

# A Strategy for Balanced Trade and Economic Revitalization

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May 2007

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## Executive Summary

This memo outlines the issues involved in reducing the trade deficit to a manageable level. It also describes the key features of a strategy designed to minimize the pain involved in the adjustment process.

The paper notes that there are three basic mechanisms for reducing the size of the trade deficit:

1. Increased public and private saving – Higher savings cannot by itself reduce the trade and current account deficits. It can indirectly have this effect, however, if it substantially reduces GDP, which would also reduce imports and therefore lower the size of the trade deficit. Higher savings may also lower interest rates. Lower interest rates could lower the value of the dollar. A lower value dollar would reduce U.S. imports, because imported goods would be more expensive. It would also increase exports, since U.S. exports would be cheaper to foreigners. This policy is only effective to the extent that it slows economic growth and/or lowers the value of the dollar.
2. Tariffs or other barriers to imports – There have been a wide variety of tariffs or non-tariff barriers proposed that could bring the deficit closer to balance. These proposals can prove difficult to administer and may violate the W.T.O. and other trade agreements.
3. Reducing the value of the dollar – The Treasury could take steps to press other countries to raise the value of their currencies against the dollar. Ideally, the United States would negotiate a managed decline in the value of the dollar comparable to the Plaza accords in the mid-eighties. The downside to such a path is that a lower dollar will lead to higher import prices and higher inflation. It also is not clear that it would again be possible to manage an orderly decline in the value of the dollar.

The paper suggests a variety of policies that will help to ease the pain of the adjustment to a sustainable trade path and will establish the basis for sustained growth with high wage jobs.

1. Fixing the health care system – The per capita cost of health care in the United States is already more than twice as high as in other wealthy countries. Furthermore, it is projected to become far more costly in the next two decades, averaging \$50,000 (in 2007 dollars) for a family of four in 2027. If health care costs grow as projected, the number of uninsured will explode and the cost of health insurance will be devastating to those employers who cover their workers. The system must be fixed.
2. The country's infrastructure is badly needs to be modernized in many areas —
  - A. New financial regulations and institutions are needed – The International Monetary Fund is completely failing as an institution that is supposed to provide stability to the international financial system. As a result, capital is flowing from poor countries to rich countries: the opposite of the normal pattern. If normal capital flows could be restored, there would be much greater demand for U.S. exports.

The domestic financial system is likely to face serious stress as a result of the collapse of the housing bubbles. Unfortunately, we will not know all of the problems with the current system, and what repairs are needed, until the damage is done.

- B. The physical infrastructure must be redesigned to meet the needs of the 21<sup>st</sup> century – There is a need for a wide range of infrastructure investments from low-cost broadband networks to repairing and replacing sewers and water lines. In addition, the transportation infrastructure must be modernized, first and foremost by rebuilding the mass transit system.
  - C. Improved education and training – The United States is falling behind other countries in providing the education and skills needed for workers to be productive in a modern economy. A particular focus should be placed on ensuring that post-secondary training is adequately preparing students for the 21<sup>st</sup> century workplace, and that adults employed in low-skill jobs have meaningful access to further training.
3. Promoting energy conservation and alternative energy – It is clear that reducing greenhouse gas emissions must be a top government priority. This is an area where the government must play a central role. By providing tax credits and other incentives for low cost conservation measures and promoting the use of alternative energy (increased insulation and solar panels), it can bring about substantial reductions in emissions. This can also be an effective short-term employment policy for a construction industry that is feeling the impact of the collapsing housing market.
  4. Innovation Policy – It is important to recognize that research and development jobs tend to follow manufacturing facilities. This means that when manufacturing gets off-shored, the higher skilled jobs in engineering and design are likely to follow. It also means that policies that promote domestic manufacturing are also likely to promote domestically based innovation. Government policy should also recognize workplace organization as an important source of productivity gains and seek to promote best practices.

Finally, we note that the government can pursue policies that buffer the effects of adjustment to a sustainable trade path and promote increased security for working families with little or no government expenditure. At the top of this list are policies that promote work-life balance. In a country where the vast majority of workers have family responsibilities, jobs must be structured in ways that allow employees to meet their family obligations. This means, for example, that workers should have some minimum number of paid sick days as well as job protected paid family and medical leave so that they can recover from a serious illness or tend to the needs of a seriously ill child, spouse, partner or parent. The government can also promote policies that encourage employers to allow more flexible work schedules and can take steps to ensure that workers enjoy this flexibility even as it deals with more deep-seated economic problems.

## Introduction

The U.S. trade deficit reached \$763.6 billion in 2006, hitting a record high for the fifth year in a row.<sup>1</sup> America's trade surplus in services of \$72.5 billion was eclipsed by the \$836.1 billion trade deficit in goods, including a \$38.3 billion deficit in advanced technology products.<sup>2</sup> The current account deficit for the year was \$857 billion, 6.5% of GDP.<sup>3</sup> This is more than three times as large as the federal budget deficit, and as the overwhelming majority of economists recognize, a current account imbalance of this magnitude is unsustainable.

The purpose of this memo is to outline a strategy that can reduce the United States current account deficit to a sustainable level, while minimizing the disruptions to the economy. The policy proposals are broken down into five broad categories:

1. Adjustment mechanisms to address the trade deficit
2. Health care
3. Infrastructure (financial, physical, educational, and financial)
4. Energy conservation
5. Innovation

We begin in the next section with a critical review of the three main policy approaches to reducing the U.S. current account deficit. We note that improving the current account position requires a better balance between imports and exports of goods, an adjustment process that can be made less difficult by enhancing the nation's domestic manufacturing capacity. The remaining sections briefly describe policies that are essential to achieving this goal. The policies outlined in this memo provide a basis for economic growth and high-wage jobs during and after this adjustment period, and help to assure that, going forward, globalization serves America's national interest in a vibrant domestic economy and a strong middle class.

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<sup>1</sup> USBC 2007a.

<sup>2</sup> Ibid. Exhibits 1 and 16.

<sup>3</sup> USDOC 2007.

## Mechanisms for Adjusting the Current Account Deficit

Economists agree that America's current account deficit is not sustainable; however, there are serious differences among them on the best course for correcting the deficit. This section discusses three distinct paths for reducing the trade and current account deficits to a sustainable level. The first path, favored by the mainstream of the economics profession, is to reduce the federal budget deficit to promote more public savings and to encourage households to increase private savings. The second path would impose a variety of trade barriers to limit imports and, possibly, promote exports. The third path focuses on reducing the value of the dollar, thereby raising the price of imports and reducing the cost of U.S. exports to foreigners. These options are briefly outlined below.

The mainstream of the economics profession prefers an indirect route to correcting the current account imbalance. The conventional view sees the imbalance as the result of a shortfall in national savings in the United States. (As an accounting identity, and distinct from a causal relationship, the current account deficit will be equal to the gap between domestic investment and national savings.) From this perspective the key is to increase the level of public and private savings in the United States. This can be done by reducing or eliminating the federal government's budget deficit and by providing more incentives for individuals to save.

Increasing saving will not be easy, but even if the savings rate is increased, it will not by itself reduce the current account deficit. Higher savings can reduce the current deficit through two routes. First, it can lead to reduced output and demand in the United States, which would also mean reduced demand for imports. In effect, this route means that if the United States goes through a recession or a period of very slow growth, then it will import fewer goods and services and its current account deficit will thereby be reduced.

The other route through which increased savings can reduce the current account deficit is by lowering interest rates in the United States. This should in turn reduce investors' demand for dollar denominated assets, which should reduce the value of the dollar. A lower dollar will then reduce U.S. demand for imports by making them more expensive, and increasing foreign demand for U.S. exports, since a lower valued dollar will make U.S. exports cheaper for people living abroad.

It is important to understand the routes through which increased savings can reduce the current account deficit. The first route involves a recession and/or slow growth and high unemployment. Presumably, this is not an acceptable route. The alternative route is that increased savings is expected to reduce the value of the dollar. So, the proximate cause in this case is the lower value of the dollar, not increased savings.

It is also important to realize that getting a lower value dollar through increased savings is not easy to accomplish. It is possible (although not easy) to increase public savings by reducing or eliminating the budget deficit. However, it is much more difficult to control the behavior of private savings. At present, the household savings rate in the United States is negative for the first time since the depression. Even if the government moved to a balanced budget or ran modest surpluses, investment in the United States would still exceed savings, meaning that the country would still be running a trade deficit if there were no change in savings behavior in the private sector. In the late nineties, the decreased savings (increase in consumer borrowing) in the private sector more than

offset the increased savings in the public sector associated with the Clinton deficit reduction agenda. The country's trade deficit soared even as the country ran the largest budget surpluses of the post-war era. In other words, trying to correct the trade deficit by reducing the budget deficit is an extremely indirect and uncertain path.

The second mechanism is tariff and trade barriers that can be used to constrain imports. Such barriers can take a wide variety of forms which will have varying degrees of effectiveness. Some mechanisms, by design, can fairly quickly move the country towards balanced trade, whereas other mechanisms would be more indirect with less certain effects.

Warren Buffet's proposal for a system of import permits is an example of a mechanism that is likely to be relatively effective in bringing down the deficit quickly. The basic principle is that importers would have to buy import permits equal to the dollar value of the goods and services that they wish to import. Import permits would be obtained by exporting goods or services. The permits could be traded among companies, and importers could purchase them from exporters. If the goal is strictly balanced trade, then the ratio of the import permits issued to the value of the goods and services exported would be 1 to 1. However, there could be a transition period in which the ratio was set higher and gradually fell to this level over time.

Under this system, the import permits would effectively provide a subsidy to exports and a tariff on imports. For example, if the permits sold for a premium of 10 percent (e.g. permits for \$1 million of imports sold for \$100,000) then companies would be able to earn a 10 percent premium on any goods or services that they exported. That is, in addition to the money they were actually paid for their exports, exporters would also get import permits. They could then sell these permits for an amount equal to 10 percent of the value of their exports. On the other side, a company would have to pay an amount equal to 10 percent of the value of any goods they imported. Since the quantity of permits issued would be adjusted to reach a targeted trade deficit, the price of the permits would rise to whatever point is necessary to hit this target.

The Buffet proposal has an advantage over most other forms of trade restriction in that it also gives a subsidy to exports. Moreover, it provides a more certain prospect of reaching the targeted trade deficit, since the government controls the issuance of permits.

An alternative approach that functions in a manner similar to the Buffet proposal seeks to use the tax system to align the goals of corporations in a global economy with the national interest in a thriving domestic economy with high-paying jobs. In this proposal, differential rates in the corporate income tax, based on average earnings, would be used to discourage companies from moving high value added operations offshore.

More traditional forms of tariffs can also be used to reduce the deficit. These can take the form of either general tariffs applied to all imports from all countries, or they can be applied to specific sets of imports or to specific countries. As a basic economic principle, the broadest base for any set of tariffs (meaning all imports from all countries) would minimize the economic damage to the United States, since the size of the tariffs would be smaller. However, there may be a better legal case in the W.T.O. for more targeted tariffs on specific countries and/or for specific items. The effectiveness of tariffs in reducing the deficit will depend on both their size and how broadly they are applied. In many instances, if tariffs are applied on only a single country or set of countries, their main impact

will be to shift the demand for imports from countries whose goods are subject to the tariff to countries that produce comparable products, but which are not subject to the tariff.

A final mechanism for adjusting the trade imbalance is to lower the value of the dollar relative to the currencies of our trading partners. A lower valued dollar would make imports more expensive for people in the United States, leading us to buy fewer imports, and would make U.S. exports cheaper for people in other countries, which will cause them to buy more U.S. exports.

While the United States has had some success in reducing the value of the dollar against the euro and other freely traded currencies, its real value has actually increased against several important currencies during this decade, notably the Chinese yuan and the Japanese yen. Ideally, the United States could negotiate an orderly decline in the value of the dollar against these and other currencies as it did with the Plaza accords in the mid-eighties. In sum, there are three main mechanisms for bringing about an adjustment in the trade deficit. All three involve some amount of pain and disruption as they would necessarily mean that the United States paid higher prices for imported goods. This means higher inflation and lower living standards.

The route preferred by most economists is lower budget deficits and higher private savings. This has the disadvantage that it can be very slow and indirect, and the policy ultimately only affects the trade deficit insofar as it slows economic growth and/or lowers the value of the dollar.

The second route involves import tariffs or other trade barriers. This route has the problem that the mechanisms used could prove to be illegal under W.T.O. regulations or other trade agreements. In addition, trade barriers can sometimes have unintended consequences. For example, barriers on imports from China may end up simply leading to more imports from Vietnam and Bangladesh and other countries, rather than reducing the demand for imports more generally. In addition, tariff and tariff-like barriers create opportunities for gaming and corruption. If a tariff is based on the value of the good imported, then an importer can understate the value of the good. This is especially easy when a U.S. company imports an item produced by a foreign subsidiary. It would also be extremely difficult to impose tariffs on items that can be transferred electronically, like software. Finally, insofar as tariffs only apply to imports of a subset of traded goods and services, they will lead to larger economic distortions than a policy that applies to all imports and exports.

A lower-valued dollar can minimize the distortions associated with reducing the trade deficit, since it would affect all goods and services on both the import and export side. As a practical matter, the countries that have a conscious policy of keeping their currency at a low value relative to the dollar will resist raising the value of their currency, but if this were the top U.S. goal in economic negotiations (as it should be), it is reasonable to believe that the government could succeed in reducing the value of dollar. A policy of reducing the value of the dollar has the advantage that, unlike the Buffet proposal or the imposition of tariffs, it would not face any obstacles from the W.T.O. or as a result of any other U.S. trade agreement.

Adjusting to a lower trade deficit by any mechanism will necessarily mean some inflationary pressure. The huge trade deficit and overvalued dollar has effectively meant that the United States has been able to live beyond its means, consuming more goods and services than it produces. This cannot go on forever, as nearly all economists agree. When we start paying for what we import, through higher prices on imports, there will be more inflationary pressure on the economy. This is



not desirable, but is an unavoidable result of the current shortsighted policy that has allowed the United States to maintain an over-valued dollar and build up large trade deficits.

The current trade deficit, and the over-valued dollar that caused it, provide short-term benefits from low-priced imports. However, over the longer term, we eventually have to pay for what we consume. When we have to pay more money for imports, as part of the process of reducing the trade deficit, it will lower our living standards. This future pain is an unavoidable result of current trade policies.

Other policies, desirable in their own right, can help mitigate the effects on middle class living standards from bringing down the overvalued dollar, and can help to ensure that adjustment costs do not fall disproportionately on the middle class and working families. These include raising the minimum wage to half the average wage and indexing it to wages; minimum paid sick and vacation days; paid family and medical leave, and universal public pre-Kindergarten. Health care reform, which affects the trade balance as well as families' living standards, is discussed in the next section.

## Health Care

The current health care system has become too costly for middle class Americans to afford, and puts American domestic producers that provide employee health benefits at a severe cost disadvantage in international competition relative to foreign producers who do not bear this cost. This is especially true of long-established companies that manufacture goods in the U.S. Any agenda designed to improve the trade balance and to protect the living standards of the middle class must fix the problems with the country's health care system.

It is essential to recognize that this is not just a question of extending coverage; reforms are needed to bring health costs under control. The country already spends more than \$7,500 per person on health care annually. This cost is projected to rise to almost \$10,000 (in 2007 dollars) per person in 2015.<sup>4</sup> That amount is equivalent to \$40,000 for a family of four. If health care costs continue to rise at the same rate, health care costs for an average family of four will be more than \$50,000 a year in 2025 (in 2007 dollars). There is no way that lower income or even middle income families can afford this expense, and the government will not be able to make health care affordable to middle class families at a price that will be acceptable to taxpayers. Any progress in extending coverage that is not accompanied by effective cost containment will soon be undone by the impact of rising costs. There is simply no alternative to reforming the health care system in a way that contains costs.

Furthermore, it should be possible for the United States to reform its health care system in a way that reduces costs. The United States currently pays more than twice as much per person for its health care (with no better outcomes) than countries like England, Germany, and the Netherlands.<sup>5</sup> These countries provide diverse models for constructing an effective reform program in the United States.

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<sup>4</sup> This calculation is based on the data from CMS 2007, Table 1.

<sup>5</sup> OECD 2006.

## Infrastructure for the 21<sup>st</sup> Century

Inadequate infrastructure, in terms of both institutions and physical structures, also raises costs for domestic producers and undermines U.S. efforts to reduce the trade deficit. We discuss the most pressing infrastructure needs below.

### A New International Financial System

The financial infrastructure that was put in place in the depression and immediately after World War II has become badly frayed. Domestically, the regulatory structure did not keep pace with financial innovations and has been to a large extent dismantled. While many maintain that a largely deregulated financial system can support sustained economic growth, there are serious grounds for questioning this belief.

The most obvious cause for concern at present is the growth of the hedge fund industry. Because hedge funds are almost completely unregulated, it is impossible to know how risky their portfolios are. However, it is worth remembering that Alan Greenspan claimed that the collapse of the Long-Term Capital hedge fund in 1998 posed enough of a threat to the country's financial system that it was necessary for the Fed to intervene in order to maintain stability. Now that the assets under the control of hedge funds are many times larger than was the case in 1998, it is almost certain that there are more Long-Term Capitals whose risky investments could pose a threat to the stability of the system.

In addition to the risk from hedge funds, there is also considerable risk to the financial system associated with the implicit government guarantees for Fannie Mae and Freddie Mac. If the downturn in the housing market is sustained, then the mortgage default rate will continue to rise and many of their mortgage pools will turn bad. While it would take a severe and sustained downturn in the housing market to threaten Fannie Mae and Freddie Mac, if housing prices return to their long-term trend value, we would get such a downturn. It is likely that we will need to re-examine the financial regulatory structure, but the current problems will probably not become clear until after the next recession.

The problems of the international financial system are more apparent. In standard economic theory, capital is supposed to flow from rich countries to poor countries, in order to finance their development. Over the last decade, there has been a massive flow of capital in the opposite direction. There are two causes. First, after the chaos created by the East Asian financial crisis in 1997, many developing countries adopted the view that the only way to insure themselves against another debilitating crisis was to accumulate substantial quantities of reserves. This partly explains the behavior of countries across East Asia and Latin America, many of whom have accumulated massive amounts of reserves in the last decade. The other reason that capital has tended to flow in the wrong direction is that some of the poorest countries have very large debt burdens. In many cases, the annual debt service exceeds the flow of new capital.

The flow of capital from poor countries to rich countries is the flip side of the U.S. trade deficit. If developing countries were again able to import capital to support their economic growth and development, then they would be able to run balance of trade deficits with the United States or other countries. In this sense, the huge U.S. trade deficit can be seen as at least partly attributable to

the failure of the I.M.F. and other international financial institutions to sustain orderly financial markets.

For these reasons, it would be desirable to set in place a new international financial infrastructure which would foster growth in the developing world and sustain a more stable international financial system. Given the track record of the existing institutions, it would probably be desirable to start from scratch with a new institution. Of course the creation of an effective international institution designed for this purpose would require a long process of difficult international negotiations to resolve differences between key actors. However, it is important to recognize that the United States and the world have paid a large price for the failure of the existing system of international finance.

## Education and Training

Education and training are too often presented as a panacea for addressing the effects of unbalanced trade on jobs and wages. This has become an increasingly hollow claim as the offshoring of jobs has begun to strike at college-educated workers. While a better educated workforce will not, by itself, resolve America's trade problems, it is nevertheless true that the U.S. needs to invest more, and more wisely, in education and training.

The current system of funding K-12 education through local property taxes has resulted in a highly uneven quality of education for America's children, with those in the poorest communities, who require significant resources to succeed, too often receiving a lower quality education in substandard facilities.

Rising tuition costs, even at public institutions, have placed a 4-year college education beyond the reach of many young people. The U.S., once a leader in the proportion of young people graduating with 4-year university degrees, has seen slow growth and, more recently, a leveling off of college graduation rates over the last 20 years, and now lags the UK and other developed countries. Nearly two-thirds of young people in the U.S. take some college courses, but only about a quarter earn a 4-year college or university degree. In contrast, the UK has raised participation in higher education from 10 percent of young people to 43 percent over this period, with about 30 percent earning a university degree.<sup>6</sup>

While 4-year college graduation rates have stagnated, the proportion of high school graduates entering community colleges and universities has increased. States and local municipalities often grade high schools based on the number of students they send on to higher education, providing incentives to schools to promote college entrance over other forms of post-secondary education such as apprenticeships or career and technical training, even for young people who are likely to drop out of college without completing their education. Post-secondary education and training is highly desirable, since many 21<sup>st</sup> century production jobs as well as technical/professional/managerial jobs require a skilled and technologically sophisticated workforce. But a broader definition of what constitutes such training can better serve the needs of many young people.

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<sup>6</sup> Cited in Finegold 2006.

The 2005 report of the National Assessment of Adult Learning (NAAL) found that large numbers of Americans lack the literacy skills required to achieve economic self-sufficiency in today's labor market. About ninety million adults lack the math and literacy skills identified by the National Governor's Association as the minimum level needed to succeed in the workplace.<sup>7</sup> About half this population is literate, but has math and reading skills too low to qualify for better paying occupations. Most states have funding to reach only about 2 to 7 percent of adults who can benefit from adult basic education via classroom training. Adult basic education classes are in short supply and waiting lists for courses are long.

A recent report from The National Center on Education and the Economy notes that most of the individuals who will be in the workforce 20 years from now are already there.<sup>8</sup> Yet providing access to training and skills upgrading for adults who hold jobs and often have family care responsibilities can be daunting. States have begun to make innovative use of technology to successfully address this training need,<sup>9</sup> but a shortage of funding – both for training programs and for the diffusion of successful state models – have limited the scope of such efforts.

## Physical Infrastructure

The United States has not been willing to make the investments necessary to keep its infrastructure in-line with changing technology and changing business and societal needs. As a result it is poorly suited to support a 21<sup>st</sup> century economy and to provide a hospitable environment for domestic producers. A report from the consulting firm Booz Allen Hamilton notes that more reliable energy, water, and transportation systems are required for a successful business environment.<sup>10</sup> There are several areas in which the country should move aggressively to modernize its infrastructure.

**Broadband Internet.** The U.S. lags behind other industrialized nations in universal access to high speed broadband and the Internet. The U.S. stands at 16<sup>th</sup> among nations in broadband adoption, with 11.4 connections per 100 inhabitants. In contrast, South Korea leads the broadband access revolution with more than double the connections of the U.S., 24.9 per 100 residents. Other countries, including Hong Kong, China, the Netherlands, Denmark, Canada, Japan, and Singapore, all outpace the U.S. in broadband access.<sup>11</sup> Moreover, broadband access in the United States also lags behind other countries in speed and affordability. The average United States cable modem has download speeds of 2 to 3 Mbps, and costs \$35 to \$50 per month, while in Japan, where consumers have speeds up to 100 Mbps, the cost is much less. A 26 Mbps service costs about \$22 per month in Japan.<sup>12</sup> The web will only grow more important through time as a resource for new product development, service delivery, and worker skills upgrading. Fast, affordable and reliable access is essential. The federal government needs to take the lead to ensure that the entire country has access to low-cost, high-speed, broadband Internet before the end of the decade.

**Mass Transit.** The country needs to expand the use of mass transit to protect the environment, promote energy independence and sustain economic growth. The first two points are largely self-

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<sup>7</sup> McCain 2002.

<sup>8</sup> Palaich et Al. 2006.

<sup>9</sup> Gatta 2005.

<sup>10</sup> Cited in "That Sinking Feeling" 2007.

<sup>11</sup> Turner 2006.

<sup>12</sup> Turner 2005.

evident: efficient bus and intra-city train and light rail systems are far more fuel-efficient than commuting by car. However, increasing the availability of mass transit can also help to sustain economic growth in some of the country's fastest growing cities. These cities have severe problems with traffic congestion that slow commutes and deliveries to businesses. It is essential that transit infrastructure be improved to meet the growing demand. This can be best be done by trying to relieve congestion through the increased use of mass transit.

***Water and gas infrastructure.*** The country's water and gas infrastructure is badly outdated and in desperate need of repair. The Environmental Protection Agency estimated that unless the pace of repair and replacement is substantially increased, by 2020 almost half of the water system pipes in the country will be in poor, very poor, or life elapsed status.<sup>13</sup> The failure to sustain these systems has ongoing costs in the form of poor quality drinking water and polluted lakes and streams. In addition, there are also the costs associated with the inevitable catastrophes. For example, a water main break can leave a neighborhood without water and close businesses for days. Such breaks also threaten public health and cause extensive flood damage to vehicles, houses, and businesses. Fixing these systems should be a top national priority, with the federal government providing state and local governments with the money and incentives to do the job.

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<sup>13</sup> Yardley 2007.

## Energy Conservation

With the public recognizing the need to reduce greenhouse gas emissions, it is time for a renewed emphasis on policies that alter patterns of energy use by promoting low-scale efforts to improve conservation and increase alternative energy use. There is enormous potential for reducing waste in heating and electricity use. For example, energy efficient florescent light bulbs use between 20-25 percent of the electricity of conventional light bulbs.<sup>14</sup> There have been similar improvements in the efficiency of a wide range of appliances from refrigerators and ovens to toasters. There are much bigger potential gains from retrofitting buildings, using increased insulation and passive solar design, in addition to installing solar paneling in areas where it is economically feasible. Such retrofitting has reduced energy consumption by more than 50 percent in many projects undertaken this far.

This push to conservation can best be accomplished through a system of tax credits that allow a large portion of the cost of qualifying investments (e.g. increased insulation or the installation of solar paneling) to be tax deductible. The installation of wind turbines should also qualify for more generous tax treatment. In addition, the federal government can provide funds to state and local governments to set up teams that could assist homeowners and businesses in finding ways to enhance energy efficiency. Such a program will be especially timely if the housing market continues to weaken, leaving many construction workers unemployed.

The U.S. must also address the effects of climate change on the Gulf coast of the U.S. and elsewhere, to avoid a repeat of the disaster in New Orleans that devastated lives and left businesses in ruins. This means setting a reconstruction process in place and also ensuring that other vulnerable areas are better protected against predictable weather events.

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<sup>14</sup> The discussion of the potential for reducing greenhouse gas emission through conservation is based largely on Joachim 2006.

## Innovation

Technological and organizational innovation is among the major drivers of improvements in quality and efficiency. These innovations underlie a nation's productivity growth. U.S. policy needs to address the challenges of sustaining a position of technological leadership for this nation in the global economy.

### Technological Innovation

In 2006, the nation ran a \$38.3 billion trade deficit in advanced technology products, with surpluses in aerospace, biotechnology, electronics, flexible manufacturing and weapons offset by deficits in advanced materials, information and communications, life science, nuclear technology, and opto-electronics.<sup>15</sup>

The logic behind the offshoring of manufacturing, and behind U.S. trade policies that actively encourage firms to move production overseas, is that it helps the domestic economy by reducing costs and expanding markets as workers in low wage countries take over the fabrication and assembly of goods. Innovation and design, meanwhile, would remain in the U.S. Two recent studies of advanced technology industries, however, find that offshoring has had adverse effects on innovation in the U.S. These studies – one of firms and one of an industry – suggest that the offshoring of manufacturing activities to low wage producers has meant not only a loss of jobs, but also a loss of innovation capacity in the U.S. This is not the important but by-now-familiar story of rising job losses by college educated, technologically savvy workers as American companies offshore research, development engineering, and business services functions. Rather, these studies raise questions about the relationship between the domestic capacity to produce goods and the incentives or capacity for innovation in the U.S.

***Opto-electronics.*** The first example comes from the opto-electronics components industry (e.g., lasers, sensors, optical switches, medical diagnostic equipment components, LEDs, night vision system components). U.S. firms producing opto-electronic components currently have two alternatives for reducing materials, labor and packaging costs: adopting new technologies in the U.S. (i.e., monolithic integration of multiple devices on a single chip) or moving production to low wage countries. Most are choosing not to innovate at home but instead are moving optical subassembly operations to developing countries in East Asia to achieve immediate cost savings. Offshoring of manufacturing in this industry not only affects labor costs but also material, overhead and other aspects of production costs. But movement of production to these economies also reduces the cost incentives for developing monolithic integration technologies in the U.S. Development of monolithic integration is driven by the high cost in the U.S. of packaging and assembling opto-electronic products separately. Lower costs for labor and materials in developing countries change the incentives for investing in the development of these technologies. At the same time, at the current level of development in the countries where production of components now occurs, a combination of factors makes it difficult for firms to produce high tech solutions at these locations. The result is that U.S. producers of opto-electronic components fail to develop integration

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<sup>15</sup> USCB 2007b: Exhibit 16a.



technologies either at home or in the developing countries where production facilities are located, preferring to produce discrete components in low cost environments instead. In the recent past, integration of microelectronic components on a single chip spurred the development of a wide range of innovative products and processes. Monolithic integration has the potential to result in a further explosion of high tech devices. But this long-run innovation potential is in danger of being lost to the U.S. as American firms relocate manufacturing to East Asia.<sup>16</sup>

**Rare Earth Elements.** The second example comes from the Rare Earth Elements industry. Rare earth elements (REE) play a key role in high technology applications through their use in computers, lasers, and telecommunications. Rare earth magnets are among the world's strongest and are important in the miniaturization of high-tech applications such as miniaturized multi-gigabyte disc drives, cell phones and iPods. They are used in TV, computer and other screens that employ liquid crystal or plasma display panel technology, in superalloys for aerospace, and in superconductors and lasers. They are important in environmental technologies, including rechargeable batteries in hybrid vehicles, energy efficient fluorescent lights, magnetic refrigeration (which is more efficient than gas compression and does not deplete the ozone layer or contribute to global warming), and for safe storage and transport of hydrogen for the post-carbon economy.<sup>17</sup> The U.S. has gone from self-sufficiency in REE processing and manufacturing applications before 1990 to importing more than 90 percent of REE from China directly or indirectly.<sup>18</sup>

REE refining and applications are among the high tech areas that have gone the furthest in outsourcing supplies and offshoring manufacturing from the U.S. to developing countries. Offshoring of high tech manufacturing utilizing REE materials has progressed continuously since 1975, and a significant share of manufacturing operations employing REEs has now been offshored to Asia. The long-term effect has been to disrupt the ability

of firms within this industry to innovate. The U.S. played a critical role in the discovery and development of rare earth magnets, and continued to play a global leadership role in the development of REE technology as recently as 2000, despite no longer mining and refining REEs, when the company Magnaquench completed construction of a research park in North Carolina. Today, U.S. manufacturers of REE magnets can no longer compete with the quality of magnets produced in China or Japan. Magnaquench has closed its U.S. operations and moved them to China or Singapore. Iowa State University closed its Rare-earth Information Center as local interest in REE technologies decreased due to the offshoring of establishments using these technologies. The result is that rare earth patent applications by U.S. firms are in decline and research and development by this industry in the U.S. has decreased as manufacturing has moved offshore.<sup>19</sup>

These studies suggest that efforts to promote innovation will be seriously impeded if the current trend toward the offshoring of manufacturing continues. The centers for research and development will tend to follow manufacturing. On the other hand, policies that promote the growth of efficient manufacturing facilities in the United States are also likely to lead to more domestic innovation.

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<sup>16</sup> Schabel et Al. 2005. See also Fuchs and Kirchain 2005.

<sup>17</sup> Haxel et Al. 2002.

<sup>18</sup> Ibid.

<sup>19</sup> Fifarek et Al. 2006. See also comments on this paper in Cox 2006.

## Organizational Innovation

Organizational innovation may be as important as technological innovation if manufacturing is to expand within the U.S. In a world of increased global competition and customization of products, successful organizations have innovated on two fronts. They have rejected the old top-down factory model in which closely supervised workers performed fragmented and repetitive task in favor of more participatory “high performance” models of work organization.<sup>20</sup> They have also developed collaborative relationships across firms, especially vertical relationships between formerly vertically integrated original equipment manufacturers that have defined a limited set of core competencies and the suppliers to whom they have outsourced other operations.<sup>21</sup> However, high performance work organization and collaborative networks are not the inevitable outcome of this type of outsourcing. Too often, the emphasis on core competencies and outsourcing is an effort by large manufacturers to move manufacturing jobs out of unionized, urban establishments, drive down wages, and shift risk from large firms to the smaller establishments that supply them. These firms soon find themselves in a “struggle with ruinous price competition from the low-wage world.”<sup>22</sup> Regional policies that provide external support and incentives for the development and diffusion of high performance work organizations within firms and for the establishment of collaborative relationships among firms is a necessary prerequisite to enhancing domestic manufacturing capacity.

## Conclusion

The country faces serious economic problems as a result of the large and growing trade deficit. The decision to allow the trade deficit to grow to its current level was a short-sighted policy that provided some temporary economic benefits in the form of cheap imports, at the cost of longer-term pain due to higher import prices, and therefore higher inflation and lower living standards at some future point.

It is necessary to take steps to bring the deficit down to a manageable level. However, there is no painless way in which this adjustment can be made. The government should seek to minimize the pain by committing itself to a set of policies to ensure that the country has the necessary physical and institutional infrastructure to support a new pattern of growth. It should also take steps to ensure that workers have the education and training that will be needed in a competitive economy.

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<sup>20</sup> Appelbaum et Al. 2000.

<sup>21</sup> Whitford 2006.

<sup>22</sup> Ibid. p. 155.

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