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THE ECONOMIC COSTS OF THE IRAQ WAR: AN APPRAISAL THREE YEARS AFTER THE BEGINNING OF THE CONFLICT

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Working Paper 12054
http://www.nber.org/papers/w12054

NATIONAL BUREAU OF ECONOMIC RESEARCH
1050 Massachusetts Avenue
Cambridge, MA 02138
February 2006

Paper prepared for presentation at the ASSA meetings, Boston, January 2006. The views expressed here are solely those of the authors, and do not represent those of any institution with which they are currently affiliate, or with which they have been affiliated in the past. The views expressed herein are those of the author(s) and do not necessarily reflect the views of the National Bureau of Economic Research.

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Linda Bilmes and Joseph Stiglitz
NBER Working Paper No. 12054
February 2006
JEL No. H5

ABSTRACT

This paper attempts to provide a more complete reckoning of the costs of the Iraq War, using standard economic and accounting/ budgetary frameworks. As of December 30, 2005, total spending for combat and support operations in Iraq is $251bn, and the CBO's estimates put the projected total direct costs at around $500bn. These figures, however, greatly underestimate the War's true costs. We estimate a range of present and future costs, by including expenditures not in the $500bn CBO projection, such as lifetime healthcare and disability payments to returning veterans, replenishment of military hardware, and increased recruitment costs. We then make adjustments to reflect the social costs of the resources deployed, (e.g. reserve pay is less than the opportunity wage and disability pay is less than forgone earnings). Finally, we estimate the effects of the war on the overall performance of the economy. Even taking a conservative approach and assuming all US troops return by 2010, we believe the true costs exceed a trillion dollars. Using the CBO's projection of maintaining troops in Iraq through 2015, the true costs may exceed $2 trillion. In either case, the cost is much larger than the administration's original estimate of $50-$60bn. The costs estimated do not include those borne by other countries, either directly (military expenditures) or indirectly (the increased price of oil). Most importantly, we have not included the costs to Iraq, either in terms of destruction of infrastructure or the loss of lives. These would all clearly raise the costs significantly.

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THE ECONOMIC COSTS OF THE IRAQ WAR:
AN APPRAISAL THREE YEARS AFTER THE BEGINNING OF THE CONFLICT[1]

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Three years ago, as America was preparing to go to war in Iraq, there were few discussions of the likely costs. When Larry Lindsey, President Bush's economic adviser, suggested that they might reach $200 billion, there was a quick response from the White House: that number was a gross overestimation.[2] Deputy Defense Secretary Paul Wolfowitz claimed that Iraq could "really finance its own reconstruction," apparently both underestimating what was required and the debt burden facing the country. Lindsey went on to say that "The successful prosecution of the war would be good for the economy."[3]

Many aspects of the Iraq venture have turned out differently from what was purported before the war: there were no weapons of mass destruction, no clear link between Al Qaeda and Iraq, no imminent danger that would warrant a pre-emptive war. Whether Americans were greeted as liberators or not, there is evidence that that they are now viewed as occupiers. Stability has not been established. Clearly, the benefits of the War have been markedly different from those claimed.

So too for the costs. It now appears that Lindsey was indeed wrong—by grossly underestimating the costs. Congress has already appropriated approximately $357 billion for military operations, reconstruction, embassy costs, enhanced security at US bases and foreign aid programs in Iraq and Afghanistan. This total, which covers costs through the end of November 2005, includes $251bn for military operations in Iraq, $82bn for Afghanistan and $24bn for related foreign operations, such as reconstruction, embassy

[1] Paper prepared for presentation at the ASSA meetings, Boston, January 2006. The views expressed here are solely those of the authors, and do not represent those of any institution with which they are currently affiliated, or with which they have been affiliated in the past.
[2] OMB Director Mitch Daniels is reported to have said that Lindsey's estimates were "very, very high." Both he and Secretary of Defense Rumsfeld estimated the costs in the range of $50-60bn, some of which they believed would be financed by other countries.
[3] *Wall Street Journal,* September 15, 2002.

safety and base security. [4] These costs have been rising throughout the war. Since FY 2003, the monthly average cost of operations has risen from $4.4bn to $7.1 bn – the costs of operations in Iraq have grown by nearly 20% since last year (whereas Afghanistan was 8% lower than last year).[5] The Congressional Budget Office has now estimated that in their central, mid-range scenario, the Iraq war will cost over $266 billion more in the next decade, putting the direct costs of the war in the range of $500 billion[6].

These estimates, however, underestimate the War's true costs to America by a wide margin. In this paper, we attempt to provide a range of estimates for what those costs have been, and are likely to be. Even taking a conservative approach, we have been surprised at how large they are. We can state, with some degree of confidence, that they exceed a trillion dollars.

Providing even rough order of magnitude estimates of the costs turns out to be very difficult, for a number of reasons. There are standard problems in cost allocation; there are future costs associated with the Iraq war that are not included in the current calculations; there are marked differences between social costs and prices paid by the government (and it is only the latter which traditionally get reflected in the cost estimates); and there are macro-economic costs, associated both with the increase in the price of oil and the Iraq war expenditures.

Consider, as an example, accounting for the value of the more than two thousand American soldiers who have died since the beginning of the war, and the more than sixteen thousand who have been wounded. The military may quantify the value of a life lost as the amount it pays in death benefits and life insurance to survivors – which has recently been increased from $12,240 to $100,000 (death benefit) and from $250,000 to $500,000 (life insurance). But in other areas, such as safety and environmental regulation, the government values a life of a prime age male at around $6 million, so that the cost of the American soldiers who have already lost their lives adds up to around $12 billion[7].

The standard estimates of the death costs also omit the cost of the nearly one hundred American civilian contractors[8] and the four American journalists that have been killed in Iraq, as well as the cost of coalition soldiers, and non-American contractors working for US firms.

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[4] Congressional Research Service Report for Congress, "The Cost of Iraq, Afghanistan and Enhanced Base Security Since 9/11", Amy Belasco, Defense Specialist, October 7, 2005. This covers funding in P.L.107-117, 107-206, 1207-115,108-7,108-11,108-106,108-199,108-287,109-13,108-447, and the recent FY 2006 Continuing Resolution (109-77) which provides $45bn for the 6-week period starting 9/30/05. DOD will need additional funds to cover the rest of the year.

[5] Ibid.

[6] The CBO estimated costs for the period of 2005-2014 under three scenarios. The estimates were $179 bn, $266bn, and $392bn, respectively. We have conservatively used their middle scenario. CBO 2005.

[7] Government agencies have estimated the value of a life at $6.1m (Environmental Protection Agency), and $5.5m (Department of Transportation). The value of a life for victims of 9/11 were estimated in a range from $2-$11million.

[8] Although the actuarial value of those lives should, presumably, have been included in the contractors' bid price when undertaking the contract.

The military values the cost of those injured by what their medical treatment costs and disability pay; and current accounting only reflects current payments in disability, not the present discounted value of (expected) future payments; a full cost analysis includes both the present discounted value of all future payments, as well as the difference between the disability pay and what the individual might have earned—and even this ignores the enormous compensation that would have been paid for pain and suffering had this been a private injury.

Costs of recruiting have increased enormously—and even after the war ends, there is reason to believe that compensation will have to be increased, including for Reserves and National Guard. Many Reservists, particularly those who are older, supporting families and established in their careers, underestimated the risks of being called to fight a war abroad and the ability of the government to force them to extend their tours of duty and even to serve second and third tours. The majority of these Reservists have suffered a significant loss in wages due to serving in Iraq. By the same token, wages currently paid the military almost surely represent an underestimation of a fair market wage, given what individuals would have needed to make them willingly undertake the job in Iraq. In fact, we know from the wages being paid by contractors performing similar work what the free market wage for such services are, and they are a multiple of what the American military get paid[9].

Even determining the current "direct" expenditures turns out to be a difficult task.[10] The Administration has provided a number, based on the current costs of operations in Iraq. We are interested here in finding the *total economic cost*, the value of the resources used, and it is not always clear that standard accounting and budgetary figures reflect that. For instance, the faster depreciation or destruction of equipment already owned by the government is clearly part of the cost of the war. Standard cost allocation procedures would attribute a substantial fraction of the overhead in the Pentagon to the War; by devoting its attention to Iraq, it has less time to work on other issues, to prepare for other problems.

A true costing of the war would focus, of course, on the incremental cost; to the extent that the actual War substitutes for expensive "war games," the incremental cost is less than the actual money spent. In our analysis we have subtracted the direct savings, such as policing the "no-fly" zone in Iraq, from the cost of the war.

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[9] For example, experienced security guards working for Blackwater Security, who guarded senior officials in the Coalition Provisional Authority, were earning up to $1000 per day. The majority of such guards were former members of the military.

[10] A recent report by the Government Accountability Office (GAO-05-767) states that the Defense Department has "lost visibility" on over $7bn of funding and reports several cases where obligations exceeded appropriations in 2004, including $4.3 bn in Army operation and maintenance. A recent report by the Congressional Research Service cites the difficulty of tracking Pentagon expenditures in Iraq, because (unlike the State Department and other agencies), DOD does not allocate funds by operation or mission until after the fact. "Defense Department witnesses periodically give average monthly costs or 'burn rates' for Iraq and Afghanistan but DOD has not provided Congress with a complete or consistent record showing those rates over time or total amounts for each operation each year". CRS, 10/7/05.

This paper attempts to provide a more complete reckoning of the costs of the Iraq War than have previously been provided, using standard economic and accounting/budgetary frameworks. Of course, a final tally will have to wait the end, and even the President has made it clear that there is no clear end in sight. And even then, it will be years before we can be sure about whether our estimates of future costs—increased costs of recruiting or payments for disability or the health care costs of the injured veterans—were accurate.

Of necessity, the numbers, especially of future expenditures, are estimates, and we have tried to avoid a false sense of accuracy by rounding our numbers from the more precise estimates provided by econometric and statistical studies, when those are employed. We provide several sets of numbers. A "conservative" estimate that we think is *excessively* conservative. We realize that the numbers provided here may be controversial. They provide a picture of costs that is much larger than that which has been provided by the Administration, especially before the War. We also provide a second estimate, which, while still conservative, is more reasonable. We refer to this as our "moderate" estimate.

Our estimates, for instance, assume that we have 136,000 troops stationed in Iraq in 2006. The Administration has recently announced a troop reduction, from 160,000 due to the pre-election build-up, to 140,000, a number which is still larger than the numbers employed in our analysis.

We have not been able to quantify many of what may turn out to be the most important costs of the Iraq venture. There is a value in military preparedness, and it is the reason for investing so heavily in defense. By most accounts, America's ability to engage in a second front at the current time is greatly diminished. At the beginning of the War, there was a great deal of talk about winning the hearts and minds of those in the Middle East. Recent opinion polls reflecting public opinion in the Arab world show that exactly the opposite has happened. Some American businesses have even claimed that anti-Americanism spawned by the Iraq War has had an effect on their sales and profits. America's credibility has been diminished: if some time in the future another American President were to claim that he had solid evidence based on intelligence that there was a threat, that evidence is more likely to be treated with skepticism. America has always prided itself in fighting for human rights; but America's credentials have been tarnished by Abu Ghraib and Guantanamo. These are among the many costs of the Iraq War that we do not attempt to quantify, but which should clearly be counted in any assessment of the Iraq War.

Nor have we included in this paper any of the costs borne directly by other countries, either directly (as a result of military expenditures) or indirectly (as a result of the increase in the price of oil.) Most importantly, we have not included the costs of the war to Iraq, either in terms of destruction of property (infrastructure, housing) or the loss of lives.[11] Clearly, including these would increase the cost of the war substantially—perhaps by an order of magnitude.

[11] We have not included the cost of the deaths of coalition soldiers and contractors, nor of the Iraqis themselves. Even the most conservative estimates put the loss of life at a multiple of that of the United

The paper is divided into two parts. In the first, we provide an estimate of the "direct" expenditures, and provide adjustments to reflect the true social costs of the resources deployed. The second provides an estimate of the macro-economic costs; the effects of the War on the overall performance of the economy, taking into account both the effects of the expenditures themselves and of the increased price of oil, some of which at least should be attributed to the War.

I. Budgetary Costs to the US Government

The budgetary costs of the war reflect the huge scale of operations that are being undertaken. For the first half of 2005, there were over 200,000 US military personnel stationed in Iraq and Kuwait (which serves as a staging ground for Iraq). To date, over 550,000 troops have served in Iraq in a combined total of approximately one million tours of duty[12].

The costs of the war in Iraq that have been reported in the media have almost exclusively focused on one type of cost – the $251bn in cash that the government has spent on combat operations since the invasion of Iraq in March 2003. This is an important element of the financial cost but it is only the tip of a very deep iceberg.

Currently the US is spending about $6bn per month on operations in Iraq. However, there are additional costs to the government – over and above this number. These include disability payments to veterans over the course of their lifetimes, the cost of replacing military equipment and munitions which are being consumed at a faster-than-normal rate, the cost of medical treatment for returning Iraqi war veterans, particularly the more than 7000 servicemen with brain, spinal, amputation and other serious injuries, and the cost of transporting returning troops back to their home bases. . The Defense Department, for which expenditures not directly appropriated for Iraq have grown by more than 5% (CAGR) since the war began, has also spent a portion of this increase on support for the war in Iraq, including significantly higher recruitment costs, such as nearly doubling the number of recruiters, paying recruitment bonuses of up to $40,000 for new enlistees and paying special bonuses and other benefits, up to $150,000 for current troops that re-enlist. Another cost to the government is the interest on the money that it has borrowed to finance the war.

Although it is difficult to estimate these costs precisely, we can use current and expected troop deployment to make a reasonable projection of the likely costs. Looking purely at direct budgetary costs to the taxpayer, we estimate that the total cost of the Iraq war is in the range of $750 billion to $1.2 trillion, assuming that the US begins to withdraw troops in 2006 and maintains a diminishing presence in Iraq for the next five years. We have looked at the budgetary cost both including and excluding the cost of interest on the debt.

States, with some estimates putting the numbers in excess of 30,000, or even 100,000. Of those, over 3000 Iraqi deaths have been among Iraqi military and police who are supporting coalition forces.

[12] Many troops have served two or three tours of duty.

We have also adjusted this cost for economic factors, as outlined in section two. Under any reasonable set of assumptions, the cost of the war *even without* considering the macroeconomic costs – is more than double the current number provided by the Administration.

We have estimated the budgetary costs using two scenarios. Both scenarios are based on the troop deployment projected by the Congressional Budget Office.[13] Our "Conservative" scenario assumes that all troops will be withdrawn from Iraq by 2010, and that all interest on the debt borrowed to finance the war will be repaid within five years. Under this scenario we count the long-term costs of disability pay and health care for veterans over a twenty-year period, even though most of the troops in Iraq are between ages 21-28 and are likely to live far longer. We have taken the present value of all cash flows at a 4% discount rate. Even under this conservative scenario, the direct costs to the government are likely to exceed $700 bn. (See figure 1).

Under a second, "Moderate" scenario, we have used CBO's assumption that a small but continuous US presence in Iraq continues through 2015. This has implications for the projected number of casualties and the length of involvement by the Defense Department. This scenario also assumes that the US budget will remain in deficit for the next 20 years. This would raise the cost of the war to over $1.2 trillion. Both scenarios exclude the cost of operations in Afghanistan – estimated to be approximately $82 bn to date and consuming $1bn per month. ,

Figure 1: Budgetary Cost of the Iraq War ($BN)

		Conservative	Moderate
1	Spent to date	251	251
2	Future spending on operations	200	271
3	VA costs	40	57
4	Cost for Brain injuries	14	35
5	Veterans disability payments	37	122
6	Demobilization costs	6	8
7	Increased defense spending	104	139
8	Interest on debt	98	386
	Total	**750**	**1,269**

[13] US Congressional Budget Office, *Estimate of War Spending FY 2005-FY2015*, Feb 1, 2005.

Assumptions for Figure 1 "Total Cost of War in Iraq to the US Government".

1. **Spending to date on combat and support operations**:

The total spending to date, as of December 30, 2005 is $251 billion. This includes funds appropriated specifically for Iraq in Emergency supplemental appropriations in April 2002, November 2003, August 2004, April 2005, and the Continuing Resolution of September 2005, which covers the first 6 weeks of FY 2006. This money includes funding for combat operations, basic troop deployments and logistics, deployment of National Guard and Reserves[14], food and supplies, training of Iraqi forces, weapons, munitions, supplementary combat pay, reconstruction[15], and payments to countries such as Jordan, Pakistan and Turkey. This also includes the payment of $500,000 in "death gratuity payment" and life insurance to the survivors of the 2156 fatalities in Iraq during this period. We have not included the costs to the Defense Department for planning the invasion in the months prior to the invasion, which the Congressional Research Service has estimated at $2.5 bn[16]

2. **Future spending on combat and support operations**.

We have estimated the cost of future operations to be proportional to the number of troops scheduled to be deployed in Iraq from 2006-2010. We have estimated the current number of troops *stationed* in Iraq as 160,000, using the number cited by the Pentagon. Future troop deployment figures are based on recent forecasts by the Congressional Budget Office, which predicts that troop levels in 2006 will be reduced to 136,000. The CBO has forecast troop levels through 2015, but in the conservative scenario we are assuming that all troops are out of Iraq by 2010. However, this approach almost certainly underestimates the actual cost of military operations, because the Pentagon will hire contractors to replace some portion of the activities performed by troops who are withdrawn.[17] In our moderate scenario, we have assumed that the US maintains a small troop presence until 2015, that we increase the number of contractors as troops decline, and that casualties continue, proportional to troop deployment...

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[14] Approximately 40% of the US troops serving in Iraq have been drawn from the National Guard and the Reserves, particularly the Army Reserves. Currently some 56,000 National Guardsmen and Reservists serve in Iraq. Additionally, over 60,000 people have been recruited to "backfill" domestic positions in the Guard and Reserves that are vacant because the others are in Iraq. The direct additional cost of mobilizing these individuals is $3 billion per year. We have assumed that participation of the Guards and Reserves remains constant at 40%.

[15] Congress appropriated $18.4bn – an unprecedented sum- for Iraqi reconstruction in September 2003. This funding was specified for purposes including school construction, sewerage, sanitation, repair of the electrical grid and other civilian projects. To date, most of the money spent has been diverted to military projects, including training bomb squads, training Iraqi security forces, constructing prisons, purchasing armored cars, and of the 3600 projects completed, some 25% of funds were spent on security. Money has also been diverted to pay for the elections (source: Special Inspector General for Iraqi reconstruction). The Administration has recently announced that it will rescind its request for remaining reconstruction money.

[16] CRS, 10/7/05, Ibid.

[17] Currently there are 20,000 – 25,000 private military contractors operating in Iraq, representing some 60 contracting firms. Experienced US soldiers can earn up to several times their military salary working for high-end contractors, in some cases up to $1000/day. (IPS, 2004).

3. **Additional Veterans Administration medical care costs for returning veterans.**

As of December 2005, over 16,000 military personnel have been wounded in Iraq since March 2003, of whom 96% were injured after the official combat operations ceased (since May 1st, 2003). Due to improvements in body armor that protect the core body, there has been an unusually high number of soldiers who have survived with major injuries, such as brain damage, spinal injuries, and amputations. According to the Pentagon and other sources[18], about 20% of those injured have suffered major head or spinal injury and an additional 6% are amputees. Another 21% suffered serious wounds that prevented them from returning to the military, including blindness, deafness, partial vision and hearing impairments, nerve damage and burns. In addition, more than half of the 550,000 US troops who have served in Iraq have served two or three tours of continuous duty under stressful, grueling conditions. Some 20,000 soldiers have been prevented from leaving the service by the government's "stop-loss" policy, which requires troops to extend their tours in case of emergency. It is perhaps not surprising that the surgeon general of the Army reported, in July 2005, that 30% of US troops have developed mental health problems within 3-4 months of returning from Iraq. To date, more than one-third of returning veterans have used the VA system for health ailments.

The number we include here represents a conservative estimate of the additional costs to the Veterans Administration due to providing medical care and other benefits (such as rehabilitation, retraining, purchase, fitting and replacement of prosthetic devices, and counseling -- but not including disability, housing, educational or loan payments) to returning Iraqi War veterans (other than those with brain injuries). The costs of treatment could be substantial. The VA had originally projected that 23,553 veterans returning from Iraq would seek medical care last year, but in June 2005, the VA revised this number to 103,000. The VA also is now responsible for providing care to an estimated 90,000 National Guards, who previously were not eligible for VA services. To meet these unforeseen demands, the VA appealed to Congress for an emergency $1.5bn in funding for FY 2005. The VA is likely face a shortfall of $2.6 billion in 2006[19]While not all the additional health care expenditures may in fact be directly linked to the Iraq war, it will be difficult not to provide the requested medical care. We assume that this need will continue and increase to $3bn as the veterans return home, and that the VA will require this additional level of funding added to its base budget.[20] (We expect that this figure is significantly understated, considering that The Veterans Administration is already facing a shortfall in funding to meet its existing obligations[21].)

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[18] Wallsten and Kosec, AEI-Brookings Working Paper 05-19, September 2005, estimates 20% with serious brain injuries and 6% amputees. They estimate 24% with other serious injuries. (We use 21% with other serious injuries based on the latest Pentagon numbers).

[19] Institute for Policy Studies, 2005

[20] See the discussion in the next section for an alternative methodology, which focuses on the *direct* costs of the Iraq injured.

[21] Former VA Secretary Anthony Principi said that the VA will need $600bn over the next 30 years to meet its existing obligations for health care, education, pensions and housing loans – but this figure did not include the Iraqi war veterans. It also does not include additional funding for capital needs, including construction and repairs of VA facilities, that have

The additional cost of providing benefits to Iraqi war veterans will become a major challenge for the VA. In our conservative scenario we have estimated that all troops are withdrawn by 2010 and these costs for 20 years; in the moderate scenario we have assumed that troops continue to be deployed through 2015 and these costs continue throughout the lifetime of the veterans (40 years).

4. Medical treatment for brain injuries.

There is a special category of health care expenditures that go beyond those included in the above calculation—for those with brain injuries. To date, 3213 people -- 20% of those injured in Iraq -- have suffered head/brain injuries that require lifetime continual care at a cost range of $600,000 to $5 million[22]. The government will be required to commit resources through intensive care facilities, round-the-clock home or institutional care, rehabilitation and assisted living for these veterans.

For the conservative estimate, we have used a midpoint estimate of a net present value of $2.7 million over a 20 year expected survival rate for this group, which is about $135,000 per year, yielding a cost of $14 billion. This amount seems low for brain-injured individuals who will require round-the-clock care in feeding, dressing and daily functioning. For the moderate estimate, we use a higher cost estimate ($4m) and assume longer life duration for a total cost of $35 billion. In both cases we assume that the number injured will rise in a manner consistent with the duration of the conflict.

5. **Disability pay for veterans**

Veterans of the Iraq war are eligible to claim disability pay and benefits, ranging up to a maximum of about $44,000 per year, under a complex formula administered by the Veterans Administration. It is important to note that that Congressional intent for disability payments is to "compensate for a reduction in quality of life due to service-connected disability payment of this disability". The benefit is intended to "provide compensation for average impairment in earnings capacity" – but it does not require the veteran to actively seek employment nor is it offset against post-military civilian earning. The principle dates back to the Bible at Exodus 21:25, which authorizes financial compensation for pain inflicted by another.[23]

Veterans are awarded claims based on the percentage of disability they can demonstrate; in gradations (0-100%) though it is possible to have a 0% disability percentage across multiple conditions and still qualify a veteran for some disability pay. The presumption for disability compensation is tied to symptoms that appear within a period of time after service. There are numerous programs that provide benefits depending on the situation, including disability compensation, specially adapted housing grants, medical benefits

[22] Wallsten and Kosec, AEI, The Economic Cost of the War, 2005 and Department of Defense estimates for number of wounded.
[23] VA Disability Compensation Program, *Legislative History*, VA Office of Policy, Planning and Preparedness, December 2004

with higher priorities, vocational rehabilitation, service-disabled veterans life insurance, dependency and indemnity compensation (paid to surviving spouse and children if a veteran dies of an illness or injury contracted while on active duty, or dies of such after retirement).[24]).

We have estimated the amount of claims that the government will need to pay based on a projection of the rate of claims based on the Persian Gulf War. The government currently pays $2 billion annually in support of 169,000 claims, or an average of $11,834 per claimant. (Hartung, 2004) The total number of claims for that war exceeded 200,000, or more than one-third of the troops deployed, despite the fact that the war lasted 4 weeks with 148 dead and 467 wounded. Many of those claims were related to the exposure to depleted uranium during the Persian Gulf conflict, and included ailments such as memory loss, sleep problems, Lour Gehrig's disease, poor concentration, and joint problems. Congress has established a "presumption of service-connection" for any health problems linked to "exposure to possible nerve agents and other toxins present in the Persian Gulf conflict and vaccinations against biological war hazards in preparation for the Persian Gulf.[25]"

In the Iraq conflict, more depleted uranium was used in the bombing of Baghdad than in the Persian Gulf conflict;[26] therefore the Iraq war veterans will be easily eligible for disability claims for any health problems that they can link to exposure. As we noted earlier, more than one-third of returning veterans have used the VA system for health ailments. We have estimated that those with serious injuries would receive the maximum disability benefits from the VA, those with medium-serious injuries would receive half those benefits ($22,000), and one-third of the remaining forces would receive the average benefit awarded to the Gulf War veterans, or $11,834. This sums to an annual payment of $2.3 billion. In the conservative scenario we have estimated this payment over 20 years; in the moderate scenario we have assumed that these payments continue over the lifetime of the veteran, so until 2045.

6. Cost of demobilization.

The Pentagon has announced plans to reduce troop levels from their current force of over 160,000 to around 140,000 in the next year, and we have assumed that this withdrawal will continual gradually as outlined by the CBO. This will in itself require direct payments of $6-10bn for the transportation and demobilization of troops, returning them to their home bases, or civilian roles (in the case of Reserves).

7. Increased defense spending

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[24] This principle is cited in numerous legal cases in which juries award compensation for injury. .

[25] In 1994 Congress passed the Gulf War Veterans Benefit Act, which legislated a presumption of service connection for an undiagnosed illness that occurred within an unprescribed time frame, taking into account the Gulf War Syndrome. This time frame period was extended in 2001 to include any disabilities associated with the Persian Gulf War service that may appear through Dec 31, 2011. (VA Disability Compensation Program, Ibid).

[26] William Hartung, "The Cost of War"2004, Taxpayers for Common Sense

Since 2002, the total appropriations for the Defense Department have increased from $310 bn to $420bn, representing a total cumulative increase of $325bn. Portions of the FY 2002, 2003, 2004 and 2005 appropriations bills, as well as FY 2003 and FY 2004 transfers, have been appropriated for Iraq. In total we estimate that 30% of the $325 increase has been devoted to Iraq. This figure covers increased military pay, research and development, recruitment, operations and maintenance and replacement of equipment. According to Pentagon estimates, the military is wearing out equipment at a rate that is 4-5 times the rate of usage in non-combat situations[27]. Additionally, CBO has estimated that the military will require some $100bn in replacements over the next five to ten years. (Much of this funding has not yet been requested)[28] and GAO has referred to the shortfall in funding for repairs, replacements and procurements[29] and the confusion between determining emergency supplemental and ordinary funding needs...

In our estimates, we have attributed one-third of the increase in Defense spending to Iraq, minus the savings from no longer policing the no-fly zone to the Pentagon. Savings from the no-fly zone have been estimated to be from $11 to $15bn per year.[30] Given that the Department is highly focused on the outcome of the war in Iraq, we estimate that up to one-half of the increase in the defense spending may be related to Iraq, but we have used only 30% of the spending in our conservative and moderate scenarios.

In addition, this increase reflects the military's increasing difficulty in recruiting troops and officers at all levels since the beginning of the Iraq conflict. During 2005, the Army was below target for most of the year, and actually lowered its targets in order to achieve them[31]. There were shortfalls in the Army National Guard, Army Reserves, and Marine Reserves. Applications to West Point and the US Naval Academy also fell between 10-25% from previous years. The military has responded to this challenge by hiring thousands of additional recruiters, increasing its national advertising campaigns, offering sign-up bonuses of up to $40,000 for new recruits, offering higher retirement and disability benefits, increasing the "death gratuity" to $100,000, and providing re-enlistment bonuses of up to $150,000 for experienced troops (who might otherwise leave the military to join private contractors who would pay even higher amounts). In further

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[27] Secretary Donald Rumsfeld said at a briefing on March 10, 2005 that US military equipment such as tanks, Bradley fighting vehicles and helicopters are being worn out at up to 6 times the peacetime rate. (Washington Post, 3/11/05)

[28] Scott Lilly, staff director of the House Appropriations Committee, said the Army would need more than $17.5bn to replace or repair worn or damaged equipment in the first year of the war. But the Army's request for depot maintenance and procurement was only about $2.2bn in the supplemental. "Pentagon's Request for Iraq includes money for troops and rewards", New York Times, 10/03/03. Additionally, Rep. Duncan Hunter, Chairman of the House Appropriations Committee, has cited figures that the Defense Department needs $90bn per year in annual modernizations and at present levels, is still $30bn short, based on CBO estimates. (Wall Street Journal, 5/03)

[29] The GAO has also referred to the shortfall in funding requests for military replacements. (GAO, "Global War on Terrorism: DOD Should Consider All Funds Requested for the War When Determining Needs and Covering Expenses."

[30] Wallsten and Kosec estimate savings from the no-fly zone at $32bn in the nearly 3 years since March 2003. John Amidon of the Air War College estimates the cost of policing the no-fly zone at $15bn per year.

[31] For example, the May recruiting target was originally 8050, but was lowered to 6706. Similar adjustments were made throughout the year.

efforts to boost recruitment, the Pentagon increased the maximum enlistment age from 35 to 42 and relaxed standards for appearance and behavior, making it more difficult to be fired. The cost to the military per recruit has increased from $14,500 in 2003 to $17,500 in 2005. (Pentagon). Hardship pay has been increased from $300 to $750 per month. We assume that the military will need to make these changes permanent, adding at least$1bn-$2bn per year into the permanent budget base. Additional increases include military pay raises, and the purchase of more expensive body armor for combat.

8. Interest Payments on Debt

Given that at the onset of the War, the country was already running a deficit, and no new taxes have been levied, it is not unreasonable to assume, for purposes of *budgeting*[32], that all of the funding for the war to date has been borrowed, adding to the already existing federal budget deficit. In the conservative scenario we assume that these funds are borrowed at 4% and repaid in full within five years. The moderate scenario assumes that the country continues to have a deficit over the next 20 years and therefore interest continues to accrue.

II. <u>Costs of the War to the US Economy: Adjustments to the budgetary estimates</u>

A second way to measure the cost of the war is to examine its *economic* cost. Economic costs differ from budgetary costs in three ways: (a) costs are borne by others (than the federal government and those fighting in the war), and these are obviously excluded from the budgetary costs *to the federal government*; (b) the prices paid by the government do not reflect full market value; and (c) economic costs do not include interest payments (which can be viewed just as transfer payments), but do include long run impacts on the growth of the economy. For instance, in the days of the draft, pay provided soldiers were a vast underestimate of their opportunity costs. Health care costs borne by soldiers and their families are examples of costs borne by others.

Here, we focus on the loss of productive capacity of the young Americans who have been killed or seriously wounded in Iraq, and the loss of civilian wages that would have been earned by those called back to duty in the Reserve forces.

There are some "problematic" items within the budgetary costs, most notably expenditures on veterans *not* linked with the Iraq war. The best way to think of this is as part of deferred compensation, and therefore, while the "categorization"—repairing human damage as a result of the war—is incorrect, it is still part of the cost of the war.

Once again we have estimated the costs under two scenarios. In the conservative case, the adjustments add $187 bn onto to budgetary cost – raising the cost to $839 bn, even when subtracting the entire cost of interest payments. In the moderate case, the economic adjustments increase costs by $305 bn. Even if we deduct the cost of interest, the cost of the war under this scenario exceeds $1 trillion. But these calculations ignore the fact that

[32] An *economic analysis* is somewhat more complicated, as the discussion in section IV will make clear.

some of the resources deployed in the war could have been used to promote economic growth, and that there are a broad range of macro-economic costs, the effect of which, as we shall show in the next section, is to increase the economic costs of the war by a significant amount.

Figure 2: Adjustments to Budgetary Numbers to Account for Economic Costs ($BN)

		Conservative	Moderate
1	Spent to Date	3	8
2	Economic Cost of Reserves	3	9
3	Economic Cost of Fatalities	23	29
4	Loss due to Brain Injuries	34	48
5	Loss due to Other Serious Injuries	30	64
6	Loss due to Other Injuries	18	26
7	Less veterans disability payments	(12)	(28)
8	Increased depreciation of military hardware	89	149
	Net Adjustment	**187**	**305**

The cost of the war to the United States, *before* taking macroeconomic factors into account, can therefore we estimated under a variety of assumptions to fall between $700bn and $1 trillion dollars, as shown in Figure 3.

Figure 3: Projected Cost of the Iraq War ($US bn) without macroeconomic costs

Scenario	Budgetary cost (without interest)	Budgetary Cost (inc. interest)	Cost with Economic Adjustments[33]
Conservative	**652**	**750**	**839**
Moderate	**884**	**1269**	**1189**

Differences between assumptions for economic and budgetary models.

1. Economic Cost of Reserves.

As we noted earlier, the US force in Iraq is composed of 40% the National Guard and Reserve forces. Many of these men and women normally work in critical "first responder" jobs in their local communities, such as firemen, policemen and emergency medical personnel. More than 210,000 of the National Guard's 330,000 soldiers have served in Iraq or Afghanistan, and the average length of Guard mobilization is 480 days[34] It is difficult to measure the cost of this deployment in purely economic terms because

[33] Budgetary cost without interest+economic adjustments
[34] IPS, Ibid.

there is a large unquantifiable cost in terms of the loss of these "first responders" to emergencies, including the value of the "insurance" of having these people ready to respond to emergencies. This was clearly seen in the Hurricane Katrina debacle, where 3000 Louisiana National Guardsmen and 4000 Mississippi Guardsmen were stationed in Iraq when the hurricane hit. According to the Institute for Policy Studies, some 44% of US police forces have some of their ranks deployed in Iraq. The loss of these services in Katrina and elsewhere clearly has had large budgetary and economic costs. We do not directly measure either the economic costs of the loss of "insurance" or the economic and budgetary costs arising from reduction in first responder capabilities (which may have been considerable.)

Still, there are some quantifiable economic costs that go beyond those noted earlier in our budgetary analysis. In the budgetary model, we included (as part of operating costs) the additional cost to the government of hiring replacements for those sent to Iraq, which is around $3bn per year. In this model, we have subtracted that sum from the total cost of operations but added in the economic cost of the difference between the civilian wages that these individuals would earn in their regular occupations and the lower wages they typically earn in the Reserves. Scott Wallsten and Katrina Kosec (AEI/Brookings, 2005) have calculated that Reserve soldiers earn about $33,000 per year as civilians. They estimate that the opportunity cost of using Reserve troops at current levels is $3.9 billion to date. We have adopted that figure into our conservative assumptions. In our moderate model, we have increased the pay per Reservist slightly to $46,000, taking into account the fully loaded cost of benefits, particularly for those reservists who are in police and fire departments and receiving 60-100% benefits.[35]

2. Economic Cost of Military Fatalities.

The budgetary model only incorporates the payments made to individuals as a result of death. Had these individuals been killed in a car accident or a work related accident (other than military) there would have been much larger payments, reflecting the economic costs of the losses.

Although it is impossible to translate the value of a life into purely monetary terms, the government commonly uses this approach and determines the "Value of statistical life" or "VSL", based to some extent on the value of foregone earnings and contributions to the economy. This method is also widely used by insurance companies and other private sector concerns. In this study, we have estimated the VSL of each US military and contractor fatality as of December 2005. According to the Pentagon casualty reports, this

[35] It is apparent (evidenced by increased difficulties in recruiting) that individuals did not fully appreciate the risks they faced when joining the reserves, so that the wage received does not reflect adequate compensation for those risks. This is particularly true because of the stop-loss policy which requires troops to extend their tours, with some 20,000 having in fact been prevented from leaving their service at their scheduled dates. A full adjustment of the economic costs would include appropriate compensation for the risks taken. See below.

is 2156 military fatalities and approximately 100 contractors.[36] We have projected these forward according to the two different scenarios described earlier.

We have not taken into account number of Iraqis who have been killed in the conflict, estimates of which range from 30,000 (the number estimated by President Bush in December 2005), to a 100,000 estimated by the British Lancet. We have also not counted the several hundred casualties among coalition countries, of which about 100 were British soldiers.

There are a wide range of VSL values in use. In our conservative scenario, we have adopted the standard set by the U.S. Environmental Protection Agency, $6.1 million per life. However this is only an approximation. The value of a young life may be determined to be higher than average, based on an estimate of foregone earnings (Viscusi and Aldy, 2005[37]). Juries frequently award much higher amounts in wrongful death lawsuits, and some have reached as high as $269 million. [38] We have used the number $6.5 million in our moderate scenario. In projecting the number of fatalities and casualties forward, we have assumed that these would be proportional to the number of troops deployed in Iraq, based on the average number of casualties per month to date. However, even this is a conservative estimate, since the number of casualties has been increasing.

3. Economic cost of contractor fatalities.

There have been about 100 US contractors killed in Iraq since March 2003 (as well as some non-US contractors, mostly working for western companies.) In this model we have only included the US contractors, and extrapolated the numbers according to the two different war scenarios. We have used the VSL of 6.1 million and 6.5 million, respectively, for the conservative and moderate models. However it should be noted that in many cases, the contractors were highly skilled, highly paid specialists, working on reconstruction projects such as fixing the electricity grid and oil facilities. We have not counted their true loss to the success of the project in Iraq, or the fact that their high casualty rate has made it more difficult and more expensive for western contractors to higher replacements to perform these jobs.

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[36] In the case of the contractors, one might argue that their wages (already included in the analysis) includes compensation for the risk of the loss of life, so that the value of the loss of these 100 contractor lives should be subtracted (reducing the overall cost of the War by some $600 million.)

[37] The "peak" age for VSL may be 29, in terms of lost earnings potential, with a VSL between $5.9 and $7.5 (Viscusi, and Aldy, NBER Working Paper 10199, 2003)

[38] There have been hundreds of large jury awards (ranging from $2m -$269 m) in wrongful death suits over the past five years. These include the awards of $112 to Elizabeth and John Reden of New York for a malpractice case in which their daughter suffered brain damage (2004) and $43 in Louisiana in 2001 for Seth Becker, a 24-year old who needed both legs amputated after an injury he sustained while working for Baker Oil Tools. In both of these and many other cases the amount awarded was determined primarily on the basis of the cost of round-the-clock medical care for life that the injured person would require. The $269m award was for Rachel Martin, a 15-year old Texas girl who died in 1998. In most cases the plaintiffs receive less than the total award, typically about 10%.

4. Economic cost of the seriously injured.[39]

Earlier, we described the budgetary costs of health care and disability for the seriously injured. The wounded contribute significantly to the cost of the war – both in a budgetary sense (in the form of lifetime disability payments, housing assistance, living assistance and other benefits from the Veterans Administration), and in an economic sense. The budgetary expenditures discussed earlier underestimate the true economic costs for three reasons: (a) they do not include adequate compensation for "pain and suffering," of the kind that would have been provided, for instance, had those suffering injuries been hurt in an automobile accident; (b) they do not include additional health care expenditures by the parties themselves, their families, or other government agencies; and (c) perhaps most importantly, they do not include the loss of economic services. On the other hand, they do include health care expenditures that may not be directly a consequence of the war. However, as we noted earlier, we are treating this as part of the deferred compensation, and therefore it *is* both a budgetary and an economic cost.

In their recent study of the economic costs of the war, Wallsten and Kosec used a "value of statistical injury" to estimate the cost of the wounded. This value represents what people are willing to pay in order to avoid being injured. They applied this value to the number of injured personnel, according to the severity of their injuries and the average cost of treatment over its lifetime. They calculated total net present value of injuries at $18.2bn to date, and $48bn through 2015, using a 5% discount rate. [40]

The Wallsten and Kosec study is quite thorough and we have used their estimates of the number and type of wounds, and lifetime treatment costs. However, they probably underestimated the total cost of the wounded because they only assigned an amount to the 26% with brain injuries and/or amputations. We have included additionally the cost of the 21% of personnel (5545 people, as of December 2005) with other serious wounds. Such injuries would include wounds from shells, explosions, gunfire, mortar, landmines, grenades, firearms and infections, resulting in conditions such as blindness, partial blindness, deafness, partial deafness, cardiac injury, facial deformation, burns, multiple broken bones, nerve damage and mental breakdown. We have deducted the veterans' disability payments from all these individuals.

We have estimated that personnel with serious injuries (including brain injuries) receiving full disability payments will essentially be lost to the economy and therefore we

[39] One might argue that for those joining the army and reserves *after* the beginning of the War, the increased compensation already incorporates the (present discounted value of) loss in welfare from the increased injuries (deaths), and so including both item 10 from table 1 and items 2 and 4 from table 2 represents "double counting." Therefore, it may be argued, we should subtract $5.3 (conservative; $8.76 in moderate case) from the total. However, there is no reason to believe that those enlisting have a good sense of the actual risks (there is no evidence that the armed forces provides accurate information to the enlistees) and the increased compensation reflects no just the increased probability of injury and death, but also the stop loss provisions which did not allow individuals to leave the services at the scheduled time. In any case, the basic pattern of results is unaltered.

[40] This is based on their "midpoint" scenario. Their high estimate is $74bn

should assign them a VSL similar to the deceased, of $6.1m. In the Conservative case, we have estimated that those who were wounded during the conflict, but returned to the military will suffer some impairment beyond the small amount of disability pay they may receive. We have very conservatively estimated that 20% of the total VSL would be an approximation of this impairment. Taken together, this adds approximately $70bn.

Under our moderate scenario, we have used a similar formula, but using an estimate of $6.5m for the VSL and assuming that there are more casualties, due to the longer duration of the conflict. Less disability payments this adds another approximately $110 bn.

There is another significant cost that we have not included, simply because we did not have the data to prepare a robust estimate. This is the degree of impairment that will be suffered by the other veterans – numbering some 160,000, or approximately one-third of the 550,000 veterans from the Iraq war – who will be eligible to claim some disability benefits. We believe that a significant number of these individuals will suffer substantial mental and physical ailments that will significantly reduce their earning potential and quality of life. If even 15% of these veterans were fall into this category, this alone would add another $30-35 bn to the economic cost of the war[41].

A conservative estimate of the risk premium individuals would require to be compensated for the injuries (beyond the loss of economic functionality and health care costs) could (with reasonable estimates of risk premia) double the total.[42] We have, however, omitted those numbers from the analysis.

5. Accelerated depreciation of military hardware.

There is only a slight difference in the estimate of the budgetary and economic costs associated with military hardware. The budgetary costs focus on replacement expenditures, the economic costs on the more rapid depreciation of hardware (than otherwise would have been the case.) In our conservative scenario, we have simply estimated straight-line 5-year depreciation for the $100m in military replacements estimated by the House Armed Services Committee and CBO, over the next five years. This is in line with the DOD's assessment that equipment is being used up at 5 times the normal rate of utilization in peacetime. We are assuming that the Pentagon will incur at least an additional $25bn in replacements through 2015, in the moderate scenario.

[41] Assuming 20% of the VSL for 24,000 individuals.
[42] Individuals are willing to pay insurance premia that are typically 60% to 120% of the value of the loss. In the case of the loss of limbs and other major bodily injuries, the risk premia are likely to be considerably higher.

III. The Macro-economic effects of the War in Iraq

As large as the direct costs—current and future—are, the macro-economic consequences may even be several times larger.[43] There are at least three major sources of macro-economic consequences: (a) the increase in the price of oil; (b) the increase in defense expenditures; and (c) the increased insecurity that has followed from the way that the war has been pursued.

In ascertaining the magnitude of these macro-economic effects, there is a standard problem: the counterfactual, what would the world have looked like, but for the war in Iraq.

Security

Consider the issue of security. The bombings in Madrid and London have only exacerbated a growing sense of insecurity. Would matters have been even worse had there been no war? One of the stated objectives of the war was to enhance the sense of security (to make sure that the war on terrorism was fought *there,* not here.) It is conceivable that the Middle East would have been even more unstable than it is today. But especially on the basis of what we know today—Iraq did not have weapons of mass destruction, and it did not have the capacities to develop them quickly – this seems unlikely, Contrary to the assertions before the War by the Administration, Iraq (with its highly secular regime) was not working with Al Qaeda, and was not a training ground for insurgency. Unfortunately, the disorder that has followed the war has provided a place where such training is going on today.

The costs of this insecurity are potentially huge.

(a) Individuals are risk averse, and there is thus a direct quantifiable cost associated with the increase in risk.
(b) The response to security threats has been to create significant barriers to the free flow of people, goods, and services. The Administration champions the virtues of free trade and the benefits from lowering trade barriers, even when those barriers are already low. But increased border security (including airport security, the reporting and registration requirements of the bioterrorism act, etc) are trade barriers; not only are there direct costs associated with administering these security measures, there can be significant macro-economic effects of the reduced flow of goods and services. A special category of costs is associated with the significantly reduced flow of students to the U.S., especially in areas of science and technology, where we have become very dependent on these "imports." (Many have stayed and made large contributions to the economy.)

[43] We provide here preliminary estimates of the costs so far, and what those costs might be expected to be under various scenarios. We do not provide what would have been a reasonable estimate of the costs at the time that the United States went to war. Given the Administration's attempt to minimize the expected costs, it is not surprising that they did not take into account all of the costs discussed in this section.

(c.) Increased risk is bad for business; it lowers investment, and over the long run thus has supply side as well as demand side effects.

Calculating these costs—and particular, the *incremental* costs associated with the Iraq War (beyond the costs which would otherwise be associated with the War on Terrorism)—is sufficiently difficult and problematic that we do not provide any estimates here. But it means that the numbers reported below almost surely underestimate the total macro-economic effects.

Oil

The price of oil is significantly higher today than it was before the War in Iraq. Even as the country went to war, it was recognized that it might have effects on the global oil market. Some of the remarks of those in the Administration seem to suggest that it may have even been a factor driving the country to war. Larry Lindsey is reported to have said, "the best way to keep oil prices in check is a short, successful war on Iraq…"[44]

The higher price of oil brings costs and benefits. Profits of the oil companies have increased enormously.[45] It is the one group (besides certain defense contractors) that has clearly benefited from the war. (Though popular discussions of the still not-clear motives for going to war often focused on oil, there is so far no reason to suppose that these benefits to one of the President's "constituencies" played an important motivation.) Here, we are concerned with the costs to the overall economy of these high oil prices.

First, however, we have to ascertain to what extent has the increased price (from $25 a barrel **before** the War to around $50 today—ignoring the spike associated with Katrina when prices rose to $60) been a result of the war itself.[46] Again, the question is, what is the counterfactual? What would the price have been had there been no war? To what extent is the rise in price due to the war, and to what extent is it due to other factors?

Future markets provide some insight. Before the war, they were forecasting that oil prices remain in the range that they had been, $20 to $30**.** Futures markets take into account growth in demands in China and elsewhere as well as changes in supply. They do so on the basis of "business as usual," that is, on the basis that nothing out of the ordinary happens. The war in Iraq was the most notable event, and it is hard to identify

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[44] *Wall Street Journal,* September 15, 2002

[45] In 2005, four of the ten most profitable corporations in the world are oil and gas companies – Exxon-Mobil, Shell, BP and Chevron Texaco. In 2002, only one of the top 10 most profitable corporations was from the oil and gas industry. Source: The Forbes Global 2000,
http://www.forbes.com/2005/03/30/05f2000land.html
http://www.forbes.com/2002/03/27/forbes500.html

[46] Oil price averaged $23.71/barrel during 2002. In run up to the war, price rose to $32.23 by February 2003 (war began on March 20, 2003). One has to interpret a significant part of the run up of costs prior to the war to the war itself—an increase in stockpiling in response to worries about supply interruptions. The price averaged $27.71 in 2003, $35.90 in 2004 and rose to $49.28 by June 2005. After Katrina, prices have stayed relatively high. As we argue, part of the cost of the War is the reduction in the capability of responding quickly to these supply shocks.

any other which can be given as much credit for significant change in demand or supply (apart from Katrina). Some might blame the high demand for oil from China. But China has had two decades of robust growth, and its growth in 2004 was stronger than many market analysts had anticipated earlier; but global growth in 2005 (of around 4%) is clearly not particularly unusual. Markets are supposed to anticipate and respond to changes in demand by increasing supply. Errors in one year are quickly corrected in the next.

What is striking is that present prices are significantly higher than what most analysts believe is the long run price, and futures markets expect that such prices will persist for at least another two years. [47] That is, costs of extraction in Iraq (apart from the security concerns), Saudi Arabia, and elsewhere in the Middle East are much lower than $40, and at $40 there are many alternative sources (shale, tar sands) with a large supply elasticity. The question is, why has there not been this normal supply response. We suggest that the War in Iraq provides the critical explanation.

Had there been no war, and had price increased, the international community could have allowed Iraq to expand production, and this would have brought down the price. But it is more likely that production elsewhere, including and especially elsewhere in the Middle East, would have increased. The instability in the Middle East which has been brought about by the Iraq War has increased the risk of investing in that region; but because costs of extraction are so much lower than elsewhere, it has not provided a commensurate supply response elsewhere. If stability is restored, then prices will fall, and these investments elsewhere would turn a loss.[48]

In addition, there is the fact that oil production in Iraq has plummeted since the war. Even though Iraq is not an oil producer on the scale of Saudi Arabia and Russia, Iraq did produce around 2.6m barrels per day (a similar level to Kuwait, Nigeria and the UK) on the eve of the war. Now production has dropped to 1.1million barrels per day. The insurgency has sabotaged refining capacity and truck drivers have refused to transport oil from the north, due to the threat of insurgents[49].

Though we believe, accordingly, that the best estimate of the cost of Iraq on oil prices is a very large proportion of the $25 a barrel or more increase in the price of oil (and looking forward, we can extrapolate this cost for the next two years), we provide a conservative calculation based on the assumption that only 20% of that amount--$5—is due to Iraq. In our moderate estimate, we assume $10 is due to Iraq.

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[47] Futures market predicts the price to remain mid $60 range during 2006 and 2007 and then fall in 2008

[48] The increase in the price immediately after the war can be partially directly attributed to Iraq, as what it had been supplying to the world markets under the oil-for-food program was greatly diminished (by almost 1 mbd). Oil prices had, of course, increased even before the war, in anticipation of these effects, so that the costs of the war began even before the war itself.

[49] Iraqi Oil production statistics from Pearson Education. Iraq produced 3.5 million barrels per day in 1990, prior to the Gulf War, and is said to have one of the world's greatest oil reserves.

Figure 4: Impact of Oil Prices

Year	Total Crude Oil Import (Thousand Barrels Per Day)	Total Import Per Year (Billion barrels)	Refiner Acquisition Cost of Crude Oil, Imported ($/Barrel)	Total Cost of Oil Import (Billion US$)
2000	11459.3	4.19	27.7	116.2
2001	11871.3	4.34	22.0	95.3
2002	11530.2	4.22	23.7	99.8
2003	12264.4	4.49	27.7	124.0
2004	13145.1	4.81	35.9	172.7
2005*	13415.5	4.91	47.9	234.7
2006**	13952.1	5.11	57.4	292.3
2007**	14510.2	5.31	65.0	344.3

*Average for the first 9 months of 2005. The total import cost is for the 12-month period using the 9-month average
**Assuming 4% growth in 2006 and 2007[50]

Given U.S. imports of roughly 4.75 to 5.0 billion barrels a year, a $5 per barrel increase translates into an extra expenditure of approximately $25 billion ($10 would be $50 billion). Americans are, in a sense, poorer by that amount.

In a neoclassical model that assumes full employment of all resources, this would be the principle effect on national income. If the economy continues to use all of its resources fully, gross output remains unchanged; only what is paid for inputs of oil has increased, so that value added (GDP) is reduced commensurately.[51]

Assuming that a $5 price increase persists for 5 years, this generates a conservative estimate of $125 billion. For our moderate estimate, we use a $10 price increase, but more plausibly, assume it extends (as future markets believe) for at least 6 years. That generates a cost of $300 billion.

This supply side approach assumes that if the price increase is reversed, the damage is over. To put it another way, this simple model implies that if first the price goes up by $10 for one year, and then down by $10 by one year (from its baseline), and then is restored to its previous level, there is no cost. This is wrong. There is a cost to this volatility. The technology, for instance, that is best adapted to one set of prices will not be that appropriate for another. And the costs can be significant. This is consistent with

[50] Data compiled from Energy Information Administration, Department of Energy, U.S. Government, http://www.eia.doe.gov/emeu/international/petroleu.html#IntlProduction
[51] That is, simplifying, if we write $GDP = vL + \pi$, where π is profits, v is real wages, and L is employment, then $\partial GDP/\partial p = M + v\partial L/\partial p$, where p is the price of oil and M is imports. The last term is the effect of the price of oil on the amount of labor individuals wish to supply, which we assume is negligible. Note that when there is a large change in price, the effect is measured by $\Delta p\ M^*$, where M* is some number between the level of the actual imports and what the imports would have been, had the price of oil not increased. Given the low short run elasticity of the demand for oil, the difference may be small.

macro economic studies that show large asymmetries between the impacts of increases and decreases in oil prices.[52] Thus this analysis of a five-year period of high prices, which assumes that the only cost is the increased transfer abroad, provides a significant underestimate of the true economic costs. We have not, however, provided an estimate of this additional cost.

Global Income and Price Effects

The value of national income is affected by the prices of other goods the country imports or exports, and these too can *indirectly* be affected by the increase in the price of oil. If, for instance, a global increase in the price of oil leads to a decrease in the price of other commodities (because of a global slowdown), then America is thereby better off. These effects are complex and likely in any case to be small.

There may be some commodities that the United States exports in which it has market power. In that case, we take firms as setting the price of exports to maximize profits. An oil price shock lowers income of buyers of American products, shifting the demand curve over to the left. The income effect (at least for a small perturbation) is just the change in profits at the old price. If markets are fairly competitive, the effect is small, but especially in areas of the New Economy where mark-ups are large, the losses in income can be significant. We have not, however, directly tried to estimate the magnitude of these effects.

Most macro-economic analyses, however, assume that there are more than just these (neoclassical or) supply side effects. This is especially important when the economy is operating below full employment. We noted that with the increase in oil prices, Americans are poorer; they have that much less to spend on other goods—including goods made in the United States. There will be a reduction in aggregate demand, and the reduction in aggregate demand caused by an increase in oil prices is likely to result in a lower level equilibrium output.

The macro-economic counterfactuals

The net effect depends on the macro-economic state of the world and how policy makers respond. If the economy is already in a world in which there is excess supply (demand constrained), then we need to focus on how monetary and fiscal authorities respond to stimulate demand. If the economy were in a state of excess demand, then the dampening of demand would lower inflationary pressure, but would leave output largely unaffected. Unfortunately, the post Iraq war world is one in which there has been excess supply (demand constrained output) in all of the major economies.

Monetary policy response is determined by two offsetting factors. The oil price increase generates some inflationary pressures, and especially among central banks focusing on inflation, this leads to higher interest rates, exacerbating the slowdown of the economy. On the other hand, *if* central banks focus on aggregate demand and unemployment, it is

[52] See, e.g. Rodriguez, 2005

conceivable that monetary policy could offset the adverse effects of oil price increases. If they fully offset the effect, then the *only* effect would be the transfer effect described earlier.

Fiscal policy typically does not adjust quickly enough to stabilize the economy (and the effect of built-in automatic stabilizers is reflected in the multipliers discussed below). Again, there are two effects. For countries with fixed expenditures, then the increase in the oil price means that there is less to be spent on domestic goods, and that exerts a downward effect on the economy. On the other hand, for countries running active countercyclical fiscal policies, the slowdown in the economy could be offset by such policies.

With Europe's Central Bank focusing on inflation, the higher inflation resulting from higher energy prices most likely contributed to higher interest rates *than they otherwise would have been*, and thus a further weakening of the economy. Fiscal constraints (the growth and stability pact) has also meant that fiscal policy could not respond; on the contrary, increased government expenditures on energy meant there was less to spend on domestically produced goods and services, again contributing to the weakening of aggregate demand. In short, for Europe, the contractionary effects including policy responses are greater than without them.

In Japan, with interest rates close to zero in any case and fiscal policy stretched to its limits, probably little policy response can be attributed to the oil price increase.

The United States is the most problematic. It appears that fiscal policy has not been closely related to the short run cyclical state of the economy. (The worsening of the fiscal position of the United States may have contributed to the resolve by some moderate Republicans not to cut taxes or expand expenditures as much as they otherwise would have done.[53] In this sense, the oil price increase has probably had a negative effect on cyclical fiscal policy, i.e. the multipliers are larger than they would be if fiscal authorities took a "neutral" stance.) So too for monetary policy: the increased inflationary pressure from the high oil prices would, if anything, led to a tightening of monetary policy in response to the high oil price, leading to a larger multiplier.

We have not carried out a full global general equilibrium analysis, but rely instead on results of standard macro-economic models. These suggest an "oil multiplier" of around 1.5 (achieved over two years).[54] [55]Thus, assuming that the economy remains below its

[53] The tax cut of 2003 occurred roughly contemporaneously with the War in Iraq. It does not appear that the War played any significant effect either in support or opposition to its passage; though it is likely that had the magnitude of the expenditures been identified, it might have weighed against the tax cut.

[54] One-year multipliers are typically smaller, but our concern is with the total impact, not the timing of the impact (the focus of most short run GDP forecasting models.) See Blinder and Wescott, 2004, based on model simulations from Global Insight, Inc. simulation results supplied August 9, 2004 (results with a monetary policy reaction function engaged and disengaged were essentially the same); and Macroeconomic Advisers, LLC simulation results supplied August 2, 2004.

[55] Increased expenditures on oil can adversely affect consumption (as households have less to spend on other goods), investment (as firms, other than producers of oil, see profits decrease from what they

potential over the period of analysis, and focusing on the total impact (not the timing), our conservative estimate is increased to $187 billion, and our more reasonable estimate to $450 billion. These models too have no feedback from exports.[56]

Global effects

There are some studies, however, which obtain much larger results. The IMF's models yield results with longer lags, but with full effects that are almost 4 times as large.[57]

One of the standard studies, that of Hamilton, estimates that *in the past* a 10% increase in the price of oil has been associated with a 1.4% decrease in GDP. A $5 increase in the price of oil thus implies a lowering of GDP by 2.8%, or approximately ($300 billion) *per year that oil prices remain at that level.* A five-year price rise would generate costs of $1.5 trillion. Hamilton's analysis is consistent with an oil price multiplier that is much larger than the earlier studies.

There are two possible explanations of the large discrepancies in results. The first has to do with the analysis of global general equilibrium results, and can be seen most sharply in the context of a "counterfactual" which has governments maintaining a fixed level (or percentage of GDP) deficit. In the standard model, what limits the multiplier are leakages, income which is not spent "domestically," but is taken out of the system, and spent abroad, or by government. In both cases, the feedback of income into further expenditures stops. But if we take a global equilibrium approach, then the money spent abroad is part of the system. If we include government endogenous expenditures as part of the system, then as taxes are taken out of disposable income, government spends the increased revenues, just as if the individual himself had spent them. (There can be even "negative" leakages; if the government maintains a fixed deficit to GDP ratio, a stimulus—such as a fall in oil prices—leads to a higher GDP, and so an increase in government expenditures. Thus, for a global closed economy, the multiplier increases from $1/s(1-t) + t$, in which taxation reduces the multiplier, to $1/(s(1-t) – d$, where taxation increases the multiplier (where s is the savings rate, t the tax rate on income, and d the allowable deficit to GDP ratio) Thus, if $d = 0$, $s = .2$ $t = .25$, the multiplier increases from 1/.4 to 1/.15, i.e. it increases by a factor of almost 3. [58]

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otherwise would have been), and government expenditures on domestically produced goods (as with budget constraints, there is less to spend on these). Impacts on households are, for instance, marked. Median household expenditures on gasoline and home heating have increased about 5% of household income. Given the low (zero) level of savings, this can be expected to translate into an equivalent reduction in expenditures on other goods.

[56] While these models predict the effects are not fully felt for two periods, they also predict that the effects are felt even after the prices come down. Our calculations ignore the timing of the impacts. Oil price shocks have effects that are different (and presumably greater) than many other shocks, since they adversely affect all of the advanced industrial countries simultaneously.

[57] See International Monetary Fund, "The Impact of Higher Oil Prices on the Global Economy," Dec. 8, 2000, prepared by Research Department staff under the direction of Michael Mussa; cited in Blinder and Wescott.

[58] $Y = (1-t)(1-s)Y + tY + dY + I + X – mY$, since $G – tY = dY$, so $Y = I + X/ (s(1-t) + m - d$

(Of course, we need to model the oil exporting countries as separate from the oil importing countries, and spending a substantially smaller fraction of the income on American goods than Americans would. If Saudi expenditure and savings patterns were identical to those of Americans, then the change in the price of oil would simply be a change in the distribution of income, but have no affect on aggregates, besides the supply side effects originating from the higher price of oil. We have slightly overestimated the negative effects on American GDP by assuming that there is no feedback from increased Saudi income back to the United States.)

If we further include future consumption generated by extra savings, then even savings does not constitute a leakage, so long as over the prevailing time horizon, the economy remains in a demand constrained situation. In short, leakages are much, much smaller, when multiyear aggregate incomes are calculated. These dynamic feedbacks are even present in first year income. Thus, increased savings this year leads to increased wealth next year, and that increased wealth leads to increased output (if output is sensitive to demand). But rational consumers will realize this[59]; their lifetime income has gone up, and so too will there current consumption. In calculating the cost of the War, we are concerned not just with the impact today, but the impact in all future years. Calculating the total multipliers requires assessing the fraction of future periods in which it is reasonable to assume that demand constraints will be binding.[60] [61]

In the periods at hand, Europe, the United States, and Japan were all demand constrained throughout the relevant time, and government expenditures were very much constrained by the level of revenues (especially in Europe). In the very short run, it was clear that such constraints were not perfectly binding in the U.S., but government expenditures were tempered from what they otherwise would have been by the looming deficit. This is clearly true for the states and localities (which make up a third of total expenditure) but even true at the Federal level. Accordingly, we believe a multiple period multiplier that is substantially in excess of that generated by the partial equilibrium American models (generating, as we have noted multipliers around 1.5) is warranted. Numbers of the order of magnitude generated by the IMF model are totally reasonable, but to stay on the conservative side, we use a much smaller multiplier of 2 as our (conservative) "moderate" estimate. (We even believe the very large multipliers implicit in Hamilton's study are not implausible.)

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[59] See Neary and Stiglitz, 1983

[60] When supply constraints are binding, individuals may displace consumption to other periods, so the net effect may be not much different from that which would prevail if demand constraints were always prevailing.

[61] Consider a simple two period model in which there is not the second feedback, but in which increased savings this period does lead to increased consumption next period. Then the two-period ($Y_1 + Y_2$) multiplier associated with increased investment the first period is, instead of 1/m (where m = s(1-t)), $(1 + \alpha(1+r))/m$, where α is the marginal propensity to consume out of wealth. In a simple life cycle model with no bequests, where the only reason to save is for consumption in "the" future period(s), $\alpha = 1$, so the multiplier has more than doubled.

However, we do believe that great care must be used in employing studies based on the impact of earlier oil price shocks. Changes in the structure of the economy, the nature of the policy responses, and the state of the economy (the extent to which it was at or near full employment) can have large effects on the full response of an oil price increase. Earlier increases occurred at a time when the global economy was already facing inflationary pressures (the U.S. from trying to ignore the fiscal costs of the Vietnam War.) Under doctrines of monetarism, there were large responses—excessive-- to the inflation resulting from the oil price shock. Globalization has put greater downward pressure on prices, so today, inflation is much more benign. Monetarism has been discredited, and even if de jure or de facto inflation targeting has meant that some countries put excessive focus on inflation, including the inflation generated by high oil prices—and thus monetary policy exacerbates the contractionary pressures of oil--it does so less than it did in the earlier oil price shocks.

Thus, while we believe that these global general equilibrium effects are significant, and should raise the multiplier considerably about 1.5 or 2, given the uncertainties associated with these global general equilibrium effects, we do not include them in our conservative estimate. For our "moderate" estimate, we use a 6-year impact and a multiplier of 2. We believe, however, that a substantially larger multiplier might be justified.[62]

Budgetary costs

The most difficult to estimate macro-economic costs are those associated with the increased expenditure. If we were not spending the money on the war, would we be spending it on something else? Would we have cut back spending, and had a smaller deficit? Would we have had the same deficit, but just more tax cuts?

But this is only part of the counterfactual analysis. How would the Federal Reserve have responded to the different macro-economic situation? Would it have dampened or exacerbated these effects?

These are standard questions in *incidence analysis*, in which public sector economists attempt to ascertain the consequence of one policy or another. One standard methodology focuses on *expenditure switching*: it is assumed that the government simply substitutes Iraq expenditures for other expenditures (some defense, some non-defense). This is the methodology upon which we focus here.

Another methodology focused on *marginally balanced budgets*, where taxes are assumed to increase in tandem (from what they otherwise would have been; there may still be tax cuts, but they are somewhat smaller than they otherwise would have been.) The Bush Administration seems undeterred in its commitment to make its tax cuts permanent, unaffected by the War, but Congress is showing some sensitivity to the size of the deficit.

[62] For instance, the IMF study cited earlier with much larger multi-year multipliers, near 4, would be associated with a total impact of $1.2 billion over 6 years.

A third methodology assumes that the increased expenditure leads to higher deficits. We comment on the implications of this at the end of this section.

The expenditure switching methodology focuses on two critical differences between expenditures on the war in Iraq and other public expenditures, such as investments in research, infrastructure, or education. The first is that the *domestic content and leakages* differ. Consider, for instance, a $1000 spent to hire Nepalese workers to perform services in Iraq. There is no "first round" effect on domestic GDP, and little impact on subsequent rounds (only to the extent that the Nepalese contractors buy goods made in the United States). By contrast, a $1000 spent on university research in the United States has a full $1000 first round impact, and high impacts in subsequent rounds. While "multipliers" associated with different kinds of expenditures are known to differ, there may be few expenditures with a lower multiplier than those in Iraq.

There are no data on the basis of which to provide accurate estimates of the differences in multipliers and leakages. Assume, however, that in the case of normal investment expenditures (like university based research) the first round and subsequent rounds of expenditure have a leakage of .67, generating an overall multiplier of 1.5. (The numbers are chosen to be deliberately very conservative.) By contrast, if the first round expenditure for Iraq is three-fourths that amount (again a conservative number, since it may well be much less) and leakages are the same thereafter, then the overall multiplier is 1.1. Switching $500 bn (over the years of the war) to domestic investment would have resulted in increased GDP by $200 bn.

(For some of the long run costs referred to in the first section of this paper, there are not likely to be large differences in multipliers. The increased disability and health care costs of Iraq War veterans are likely to have multipliers similar to that for investment expenditures. That is why we have conservatively focused on the impact of switching only $500bn.)

The second major difference is impacts on long run output. Investments in the public sector yield high returns, and so output would have been higher in the future. Expenditures on the Iraq war have no benefits of this kind. As a result, output in the future will be smaller. Assume, for instance, that of the direct costs of the war estimated in the previous section $500 billion[63] were put into investments yielding conservatively a 6% real return on the investment, and using a (conservative) 4% discount rate, the present discounted value of the lost income is $750 billion.[64]

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[63] Obviously, it is conceivable that far more than $500 billion out of the nearly $1 trillion in Iraq expenditures switch to investment.

[64] 6% is the certainty equivalent return. Investments in government research have been shown to have much higher rates of return. The natural discount rate to use (for discounting certainty equivalents) is the real T-bill rate, which in recent years has been close to zero or negative. Historically, it has been around 1.5%**.** The present discounted value of lost income of an investment I yielding a return of g at a discount rate of r is Ig/r, i.e. a "multiplier" of g/r. We have been conservative in choosing a low g and a high r, generating a multiplier of 1.5. The standard cut-off for government projects is 7%, and research yields are even higher. Using a value of g= .07 and r = .015 yields a multiplier of 4.67, which is substantially higher. In the case at hand, with forgone investment of $500 billion, the PDV of future lost income is $2.3 trillion.

If the government had, instead, simply let the deficit grow, one would have to calculate the additional growth costs of that deficit. The additional deficit could, for instance, crowd out private investment, and calculations similar to those just performed would provide an estimate of the cost, somewhat larger than the costs estimated above.[65]

Other macroeconomic costs (stock market, housing)

Higher oil prices and higher interest rates to which the oil prices give rise also have effects on asset values. To the extent that these effects are greater than just the current year effects on profits, they suggest a persistence of the consequences that our previous analysis did not fully take into account, and the existence of large non-linearities. This is evident in the industries that are particularly sensitive to oil prices, like the airline industry, where many firms face the prospect of bankruptcy.

The surge in corporate profits in the last couple of years has not been accompanied by an increase in stock prices of the magnitude that would have been expected. Robert Wescott[66] estimates that the value of the stock market is some $4 trillion less than would have been predicted on the basis of past performance. Assuming that the major factor contributing to that is the increase in oil prices, and that 20% of that increase in oil prices is due to Iraq leads to a cost of some $800 billion. This is several times the increase in the direct energy costs over the next few years. This may reflect the fact that we have grossly underestimated the effects by limiting our analysis to six years; or to the fact that there are large non-linearities.[67] But this decrease in corporate wealth does imply that consumption was lower than it otherwise would have been, with the attendant multiplier effects.[68]

Note that it would be double counting to both count the value of the investment (the opportunity cost) and the value of the benefits that would have been generated by the investment. In a world with perfect markets and no costs to raising taxes, presumably there would be no difference between the discount rate and the marginal return to investment, in which case, the value of the investment would be equal to the present discounted value of the benefits generated by it. In the public sector, however, it is clear that there are often large discrepancies. A relatively modest investment in levees in New Orleans would have saved hundreds of billions of dollars.

[65] If the private investment yields a return of 8%, and we discount at the rate of 4%, then the $500 billion of displaced investment has a PDV costs of $1 trillion, or $500 billion in excess of the direct costs. If the United States borrows the full amount abroad, and there are no effects on the interest rates at which the U.S. can borrow, then there is no displacement effect, and the only costs are the direct costs already estimated. At the same time, the deficit-financed expenditures will give rise to a positive aggregate demand effect. $500 billion of expenditures, in the assumptions given earlier, would have an additional multiplier effect of $50 billion. Note that in the case of full deficit financing, in the moderate scenario, the total budgetary impact is $1.185 trillion; if just 25% of this displaces private investment, the estimated macro-economic costs would be greater than under the expenditure switching analysis.

[66] Personal correspondence

[67] For example, bankruptcy exerts a strong non-linearity. Some key American industries (automobile, airlines) have been pushed near bankruptcy as a result of oil prices.

[68] Similar issues arise in the case of housing. Though there has been a boom in housing, presumably if the costs of operations were lower, the demand for housing services would have been higher, and prices would

Uncertainty about future oil prices also has a dampening effect on investment. Firms do not know what technology is appropriate for the economic environment that will prevail, and respond to that uncertainty by postponing investment. This has both an effect on aggregate demand and aggregate supply in the short run. Again, we have not estimated the magnitude of these effects

Summary

The macro-economic costs are potentially very large; possibly even a multiple of the direct costs. Clearly, though ensuring supply of oil was one of the sometimes stated or inferred goals, the risks of Middle East instability that might result was often noted as one of the main risks of the venture. What has happened is certainly within the range of predicted consequences to the price of oil[69]; and experiences in the 1970s should have made us aware of how large the macro economic consequences could be. In short, while large, when adjusted for the larger size of the economy today, they are, we believe, totally plausible.[70]

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have been still higher. We have not estimated the value of the implied reduction in the value of housing *from what it otherwise would have been.*

[69] See, in particular, Nordhaus [2002].

[70] For most of the analysis, we have assumed that there has been excess capacity in the economy, i.e. the economy during the period of concern has been operating below its potential. This is evidenced not only by figures on capacity utilization and by the fact that the employment ratio (fraction of working age population working) is significantly below the level of the 90s. Even the unemployment rate is significantly higher than the 3.8% reached in the 90s (and there appeared to be no significant inflationary pressures even at that unemployment rate.) The factors that have led to a decrease in the NAIRU, including the competitive supply of goods from abroad, have continued to operate, so that there is every reason to believe that the NAIRU remains far lower than current unemployment rates. (See Stiglitz, 2000). Stagnation and declines in real wages, higher than normal levels of "disability," and large numbers of individuals claiming to be working part time involuntarily are consistent with this view of significant weaknesses in the labor market, i.e. significant potential for increasing incomes without generating increases in inflation. Our analysis assumes that potential output will exceed actual output for (in the conservative scenario) the next two years. This is consistent with most forecasts which see a slowing of growth to between 3.25% and 3.5% in the period 2006-2008, particularly as consumption growth is dampened from its unsustainable levels fueled by rising real estate prices and low interest rates. Even if productivity growth slows from the 3% that marked the nineties, these rates are not sufficient to overcome the "jobs deficit" created in 2001-2003. In any case, even our "moderate" estimate projects that had oil prices not been as high, output would have been higher by amounts that are a fraction of the estimated gap between potential and actual output.

Figure 5: Macro-economic effects ($ billion)

Impact	Conservative	Moderate
Oil price increase		
Transfer (supply side) effect	125[71]	300
Aggregate demand[72]	62	150
Global General Equilibrium		150
Budgetary impacts		
Expenditure switching		200
Growth impacts (PDV)		250
Total	**187**	**1050**

We therefore estimate that the total economic costs of the war, including direct costs and macroeconomic costs, lie between $1 and $2 trillion, as shown in Figure 6.

Figure 6: Total Economic Costs of the Iraq War ($BN)

Scenario	Conservative	Moderate
Direct costs	839	1189
Macroeconomic	187	1050
	1026	**2239**

<u>List of Omitted Costs</u>

Defense and destruction costs

- Costs of planning war[73]
- All costs borne by other countries, including Iraq
    - Military costs
    - Destruction of property
    - Loss of life
- All costs of increased insecurity[74]
    - Increased costs of cross border flows
    - Reduced investment
- Consequences of Loss of credibility
- Value of reduced capability of responding to national security threats elsewhere in the world

[71] Conservative: $5 barrel for 5 years; moderate: $10 barrel for 6 years
[72] Conservative: (multi-year) multiplier of 1.5; moderate: (multi-year) multiplier of 2
[73] Estimated at $2.5 billion
[74] Other than the indirect impact of increased insecurity in impeding oil supply response

Value of reduced capability of responding to domestic situations in which the National Guard or the Reserves might have been called upon (as in New Orleans)

Macroeconomic costs

- All costs of increased insecurity[75]
    - Increased costs of cross border flows
    - Reduced investment
- Indirect aggregate demand effects (as a result of reduced incomes in trading partners)[76]
- Costs of oil price volatility
    - Including on investment
    - Costs of bankruptcy[77]
- Reduced demands as a result of anti-American sentiment
- Consequences of losses of asset values (arising from increase in oil prices or otherwise)
    - Equity markets
    - Housing
- Consequences of tighter monetary policy as a result of increased inflation[78]
- Consequences of worsening fiscal position
    - As a result of increased government expenditures on oil[79]
    - As a result of increased expenditures on the war[80]

Other costs

- Costs of risks borne by individuals[81] (including compensation that would be required to make them willingly bear risks)
- Economic Cost of impairment to earnings potential and quality of life for veterans who claim partial disability (est. 160,000) but were not wounded during the conflict
- Health care costs not borne by the government.

[75] Other than the indirect impact of increased insecurity in impeding oil supply response
[76] Other than as reflected in higher multiplier in "conservative" case
[77] Other than as reflected in the multiplier analysis. The multiplier analysis focuses on demand side effects; bankruptcy costs are more correctly viewed as supply side effects (not included in the standard neoclassical model.)
[78] Other than as reflected in multiplier analysis
[79] Other than as reflected in multiplier analysis
[80] In the "Conservative" scenario. In the "moderate" scenario, we perform an expenditure switching incidence analysis, which provides a number that may partially reflect these costs.
[81] Other than as reflected in increased recruitment costs

IV. Concluding Remarks

The most important things in life—like life itself—are priceless. But that doesn't mean that topics like defense, involving the preservation of our way of life and the protection of life itself, should not be subject to cool, hard analysis of the kind for which economics has long earned a reputation.

Take the decision of when to go to war. Here, economic analysis employs the concept of *option value*. Even if one thinks war is inevitable or highly likely, there is a question of timing because there are costs and benefits to postponement. The enemy may be better prepared, but so may we. Normally, one goes into such a war under the presumption that one is going to win, and therefore a critical issue is managing the post-war occupation. Without adequate preparation, weapons may easily fall in the hands of insurgents—as in fact they did—enormously increasing the occupation costs. With adequate armor, fewer American troops are likely to be injured or killed. As even the Secretary of Defense has admitted, in the rush to war, there was not time to provide adequate protection for the troops, protection that clearly the richest country in the world could have afforded and that its citizens would have expected.

Economists also think about the *value of information*. In this situation, postponing war might have allowed us to gather better information with which to judge whether Iraq posed a real threat. This is not, as Americans say, Monday morning quarterbacking: there were already strong suspicions regarding our sources of intelligence on Iraq's alleged weapons of mass destruction. More time would have enabled the verification of this evidence. The value of this information would have been enormous. The possibility of war later on would have still been an option. Tens of thousands of lives would have been spared, and hundreds of billions of dollars saved.

All of this leads to economists' constant urging that politicians undertake a *cost benefit analysis* before undertaking any project—especially one with as significant consequences as war. This can and should be done even if certain elements of the costs and benefits are hard to value.

If Congress had been informed of the range of costs, perhaps if they had been told that the costs might exceed a half trillion, or a trillion dollars, perhaps, in the end, they would have made the same decision. But perhaps they would have been a bit more cautious in making that decision, looked a little harder at the evidence, thought differently about how best to conduct the war.

We have not attempted in this paper an overall assessment of whether the war was conducted in the most cost efficient manner, i.e. whether, given what has been achieved (however that is defined), those objectives could have been achieved at lower costs. We have taken the expenditures, as they have occurred, not as they might have been. The Administration has explicitly tried to fight the war on the cheap, that is limit direct commitments of American troops, even shortchanging body and personnel armor. In violating the Powell doctrine, this may be one of those instances of "penny wise-pound

foolish". Certainly, the long run costs to the individuals and to society of the individuals who died or were badly maimed (not to mention the additional costs of recruitment) far exceed the savings from not purchasing better body protection. Many observers believe that the manner in which the War was conducted led to the extended insurgency, which too has greatly increased cost.

Though we have suggested that many of the costs were within the range of what could have been anticipated, we have not sought in this paper to ascertain whether on the basis of the information available, the Administration could have made more reliable estimates. We do not address the question of whether the disparity between the predicted numbers and the actual numbers is a result of a deliberate attempt of the Administration to mislead the American people on the cost of the war, or of incompetence, going to War with information of low reliability and with best estimates that were far from the mark. In response to accusations about the existence of weapons of mass destruction and the connection with Al Qaeda, the Administration has been adamant that it did not intentional deceive the American people; it prefers charges of incompetence to those of malevolence. We have not attempted to ascertain the relative role of each in the failure to provide the American people with an accurate cost of the venture. At the very least, though, honesty would have required laying out the various scenarios, even if it attached low probabilities to those that in fact turned out to be the case.[82]

Americans could, and should have asked, are there ways of spending that money that would have enhanced our long run well being—and perhaps even our security—more. Take the conservative estimate of a trillion dollars. Half that sum would have put social security on a firm grounding for the next seventy-five years. If we spent even a small fraction of the remainder on education and research, it is likely our economy would be in a far stronger position. If some of the money spent on research were devoted to alternative energy technologies, or to providing further incentives for conservation, we would be less dependent on oil, and thereby more secure; and the lower prices of oil that would result would have obvious implications for the financing of some of the current threats to America's security. While we may not know what causes terrorism, clearly the desperation and despair that comes from the poverty that is rife in so much of the Third world has the potential of providing a fertile feeding ground. For sums less than the direct expenditures on the war, we could have fulfilled our commitment to provide .7% of our GDP to help developing countries—money that could have made an enormous difference, for the better, to the well being of billions today living in poverty. We could have had a Marshall Plan for the Middle East, or the developing countries, that might actually have succeeded in winning the hearts and minds of those in the Middle East.

[82] An excellent example of the kind of analysis that could and should have been provided is that of Nordhaus (2002), who lays out various scenarios. The CBO and the House Budget Committee provided some estimates. Nordhaus points out, however, that they did not include scenarios involving extended engagement, occupation, and reconstruction.

What is clear is that the Administration's original estimates were strikingly low.[83] Would the American people have had a different attitude towards going to war had the known the total cost? Would they have thought that there might be better ways of advancing the cause of democracy or even protecting themselves against an attack, that would cost but a fraction of these amounts? In the end, we may have decided that a trillion dollars spent on the War in Iraq was better than all of these alternatives. But at least it would have been a more informed decision than the one that was made. And recognizing the risks, we might have conducted the War in a manner different from the way we did.

Hamid Rashid, Robert Wescott, Joshua Goodman and Kwang Ryu made important contributions to the results reported here, which are gratefully acknowledged.

[83] It is of interest that our "moderate" estimate is not dissimilar to Nordhaus' "high (protracted and unfavorable) case, $1.9 trillion. His estimate of direct military spending, occupation, and reconstruction was $745. However, he did not include a number of the long run costs (such as health costs and disability benefits and increased recruiting costs), nor the adjustments between economic and budgetary costs noted in section III. His estimate of the direct impact on oil markets (the transfer effect) was $778 billion, which we believe to be more accurate than estimate of $300 million (in the moderate case), which was deliberately chosen to be conservative. He uses a "macro-economic oil" multiplier that is similar to ours, but because he (realistically) assumes a large oil price effect, he obtains a larger macro-economic effect. He does not include any "growth investment/displacement" or "expenditure switching" effects in his analysis. Nordhaus' historical analysis puts some perspective on the magnitude of the expenditures: the projected direct expenditures in Table 1 are comparable to those of the Vietnam War ($494 billion), somewhat greater than the Korean war ($336 billion) and more than twice as large as World War I ($190 billion).

References

Abeysinghe, Tilak, "Estimation of direct and indirect impact of oil price on growth", Economics Letters 73 (2001) 147–153

Belasco, Amy. "The Cost of Iraq, Afghanistan and Enhanced Base Security Since 9/11", Congressional Research Service, Report for Congress, October 7, 2005

Bennis, Phyllis and Leaver, Erik, "The Iraq Quagmire: The Mounting Costs of the War and the Case for Bringing Home the Troops", Institute for Policy Studies and Foreign Policy in Focus, August 2005

Blinder, Alan and Robert Wescott, "Higher Oil Prices Will Hurt the U.S. Economy" August 10, 2004, unpublished

Congressional Budget Office, "Estimated Costs of a Potential Conflict with Iraq," September 2002, available at http://www.cbo.gov/ and reports and estimates published in 2003, 2004, and 2005

Hamilton, James D., "What is an oil shock?" NBER Working Paper Series 7755, June 2000

Hartung, William, "The Cost of the Iraq War", Taxpayers for Common Sense, 2004

House Budget Committee, Democratic Staff, Assessing the Cost of Military Action Against Iraq: Using Desert Shield/Desert Storm as a Basis for Estimates, September 23, 2002

Kniesner, Thomas, Viscusi, Kip, Woock, Christopher, and Ziliak, James, "How the Unobservable Productivity Biases the Value of a Statistical Life", NBER W.P.11659, September 2005

Neary, Peter, and J. E. Stiglitz, "Toward a Reconstruction of Keynesian Economics: Expectations and Constrained Equilibria," Quarterly *Journal of Economics*, 98, Supplement, 1983, pp. 199-228.

Nordhaus, William D. "The Economic Consequences of a War with Iraq", Cowles Foundation Discussion Paper Series, Yale University, December 2002

Rodriguez, Rebeca and Marcelo Sanchez, "Oil price shocks and real GDP growth: empirical evidence for some OECD countries", Applied Economics, 2005, 37, 201–228

Stiglitz, J. E. "Reflections on the Natural Rate Hypothesis," *Journal of Economic Perspectives,* 11(1), Winter 1997, pp. 3-10.

U.S. Government Accountability Office, “Global War on Terrorism: DOD Should Consider All Funds Requested for the War When Determining Needs and Covering Expenses”; GAO-05-767

Wallsten, Scott and Kosec, Katrina, “The Economic Costs of the War in Iraq”, AEI/Brookings, working paper 05-19, September 2005