

The Economic Consequences of a War with Iraq

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Revised

Introduction

The drums of war are beating as the United States marches, two steps forward and one step backward, toward war with Iraq. The Congressional Resolution authorizing the use of force describes U.S. policy as “to defend the national security of the United States against the continuing threat posed by Iraq and enforce all relevant United Nations Security Council resolutions regarding Iraq.”¹ The major benefits of a successful war are reckoned to be disarming Iraq of its weapons of mass destruction and removing a leadership that is unrelentingly hostile to the United States.

But what of the costs? Even asking such a question may be thought a sign of insufficient resolve at best and appeasement at worst. However, although cost estimates are often ignored when war is debated, most people recognize that the costs in dollars, and especially in blood, are acceptable only as long as they are low. If the casualty estimates mount to the thousands, if the war pushes the economy into deep recession or requires a large tax increase, and if the United States becomes a pariah in the world because of brutal attacks on civilian populations, then decision makers in the White House and the Congress might not post so expeditiously to battle.

Given the salience of cost, it is surprising that there have been no systematic public analyses of the economics of a military conflict in Iraq. This essay attempts to fill the gap. It is recognized that the estimates here are virtually certain to be wrong, for the fog of war extends far beyond the battlefield to include forecasts of political reactions and economic consequences. However, as Keynes said, it is better to be vaguely right than precisely wrong.

¹ H.J.Res.114 (October 2002).

While historians have documented the many miscalculations involved in war, little has been written on faulty economic forecasts, but a couple of examples will suffice. Lincoln's Secretary of the Treasury estimated that the direct cost of the war to the North would be \$240 million, which amounted to about 7 percent of annual GDP at that time. The actual cost to the North turned out to be \$3,200 million, or about 13 times the original estimated cost.² The cost to the South was much greater, for most of its capital stock was destroyed and output per worker was depressed for nearly a century. The most prophetic economic analysis of war and peace of all time, Keynes's *Economic Consequences of the Peace*, did not foresee the great German inflation that was virtually at hand, nor did it contain any hints of the Great Depressions in Britain of the 1920s or of the world of the 1930s.

In more recent times, the costs of the Vietnam War were grossly underestimated when the buildup occurred. The original budget estimate in early 1966 underestimated the cost for the coming fiscal year by \$10 billion, or about 1½ percent of GDP. By assuming that the war would end by June 1967, the Pentagon underestimated the cost of the war by around 90 percent. The war in fact dragged on until 1973, and the total direct cost was in the range of \$110 to \$150 billion.³ The indirect costs were more difficult to gauge but comprise inflation and economic instability, civil unrest, and, some have argued, a growing disenchantment with authority and government in the United States.

The Economic Background in Iraq

It is widely recognized that the United States is an economic and military superpower. The military status of Iraq has been carefully reviewed,⁴ and I will concentrate on the current economic situation, beginning with Iraq's major economic asset, oil.

Oil experts believe that Iraq has immense oil resources. The most recent review by the U.S. Energy Information Agency stated in early 2002:

² See Table 2 below.

³ The economic story is beautifully laid out in Arthur Okun, *The Political Economy of Prosperity*, Brookings, Washington, D.C., 1970, Chapter 3.

⁴ See particularly Anthony H. Cordesman, *Iraq's Military Capabilities in 2002: A Dynamic Net Assessment*, Center for Strategic and International Studies, Washington, September 2002.

Iraq contains 112 billion barrels of proven oil reserves, the second largest in the world (behind Saudi Arabia) along with roughly 220 billion barrels of probable and possible resources. Iraq's true resource potential may be far greater than this, however, as the country is relatively unexplored due to years of war and sanctions. Deep oil-bearing formations located mainly in the vast Western Desert region, for instance, could yield large additional oil resources, but have not been explored.⁵

Iraq has about 10 percent of the world's oil proven reserves and resources. Iraq's oil resources could satisfy current U.S. oil imports for almost a century.

Iraq's oil production in 2000 and 2001 averaged around 2.5 million barrels per day (mbpd). About 1 mbpd of this came from the northern Kirkuk field located largely in Kurdish Iraq, and the balance was produced largely in the southern, Shiite-majority Rumaila region.

Iraq has frequently attempted to use oil as a weapon against the West, but recently it has held out the "oil carrot" to potential allies. As of early 2002, contracts involving many billions of dollars for increasing capacity have reportedly been negotiated with China, France, and Russia.⁶ It is probably not coincidental that these three countries have permanent seats on the U.N. Security Council. All three countries are probably suspicious of American economic designs on postwar Iraq, particularly given the powerful influence in Republican circles of construction and oil exploration companies like Bechtel and Halliburton.

What is the current state of Iraq's economy? The regime of Saddam Hussein has been as disastrous for the Iraqi economy as for other aspects of Iraqi society. The state of Iraq's statistical system, like much of its economy, is in a sad state. None of the major international organizations has provided reliable data on Iraq's economy for the last decade, but a rough estimate of economic conditions can be obtained on the basis of informal estimates.

In recent decades, Iraq has been heavily dependent upon oil production. During those periods when oil production was not constrained by war or sanctions, Iraq's oil production peaked at around 3 million barrels per day, or about 1 billion barrels per year. This constituted about

⁵ <http://www.eia.doe.gov/emeu/cabs/iraq.html>

⁶ <http://www.eia.doe.gov/emeu/cabs/iraq.html>

half of Iraq's GDP during the late 1970s. GDP per capita peaked in 1979 at around \$9000 in 2002 prices.

The year 1979 also marked Saddam Hussein's rise to power. Since that time, Iraq has experienced one of the most catastrophic economic declines in modern history. It appears that per capita income was in the range of \$1000 - \$1200 in 2001. These figures suggest that in the 23 years since Hussein came to power, living standards in Iraq economy have declined by around 90 percent.

The first phase of the economic decline came during the Iran-Iraq war (1980-88), and second during the first Persian Gulf War and under the subsequent UN sanctions. The Iran-Iraq war dealt a devastating blow to the Iraqi economy. The war destroyed a large part of Iraq's capital stock, reduced oil production and exports, and depleted much of its foreign assets and foreign exchange reserves. Kamran Mofid estimated that the total cost to Iraq was \$450 billion (in current dollars), which amounts to about eight years of Iraq's GDP at that time.⁷

The First Persian Gulf War (PGW-I) and the ensuing sanctions dealt two more blows to Iraq's economy. The war destroyed about \$230 billion of infrastructure.⁸ The UN sanctions in place since 1991 have been the most severe ever imposed. Under sanctions, oil production during the 1991-2002 period averaged 1.4 mbpd. Assuming that Iraq could have produced 3.5 mbpd during this period, the revenue shortfall since PGW-I was about \$200 billion. Although reliable statistics on Iraqi GDP are unavailable, it probably averaged \$25 billion in the 1990s. This suggests that the sanctions reduced Iraq's oil revenues by approximately eight years' GDP, and the total cost to the Iraqi economy was probably even larger than that. Overall, the wars and sanctions during the Hussein regime probably cost Iraq in the order of two decades of GDP in lost output, capital, and financial resources. There are no parallels in modern history to economic devastation on that scale.

Economic statistics are too abstract to capture the grim reality on the ground. A recent report captures the impact of economic decline on day-to-day life.

⁷ Kamran Mofid, *The Economic Consequences of the Gulf War*, Routledge, London, 1990.

⁸ Abbas Alnasrawi, *The Economy of Iraq*, Greenwood Press, Westport, CT., 1994.

While the accuracy of statistics demonstrating the impact of United Nations sanctions on Iraq cannot be fully determined, there is no question that their impact has been severe. Infant mortality has doubled from the pre-sanctions era, with the Food and Agriculture Organization (FAO) reporting a fivefold increase in mortality among children under age five. Kwashiorkor and marasmus – symptoms of severe protein deficiency and usually seen only in famines – are increasingly common.... According to the World Health Organization (WHO), “The vast majority of the country’s population has been on a semi-starvation diet for years.” An FAO Mission to Iraq in the summer of 1997 found that 25 percent of young men and 16 percent of young women show signs of chronic energy deficiency, reflecting the reduced availability of food over the past seven years.... Before sanctions, 93 percent of urban and 70 percent of rural residents had access to potable water. Currently more than half of rural residents do not have access to clean water.⁹

Estimating the Costs of War

The Costs of Wars Past

Before analyzing the current conflict, it will be useful to review the costs of past major wars. Table 1 shows the size of forces and total fatalities in past wars.

⁹ Sheila Carapico, “The Impact of Sanctions in Iraq,” *Middle East Report*, Spring 1998, vol. 28, no. 206, no. 1 (slightly edited for brevity), available at <http://www.cam.ac.uk/societies/casi/info/themes.html#hum> .

Conflict	Population	Military Personnel	Ratio	Fatalities	Ratio
	[millions]	[thousands]	[% of Population]		[% of Population]
Revolutionary War	3.5	200	5.7%	4,435	0.127%
War of 1812	7.6	286	3.8%	2,260	0.030%
Mexican War	21.1	79	0.4%	1,733	0.008%
Civil War					
Union	26.2	2,803	10.7%	110,070	0.420%
Confederate	8.1	1,064	13.1%	74,524	0.920%
Combined	34.3	3,868	11.1%	184,594	0.538%
Spanish-American War	74.6	307	0.4%	385	0.001%
World War I	102.8	4,744	4.6%	53,513	0.052%
World War II	133.5	16,354	12.2%	292,131	0.219%
Korean War	151.7	5,764	3.8%	33,651	0.022%
Vietnam War	204.9	8,744	4.3%	47,369	0.023%
First Persian Gulf War	260.0	2,750	1.1%	148	0.000%

Table 1. American Casualties from Major American Wars

Source: Al Nofi, *Statistical Summary: America's Major Wars* at <http://www.cwc.lsu.edu/cwc/other/stats/warcost.htm> based on *Principal Wars in which the US Participated: US Military Personnel Serving and Casualties*, Washington Headquarters Services, Directorate for Information Operations and Reports. US Department of Defense Records, Table 2-23. Casualties are limited to U.S. military forces.

Table 2 provides estimates of the direct military costs of major wars. These omit veterans' benefits and health costs, which are appropriate budgetary items and have sometimes added substantially to costs but difficult to reckon. They also omit interest costs, which are not appropriate economic costs as they reflect decisions about financing rather than costs. Major wars in the past cost more than one-half of a year's GDP. By contrast, the first Persian Gulf War cost only about 1 percent of GDP.

Conflict	Total Direct Costs of Wars (billions)	Total Direct Costs of Wars (billions)	Per capita cost	Cost
	[Current \$]	[2002 \$]	[2002 \$]	[% of annual GDP]
Revolutionary Wars (1775-1783)	0.1	2.2	447	63
War of 1812 (1812-1815)	0.09	1.1	120	13
Mexican War (1846-1848)	0.07	1.6	68	3
Civil War (1861-65)				
Union	3.2	38.1	1,357	84
Confederate	2.0	23.8	2,749	169
Combined	5.2	62.0	1,686	104
Spanish American War (1898)	0.4	9.6	110	3
World War I (1917-1918)	16.8	190.6	2,489	24
World War II (1941-1945)	285.4	2,896.3	20,388	130
Korea (1950-1953)	54.0	335.9	2,266	15
Vietnam (1964-1972)	111.0	494.3	2,204	12
First Gulf War (1990-1991)	61.0	76.1	306	1

Table 2. American Costs of Major Wars

Source: U.S. Commerce Department, *Historical Statistics of the United States*, Government Printing Office, 1975, vol. 2, series Y and Al Nofi, *Statistical Summary: America's Major Wars* at <http://www.cwc.lsu.edu/cwc/other/stats/warcost.htm>. Estimate in 2002 dollars are reflated using the GDP deflator. The costs include only costs to the U.S. federal budget.

Military Scenarios

An assessment of the costs of a war with Iraq is based on scenarios for the conduct of the war, the aftermath of hostilities, the impacts on related markets, and the macroeconomic impacts. It is impossible to project the detailed military strategies. However, we can describe the general contours of a “quick victory” and a “protracted conflict” and attempt to put price tags on each.

The difference between the good and bad cases is unlikely to revolve around the victor, for there is little doubt among military specialists that the United States will prevail if it enters with overwhelming force and perseveres through all obstacles. Rather, the difference lies in the duration of the conflict, the total damage to Iraq, civilian casualties, the potential for unconventional warfare, and the spread of the conflict outside Iraq.

A study prepared by the Democratic staff of the House Budget Committee¹⁰ and studies by private specialists such as Anthony H. Cordesman and Michael E. O’Hanlon¹¹ lay out a plausible starting point for the analysis. Most experts believe that the war would begin with an intensive bombing of Iraqi targets, focusing on command and control sites, leadership headquarters, Scud missiles, CBRN [chemical, biological, radiological, and nuclear] weapons sites, communications infrastructure, and elite Republican guard troops.

These studies estimate that the U. S. will need to deploy between 150,000 and 350,000 personnel to achieve overwhelming force – this being approximately half of the troop strength deployed in the First Persian Gulf War. To some extent, the conduct of the war will be limited by decisions on use of territory by Turkey, Jordan, and Saudi Arabia. Specialists provide a wide array of scenarios ranging from heavy reliance on Special Forces to intensive air war to ground invasion. All scenarios end up with some form of capitulation by Iraq, occupation of Baghdad, and destruction or capture of Iraq’s top leadership. Some battle plans have found their way to the

¹⁰ *Assessing the Cost of Military Action Against Iraq: Using Desert Shield/Desert Storm as a Basis for Estimates*, An Analysis by the House Budget Committee, Democratic Staff, September 23, 2002.

¹¹ Anthony H. Cordesman, *Iraq’s Military Capabilities in 2002: A Dynamic Net Assessment*, Center for Strategic and International Studies, Washington, September 2002; Michael E. O’Hanlon, “Three Months to Baghdad,” *The Washington Times*, August 30, 2002.

newspapers, but it seems more likely that these “leaks” of battle plans are attempts to mislead the enemy than disclosures of sensitive information by disgruntled generals. U.S. strategy is at this point the most closely held of secrets.

The “quick victory” scenario would involve some combination of strategy and luck in which Saddam Hussein and his top leadership were captured or killed, the Iraqi ground forces surrendered quickly, and the presence of U.S. forces prevented civil disorder from breaking out in the south or Kurdish regions. This is the outcome analyzed in the Democratic staff report, which envisions between 30 and 60 days of air war and ground combat, followed by 2½ months of post-victory presence by troops in the theatre. It is hard to see how anything short of preemptive capitulation by the Hussein regime could be less costly than this scenario. U.S. casualties under the quick victory strategy might be similar to those in PGW-I of around 250 fatalities.

When the dust has settled, military analysts will spend many years sifting through the results of the battles. From an economic point of view, the tactical details are unpredictable, but they are also inessential for the economic analysis.

Prolonged Conflict and Nasty Outcomes

The quick victory scenario would resemble the first Persian Gulf War, the Kosovo War, and the Afghanistan war. A “prolonged conflict” case comes when the dice of war roll unfavorably. Often, as in the case of September 11, problems arise simply because people thought they could not or would not happen. Sometimes, things go wrong because there are no good ways to prevent them. However, the opportunity for miscalculation is unlimited. Anthony Cordesman concludes his review of the battlefield prospects by emphasizing the intrinsic uncertainty:

Anyone who looks seriously at this list of independent variables will quickly see that it is impossible to predict when and how the United States will use decisive force, the Iraqi response to a U.S.-led coalition, the nature of a U.S.-led coalition, how long Iraq can endure, and what strategy Iraq will actually pursue if it does use its CBRN weapons.¹²

¹² Anthony H. Cordesman, *Iraq's Military Capabilities in 2002: A Dynamic Net Assessment*, Center for Strategic and International Studies, Washington, September 2002, p. 81.

Analysts point to a wide variety of potential complications and costs that need to be contemplated. These include prolonged conflict and an Iraqi urban redoubt strategy; occupation and peacekeeping costs; reconstruction costs; humanitarian assistance; costs of nation building; impact on oil markets; the cost of buying support from allies; subsequent terrorist acts inside or outside the United States; macroeconomic shocks; spillover to other policies; escalation of war by Israel; contagion of terrorist acts around the world; and the use of weapons of mass destruction. This section outlines some potential adverse military scenarios, and the subsequent sections attempts to put a price tag on them where they involve economic impacts.

Urban defense strategy

A first possibility, viewed as a serious risk by military analysts, involves an urban defense strategy on the part of the Iraqis. PGW-I was a turkey shoot in part because the turkeys were in the open desert. Cordesman described the implications of an urban strategy as follows:¹³

While much would depend on the loyalty of the population and the army, dispersing and sheltering in towns and cities would make it much harder to use air and missile power effectively. Iraqi fixed facilities would remain highly vulnerable, but Desert Fox, Kosovo, and Afghanistan have all shown that air targeting and weaponry have not reached the point where it is possible to destroy massive amounts of major ground weapons without high collateral damage and civilian casualties. Similarly, forcing the US and its allies to fight urban warfare on a city by city basis means close combat of a kind where many of the technical advantages of US troops have far less effectiveness. It also would mean giving the war a far more negative public profile in the eyes of the rest of the world.

The dangers of an urban redoubt strategy were stated forcefully by retired General Joseph Hoar before the Senate in September 2002:¹⁴

The nightmare scenario is that six Iraqi Republican Guard divisions and six heavy divisions reinforced with several thousand anti-aircraft artillery pieces defend the city of Baghdad. The result would be high casualties on both sides as well as in the civilian community. U.S. forces would certainly prevail but at what cost and what cost as the rest of the world watches while we bomb and have artillery rounds exploded in densely populated Iraqi neighborhoods.... All our advantages of command and control, technology, mobility, all of those things are

¹³ Ibid, pp. 7f.

¹⁴ <http://www.fednet.net/archive/> and cited at <http://www.smh.com.au/text/articles/2002/09/27/1032734328055.htm>.

in part given up and you are working with corporals and sergeants and young men fighting street to street. It will look like the first 15 minutes of *Saving Private Ryan*.

The peril of urban warfare for the United States is that Iraqi forces have better cover, while U.S. precision weapons are not smart enough to separate out troops from civilians or tanks from trucks. O’Hanlon notes that “even after eight years of further modernization after Desert Storm, NATO airpower was of quite limited effectiveness against small groups of Serb forces operating within forests, towns, and civilian populations in the Kosovo war.”¹⁵

An urban defense strategy might produce much higher casualties on both sides. Michael O’Hanlon estimates the casualties in an Iraqi war as follows:¹⁶

Based on available methodologies, the likely numbers of U.S. military personnel killed in a future war to overthrow Saddam Hussein could plausibly range anywhere from roughly 100, in the event of little fighting, to 5,000, in the event of intense if relatively short urban combat, with total numbers of wounded about three to four times as great either way.

An effective urban-defense strategy by Iraq would prolong the combat, increase casualties, and broaden the destruction of Iraq’s urban areas and infrastructure. Collateral damage and civilian deaths would probably be much greater, and the nightly news (or at least the news in the Arab world) would produce many grizzly pictures. Intensive urban fighting would provoke massive movements of refugees fleeing away from combat zones and toward the protection of American forces. A long and bloody urban conflict would induce hundreds of thousands of protesters, or more, on the streets of America, Europe, and the Muslim world.

Iraqi Use of Chemical and Biological Weapons

A more dangerous possibility is that Iraq might successfully use biological or chemical weapons. The most likely targets would be U.S. troops, Saudi Arabia, or Israel. Cordesman provides a useful summary of the prospects:

¹⁵ Id.

¹⁶ Michael E. O’Hanlon, “Counting Casualties: How many people would die in an Iraqi War?” *Slate*, September 25, 2002.

In spite of some defector claims, it seems doubtful that Saddam has even one nuclear weapon. The same, however, is probably not true of biological and chemical weapons and a radiological weapon is possible. Iraq may also have enough components to assemble as many as 25 Scuds, has shorter range missiles, can modify drones and combat aircraft to act as “cruise missiles,” and has significant capability to smuggle weapons of mass destruction out of Iraq and deliver them covertly. There is considerable evidence that he may have the capability to make dry, storable biological weapons in aerosol form.¹⁷

U.S. forces have protective gear and are immunized against some biological weapons. However, U.S. troops have not experienced germs or gas under combat conditions in modern times, and it is not clear what protective gear will be worn, or by whom, or how effective the gear will be against the threats that are faced. An even larger concern is the casualties and panic that would occur if these weapons were launched on civilian populations in large cities.

Iraqi preemption and wider conflict in the region

Another set of worrisome outcomes would occur if the war spills outside of Iraq. For example, Iraq might preempt the preemptors by attacking the population centers of Kuwait or Saudi Arabia, or attempting to destroy the oil facilities of other Gulf states. (I discuss the oil issues below.)

Alternatively, the conflict might stoke widespread resentment against the U.S., boiling over into political protests, mob action, adverse policies, or even regime changes outside Iraq. The parade of horrors includes attacks by Russia or China on dissident groups or regions, turmoil in the Indian subcontinent, a takeover of Pakistan by fundamentalists, military conflict between Israel and its neighbors, or terrorist actions by Al Qaeda. The range of outcomes here is so broad as to defy any serious attempt to quantify the impacts.

One particularly dangerous scenario would involve a damaging Iraqi attack on Israel, perhaps with chemical or biological weapons. Israel would probably strike back with great ferocity, leading to a further poisoning of relations between the Israel and the Arab world as well as of U.S.-Arab relations. A most frightening scenario is described by Cordesman: “If Iraq should succeed in delivering extremely lethal biological agents against an

¹⁷ Anthony H. Cordesman, “Iraq’s Military Capabilities: Fighting A Wounded, But Dangerous, Poisonous Snake,” Center for Strategic and International Studies, December 3, 2001.

Israeli city, Israel would probably massively retaliate with nuclear ground bursts against every Iraqi city not already occupied by U.S.-led coalition forces.”¹⁸

These three nasty outcomes – urban warfare, unconventional warfare, and wider escalation – are obvious to both sides. The U.S. has undoubtedly analyzed these scenarios and has plans to prevent, preempt, deter, or overcome them.¹⁹ Successfully avoiding a wider war is probably the key to a rapid and relatively bloodless victory.

¹⁸ Cordesman, p. 45.

¹⁹ A report on a new U.S. approach to urban warfare is given in Eric Schmitt and Thom Shanker, “Threats and Responses: Military Tactics; U.S. Refines Plans For War In Cities,” New York Times, October 22, 2002, p. 1.

Publicly Available Estimates of the War's Costs

What is known about the cost of a war in Iraq? Two conceptual points need to be made before starting the analysis. First, we are attempting to estimate the total costs to the nation, not just the budgetary costs. We are asking how much of our national output will be sacrificed by the war and its consequences – in effect, the loss of butter because of the resort to guns.

Second, these costs should count only the incremental costs of the war. The 82nd Airborne Division has to be paid whether it is in Iraq or North Carolina. Only additional costs such as the cost of transport, the combat pay, and the replacement cost of the munitions should be counted in the cost of the war. The implication of this conceptual point is that the cost of a short war is likely to be surprisingly small because most of the costs are already paid for in the defense budget.

Lindsey's Estimates

The only public estimate of the cost of the war by the Bush Administration came in an interview by Larry Lindsey, the economist-in-residence in the West Wing. As reported by *The Wall Street Journal*, Lindsey estimated the “upper bound” cost of \$100 to \$200 billion. He dismissed the cost as small, stating that these numbers would be only 1 to 2 percent of U.S. GDP. The *Journal* report continued:

Mr. Lindsey said that Mr. Hussein's ouster could actually ease the oil problem by increasing supplies. Iraqi production has been constrained somewhat because of its limited investment and political factors. “When there is a regime change in Iraq, you could add three million to five million barrels of production to world supply” each day, Mr. Lindsey estimated. “The successful prosecution of the war would be good for the economy.”²⁰

The lead editorial in the *Journal* joined Lindsey's upbeat assessment, opining, “All of which is another way of saying that the best way to keep oil prices in check is a short, successful war on Iraq that begins sooner rather than later.”²¹

²⁰ *WSJ*, September 15, 2002.

²¹ *WSJ*, September 15, 2002 (“Saddam's Oil”).

The next day, the White House spokesman, Scott McClellan distanced the White House from Lindsey's interview:²²

QUESTION: Scott, can you confirm Larry Lindsey's \$100 billion to \$200 billion cost of the war?

MR. McCLELLAN: Well, I think, one, let me remind everybody, the President has not made a decision about any particular course of action, so it's premature to speculate about decisions the President has not made.

...

Q: That doesn't mean you guys don't look ahead and cost out what a certain course of action — I mean, let's be real here.

MR. McClellan: Well, this is a national security issue. Let's keep that in mind.

Q: So you're saying it would be for reasons of national security that you don't want to comment on what a war could cost?

MR. McCLELLAN: I'm saying that I don't want to speculate about — preemption is not an option for spokespeople....

An authoritative administration source there was no known basis for Lindsey's comments. Indeed, the one factual element in Lindsey's comments – the statement that a regime change in Iraq could add 3 to 5 million barrels per day (mbpd) to oil production – is far off base. We will discuss the oil situation below, but the general conclusion is that Iraq's production in 2001 was close to its sustainable level.

It is certain that the Pentagon has made internal forecasts of the military cost of the war. The Council of Economic Advisers has reportedly sent a classified study of the economic impacts of a war in Iraq to the President. None of these has been made public, nor are they likely to be so for a decade. In short, aside from Lindsey's assessment, the Administration is likely to remain silent on the economic impacts of the war.

²² White House Daily Briefing, September 16, 2002.

Estimates by the Democratic Staff of the House Budget Committee

There were two published studies of the prospective cost of the second Persian Gulf War (PGW-II) prepared by government budget analysts through the end of October 2002. One was undertaken by the Democratic Staff of the House Budget Committee (the House study)²³ and the second was by the Congressional Budget Office (the CBO study).²⁴

This House study was a “top down” study. It assumed that the costs of the second Persian Gulf War could be projected based on the costs of the 1990-91 conflict. The study priced two scenarios for the war. The most relevant one is “New War A,” which involves 250,000 troops (the other scenario plans for only half that number). As Table 3 shows, New War A was estimated to cost between \$48 and \$60 billion.²⁵ This figure is slightly less than the earlier war, which cost about \$80 billion in today’s dollars.

²³ *Assessing the Cost of Military Action Against Iraq: Using Desert Shield/Desert Storm as Basis for Estimates, An Analysis by the House Budget Committee, Democratic Staff, September 23, 2002* (hereafter, “House study”).

²⁴ Congressional Budget Office, “Estimated Costs of a Potential Conflict with Iraq,” September 2002, available at <http://www.cbo.gov/> (“CBO Report”).

²⁵ The DNBC report also includes interest costs in the estimates. These costs are inappropriate, however, for they depend upon the financing of the war.

<u>Cost Category</u>	<u>Persian Gulf</u>	<u>New War A</u>
Airlift/Sealift (Buildup)	10.6	6.6
Personnel & Personnel Support	21.5	11.3 - 13.4
Operating Support & Fuel	32.2	14.6 - 24.1
Investment	10.1	10.1
All Other	<u>5.6</u>	<u>5.6</u>
<i>Subtotal, Cost of Defeating Iraq</i>	<i>79.9</i>	<i>48.3 - 59.8</i>

Table 3. Comparing the Costs of the First Persian Gulf War to Estimates of the New War Scenario “A” (in billions of 2002 dollars)

Source: House Study, p. 2.

Most of the cost involves fuel and extra costs for the buildup. The costs labeled “investment” are somewhat vague but appear to include replacement of weapons, ammunition, weapon systems, and other equipment. The total costs of PGW-II were estimated to be smaller than those for PGW-I because the size of the force was estimated to be about half as large.

The advantage of relying upon the costs of Desert Shield/Desert Storm is that they are actual costs of operating in the same theater of operations against the same enemy. Therefore, as long as the war unfolds in roughly the same manner, the estimates are likely to be relatively accurate.

Estimates by the Congressional Budget Committee (CBO)

The CBO study used a different methodology from the House study. It examined two options – a “heavy ground” option involving 370,000 military personnel in the Persian Gulf and a “Heavy Air” option relying primarily on air power with 250,000 military personnel. The CBO methodology was a “bottom up” approach, which priced out the components and added them up, rather than the “top down” approach of the House study, which priced the war based on the earlier conflict.

Table 4 shows the CBO’s building blocks used to estimate the costs of the “Heavy Ground” war. Two parts, deployment and redeployment, are fixed in nature and total about \$20 billion. The other component of wartime cost was combat, estimated to cost \$9 billion per month for the first month and \$8 billion for subsequent months. (The Heavy Air scenario costs slightly less.)

Cost Element	Deployment (Three months)	First Month of Combat ^d	Subsequent Months of Combat ^e (Per month)	Redeployment (Three months)	Occupation (Per month)
Personnel and Personnel Support ^a	4.3	1.4	1.4	4.3	n.a.
Operations Support ^b	5.4	7.1	5.4	1.5	n.a.
Transportation ^c	<u>2.8</u>	<u>0.7</u>	<u>0.7</u>	<u>1.5</u>	n.a.
Total	12.5	9.2	7.5	7.3	1.4 to 3.8 ^f

Table 4. Costs of Different Components for a War in Iraq for Heavy Ground Force Option (in billions of 2002 dollars)

Source: Congressional Budget Office.

We can compare the two studies by plugging the assumptions for duration in the HDBC report into the CBO costs for the different components. The “New War A” assumption in Table 3 assumed 30 days of combat plus 2½ months of post-combat presence in the region. For a conflict of that duration, the CBO formula yields \$44 billion as compared to the House study estimate of \$48 to \$60 billion.

The two studies come to a slightly different conclusion, which is not surprising given that they use completely different methodologies. A reasonable ballpark estimate based on these two studies is that the cost of a short and successful war would be around \$50 billion. This compares with the cost of \$80 billion for PGW-I in 2002 dollars.

Neither report provides estimates of the costs of a protracted war. These costs would depend upon the length of the conflict, the extent to which it spread to other countries, and the need for the United States to devote more resources to the conduct of the war. Consider, as a reasonable upper bound, the case where Iraq pursued an urban defense strategy and where

some of the neighboring countries refused basing and overflight rights to the U.S. In this situation, the conflict might drag on for a year and the U.S. might need to devote 50 percent more resources than in the “heavy ground” option analyzed by the CBO. In that case, the cost would rise from \$50 billion to around \$140 billion. While much larger, these costs would still be only around 1½ percent of GDP – on the scale of the Mexican or Spanish-American wars rather than the more costly Vietnam or Korean wars.

Further Economic Impacts

The two Congressional studies are valuable contributions to public awareness of the costs of the coming war. They are incomplete, however, because they explicitly exclude a number of potential costs, generally non-military in nature, most of which are highly uncertain. The reports exclude complete estimates of the total costs of occupation, peacekeeping, democratization, nation building, and post-occupation humanitarian assistance. They assume that there will be no use of weapons of mass destruction or subsequent terrorist activities. Furthermore, they exclude the costs of persuading other nations to support the U.S and exclude impacts upon oil supplies, macroeconomic activity, and the federal budget.

In addition to the direct military costs of a war in Iraq, some of these economic impacts are virtually inevitable. These include the costs of occupation and peacekeeping, along with impacts on oil markets and macroeconomic impacts. To avoid paying the costs of rebuilding and nation building would be to repeat the errors of Afghanistan, Yugoslavia, and the first Persian Gulf War. To say these costs are inevitable does not mean that they are easy to estimate, but this section lays out order-of-magnitude estimates of the indirect economic impacts.

Occupation and peacekeeping

James Fallows recently asked a number of experts, “What will the U.S. do when it gets to Baghdad?”²⁶ He found a long list of worries. The U.S. might easily face a humanitarian crisis, with tens of thousands of wounded and hundreds of thousands of refugees without adequate shelter or food. Someone will have to do the policing to keep yesterday’s victims from becoming tomorrow’s tyrants. The U.S. might face the cleanup of any biological or chemical weapons attacks; anthrax, for example, can remain potent for many years. Moreover, the Iraqi population might view the American occupation troops rather than as liberators – in essence, they might see themselves as Palestinians on the Tigris.

It seems highly likely that there will need to be a substantial occupation and peacekeeping force in Iraq for a lengthy period after the war. There is no evidence that the American people are prepared for the potential scale of the operation. Gordon and O’Hanlon provide the following estimates:²⁷

[T]o avoid the risk of prolonged conflict among various Kurdish, Shi’a, and Sunni groups, which could draw Iraq’s neighbors into a regional conflict, the United States would need to lead a major international effort to help form a stable national government. Such an effort could require a multi-year military presence by tens of thousands of U.S. military forces, implying annual military costs of at least \$10 billion. (In Bosnia, one-eighth the size of Iraq and with one-sixth the population, NATO deemed it necessary to deploy over 50,000 peacekeeping troops, at a cost of some \$10 billion per year; six years later nearly 20,000 troops remain).

The CBO estimates the costs as “occupation forces” rather than “peacekeepers.” Their estimates are considerably higher:

The costs associated with an occupation force for Iraq remain highly uncertain, varying from about \$1 billion to \$4 billion a month, depending on the assumptions used about force size and operations. Some military experts suggest that a force of up to 75,000 peacekeepers might be needed; another plan discussed by the U.S. Central Command calls for up to 200,000 troops. For its estimate, CBO used an average cost for a U.S. Army peacekeeper consistent with experiences in Bosnia and Kosovo, and assumed that U.S. force levels would range between 75,000 and 200,000 troops. It also assumed that replacement occupation personnel and equipment would be periodically rotated to the theater in a manner similar to that used in

²⁶ James Fallows, “A ‘Liberated’ Iraq Could End Up Like Weimar Germany,” September 24, 2002, Guardian/UK.

²⁷ Philip H. Gordon and Michael E. O’Hanlon, “Should the War on Terrorism Target Iraq? Implementing a Bush Doctrine on Deterrence,” Brookings, Policy Brief #93, January 2002.

recent peacekeeping activities. However, current Army forces would be unable to support those rotations for a prolonged 200,000-person occupation.²⁸

The CBO estimates are \$17 to \$45 billion per year and are consequently much larger than those cited by Gordon and O'Hanlon. The CBO estimate is approximately \$250,000 per peacekeeper per year. This figure is at the low end of the estimated cost of U.S. peacekeepers in Kosovo; it might actually underestimate the cost if the post-combat environment in Iraq is hostile and its dangers resemble the West Bank more than the Balkans.

The duration of the occupation-peacekeeping effort is unpredictable. The occupation of Japan lasted seven years, while the U.S. has stationed more than 30,000 troops in South Korea for a half-century. It is difficult to see how a successful occupation of Iraq could be less than five years and might easily extend for two decades. While there are no public estimates of the total, a minimum cost would be \$75 billion and an upper bound of \$500 billion over the next decade is consistent with peacekeeping operations in the Balkans and the size and scope of the task in Iraq.²⁹

Reconstruction costs and nation building

When some semblance of order has been imposed, the U.S. and its coalition partners must turn to reconstruction and nation building. General Wesley Clark, who was deeply involved in the Balkan wars, noted that we must plan for humanitarian assistance, police and judicial capabilities, emergency medical and reconstruction assistance, and preparations for a transitional governing body.³⁰

The democratization of Iraq is one of the most politically appealing aspects of the Bush administration's current policy. The stated U.S. policy is to "promote the emergence of a democratic government." President Bush committed the United States to nation building in his October 7, 2002 address:

²⁸ CBO Report, p. 4.

²⁹ The low and high numbers assume, respectively, peacekeeper costs of \$200,000 to \$250,000 per peacekeeper per year, with the numbers from 75,000 to 200,000, and for a period of 5 to 10 years.

³⁰ Statement Of General (Retired) Wesley K. Clark, U.S. Army, Before The House Armed Services Committee United States House Of Representatives, September 26, 2002 at <http://www.house.gov/hasc/openingstatementsandpressreleases/107thcongress/02-09-26clark.html>.

Freed from the weight of oppression, Iraq's people will be able to share in the progress and prosperity of our time. If military action is necessary, the United States and our allies will help the Iraqi people rebuild their economy, and create the institutions of liberty in a unified Iraq at peace with its neighbors.³¹

This goal has been widely praised by columnists and political leaders, as exemplified by Thomas Friedman's appraisal:

So I am for invading Iraq only if we think that doing so can bring about regime change and democratization. Because what the Arab world desperately needs is a model that works—a progressive Arab regime that by its sheer existence would create pressure and inspiration for gradual democratization and modernization around the region.³²

When some semblance of order has been imposed, the U.S. and its coalition partners must turn to reconstruction and nation building. What are the goals for Iraq, and how would these goals be accomplished? Would the regime change be followed by turning over the reins of power to a *loya jirga* as in Afghanistan? Would the U.S. install an occupation regime like those in Germany or Japan after World War II, imposing a western-style constitution, a free press, free elections, and all the other infrastructure of western democracy? Would the U.S. introduce a new Marshall Plan for democracies of the Middle East?

Plans for postwar Iraq are in their infancy. Newspaper reports on one day in mid-October suggested that the Bush administration was coalescing around a plan modeled after the postwar occupation of Japan. However, the very next day, administration sources indicated that the Japanese model had too much of the taint of "occupation" and that the U.S. would be friends rather than enemies. About the same time, Secretary of State Powell candidly described the state of U.S. planning, "We are obviously doing contingency planning and there are lots of different models from history that one can look at. . . but I wouldn't say that anything has been settled upon." Therefore, the answer clearly is that as of mid-October, the U.S. does not know what it will do when it gets to Baghdad.

Scholars who have studied the problems of nation building caution that the process is difficult, costly, and fraught with dilemmas. Recent examples of U.S. nation building, including Haiti, Bosnia, and Afghanistan,

³¹ <http://www.whitehouse.gov/news/releases/2002/10/20021007-8.html>

³² Thomas Friedman, New York Times, September 18, 2002.

indicate that the United States has not discovered any formulas for quick success. A recent review of efforts concludes:

Like Afghanistan, Iraq is a country torn by profound ideological, religious and ethnic conflicts. Before democratization can even begin, the United States would have to assemble a power-sharing agreement among ethnic Kurds, Shiites, and Sunni Muslims. Because no obvious leader is waiting in the wings and the exiled Iraqi opposition is chronically divided, Washington would have to provide the political and, most importantly, military and security infrastructure necessary for holding a new government together. In short, the United States would have to become engaged in nation building on a scale that would dwarf any other such effort since the reconstruction of Germany and Japan after World War II. And it would have to stay engaged not just years, but decades, given the depth of change required to make Iraq into a democracy.³³

The length of the nation-building effort is highly uncertain, but it is hard to see how a serious attempt to turn Iraq into a modern democratic society could be accomplished in less than a decade. This effort is orders of magnitude more than the United States has undertaken in the region in the past; the U.S. spent about \$250 million on democracy programs in the Middle East in the last decade.

Reconstruction and nation-building costs will be largely determined by the ambitions for post-war Iraq. I have found no careful studies of the requirements, but a lower bound can be determined by estimating the capital stock necessary for a country like Iraq. For oil-rich developing countries like Iraq, the capital-GDP ratio outside of housing is usually in the neighborhood of one. If Iraq is to attain a per capita GDP equal to Egypt or Iran, and if one-half of the capital stock requires rebuilding, this would imply rebuilding needs of about \$800 per capita, or a total of \$20 billion. Estimates by the World Bank have found that rebuilding in Lebanon, East Timor, and Bosnia would require approximately \$1000 per person, which implies a total of around \$25 billion.³⁴

A more ambitious plan would be a “Marshall Plan for Iraq.”³⁵ To refresh our memories, recall that the Marshall Plan cost the United States

³³ Marina Ottaway, Thomas Carothers, Amy Hawthorne, and Daniel Brumberg, “Democratic Mirage in the Middle East,” Policy Brief, Carnegie Endowment for International Peace no. 20, October 2002.

³⁴ World Bank, “Afghanistan: World Bank Approach Paper,” November 2001, available at [lnweb18.worldbank.org/SAR/sa.nsf/Attachments/ az/\\$File/afgApproach.pdf](http://lnweb18.worldbank.org/SAR/sa.nsf/Attachments/az/$File/afgApproach.pdf).

³⁵ Roger D. Carstens, “A Marshall plan for Iraq,” *The Washington Times*, August 5, 2002. (“The solution is to provide U.S. leadership in the implementation of a Marshall plan for Iraq. An Iraq

\$13.3 billion over a four-year period, this being about 4½ percent of the GDP of that period, or about \$450 billion at today's GDP. At today's income levels, the assistance comprised about \$2000 per person, or \$500 per person per year, in the recipient countries, more than twice the size of the lower-bound figure cited above.

The parallel is optimistic, even simplistic, for the Marshall plan was introduced after the countries of Western Europe had a substantial part of their reconstruction efforts, and European countries had most of the infrastructure of democracy and civil society in place before the war. Moreover, the threat of an Islamic republic, or even a fundamentalist regime, in Iraq will worry nation builders looking to other countries, like Iran or Algeria. To recognize that the nation building in Iraq begins with much less social capital and civic infrastructure, we might conservatively expect that the effort would be six rather than four years of effort at the expenditure rate of the Marshall Plan, for a total of \$75 billion.

The numbers for both reconstruction and nation building, therefore, are substantial, from a minimum \$25 billion for reconstruction to as much as \$100 billion.

Humanitarian assistance

Humanitarian assistance will be necessary to feed, house, clothe, and care for the refugees, wounded, and ill in Iraq, and possibly in neighboring countries. Estimates of the costs of humanitarian assistance are uncertain because they involve knowing the population at risk, the level of need after the war, and the duration of the assistance.

One benchmark for estimating the cost of humanitarian assistance was the case of Bosnia and Herzegovina (including Republika Srpska) during the 1990s. Humanitarian assistance in the country was \$5 - 6 billion during the war and \$7 - 8 billion in the post-war period, for a total of \$12 - 14 billion over a period of approximately a decade. On a per capita basis, this amounted to approximately \$500 per person per year.³⁶

that is stable, strong and pro-American is in our interests. Both America and the people of Iraq deserve it.”)

³⁶ Žarko Papić, “Normal Social Policy and International Humanitarian Assistance in the Conflict Context,” IBHI, Sarajevo, October 2000, available at www.stakes.fi/gaspp/seminar/papapic.pdf.

Only the roughest of estimates are available for the cost of humanitarian assistance. A plausible estimate would be that 1 to 5 million residents of Iraq (out of a total population of around 24 million) would require assistance in the post-war environment. If the time required for assistance was between two and four years, then the total cost of humanitarian assistance would be \$1 to 10 billion.

Who Will Pay for the War?

Who will pay for all these efforts? Iraq has one major advantage compared to recently damaged countries like Afghanistan, Serbia, Bosnia, or Kosovo because it has major oil resources that might be tapped. If Iraq could rebuild its production back to 3 million barrels per day, this would yield around \$25 billion per year at prevailing oil prices.

However, claims on these resources will be spread thin. To begin with, these revenues amount to only \$1000 per capita in today's Iraq, and much of these funds will be required for imports of food, medicines, and other necessities of daily life. Some revenues would be needed to finance the rebuilding and upgrading of Iraq's economic infrastructure. Additionally, Iraq has close to \$100 billion of foreign debts and Kuwaiti reparation claims. As of early 2002, there were \$78 billion of business claims against Iraq, but only \$3.6 billion had been paid by Iraq.³⁷ The claims against Iraq after the 1991 war totaled over \$300 billion. Given all these claims, to divert funds from vital necessities to pay the expenses of the U. S. occupation forces would be economic and political folly.

Will other countries step up to pay the bills, as they did after the First Persian Gulf War? Probably not. If the war is undertaken without U.N. sanction or broad international support, the U.S. could be forced to pay the lion's share of the costs.

Can these costs be covered by the United Nations? Current U.N. peacekeeping efforts of \$2.6 billion per year are a pittance by comparison to the needs in post-war Iraq. In reality, payments for U.N. peacekeeping missions are in arrears, and little of the half-billion dollar commitment to the reconstruction of Afghanistan has been paid.

³⁷ "Iraq Presses Firms to Forgo Billions in War Reparations," *Wall Street Journal*, June 21, 2002.

Will the U.S. actually undertake the massive effort required to rebuild and democratize Iraq? In virtually every country where the U.S. intervened militarily over the last four decades, it has displayed a “hit and run” philosophy where bombing runs have seldom been followed by construction crews. The latest war in Afghanistan is a signal example. In the year ending September 2002, the U.S. spent \$13 billion on the war effort. By contrast, the total Pentagon effort has committed only \$10 million to civil works and humanitarian aid.

The disproportion between military destruction and civilian construction in Afghanistan and elsewhere does not augur well for an ambitious rebuilding effort in Iraq. Is it plausible that such an enormous civilian effort will be appropriated when the U.S. today spends only \$15 billion annually on foreign aid for the entire world? The prospect of an ambitious nation-building plan that is left half-built is the most realistic prospect.

Risks for oil markets

War in the Persian Gulf might produce large impacts in petroleum markets either because of physical damage or if political events led producers to restrict production after the war.

When pressed on the reasons for the first Persian Gulf war, Secretary of State James Baker stated the reason was “jobs, jobs, jobs.” When later asked what this meant, Baker stated, “[T]he fact of the matter is it would have boiled down to jobs if Saddam Hussein had been able to control the flow of oil from the Persian Gulf or to, by controlling his own oil and Kuwaiti’s oil, act in a way to influence prices.”³⁸ So, Secretary Baker was really saying that the reason for the war was “oil, oil, oil.”

The current administration has said little about jobs or oil in the current debate, although the interview with Larry Lindsey suggests that thoughts about improved oil security or control of Iraq’s oil resources after the war may be hidden in some of the classified analyses. Whatever the role of oil supplies in the Bush administration’s calculus, many foreign nations suspect that getting control of Iraqi oil supplies for American companies and American SUVs is high on the American priority list.

³⁸ Frontline/BBC, “Oral History,” January 1996, available at <http://www.pbs.org/wgbh/pages/frontline/gulf/oral/baker/5.html>.

Some background information will be useful for this discussion. World oil consumption in 2000 and 2001 averaged around 68 mbpd. OPEC was responsible for approximately 29 mbpd, or 42 percent of the total. The Arab states plus Iran contributed 22 mbpd (or 32 percent) of world production. Excess capacity by OPEC in 2001 was around 4 mbpd, which was dangerously low by historical standards. In earlier periods, when excess capacity dipped to or below 4 mbpd – as occurred in 1973-74, 1978-79, and 1991 – oil prices rose sharply.

The “worse” case in oil markets

A particularly worrisome outcome would be a wholesale destruction of oil facilities in Iraq, and possibly in Kuwait, Iran, and Saudi Arabia. In the first Persian Gulf War, Iraq destroyed much of Kuwait’s petroleum infrastructure as it withdrew. The damage included most of Kuwait’s oil wells in addition to refineries along with gathering and export facilities. The sabotage was apparently well planned and not just a last minute act of revenge.³⁹ The sabotage shut down Kuwaiti oil production for approximately a year. Kuwait’s production was 0.2 mbpd in 1991, 1.1 mbpd in 1992, and only reached 1.9 mbpd, close to prewar levels, by 1993.

Cordesman suggests the possibility of a reprise: “Saddam Hussein might well see burning Iraq’s oil fields and CBRN [chemical, biological, radiological, or nuclear] attacks on major Gulf oil fields as both a defense and form of revenge.”⁴⁰

Unless the Iraqi leadership is caught completely off-guard, destruction of Iraq’s oil production facilities in a new war is probably within the capabilities of Iraqi forces. The strategic rationale for destruction is unclear, but such an act of self-immolation cannot be ruled out. This would reduce world oil capacity by about 3 mbpd. Sabotage of other countries’ oil fields would require a military operation that Iraq was unable to accomplish in PGW-I, and it seems unlikely that it could do so with its diminished military power today. Extremist groups might attack the oil fields, particularly in Saudi Arabia. However, destroying a major part of the Saudi infrastructure, including its 1400 producing wells, would seem beyond the capability of anything short of a substantial military force. Contamination of major areas

³⁹ U.S. Central Intelligence Agency, “Damage Assessment - Kuwait Oil,” April 2002, available at http://www.fas.org/irp/gulf/cia/960702/70076_01.htm.

⁴⁰ Anthony H. Cordesman, *Iraq’s Military Capabilities in 2002: A Dynamic Net Assessment*, Center for Strategic and International Studies, Washington, September 2002, p. 81.

by biological or chemical means would pose much greater problems for oil markets, but the risks of that contingency are impossible to assess.

A final possibility is a concerted reduction in oil production. This might occur through a boycott against the U.S. and other Western countries, such as the one that followed the 1973 Arab-Israeli war, or if control of a substantial part of OPEC's oil resources fell under the control of anti-Western elements. This possibility is worrisome because of the high degree of dependence of industrial countries, particularly the United States, on imported oil.

George Perry recently investigated the economic impacts of disruptions of world oil supplies. He analyzed a bad case, a worse case, and a worst case. Depending upon the mix of countries, the impacts range from a reduction of production from 3½ to 10 mbpd. Perry assumed that it would be possible to offset this with a drawdown from strategic stockpiles of 2½ mbpd. Although his analysis referred to terrorism, the underlying economics applies equally well to any kind of supply reduction.

The impacts would involve sharp increases in oil prices, high inflation, and major changes in wealth. We should avoid the common fallacy of thinking that the U.S. or any country can insulate its economy from an oil shock because it imports oil from "safe" sources. As long as oil prices are determined in the world market, oil is a fungible commodity, and a price shock anywhere affects importers everywhere.

Perry calculates the effects of an oil supply disruption assuming that the short-run price-elasticity of demand for oil is -0.05. At this elasticity, a 1 percent decrease in total oil supplies will increase oil prices by 20 percent. Based on these and other factors, Perry calculated the first-year impacts of different scenarios year as shown in Table 5. These effects are likely to decline in subsequent years because of higher oil production, energy conservation, and responses of monetary and fiscal policy.

For our high cost outcome of the war, I examine the "worse" case.

	Baseline	Bad Case	Worse Case	Worst Case
World production shock (mbpd)	0	-3.5	-7	-10
Less: supply from reserves (mbpd)	0	2.5	2.5	2.5
Net supply change (mbpd)	0	-1	-4.5	-7.5
Crude oil price (\$/barrel)	25	32	75	161
Gasoline price (\$/gallon)	1.60	1.76	2.78	4.84
Change in real GDP				
Percent	0.0%	0.6%	2.7%	4.6%
Billions (2002 \$)	0	62	282	478

Table 5. Impact of Oil Supply Disruption on the U.S. Economy

Source: George L. Perry, "The War on Terrorism, the World Oil Market and the US Economy," October 18, 2001. For a description of the scenarios, see text.

For our high cost outcome, Perry's worse case represents a plausible bad outcome of a nasty war in Iraq. This case is similar in size to the economic impact of the two oil shocks of the 1970s and therefore has two history precedents in the last three decades. This situation assumes a decline in world oil production of 7 million barrels per day, partially offset by a drawdown of 2½ million barrels per day from strategic oil reserves. Many combinations of events – arising from wartime destruction, terrorism, or political reaction of governments in the region – could lead to such an outcome. Concrete examples would be destruction of most of Iraq's oil-production capacity along with one-quarter of the productive capacity of other Gulf states. Another possible cause would be an OPEC boycott that cut oil production by 25 percent. The boycott route is economically plausible in oil markets because producer profits go up rather than down with lower production.

The impacts would involve sharp increases in oil prices, high inflation, and major wealth transfers from oil consumers to oil producers. In this worse case, Perry projects a tripling of oil prices to around \$75 per barrel, with gasoline rising to almost \$3 per gallon. The cost of imported oil imports would rise \$200 billion per year, and the oil-price shock and inflationary impetus would probably trigger a recession. The estimated impact is derived

by assuming that the price shock lasts 1½ years, leading to a high-cost outcome of \$500 billion.

To check Perry's estimates, I examine the impact of the "worse" price scenario in a small oil-market model (see the Appendix for a discussion). As explained there, the estimated impact assuming a frictionless full-employment economy would be in the range of \$340 billion to \$970 billion depending upon the parameters. Perry's estimates, and the high-cost figure used here, fits comfortably in that range.

A "happy" outcome in oil markets

There may on the other hand be happy outcomes in oil markets. A quick victory in Iraq followed by relative stability in the region could lead to increases in oil production capacity in Iraq, Iran, and other countries, putting downward pressure on oil prices. The speed with which Iraq could increase its oil production should not be overestimated, however. Industry sources indicate that Iraqi oil experts believe that they could regain a sustainable capacity of 3 mbpd within one year after Iraq is freed from constraints (in our analysis, after the end of hostilities), 3½ mbpd within 3 to 5 years, and 6 mbpd with a decade after lifting of sanctions. Industry sources project that \$30 - \$50 billion of investment (presumably, most of it foreign) would be required to bring production up to 6 mbpd.⁴¹ These estimates are not far from the estimates of the need for reconstruction above. The key point to note, however, is that a major increase in Iraqi oil production has a time frame of a half-decade to a decade rather than one or two years.

What might be the beneficial impact of an increase in Iraqi oil production? An order-of-magnitude estimate can be calculated as follows. A plausible outcome would be an increase in Iraqi capacity by 1 mbpd over the 5 years following the end of hostilities – this representing about 1.4 percent of current world oil production. Using the simple model and assumptions outlined in the appendix, I estimate the impact of such an increase in long-run oil supply. Under plausible assumptions about the supply response in other regions, the increased Iraqi supply would lead to a decline of slightly under \$1 per barrel over the next decade. Using a \$25 per barrel baseline forecast, this would lead to a decrease in the cost of U.S. oil imports of \$30

⁴¹ Estimates from Geodesign, Ltd., available at http://www.geodesign.co.uk/iraq/iraq_why.htm. These estimates assume that the total development costs are approximately \$10,000 of capital costs per mbpd. This is high relative to development costs in other Middle East countries, however.

billion over the next decade. Figure 1 shows the price trajectories under both Perry's worse outcome and the happy outcome described here.

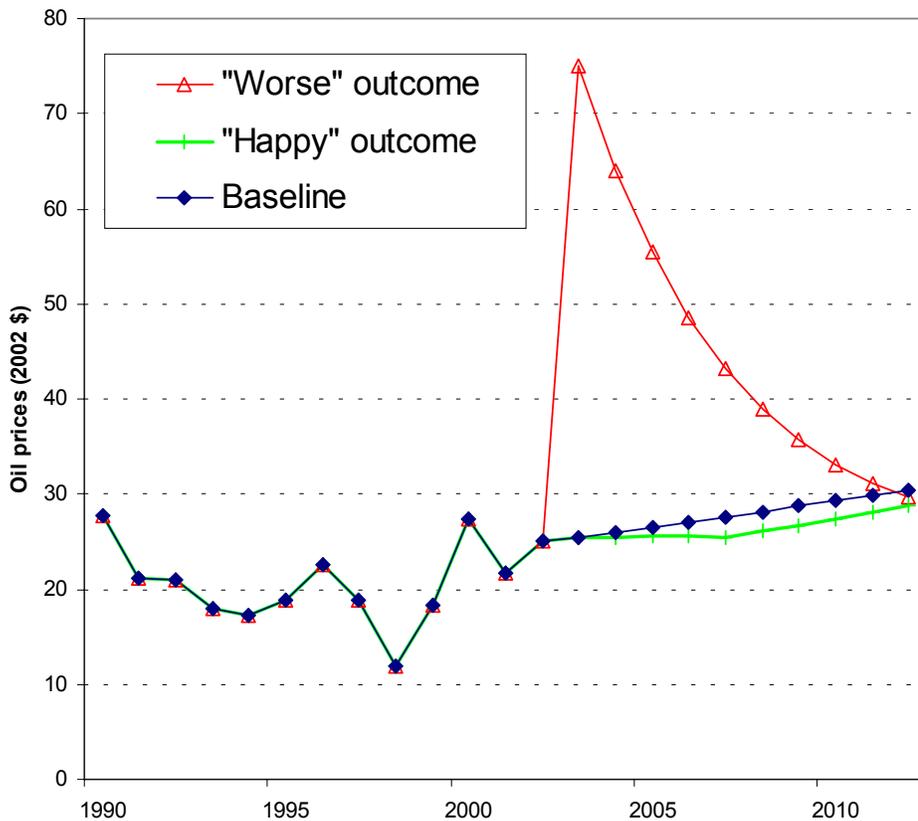


Figure 1. Oil Prices in the "Worse" and "Happy" Scenarios
Source: See Appendix.

Macroeconomic Impacts

Historically, economic expansions were the constant companions of war. Indeed, a standard exam question in intermediate economics was, “Marxists claim that war is necessary for full employment? True or False?” The reason for the iron law of wartime booms can be seen in Table 6. In World War II, for example, defense outlays rose by almost 10 percent of total GDP before Pearl Harbor, and this spending boosted the economy out of the doldrums of the Great Depression. Similar but smaller military buildups accompanied the economic expansions in the Korean and Vietnam Wars.

The iron law of wartime booms ended with the first Persian Gulf War. One of the reasons why the iron law of wartime booms has been repealed can also be seen in Table 6: defense spending during the First Persian Gulf War increases by only 0.3 percent of GDP. Because the public sector provided no expansionary impetus, the course of macroeconomic activity was determined by the private sector, which in turn was driven in the short run by psychological reactions to the war.

The major psychological factors that affect the economy in the short run are those driving stock prices, exchange rates, and consumer sentiment. Sharp drops in consumer sentiment and stock prices tend to depress consumer spending, particularly on consumer durables, and business investment. Sharp declines in the dollar tend to raise inflation and are sometimes associated with declines in asset prices. Figure 2 shows the dramatic psychoeconomic reaction to the Iraqi invasion of Kuwait in August 1990. The figure shows indexes of consumer sentiment, stock prices, the exchange rate of the dollar, and industrial production, where I have normalized each variable to equal 1 in July 1990 (the month before the invasion). Consumer sentiment and the stock market both took a sharp nosedive after the initial Iraqi invasion. They then recovered sharply with the quick U.S. victory in February 1991.

Industrial production reacted gradually to the resulting decrease in demand. The recession was sharp, and, notwithstanding the general euphoria after the 100-hour war (seen in the upturn in consumer sentiment), the recovery was slow. The total shortfall of GDP relative to its potential from the beginning of the war until the end of 1991 was around \$250 billion (in 2002 prices).

Economic Stimulus from Defense Spending		
<i>War</i>	<i>Period</i>	<i>Increase in Defense Spending as Percent of GDP</i>
World War II		
Before Pearl Harbor	1939-41	9.7%
All years	1939-44	41.4%
Korean War	1950:3 to 1951:3	8.0%
Vietnam War	1965:3 to 1967:1	1.9%
Reagan Buildup	1981:1 to 1982:4	1.1%
Persian Gulf War I	1990:3 to 1991:1	0.3%

Table 6. Size of Defense Buildup in Past Conflicts

Source: Department of Commerce, National Income and Product Accounts, available at www.bea.gov.

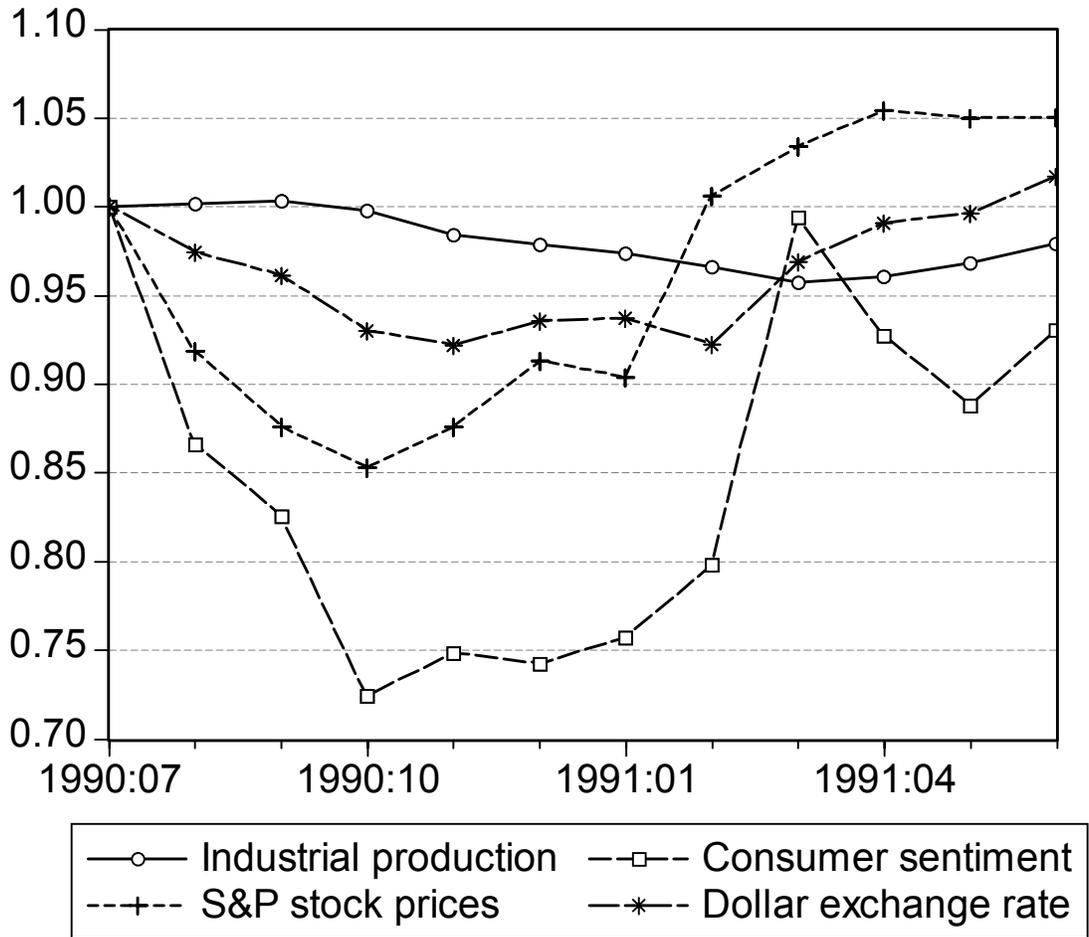


Figure 2. Major Factors Determining Short Run Economic Behavior After the Beginning of the first Persian Gulf War

Source: Data from the U.S. Department of Commerce, Federal Reserve Board, Standard and Poor's Corporation, and the University of Michigan.

The increase in defense spending over the last year (2001:2 through 2002:2) was only 0.3 percent of GDP, so it is likely that psychological factors again will dominate the macroeconomic response to the Second Persian Gulf War unless the conflict spirals outwards from Iraq. A repetition of the 1990-91 downturn is unlikely because markets have in part discounted the prospect of a war, or at least of a short war. Since summer 2002, stock prices have fallen 20 percent, the dollar has depreciated, and indexes of consumer sentiment are at their lowest level for almost a decade. Fears of war are hard to separate from the weak economy, corporate scandals, and poor profits, but part of any adverse psychological reaction to a short war has probably already occurred. In the case of a quick and relatively bloodless victory, the macroeconomic impact is likely to be nil to favorable.

If the war goes badly in the initial phases, the macroeconomic outcome might turn negative. The dangers of tipping into recession are real, particularly given that the U.S. economy was growing very slowly in summer 2002. If there is some combination of heavy casualties, protracted urban warfare, gory pictures on the nightly news, massive foreign denunciations of American policy, rumors or reality of chemical or biological weapons, or major terrorist actions at home or abroad, the economic reactions might resemble the sharp economic declines following the 1990-91 war or the sharp drop in economic activity following 9/11. A plausible unfavorable outcome would be that the economy would experience an average recession in the wake of the war, with output losses in the range of 2 to 5 percent of GDP (\$200 to \$500 billion in today's dollars).

A prolonged conflict is likely to have more profound macroeconomic consequences on the budget and private spending. However, standard macroeconomics holds that the pure cyclical impacts on output and unemployment can over the medium run be offset through monetary and fiscal policy, and I see no reason to think that the standard view is wrong in the current circumstances.

Summary of Economic Costs

We can now collate the different components of the cost of a war with Iraq. It should be emphasized that these estimates vary in terms of precision and empirical support. Indeed, aside from the estimates of the direct military costs, all of the numbers should be regarded as informed conjecture.

Moreover, these costs do not attempt to estimate the benefits of resorting to arms. Since reducing future dangers from a continuation of the

Hussein regime are one of the major objectives of the war, we cannot truly balance the costs and benefits of war without considering the benefits of the disarmament of Iraq. The point was clearly put by Secretary Powell when he asked, "But do we want Saddam Hussein to have nuclear, chemical and biological weapons that he can use, as he has used these kinds of weapons in the past against his neighbors, against his own people, or perhaps against us someday? This is the time to stop him."⁴² We do not (and cannot) measure the extent to which military action today may reduce the threat of Iraqi weapons of mass destruction in the future. At the same time, we also do not and cannot estimate the increase in risk of terrorist or other costly actions which are triggered by a war or that are not prevented because U.S. attention is focused on Iraq.

Table 7 shows a summary compilation of the different elements that we have been able to quantify. Recall that these costs include only the costs to the United States and exclude any costs to foes and friends. The favorable case in the first column of numbers indicates that the economic costs are relatively modest, in the order of \$120 billion dollars. (These are the total costs over the next decade, not the annual figures.) This outcome assumes that the military, diplomatic, and nation-building campaigns are successful.

⁴² Interview on the Oprah Winfrey Show, October 22, 2002, available at <http://www.state.gov/secretary/rm/2002/14563.htm>.

Source of Cost	Costs of War (billions of 2002 \$)		Notes
	Low (short and favorable)	High (protracted and unfavorable)	
Direct military spending	\$50	\$140	[1]
Follow-on costs			
<i>Occupation and peacekeeping</i>	75	500	[2]
<i>Reconstruction and nation-building</i>	25	100	[3]
<i>Humanitarian assistance</i>	1	10	
<i>Impact on oil markets</i>	-30	500	[4]
<i>Macroeconomic impact</i>	0	345	[5]
Total	\$121	\$1,595	

Table 7. Estimates of Cost to the United States of Potential War in Iraq (in billions of 2002 dollars). These costs are the total for the decade following the conflict (e.g., 2003-2012). Negative numbers are benefits

Notes:

[1] Protracted conflict assumes that the monthly cost is 50 percent greater than the CBO estimate and combat lasts 8 months longer. This yields $\$7.5 \times 1.5 \times 8 = \90 billion additional costs.

[2] The low and high numbers assume, respectively, peacekeeper costs of \$200,000 to \$250,000 per peacekeeper per year, with the numbers from 75,000 to 200,000, and for periods of 5 to 10 years.

[3] This includes, at the low end, reconstruction costs of \$25 billion and minimal nation-building costs. At the high end, it adds a “Marshall Plan for Iraq” as described in the text.

[4] The high estimate is equivalent to 1½ years of Perry's “worse” or middle case, while the worst case would be almost twice as high. The low-cost case assumes that Iraq increases production by 1 mbpd in the five years after the end of hostilities. The sign is negative to indicate a benefit or negative cost. Conceptually, these figures include only the impact of oil price changes (the terms of trade effect) and exclude the macroeconomic impacts.

[5] The high cost assumes that the impact is the same as the estimated impact of the First Persian Gulf War scaled to 2002 GDP. This excludes the terms of trade effects that are calculated in the impacts on oil markets in [4].

The unfavorable case is a collage of potential unfavorable outcomes rather than a single scenario. It shows the array of costs that might be incurred if the war drags on, occupation is lengthy, nation building is costly, the war destroys a large part of Iraq's oil infrastructure, there is lingering military and political resistance to U.S. occupation in the Islamic world, and there are major adverse psychological reactions to the conflict. The outer limit of costs would be around \$1.6 trillion, most of which come outside of the direct military costs.

Be warned that this discussion vastly oversimplifies the analysis by constructing only two cases, whereas reality presents a dizzying array of outcomes. Returning to the metaphor of war as a giant roll of the dice, we might say that the U.S. could end up paying the "low" costs of around \$120 billion if the dice come up favorably. If some dice come up unfavorably, the costs would lie between the low and the high cases. However, if the U.S. has a string of bad luck or misjudgments during or after the war, the outcome, while less likely, could reach the \$1.6 trillion of the high case.

Even the high case is not the limit of fortune's frowns. These estimates exclude any costs to other countries, omit the most extreme outcomes (such as chemical or biological warfare), and exclude Perry's "worst" case in oil markets. Moreover, the quantified costs ignore any tangible or intangible fallout that comes from worldwide reaction against perceived American disregard for the lives and property of others.

One feature of the costs not shown in Table 7 is the extent to which other countries share the costs. In the first Persian Gulf War, the U.S. diplomatic efforts reduced the domestic cost of the war essentially to zero. It seems highly unlikely that the U.S. can transfer most of the costs to other countries in the present circumstance, and help from U.S. allies is even more unlikely if the U.S. undertakes a unilateral war by preemption. Indeed, the longer, more expensive, bloodier, more unilateral, and more destructive is the war, the larger the fraction of the very large costs the U.S. will be forced to bear.

Why Do Nations Underestimate the Costs of War?

The historical record is littered with failed forecasts about the economic, political, and military outcomes of wars. It can hardly be a surprise that forecasts about the costs of wars were so far of the mark. When wars occur, this is evidence of some kind of major miscalculation or impaired collective decision-making on a grand scale. With hindsight, would the

southerners have gone to civil war if they had known the devastation that would follow? Would the Germans have provoked World Wars I and II? Would Japan have bombed Pearl Harbor? Would the United States have engaged half a million men in Vietnam? The history of war is, as Barbara Tuchman entitled her insightful book, the march of folly.

Are there structural reasons why nations underestimate the costs of war? To some extent, the answer to this question is plagued by selection bias. Just as 90 percent of legal disputes are settled before they reach the courthouse, similarly a large fraction of disputes between nations are resolved without a resort to arms. Wars are disproportionately fought by those – like Saddam Hussein – who cannot count, refuse to count, count badly, or belittle costs. Sometimes, as with Lyndon Johnson, leaders pursue war because they get foolishly sucked into a psychology where honor and credibility are valued above the lives of combatants and the livelihoods of citizens. Citizens should demand a careful accounting because they, not Presidents or Senators, pay the bills and send their children into battle

A second reason why nations underestimate combat's cost is that they are unable to listen or are provided systematically biased information. Some leaders either cannot hear bad news or kill the messenger who delivers it. Philip II of Spain was of the first variety, as Tuchman recounts:

Wooden-headedness, the source of self-deception, is a factor that plays a remarkably large role in government. It consists in assessing a situation in terms of preconceived fixed notions while ignoring or rejecting any contrary signs. It is acting according to wish while not allowing oneself to be deflected by the facts. It is epitomized in a historian's statement about Philip II of Spain, the surpassing wooden-head of all sovereigns: "No experience of the failure of his policy could shake his belief in its essential excellence."⁴³

There are many examples of the dangers of sealing off a leader from information in such a way that produces poor decisions. Indeed, Saddam Hussein has an unbroken record of miscalculations since his rise to power in 1989. His reign has comprised eight years of disastrous war with Iran, one year of war with the United States, eleven years of draconian sanctions, and only three years free of costly disputes or hostilities. Many today believe that Saddam Hussein's catastrophic miscalculations were in part due to the poor and biased quality of Iraqi intelligence. An example from PGW-I is instructive:

⁴³ Barbara Tuchman, *The March of Folly: From Troy to Vietnam*, Knopf, New York, 1984, p. 7.

On the eve of the ground war, after more than a month of sustained air attacks, [Hussein] told Soviet envoy Yevgeny Primakov (who was trying to negotiate an Iraqi withdrawal from Kuwait), "If America decided on war it will go to war whether I withdraw from Kuwait or not. They are conspiring against us. They are targeting the leadership for assassination. What have the Iraqis lost? They might yet gain!"⁴⁴

A third reason, particularly salient for democracies like the United States, is the advantage of understating costs for gaining political consensus. If wars are thought to be short, cheap, and bloodless, then it is easier to persuade the populace and the Congress to defer to the President. If the American people are led to believe that PGW-II will be like PGW-I or like the Afghanistan conflict, then they may believe that war will not disrupt life or comforts while the world will have one less tyrant. Moreover, if complications arise, it is much easier to raise the extra billions of dollars once troops are in the field and bullets are flying than before the battle is engaged. Politics does not end at the water's edge, but it is surely silenced when the first shot is fired.

Each of these causes of ignoring or underestimating the economic costs of war – the losers' curse, wooden-headedness, and the political advantage in securing consensus – can be reduced by a careful and public discussion of the costs of war. Today's debate about giving the President war-making powers cannot be well informed unless these costs are presented and dissected, and legislators who do not insist on a thorough analysis are leaving half of the equation unexamined and unchallenged.

Another Chapter in the March of Folly?

It seems likely that Americans are underestimating the economic commitment involved in a war with Iraq. This is hardly new, for the record is littered with failed forecasts about the economic, political, and military outcomes of wars. The history of war is, as Barbara Tuchman entitled her wonderful book, the march of folly.⁴⁵ Is America writing another chapter in the march of folly? It is impossible to know in advance, but historians may look back at several early warning signs of economic and political miscalculations.

⁴⁴ Cited in F. Gregory Gause, III, *Iraq and the Gulf War: Decision-Making in Baghdad*, available at <http://www.ciaonet.org/teach/cs/gaf01.html>.

⁴⁵ Barbara Tuchman, *The March of Folly: From Troy to Vietnam*, Knopf, New York, 1984.

The first concern is that the Bush administration has made no serious public estimate of the costs of the coming war. The populace and the Congress are unable to make informed judgments about the realistic costs and benefits of the upcoming conflict when none is given. Particularly worrisome is the promise of post-war occupation, reconstruction, and nation building in Iraq. If American taxpayers decline to pay the bills, this would leave a mountain of rubble and mobs of angry people in Iraq and the region.

Closely related is a second syndrome, frequently found in past conflicts, of entering war prepared militarily but not economically. The finances of the nation have deteriorated sharply since George W. Bush took office. The annual federal budget has deteriorated by \$360 billion in 1½ years, and, even with a short war, budget deficits are likely to mount in coming years. The Bush administration has not prepared the public for the cost or the financing of what might prove an expensive adventure. Perhaps, the administration is fearful that a candid discussion of wartime economics will give ammunition to skeptics of the war; perhaps, it frets that acknowledging the costs will endanger the large future tax cuts, which are the centerpiece of its domestic policy. Nonetheless, the price must be paid – by raising taxes, by cutting expenditures, or by forcing the Federal Reserve do the job by raising interest rates, thereby curbing investment and especially housing. One way or another, Americans will pay for the war.

Third, the predisposition of the United States under the Bush administration to undertake unilateral actions poses major risks. From a military point of view, attacking without a broad coalition of countries can make the conduct of the war more difficult and costly, and it may raise the hopes of the Iraqi leadership that others will come to their aid, thereby extending the conflict. From a political point of view, unilateral actions, particularly those taken without support from the Islamic world, risk inflaming moderates, emboldening radicals, and spawning terrorists in those countries. From a legal point of view, America's insistence on the right to overturn foreign governments without the sanction of international law will undermine a wide variety of cooperative efforts on international finance, disarmament, the environment, non-proliferation, and anti-terrorism. From an economic point of view, unilateral actions imply that the costs will be largely borne by the United States.

Fourth, strategists may be deluding themselves on the reaction of the Islamic world and the Iraqi people to American intervention. A key uncertainty concerns the loyalty of Iraqi troops and the willingness of the

Iraqi military commanders to undertake an urban defense of Baghdad. Furthermore, even though no major Arab government is solidly behind the United States, the administration appears to be persuaded that Muslims are just waiting for the overthrow of Saddam to dance in the streets and that Americans will be welcomed in Baghdad as liberators rather than infidels. Major blunders could unfold if both tactics prove more formidable and admiration for America less widespread than the American administration believes.

Finally, one senses an obsession bordering on wooden-headedness in the Bush administration's focus on Iraq in general and on regime change in particular. In contrast to the clear danger from terrorist activities, there is no imminent threat from Iraq. The war in Iraq threatens to claim the scarce resources and attention of the United States for many years, distracting the country from other troubling spots, like North Korea or the Israeli-Palestine conflict. The administration concentrates on Iraq, while slow growth, fiscal deficits, a crisis of corporate governance, and growing health-care problems threaten the economy at home. The domestic economy and the rest of the world will take a back seat as the U.S. deals with war and peace in Iraq.

Notwithstanding all the warning signs, the administration marches ahead, heedless of the fiscal realities and undeterred by cautions from friends, allies, and foes. Soon, the United States will cry havoc and roll the dice of war.