.2%
Real estate and rental/leasing.....	2,009.1	2,202.1	193	9.6%
Real estate.....	1,314.4	1,524.5	210	16.0%
Rental and leasing services.....	667.0	644.9	-22	-3.3%

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Job Growth In Industries Not Facing Outsourcing or Imports

ALL net Job growth from Public/Private Education & Health Care, Restaurants/Bars

Industry: Nonfarm Jobs (1,000)	September		Change: 2007-2000	
	2000	2007	#	%
Lessors of nonfinancial intangibles.....	27.7	32.7	5	18.1%
Professional and business services.....	16,800.0	17,950.0	1,150	6.8%
Professional and technical services.....	6,815.1	7,723.6	909	13.3%
Legal services.....	1,068.6	1,180.0	111	10.4%
Accounting and bookkeeping.....	876.1	966.6	91	10.3%
Architectural and engineering.....	1,253.5	1,441.8	188	15.0%
Computer systems design and related...	1,277.6	1,362.2	85	6.6%
Management and technical consulting....	720.8	1,011.2	290	40.3%
Management of companies and enterpris	1,800.7	1,854.7	54	3.0%
Administrative and waste services.....	8,183.7	8,371.9	188	2.3%
Administrative and support services.....	7,868.6	8,014.8	146	1.9%
Employment services.....	3,848.5	3,471.3	-377	-9.8%
Temporary help services.....	2,645.4	2,548.8	-97	-3.7%
Business support services.....	793.9	809.5	16	2.0%
Services to buildings and dwellings.....	1,568.0	1,860.8	293	18.7%
Waste management and remediation.....	315.1	357.1	42	13.3%
Education and health services.....	15,209.0	18,531.0	3,322	21.8%
Educational services.....	2,425.8	3,040.1	614	25.3%
Health care and social assistance.....	12,783.3	15,490.7	2,707	21.2%
Health care.....	10,909.6	13,075.7	2,166	19.9%
Ambulatory health care services.....	4,349.2	5,516.3	1,167	26.8%
Offices of physicians.....	1,853.2	2,236.4	383	20.7%
Outpatient care centers.....	389.4	500.6	111	28.6%
Home health care services.....	633.5	933.8	300	47.4%
Hospitals.....	3,963.9	4,565.4	602	15.2%
Nursing and residential care facilitie	2,596.5	2,994.0	398	15.3%
Nursing care facilities.....	1,517.4	1,614.3	97	6.4%
Social assistance.....	1,873.7	2,415.0	541	28.9%
Child day care services.....	698.5	820.8	122	17.5%
Leisure and hospitality.....	11,940.0	13,612.0	1,672	14.0%
Arts, entertainment, and recreation.....	1,799.3	1,959.6	160	8.9%
Performing arts and spectator sports.....	386.4	409.8	23	6.1%
Museums, historical sites, zoos & parks..	111.5	131.3	20	17.8%
Amusements, gambling, & recreation.....	1,301.4	1,418.5	117	9.0%
Accommodations and food services.....	10,140.6	11,652.5	1,512	14.9%
Accommodations.....	1,899.2	1,859.6	-40	-2.1%
Food services and drinking places.....	8,241.4	9,792.9	1,552	18.8%
Other services.....	5,182.0	5,477.0	295	5.7%
Repair and maintenance.....	1,244.7	1,263.6	19	1.5%
Personal and laundry services.....	1,252.8	1,289.2	36	2.9%
Membership assocs & organizations.....	2,684.1	2,924.6	241	9.0%
Government.....	20,735.0	22,304.0	1,569	7.6%
Federal.....	2,745.0	2,708.0	-37	-1.3%
Federal, except U.S. Postal Service.....	1,867.9	1,947.7	80	4.3%
U.S. Postal Service.....	877.4	760.3	-117	-13.3%
State government.....	4,804.0	5,175.0	371	7.7%
State government education.....	2,034.4	2,352.8	318	15.7%
State government, ex education.....	2,769.4	2,822.5	53	1.9%
Local government.....	13,186.0	14,421.0	1,235	9.4%
Local government education.....	7,311.8	8,069.6	758	10.4%
Local government, ex education.....	5,873.8	6,351.6	478	8.1%

U.S. Department of Labor, BLS and MBG Information Services

Personal Financial Disclosure Form

Instructions: Please complete this form to the best of your ability. Return the completed form to the Committee on Science and Technology at least 24 hours prior to the hearing at which you will testify.

You need only disclose personal financial interests which are relevant to the subject matter of your testimony or the subject matter of the hearing at which you will testify. Please list all appropriate interests for the past two (2) years. If you need additional space, please continue your responses on a separate sheet of paper.

Government research grants or contracts: *MBG Information Services has had two research contracts in the past two years to investigate the effects of China's technology development. One was with the Small Business Administration to examine effects on China and the US, and another was with the US-China Economic and Security Review Commission to examine effects on the state of North Carolina. Both have been completed.*

Non-government research grants or contracts: *MBG Information Services works on retainer to corporate clients and trade associations to provide on-going research. Much of this involves technology and trade matters.*

Government employment or other compensation: *None*

Non-government employment or other compensation: *MBG Information Services is a 20-year-old Washington, DC-based business information, analysis and forecasting firm.*

Stock or stock options in public or privately held companies: *_None relevant*

Other: *No*

Name: Charles W. McMillion **Signature:** _____ *Signed* _____

CHARLES W. MCMILLION, Ph.D.

President and Chief Economist of MBG Information Services, a consultancy based in Washington, D.C. providing timely business information, analysis and forecasting to a small, diverse national client base. Dr. McMillion combines more than 35 years of business and economic analysis, strategic planning and project management for industry, government and academia.

Dr. McMillion is a former Associate Director and Associate Professor in the Johns Hopkins University Policy Institute where he researched and managed business and economic policy issues and projects in the U.S. and abroad. He has held Staff Director and Chief Economist positions in the U.S. House and Senate and is a founder and former Executive Director of the bipartisan United States Congressional Economic Leadership Institute, where he worked with the Speaker of the House to conduct the major opening activity of the 100th Congress. He is associated with 12 successful legislative initiatives on economic and business policy.

He is the author or editor of four books and over 150 scholarly and popular articles and reports. A former Contributing Editor of *The Harvard Business Review*, McMillion wrote a regular column on key business and financial trends. He has also written a regular column on business for *The Washington Business Times*. A featured speaker in former President Clinton's December, 1992 Little Rock Economic Summit, McMillion often testifies on business issue before the U.S. Senate and House, and to state legislatures. He frequently lectures in the US, Europe and Asia including four tours sponsored by the United States Information Agency. A Returned Peace Corps Volunteer in Ethiopia, he is active in civic organizations.

Born in Fort Worth Texas, Dr. McMillion received his BA degree in government at the University of Texas, an MA degree at Southern Methodist University, and MA and Ph.D. degrees in political economy at Rutgers University. His dissertation, written in Europe in the 1970s, is one of the first thorough examinations of the effects of global trade and finance on national and regional markets and industries.

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- "China's Soaring Financial, Industrial and Technological Power," U.S. Small Business Administration, 9-2007.
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