

The Social Security Shortfall and the National Defense Shortfall

Dean Baker¹

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CENTER FOR ECONOMIC AND POLICY RESEARCH • 1611 CONNECTICUT AVE., NW, SUITE 400
WASHINGTON, D.C. 20009 • (202) 293-5380 • <WWW.CEPR.NET> • EMAIL: CEPR@CEPR.NET

¹ Dean Baker is the co-director of the Center for Economic and Policy Research. Marcellus Andrews, Lynn Erskine, and Diane Schwartz made helpful comments on this paper.

Executive Summary

Many politicians and commentators have claimed that the cost of sustaining the solvency of Social Security in the decades ahead will pose a crushing burden on future generations of workers. However, Social Security will not be the only program that will require additional funding in the future under current policy. The current U.S. defense policy is based on the United States being the world's pre-eminent military power. Maintaining this pre-eminence will pose enormous financial strains in the future.

As China passes the United States as the world largest economic power in approximately the next decade, the United States will find it increasingly difficult to maintain its military pre-eminence. Many analysts have failed to appreciate the true size of China's economy, because they use the wrong measure of the GDP. Using a purchasing power parity measure, which nearly all economists agree is the appropriate measure of economic output, China's economy is already two-thirds the size of the U.S. economy, and far larger than any other economy in the world.

China's economy will exceed the size of the U.S. economy, eventually growing to be more than three times as large, by the end of the twenty first century. This paper projects the amount of additional military spending that the United States will need to keep pace with China.

It shows that:

- In a low-cost scenario, the gap between the amount of spending needed to keep pace with China's military and the amount of U.S. defense spending projected by the Congressional Budget Office (CBO) will be more than 2.0 percent of GDP (\$240 billion at 2005 output levels) by 2030, and nearly 5.0 percent of GDP by 2050 (\$600 billion at 2005 output levels). In a mid-cost scenario, which assumes that China devotes the same share of its output to the military as the United States does at present, this military spending gap will be close to 7.0 percent of GDP by 2050 (\$720 billion at 2005 output levels).
- In a high-cost scenario, in which China matches the share of output that the United States spent on its military at the height of the Cold War, the military spending gap will exceed 12 percent of GDP by 2030 (\$1.4 trillion at 2005 output levels) and 18 percent of GDP by 2050 (\$2.2 trillion at 2005 output levels).
- This military spending shortfall is far larger than the projected Social Security shortfall. In the low-cost scenario, the present value of the military spending shortfall over the next 75 years is \$26.7 trillion, more than six times the size of the Social Security trustees projection of the 75-year shortfall in Social Security. The projected 75-year military spending shortfall in the mid-cost scenario is \$35.7 trillion, nearly nine times the size of the projected Social Security shortfall.

- In the high-cost scenario, the projected military shortfall over the next 75 years is \$89.2 trillion, more than 22 times the size of the projected Social Security shortfall.

It is possible to debate the importance of the projected shortfall in the Social Security program over its 75-year planning horizon. However, in almost any scenario, maintaining the current U.S. defense policy over this period will impose far larger costs. It is remarkable that politicians and commentators have devoted so much attention to the projected Social Security shortfall, while virtually ignoring the far larger expenses that are implied by maintaining the current U.S. defense policy.

Introduction

President Bush has argued that the prospect of a shortfall in Social Security funding projected for 2041 is a major national problem. While the basis for this projected shortfall is questionable (the non-partisan Congressional Budget Office [CBO] projects that the program will be able to pay full benefits for nearly half of a century), it is easy to show that the potential burden posed by this shortfall is smaller than other problems facing the country.

Specifically, most workers stand to lose far more income as a result of growing wage inequality or rising health care costs than the potential tax increases that could be needed to close a Social Security funding gap.² While these burdens have been given relatively little attention in policy circles, it is even more striking that a third potential burden – the cost of maintaining current defense policy has been almost neglected.

The Bush administration's defense policy is to maintain the status of the United States as the world's pre-eminent military power. At the moment, this can be relatively easily accomplished, since the United States has the largest economy in the world. However, the United States is likely to be surpassed by China as the world's largest economy in little more than a decade. At that point, it will become far more difficult for the United States to maintain military superiority over China.

If China chooses to commit as large a percentage of its resources to the military as the United States does at present, then the United States will have to spend vast sums to keep its military strength on par with China. As China's economy grows much bigger than the U.S. economy (it is projected to be twice as large by 2050), the effort to keep pace with China's military spending will impose a substantial burden on the United States, that has not been included in any of the standard long-range budget projections. This potential burden is far larger than the taxes that could be necessary to close a projected Social Security shortfall.

This paper sets a range on the defense spending shortfall – the amount of additional defense spending that will be needed to match China's growing military power. It compares this range to the projected size of the Social Security shortfall. Under almost all plausible sets of assumptions, the defense spending shortfall is much larger than the Social Security shortfall and will be felt much sooner – at least if the United States maintains its current defense policy.

The China Defense Challenge

Most analysts have hugely underestimated China economic and potential military power, because they have used an inappropriate measure of China's economy. It has become standard to measure the size of China's economy using an exchange rate conversion measure of GDP. This methodology calculates the size of China's economy in its own

² See Baker 2005 and Baker and Rosnick 2005.

currency, and then converts it into dollars, using the official exchange rate, to get a dollar measure of the size of China's economy. By this measure, China's GDP in 2004 was \$1.5 trillion (excluding Hong Kong), which is less than 15 percent of the size of the U.S. economy and considerably smaller than the economies of Germany and Japan.

While the exchange rate conversion methodology gives a reasonably good measure for most rich countries, it tends to badly underestimate GDP in developing countries. It is an especially bad methodology for estimating China's GDP, because China's currency is seriously under-valued. Economists more typically use a purchasing power parity (PPP) measure of GDP when making international comparisons. This methodology uses the same set of prices to measure the output of goods and services everywhere. In other words, it would calculate China's GDP as if all the goods and services in China were sold at the same price as the same goods and services would sell for in the United States.

Measures of GDP, PPP are inexact, but it is clear that China is far larger by this measure than by the currency conversion measure of GDP. In 2004, China's GDP on a PPP basis was \$7.6 trillion (including Hong Kong), which is approximately two-thirds of the size of the U.S. economy.³ This measure is far more consistent with China's impact on the world economy. For example, China is the world's second largest consumer of oil and the largest producer of steel and many other key products. Such rankings would be implausible if China's currency conversion measure of GDP were a meaningful measure of its economy. (By the currency conversion measure, China is exporting an amount equal to 14 percent of its GDP to the United States at present.)

The PPP measure of GDP indicates that China is already by far the second largest economy in the world. However, it has been growing at a rate of more than 7 percent annually, and it is projected to continue to grow at close to a 7 percent rate long into the future. At this growth rate, China's economy will double in size in just over ten years. With growth in the U.S. economy projected to slow sharply in the near future, China's economy will soon be larger than the U.S. economy. The growth projections from the CBO imply that China's economy will be larger than the U.S. economy as soon as 2015. In addition, China's economy will be more than twice as large as the U.S. economy by 2050.

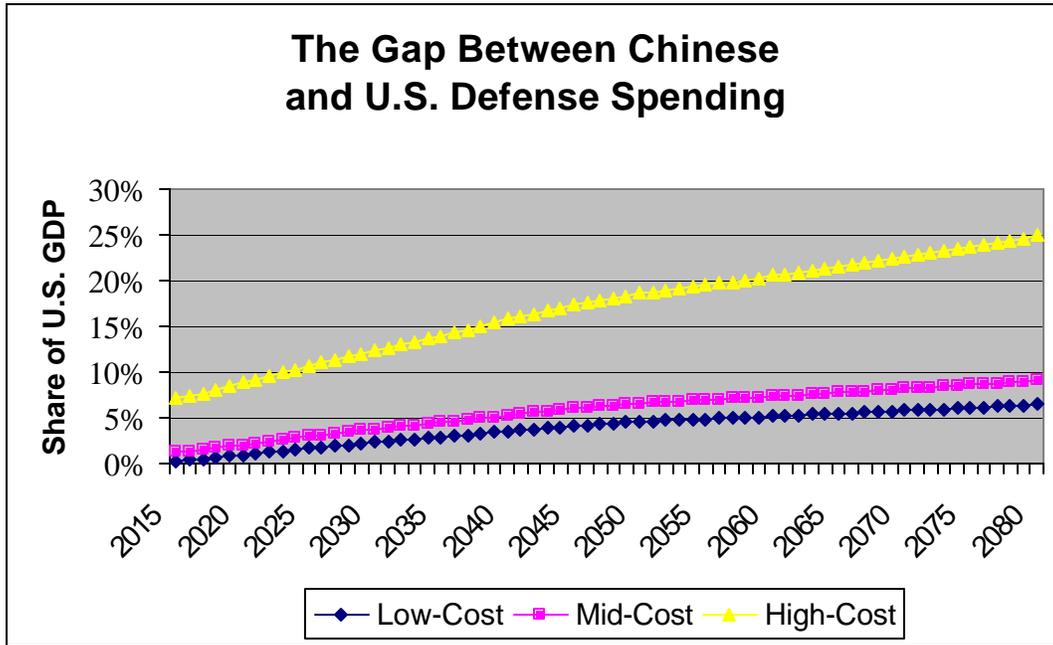
The extent to which matching China's military strength poses a burden for the U.S. economy will depend primarily on how large a share of its economy China chooses to commit to its military. Figure 1 shows the gap between CBO's projected level of defense spending over the next 75 years, and the amount that will be needed to keep the strength of the U.S. military comparable to China's under three different scenarios. The low cost scenario assumes that China spends an amount equal to 3 percent of its GDP on its military, the same share of GDP that the United States devoted to military spending at the end of the Clinton administration. This figure is somewhat below the bottom end of the range of 3.5 to 5.0 percent of GDP that the Central Intelligence Agency estimates China currently devotes to military spending.⁴ The mid-cost scenario assumes that China will

³ The derivation of this estimate is explained in the appendix.

⁴ See Central Intelligence Agency, 2004.

spend 4 percent of its GDP on its military, approximately the same share as the United States currently spends. The high-cost scenario assumes that China will spend an amount equal to 10 percent of its GDP. This is approximately the share of GDP that the United States devoted to the military at the height of the Cold War in the fifties.

Figure 1



Source: Penn World Tables and author's calculations, see appendix.

Figure 1 shows that there will be a large and growing gap between the amount that the United States is currently projected to spend on its military, and the amount that will be necessary to match China's military power, as its economy outgrows the U.S. economy. In the low cost scenario, the gap between projected U.S. military spending and the amount needed to match China's military power will be equal to 1.0 percent of GDP (approximately \$120 billion at present), by 2020. This gap rises to 3.0 percent (approximately \$360 billion at present) of GDP by 2041, the year when the Social Security trustees first project that Social Security will face a shortfall. The gap will be equal to 4.0 percent of GDP (approximately \$480 billion at present) by 2052, when the CBO first projects that Social Security will face a shortfall. This gap will be equal to 7.0 percent of GDP (approximately \$840 billion at present) in 2080, the end of Social Security's 75-year planning horizon.

The gaps are even larger in the middle and high cost scenarios. In the middle scenario, the gap will exceed 2.0 percent of GDP by 2020, 6.0 percent of GDP by 2041, 7.0 percent of GDP by 2052, and 9.0 percent of GDP in 2080. The high cost scenario would imply a gap of 9.0 percent of GDP by 2020, 17.0 percent of GDP in 2041, 20.0 percent of GDP in 2052, and 25 percent of GDP in 2080.

By comparison, share of GDP devoted to Social Security spending is projected to increase by approximately 2.0 percent over the next 75 years. The Social Security trustees project that a tax increase equal to 0.6 percent of GDP would be sufficient to keep the program fully solvent over this period. CBO projects that a tax increase equal to 0.4 percent of GDP would be sufficient to keep Social Security fully solvent over its 75-year planning horizon.

It is also possible to express the military spending shortfall over this period in present value terms. This makes it possible to compare it to the \$4.0 trillion shortfall that the Social Security trustees project for the program, which has been mentioned frequently in public discussion of the issue. Table 1 shows present value of the projected shortfall for Social Security and the military spending shortfall in the low cost, mid-cost, and high-cost scenarios.

Table 1
Projected Shortfalls in Social Security and Defense Spending

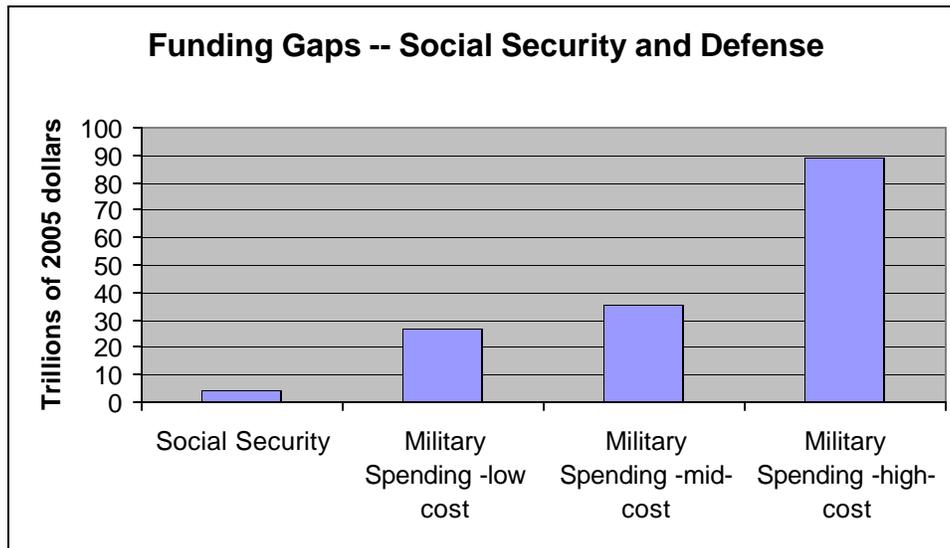
	75-year	Infinite horizon
Social Security	\$4.0 trillion	\$12.0 trillion
Military Spending (low-cost)	\$26.7 trillion	\$60.9 trillion
Military Spending (mid-cost)	\$35.7 trillion	\$81.2 trillion
Military Spending (high-cost)	\$89.2 trillion	\$203.1 trillion

Source: Author’s calculations, see appendix.

As can be seen in Table 1, the projected shortfall in the Social Security program is considerably smaller than the additional military spending that will be required to maintain the current U.S. defense policy. Even in the “low-cost” scenario, which assumes that China will only devote as large a share of its economic output to its military as the United States did at the low-point of the Clinton administration, the additional defense spending that will be needed to match China’s spending over the next 75 years will be more than 6 times as much money as will be needed to keep the Social Security system fully solvent over this period.

The middle cost scenario, which assumes that China will spend the same share of its output on its military as the United States does at present, implies that the additional military spending needed to maintain U.S. military pre-eminence over the next 75 years will be nearly 9 times the size of the Social Security shortfall. In the high cost scenario, in which China devotes as large a share of its output to the military as the U.S. did during the height of the Cold War, the military spending gap is more than 22 times as large as the size of the projected Social Security shortfall over the next 75 years. These comparisons are shown in Figure 2.

Figure 2



Source: Penn World Tables and author's calculations, see appendix.

While there is considerable uncertainty about the future rates of growth of both the Chinese and U.S. economies, and also about the amount of resources that the Chinese government will opt to devote to its military, there can be little doubt that China's economy will exceed the size of the U.S. economy in the not so distant future. At that point, China will have the ability to support a military that is more powerful than that of the United States. If the defense policy of the United States hinges on always maintaining the most powerful military in the world, then this policy will prove costly as China's economy eventually expands to be three to four times as large as the U.S. economy later in this century.

The cost of keeping pace with China's military is likely to be many times larger than the cost of dealing with the projected shortfall in the Social Security program. Even if China devotes only a modest portion of its output to its military, the burden to the United States of keeping pace will be more than 6 times the size of the Social Security shortfall. If China is more aggressive in building up its military, the burden to the United States of keeping pace could be more than 20 times the size of the projected Social Security shortfall.

The decision to maintain the largest military force in the world is a costly one. This cost will grow, as the size of China's economy exceeds the size of the U.S. economy. Unfortunately, there has been almost no public debate about the future status of the United States in the world. While most policy makers appear to assume that the United States will continue in its current role, there has been no effort to budget for the military expenditures that this will imply in the decades ahead.

Even in a best-case scenario, these additional military expenditures will be many times larger than the burdens associated with maintaining the solvency of Social Security. If the burdens associated with sustaining the solvency of Social Security are as ominous as many politicians and commentators claim, then the much larger burden implied by U.S. defense policy provides grounds for serious concern.

Appendix

The data for China's GDP, PPP were taken from the Penn World Tables 6.1.⁵ Year 2000 GDP, PPP was calculated by multiplying the estimate for China's per capita GDP (\$3,843.67) by its population (1,258.8 million). For the years 2000 through 2004 growth data from the International Monetary Fund's World Economic Outlook were used. For years from 2004 to 2050, it is assumed that China's GDP follows the growth path described in Goldman Sachs (2003). In the years after 2050, the projections assume that China's per capita GDP growth continues to exceed per capita GDP growth in the United States, until per capita income equalizes in 2100. At that point, it is assumed that per capita GDP in China and the U.S. grow at the same rate. The growth projections for the United States are taken from the 2004 Social Security Trustees Report.

Hong Kong's GDP was added to China's for this analysis. Hong Kong's 2000 GDP, PPP was also calculated using the Penn World Tables 6.1. Its 2000 per capita GDP (\$27,893) was multiplied by its population (6.9 million). The calculations assume that its growth in subsequent years is equal to the growth rate in the United States.

The gap between projected Chinese military spending and U.S. military spending follows the Congressional Budget Office in assuming that military spending remains at its real 2015 level.

The numbers in Figure 2 and Table 1 show the present discounted values of the gaps between projected Chinese and U.S. military spending in the three scenarios described above. The calculations use a discount rate of 3.0 percent. The calculation of the Social Security shortfall is taken from the 2005 Social Security trustees report, Table IV.B7.

The projections in this paper assume that one dollar of military spending in China (adjusted for purchasing power parities) is equivalent to one dollar of spending in the United States in creating military power. While this may not be strictly true in 2005, it almost certainly will be true in the not very distant future, as improvements in Chinese technology reduce and eventually eliminate the gaps that currently exist.

⁵ See Heston, et al., 2002.

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