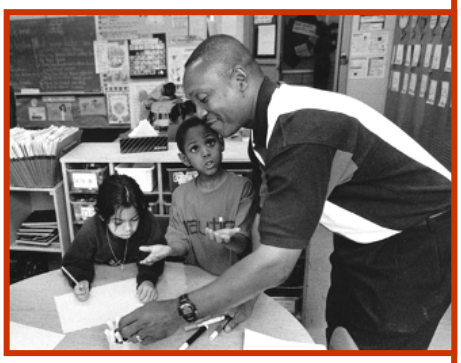
THE U.S. EMPLOYMENT EFFECTS OF MILITARY AND DOMESTIC SPENDING PRIORITIES: AN UPDATED ANALYSIS



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ABSTRACT

This study focuses on the employment effects of military spending versus alternative domestic spending priorities, in particular investments in clean energy, health care and education. We first present some simple alternative spending scenarios, namely devoting $1 billion to the military versus the same amount of money spent on clean energy, health care, and education, as well as for tax cuts which produce increased levels of personal consumption;. Our conclusion in assessing such relative employment impacts is straightforward: $1 billion spent on each of the domestic spending priorities will create substantially 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 show that investments in clean energy, health care and education create a much larger number of jobs across all pay ranges, including mid-range jobs (paying between $32,000 and $64,000) and high-paying jobs (paying over $64,000). Channeling funds into clean energy, health care and education in an effective way will therefore create significantly greater opportunities for decent employment throughout the U.S. economy than spending the same amount of funds with the military.

1. INTRODUCTION

The U.S. government spent an estimated $624 billion on the military in 2008. This amounts to about $2,000 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 constant dollar terms (after controlling for inflation), military spending rose at an average rate of 8.1 percent per year from 2001 – 2008, the full years of the Bush presidency. By contrast, the overall U.S. economy grew at an average annual rate of 2.4 percent. As a share of GDP, the military budget rose from 3.0 to 4.3 percent during the Bush Presidency. At the current size of the economy, a difference between a military budget at 4.3 rather than 3.0 percent of GDP amounts to $175 billion.

The largest increases in the military budget during the Bush presidency were associated with the Afghanistan and especially the Iraq wars. These two wars cost $188 billion in fiscal year 2008, according to the Congressional Research Service. Thus, the $188 billion the U.S. government spent on these wars in 2008 was basically equal to the total increase in military spending resulting from moving the military budget from 3.0 to 4.3 percent of GDP.

Amid the debates on the political and strategic merits of the Iraq war, one aspect of military spending that has been largely neglected is its effects on the U.S. economy. Six hundred twenty-four billion dollars 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 $624 billion were instead devoted to alternative domestic 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 (e.g. Ruttan 2006). The Pentagon is often said to be a major underwriter of, and stimulus to, important technical innovations. 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 in excess 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 billon into areas such as renewable energy, mass transportation and health care 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 plus 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.

This paper is focused on the employment effects of military spending versus channeling equivalent amounts of funding into alternative purposes—namely education, health care, clean energy, and personal consumption. Specifically, we consider the impact of devoting $1 billion to the military versus the same amount of money for these four non-military alternatives. The presentation here is a brief sequel to a more detailed study we initially published two years ago (Pollin and Garrett-Peltier 2007). The new materials we present in this paper include the following:

1. Updated figures. We have updated all the employment estimates, using the most recent figures from the U.S. Department of Commerce, Bureau of Labor Statistics and other sources. All sources are described in the appendix.

2. *Job creation from clean energy investments.* We include estimates of the employment effects of investments in clean energy sectors of the economy. In our previous study, we had not yet fully developed a method for making such estimates in ways that were comparable to our estimates for military spending, personal consumption, education and health care.

3. *Induced job creation.* We include estimates for *induced* job creation through investments in all sectors of the economy—that is, the expansion of employment that results when people who are newly employed spend the money they have earned on other products in the economy. In our previous paper, we discussed the category of induced job creation, but had not yet fully developed an accurate method for estimating this effect. In the previous study, we presented data only for *direct* and *indirect* job creation. Direct jobs are those created by producing, for example, wind turbines, warplanes or schools. Indirect jobs are those associated with industries that supply intermediate goods for producing wind turbines, warplanes, or schools. We consider all three categories of job creation in more depth below.

Unlike the earlier paper, we do not discuss here the basic input-output modeling technique for considering issues such as these in a systematic way. We also do not review here the results of earlier efforts to estimate employment effects of military spending versus alternative spending priorities. Discussions on these points can be found in our earlier study.

The basic findings of this paper have not changed relative to our previous paper, though some of the detailed results do vary. Our first conclusion is straightforward: that spending $1 billion on personal consumption, clean energy, health care, and education will all create significantly more jobs within the U.S. economy than would the same $1 billion spent on the military.

As with our previous study, we again find that jobs created by military spending do provide relatively high average wages and benefits relative to these other spending areas. Indeed, this result emerges more sharply with the updated figures relative to our previous paper. This is especially because, on average, jobs associated with the military provide far more generous benefits than can be obtained in other sectors of the U.S. economy. Nevertheless, as we show, because spending on clean energy, health care, and education produce substantially more jobs overall per $1 billion in spending, they also create more good jobs as well. This includes jobs paying within a mid-range, which we define as between $32,000 - $64,000 per year, as well as high-paying jobs, i.e. those paying over $64,000.

We conclude this updated study with a series of brief summary observations.

2. WHY EMPLOYMENT CREATION VARIES BY SECTOR

The basic tool we use 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. Similarly, we can use the input-output model to estimate the employment and other requirements for investing in clean energy activities. These would include energy efficiency projects such as building retrofits, public transportation and upgrading the electrical grid system; and renewable energy projects such as expanding the capacity to produce wind, solar, and biomass energy on a cost-effective basis.

To estimate the overall employment effects of any given spending target, such as a fighter bomber airplane 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 fighter bomber or school;

2. *Indirect effects*—the jobs associated with industries that supply intermediate goods for building a fighter bomber, school, or any other direct spending target. These would include the steel, glass, tire, and electronic industries for building an airplane; 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 fighter bomber 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? As a matter of simple arithmetic, there are only three possibilities, which we can illustrate by comparing the situation for educational versus military spending:

1. *Labor intensity*. When proportionally more money of a given overall amount of funds is spent on hiring people, as opposed to spending on machinery, buildings, energy, land, and other inputs, then spending this given amount of overall funds will create more jobs. 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.

2. *Domestic content.* If we are considering job creation within the U.S. economy, when a higher proportion of a given amount of funds is spent within the U.S. as opposed to spending on imports or activities in other countries, the given amount of money will, again, create more jobs. The overall level of spending within the U.S. economy—as opposed to the rest of the world—is 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.

3. *Compensation per worker.* If there is $1 million total to spend in a given year, and one employee earns $1 million per year, then that obviously means that only one job is created through spending $1 million. However, if the average pay is $50,000 per year, then the same $1 million will generate 20 jobs at $50,000. Thus, if 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, then more jobs will be created through spending a given amount of money in education as opposed to the military.

3. EMPLOYMENT ESTIMATES

We present in Table 1 and Figure 1 our estimates of the effects of spending $1 billion on alternative sectors within the U.S. economy, including military spending, clean energy, health care, and education. We also include figures for tax cuts that then get translated dollar-for-dollar into increased levels of household consumption. We include this category of tax cuts/household consumption since it is the most straightforward alternative use of funds now devoted to the military—i.e. the money freed up from a reduction in military spending goes back directly to taxpayers for them to use as they see fit. Our estimates are derived from the 2007 U.S. input-output model, along with other data sources on national income and employment within the United States. We describe in depth our data sources and techniques for estimation in the Appendix.

We wish to stress here that our figures are, of course, *estimates*. We are confident intheir reliability as estimates, but we cannot claim that they are accurate down to the level of every detail. There are two basic reasons for this. First, one faces a wide range of technical challenges in developing empirical estimates of matters such as those we are posing here. No model will adequately capture the full range of variables that produce economic outcomes, such as job creation, in the real world. At the same time, of all the unavoidably imperfect approaches available for us to use, we are confident in the reliability

of our own methods.[1] In addition to the strictly methodological issues in play, all researchers, including ourselves, are working with data sources that are subject to changes over time. Still, we are again confident that, in terms of the data that are available to us at the time of writing, the figures we are reporting are as reliable as possible.

The first two columns of Table 1 report direct and indirect job creation estimates for each of our five spending targets—military spending, household consumption, clean energy, health care, and educational services. We then summarize these direct and indirect effects in column 3. Column 4 then reports our estimates for induced job creation for each of the spending targets. Column 5 then adds together direct, indirect, and induced job creation. Finally, in column 6, we present the overall job creation figures for each spending target relative to military spending.

TABLE 1. EMPLOYMENT CREATION THROUGH SPENDING $1 BILLION FOR ALTERNATIVE SECTORS OF THE U.S. ECONOMY, 2007

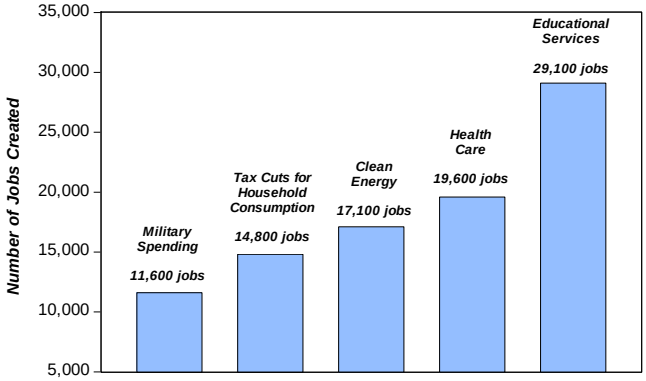
	(1) Direct Jobs	(2) Indirect Jobs	(3) Direct + Indirect Jobs (= columns 1+2)	(4) Induced Jobs	(5) Total Job Creation (= columns 3+4)	(6) Total Job Creation Relative to Defense Spending
Military	7,100	1,800	8,900	2,700	11,600	---
Tax cuts for personal consumption	6,900	3,700	10,600	4,200	14,800	+27.6
Clean energy	7,500	4,700	12,200	4,900	17,100	+47.4
Health care	10,400	3,600	14,000	5,600	19,600	+69.0
Education	16,900	3,900	20,800	8,300	29,100	+150.9

Sources: See Appendix

Considering overall job creation, we see from Table 1 that military spending creates about 11,600 with $1 billion in spending. By a significant amount, this is the fewest number of jobs of any of the alternative uses of funds that we present. Thus, household consumption generates about 14,800 jobs, 28 percent more than military spending. Clean energy generates about 17,100 jobs, (48 percent more than military) and health care generates about 19,600 jobs (69 percent more than the military). Spending on education is the largest source of job creation by a substantial amount, generating about 29,100 jobs overall through $1 billion in spending, which is 151 percent more than the number of jobs that are generated through $1 billion in military spending.

These overall job creation figures are then summarized again in Figure 1. The large disparities in the job-generating capacity of our four domestic spending categories relative to military spending emerge sharply in this figure.

FIGURE 1. JOB CREATION IN THE U.S. THROUGH $1 BILLION IN SPENDING



Sources: See Appendix
Note: Employment estimates include direct, indirect, and induced jobs

4. COMPENSATION LEVELS

As mentioned above, one way in which a given amount of spending will create different number of jobs overall is through variations in compensation levels—e.g. spending $1 million in a year could create a total of one job or 20 jobs, depending on whether average compensation is $1 million or $50,000 per year. If the only way that more jobs are created through non-military as opposed to military spending activities is through paying much lower wages and benefits, we then need to question whether the net job impact of an alternative use of funds is superior to spending on the military.

[1] See Pollin, Heintz, and Garrett-Peltier (2009) for an extended discussion of related methodological issues.

Thus, in Table 2, we present figures on average wages, benefits, and total compensation for the various sectors we have been considering. These figures incorporate all jobs created through spending in the different sectors, including direct, indirect and induced jobs. In the first column of the table, we report on average wages in each of the sectors, and the second column shows the average wage in the four domestic spending areas relative to military spending. As we see, average wages generated by military spending, at $50,388, are higher than any of the other four sectors. The next highest is clean energy, where the average wage is $46,600, 7.5 percent below the average for the military. Education is only slightly lower than the average wage rate for clean energy.[2] Average wages for personal consumption spending and health care are both around $40,000 per year, roughly 20 percent below that for the military.

TABLE 2. AVERAGE WAGES, BENEFITS AND TOTAL COMPENSATION FOR ALTERNATIVE SECTORS OF U.S. ECONOMY, 2007

Total Job Creation: Direct, Indirect, and Induced Jobs

	(1) Average Wages	(2) Average Wages relative to Military	(3) Average Benefits	(4) Average Total Compensation (= columns 1+3)	(5) Average Total Compensation Relative to Military
Military	$50,388	---	$28,736	$79,124	---
Tax cuts for personal consumption	$39,627	-21.4%	$13,068	$52,695	-33.4%
Clean energy	$46,600	-7.5%	$21,397	$67,997	-14.1%
Health care	$40,494	-19.7%	$14,590	$55,084	-30.4%
Education	$45,160	-10.4%	$15,148	$60,308	-23.8%

Sources: See Appendix

These differentials widen substantially when we then factor in benefits provided within each sector. These figures are shown in column 3 of the table. Here we see that the benefits provided by military spending are far greater than the other sectors. Thus, military sector benefits average nearly $29,000, with the next highest being clean energy at about $21,400.

The much higher level of benefits for the military means that, when we consider overall compensation—including wages plus benefits—spending on the military does come out significantly higher than other sectors. We see this in columns 4 and 5 of Table 2. Average overall compensation for jobs generated by military spending, at $79,124, is 14 percent higher than clean energy, and 33 percent higher than personal consumption.

Higher Average Wages vs. Total Numbers of Decent Jobs

Given these results for overall compensation, it is important to weigh the benefits of more jobs through non-military spending versus higher average compensation within the military. The first point to note is that the main factor driving the higher overall compensation figure for the military is benefits, not wages. This result connects up to an important theme in the current U.S. debate over health care reform: that military personnel receive generally excellent health coverage through government-run programs. This level of government-based support for military personnel stands in sharp contrast to the much poorer coverage provided in other sectors of the U.S. economy.

That said, the benefits from higher average compensation levels must be weighed against the much larger number of jobs generated by spending on clean energy, health care, and education. We present figures relevant for making such relative assessments in Table 3 and Figure 2. In this table and figure, we break down the overall number of jobs generated by spending in each sector into three separate pay categories: the proportions of a) low-paying jobs, which we define as paying less than $32,000 per year in annual wages; b) mid-range jobs, which are jobs paying between $32,000 - $64,000 in annual wages; and c) high-paying jobs, i.e. those paying more than $64,000 per year.

[2] The compensation figure that we report here for education includes both public and private school systems. Compensation is substantially higher within the public school system. Considered separately, public school compensation, including both wages and benefits, averages about $69,000.

TABLE 3. DISTRIBUTION OF JOBS BY WAGE LEVELS IN ALTERNATIVE U.S. ECONOMIC SECTORS

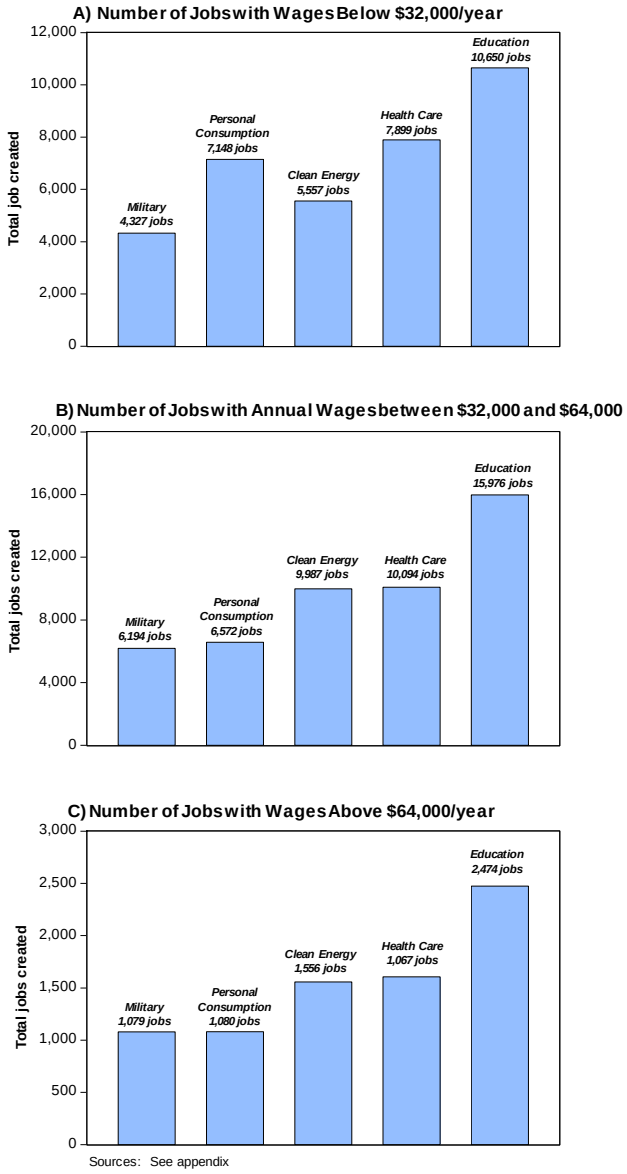
Jobs Created through $1 Billion in Spending within Each Sector

	Total Jobs Created	Jobs with Wages below $32,000	Jobs with Wages between $32,000 - $64,000	Jobs with Wages above $64,000
Military	11,600	4,327 (37.3% of military)	6,194 (53.4% of military)	1,079 (9.3% of military)
Tax cuts for personal consumption	14,800	7,148 (48.3% of personal consumption)	6,572 (44.4% of personal consumption)	1,080 (7.3% of personal consumption)
Clean energy	17,100	5,557 (32.5% of clean energy)	9,987 (58.4% of clean energy)	1,556 (9.1% of clean energy)
Health care	19,600	7,899 (40.3% of health care)	10,094 (51.5% of health care)	1,607 (8.2% of health care)
Education	29,100	10,650 (36.6% of education)	15,976 (54.9% of education)	2,474 (8.5% of education)

Sources: See Appendix

FIGURE 2. DISTRIBUTION OF JOBS BY WAGE RANGES IN ALTERNATIVE SECTORS

Direct, Indirect, and Induced Jobs Created through $1 Billion in Spending



For these pay distribution figures, we were able to obtain relevant data on wages only, not benefits as well. This then means that the distributional breakdowns that we are able to observe do not take account of the much greater advantage for military employment in terms of benefits.

Nevertheless, working with data on the distribution of wages alone, a basic result still emerges clearly. This is that, for the most part, spending on clean energy, health care, and education generates more jobs of all kinds—low, mid-range, and high-paying jobs. This for the straightforward reason that spending within the non-military sectors creates significantly more jobs overall, even if the average pay in these domestic sectors is lower.

For example, let us compare spending $1 billion on clean energy with military spending. With clean energy, we estimate that almost 10,000 job are within our mid-range of $32,000 - $64,000 and another roughly 1,500 pay over $64,000. This totals to about 11,500 jobs at either the mid-range or high pay levels. Military spending, by contrast, generates about 6,200 mid-range jobs and another roughly 1,100 high-paying jobs. This totals to 7,300 mid-range or high-paying jobs with the military, i.e. 47 percent fewer such jobs than would be generated through $1 billion in spending on clean energy. The contrast is far more dramatic with education, where spending

$1 billion will generate about 18,500 jobs that pay either in the mid-range or high end of wages. This is more than 150 percent higher than what results through military spending.

Again, these differences would be less dramatic if we were able to take account of benefits as well as wages. But this factor would not change the basic result we are observing—that spending on clean energy, health care, and education will all create many more jobs overall, at all pay levels than spending on the military. Even spending on personal consumption generates roughly the same number of both mid-range and high-paying jobs as military spending, even while the average wage is 21 percent lower for jobs generated by personal consumption relative to the military.

5. CONCLUSIONS

As of 2008, the U.S. government operated with a military budget of $624 billion. This is a 73 percent increase (in real dollars) relative to the level of spending in 2001. It amounted to 4.3 percent of GDP in 2008. 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 the overall employment effects—including direct, indirect, and induced job creation—of spending on the military in contrast with four alternative domestic spending categories: clean energy, health care, education, as well as increasing household consumption through tax cuts. Specifically, we have shown that spending on all of these alternatives to military spending create substantially more jobs per $1 billion in expenditures relative to military spending.

It is true that jobs generated by military spending provide higher average levels of compensation. This is primarily the result of substantially more generous benefits provided for employees associated with the military industries than those working in other sectors of the U.S. economy. These large disparities in compensation could possibly diminish if, through its current debates as of this writing, the U.S. Congress succeeds in enacting health care reforms that provide broadly-shared benefits for all sectors of the economy.

But even despite these large differences in benefits for employees in the military sector, it is still the case, as we show, that spending on clean energy, health care, and education all create a much larger number of jobs that pay wages greater than $32,000 per year. Spending in these sectors all generate a much larger number of mid-range jobs, paying between $32,000 - $64,000, as well as high-paying jobs that pay over $64,000.

Overall then, as we concluded in the original version of this study, there is a great deal at stake as policymakers and voters establish public policy spending priorities. By addressing social needs in the areas of clean energy, health care and education, we would also create many more job opportunities overall as well as a substantially larger number of good jobs.

APPENDIX

Estimating Employment

Direct and Indirect Jobs

The employment effects reported in this paper were estimated using IMPLAN 2.0 software and data from the Minnesota IMPLAN Group, Inc. This is an input-output model which uses data from the U.S. Department of Commerce as well as other public sources. The data set we used in this paper is from 2007. An input-output model traces linkages between all industries in the economy as well as institutional sources of final demand (such as households and government). The model is described in detail in the technical appendix of Pollin et al (2009).

In this report, we analyze the employment effects of the following types of spending: federal defense, personal consumption (households), healthcare, education, and clean energy. Of these categories, federal defense, personal consumption, and healthcare are defined within the I-O model. For the education category, we combine public and private education sub-sectors (4 in all: primary and secondary, colleges and universities, public sector, and other) and provide a weighted average of the employment effects in these four sub-sectors, where the weights are based on actual output levels in 2007. For a description of how we create the "clean energy" category, please refer to the technical appendix (pp. 50-52) of Pollin, Heintz, and Garrett-Peltier (2009).

Induced Jobs

To estimate the induced employment effects, which are the jobs that are created when direct and indirect employment is created and those workers spend their earnings, we use a rule-of-thumb method that corresponds to established estimates of induced effects. We estimate that for all sectors other than defense spending, the induced effect is approximately 40% of the combined direct and indirect effects. See pages 21-22 of Pollin et al (2008) for a discussion of induced effects. For the defense sector, induced effects will be lower than for other sectors, since military personnel spend a lower percentage of their income on domestic goods and services than do other types of workers. As reported in the main text, military personnel spend 43% of their income on U.S. goods and services, while the rest of the U.S. workforce spends 78%. This reduces the induced employment created through wages and salaries, since fewer dollars are spent within the U.S. and thus create fewer domestic jobs. Since the economy-wide induced effect of 0.4 results from 78% domestic spending, the military domestic spending of 43% creates an induced effect of approximately 0.2. To adjust for this, we weight the induced effect by the portion of total defense spending going to military salaries versus other salaries. Of $1 million spent on defense (economy-wide), $528,375 is for compensation of employees. Of that, $284,170 is military pay and $244,205 is non-military. So the weighted average induced effects would be 0.4*(244,205/528,375) + 0.2*(284,170/528,375) = 0.3. Thus, we use 0.3 for defense spending induced effects, and 0.4 for the induced effects for all other sectors.

Wages and Benefits

Wages

The wages presented in this reported are estimated by using the I-O model combined with data from the U.S. Bureau of Economic Analysis. First, we estimate the employment impacts resulting from each spending strategy by using the I-O model. These employment impacts are distributed across the 440 industries of the model. We calculate the share of new employment in each of those industries, and then aggregate them to a 65-industry level so that the results are compatible with other data sources. At this level of detail, we can match our I-O industries with BEA data on wages and salaries by full-time equivalent employee.[3] We then calculate the weighted average wage for each spending strategy by multiplying each industry's average wage by its share of new employment, and summing the results.

$$\sum_{i=1}^{n} W_i S_i$$

where w_i is the average wage in industry *i* and s is the share of new employment in industry *i*.

Benefits

In order to estimate benefits in addition to wages, we use data from the U.S. Bureau of Labor Statistics. The BLS conducts an employer-based survey entitled "Employer Cost for Employer Compensation" and reports the percentage of total compensation going to wages and salaries versus benefits for each category of occupations. We apply these ratios to the weighted-average wages we have calculated to arrive at a total compensation figure for each spending category. This total compensation therefore accounts for the distribution of new employment created through the I-O model, as well as the average wages and benefits received by workers in those industries.

Wage Distribution

We calculate the wage distribution for each spending strategy by first obtaining the wage distribution for each sector from the BLS's "Occupational Employment Statistics."[4] This data

[3] BEA, Table 6.6D. Wage and Salary Accruals Per Full-Time Equivalent Employee by Industry, available from http://www.bea.gov/national/

[4] http://www.bls.gov/oes/tables.htm

file provides the distribution of earnings for various occupations, organized according to the North American Industry Classification System (NAICS), which allows us to match the occupational data to the industries in our model.

First, for each sector, we organize the OES data into salary groupings (below $20k, below $32k, $32k-$64k, and so on). Then, we use the input-output model to calculate the new employment per sector resulting from each spending strategy (for instance, what percentage of clean energy employment is in manufacturing). We can then match those sectoral results with the salary groupings to arrive at a distribution of wages for each spending strategy.

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