



The Employment Effects of Downsizing the U.S. Military

Robert Pollin and Heidi Garrett-Peltier

November 2007

**POLITICAL ECONOMY
RESEARCH INSTITUTE**

Gordon Hall
418 North Pleasant Street
Amherst, MA 01002

Phone: 413.545.6355
Fax: 413.577.0261
peri@econs.umass.edu
www.peri.umass.edu

WORKINGPAPER SERIES

Number 152



The Employment Effects of Downsizing the U.S. Military

By Robert Pollin and Heidi Garrett-Peltier
Department of Economics and Political Economy Research Institute (PERI)
University of Massachusetts-Amherst

October 2007

ABSTRACT

This study focuses on the employment effects of military spending versus channeling some significant part of the military budget into alternative purposes. We begin by introducing the basic input-output modeling technique for considering issues such as these in a systematic way. We then present some simple alternative spending scenarios, namely devoting \$1 billion to the military versus the same amount of money spent for five alternatives: tax cuts which produce increased levels of personal consumption; health care; education; mass transit; and construction targeted at home weatherization and infrastructure repair. Our first conclusion in assessing such relative employment impacts is straightforward: \$1 billion spent on personal consumption, health care, education, mass transit, and construction for home weatherization and infrastructure will all create more jobs within the U.S. economy than would the same \$1 billion spent on the military. We then examine the pay level of jobs created through these alternative spending priorities and assess the overall welfare impacts of the alternative employment outcomes. We then consider what would be the impact on employment of transferring all \$138 billion in funding that went to the Iraq war in 2007 into alternative peaceful purposes. As we show, a transfer of funds of this magnitude would enable the U.S. government to provide, for example, health insurance for the 45 million U.S. residents who are now uninsured, and still provide funds for significant investments in education and energy conservation. A transfer of the Iraq budget into these alternative purposes would also expand employment in the U.S. by between 600,000 – 1 million jobs, depending on how exactly the \$138 billion were allocated.

JEL Classifications: J23, H54, H56, E24, C67

The U.S. government spent an estimated \$572 billion on the military in 2007. This amounts to about \$1,800 for every resident of the country. The level of military spending has risen dramatically since 2001, with the increases beginning even before September 11, 2001. In total dollar terms (after controlling for inflation), military spending has risen at an average rate of 10 percent per year from 2000 – 2006, the full years of the Bush presidency to date. By contrast, the overall U.S. economy grew at an average annual rate of 2.7 percent. As a share of GDP, the military budget rose from 3.0 to 4.4 percent of GDP during the Bush Presidency. At the current size of the economy, a difference between a military budget at 4.4 rather than 3.0 percent of GDP amounts to \$134 billion.

The largest increases in the military budget during the Bush presidency have been associated with the Afghanistan and especially the Iraq wars. The Iraq war alone now costs an average of \$360 million a day (according to the Congressional Research Service),

or \$138 billion over the 2007 fiscal year. Thus, the \$138 billion spent on Iraq in 2007 was basically equal to the total increase in military spending resulting from moving the military budget from 3.0 to 4.4 percent of GDP.

One aspect of the huge level of military spending by the U.S. government, and of the Iraq war specifically, that has been largely neglected is its effects on the U.S. economy. \$600 billion is a vast sum of money—greater than the combined GDP of Sweden and Thailand, and eight times the amount of U.S. federal spending on education. It is therefore reasonable to ask what the benefits might be to U.S. taxpayers if some significant share of the \$600 billion now going to the military were instead devoted to important non-military purposes, such as health care, education, or the environment.

A view is often expressed that the military budget is a cornerstone of the U.S. economy. The Pentagon is often said to be a major underwriter of, and stimulus to, important technical innovations.¹ It is also often cited as a major employer, providing good jobs—jobs that are stable and at least decently paid—to millions of Americans.

At one level, these claims cannot help but be true. If the U.S. government is spending upwards of \$600 billion on maintaining and strengthening the military, how could the necessary expenditures on building technologically sophisticated weapons, along with transportation and communications systems, fail to encourage technical innovations that are somehow connected to these instruments of warfare? It is true that investments in military technology have produced important spin-offs for civilian purposes, the Internet being the most spectacular such example. At the same time, channeling \$600 billion into areas such as renewable energy, mass transportation and public health would also create a hothouse environment supporting new technologies.

Parallel considerations arise in assessing the impact of the military budget on employment in the U.S. The \$600 billion military budget creates approximately five million jobs, both within the military itself and in all the civilian industries connected to the military. And precisely because of the high demands for technologically advanced equipment in the military, a good proportion of the jobs created by the military budget will be well-paying and professionally challenging. But again, this will also be true when funds are spent in other areas that entail using and developing new technologies, such as for health care, energy conservation, or renewable energy.

Thus, if we want to give a balanced account of the impact of military spending on the U.S. economy, including the employment situation, the only appropriate way to do this is to examine the issue in relative terms—i.e. what is the impact of spending a given sum of money on the military versus spending the same funds on some combination of non-military alternatives?

¹ The most careful recent presentation of this view is by Ruttan (2006).

This study is focused on the employment effects of military spending versus channeling some significant part of the military budget into alternative purposes. We begin by introducing the basic input-output modeling technique for considering issues such as these in a systematic way. We also review the results of earlier efforts to compare the employment effects of military spending versus alternative government spending priorities.

We then present some simple alternative spending scenarios, namely devoting \$1 billion to the military versus the same amount of money spent for five alternatives: tax cuts which produce increased levels of personal consumption; health care; education; mass transit; and construction targeted at home weatherization and infrastructure repair. We have included tax cuts/personal consumption in this list since it is the most straightforward alternative spending use—that the money freed up from a reduction in military spending goes back directly to taxpayers for them to use as they see fit. We have also, reluctantly, excluded a category for renewable energy investments. This is only because the data now available to us are not adequate to make reliable estimates as to the employment effects of investments in renewable energy projects.² As a provisional substitute, one can consider the categories of mass transit and construction on home weatherization as constituting investments in energy conservation.

How many jobs are created by each of these alternatives and what is the quality of the jobs being created? Our first conclusion in assessing such relative employment impacts is straightforward: \$1 billion spent on personal consumption, health care, education, mass transit, and construction for home weatherization and infrastructure will all create more jobs within the U.S. economy than would the same \$1 billion spent on the military.

But this conclusion raises an obvious question: do we create more jobs through these non-military spending targets simply by substituting well-paying jobs associated with the military with poorly-paid jobs associated with the alternatives? In fact, spending on personal consumption does produce a preponderance of poorly-paid jobs, such that the total compensation flowing to workers will be lower than through \$1 billion going to the military. However, the opposite is true with education as the spending target. Here, both the total number of jobs created as well as the average pay are both higher than with the military. The situations with health care, mass transit and home weatherization/infrastructure construction are less clear-cut. More jobs will be created than with military spending, and the total compensation will also be significantly higher than with military spending. But the average pay for a health-care worker or those engaged in mass transit or construction will be lower than with the military. After presenting these findings, we examine them in a broader context—i.e. assessing the overall welfare impacts of the alternative employment outcomes.

² One of the ongoing projects at PERI is to create a reliable data base showing the employment effects of investments in renewable energy. We expect that we will have such data available by Spring 2008.

We then consider a more immediate question, i.e. what would be the impact on employment of transferring all \$138 billion in funding now going to Iraq into alternative peaceful purposes? As we show, a transfer of funds of this magnitude would enable the U.S. government to provide, for example, health insurance for the 45 million U.S. residents who are now uninsured, and still provide funds for significant investments in education and energy conservation. A transfer of the Iraq budget into these alternative purposes would also expand employment in the U.S. by between 600,000 – 1 million jobs, depending on how exactly the \$138 billion were allocated. We conclude by briefly considering both the broader labor market impacts of increasing employment in the range of 1 million jobs, and the issue of the U.S. fiscal deficit. If we were to reallocate the Iraq war budget, is it most prudent to simply use the funds for deficit reduction?

We conclude the study with a brief series of summary observations.

Previous Studies of Job Effects of Alternative Spending Priorities

The basic tool for estimating the net overall employment effects of alternative government spending priorities in the United States is the input-output model of the U.S. economy, produced every five years and updated annually by the Department of Commerce. The input-output analytic framework was first developed in the 1930s by Nobel Laureate economist Wassily Leontief, with many subsequent refinements by Leontief and others. An input-output model traces through all of the factors—i.e. inputs—that go into producing a given output. For example, we can observe through the input-output model of the U.S. economy how many and what types of workers, how much and what types of equipment, and how much energy (all inputs) are needed to produce a military fighter airplane, tank or warship (outputs). We can also observe what the equivalent requirements would be to keep an existing elementary school or hospital functioning or to build a new school or hospital.

To estimate the overall employment effects of any given spending target, such as a warplane or a school, we have to consider three factors within the overall the input-output model:

1. *Direct effects*—the jobs created by producing the warplane or school
2. *Indirect effects*—the jobs associated with industries that supply intermediate goods for building a warplane, school, or any other direct spending target. These would include the steel, glass, tire, and electronic industries for building a warplane; and concrete, glass, and trucking industries for building a school.
3. *Induced effects*—The expansion of employment that results when people who are paid to build a warplane or school spend the money they have earned on other products in the economy.

How could one spending target create more jobs for a given amount of expenditure than another? If we compare, for example, military spending with education, there are only three possibilities:

1. The average pay for all of the industries associated with education—including direct, indirect, and induced effects—is lower than the average pay for the military-related industries.

2. The average “labor intensity” of the education-related industries—i.e. number of jobs created per dollar of spending, as opposed to the amount spent on machinery, buildings, energy, land and other inputs—is higher than the labor intensity of military-related industries.

3. The overall job creation effects within the U.S. economy—as opposed to the rest-of-the-world—are higher for education than the military. For example, we roughly estimate that U.S. military personnel spend only 43 percent of their income on domestic goods and services (including import purchases in this calculation) while the U.S. civilian population, on average, spends 78 percent of their income on domestic products.

To enable the input-output model to address specific questions both on the quantity of jobs created, the classification of these jobs by category, and the compensation levels associated with them, we have to then incorporate data from the U.S. labor force surveys into the input-output framework. Operating this kind of economic model clearly entails large numbers of technical manipulations and calculations. At the same time, the U.S. economy is a \$13 trillion enterprise, involving millions of interactions, operations, and innovations on a daily basis. There is no model—input-output model or otherwise—that can capture with precision every detail of what is actually happening on the ground. Still, the input-output model can accurately capture broad parameters of economic reality, including those relating to the question on which we are focusing, the relative employment effects of military versus non-military spending initiatives.

In 1961, Professor Leontief himself used input-output modeling to study the effects of demilitarization on the economy. In his essay entitled, “The Economic Effects of Disarmament,” Leontief estimated how employment and overall output would change as a result of a shift in spending from the defense industry to non-defense. He showed that while cutting military spending would eliminate a substantial number of jobs, twice as many jobs would be created in expanding spending on alternative domestic purposes.

Professor Seymour Melman, an industrial economist and engineer, also examined the employment and output effects of military versus non-military spending alternatives in a series of research projects over the 1960s – 1980s.³ Melman demonstrated repeatedly that the net effects of increasing the proportional share of non-military spending would be beneficial in terms of jobs and overall output. He also stressed that investment in non-defense industries would offer large benefits in terms of encouraging new technologies and raising average living standards in the United States.

³ See, for example, *The Demilitarized Society: Disarmament and Conversion*, 1988.

In the 1990's, two separate studies were published which used input-output analysis and as well as supplemental modeling techniques to estimate the effects of conversion. One was a 1993 paper by Professor James Medoff, entitled "Smart Stimulus: More Good Jobs." The other was a 1990 study by Marion Anderson, Greg Bischak and Michael Oden entitled "Converting the American Economy."

Medoff used the 1987 input-output model of the U.S. economy to estimate the relationship between different types of spending—for example, military, state government, private investment and consumption—on employment, that is, focusing on the same questions that we are addressing here. Medoff created a number of indices to illustrate both the job quantity and job quality effects of alternative types of spending—looking specifically at the number of jobs created through alternative spending targets and the average compensation levels associated with the various types of jobs created. Medoff found that personal consumption expenditures had the lowest positive impact on his index that combined both the number of jobs created and the wages and benefits of jobs. Defense spending was the next to last by this combined job quality/quantity index. Medoff found that spending for education, health care, transportation infrastructure and construction all performed substantially better than military spending by this combined job quantity/quality index.

Anderson et al. use a somewhat different technique than Medoff. They relied on a model developed by the Employment Research Associates and Regional Economic Models Incorporated (REMI) that combines an input-output model with other statistical techniques in estimating the relative employment effects of military spending versus spending on alternative domestic purposes.⁴ This study was conducted in 1990, but offers projections of employment effects through 1994. It reports detailed projections of the net job impacts by occupation – both within the military and civilian sectors and also within branches of the military and sectors of the civilian economy. For example, they found that the impact of a gradual reduction in military spending, starting with \$35 billion in 1990 and reaching \$105 billion in 1994, would produce a net gain of 477,000 jobs within the U.S. economy.

Employment Effects of \$1 Billion in Spending for Alternative Purposes

⁴ In principle at least, the approach of the REMI model addresses a significant limitation of the input-output model. This limitation is that the input-output model assumes that the overall structure of the economy will remain the same despite any changes in the level of spending. For example, if spending on the military were to decline and construction spending increased, it is likely that, in reality, prices of construction materials would rise as a result. Wages for construction workers could also rise. Such effects are not incorporated into the input-output model. The input-output model rather works from a simplifying "fixed coefficient" assumption, meaning that the model assumes the basic price and wage relationships would stay fixed despite the changes in spending. The REMI model is among the type of models that tries to incorporate such effects. In principle, the REMI-type model provides a fuller picture of what actually happens when spending priorities in the economy change. In practice, these sorts of changes are very difficult to model accurately. As such, in many cases, the simpler input-output model provides as good as approximation of the overall effects as one is likely to generate from this sort of modeling exercise.

We present in Table 1 our estimate of the relative effects of spending \$1 billion on alternative uses, including military spending, health care, education, mass transit, and construction for home weatherization and infrastructure repair. Our estimates are derived from the 2005 U.S. input-output model, along with other data sources on national income and employment within the United States. We show the full list of our data sources in the Appendix.

TABLE 1 BELONGS HERE

The table first shows in column 1 the data on the total number of jobs created by \$1 billion in spending for alternative end uses. As we see, defense spending creates 8,555 total jobs with \$1 billion in spending. This is the fewest number of jobs of any of the alternative uses that we present. Thus, personal consumption generates 10,779 jobs, 26.2 percent more than defense, health care generates 12,883 jobs, education generates 17,687, mass transit is at 19,795, and construction for weatherization/infrastructure is 12,804. From this list we see that with two of the categories, education and mass transit, the total number of jobs created with \$1 billion in spending is more than twice as many as with defense.

We next consider the differences in the compensation in the jobs associated with our alternative spending targets. If the only way that more jobs are created is by lowering pay levels, then we can question whether the net job impact of an alternative use of funds is superior to spending on defense. As we see in columns 3 and 4 of Table 1, the average wages and benefits from defense spending are higher than all the alternative uses other than education. The average overall compensation for defense, at \$65,986, is almost 33 percent higher than for mass transit, 29 percent higher than for personal consumption, 22 percent higher than for home weatherization/infrastructure construction, and 14 percent higher than health care. Education is the only spending target generating a higher average compensation level, at \$74,024.

Is it better for overall economic welfare to generate more jobs, even if they are low-paying, or a fewer number of well-paying jobs? There isn't a single correct answer to this question. It would depend on the magnitude of these differences—i.e. how many low-paying jobs are being generated, and how bad are these jobs? How many high-quality jobs would be sacrificed through a transition out of the military, where, as we have seen, at least, the average wage is generally high?

One simple standard is to compare the total amount of compensation that is received by workers through these alternative end uses. This would simply be the figure generated by the total number of people employed by each of the end uses multiplied by the average total compensation package for each job.⁵ We see these figures in columns 5

⁵ This is the basic standard considered by Medoff in developing his “relative job quality” index. In fact, Medoff’s terminology here is a bit misleading, since the relative job quality index is actually the product of multiplying total number of jobs created by total compensation—i.e. it combines a quantity and quality measure. It is not a quality measure alone.

and 6 of Table 1. As we see, the total compensation from \$1 billion in defense spending generates \$564.5 billion in total compensation. Personal consumption is the only spending target that is lower than defense in overall compensation, at \$504.6 million. In other words, with personal consumption spending, even though it creates 26 percent more jobs than defense, because the average compensation is 29 percent lower, the effect for the overall economy is 10 percent less in total compensation.

The picture is reversed with the other alternative spending targets. With all four of these, the total amount of compensation generated ranges between 23 – 132 percent more than the \$1 billion spent on defense. Education has the strongest overall effect, generating \$1.3 billion in total compensation from the 17,687 jobs created.⁶

Beyond looking at average and total compensation for each spending category, it will also be useful to consider more fully the specific types of jobs that are linked to each of the spending areas and the proportions of poorly-paid and highly paid jobs in these various areas.

In Table 2, we show the breakdown of the distribution of jobs that will be generated through \$1 billion in spending in each of the targeted areas. These job effects are broken down into 15 separate industries within the U.S. economy. We can also observe the same effects through a more fine-grained, 65-industry breakdown. But for our purposes here, the 15-industry categories are sufficient to show overall patterns. We will refer below to some of the more specific figures from the 65-industry breakdown.

TABLE 2 BELONGS HERE

We see in Table 2 that, with defense, by far the largest number of jobs created will be with the government—3,902 out of a total of 8,555 jobs (46 percent). The next largest area of job creation with defense is professional and business services, with 1,748 (20 percent).

Of the alternative spending areas, personal consumption has the largest dispersion of jobs created—with large numbers in retail, health care, education, professional services, and accommodations/food services. Education, health care, mass transit, and construction for home weatherization/infrastructure are all heavily concentrated in a few areas—education itself, health care itself, construction itself, and transportation/warehousing.

⁶ How is it possible for \$1 billion in new spending to generate more than \$1 billion in total compensation? The answer is that we have to recognize again that the overall employment effects combines three factors—the direct spending increases within the targeted industry itself; the indirect spending increases from industries that supply inputs to the target industry; and the induced increase in spending, generated by those who are newly employed spending their wages in the economy. It is through the combination of direct, indirect, and induced spending injections that, for the direct \$1 billion increase in education spending, the overall effect on increased compensation will be \$1.3 billion

What about the distribution of wages in the various job areas? It is difficult to obtain a precise sense of this, because the detailed data on wages aren't categorized in the same ways as the input-output industry categories. Moreover, to obtain a clear sense of the wages in various activities, one needs a more detailed breakdown of industries than the 15-industry categories.

In Table 3, we present some relevant figures that draw selectively on the more detailed 65-industry occupational categories. Though we still do not have exact matching between the employment categories for wages and the industry categories for the input-output model, this table nevertheless provides some relatively accurate perspective on job quality related to the various spending priorities.

TABLE 3 BELONGS HERE

As the table shows, we present data for each of the job categories on the percentage of jobs paying annual incomes below \$20,000 per year, below \$32,000, between \$32,000 and \$64,000, and above \$80,000. A wage below \$20,000 would mean, on an hourly basis, less than \$10 per hour for a full-time, year-round worker. This would be below any reasonable definition of a "living wage" in any community in the U.S.⁷ The \$32,000/ year would correspond to a \$16 per hour wage for a full-time worker. This is a reasonable threshold wage for defining a minimally decent basic needs income standard. The \$32,000 - \$64,000 category incorporates a broad range of middle-class jobs. We finally present figures on the proportions earning above \$80,000 per year. This will enable us to see the proportion of well-paying jobs in the different categories, and will therefore help address the issue of whether, if resources are moved out of the military, there would be a significant loss of good professional and technical job opportunities.

As the table shows, personal consumption spending is the only area where there are a substantially higher proportion of low-paying jobs relative to defense. In the cases of health care, mass transit, and construction for weatherization/infrastructure, our rough figures show about 5 – 10 percent more jobs paying below both \$20,000 and \$32,000 than with the military. Still, if we consider all the main categories of job expansion through spending on health care, mass transit and weatherization/infrastructure, a substantial majority of the jobs pay more than \$32,000 per year, our threshold figure for a minimally decent income for a full-time worker. With education, the differences are smaller, reflecting the fact that, overall, education as a spending target will generate a higher average increase in compensation than defense in addition to creating more jobs.

How can spending on education generate both higher average wages as well as more new jobs per \$1 billion in spending? The answer is straightforward. For one thing, the high average wage reflects the fact that a large proportion of people in the sector operate with relatively high credentials and skills, and their incomes reflect this. In addition, education is a relatively labor-intensive industry. This means that, compared

⁷ See the discussions on living wage standards in Pollin 2007 and Pollin et al. 2008.

with the other industries we are examining, for every \$1 billion in new spending in education, proportionally more money is spent on hiring new people into the industry and relatively less is spent on supplies, equipment, buildings.

By contrast with respect to personal consumption, health care, mass transit or home weatherization/infrastructure, what is clear again in Table 3 is that part of the way that more jobs are created per dollar of spending in these industries is that a higher proportion of low-paying jobs will be created than through military spending. This situation is most serious with respect to personal consumption. This is a good reason for avoiding tax cuts as a means of promoting job creation. For example, using the savings from a reduction in the military budget to lower taxes primarily for the wealthy—which has been a major domestic policy priority under the Bush Administration—would primarily produce more consumption for the well off along with a relatively weak payoff in terms of promoting decent jobs.

The situation is different with health care, mass transit and construction for home weatherization/infrastructure. All of these should be high public priorities independent of their employment effects. In all three areas, unlike personal consumption, shifting funds from the military will create both more jobs and an increase in overall income for workers. The overall level of compensation per job will fall, and a higher proportion of low-paying jobs will increase. But these effects can be counterbalanced through combining these spending priorities with education, where, as we have seen, the general level of pay is high. It will also be the case that wages are likely to rise somewhat in the areas that become targets for increased spending. For example, a rising demand for construction workers to work on home weatherization projects should lead to rising wages in that industry.

Moving Funds from the Iraq War to U.S. Social Priorities

There is now little debate that the Iraq war has been both a moral and strategic disaster for the United States. As of mid-1997, it had brought death to more than 3,500 American soldiers with another 26,000 having been wounded. The number of Iraqi deaths now as of mid-1997 was estimated at around 650,000. This says nothing about the destruction of infrastructure and the state of constant terror facing Iraqis. The Iraq war has also diverted attention away from the genuine need to fight Al Qaeda in an effective way. Indeed, it has rather only enhanced the stature of Al Qaeda and all other groups that take strong stands against the U.S. occupation of Iraq.

There are obviously a very large number of ways to spend \$138 billion toward meeting crucial social needs. To follow the areas on which we have focused in our discussion thus far, let us consider three basic spending targets:

- Extending public medical insurance at a level equivalent to Medicaid to all 45 million U.S. citizens that are currently uninsured;

- Investing in public education at all levels, starting with Head Start and other pre-school programs, and moving up to college and university scholarships;
- Investing in home weatherization, mass transit and other forms of energy conservation.

Two kinds of benefits would result by this kind of transfer of tax and spending priorities. First, of course, it would produce dramatic improvements in health, income security, educational opportunities and the quality of the environment. The provision of decent, Medicaid-type health insurance for everyone in the U.S. would obviously raise living standards and the level of security for those currently uninsured. The net cost of extending health care coverage in this way would be \$130 billion. So it would itself consume all but \$8 billion of the funds released by taking all of the funds out of Iraq.

Nevertheless, releasing \$8 billion from the Iraq war and spending that on education and energy conservation can also have major positive benefits. If, say \$4 billion each were allocated to education and energy conservation, some obvious potential recipients of funds might include:

- An increase of roughly 30,000 elementary and secondary school teachers. This expansion would also entail about \$400 million in new school construction and 1.2 billion in expanding support-staff jobs.
- A simple program for weatherizing older houses through installing attic insulation, caulking, weather stripping and similar measures. This costs an average of \$2,500 per house. This level of investment can reduce home energy consumption by about 30 percent. A \$4 billion program could therefore mean that 1.6 million homes could be weatherized. This is about 2 percent of all single-family homes in the country.

Obviously, one could achieve more in the areas of education or energy conservation if most of the funds released from Iraq were not spent on providing universal health insurance. We could also consider many other worthy public policy initiatives, such as mass transit and other forms of public infrastructure, or direct spending for poverty reduction through the Earned Income Tax Credit. We would argue that establishing universal health insurance should be a top public policy priority, but this is not the place to debate the merits of this priority relative to other pressing needs.

For our main purpose here of analyzing job effects, let us consider two simple options:

1. We maintain national health insurance as the first priority, so that the \$130 billion of the \$138 billion total is used for this purpose; while the remaining \$8 billion is divided evenly between education and energy conservation, including both home weatherization and mass transit; and

2. The full \$138 billion is divided evenly between health care, education, and energy conservation, again including both home weatherization and mass transit.

Table 4 presents the net effects of these two types of spending transfers.⁸ As the table shows, prioritizing universal health insurance with the Iraq funding transfer will generate 600,000 new jobs and a \$43 billion increase in total compensation. If the Iraq funds were transferred equally into health care, education and energy conservation, the net effect would be a 1 million net job increase and \$51 billion in additional compensation. The reason for these differences is straightforward. As we saw in Table 1, increasing spending on health care generates far fewer jobs and less compensation than the same amount of money spent in education, construction for home weatherization, or mass transit.

TABLE 4 BELONGS HERE

Recognizing such large differential employment effects should prompt consideration on how to prioritize a transfer of funds out of the military. For example, perhaps the funds should be channeled into the areas that have the most favorable employment effects, assuming the public welfare benefits are comparable. One could then consider using some share of the additional income generated by this approach for supporting universal health care.

We obviously are not going to resolve such spending priority issues here. The point is to recognize the large potential for job creation by shifting funds into these areas that have both large social welfare benefits as well as strong “induced” effects in stimulating domestic job expansion.

⁸ Our estimates of the employment effects of transferring funds out of Iraq war spending assume that these effects are equivalent to a decline in the overall military budget. In fact, funds spent on the Iraq war, which now constitutes about 25 percent of the overall military budget, do have somewhat different employment effects than those of the rest of the military budget. For example, overall Department of Defense spending on military personnel amounted to 23.5 percent of the Pentagon’s 2007 estimated budget. But personnel expenditures on the Iraq war amounted to only 12.5 percent of the overall 2007 Iraq budget. Similarly, overall Pentagon spending on Research and Development was 15.7 percent of the 2007 budget, while it was only 1.0 percent of the Iraq war budget. On the reverse side, Operations and Maintenance amounted to 64.4 percent of the Iraq war budget but only 31.2 percent of the overall Pentagon budget. These differences are large, but not substantial enough to significantly alter our overall employment estimates. We can see this through a simple numerical example. For 2007, the Iraq war accounted for 25 percent of the overall military budget. From the budget figures we have reviewed, it is reasonable to assume that Iraq war spending could generate up to 25 percent fewer jobs per \$1 billion in spending than the overall military budget. Given these two estimates, it would follow that the effect of the Iraq war as a 25 percent share of the overall military budget will reduce the overall employment impact of the military budget by about 6 percent (i.e. $.25 \times .25 = .0625$). Considering the question more generally, it is clear that the direction of this Iraq war employment effect is clearly negative relative to the U.S. jobs generated by the rest of the military budget. Therefore, the figures we are using, which assume that Iraq war spending creates an equal number of jobs as military spending overall, actually understates the employment benefits of transferring funds into social spending priorities.

Overall Effect on U.S. Labor Market.

As of mid-2007, there were 6.8 million people unemployed within the U.S. labor force of 152 million, producing an official unemployment rate of 4.5 percent. For simplicity, let us assume we transferred the \$138 billion equally to our three alternative uses. If we also assume that all else would remain equal in the U.S. labor market after the \$138 billion transfer of funds had occurred, the net increase of 1 million jobs would therefore reduce the total number of unemployed people to 5.8 million, a decline of 15 percent. This would cut the unemployment rate to 3.8 percent. This is an unemployment rate comparable to the late 1960s and late 1990s. In both of these previous periods of near-full employment, the high demand for workers led to rising wages and benefits, including in particular at the low-end of the job market. Poverty fell as a result. Near full employment in the late 1960s also brought better working conditions and less job discrimination against minorities.

Of course, we cannot assume that everything about the U.S. labor market would stay unchanged after 1 million new jobs were created in health care, education, and energy conservation, while jobs connected with the military would contract. There would no doubt be skill shortages in some areas and labor gluts in others. There would also be some rise in inflationary pressures that would have to be managed carefully. But at least as an illustrative exercise, we can see that large-scale job creation within the United States is possible through concerted policy interventions—and all of this could be achieved as an outgrowth of ending the Iraq war and transferring the funds to important public purposes.

Deficit Reduction: The Responsible Alternative?

The federal fiscal deficit in 2007 was \$244 billion. Transferring all of the Iraq war spending into deficit reduction would therefore lower the deficit to \$106 billion, a reduction of 57 percent.

Is this the best use of the funds released by the Iraq war? Of course, the U.S. cannot run a reckless fiscal policy, no matter how pressing are the country's social and environmental needs, along with its legitimate military needs. But a \$244 billion fiscal deficit in today's economy is not reckless. It amounts to about 1.8 percent of GDP. This is slightly below the average-sized fiscal deficit between 1960-2006 of 1.9 percent of GDP. The largest deviation from this long-term average occurred under Ronald Reagan's Presidency, when the fiscal deficit averaged 4.2 percent of GDP—i.e. more than twice as large as the current deficit as a share of the economy.

We would need to worry about the deficit today if it were running persistently at Reagan-era levels. This is because the federal government would soon end up consuming upwards of 20 percent of the total federal budget in interest payments, as it did at the end of the Reagan era. This is opposed to the 10 percent of total government spending we now pay to the Japanese and Chinese bondholders, U.S. banks, and wealthy private

Americans who own the bulk of U.S. government debt. But because the deficit is now at a reasonable level, the primary problem with the U.S. Treasury's fiscal stance is not the size of the deficit per se but how the money is being spent.

Conclusion

The U.S. government now operates with a military budget of nearly \$600 billion per year. This is a 66 percent increase (in real dollars) relative to the level of spending in 2000. It amounts to 4.4 percent of GDP. An expenditure level of this magnitude will necessarily have a major impact in establishing the country's policy priorities and overall economic trajectory.

We have shown what are the employment effects of spending on the military in contrast with five domestic spending categories. Specifically, we have shown that spending on personal consumption, health care, education, mass transit, and construction for home weatherization and infrastructure repair all create more jobs per \$1 billion in expenditures relative to military spending.

It is true that jobs generated by military spending tend to pay relatively well, which is part of the reason why fewer jobs are created per dollar of expenditure than through alternative spending targets. However, we have also seen that \$1 billion in spending on education, on average, generates more than twice the number of jobs as military spending as well as higher-paying jobs. Spending on health care, mass transit, and home weatherization/infrastructure creates jobs at a lower average level of pay than military spending. But these three spending targets do create substantially more jobs than military spending, with an overall level of pay, combining all workers' paychecks and benefits, higher than the military. Moreover, a substantial majority of the jobs generated through a health care, mass transit or construction spending expansion will pay more than \$32,000 per year, our rough threshold for a minimally decent income level. The majority of jobs pay between \$32,000 - \$64,000, a rough middle-income pay range. Health care, mass transit, home weatherization, and infrastructure repair are all also high priority areas for social spending. More spending in these areas could be combined with improving the average level of pay, while still creating more jobs per dollar of expenditure than the military.

Increased personal consumption resulting from tax cuts is the only alternative spending target that we examined that is inferior to military spending along two dimensions—both the average pay and the total amount of compensation per \$1 billion in expenditures are lower. There is also no reason why expanding personal consumption expenditures—particularly of the already affluent, whose level of expenditures have risen sharply since the early 1990s—should be considered as a primary focus of social policy.

Virtually all of the expansion in military spending since 2000 is due to the \$138 billion now being spent on the Iraq war. The Iraq war budget alone now accounts for 1.4 percent of U.S. GDP. If nothing else, the Iraq war has demonstrated that if the President

and his political allies are intent on targeting a new spending area, finding the funds for this new priority is not likely to be an insurmountable obstacle.

There are lots of good reasons as to why the U.S. government policy should now initiate major commitments in the areas of health care, education, infrastructure repair and environmental sustainability. All of these spending areas stand on their own merits. But we have also shown that moving the \$138 billion now being spent on Iraq into health care, education, and energy conservation will have a significant positive impact on jobs in the U.S. Depending on how funding for these areas would be shared, employment in the U.S. economy would expand by between 600,000 and 1 million jobs. Considering the labor market as of mid-2007, this level of employment expansion could push the unemployment rate below 4 percent. When the U.S. economy operated at below 4 percent during the 1960s and 1990s, the tight labor market conditions led to rising average wages, a fall in poverty, and less job market discrimination.

Overall then, there is a great deal at stake as policy makers and voters establish public policy spending priorities. As we have seen, by addressing social needs in the areas of health care, education, education, mass transit, home weatherization and infrastructure repairs, we would also create more jobs and, depending on the specifics of how such a reallocation is pursued, both an overall higher level of compensation for working people in the U.S. and a better average quality of jobs.

Robert Pollin is Professor of Economics and Co-Director of the Political Economy Research Institute (PERI) at U Mass Amherst. Heidi Garrett-Peltier is an Economics Ph.D. student and Research Assistant at PERI.

Acknowledgements

We have received extremely helpful comments and technical assistance on this paper from Greg Bischak, Anita Dancs, Jerry Epstein, James Heintz, Michael Oden, Miriam Pemberton, and Jeannette Wicks-Lim.

The study was underwritten by The Melman Fund at the Institute for Policy Studies and a generous grant from the Colombe Foundation secured by Women's Action for New Directions (WAND).

Appendix: Data Sources

	Source	Table Name/Number	Location of Data Source
Input-Output Tables	BEA	2005 Annual Industry Tables, Summary Level (65 industry)	http://www.bea.gov/industry/iotables/prod/table_list.cfm?anon=1650
Employment	BEA	NIPA Table 6.8D, 2005	http://www.bea.gov/national/nipaweb/TableView.asp?SelectedTable=198&FirstYear=2004&LastYear=2005&Freq=Year
Output	BEA	GDP by Industry: Gross Output by Industry, 2005	http://www.bea.gov/industry/gdpbyind_data.htm
Wages and Benefits	BLS	Employer Cost for Employee Compensation	http://data.bls.gov/cgi-bin/dsrv?em
	Census Bureau	Federal Government Employment and Payroll data	http://ftp2.census.gov/govs/apes/05fedfun.pdf
	BLS	Current Employment Statistics	http://www.bls.gov/ces/home.htm
Occupational data	BLS	May 2005 National Industry-Specific Occupational Employment and Wage Estimates	http://www.bls.gov/oes/2005/may/oesrci.htm

REFERENCES

- Adams, F. Gerard, ed. (1992) *The Macroeconomic Dimensions of Arms Reduction*, Boulder, CO: Westview Press.
- Anderson, Marion and Greg Bischak (1990). "A Shift in Federal Spending: What the Peace Dividend Can Mean to Maine," A Report for the Peace Economy Project, Lansing, MI: Employment Research Associates.
- Anderson, Marion, Greg Bischak and Michael Oden (1991). "Converting the American Economy, The Economic Effects of an Alternative Security Policy," Lansing, MI: Employment Research Associates.
- Bureau of Economic Analysis, (2005) "Government Transactions," BEA Methodology Papers: U.S. National Income and Product Accounts, MP-5.
- Carter, Anne P. (1974). "Applications of Input-Output Analysis to Energy Problems," *Science*, New Series, Vol. 184, No. 4134, Apr. 19, pp. 325-329.
- Chentrens, Carl (2005), "Employment Outlook: 2004-2014," Washington, D.C.: Bureau of Economic Analysis.
- Doggett, Ralph M. (1992) "Defense Expenditures in the 1980s: A Macroeconomic, Interindustry and Regional Analysis," in *The Macroeconomic Dimensions of Arms Reduction*, F. Gerard Adams, ed., Boulder, CO: Westview Press.
- Guo, Jiemin, Ann M. Lawson, and Mark A. Planting, (2002), "From Make-Use to Symmetric I-O Tables: An Assessment of Alternative Technology Assumptions," BEA Working Paper 2002-03, Washington, D.C.: Bureau of Economic Analysis.
- MacroSys Research and Technology, (2003). "Highway Operations Spending as a Catalyst for Job Growth," prepared for the Federal Highway Administration, Dept. of Transportation, Washington, D.C.
- Melman, Seymour, (1988). *The Demilitarized Society: Disarmament and Conversion*, Montreal: Harvest House.
- Horowitz, Karen J. and Mark A. Planting, "Concepts and Methods of the Input-Output Accounts," Bureau of Economic Analysis, September 2006.
- Leontief, Wassily (1986). *Input Output Economics*, 2nd ed. New York: Oxford University Press.
- Medoff, James L. (1993). "Smart Stimulus: More Good Jobs," Washington, D.C.: Center for National Policy.

Miller, Ronald E. and Peter D. Blair (1985). *Input-Output Analysis: Foundations and Extensions*, New Jersey: Prentice-Hall, Inc.

Moulton, Brent R. and Eugene P. Seskin, "Preview of the 2003 Comprehensive Revision of the National Income and Product Accounts: Changes in Definitions and Classifications," Bureau of Economic Analysis, June 2003.

Pollin, Robert (2007) "Making the Federal Minimum Wage a Living Wage," *New Labor Forum*, 16(2), Spring 2007, pp. 103-07.

Pollin, Robert, Mark Brenner, Jeannette Wicks-Lim, and Stephanie Luce (2008) *A Measure of Fairness: The Economics of Living Wages and Minimum Wages in the United States*, Ithaca, NY: Cornell University Press.

Richardson, Harry W. (1972). *Input-Output and Regional Economics*, New York: John Wiley and Sons.

Ruttan, Vernon W. (2006) *Is War Necessary for Economic Growth? Military Procurement and Technology Development*, New York: Oxford University Press.

Sohn, Ira, ed. (1986). *Readings in Input-Output Analysis: Theory and Applications*, New York: Oxford University Press.

Stone, Richard (1961). *Input-Output and National Accounts*, Paris: Organisation for Economic Co-operation and Development.

"The 1997 Washington State Input-Output Model," (2004) Office of Financial Management, State of Washington. Access online April 2007 from <http://www.ofm.wa.gov/economy/io/>

United Nations (1999). *Handbook of Input-Output Table Compilation and Analysis*, Dept. of Economic and Social Affairs, Statistics Division, New York: United Nations.

Table 1.
Overall Employment Effects of Spending \$1 Billion for
Alternative Spending Targets in U.S. Economy, 2005

	(1) # of Jobs Created	(2) # of Jobs Relative to Defense Spending	(3) Average Wages and Benefits per Worker	(4) Average Wages and Benefits relative to Defense	(5) Total Wages and Benefits from Employment in millions	(6) Total Wages and Benefits relative to Defense
Spending Targets						
1. Defense	8,555	---	\$65,986	---	\$564.5 million	---
2. Tax cuts for Personal Consumption	10,779	+26.2%	\$46,819	-29.1%	\$504.6 million	- 10.7%
3. Health Care	12,883	+50.2%	\$56,668	-14.2%	\$730.1 million	+29.3%
4. Education	17,687	+106.7%	\$74,024	+12.2%	\$1,309.3 million	+131.9%
5. Mass Transit	19,795	+131.4%	\$44,462	-32.6%	\$880.1 million	+55.9%
6. Construction for home weatherization/ infrastructure	12,804	+49.7%	\$51,812	-21.5%	\$693.7 million	+22.9%

Sources: See Appendix

Table 2.
Jobs Created through \$1 Billion in New Spending

Comparison of Alternative Spending Targets

	Defense	Tax Cuts for Personal Consumption	Education	Healthcare	Mass Transit	Construction for Home Weatherization/infrastructure
TOTAL JOBS	8,555	10,779	17,687	12,883	19,795	12,804
Agriculture, forestry, fishing, and hunting	24	237	32	52	18	172
Mining	18	41	13	16	46	64
Utilities	13	58	15	17	10	15
Construction	193	83	192	69	27	7,715
Manufacturing	1,240	1,219	396	537	675	1,700
Wholesale trade	218	424	113	148	333	340
Retail trade	38	1,391	50	52	76	651
Transportation and warehousing	230	366	151	180	16,692	315
Information	218	221	175	117	95	100
Finance, insurance, real estate, rental, and leasing	203	846	309	282	244	224
Professional and business services	1,748	1,361	1,237	1,380	1,102	1,059
Educational services, health care, and social assistance	166	2,148	14,515	9,364	10	10
Arts, entertainment, recreation, accommodation, and food services	171	1,364	147	325	92	115
Other services, except government	172	870	201	179	262	247
Government	3,902	151	141	165	114	77

Sources: See Appendix

Table 3.
Percentage of Low- and High-Paying Jobs in Activities Linked to
Spending Targets

	Pct. of new employment	Pct. below \$20,000/year	Pct. below \$32,000/year	Pct. Between \$32,000 and \$64,000/year	Pct above \$80,000/year
Defense					
Federal Government	44.1	5.3	28.0	61.3	4.7
Professional/Business Services	20.4	4.5	22.9	62.2	14.6
Manufacturing	14.5	4.0	7.3	85.8	5.8
Personal Consumption Expenditures					
Retail Trade	12.9	40.0	70.6	27.3	1.4
Food Services	8.9	68.1	95.3	4.3	0.3
Hospitals and Nursing Care	8.2	15.3	46.3	43.2	4.8
Education					
Educational Services	82.1	11.7	31.8	59.1	1.2
Professional/Business Services	7.0	4.5	22.9	62.2	14.6
Health Care					
Hospitals/Nursing Care/Ambulatory Care	72.5	15.3	46.3	43.2	4.3
Professional/Business Services	7.0	4.5	22.9	62.2	4.8
Mass Transit					
Transportation	76.4	5.8	36.5	60.2	1.0
Professional/Business Services	10.6	4.5	22.9	62.2	4.8
Weatherization and Infrastructure Repair					
Construction	66.8	8.6	26.9	60.1	1.8
Professional/Business Services	9.6	4.5	22.9	62.2	4.8

Sources: See Appendix

Table 4.
Employment and Compensation Effects of Transferring the Iraq War Budget to Social Spending Priorities

\$138 billion budgetary transfer

	Net Job Creation	Net Compensation Increase
<p><i>1. Prioritizing Universal Health Insurance</i> -- \$130 billion for health care -- \$4 billion for education -- \$4 billion for energy conservation (home weatherization + mass transit)</p>	600,000	\$43 billion
<p><i>2. Equal Reallocation</i> -- \$46 billion for health care -- \$46 billion for education -- \$46 billion for energy conservation (home weatherization + mass transit)</p>	1 million	\$51 billion

Sources: See Appendix