

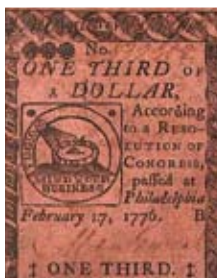
2008

DEFENSE ECONOMICS CONFERENCE

THE ECONOMICS OF WAR

2008 DEFENSE ECONOMICS CONFERENCE

The Economics of War



Jointly sponsored by

OFFICE OF THE SECRETARY OF DEFENSE
(PROGRAM ANALYSIS AND EVALUATION)

AND

INSTITUTE FOR DEFENSE ANALYSES



November 17, 2008



2008 Defense Economics Conference
The Economics of War

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Office of the Secretary of Defense
(Program Analysis and Evaluation)
and
Institute for Defense Analyses

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This work was conducted under contract DASW01-04-C-0003, Task BA-7-2020, for the Office of the Director, Program Analysis and Evaluation. The publication of this IDA document does not indicate endorsement by the Department of Defense, nor should the contents be construed as reflecting the official position of that Agency.

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ISBN 978-0-9762550-5-5

Photos on the cover from left to right, "We Can Do It" (J. Howard Miller); one-third dollar continental currency in 1776 (Smithsonian Institution); Iraqi voter proudly displays purple finger (Spc. David Kobi); a large explosion of confiscated weapons at Contingency Operating Base Q-West in Iraq (Sgt. Eric Rutherford); on the back cover, USAF aircraft of the 335th Fighter Squadron (U.S. Air Force Photo).

All conference photos by
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Preface

Since 1991, the Office of the Secretary of Defense (Program Analysis and Evaluation) and the Institute for Defense Analyses (IDA) have jointly sponsored a conference on defense economics. In 2008, the conference topic of the economics of war provided an opportunity for participants to explore economists' contributions to the national security decision process.

This publication, IDA Document D-3717 (Nonstandard), contains the proceedings of the 2008 conference, held at IDA in Alexandria, Virginia, on November 17, 2008. IDA prepared the publication under a task titled "Defense Economics Symposium." The document did not undergo formal technical review. The conference proceedings were recorded, transcribed, and edited for clarity before they were reviewed by the participants for accuracy.

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WELCOME

Jerry Pannullo
Larry D. Welch

JERRY PANNULLO (Director, Economic and Manpower Analysis Division, Office of the Secretary of Defense, Program Analysis and Evaluation): Welcome to the 2008 Defense Economics Conference. I'm Jerry Pannullo from the Office of the Secretary of Defense.



We have a wonderful line-up of panelists and speakers today and I'm looking forward to hearing their insights on the conference's timely and timeless topic, "The Economics of War." I also encourage the usual socializing at this conference during our breaks and at the reception.

One of our scheduled panelists, Edward Luttwak, had a personal emergency and is not able to participate. We will have Stan Engerman serve as a solo panelist in that session rather than as a co-panelist and allocate one hour for his talk as scheduled.

It is my honor to introduce the president of the Institute for Defense Analyses, General Welch.

LARRY D. WELCH (President, Institute for Defense Analyses): Thank you. I want to very briefly express our pleasure at hosting the eleventh Defense Economic Conference.

As many of you recall, we departed at the last conference from the traditional practice of addressing fairly narrow areas to the much broader look at defense economics, that is, defense in the macro economy.



This conference we're even bolder. We are expanding beyond just defense economics to examine the economics of war encompassing four specific topic areas, that is, the economic causes of war, the use of resources in war, the impact of war on the economy, both positive and negative, and, finally, the use of economic tools in warfare.

Each of these topics is easily worth a complete day, but we hope to engage your interest by addressing all four topics in one day, and given the nature of the group and the participants, we feel confident that we'll be able to do that.

It is my pleasure to introduce our keynote speaker, Professor Martin Feldstein. Professor Feldstein who also spoke at our last conference, which I'm sure you all remember, is a leader in the twin business of interesting economists in the analysis of defense and defense leaders in the insights of economists, and we believe strongly that both can benefit from that. He was the chairman of President Reagan's Council of Economic Advisors. He was president of the American Economic Association. He is president emeritus of the Economic Bureau of National Research and currently is the George F. Baker Professor of Economics at Harvard University.

I know we are all eager to hear Dr. Feldstein's insights.

KEYNOTE ADDRESS

Martin S. Feldstein

MARTIN S. FELDSTEIN
(Professor of Economics, Harvard University): Thank you very much, General Welch. It's a pleasure to be back here and to have an opportunity to talk with all of you. Because of the special nature of this group, I really look forward very much to your questions after my prepared remarks. When I was invited to speak at this conference I said I wanted to talk about the implications of Chinese economic



growth for U.S. national security. I still plan to do that, but I want to take a minute before I get to that subject to talk about another topic and that is the opportunity for additional government spending on rebuilding U.S. defense assets.

When I last spoke to this conference a few years ago, I talked about the need for increased defense spending. The obvious question then was: How do you finance it? And my answer at the time was that some of the so-called tax expenditures should be scaled back or eliminated to free up resources for the more important task of maintaining and expanding our national security.

I recognize the difficulty of making those kinds of political changes but I thought then, and I think now, that this is the right way for us to proceed for future years.

The situation right now is different in an important way. The U.S. economy is in the worst economic downturn since the depression of the 1930s. For a variety of reasons, it looks like it's going to be a longer and deeper downturn than the typical post-war recession.

The fall in the stock market and in home prices has cut household wealth by more than \$10 trillion. That's a one-third cut in all household wealth, and that will lead to a major reduction in consumer spending. I expect the consumer spending as a result of that decline in household wealth will be \$300

billion a year or more and that, in turn, will lead to reductions in production and employment and incomes and, therefore, further reductions in consumer spending.

The traditional way in which we have dealt with recessions in the past has been to lower interest rates, but it's not working this time. Monetary policy essentially has no traction because of the dysfunctional credit markets and because of the collapse of home building.

The government tried a one-time tax rebate program earlier this year, as you'll recall, of about \$100 billion in order to stimulate consumer spending but it didn't work. It didn't work essentially because people saved those dollars or used them to pay down debt.

More than 80 percent of that \$100 billion was not added to consumer spending. So it's clear that we need to increase government spending to take up the slack in the economy. I don't like government spending. I don't like budget deficits. Yet I think, this time, both are needed to maintain employment and incomes. It's not clear exactly how much should be spent. It depends on a variety of things, but I think \$300 billion a year, two percent of GDP for the next 2 years is probably a minimum.

How should the government spend that money? Well, I think the critical thing is that it be spent quickly and that it focus on creating new



production and employment. The Congress is talking a lot about general infrastructure, about roads and bridges. I worry that much of that investment will take a long time and not provide the spending and employment quickly enough. So I think this is a time to spend as much as possible of that stimulus package on equipment rather than infrastructure on the grounds that the latter type of spending can

happen more rapidly. More specifically I think this is a good time to rebuild and replace military equipment and supplies.

As you know better than I, the stock of equipment and supplies has been depleted by the wars in Afghanistan and Iraq, so this is a time to do needed rebuilding while there is substantial unused capacity in the economy and while we don't have to face up to the question of what must be cut in order to finance this spending or what tax will need to increase.

I'm trying to send that message to members of Congress and to people who will be influential in the Obama administration, but, frankly, I could use your help. I can say increased military spending that can come on screen quickly would be a good thing to do but I can't answer the next question: What spending do you mean specifically?

So I hope that some of you will help me answer that question. What specifically would you put into a package of accelerated defense spending if Congress asked what you would like to do at this time? Send me an e-mail at MFeldstein@Harvard.EDU and tell me what you think would be good to do.

Let me now turn to my main topic, the impact of Chinese economic growth on U.S. national security.

I've been going to China since 1982. I go quite frequently. I've seen the remarkable development, indeed the remarkable transformation of the Chinese economy. The Chinese have raised hundreds of millions of people out of poverty and created a massive middle class society not only in the major cities but also in small towns across China.

Looking ahead, I think the relationship between the United States and China is likely to be the most important long-term bilateral relationship for both countries. During the next 50 years, the United States and China will be the two global giants. My friends in Europe may not agree with that, but I think the United States and China will be the two major powers. Both will be able to project force and to pursue ambitious foreign policies, so it's important that we understand that relationship and that it be managed in a constructive way.



The administrations of Bill Clinton and George W. Bush both began with very antagonistic attitudes towards China. Over time, the relationships changed and improved. I think it would be good if the new Obama administration could learn from the past administrations, both Democrat and Republican, and avoid the initial period of conflict. It should be able to do so by recognizing the fundamental differences between China and the United States, the potential sources of conflict between the two countries and the threats that China can pose to the security of the United States in both the near term and the more distant future.

Based on that kind of understanding, the United States should be able to pursue a more positive long-term relationship with the Chinese. Anyone who knows China or spends time there recognizes that there is not an ideological difference pitting Chinese communism against American capitalism.

China is a very entrepreneurial society with a large and growing private sector. Indeed, the Chinese government has been reducing the role of the state-owned enterprises. Foreign firms, including many American firms, play a large role in the Chinese manufacturing economy and financial sector. Although the Chinese government continues to play a major role in shaping the overall development of the economy, it's no longer involved in the detailed microeconomic decisions about corporate investments, employment, production, and product pricing the way it was a few decades ago.

Western style tax policy is used to provide incentives. The central bank relies increasingly on traditional interest rate policies while still using some more interventionist forms of lending controls. The really important differences between China and the West are no longer about economics. They are about the political system and the rule of law. Although the Chinese use western style elections to choose leaders for villages and for other very small units, for more significant positions, they view the selection process as a matter of management decisionmaking that should be aimed at promoting desirable performance rather than at affecting democratic preferences. Although the legal system is evolving and granting litigants more of the rights in commercial and criminal cases than they would expect in the West, that process is certainly far from complete.

We in the United States should be able to recognize these differences, just as we recognize the differences in the French and German political and legal systems that are different from those in the United States, without it being a substantial source of conflict. Yet there are important sources of conflict inherent in the relationship between the United States and this growing giant in Asia. The conflict is not about ideology or about a desire to shape the form in China's image. Today's China is not the China of Mao or the former Soviet Union or the Islamic jihadis who are seeking to establish a new global caliphate.

China is able to challenge U.S. interests despite its relatively low level of per capita income because of its enormous population, its rapid rate of economic growth, and its massive accumulation of foreign exchange.

China's annual per capita income is only about \$5,500 based on purchasing power of the renminbi [currency of the People's Republic of China]. That's only about 12 percent of U.S. per capita income, but its population of 1.3 billion people is more than three times that of the United States, implying a Chinese

aggregate GDP [Gross Domestic Product] of about \$7 trillion in purchasing power. More importantly, the rapid rate of economic growth in China implies a closing of the gap in aggregate GDP. Even if the Chinese rate of GDP growth slows from the very recent double-digit levels or the 7½-percent annual rate that it's achieved over the past 3 decades to a more likely 6-percent rate in the future, China's total GDP will equal that of the United States before 2035. Although the Chinese per capita income and the average standard of living will still then be much lower than that in the United States, it's the aggregate level of GDP that will give China its global power.

In the military field, China's willingness to devote a larger share of its GDP to defense spending than we do in the United States implies that China's military spending will catch up with that of the United States long before 2035. China's international strength also reflects its accumulation of dollars and other foreign funds. The total of these foreign currency assets is now about \$1.5 trillion. These funds give China the ability to buy assets and to make grants and loans around the world. These funds were accumulated as a result of the trade surpluses that China has run with the rest of the world. Last year China's current account trade surplus was some \$370 billion. At that rate, China's foreign exchange funds will soon be \$2 trillion, enough to generate an additional \$100 billion a year in foreign exchange investment income.

What are the current and potential future sources of conflict between China and the United States? They are the kinds of conflicts that one would expect between two great powers who share the same global space. Four interrelated areas of conflict have already emerged and are likely to become more important in the future: These are China's export policy, attempts to gain control over natural resources, foreign direct investment, and foreign policy more generally. So let me speak about each of these sources of conflict.

First, I'll discuss China's export policy. China's trade surpluses, \$370 billion last year, reflect its undervalued currency. Until 2005, the Chinese government kept the dollar value of the renminbi fixed at an artificially low level, that is, at a level which was designed to generate a large and growing trade surplus. When China relaxed this fixed exchange rate in 2005, it allowed the renminbi to rise only very slowly. The Chinese government did this to promote employment in China. The undervalued exchange rate and the resulting Chinese trade surplus have created friction with the United States. It remains to be seen how rapidly the Chinese will now allow their currency to appreciate and how quickly that will shrink this bilateral trade imbalance.

The second source of conflict is in the field of natural resources. China has a vast appetite for natural resources of virtually every kind. In 2007, China was a major, indeed, the major, importer of oil and steel and copper, pushing up the global prices of these materials. These imports will increase rapidly as China's



economy expands. China's approach to satisfying its demand for oil is a good example of how its need for natural resources presents a challenge to the United States and other countries. China uses oil not just for transportation, but also for its petrochemical industry, for heating and for electricity generation.

Although it could in principle buy as much of that oil as it needs whenever it wants to on the global oil market, China has instead chosen to buy oil in the ground in places as far away as Africa. It's not at all clear why China has chosen to do so. There are a variety of possible explanations.

Chinese officials say they have bought oil because they need the supply. In fact, though, since it's uneconomic to bring oil from Africa to China, the Chinese actually sell on the global market the oil that they pump in Africa. The Chinese may, nevertheless, believe that ownership provides a more secure supply than the dependence on the spot market and also than long-term contracts. If the global oil market breaks down because of embargoes or other political reasons, the Chinese may be able to trade their own African oil for other supplies.

Buying oil in the ground is also a way to convert some of its large foreign exchange balances into a real asset that will keep its value if the dollar declines. Some experts say that the Chinese oil companies are merely reinvesting their retained earnings since they are not under any pressure from their shareholder, the Chinese government, to pay more to dividends. Others see the purchase of oil in the ground and oil drilling rights as ways for the Chinese to establish closer political relations with the host countries in Africa for foreign policy purposes quite independent of the oil itself. China's desire to maintain access to oil affects its foreign policy relations with countries in the Middle East. Because Iran is a substantial source of China's oil, the Chinese government maintains a relatively favorable relationship with Iran and is reluctant to support the UN sanctions on Iran that the United States has sought.

The third source of conflict is in the area of foreign direct investment. Oil is only one of the many fields in which China invests abroad. It has invested through its industrial companies and now through a new sovereign wealth fund. When the Chinese invest in emerging market countries, they sometimes establish relationships and support regimes that are contrary to U.S. policy. In addition, the Chinese began in recent years to invest in the United States. Some of those investments have gone smoothly while others have created conflicts with the U.S. Government. For example, the Chinese firm, Lenovo, bought IBM's PC activities but the United States blocked a Chinese oil

company's design to buy Unical because of a worry that China would acquire sensitive technology.

Many U.S. corporations are investors in China, including a wide variety of firms in high-technology industries. They do so because of the supply of talented Chinese scientists and engineers, but these firms are also concerned that the Chinese will copy valuable technology without paying for it. That creates an ongoing source of conflict between China and its western investors.

The fourth and final broad area in which there are current and will be future sources of conflict is foreign policy. Of course, China and the United States have many common foreign policy interests. Our goal should be to work with the Chinese to pursue those common goals. An important recent example of this has been China's key role as a member of the group dealing with North Korea. There are also many aspects of China's foreign policy that should be regarded as neutral or as sympathetic to American interests, but China is inevitably a major independent actor in Asia, where it has sought to develop organized alliances that specifically exclude the United States. In addition, as a permanent member of the UN Security Council, China can veto resolutions in which the United States has a strong interest. In pursuit of its trade interests and its desire for access to oil and other raw materials on favorable terms, China has been unwilling to join the United States and others in tough sanctions on Iran or in policies of disciplining bad actors in other parts of the world.

I think it's important to recognize that we are going to have these ongoing disagreements with China over the four areas to which I've just pointed—export promotion policy, the pursuit of oil and other natural resources, foreign direct investment, and foreign policy more generally—as well as other areas. If these disagreements are not managed well they could lead to different forms of aggression. While military conflict with China seems almost unthinkable at this time, there are other nonmilitary ways in which China and the United States could conflict.

Considering how China could use its economic power in ways that are contrary to U.S. interests is useful as a reminder of our stake in resolving our differences and agreements. I'll consider four such ways in which China could use its current and future economic strength to limit or hurt the United States. They are: economic leverage, financial leverage, cyber conflict, and actual military conflict.

China can use its economic leverage to reward its friends and damage its adversaries. It can do so through trade, through foreign direct investment, and through foreign aid. The size of China's economy and the ability of the Chinese government to affect the behavior of its corporate sector make these channels quite significant. China's trade relations are particularly important

because of China's role as a trading intermediary in what has come to be called process trade. Chinese companies import components and semifinished products from other countries in Asia, complete the manufacture of those products, and then sell the final products to Europe and to the United States. It is in this way that China has become a major export market for Korea and for other Asian countries.

There's no doubt that China is looked upon more favorably in Korea as a result of the large volume of products that Korea sells to China. Korean industry recognizes that the Chinese government can influence the national distribution of sourcing among supplier countries. Despite some important historic grievances of the Koreans with respect to the Chinese, this trade relationship provides a substantial incentive for the Koreans to cooperate with the Chinese in a variety of non-economic political contexts. Chinese businesses have been investing in a number of emerging market countries, creating jobs, and even building roads and other infrastructure. The ability to provide or to withhold such foreign direct investment is an important source of leverage.

Finally, China has become a significant source of bilateral official development assistance. It often provides those funds in collaboration with Chinese corporate investments. So this combination of trade, investments, and assistance need not be a form of conflict with the United States.

The United States often wishes to help these same emerging market countries to develop and prosper. The Chinese actions can help to achieve that goal, but we really do need to be aware that the Chinese can also use these forms of leverage to shift the behavior and the alliance of recipient countries in ways that are inimical to U.S. interests.

Let me turn now to financial leverage as separate from straightforward economic leverage: \$2 trillion of foreign exchange provides a great resource for financial leverage in support of China's foreign policy goals. Although China does not disclose how those funds are currently invested, it seems reasonable to believe that the overwhelming bulk of those funds have been invested in government securities of the United States and of the European governments. China can use those funds to support foreign investment and foreign aid. It could also strengthen alliances by providing loans or other forms of financial assistance.

Korea recently announced that it was seeking a dollar swap line from China to augment the amount that it received from the U.S. Federal Reserve. If China agrees, Korea will clearly be in its debt.

China could also use its dollar assets in other ways that will directly affect the U.S. economy. China has recently invested some of its dollar funds in U.S. financial firms and in the acquisition of manufacturing firms. This was welcomed at the time.

The Treasury Department continues to emphasize that the United States welcomes more such investments from China. It's likely that China's sovereign wealth fund will accelerate that equity investment in the United States. As long as this is passive or folio investment it should be welcomed as a useful source of capital. Direct investment in U.S. operating businesses, especially when a controlling interest is involved, raises other issues. The Committee on Foreign Investment in the United States will prevent Chinese investments in military suppliers, there is a wide variety of other businesses of national security significance that might be acquired by the Chinese if we are not adequately careful.

A decision by China to reduce rapidly its existing investments in bonds could have very serious consequences on U.S. financial markets in the U.S. economy. If the Chinese were to sell large amounts of their dollar bond portfolio, they would cause a substantial rise in U.S. interest rates. Such a rise in the interest rate on Treasury bonds, while it would hurt the Chinese as holders of those securities, would have a very serious impact on economic activity in the United States. Moreover, although that would reduce the value of the Chinese government assets, it would not hurt the concurrent GDP of China and the real incomes of the Chinese people.

In short, if the Chinese wanted to hurt the U.S. economy by selling bonds they could do so even though it reduced the value of their own portfolio without at the same time hurting the standard of living in China. The importance of this risk was highlighted in the past year by Washington's concern about China's large existing investments in Fannie Mae and Freddie Mac. It became clear this past summer that these government-sponsored enterprises have little or no net capital. If they were not quasi-government organizations they would today be bankrupt. The bonds of these government-sponsored enterprises are not technically guaranteed by the U.S. Government in the way that Treasury bonds are.

There was a fear that the Chinese would sell their bonds causing a major rise in the interest rates on these and other U.S. securities. So the U.S. Government made substantial efforts to persuade the Chinese that there would be no default, no loss on the bonds of Fannie and Freddie when the government put these two entities into a conservatorship. In the end, the Chinese have retained the full value of their bonds and they have earned a higher rate of interest based on the lack of a formal government guarantee even though there is and has been a de facto guarantee.

In short, the U.S. Government was forced to give the Chinese a very good deal to avoid a potential sharp rise in U.S. interest rates that the Chinese could have caused. A Chinese financial strategy could also target particular companies, particular bonds, particular stocks in order to bring pressure to

bear on those firms or industries. If China uses its sovereign wealth fund to accumulate a large diversified portfolio of U.S. equities and corporate bonds, it would be in a position to sell particular investments in that way.

Let me turn from economic and financial leverage to the next possible level of conflict and that is cyber conflict. A shift from using economic and financial leverage to a strategy of cyberspace would be a major escalation of hostility. It would be aggression without soldiers or bloodshed and yet it could do substantial damage to U.S. economy and to daily life in the United States.

Recent headlines indicated that Chinese sources were able to hack into the unclassified White House computer network. Newspapers have also reported hacking into the computer systems of industrial companies with the intention of obtaining industrial secrets. Experts have warned for a long time that the ability of a foreign power or even of a terrorist organization to penetrate computer networks in the United States would allow them to disrupt our electric power grid, our air traffic control systems, or our financial systems. A sustained disruption of any of these networks would bring economic chaos. The problem is exacerbated by the ability of hackers to disguise their location by entering the U.S. networks through a third country. If they do that, we cannot know the source of the aggression and, therefore, cannot threaten to retaliate. As a minimum, therefore, the U.S. Government should be working hard on ways to prevent such invasive attacks.

Finally, there is the possibility of military conflicts. There's every reason to hope that there will never be a military confrontation between the United States and China, and yet the U.S. military is certainly wise to take a future Chinese military threat seriously and to prepare strategies for dealing with it.

The United States military is now incomparably stronger than the military of China. Our defense spending greatly exceeds that of China, but, as I indicated earlier in my remarks, China's ability to spend on defense will rise rapidly with its aggregate GDP and can exceed U.S. military spending long before the two national incomes are equal because of the Chinese ability to devote a larger share of their GDP to defense.

Chinese military capability is far more than just a large army. China is a nuclear power with the ability to deliver nuclear weapons anywhere in the world. The Chinese have been demonstrating their ability in space, presumably able or becoming able to destroy or block the satellites that the U.S. military would use to monitor and control ground forces. In addition, the next phase of Chinese military development calls for the creation of a substantial blue-water Navy. Why are the Chinese using the scarce resources for a large military budget at a time when they might be better spent in China on health care or world education? I think there are at least five reasons.

First, some in the Chinese political leadership may have a fear of future military aggression by the United States, or by the West more generally, and if not outright military aggression by the West, then policies to deny the Chinese access to energy or to other vital raw materials.

Second, the Chinese want to be able to prevent a declaration of independence by Taiwan. This requires not only enough military capability to intimidate Taiwan, but also the ability to deter the United States and others from becoming involved in such a conflict if it came to pass.

Third, the Chinese recognize that they live in a dangerous neighborhood. It's not clear how Russia or North Korea or India will behave toward China in the next decade if China does not have retaliatory capacity.

Fourth, the Chinese standing as a great global power requires, at least in their own eyes, the ability to project considerable force far beyond their own borders.

Fifth, the development of military technology and manpower provides an option for the future, a future in which they do not know how the rest of the world will treat China and what goals the future Chinese leadership will have. So China has a major military capability and will continue to develop it in the future. Although I believe the current Chinese leadership has absolutely no intention of deploying that capability against the United States, I'm enough of a realist and I know enough history to understand that we cannot rule out Chinese military aggression against the United States at some point in the future. That is no doubt why a conflict with China is the major potential future military conflict in U.S. military planning.

Even though such a conflict is not something that the Chinese leadership will want in the current decade or the next decade, it is something that could come to pass in that timeframe. The Chinese action in shooting down a U.S. surveillance plane created a tension that could have gotten out of hand. There is clearly a military risk in the large military capability of China, just as there is in the Russian stock of nuclear weapons.

The U.S. promise to defend Taiwan if China attacked without provocation could lead to a military exchange, and it's not clear what would happen if Russia or Pakistan were to attack some part of China. In assessing the risks of a military conflict with China, it's important to recognize that a nuclear power with intercontinental missiles is a serious risk even if it could not sustain or win a major conflict with the United States.

Let me conclude, therefore, with a few brief thoughts. China's size and its rapid economic growth make it a formidable competitor on the global stage. Important economic and political issues will continue to be a source of

friction between us. If we don't solve these in a positive way, China can use its economic and financial resources and its technological and military power to hurt the United States and our interests. A China policy aimed at managing these potential conflicts is a key challenge for the new administration.

Thank you very much. I'd be happy to answer questions about what I've talked about or, indeed, about anything in this complex economic world.

CINDY WILLIAMS (Massachusetts Institute of Technology): You mentioned that China might worry that ultimately spot markets for energy might break down and, therefore, it's interested in locking up as much oil as it can, for example, through its holdings in Africa. I'm wondering whether you personally think that this is a legitimate worry. It strikes me that energy markets, today at least, are extremely efficient. There are plenty of buyers, plenty of producers, and the notion that the market could literally break down is very remote. In fact, what would happen is [that the Chinese could] cause a rise in price but not a breakdown in the market and that, no matter how much oil China holds in the ground, it's going to be affected by that rise in price. What's your thinking on this?



FELDSTEIN: I listed four or five possible explanations about why the Chinese do this. I've talked with the Chinese about it. I've talked with the oil industry about it. I'm still puzzled myself about how much weight to put on each of these. We have had a breakdown in the past on the availability of oil. When the Saudis said we're not going to sell to the United States or other friends of Israel—China is not high on the list of friends of Israel but there might be a different reason why Middle East suppliers would choose to not supply the Chinese.

But if the oil is out there in Africa, that doesn't do them a lot of good. You've got to get it from Africa to China. And if the Chinese are somehow being excluded and we're on the other side of that disagreement, how are they going to safely ship that oil across the ocean?

Well, of course, they are building a blue-water Navy, so they may be in a position to protect that in the future. But part of the answer is if the markets break down and you actually own oil, then you may be able to trade oil for delivery in China by delivering oil to somebody else in a way that the cash market won't work.

Now, how plausible is that? I don't know. But I think it's part of the thinking that goes behind it. I think there are these other reasons from the most benign—these are large companies, state owned, without pressure to

distribute dividends and, therefore, just as Exxon invests around the world, why shouldn't they invest around the world to the view that this has nothing to do with getting oil; it's getting a position in small countries where they can influence the government and foreign policy.

I don't know where on that spectrum to draw the line but I can believe that all of those play a part, and that they are all mutually reinforcing.

CARLA TIGHE MURRAY (Congressional Budget Office): I want to ask a question about your initial remarks about the current economic situation. Some in this country and other countries are calling for a government stimulus that's a green stimulus where the government investment would go towards reducing carbon footprint and helping retool and so on, and I wondered what your perspective was on that by itself and perhaps in relation to an increase in directing the spending more towards defense and military equipment.



FELDSTEIN: I don't think we have to do a lot of choosing at this point. I think we're talking about very large numbers, much larger than the [Congresswoman Nancy] Pelosi discussion about another \$100 billion. I don't know how much you can spend in the near term on green technology. I think the important characteristics of a spending program are that it be big, that it be fast, and that it be creating jobs. I think that rules out another one-time tax rebate. I think it rules out programs that will take 5 or 6 years to happen. If there's additional technology spending that we could do quickly in the green area, that's okay with me. If people say it's not the most efficient, productive use of resources, this is not a time to worry that much about that. This is a time to get spending out there in a way that will stimulate economic activity because otherwise this thing can keep spiraling down.

MARTY McGUIRE (University of California at Irvine): I have a comment and a question. People may be interested to know that over the weekend it was announced that the Bank of Korea, the Bank of China, and the Bank of Japan agreed upon collective swap agreements in the amount of \$13 billion.



I do have a question to you as a famous macro economist in response to the present financial crisis. I wonder if it might not be worthwhile trying to think through a little bit how the United States was so successful in the late thirties and forties in marshaling resources

at a time when people were laying around, sitting around on their hands, thinking that through—especially if the consequences of the present situation become especially dire—thinking through what we may have to learn from the expenditure and taxation approaches taken by the Roosevelt administration.

FELDSTEIN: Good question. Thank you for bringing me up to date on the Koreans. I was in Korea about a week ago and they were quite clearly nervous. I don't know whether \$13 billion is going to make them a lot less nervous. They got \$30 billion from the Fed. They have foreign exchange of their own of \$240 billion, and yet they've managed to create a precarious situation despite that.

You said \$13 [billion] from each?

JEFF WERLING (University of Maryland): No. The interesting connection there is that Japan contributed \$10 [billion], China \$3 billion. It's the nexus of Japan, China, and Korea.

FELDSTEIN: If that's all they got, they have to be a little unhappy.

Anyway, lessons from the thirties. We continued to have double-digit unemployment until the military buildup, so all of the programs did virtually nothing. The monetary policy got off to the wrong start but even after that was changed, [it] didn't help. Programs like the WPA [Works Progress Administration] and the PWA [Public Works Administration] and all of these wonderful ideas, some of them were counterproductive but none of them really succeeded in bringing the economy back. It was only when we shifted to a sort of wartime economy that we created substantial aggregate demand.

I'm not suggesting that we need to go to war with somebody, but I think we could certainly do some more military spending.

GREG HILDEBRANDT (Naval Postgraduate School): In the area of military posture, I was talking to a senior official with real expertise in forces and he said he doesn't really care about the quantities of low-tech military forces. More the question was the wherewithal of China to construct a high-tech military. Of course, you mentioned nuclear and space, but more specifically one might ask about whether China has the military technological base to build, let's say, a U.S. sensor-to-shooter command, control, communications, intelligence, surveillance, and reconnaissance. It's actually been a couple of years since I followed China's defense activities but off the top of my head it almost seems like India would have certain advantages over China.



FELDSTEIN: China does have a very strong high-tech industrial base. It's not surprising I suppose that Microsoft and others do some of their most fundamental research in China because of the quality of the mathematicians and scientists that they can get to work on their issues. If the Chinese set that as a goal for 10 years from now, I'd be surprised if they couldn't achieve it, especially with a little help from espionage.

JOMANA AMARA (Naval Postgraduate School): You talk about the economic leverage and the financial leverage that China could have. My question is more general. As an economic policy, as a nation we go out and we encourage trade. We have all the negotiations with the WTO [World Trade Organization]. We encourage investment in the [United States] and other nations. It seems to me that on one side, what we're encouraging is actually a detriment to our security. On the other side, we do understand that there needs to be certain limits to what we encourage or allow to happen in the [United States],



Have you heard any discussion or any guidelines on where would be a good cutoff point or what the areas of concern should be?

FELDSTEIN: I'm not sure what you have in mind other than foreign direct investment in the United States in terms of a risk to us in our pro-trade policy.

AMARA: For example, in the current financial crisis, we're essentially going around encouraging people to invest in the United States or put money in the United States. At the same time, we recognize that, should there be an issue and the money is withdrawn, we're talking about collapsing markets. We encourage trade. We want people to trade. At the same time we recognize the issue with all the foreign currency, the U.S. currency that's being held in China. We encourage people to come in and invest in our companies. At the same time we're very concerned that that gives them undue leverage in our business activities.

FELDSTEIN: Foreign investment in the United States, if it's not just passive portfolio investment, can be worrisome. I worry that the CFIUS [Committee for Foreign Investment in the United States] is too narrow in its focus and there are other industries where I would rather foreigners, particularly potential adversaries, not invest. With respect to the inflow of funds from the rest of the world, China and the Middle East are the only players with sufficient volume in that they have enough money invested that if they pull out it creates a problem for us. We don't want to encourage them to pull out now. We want to encourage them to continue to provide funds. Now, as long as we run a trade

deficit, that trade deficit has to be financed, and in a sense it is automatically financed. If you sell us goods in excess of what we sell to the rest of the world, then you have to give us the credit to go with it. The question is on what terms.

Foreigners don't want to continue to supply funds at existing interest rates and existing exchange range. And if they wanted to pull out, then we would get an adjustment in either the dollar or the interest rate or both of those, and we're trying to avoid an adverse reaction of that sort.

With the exception of the foreign direct investment, I don't worry about these other things, although there's no question that the large buildup of financial funds, dollar funds in China, in the oil-producing world, gives them potential leverage. The only thing we can do about that is to pursue policies that will shrink our trade deficit and the magic word for that is increased national saving in the United States. An appropriate long-term goal and something that I think will happen more or less automatically over time, people respond to this sharp fall in wealth. They will be rebuilding wealth the old fashioned way by spending less.

Right now we don't want to tell everybody to stop spending. We need them to spend in the short run. Over time if we want to shrink our trade deficit, it will have to be by policies or by just spontaneous action, which I think will happen because of this collapse in household wealth.

JERRY PANNULLO: I think we have to stop there. Thank you, Professor Feldstein. I'm presenting you with a gift, a Jefferson Cup, which has for us come to symbolize making the best use of scarce resources. Thomas Jefferson had four silver cups. He sent these to John Letelier, a Richmond, Virginia silversmith. Jefferson directed that the cups be melted down and made into eight smaller cups similar to a model which he had enclosed. The cups are now known as Jefferson Cups. Thank you again Professor Feldstein.



COSTS AND BENEFITS OF THE GLOBAL WAR ON TERROR

J. Michael Gilmore
Cindy Williams

JERRY PANNULLO (Director, Economic and Manpower Analysis Division, Office of the Secretary of Defense, Program Analysis and Evaluation): Mike Gilmore holds a degree in physics from the Massachusetts Institute of Technology and master's and doctorate degrees in nuclear engineering from the University of Wisconsin at Madison. Mike was a senior executive in the Department of Defense in the Office of the Secretary of Defense, Program Analysis and Evaluation, and he is currently the director of National Security at the Congressional Budget Office.



Cindy Williams has a Ph.D. in mathematics from the University of California, Irvine. She also was a member of the Senior Executive Service in the Pentagon's Directorate of Program Analysis and Evaluation and was an Assistant Director for National Security at the Congressional Budget Office. She is currently a principal research scientist in the Security Studies Program at the Massachusetts Institute of Technology.

First up will be Dr. Gilmore.

J. MICHAEL GILMORE: I'll talk about the estimates of war costs that we've been doing for quite some time. In fact, we did our first estimate of war costs before the war in September 2002. We turned out to be just about right for the combat phase. We estimated based on experience in Bosnia that occupation costs for a force about the size of the one that was there initially would run around \$4 billion a month, which is what the costs were initially. But our estimates have subsequently proven to be low. The costs have proven to be much higher than that.¹

Initially we performed bottom-up estimates using models like Contingency Operations Support Costs [COST] based on assumptions about what kinds

¹Appendix A contains copies of the material that accompanied Dr. Gilmore's presentation.

and numbers of forces would be present in the theater and those costs turned out to be low. So subsequently and more recently we've been doing our estimates of future costs based on, naturally, what's been spent in the theater the previous year, removing what we think are certain one-time costs like, for example, costs for Mine Resistant Ambush-Protected Vehicles, and then projecting forward.



The data we use come from the sources that are shown on this chart. People from CBO [Congressional Budget Office] testified previously about the adequacy of those data and how the problems with the data that are available prevent us from understanding the causes underlying the trends. It makes using these data problematic for projecting future costs. Nonetheless, these are the best sources of data that we have and those are the data that we use.

Now, we focus on federal budgetary costs. Other estimates have been done. Those estimates pick up not just federal budgetary costs, but also costs to society as a whole, including estimates for costs of lost productivity to society because people have been wounded and injured and killed. Estimates of the costs to society have also included part of the oil price increases that have occurred, attributing that to the war. Of course, how people making such estimates would handle the oil price declines that are occurring now I don't know.

Our emphasis has been on Federal budgetary costs, and even if you focus on those costs (and they are a part of the estimates that Professor Stiglitz and others have done), you can still end up with different estimates of what's been spent and what costs might be in the future for a variety of reasons, some of which are listed here on this chart. For example, we present our estimates in current dollars because Congress uses current dollars in preparing budgets; others estimate costs using net present value calculations.

We focus on the marginal costs associated with military operations in Iraq and Afghanistan. We don't look at total costs. There are some analysts who have attempted to estimate total costs, in particular Murphy, Davis, and Topel. When they prepared their estimates of the total costs of containing Saddam Hussein versus the total costs of the war, they attributed to the cost of the war all the equipment costs for units deployed, as well as total peacetime personnel costs. Therefore, their estimates included not just the special pays and the costs associated with having troops in theater, but the peacetime costs

associated with training and paying the troops manning the 15 to 20 brigades deployed to the Iraq theater.

That estimate of total costs doesn't account for the fact that it's the entire army that's supporting those 15 to 20 brigades in the theater, including the associated rotation base. Similarly for a carrier battle group, five or six other carriers compose the rotation base sustaining that one carrier battle group in the theater. So, I could find issues to raise regarding some of the estimates of total war costs that others have done. Anyway, we at CBO focus on estimating and projecting the marginal costs of the war.

A number of analysts would attribute the costs of the war entirely to deficit spending and, therefore, would also accrue interest costs. At CBO [Congressional Budget Office], we don't generally take a particular part of Federal spending and attribute interest costs to it. This is another reason that a focus on computing Federal budgetary costs can nonetheless generate differing estimates.

Other differences have arisen among estimates of the Federal budgetary costs of the war. Some organizations, in particular the Congressional Research Service, have estimated a couple of billion dollars was spent on planning for the war. We have considered that estimate and don't find it plausible. It would require a couple of Pentagon equivalents to have spent that amount on planning. The Pentagon staffs weren't augmented in order to plan for the war, and if we hadn't engaged in the war, those staffs wouldn't have been reduced in size.

Also, some have attributed part of the increase in what I'll call DOD's peacetime budget—the budget excluding the supplemental appropriations that have been used at least up to this point to finance the war—that has occurred since the beginning of the Bush administration to the war. Most of the increases that have occurred in the peacetime budget were contained in whole or part in the 2003 FYDP [Future Years Defense Program]. They've occurred for the reasons stated on the chart as well as for other reasons, including production ramp-ups that were planned at that time, such as for the V-22 and the Joint Strike Fighter, as well as for other systems.

So, we don't attribute any of those costs to the costs of war. In fact, there's been a debate that I think continues to this day, regarding whether some of the costs that have been financed using supplemental appropriations actually should have been funded out of the peacetime budget. For example, the supplemental appropriations have been used to fund the Army's conversions to modular units among other things.

In any event, we don't attribute any of the increases, at least most of them through the current time that have occurred in the peacetime budget, to the costs of the war. There are some issues to debate in that regard too,

like the costs now included in the peacetime budget of the decision to increase the size of the Army and Marine Corps. Nonetheless, generally we haven't included increases in the peacetime budget in our tally of costs of the war.

In this chart, we are focusing on one particular element of costs that's gotten a fair amount of visibility, namely costs for the Department of Veterans Affairs (VA) to care for disabled veterans and wounded veterans. This chart provides a summary of how we prepare our estimates of those future costs, which I'll show you in a minute.



The first thing we consider is how many veterans would have applied for disability and been granted benefits in the absence of operations in Iraq and Afghanistan. Then we, like others, use past experience to generate our estimates going forward. It is true that 40 percent of Gulf War veterans were granted disability, but a quarter of those veterans were given a zero percent disability rating, so we account for that when we do our projections of future costs.

Then we use the data that we have, namely the data on costs for caring for veterans of Enduring Freedom and Iraqi Freedom, what the medical costs have actually been for those veterans, in our projections going forward. And as you can see on the chart, those costs have been lower than for the veteran population as a whole because these recent veterans are younger than the veteran population as a whole.

In the projections you'll see in a minute, we postulate what the force levels might be going forward. We then use those assumptions to prepare a projection from the top down based on what the costs have been per patient, as well as for disability and dependency and indemnity compensation that's paid out. When we do that, we don't project costs explicitly building an estimate from the bottom up based on treating all the individual types of injuries that occur.

The people with traumatic brain injuries or post-traumatic stress disorder are implicitly included in our projections because we look at the total cost accrued per patient and per veteran. I will make a couple of comments about these two conditions.

Certainly there are some traumatic brain injuries [TBIs] that occur as a result of horrible injuries to the head and those are recognized immediately and can be quite costly to treat. The majority of the TBIs are diagnosed based

on secondary kinds of symptoms like headaches, memory loss, and so forth. Sometimes the significance of these symptoms is recognized by physicians or by the soldiers themselves and sometimes the significance goes unrecognized.

The military is trying to improve its screening procedures for TBIs, and we really don't have any data on exactly how successful they've been, although we do have data on the number of TBIs that have been diagnosed. The research that's been done on traumatic brain injury in the population as a whole indicates that about 80 percent of those TBIs are mild and the associated symptoms disappear on their own over time. Whether that data is applicable to TBIs suffered by soldiers in Iraq is unknown.

As far as post-traumatic stress disorder [PTSD] is concerned, you've seen numbers that 12 to 15 percent of the people who have been deployed have been screened for PTSD, but screening doesn't equal a diagnosis. Diagnosis of PTSD occurs after soldiers are seen by physicians, and we don't have good data on exactly how many people who screen are ultimately diagnosed with PTSD. Therefore, it's problematic at this point to generate good estimates of what PTSD costs might be if you were trying to build an estimate from the bottom up, which is why we do an estimate from the top down.

Looking at what costs have been in current year dollars, they've been about \$790 billion through 2008 for operations in Iraq and Afghanistan broken down according to the categories shown in this chart. This doesn't include the \$60 billion-plus that was appropriated as a bridge fund for 2009.

No matter how you add up the costs, whether you are just focusing on what you consider to be Federal budgetary costs or whether you try and calculate costs for society as a whole, you are going to end up generating large costs for the war, much more than people generated before hostilities. Cost to date, \$790 billion.

Looking forward, first at VA spending, here are some projections that we've done for two different scenarios that CBO published in the most recent [Budget and Economic Outlook]. One scenario had a very rapid draw-down to a level of 30,000 troops deployed overseas; that is equivalent to almost completely withdrawing from Iraq and maintaining current troop levels in Afghanistan by the end of 2010. A second scenario assumed a more gradual drawdown to a higher level of 75,000 troops overseas by the beginning of 2013.

We use those assumptions regarding the number of troops deployed to then estimate what the patient loads will be in the VA, and what the costs will be for veterans' medical care, which constitutes about 70 percent of VA spending. Another 23 percent of costs are associated with disability compensation and 5 percent of costs are for dependents indemnity compensation. The chart displays the estimates for VA costs that we have generated. That little dip

in the chart occurs in the low scenario because the draw-down occurs more quickly in that scenario, causing the patient load at VA hospitals to decline more quickly than in the scenario with a larger number of troops deployed for a longer time period. Eventually the spending projected for disability, and for dependents indemnity compensation increases, causing projected overall costs for the low scenario to begin to increase once again.



We generate estimates through 2017 because that is consistent with the convention that CBO adopts in preparing its 10-year baseline projections for federal spending. Through 2017, VA costs total \$9 billion to \$12 billion.

If you look at costs for operations overall, here is our estimate for the two scenarios that I just described. Estimates for overall costs range from \$1.3 trillion to \$1.7 trillion, which are large numbers. I emphasize that our estimates under these two scenarios are just illustrative.

As I said previously, we don't typically attribute interest cost to any particular part of the Federal budget, but in the past we've been asked to do that by the House Budget Committee, among others, and if you did do that you would add another \$700 to \$700 billion to those figures.

How does that compare to what we spent on past wars? Well, this chart summarizes that for you, comparing costs to annual Gross Domestic Product averaged over the period of the wars. On that basis, costs for operations in Iraq and Afghanistan are not as large as were the costs of World War I and World War II. Nonetheless, the costs of Iraq and Afghanistan are definitely substantial.

I'll close with some observations about what we understand and what we don't understand when we use the data available to do these projections of costs going forward.

We do understand how military personnel levels in theater track with costs. You can see on this chart the military personnel costs paid using supplemental appropriations track very well with the troop levels deployed to the two theaters. You can see the other elements of cost, operations and maintenance funding and procurement funding have gone up substantially over time, while troop levels remained relatively constant.

At the top level, we understand a number of the potential reasons for these trends, although we don't understand the underlying causes well enough to predict how these trends might change in the future as troop levels change.

Over the course of the operations, the [Defense] Department has apparently realized that costs are accruing, for things like depot maintenance on equipment as the equipment is used in the theater, that were either not experienced or not anticipated at the outset of the operations. Also, as time has passed, the Department has consciously decided to broaden its definition of what might constitute war costs and what should be funded using supplemental appropriations.

The effects of that broadening are summarized on this chart. The increase in procurement funding that has occurred reflects, for example, the Defense Department's decision to buy Mine-Resistant Ambush-Protected Vehicles to mitigate the problems associated with improvised explosive devices and to upgrade virtually all the Bradley fighting vehicles and Abrams tanks when they are returned to the United States for depot maintenance. Even with the additional detail that the Defense Department has provided in the budget justification materials accompanying its requests for supplemental appropriations recently, there's still a lot we don't understand about the increases in operations and maintenance costs.

CINDY WILLIAMS:

I want to start by thanking Mike Strobl and all the people in IDA who made this conference possible. I'm so pleased to see friends that I already know and meet people that I didn't know in this community. It's a genuine pleasure and it's really nice to be invited to talk about this stuff.



The challenge that was put before Mike and me was to talk about the costs and also the benefits of the global war on terror. I thought it would be useful to think about what the benefits are and to try to do that in some kind of organized fashion.

I want to start by explaining what I mean by the term "global war on terror." I personally cannot put Iraq in that category. I'm going to separate out the potential benefits of the war in Iraq from the potential benefits of everything else that we're doing that might be called global war on terrorism.

I'm going to include the war in Afghanistan—protection at military bases and all the other things that are in the CRS [Congressional Research Service] estimate, for example, as part of the costs of global war on terrorism—and

I'm also going to include the homeland security costs that are over and above the ones we were spending before 9/11. Many people do call it part of the global war on terrorism [GWOT] when they say we have to use every tool in the nation's arsenal to make the nation safer, so that's how I'm going to think about things.



My bottom line is that the benefits the war in Iraq might bring over time are substantially lower than the costs.

On the question of what I call the GWOT—in other words, the war in Afghanistan, some other costs of GWOT outside the war in Iraq, and homeland security—it's not as clear to me that the benefits are lower than the costs, but in both cases I think it would behoove us the next time we consider going to war to think a lot more carefully about the alternatives that might be much less costly.

In any discussion of the costs and benefits of war, it's good to begin by reminding ourselves of the traditional aims of national security policy.

What are the main reasons that we have national security or that we might consider going to war at all? It strikes me that the old-fashioned definition still works well: safety, sovereignty, and territorial integrity. Those are the three main interests that cause a nation to want to have a security policy. Those are the three main things that a nation is trying to protect.

Students of international relations today also typically identify the sustainment of the nation's power position in the world as an important consideration in national security accounting. To some, securing material interests should be added to the list, not just because having the material interests secured could lead to your safety, sovereignty, and territorial integrity, but genuinely in their own right.

In recent years there's been a moral argument advanced for the purposes of U.S. national security that has to do with the importance of saving the lives of innocent victims of brutal governments or civil wars through humanitarian intervention. You can probably think of others but I want to emphasize the main three. Starting with those traditional aims of safety, sovereignty, and

territorial integrity, I think most observers would agree that neither the global war on terrorism nor the war in Iraq is really about either sovereignty or territorial integrity. To the extent they are about any of those big three, it is about safety.

I want to emphasize that in my way of thinking about this, terrorism is a safety issue even if it's mass casualty terrorism and even if it's terrorism through the use of weapons of mass destruction. Terrorism, as long as it's being carried out by non-state actors, is not an existential threat to the United States unless by actions of our own we decide to make it so. One example is not educating the public enough that we're not talking about a war of national survival here so that the public is panicked every time there is a terrorist attack or going into complete panic if, heaven forbid, a weapon of mass destruction were used on the United States.

I'm looking forward to our talk by the historian later today because it strikes me that if this were genuinely a war of national survival we would not even be having this discussion. We wouldn't be talking about the costs and benefits. Typically when it's a war of national survival the benefits are so widely recognized as being so extensive that people don't talk that much before, during, or afterwards about the cost-benefit calculus.

On the other hand, if these were wars of national survival, I would posit that Americans outside the military might have been asked to sacrifice something and there wouldn't have been a reluctance to pay for these wars by raising taxes.

Let's turn now to the potential benefits. What are the benefits of the global war on terrorism and the war on Iraq? I'll start with the global war on terrorism. I'll remind you I think this war was mostly about safety, not about the other two traditional aims of sovereignty and territorial integrity.

The fact that it's about safety makes me think that one could try to discern the benefits in terms of what additional safety from future terrorist attacks the GWOT might provide. How many lives saved might have been saved? Presumably one could even translate that into economic terms—the economic damage avoided by the prevention of terrorist attacks, the amelioration of the consequences through protection and preparation.

The problem with conducting such a calculation is the dog that didn't bark. We don't know how many terrorist attacks might have been prevented, either because of strengthened homeland security or because of the war in Afghanistan, which at least for a time pushed al-Qaeda out of its government-sponsored sanctuary.

A benefits calculation might look like this: After 9/11 several economists calculated that the economic consequences of the 9/11 attacks were. Estimates

ranged between \$200 and \$300 billion. One specific estimate of the economic consequences was \$225 billion.

Suppose the GWOT has averted a new 9/11. If you total up the costs of strengthened homeland security since 9/11, and the costs of the war in Afghanistan over that period of time, plus the other costs that at least the Congressional Research Service includes when it talks about the global war on terrorism, not the Iraq War, you come to something on the order of \$300 billion.

If you genuinely believe we have averted three major terrorist incidents you could say this was cost-effective. A lot of those costs—the economic consequences of the 9/11 activity—were not direct costs. Those were economic costs that had to do with people panicking afterwards. In fact, the direct costs are much lower.

Nevertheless, \$300 billion is a lot of money. It strikes me in the search for alternatives that the nation might be better off looking for more cost-effective alternatives, for example of the American public. Such education would begin with the principle that terrorist attacks are going to occur now and again; there is no way that the United States can avoid all attacks. How then can we prepare ourselves to be more resilient in the face of attacks? Money spent on education might go further than some of the expenses that the United States has made in the global war on terrorism.

Now let me turn to the Iraq War, and here I think the calculus is much different. I think the United States has spent way more on the Iraq War than is warranted by any of the potential benefits, even the potential benefits as they were touted before the Iraq War started.

I want to start by going through the various arguments others have put forward for why the Iraq War was a good idea and see how we've come out with respect to those. The first argument, of course, was that the United States would be protected from an attack on its own soil with weapons of mass destruction [WMDs] by the Iraqi government, because the Iraqis had or were developing WMDs.

I think the fact that no WMDs were found in Iraq tells us that we would have been better off spending a little more money on intelligence. If money on intelligence wasn't good enough, then one should have spent a lot more money on improved intelligence processes so that intelligence would not be corrupted by the time it got to the top. Those would have been better expenditures than having the \$1 trillion that we will have spent on the war in Iraq under Mike's scenarios.

A second argument for the war in Iraq was basically moral and humanitarian. It was that the war would end decades of human rights abuses

by the Saddam Hussein regime against the Iraqi people. It is conceivable that in the future Iraq is going to be better off because of the war. But I don't see it today. In fact, what I see today is, by any reasonable estimate, the number of civilian deaths due to the war in Iraq has been at least 100,000. You also have seen at least 2 million people either internally displaced or as political or economic refugees outside the country today. I think what the numbers tell us is that every time you think that you are going to go to war for humanitarian reasons or for moral reasons you need to look at the humanitarian calculus on both sides of the equation.

An intervention, no matter how well intentioned, is bound to cause humanitarian problems in the interim, and you should be asking very carefully whether intervention on such humanitarian grounds is actually cost-effective in terms of lives and lives disrupted. In fact, I'm always looking for alternatives, and asking what we could have done. Instead of going to war, maybe we could have found a better way of dealing with political refugees before the war than to have invaded Iraq and overthrown the government.

Probably the next and most compelling argument—and some people think it was the genuine reason for the war in Iraq—was oil. It was the notion that the United States could prevent the Iraqi government from one day holding back its oil—that the United States could prevent any hegemon in the Middle East from capturing most of the oil, for example, if the Iraqis got control of the Saudi oil. The Saudis are producing 10 million barrels per day compared with Iraq's 2 million barrels per day today.

This is not a safety issue and it is not humanitarian. This is about the protection of U.S. material interests, some argue; it is about energy security.

How might the Iraq War ultimately affect this calculation in a positive way? And, of course, the [Joseph E.] Stiglitz book [*The Three Trillion Dollar War: The True Cost of the Iraq Conflict*, Linda J. Bilmes, co-author] says it's been affected already in a negative way, in other words, there was less oil. Stiglitz includes among the costs of the Iraq war the oil spike of last spring. Mike asked whether that cost should really be attributed to the war. But over the long term, is there actually going to be a benefit from the war in Iraq? Suppose we had a stable and productive Iraq in the future. Suppose this war really does lead to a stable and productive Iraq that supports United States policies. How much better off would oil markets be in terms of supply?

It strikes me there are two things that could happen from that beautiful world. One is that you could lower the price of oil on world markets



generally because you would have greater supply than you did beforehand. The other came up this morning, the China question, i.e., you could ameliorate the price shock that would be associated with future disruptions of the flow of oil. I want to look at those two arguments one at a time.

First, the question of lowering the price of oil on world markets. How much would oil prices fall if Iraq were able and willing to produce oil closer to its actual capacity? A lot of people think its capacity might be somewhere in the neighborhood of 5 million barrels per day compared to the 2 million barrels per day that it's pumping today.

The size of any price differential would depend on whether Iraq would be willing to produce up to that 5 million barrels per day or if it would say, "We're members of OPEC, we'll produce consistent with the OPEC choices about how much oil we want on the world markets."

I'm grateful to William Nordhaus for an article he wrote before the Iraq War started for making the following point [published as "The Economic Consequences of a War With Iraq," Chapter 3 in Carl Kaysen, Steven E. Miller, Martin B. Malin, William D. Nordhaus, and John D. Steinbruner, *War With Iraq: Costs, Consequences, and Alternatives*, American Academy of Arts and Sciences, 2002]. Suppose Iraq became [the equivalent of] the 51st state of the United States and was willing to produce all the oil it could possibly extract, i.e., that it was willing to produce that 5 million barrels per day. Well, you could see a favorable effect on the price of oil in that case, but as was pointed out this morning by Martin Feldstein, that favorable effect wouldn't last forever because ultimately you've got the demand side of the equation with China, Brazil, India, and other rising powers pulling much harder than that extra 3 million barrels per day it's going to give you on the supply side.

Not only that, but that scenario seems exceedingly unlikely to me, in particular if you just look at the time that the United States has spent over the past several months trying to come to an agreement with Iraq over the status of forces, and it strikes me that Iraq is starting to behave much more like an independent state and not moving in the direction of being the 51st state of the United States. It strikes me the long term benefit is going to be more that Iraq will be able to produce a few million barrels per day but probably not at its full potential capacity.

At least according to William Nordhaus in that article that might bring you a few tens of millions of dollars per year in terms of benefits in oil price, but nothing like the cost that the United States has spent already on the war in Iraq.

There is this secondary question: What about buffering against price shocks? Would the fact that we have a friend in the Middle East really help us to buffer against price shocks?

It's conceivable it would buffer to some extent, and some people say it could be worth as much as a few hundred billion dollars in the event of a price shock. You have to take that with some grain of salt, however, because disruptions today don't cause the same price shocks that they might have yesterday, the reason being that the industrialized states have very large reserves of oil that they didn't have back in the 1970s.

It strikes me that maybe you can come up to a few hundred billion dollars of benefit in a very rare circumstance, but again that's not enough to outweigh even the costs that we've already incurred in Iraq.

And there are other things that you could do if either of those concerns about oil are your main concerns. One is you could tax gasoline at the pump and lower the tax as the supply tightens. Another thing you could do is conduct research and build the infrastructure needed to make alternative energy sources competitive.

If oil price shocks are your concern, you could increase holdings in the strategic reserve. There are other things that would be a lot less costly than going to war in Iraq over oil. If the terrorism threat or the former regime of Saddam Hussein were threats to U.S. sovereignty, we wouldn't even be having this meeting.

The war aims in both cases are limited and the war in Iraq in particular was a war of choice. It strikes me that especially in a democracy with an all volunteer force, it's a good thing to be weighing the costs and benefits of wars of choice. It appears to me finally that the Iraq war in particular has so far been much more costly than the benefits it might warrant and also more costly than reasonable alternatives.

STANLEY A. HOROWITZ (IDA): I'm not going to argue with any of the numbers. I think you had a sensible framework. I'd like to argue with the premise about GWOT. It seems to me there's a reasonable argument that global terrorism is an existential threat. One smuggled in nuclear weapon isn't, but 20 or 50 might well be. Central government couldn't maintain control. The country could come apart. Keeping Iranian, Pakistani, and North Korean nukes out of the hands of terrorists is very important to us, and I think it ought to be thought of in the context of territorial integrity and national existence, not just in the context of safety.



WILLIAMS: I would posit that the notion you are going to have 20 or 30 nuclear weapons that are actually going to work in the hands of stateless terrorists is just preposterous. If they are not in the hands of stateless terrorists then they are in the hands of a state. I'm not going to then call it terrorism. I'm going to call it war, and then you have other tools that you have to think about.

MARTY MCGUIRE
(University of California
at Irvine): It's a pleasure to
criticize a colleague from
University of California.
I would very much like to
second Stan Horowitz's
point. I think you have left
out the most important
reason for national defense



and national security and that is the benefit to the United States and, of course, its allies, of the economic and political benefit of power projection you might call it—"power projection" suggests something rather nefarious, but, in any case, there is a benefit of defense and national security quite aside from sovereignty, safety, and territorial integrity. For one brief example, of course one is always dealing with factual situations here, but what was the benefit of occupying Japan at the end of World War II? There was no need for us to occupy it other than the fact that the Russians were probably going to occupy it if we did not. But even that, it's not at all clear that there would be any safety, sovereignty, or territorial integrity benefits of occupation. But who would question that our history of occupation and the relationship that evolved in Japan has been immensely beneficial to the United States? That's a rhetorical question. Similarly with respect to Korea.

So I think that you have left out, possibly, although the most imponderable benefit of national security, probably the most important.

WILLIAMS: I do mention the old-fashioned ones were safety, sovereignty, and territorial integrity, but many scholars today like also to talk about sustaining a reasonable relative power position in the world. I'm among those scholars. I'm among those people who think that's crucial. Most of the time, I like to think of that as a means to the other three. More as a means than as an end. That's a kind of a small quibble. I



do think sustaining a reasonable, relative level of power is crucial. That doesn't mean that I think the United States has to hold on to its position as the world's superpower forever. In fact, I think that will not happen. It will not hold on to that position forever.

What I do think is that the United States at least needs to keep sufficient levels of power, that it can be the balancer of last resort if other powers go at each other's throat. So I do think the United States needs at least that much power, but it's not clear to me that either the GWOT or the war in Iraq was about sustaining a level of U.S. power in that way.

You could say securing its material interests and particularly energy interests is along that line, although again I think that if we recognize the amount of money that we spend at the pump year after year to secure the oil in the Middle East—which is at least \$100 billion a year, that's probably a conservative estimate of the cost of securing oil in the Middle East—you might start asking whether we shouldn't at least recognize those costs at the pump so that people would behave differently than they do in the purchase of oil.

I will mention one other thing. I was a proponent of the war in Afghanistan, at least the initial war, and I still think that was the right thing and not just for economic reasons. It goes to this reason about securing the nation's power position.

I think it was crucial for a state willing to let itself be the haven for al-Qaeda to be shown, and shown immediately, that the United States doesn't tolerate that, that there's immediate retaliation as soon as the United States knows there's a state like that. And that does have to do with this question of power position. It has to do with the question of deterrence. I thought that was crucial. I think the actions since then and particularly the war in Iraq has watered down that message because now we're mired in a war—and maybe you'll argue whether we are mired today—but we were mired in a war that many outside observers are taking the wrong lesson from.

JEFF WERLING (University of Maryland): I actually have a question for Mr. Gilmore. Did you include the development and reconstruction costs in your figures?

GILMORE: That's in diplomatic operations, the \$20 billion or so that has been appropriated for reconstruction.

WERLING: I thought there was \$30 [billion] to begin with.



GILMORE: I think it was \$20 [billion] to begin with and there were some additional funds that were appropriated after that, nothing recently. Those costs are acquired here.

WERLING: On the procurement side, there's a lot of equipment that's over in Iraq right now. Are we going to bring all that out or are we going to end up donating that and have you looked at that?

GILMORE: We haven't explicitly accounted for any equipment that might be donated or left behind. I don't have any information on which to base assumptions about what might be left behind. I would certainly guess a fair number of trucks, for example, are going to be left behind even though they are some of our more modern trucks over there in what's called the "theater equipment pool." But right now I would just have no basis for assuming specific numbers about types and costs of equipment.

GREG HILDEBRANDT (Naval Postgraduate School): [Concerning] the chart that depicted the 8 to 10 different ways of measuring the marginal costs of our support to Europe, which ranged from \$1 billion to half of the total defense budget, there was a woman who used to work at PNE who was at the Western Economic Association Convention 2 years ago. She looked into the GWOT supplemental expenditures, and she says there's no database to actually track how those expenditures end up being allocated. I was talking to some people who were involved in program depot maintenance and on a worksheet where you can actually see aircraft depot maintenance, some supplemental funding. It seemed to me that that funding was simply permitting the Air Force to meet unfunded requirements where the requirements were not defined based on wartime scenarios. They were defined based on the PDM [Programmed Depot Maintenance] interval.

I guess the question is the sense in which those kinds of costs truly reflect the costs of the war. You made the point when—

GILMORE: I can't give you CBO's estimate for the funding that's been provided in supplemental appropriations that some would argue should have been included in the peacetime budget. I can't give you an overall comprehensive number like that, and the organization would probably be loath to do it anyway because it's subject to debate. It's a matter of opinion as to which costs would be associated with the war.

I'll just note a few things. There's a substantial amount of money that's been spent as it's been appropriated in supplementals in the last couple of years, in particular both operations and maintenance and procurement, that's being used to upgrade all the Bradleys and Abrams that are in the theater to the most modern configuration, and the Army has made the decision to do that. They decided because of dust infiltration, other issues, that each Bradley and Abrams that comes back from the theater should go to depot and be torn down. Once you've

torn them down you have the perfect opportunity to upgrade them. So there's an argument that makes sense. But it's also true that those kinds of upgrades to the most modern configuration have been in and out of the Army budget for years beginning back in the early 1990s. There's an argument that some or all of those costs should have been part of the peacetime budget. On the other hand, you should pay for at least part of the cost for the supplementals.

Similarly, I think there's probably a more cogent argument that the costs of modularity would normally have been paid for in the peacetime budget. Modular conversions in the Army were something that were talked about before our involvement in Iraq.

Subsequently, the Department claimed that we would have done modular conversions whether we were in Iraq or not. They thought they were sufficiently important that they thought they would basically tie up part of the force, pull it out of the rotational pool in order to do those modular conversions because they took a year or more to do in each case but, nonetheless, initially modular conversions were funded out of the supplementals.

There are reasonable arguments that at least some of those costs, and I wouldn't say it's a small amount, would normally have been paid for out of the peacetime budget but have been paid for out of the supplemental.

JACOB KLIERMAN (Abt Associates):
It seems to me that the costs should turn on this question about the possibility of weapons of mass destruction and terrorist groups. You earlier used the phrase "preposterous," but can you fill in the arguments regarding why you feel the possibility [of terrorist groups obtaining a large number of WMD] is probably low?



WILLIAMS: It strikes me that the way for terrorists to get that amount of nuclear material would be to buy it, but somebody has to be willing to sell it, and that somebody generally is a state. States typically don't want to part with that much great stuff.

They could steal it. They could try to grab it from the nuclear arsenals of Russia that aren't yet locked up. About 25 percent of Russian nuclear material isn't yet secured. The likelihood that they could steal that much and get it across borders and then put it into nuclear weapons strikes me as just very low. The likelihood that they could steal it from the United States Air Force—maybe that's a higher likelihood than what's gone on in the past year and a half, but I don't think that's right.

The most likely avenue for them to get that much nuclear material would be for a state to sell it to them. If a state has that much nuclear material, that

state is going to want to secure its own interests with that much material and that many bombs. It's not going to want to give them to a terrorist group.

I don't count the notion that a terrorist group could come up with one or two bombs. I do discount the notion it could come up with 20 and that we somehow wouldn't have a return address.

KLERMAN: Would you make the same argument about chemical or biological weapons?

WILLIAMS: It strikes me that a state doesn't have to bring [chemical or biological weapons] into the country. They could do it right here, a terrorist group. If what they really want to do is chemical or biological attacks on the United States, they probably would be better off producing them here in the United States and then you are not talking about much of what we call the war on terrorism. You are talking about homeland security law enforcement efforts.

But you are not talking about the war in Afghanistan, protection of U.S. military bases, nearly as much, but the bottom line is I'm happy to pay in costs that I attribute to the global war on terrorism. It's not that much. Even the homeland security costs aren't that much compared with what the United States spends on defense every year. I'm happy to pay that. What I'm not happy to have paid is the costs of the war in Iraq.

MIKE STROBL (OSD(PA&E)): I have a question, a thought for Dr. Gilmore. While I agree it's very important that we attempt to calculate the cost to government of war, our view seems to be too narrow and we should—in addition to looking at the costs to government—we should look at the costs to the nation. And I make the distinction because it's my sense that a lot of what we call a "cost" is more appropriately viewed as a transfer. Some examples that come to mind are payments to our forces, our activated reservists, the procurement costs to a large degree, maybe not entirely but for a large degree are transfers. Even as uncomfortable as it may be to think about payments like survivor benefits to the families of the deceased, it is an accounting cost to government, but when viewed from a larger perspective of the nation at large is really just a transfer from government to other stakeholders. I welcome your thoughts on that.

GILMORE: Even though we focus on Federal budgetary costs, we would never claim there aren't other costs to society as a whole. We just don't attempt to estimate.

I would say that I think you should apply as much rigor as possible if you are attempting to estimate those costs, and not everything I've seen has struck me as being rigorous. Just because we don't estimate those costs doesn't mean that the organization has taken a position that they aren't important or they aren't substantial. They can be both important and substantial. It's just not in our charter to estimate them.

In terms of the examples you mentioned, the Federal budget costs, they are actually in our tallies. What's not in our tallies are the costs associated with the fact that you've killed over 4,000 people and their productivity is a loss to the society as a whole. There are economists out there and others who take their particular value of a statistical life and attempt to apply that to determine what the value to society as a whole is. It is not in our charter to estimate that. When I say we are focusing on Federal budgetary costs, that's what I mean, and it's because that's our charter. There is no value judgment implied by making that statement.

PANNULLO: Mike and Cindy, thank you very much. We'll take a break and come back at 11:00.



ECONOMIC HISTORY OF WAR

Stanley L. Engerman

JERRY PANNULLO (Office of the Secretary of Defense, Program Analysis and Evaluation): The next panelist is Stanley Engerman. Professor Engerman is the author of *Slavery, Emancipation & Freedom: Comparative Perspectives*. He's the co-author of the book *Time on the Cross: The Economics of American Negro Slavery* and co-author of *Naval Blockades in Peace and War: An Economic History Since 1750*. He is the John H. Munro Professor of Economics and Professor of History at the University of Rochester where he's taught since 1963. Professor Engerman.

STANLEY L. ENGERMAN: This talk will be quite a bit different than the previous talks, which discussed the present, future, and so forth. What I want to do is discuss the far distant past.

The argument and justification for this is many interesting things related to war have happened in the past and even though they may not seem to be directly relevant to today's policy, they raise a number of interesting questions which hopefully provide some insight with which to approach these issues.



My interests in war and slavery come together because [they are] two of the most ubiquitous human institutions. These are institutions which occurred almost all times in recorded history up until today and in all parts of the world. These institutions have quite negative connotations, war and slavery. In many ways they need to be examined together.

Since wartime captives were the most frequent source of slaves in most parts of the world—and certainly most of the slaves brought to the Americas in the transatlantic slave trade were captives in war. Slavery was regarded by many as a humane way to handle captives. The [alternative]—which was quite often exercised—[was] just killing them, or as in other societies, killing them as a form of religious ritual by human sacrifice. Another relation of war and slavery, particularly important in Islamic societies, most notable was that among the group known as the Mamluks.

In many cases, slaves were used for military purposes on a very large scale. In most parts of the world down to the 16th and 17th centuries, slaves were considered the ideal combatants. Draftees, conscripts, voluntary military service [were] quite late arrivals on the scene.

Recent work by anthropologists on warfare argues there were frequent and high mortality wars among bands and tribes and societies at a precivilization stage.

For example, in the study of North American Indian tribes and bands, only 4 percent of about 157 tribes studied in the United States were considered to be truly peaceful. Most were at war at least once every 4 or 5 years. Mortality rates in these wars were greater than those which occurred in the later nation states around the world.

Some indication of the long-term persistence of warfare is that in the 16th and 17th centuries, European great powers were at war for about 95 percent of the time. This declined slightly to about 78 percent in the 18th century. European warfare at a time of European development was a major characteristic.

In the period since World War II, there have been around the world an estimated 40 to 50 million war-related deaths in international wars and civil wars. Clearly, the continued presence of warfare of different types between countries of different sizes remains. In these estimates of the frequency of warfare, we haven't yet included discussions of various substitutes for warfare such as sanctions, i.e. what used to be called peaceful blockades, which were aggressive actions intended to substitute for war and to achieve desired results of conquest or control. In other words, the ability to try to force by peaceful means has become more prominent in the 19th to 20th century.

The first war I want to mention, which has very little relevance perhaps to today's world because of its great geographic expansion and its effectiveness in killing people, is the expansion of the great Mongol hero, Genghis Khan. From 1207 to 1227, Genghis Khan geographically captured China, killing probably about a third to a half of the population at that time, and then marched through much of southeast Asia and eastern Asia to the Middle East, Prussia, Poland, Hungary, Russia, and eastern Europe. This is generally considered even today the largest land expansion of any conqueror.

A related Mongol might have done better geographically, but he killed many fewer people. What is most striking about Khan is the number of people killed in his marches. Estimates ranged from about 10 to 30 million people throughout Asia and Europe, which would be a range of somewhere between 3 to 10 percent of the world's population at the time. Clearly this has given Genghis Khan the all-time record. And he did it in the old-fashioned way, using

horses, bows and arrows, and swords. Since Genghis Khan didn't seem to be interested in colonization or settlements but rather conquest and plunder, he had apparently little interest in capturing slaves.

As another aspect of wars at that time, recent studies of DNA have estimated that there are probably about 16 million descendants of Genghis Khan alive today, which is about $\frac{1}{2}$ to 1 percent of the total population. Sexual exploitation of female military captives was considered appropriate for a long time.



It is not surprising he would be a big hero in Mongolia. A number of American and European scholars have done their best to resurrect his reputation and find rather good things to say about what might seem a horrid record. No matter how bad your reputation is today, there's always hope.

Khan is actually considered to be one of the leading figures—one of the founders—of globalization today. Of course, given the way many people feel about globalization, that perhaps is not his big plus. He was also praised for his role in state development, introduction of laws, and social stability in Mongolia. Another praiseworthy aspect which is mentioned by these scholars is that Khan was a humane warrior. He did not permit torture of the people before killing his victims. Whether this was desirable or not it's considered a plus. Anyhow, there's a nice resurrection of Khan. The number killed in the First and Second World Wars totaled probably about 23 million people. Khan's numbers are rather impressive, even if slightly exaggerated.

There is a paradox in the discussion of modern Europe. We often expect that economic growth would be more probable in times of peace than warfare despite the argument that some attribute to wartime demand and wartime military needs. Yet the industrial revolution—the diffusion of industrialization throughout Europe—[came at a time of] disputes among the western European powers.

In the 17th and 18th century, France was at war, mostly with Britain, about half the time. The Netherlands were at war with the other powers 46 percent of the time. The United Kingdom was at war, often with France, 50 percent of the time. Spain perhaps paid the cost of being at war about 65 percent of the time, including just about every year between 1550 and 1650.

As you can see, war was heavy on manpower, capital, and resource demands, which one might have expected to have a negative effect on economic growth. It should be noted in the 16th and through the 18th century, the Europeans were not the only nations at war, and in several cases, indeed, the

Europeans were on the defensive, for example, in trying to limit the extension of the Ottoman empire into Europe. The Ottomans had gone into Europe. The Europeans had not gone into the Ottoman empire.

China and India were fighting wars of expansion. Meanwhile, military operations were taking place in Africa, Asia, and the Americas. There's an interesting point to the continuous warfare since we discuss in most cases war as something which shows Europe dominating the world.

There is a very curious moral attitude among Europeans concerning the relation between war and slavery.

By about 1400, western Europeans who had previously been willing to enslave other western Europeans changed their attitude and, for religious, moral, and other reasons, outlawed this form of enslavement, but at the same time they began to purchase enslaved Africans—purchased because they had been enslaved within Africa—and bring them, not to Europe, but to the Americas. The estimated transatlantic slave trade [was] about 10 to 12 million, which actually was only part of the African slave trade that moved slave captives to North Africa and the Middle East, as well as internally.

Warfare among Europeans did preclude slavery, but seemingly permitted killing, rape, pillage, etcetera, as part of the conflict. During the 3 centuries of the transatlantic trade, deaths of Europeans in warfare were possibly about 9 million individuals, almost as much as were carried in the slave trade and about 10 percent of Europe's population in 1700.

One can only be struck by the rather curious standards of morality held by these Europeans at the time. Slavery of western Europeans would not be permitted, but warfare, killing, and so forth of basically equal numbers were acceptable. The struggle for European domination effectively ended by 1815 with the final ending of the Napoleonic wars and the triumph of British naval power. This is called "Pax Britannica," which mainly meant not world peace but [that] northern Europe had only a very limited number of wars between major powers, mainly the Franco-Prussian War. There were periodic revolutions in Europe but these often did not often draw in other nations, and there was also a fair degree of warfare between European powers and Asian and African nations.

Pax Britannica, whatever its claims, was not very much of a world pax. It just meant the major European powers were not willing to fight with each other and that basically they were fighting with Africans, Asians, and everybody else.

Now, the British triumph may have been unexpected in some sense. France, for example, had been quite wealthy. France did suffer because of the French Revolution and then the loss of Haiti, which at that time was probably

the richest country in the world and that served to weaken [France] vis-à-vis the British.

The Dutch lost out because they were a small country. They lost wars to Britain, but the Dutch also suffered the burden of the navigation acts, which were imposed by Britain to stop the Dutch carrying trades. The Dutch were the major carriers. This was costly to Britain as even Adam Smith acknowledged. Smith pointed out that the navigation acts were one government action he was willing to accept because defense was more important than opulence and, therefore, Britain was benefited politically. The British actually had a lower per capita income than did the Dutch into the 19th century so we have the case of an economic power facing a political power.

The case of Spain is always a bit of a puzzle to people. Spain had a one-century lead in settling the Americas over Britain and everybody else. They got there essentially earlier, and what they did is they went to the most prosperous area of the Americas, with the Aztecs and Incas, who had about 75 to 80 percent of the population.

The Aztecs and Incas were quite civilized by European standards. They were imperialists in their neighborhood. They owned slaves and so forth.

Spain with its 100-year lead managed to lose out. Why Britain took over economically is still a bit of a puzzle. Some argue that the wars were very desirable for Britain, but what building up the war machine did was to build up a strong central government and what some people have come to call "state building." The whole idea of state building being desired meant you don't want to be too strong to take away freedoms from the people, but you don't want to be too weak because you want to be able to control people. Some people could argue that state building had advantages but the cost was not cheap for Britain to become a world power.

Between 1688 and 1783, about 9 to 14 percent of Britain GNP [Gross National Product] went for military purposes. During the Napoleonic wars, about 24 to 29 percent of Britain GNP went for government purposes. They also paid a cost because the British took over shipping from the Dutch and paid a higher price for shipping. No one has really estimated what the cost of state building was for the British, but it does seem to be a very expensive venture.

More extensive, we could have asked what would have happened in Europe without a war, with none of the countries wasting its resources. Would this have been a better solution in the long haul? What happens with the Pax Britannica once the Europeans stopped fighting each other is for the most part a period where Britain starts losing, a period of economic convergence, [as] the rest of Europe grew.

Now, when we get to the American Civil War as we slowly move forward in time we're on more familiar ground with very interesting questions that

come up about war and peace. The Civil War remains the most expensive war in U.S. history in terms of human deaths. Curiously, often ignored, at the exact same time as the American Civil War, in China you had a civil war which accounted for about 20 million people being killed. The American Civil War, which gets most of the attention, on the other hand only resulted in about 620,000 deaths, a lot by diseases. These deaths were 365,000 northerners and about 255,000 southerners. This compares with 400,000 American deaths in World War II, 116,000 deaths in World War I, and 2,500 [deaths] in the Spanish-American War.

The Civil War was also very expensive in resources. The Civil War took about 20 percent of northern GNP and 24 percent of southern GNP for required military materials and so forth.

The difficulty which some find in dealing morally with such losses is that whatever may have led to the warfare, it did succeed in ending slavery in the United States, something that may not have been achieved as rapidly in the absence of military conflict. This is the case where most people seem to evaluate the benefits of the war were high because it ended slavery.

The economics of ending slavery in the United States by military conflict was quite critical because it's very doubtful that given the economies of the 1850s that slavery would have ended in the immediate future. In the 1850s, slavery in America, slave prices were at a peak. Slave prices in Brazil and Cuba were at all-time peaks. Look at the prices you see paid for slaves, look at the fact that the northerners were willing to lend money to the southerners; northerners also expected slavery to last forever.

Slavery could not have effectively been ended without a war because the value of slaves in the United States on the eve of the Civil War was equal to about one year's worth of GNP. If you tried to buy the slaves with bonds and so forth it would have resulted in a sixfold increase in the Federal budget. In other words, this was not really a feasible solution. Indeed, one of the things that comes out at the end of the war is the United States is the only major slave power in the Americas where slavery ends without any compensation being paid to the slave owners even after the war. The South fought, they lost the war, and they lost their slaves.

After the disillusionment about World War I and the politics of World War I, it was felt the United States had been duped into the war. Wars were generally considered unnecessary. In other words, [in] the period of time between the wars, it was considered undesirable and unnecessary to have wars.

What was the basic argument for the Civil War being a necessary war? It was based on rather faulty projections which argue that the demand for cotton from the South would decline and, therefore, the South would lose

out on the value of cotton. It was also argued that if there are natural limits to slavery's expansion, then you would have slavery end.

One of the interesting arguments at this time occurred in the debates between Abraham Lincoln and Stephen Douglas in the state of Illinois in 1858. Lincoln's proposal to end



slavery was not to interfere with slavery where it existed, in other words, in the southern states, because that would lead to warfare, but to not let slavery expand into new territories. In other words, bottle slavery up in a limited amount of land.

Douglas argued that no matter what Lincoln said, this was going to lead to warfare and Lincoln was really a warhawk. Lincoln's argument was basically that if the slave population increased as it did very rapidly and if there was no land to expand into, what would happen would be due to the law of diminishing returns; the price of slaves would fall [and] the slave owners would free the slaves. Lincoln argued that he had a peaceful solution for ending slavery by just letting the South not expand and, therefore, having the price of the slaves fall.

Douglas then asked about how long would this [process] take, and this is an interesting question for some of the studies in recent times. Lincoln said he had worked it out. It would take about 100 years for slavery to end by this system, but this would be by far the best way to end slavery. Lincoln was very adamant that he was going to bring about peace, a peaceful end of slavery if the people would be willing to wait the 100 years, although as Douglas pointed out, part of the policy also went that the slaves would be starving to death, which Douglas didn't consider a particularly nice gesture.

Now, Lincoln also added another interesting question which has come up today and which has some current analogies. In 1862 Lincoln posed the question of whether some form of compensation for emancipation to slave owners would shorten the war and increase the wealth of the country. His policy wasn't very good because it was actually below market prices but he had the right intent.

What Lincoln then did was to calculate how many days of the war, how many days of military costs would pay for this emancipation, the idea being that compensated emancipation would be by far the most desirable thing. He

estimated that the cost of compensation was 87 days worth of war. If you were willing to compensate, instead of fighting those 87 days, you would have been able to buy off the war. This of course was a nonstarter in the war. The U.S. South never did get any compensation.

It does point out the high probability that the cost of fighting the war both in financial and human terms is somewhat greater than the course of a compromise and peaceful solution.

Now, following the great effect World War II had in boosting American economic growth, the source of debate was whether war was necessary to increase aggregate demand or if this could be done by more standard means. The argument that the Civil War led to a great spurt in the northern economy attracted great credence but was inappropriate for several reasons.

First, the post-World War II experience was unique in American war history. World War II started at a time where the unemployment rate was about 15 percent. It had been higher earlier but was down to about 15 percent, and although there had been some recovery in 1939 and 1940 with the demand of Europeans for munitions, the question, of course, is: Did you need to have a war or could you come up with some infrastructure expenditures? Not everyone is quite happy with the statement that World War II lifted up the economy.

It turns out, interestingly enough, that in World War I and the Civil War were, with the exception of the Depression, the slowest decades of the American economy. The reason, of course, is that there were relative high rates of employment.

I want to conclude with one or two words about one of the topics we discussed in our book about blockades. The North imposed a naval blockade on the South, which attracted a great deal of attention. This blockade was only of limited success because most southern vessels once the war started were steam vessels and steam vessels had about an 80 to 90 [percent] success rate against the northern blockade.

The North suffered for two other reasons. The North lacked enough vessels to impose a full blockade. What this meant is that the North did not meet the international standards for other countries to agree with the terms for this being a blockade, and this led to a great number of international controversies about whether it [was] actually a blockade or not.

Indeed, the North cut back on the blockade before the end of the war because it was getting too financially expensive. The reason why the South had trouble was that the southern strategy at the start of the war was not to produce cotton, and by not producing cotton, to get England and France to be on their side. The South had stopped producing cotton. It wasn't that the North didn't let it through. Basically what happened was [the issue of] cotton

[turned out to be a] very bad miscalculation by the South. India, Egypt, Turkey and others began to produce cotton at a very high level and took the place of the United States. The blockade was really not very effective and it's really the South which cut its own throat.

Similarly, the French and the British blockades had their limits. The French blockade suffered both from the fact that the French had a small navy. What they also did as a point of war strategy, because Napoleon was a confirmed mercantilism, during 1811, when there was a shortage of grain in England because of harvest failures, Napoleon's strategy was to sell at high prices and let them have their food. It could be argued that he wanted to take the money away because of mercenaries. Basically the blockade didn't work, and the British blockade of the French didn't work because all the French were interested in was not controlling the food supply but making sure the French fleet couldn't leave port. They concentrated all their resources there.

The final point about the Civil War economy which came up today is the Civil War introduced large-scale pensions for disabled northern veterans. These were pensions which began in the war and continued into the 20th century. The pensions were initially, as all pensions were, to go to disabled veterans then it was to any veteran, and by the end of the century, the share of the Federal budget for defense was under 1 percent, [while] veterans pensions were about 40 percent. It had a tremendous impact.

These weren't the first benefits to veterans. The United States military has a very long history of providing benefits to veterans. At the end of the Revolution, veterans were given some land and cash. After that down through the Civil War, you had an interesting system in which land warrants that permitted people to purchase land at cheap prices were being given initially to military veterans, and then they go to include Indian War veterans, then they go to anyone who was in the Army but didn't fight.

The whole idea of the GI bill was a new version, but it's a policy which has a long history. After World War I there was a provision of veterans' bonuses to be paid in 20 or 30 years as part of the agreement with veterans. These veterans' benefits and bonuses became a very important issue in the Great Depression because the veterans advocated payment [long] before they were supposed to. It turns out that the veterans convinced Congress, if not the President, and it turns out that among the one or two years in which the Federal budget deficit had increased relative to 1929 were years in which veteran bonuses were being paid by congressional dictate, and it became part of the fight about what you [do] to avoid a depression.

I have two quotes here. [They] are not said with any sense of judgment, [but] perhaps a sense of déjà vu.

In 1955, the *History of Military Mobilization in the United States Army 1775-1945* commented that: “The United States has never adequately and fully planned for mobilization before it occurred. There has been the reluctance of the Nation’s leaders to confide in Congress and the people. Congress has been content to follow the lead of the Chief Executive.”

The distinguished American economist John Maurice Clark has a book, *The Costs of the World War to the American People*, published in 1931. He concludes his book with: “Post-war unpopularity may perhaps be no conscious loss. But this is a loss of a rather grave sort for we have lost something;” We have not been very actively loved in the past perhaps, but now we seem actively resented, for reasons not difficult to understand.”

A sense of déjà vu perhaps in some of these arguments.

AYEH BANDEH-AHMADI (IDA): My question actually relates to the quote that you ended with. It seems like one of the hardest parts of the question and answer about the costs and benefits of the war is figuring how much better off we are and even if it is possible to figure out if we are better off.



Are there any lessons from historic examples about that and are there any tools—like you were talking about state building—that are hallmarks of wars where someone has ended up being safer or less safe in the long run?

ENGERMAN: You need a bit more cost calculation because it’s not obvious. The first question about how much you can be hated and still survive as a power is sort of an interesting one. I was struck by the fact that Clark is a very sophisticated economist. He was probably the most distinguished American economist of his generation. He said they are always going to hate us. They hate us more. Well, the reason they hated us more in 1931 had to do with the League of Nations but certainly within a period of time the United States gained its world stature, [it] may have lost it again, but basically it was not something which was unrecoverable.

MARTY McGUIRE (University of California at Irvine): Your paper goes directly to a question that was raised in the previous session, and that is: What is the purpose of national defense or national security? As you no doubt know,

and many people would, one theory is that nations go to war in order to enrich themselves at the expense of an adversary. In contrast to that is the idea that was first popularized before World War I by a fellow who later won a Nobel Prize but his name escapes me. This was a theory that because of developments in technology that war had become non-cost beneficial. In other words, it was much more rational for countries to trade and invest and grow that way rather than enrich themselves by conquest. Might be this person's name was Graham.

ENGERMAN: That argument has a long history.

McGUIRE: We have to resolve the issue of whether we should regard the war in Iraq as a war of enrichment or for some other purpose, and I wonder what your wisdom might have to say about that.

ENGERMAN: I was reading last night about the invention of the telegraph. Once you could shorten the period of time in which you deal with other people, this would bring about peace; thus with underwater cables, everyone seemed to be very optimistic about ending war. The causes of war are a lot different. World War II seems to be fought by an act of aggression over territory. Presumably World War I might be the same. Colonial wars, small countries, always seem to be for control. It's very hard to generalize because there are so many different circumstances.

The one thing that seems to be constant, people remember World War I was the war to end all wars. People are always optimistic that wars are coming to an end and they are always wrong.

NATALIE WEBB (Naval Postgraduate School): Much of the discussion has been on wars among nations, and I'm curious what history might help us think about in terms of the jihad with war among non-nation states, groups that we might not even know who the enemy is. History could help us think about the future of that situation.



ENGERMAN: It's hard to visualize. In the past, wars of a similar type as this existed where we had presumably independent people attacking other countries, such as the German Fifth Column before World War II and the IRA in England, I'm sure more existed but it's hard to think of too many.

JOMANA AMARA (Naval Postgraduate School): I found your statement about slavery being the first form of conscription as very intriguing. Would you be able to address issues in manpower since slavery ended, issues on funding for wars? How have armies gone out and recruited after ending the institution of slavery?

ENGERMAN: There are several different methods being used. One, of course, would be a military draft, compulsory service. This, of course, led to involuntary slavery replaced, in part, by voluntary Army. In parts of Asia now they seem to bring in young kids to be soldiers so you have some actually drafted. I think most of the nations in Western Europe and the West basically have variations on a draft or voluntary Army. A voluntary Army gets paid. Slave armies were not unpaid. You had to feed the slaves and clothe them and so forth so it wasn't free, but basically to have a slave Army it was costly, but they seemed to be able to get very good military power out of them.

The whole question of how you treat soldiers would seem to be something counter-intuitive, arming slaves and having them fight seemed to work all the time. The Mamluks in Egypt were basically leaders as well as slave soldiers. There are various forms of compulsion. You may want to consider the draft a form of compulsion, but then you have a voluntary Army.

ALLISON PERCY (Congressional Budget Office): You mentioned—there is a history of increasing or providing bonus payments or other compensation to veterans after previous conflicts, after the Civil War and after—

ENGERMAN: Even before, the War of 1812 is where that starts.

PERCY: I'm wondering what your thoughts are on to what extent veterans' benefits are a cost of the war and to what extent government should take them into account when making the choice to go into war. Is it inevitable that they are going to end up paying for additional veterans' benefits?

ENGERMAN: It's deferred payments. They should have planned for it. Veterans have always been given benefits. The way it was usually counted in the budget, it was a normal budget, as I say, because the Civil War pensions end up being about 40 percent of the Federal Government expenditures at the end of the 19th century.

I would add that this is part of the war and should be considered in the sense that presumably it would not have been paid if there had not been wartime service.

STANLEY A. HOROWITZ (IDA): I was kind of confused by what the bottom line was on whether it would have been cheaper to buy the slaves in the American Civil War. Was Lincoln's 87 days, if that's true it would have been cheaper, but a year of GDP, did the war wind up costing more than the—

ENGERMAN: The war cost more than a year of GDP. I had a rough calculation made that almost no war was worth fighting if you just do the simple costs of the warfare, manpower loss and so forth, probably because you do see situations where if you had a peaceful situations you wouldn't have lost the resources. But I think any attempt to end the Civil War before Lincoln's

100 years, I mean, the Federal budget would have increased about six times and that would be if you could get the southerners to pay the amount so they are not going to get the full payment. This is one of the wars that strikes me as being very difficult to see a peaceful agreement on. I think Lincoln was hoping for one, but it does seem quite doubtful.

PANNULLO: Thank you Dr. Engerman.



LUNCHEON SPEAKER

Joseph E. Stiglitz

MIKE STROBL (Office of the Secretary of Defense, Program Analysis and Evaluation): We are very honored today to have the co-recipient of the 2001 Nobel Prize in Economics from Columbia University, Dr. Joseph Stiglitz.

JOSEPH E. STIGLITZ: It's a real pleasure to be here. I'm talking a little bit about my book, *The Three Trillion Dollar War, the True Cost of the Iraq Conflict*. What I'm going to do is not just so much summarize what's in the book but also raise some of the issues that we encountered in writing the book, which I think will echo some of the discussion you've already been having this morning.



The number \$3 trillion suggests that the war was very expensive—although, I have to say with the multi-trillion dollar bailout, it seems smaller in the long run, and we're getting used to numbers like this. It reminds me of what Everett Dirksen once said, "A billion here, a billion there, and pretty soon you're talking real money." Now it's a trillion here and a trillion there, but it does add up.

Our true estimate is \$3 to \$5 trillion, but we thought \$3 trillion sounded like a better title for a book than the \$3 to \$5 trillion war. Most people don't understand there [aren't precedents for] these estimates but that the best you can do is get a range.

We talk about the \$3 trillion war. We're talking about the total cost, not just the budgetary cost but the costs that go beyond the budget, and in that way our estimates differ from many of the estimates that have been done in the context of other wars, which typically have focused just on the budgetary costs.

We argue that it's really important to take this more comprehensive approach to what the total costs are. Let me first begin by talking a little bit about why one wants to do an exercise like this. The basic lessons of economics

can be that—this could have been the subtitle for the book—there's no such thing as a free lunch, and there's no such thing as a free war.

If you are going to be devoting your resources to one use, there's an opportunity cost for not spending on other uses. That's not only true looking across money from military versus nonmilitary; even within the military, if you are spending this amount of money on Iraq, then you are not spending some amount of money in other areas, Afghanistan or Pakistan or some other war. The issue is once you've decided how much you want to spend on the military, how to maximize the security you get for that expenditure, that really is the ultimate objective.

You can say no one really cares that much about Iraq particularly. It is a little small piece of land on the globe. What one really cares about is maximizing our security and it's a little bit analogous to some research where if a community invests a lot in policemen, enough policemen, they can get the number of crimes in that district to go down, but then crimes show up in the next village.

One of the concerns is that they may be able to spend a lot of money and get the violence in Iraq down but it will show up somewhere else, and that hasn't enhanced our overall security. It could be like putting your finger in a dike. Spending all your money in one place and other holes are ending up elsewhere. One always has to keep a broader security perspective on this.

The issue one has to keep in mind: What is the objective on which you are focused? You should be focusing, and to allocate resources well, you have to know how much you are spending on various things. That's why in the rest of the economy we pay a lot of attention to accounting.

Most of you know we are going through an economic problem right now in the United States, and you can say that the underlying reason for the problem is bad accounting, that they tried to engage in deceptive accounting on what their profits were, what their risks were, and they succeeded in the deception so well that they themselves didn't know what their own balance sheet was. Their intent was to deceive others, but in the process they deceived themselves. That is a worry in any accounting framework.

There may have been an objection to the original intention to deceive the American people what the costs in Iraq were, but in that process the numbers that are used for control purposes of deciding on how you spend money deceive themselves, and the result of this is resources aren't spent as well as they should have been.

In a way, this is very much related to my own work for which I got the Nobel Prize, which is on the role of information and resource allocations, and that's what accounting frameworks are supposed to do, to provide us information about where we're spending money, what the returns are in the various areas

in which we're spending so that we can redeploy resources from where they are less productive to where they are more productive. And the problem is that any accounting framework is more imperfect than some other, and the more imperfect they are the more likely you are to get distorted resource allocations.

We have been using very flawed accounting frameworks. We remark in the book that if the accounting framework that the Federal Government uses were used by any company, [those responsible] would be in jail, that is to say all large companies beyond the corner grocery store have to use accrual accounting and a few governments, New Zealand for example, have moved to accrual accounting. It can be done, but it's not easy and accrual accounting has its own problems. Accrual accounting takes into account costs that you incur today that you will pay for in the future.

So an example is that if a company hires a worker and he works this year but you don't pay him until next year, under cash accounting you don't show any expense but clearly you've accrued a liability. He's worked for you for a year. You have a year's wages that you owe and you want to show that as the cost of production this year. It's a cost this year that you accrued, not next year. In a very simple way, that's the basic principle of accrual accounting, i.e. that you want to take into account costs as they actually occur.

The government and the Defense Department use cash accounting. It's what you actually spend. The result of that is that there can be, especially in modern warfare, very large discrepancies between the two, because they have been increasing, when those numbers get very different there are very big risks of distorted decisionmaking.

Let me just give you a couple of examples of where this occurs. One of the most important examples is deferred compensation, the pensions that people get paid when they leave. It's an obligation incurred today that you will have to pay in the future. You can change the law, you can change the benefits, but there are certainly obligations that you have undertaken today.

What has increased enormously in this war are the costs of disabilities. The ratio of casualties to deaths in this war is 15 to 1. In previous wars, it's been about 2½ to 1.

The first Gulf War that lasted 100 hours, we are now paying in disability compensation \$4.3 billion a year, and that is likely to go up over time. People are living longer. Life expectancy is increasing, a tribute to modern healthcare. One of the reasons so many casualties survived is improved battlefield medicine. The number of survivors is increasing.

You multiply 50 years times 4 billion a year, that's \$200 billion. That number is a big number, a big number compared to the original wages that were paid. That's likely to be much larger in the Iraq war.

About 39 percent of those that fought in the first Gulf War have been eligible for disability. When I gave that number, that was only disability compensation. That wasn't the health care cost of those that come back with one form of injury or another who are entitled to [Department of Veterans Affairs] benefits.

In this war, there are several studies estimating that almost a third of those [deployed] will come back. So far about 1.7 million have been deployed, about a third will come back with what they call invisible wounds, PTSD [post-traumatic stress disorder], traumatic brain injury, or severe depression.

In the first Gulf War, it was about 39 percent that came back with some form [of disability] but once we include the number of those that can benefit with invisible wounds and the other wounds we probably will be more in the range of 40 to 50 percent that will come back with disabilities. Some of them, obviously, very severe. We are talking about large numbers. There are some uncertainties. That's one of the difficulties in forming these estimates of future cost but the numbers tend to be looking like they are getting larger and larger.

The estimates that we did in our book were around \$600 billion, i.e. \$500 to \$600 billion. These numbers get so large that it's a little bit hard to fathom what they mean. Let me try to just translate that a little bit. Four years ago, the President said that if we had a major financial problem with our Social Security system and we would repair it, our economy, our Social Security system would go bankrupt; it would break the social contract across generations.

The estimate of the gap in our Social Security system was around \$560 billion. In other words, roughly the gap—the unfunded entitlement for our troops returning from Iraq—is roughly equivalent to this major hole in our Social Security system.

Put another way, opportunity cost; if we hadn't gone to war, this fraction of the war cost, we could have put Social Security on a sound financial basis certainly for the next 50, 75, 100 years. We would never have to talk about it again. Those are among the opportunity costs you are talking about when you go to war.

[Here is] another example of today versus the future that —[attests to] why accrual accounting is important. In early 2005, the commanders in the field asked for MRAP [Mine Resistant Ambush Protected] vehicles, these vehicles that resist explosion. As an aside, we had one thing in writing the book that we found disappointing. I testified to Congress on this. I said we should not have had to write this book. This book should have been done by the government, by you, by the CBO. You should have several differing sources and have a national discussion about what these costs were. We should not have had to do it.

Since we wrote our book, several studies have come forward and they've mostly been in the same ballpark. We've had some discussion with the CBO over some precise numbers, legitimate disagreements that I think have been interesting in trying to uncover some of these uncertainties, but the administration [staff] still has not come forward with their numbers.



They've said that they don't think our numbers are right, but they don't come forward with what their own numbers are.

We had to use the Freedom of Information Act to get a lot of the numbers that we used in the book. That should not have been the case. These numbers should have been publicly available. There's no security issue on any of the numbers that we used. That was one of the things where we had to use the Freedom of Information Act.

There was this request in early 2005 for these MRAPs. They were not ordered until 2007 and they are costly. One of the issues from a purely cost [perspective]—you needed to compare the cost of the vehicle with some measure of the cost of the injuries that would have been saved and the deaths that would have been saved and you could have a discussion about how you value that. That should have been part of the calculations.

Evidently—our view would have been that it was an easy calculation. You would have easily ordered [the MRAPs] if you had used accrual accounting. You would have seen you were being penny wise and pound foolish not to order those vehicles even though they were very expensive, because not having them was more expensive. Because you use cash accounting, you don't see the total cost of warfare and the result of that is you make bad decisions. That is an example of where not having good accounting frameworks can lead to problems.

You want to have a comprehensive accounting framework to try to identify overall costs over time but also overall cost at this time of the Iraq war cost. There are a number of difficulties. There are costs that could be or should be attributable to the war in Iraq that are not in the Iraq War budget. There are costs that should be attributable to the war that are not in the Defense Department budget. They go beyond the Defense Department. There are costs finally that go beyond the budget and are felt by the rest of society. Many of these costs we can't quantify.

When we say \$3 trillion, those are the quantifiable costs. There are lots of other costs that we could not quantify, and we list those as sort of things that people in future research can try to quantify but even quantifying it, it becomes a way of thinking about a lot of the repercussions of a war.

I won't go through all the items but let me just mention some of these may be more controversial than others. In the context of the expenditures that one might argue are attributable to Iraq and Afghanistan, [expenditures] that are in the military budget but not classified as Iraq expenditures, is the fact that because the war has been unpopular it's been more difficult to recruit. The response to that is you have to pay higher salaries and higher enlistment bonuses, reenlistment bonuses, and [you have to] lower standards. Lowering standards has a cost. That's the part that we couldn't calculate but the others you can calculate. That can be a significant amount.

The only part that goes into the Iraq budget is [the costs] while they are in Iraq; when they are not in Iraq you still have to recruit them and they are not going to spend all the time in Iraq. You still have to pay them the higher wage you did to come and work in the military. Expenditures that are government expenditures that go outside the military budget are—actually a lot of them are lots of little amounts in different agencies that relate to, for instance, the veteran benefits, housing benefits, may go in the HUD [Department of Housing and Urban Development] budget.

I want to mention two [of these]. The obvious one is Social Security. There's a disability provision in the Social Security program, and veterans who come back disabled and qualify for Social Security get Social Security disability benefits. This is an incremental cost that doesn't go in the veterans' [costs] but is part of the cost of the war. One that was not obvious and one of the interesting things in writing this book—and I wrote it with Linda Bilmes who teaches at Harvard—we would discover something that seemed to us incredible, hard to believe. She would discover it and I would say, "It can't be true," and we would check it out and it was true.

As another example, contractors are required to have insurance for people who work for them for disability and death. It turns out that it's very expensive. Guess who pays for the insurance. The U.S. taxpayer, but out of the Labor Department. This is something that doesn't show up in the military budget.

Then it turns out that like most good insurance companies, you write into the insurance contract some little clause that is intended to exclude most of what you want to insure. The famous example, of course, was in the Hurricane Katrina, people discovered that they thought they had coverage for a hurricane but the flood insurance said it was wind and the wind insurance said it was flood, and between the two they could agree it was the other guy,

so [essentially] you got no insurance coverage, and there has been a lot of litigation over that.

If you were writing insurance for somebody in Iraq, what clause would you put in to make sure you don't have to pay out anything? Acts of war, hostile actions, acts of war. It turns out that they put in this act of war, hostile action clause, and the result of that is that we pay the insurance premium but we also wind up paying the benefits for most of the people for a very large fraction of the people.

Which insurance company do you think got the biggest amount from the U.S. Government? AIG was the big beneficiary, several hundreds of millions of dollars on this particular deal.

Well, as far as we could find there is no central registry where you can find out the total amounts involved. We didn't include that in our \$3 trillion cost. All we could do is find out these costs existed. There have been some hearings since the book came out about these that sort of uncovered a magnitude of several hundreds of millions of dollars but it's very difficult to know precisely the amount.

I want to spend a minute talking about how we go beyond the budgetary cost today and future budgetary cost to the non-budgetary cost. Here there are two categories. One is what we call the microeconomic and the other the macroeconomic. The microeconomic costs are costs to individuals, to families, to communities. Some of these are hard to estimate. For some of them, there are standard methodologies.

For instance, in sending over the National Guard troops to fight in Iraq, many of the people who volunteered for the National Guard volunteered because they wanted to be the first responders in their communities to do something like [respond to] a hurricane in New Orleans, but they weren't there because they were overseas. We had thought we had bought an insurance policy. That's why we were paying them on a regular basis as a National Guard, but they weren't there and the same thing [occurred] in other cases. Large fractions of the equipment have been taken out of the National Guard and shipped abroad. So our capacity to respond to emergencies has been diminished as a result of the Iraq war. We didn't estimate that amount, but we know it's real and we've foreseen instances in which it's real.

A second case where it's hard to estimate a number—and we didn't include it for that reason—is the opportunity cost of the members of the National Guard who would otherwise have been most of the time working in their communities, working on ordinary jobs but had to go over and fight in Iraq. They would have been earning wages, wages reflecting their productivity in the private sector, wages plus paying taxes on those wages, and there would have been employer contributions, Social Security taxes, and other taxes.

One could try to estimate what their contributions would have been in the private sector had they not been fighting in Iraq, and that is a measure of the opportunity cost and that might or might not be greater than the wages that they received.

That's the case where some of the earlier studies suggested that the wages, which are in the budget—were much less than the income that they would have had if they had not been drafted, had not been forced to go to fight in Iraq.

Now, it's a little bit controversial because there are different ways of getting data. The data that one gets from self-reporting seems to be different from what's called "administrative records." There's a very large fraction of these people who are self-employed and one of the things we know about self-employed people is they don't report all their income on their tax returns.

If you use your tax returns, you don't see as big a gap between the earnings paid to an individual and their private sector productivity, but if you get self-reported income there seems to be a much bigger gap, and because of these differences we didn't include that.

There are other issues that are actually even more important in the context of manpower. The question is: Were they developing skills that will lead to higher wages in the future, the formation of human capital?

There is a question whether fighting wars develops skills that are human-capital producing as effectively as working in the private sector. Again, that's an open question on which there is not good data, but I think it's an important issue to try to resolve.

Those are some of the costs that we did not include. The costs that we did include refer back to a standard problem in the public sector. When we make a regulation, say an auto safety regulation, we calculate the cost of the auto safety regulation and then we calculate the benefit. How do we calculate the benefit? We form an estimate of the number of lives that will be saved and then we go through this process which is very unpleasant; we ask, What is the value of the life? And the same thing is true in the EPA [Environmental Protection Agency], and every [regulatory] department of the government.

You have an EPA regulation that will reduce the particulate in the air and you ask, What is the cost of this regulation and what is the benefit in terms of lives saved, injuries, asthma attacks, hospitalizations? We have a standard procedure for [assessing these costs] throughout the government and all the advanced industrial countries do this. And there's a standard number that they use for what is called the "value of a statistical life." The EPA uses \$7.2 million, but there's a range in different government departments between \$7 and \$20 million. The U.K. has a little bit higher numbers. This gives you a range.

Why is that important? The gratuity that goes in the budget of the Department of Defense is \$100,000, if they have life insurance, it's another \$400,000 but that number, \$500,000 is still less than \$7 million. So \$7 million is the number we would use everywhere else in the government for valuing a project and that's higher than the budgetary cost.

On disabilities, injuries, you have the same kinds of calculations. You have an example of a microeconomic cost that goes beyond the budget that can be quite significant. Some of these numbers may go from being non-budgetary to budgetary.

There is a movement right now to compensate those who are taking care of the seriously injured. In one out of five American families where there is somebody seriously injured, somebody has to give up a job to take care of them full time. There have been very large numbers of people who have been very seriously injured in this war who are effectively incapacitated. They need full-time care, and somebody in the family gives up a job. That's an economic cost in terms of our society. These are people who would have been working but do not work and don't get paid. There's now a movement to get compensation for these caretakers. Right now it's not part of our budget, but it may be going forward. This is one of those uncertainties. As an economic cost it's important to do that.



One of the reasons for trying to emphasize why we want a comprehensive measure is, again, sometimes we can take actions that shift things out of the budget on to the private sector but that doesn't reduce the overall societal cost. You can get distorted decisionmaking if you have a narrow measure of cost.

Somebody asked me what was one of the surprises in writing the book and in the reception to the book. One of the surprises was how we got strong endorsement from three of the large veterans groups, including the Disabled Veterans of America. The reason is that we discussed a great deal of how [the government was] mistreating them. One of the ways that is that [the government has] not been providing the resources necessary to provide them with the care they need.

As an example of that, in 2003, 2004, 2005, and a little bit into 2006, we were using numbers from 2002 to form the budgetary projections for the VA as if nobody was coming back injured. Then we were funding them through

supplementary emergency appropriations, but those were always on the short side. The result of that is you can see the lengths of time that it takes for people before they get care. They apply. It takes months to get their applications processed. As we put it in the book, they came back from fighting one battle in Iraq to fight another battle with the bureaucracy to get the benefits to which they were entitled.

Those whose parents were wealthy enough, who got health care, they paid it for themselves. The parents who could afford it weren't going to allow their children not to get the health care they needed. But that was just shifting that health care from the public sector from the budgetary account into a non-budgetary account but the costs were still there. We were saving on the budget but we weren't saving on the resources.

The real worry, and several groups have emphasized this, in not providing adequate treatment for PTSD we are creating potential for problems in the future, that a large number, a disproportionate fraction of the homeless in the United States today are Vietnam [War] veterans, and we are now going to be creating the next generation of problems of this kind because we don't have adequate psychiatric facilities today. So we are saving budgetary today but if we took a longer-run budgetary framework, we would realize this was again penny wise and pound foolish.

That's the microexamples of the microeconomic costs. There are a lot more.

Then there's the macroeconomic cost. This is in some ways the most controversial, perhaps most interesting. We described the ingredients to why this war was contributing to the collapse that would be. Let me try to go through the link between the war and the macroeconomic situation.

There are two things that we identified. The first is that the war is related to the increase in the price of oil. When we went to war the price of oil was \$23 a barrel and future markets, which looked to future demand and supply, estimated that the price would remain around that for the next decade. They understood that there was going to be an increase in demand from China, from India, even the United States, but they also estimated that there would be an increase in supply, a concomitant increase in supply from the low-cost providers, mainly the Middle East, and the war really changed that equation.

There isn't a debate among economists about what fraction of the increase in oil—as it went from \$25 up to \$80—what fraction of that had to do with the disturbance in the Middle East, but there is no doubt that it had something to do with it. We take a conservative approach where we only attribute \$5 to \$10 of the increase to the war, but probably a more realistic number is a much higher number. Clearly, I think it ought to be a larger number.

How was that related to our current problems? The increase in the price of oil meant that Americans with their addiction to oil were spending, importing a lot of oil and spending a lot more on the imports because the price was higher, and that money that was being spent to import oil was money that was not available to support the American economy.



In the 1970s when what I'll call the "oil price shocks" occurred, when the price of oil went up, the response was recessions in most parts of the world. We avoided a recession this time for a while. In a way one of the regions of the world avoided it in the 1970s and that was Latin America. How did it avoid it? It avoided it by borrowing. The official name was "recycling petrodollars." That was just really borrowing and borrowing from the Middle East where all the money was going. You spent all the money for the high oil and then you borrowed the money back to maintain your standard of living.

What happened in Latin America? They borrowed and borrowed until they could not repay it, and country after country went into default, [causing] a debt crisis in the early eighties. They had a decade of what is called the lost decade of stagnation. I jokingly say we studied only the first part of that example.

The responsibility was to try to keep the economy at a level keel, and [the Fed] did that by lowering interest rates, lax regulation, and it worked in a short-sighted way. It fed a housing bubble. The housing bubble fed a consumption boom. People took money out of their houses. Savings rates plummeted to zero, and we managed to avoid an economic downturn.

We replaced the money that we were spending in importing oil with money—with more consumption. It was an extraordinarily short-sighted policy, and it is so clear we were living not only on borrowed money, but also on borrowed time. It was only a matter of time before a day of reckoning had to come. You couldn't predict when. Economists are not very good at exact timing. If we were we would be a lot richer.

Identifying the underlying forces, it was very clear what was going on and I talked about this since the beginning of 2005, and others did as well. If we hadn't gone to war, if prices hadn't been as high we would not have needed as much liquidity. The Fed would have tightened interest rates a little bit earlier, and it is at least plausible that the bubble would not have been as high and, therefore, wouldn't have broke and the downturn would not have been as great. I think

a very compelling case can be made that the war at the very least exacerbated significantly the magnitude of the downturn that we are facing now.

There's a second way in which the war affected us and that has to do with the peculiar way in which it was financed. In every other war in the United States, and probably in most other countries, when a country goes to war and asks its young men and women to sacrifice, to risk their lives there is a sense of shared sacrifice.

Those of us too old to fight sacrifice by paying higher taxes. This is the first war in which we went to war entirely on the credit card, the whole war on the credit card. We had a deficit when we went to war. Then 2 months after the war we got a tax cut for upper income Americans. That means the entire war has been financed on deficit spending. It is also the first war since the Revolutionary War in which we have had to turn to such a large extent to foreigners to finance our war. This war we've turned to China. About 40 percent of the debt, the finance, has come from abroad, making us much more dependent on, in an overall sense, a reduced security.

How is that related to the current downturn? Even Ben Bernanke, chairman of the Federal Reserve and before that Bush's economic advisor said the big difference between this recession and 2001 was that in 2001 we had a 2 percent of GDP surplus and that meant that we had more room to maneuver. We had more cash to respond to try to stimulate the economy.

Now there is an active debate going on that is just beginning to bubble into the public press but do we have enough money to have the stimulus that we need? Paul Krugman in an article Saturday said we need a stimulus of \$500 to \$600 billion to rejuvenate the economy, to get the economy just going again. I think he's right. I think most of the estimates are in that ballpark, that's what you need.

Can you afford that when you have the deficit that we have? Our national debt has increased from \$5.7 trillion in the year 2001, when President Bush became the president, to over \$10 trillion today. If you include the bailouts in the way that the IMF [International Monetary Fund] does—and the CBO has said that's the right way to do it—I have some disagreements with the IMF —[but] the number [becomes] \$15 to \$16 trillion dollars.

At that level you start beginning to worry about the deficit. My view is we can't afford not to do it. But the point I want to make is the war is constraining our ability to maneuver and inevitably is going to make us more conservative. Therefore, [we will] not take the actions as strong as we need and the downturn will be deeper and longer than it otherwise would have been.

That goes through the budgetary framework. I want to just conclude on three or four other economic issues that the book raises and then open it up for questions.

In discussing the macroeconomics—and it echoes back to a comment that Stan [Engerman] made in his talk—the view has long been that wars are good for the economy. We argue that wars are not good for the economy. The reason is very simple. We know how to stimulate the economy but in ways that leave a legacy of increasing productivity in the future. Wars don't do that.

Actually even worse, to give you an extreme case, if you use defense spending to hire a Filipino worker to work in Iraq, it doesn't provide short-range stimulus to the economy either. Short-term stimuli may be less than other forms of spending. I think that one has to say that, relative to other forms of spending, it's not good for the economy.

A second issue is the use of contractors. One of the reasons this war is expensive is the most extensive reliance on contractors. Given the size of the military that we have, I think we probably didn't have much alternative. I think the number is—it's hard to get good numbers, but—over 100,000 contractors now, and obviously the military is already stretched. If you need to have another 100,000 it would have been stretched beyond capacity. But that raises the question: Should we have expanded the military? It's obviously partly a political decision but that political decision should have been informed by an economic analysis of what the costs would have been under those two alternatives.

One of my concerns has been that contractors may pursue objectives that are not consistent with our overall mission, and this is a broad issue I've written about, the theory of privatization. When do you want to privatize? When do you delegate to a private sector and when do you want to keep it in the public sector?

The history is that private armies do not have a good reputation. Mercenaries in general are not looked upon as a good way of conducting the military, and there is a good reason for that. The general theory of contracting basically says it's very difficult to specify in the contract all the aspects of what you want people to do. It's the theory of incomplete contracting. Therefore, given the imperfectly specified contract, the pursuit of projects often does not coincide with the pursuit of social objectives.

Let me give you one example that's related to the next issue I was going to talk about. In Iraq one of our concerns very early in the war was [to] win the hearts and minds of the people. We knew with some degree of confidence that we would win the military victory in the beginning. If we didn't, we obviously have some problems. If we couldn't win a war having spent almost 50 percent of military expenditures in the world, win a war against a country that is 10

percent of the population, 1 percent of the GDP, we ought to rethink our strategy. That we sort of understood, but the question is: Would we win the peace? Would we win the hearts and minds?

One of the things that you need to do is provide jobs for young men. When I was at the World Bank we were engaged in some peacekeeping operations. One of the things I did was go to Mindanao, where there were some guerillas. We would try to get them to lay down their arms, and what we tried to do is create jobs for them. That was one of the things I was engaged in. After the war, the unemployment rate in Iraq soared to 60 percent. It should have been an imperative for us to create employment. We didn't control the arms supply in the way we should have, so we knew that arms were floating around. What happened is the private contractors' objective was to minimize cost, to maximize profit. Minimizing costs meant hiring a police force that comprised of Filipinos, or other contractors that were lower wage.

Here you have a country that's been occupied by the United States bringing in low-cost contractors from elsewhere where there's a 60 percent unemployment [rate], and in a way that was clearly predictable and predictive, that explosive mixture of unemployed young men and arms exploded.

That's just one of the examples of how the mission of the contractors often did not coincide with our broader mission.

The third issue I wanted to talk about was this broader issue of winning the peace, winning the hearts and minds, and this is an issue that comes up over and over again. Within the U.S. Government there is often an inability to come together on the importance of this.

For instance, I think that critical in this struggle is job creation. There was an important USAID program to try to provide loans to small businesses, which are the heart of job creation. But while they were trying to do that, the U.S. Treasury, following traditional IMF macroeconomic frameworks, got very worried about inflation and started contracting the availability of credit. So you have one agency of the government who is trying to create a loan program to increase credit and another agency that's using this sort of conservative mantra of central bankers trying to reduce the supply of credit in an economy which still faces 25 percent unemployment.

You can bet who won that and you bet who lost. The country [lost]—as a consequence of that. Unemployment remains stuck at 25 percent.

We are seeing exactly the same thing going on today in Pakistan. The U.S. Treasury and the IMF are demanding very high interest rates, other things that will push their economy into a very bad state. [It] will undermine those who are trying to create a stable government in that country, [and] I think [it] is an extraordinarily short-sighted policy.

Finally, the issue I want to talk about is the exit strategy. I can talk about it now perhaps a little bit more freely because the exit strategy has really been agreed upon. When I wrote the book, I said we may not be able to choose an exit strategy. [The Iraqis] may have views on this. Their views may in the end prevail. A lot of this discussion of whether we should be there for 100 years or 5 years may not be just a matter of our choice. They may have views that will prevail and that seems to be what has happened.

I think the discussion we have in one of our chapters about this exit strategy is worth noting. What we said is the issue isn't so much whether there will be chaos when we leave, which there may be, or whether things will get better, a view that most Iraqis held [in] a majority, but not in all parts of the country. In some parts of the country, there are very big differences [in viewpoints]. The issue is if we stay in 1 or 2 years versus 4 or 5 years, what is the difference? That is to say when you are thinking about this as a problem, intertemporal decisionmaking, what is the difference in the peace or the difference in the degree of chaos and what is the cost? The way to think about it is a decision to stay longer ought to be viewed in terms of the extra cost of staying longer and the extra benefit, which is the change in the degree of chaos or the change in the degree of peace. That's a different way of looking at it than to say there will be peace or there will be chaos, because that may be the case if we leave now or in 5 years time. It's that difference that we want to talk about in our analysis.

In any case, I just want to say that going through this kind of exercise and trying to calculate the cost of this war has really raised a large number of issues, which I hope will become part of a standard kind of analysis that we do in [the] future. I would hope we would never have another war like this, but the probability is that we will, and as we go through these, even in some of the security exercises, these same issues need to be raised.

Thank you.

DAVID S.C. CHU (Under Secretary of Defense for Personnel and Readiness): You spoke to the importance of the intertemporal approach. As you are probably aware, the Department has used accrual accounting for its current accounts for over a century and for health care for over a decade. The side question of course is: Has it had any effect on political decisions? My question really is if that is your perspective would you share with us your views on the merits and demerits of dividing the defense budget between an operating and capital account.



STIGLITZ: I'm very much in favor of a capital account. Every accounting framework is imperfect. The concern about capital accounting is that you sometimes have a tendency to try to claim everything as an investment, so you have to guard against that tendency. You are going to be healthier in the future and, therefore, you will be more productive and, therefore, you can't just look at it as a current enjoyment. You are only enjoying that because you are going to be more productive in the future.



It seems to me that it is important—especially, I think, in defense—to think about which of these things are things that we're spending today like munitions and which are things that are really investments that we hope will be providing security over long periods of time.

CINDY WILLIAMS (Massachusetts Institute of Technology): You mentioned that the war costs are constraining our ability to maneuver in response to the current financial crisis and the economic problems. You also did say that most of the spending for the war would be considered to be stimulative. The only part that you brought out that wasn't [stimulative] is the relatively small fraction that's going to the [Filipino] contractors. Did you mean to say that borrowing the costs of the war is constraining?

STIGLITZ: Let me make it clear. It's the deficit in general, not this particular aspect of the deficit. If we had not had the tax cut we would have had a smaller deficit and more room for maneuver.

I don't want to single this out particularly, but the decision to go to war and finance this war totally by debt has meant that our deficit is larger and our national debt is larger than it otherwise would have been, and that means that when people try to decide what size stimulus we should have, in the back of their minds is the fiscal position the United States is in right now.

AYEH BANDEH-AHMADI (IDA): This morning Martin Feldstein advocated spending more money on equipment and military to simulate the economy. You critiqued the idea that wars stimulate the economy in general, but can you just talk a little bit about to what extent you think there is a trickle-down effect from military spending on things like equipment and contrast that with other tools, things we could spend on, and especially spending on veterans'



benefits. What would be the best way to spend money to stimulate the economy both in the short and long run?

STIGLITZ: The last part of your question is really the important part. Think about both the short run and the long run. The important point I tried to make was that military expenditures do not increase long-term productivity and, therefore, have only a short-term stimulative effect. As you point out, apart from that part of the expenditures which doesn't come from the United States, the short-run effect may not be that much different from other forms of expenditure except for one thing. There is a complementarity between private returns and public investments.

If we have better roads, if we have more research, that increases productivity. If we have better human capital in general, it will increase the returns to private sector capital and, therefore, will stimulate private investment. That's not true with the military, at least to the same extent. So, in general, there is a second-round effect of public investments for activity-enhancing expenditures that is not there with the military expenditures. If you are trying to particularly stimulate a broad sense of the private sector, it's really where you would want to direct more of your investment.

The second point I guess I'd also want to make is the following. We have not managed our economy very well for several years. Part of the real cost of the financial sector debacle is that we misallocated capital, scarce capital that should have been spent to increase productivity went into housing beyond people's ability to afford and in the wrong places.

That's a waste of money in the magnitude of hundreds of billions of dollars, and now, because of the financial debacle, our economy is going to be operating below its capacity, and we will lose several trillion dollars, so we are going to be poor. In addition to that, for the last several years we've been borrowing about 5 percent of GDP a year. We've been living beyond our means. You borrow that amount of money year after year you have to pay it back. We've accumulated huge debts to foreigners and we're going to be paying that. We have to get used to the idea that we're much poorer than we thought we were.

We were living in a dream partly because of the bubble economy and now we've been brought back to reality. This is important because in bringing us back to reality we have to become more efficient. We have to become more efficient in everything we do. We have to become more efficient in our health care system, in our energy system, and also in our security system. What I would be urging is increase the efficiency in all these major sectors where I think there is large room for improvement.

JEFF WERLING (University of Maryland): I'd like to mention one thing that's kind of missing in the analysis. Someone mentioned this morning the



question of whether all these costs are buying our national security, and the one thing we don't measure, we don't put into GDP, is national security. Even if we go to a capital budget we can see actually a capital budget in the national accounts for defense. All that capital investment never buys something that we noticed in the account, education, roads, these things. We can

do the cost benefits because we never really do measure the benefits of investing in a tank, investing in a soldier. I want to mention that.

STIGLITZ: That was actually the beginning of my talk. The reason we focus on the cost is we can agree what the costs are. We have a lot harder time agreeing on what the benefits are. For some people their perception [is that] benefits are very high, and for others, they are not. For those who deal with those benefits, it's real. That's not something we should ignore.

MARTY MCGUIRE (University of California at Irvine): Second comment. The answer you get to a question often depends on the way the question is framed. I suggest a slightly different way of framing the question, part of which you've already answered with response to the previous question. Consider a 50-year time horizon. Suppose we amortize this \$3 trillion a year out over that 50 years. We got \$60 billion a year. Then the question might be asked, and I'm not endorsing or advocating this, but the question might be asked: Is it worth \$60 billion a year for the United States to have a permanent base with a client state in the Middle East and in Iraq? And asking the question that way might change one's instinct [about an] answer, in spite of [the] very, very compelling—especially the macro[economic]—argument you make.

STIGLITZ: The one thing I want to go back and emphasize, the issue is not Iraq. The issue is security. You have to ask the question what have been the consequences for our overall security in the world or even in the Middle East, and you have to evaluate what's going on in Iraq in the context of Afghanistan, Pakistan, and all these other things. We can get security in one little piece of land. That doesn't buy us global security. It doesn't even buy us regional security.

STANLEY A. HOROWITZ (IDA): I have a question about costing methodology. Obviously, disability costs are a substantial part of the analysis, and the VA disability system, as I understand it, is such that a fairly large fraction of folks who never go to war draw disability. You can get disability without having any affliction that's militarily related. Can you say a few words about how you normalized this peacetime level of—

STIGLITZ: That was a question we tried to address. This goes to the question of the factual and incremental. What would have been the disability payments were it not for our engagement in Iraq? We did a study—I'll try to inform this by looking at that time background level, occurrence of disability in peacetime, and then compare that to the increase that occurred by them being in Iraq. I was a little bit disappointed in that I had hoped there would have been a lot of studies of this kind and the fact that we had to—there may be some—

HOROWITZ: We've got some stuff.

STIGLITZ: I'd like to see that. We had to do our own little bit of study, do that kind of comparison. In terms of the budgetary cost as opposed to the incremental societal cost, the fact that they were in the military and they would not have been, the National Guards that were called up and got these benefits, those are incremental budgetary costs whether or not they are incremental societal costs. That's an example where there are incremental budgetary costs that may not even be incremental societal costs, so the two concepts can be somewhat different.

And there are other examples, for instance, there almost surely was a lot of corruption in the contractor payments. To the extent that the contractors got overpaid, that's a transfer payment. It's not a real resource use. That's an example of a budgetary cost that was just a particular way that the Federal Government has of compensating some campaign contributors and they could have done it through other ways.

In peacetime, we would have found other ways of giving away goodies to these people, but this was the most convenient way under war to give away these goodies. It doesn't even belong as a cost for the Iraq war, it's just it was the most convenient form today.

We didn't try to figure out how much of the contractor's costs could be viewed as corruption payments, transfer payments to pay political debts or whatever. We just left it in there. Those are the kinds of things that in the future one could try to actually estimate and I think give a view of the total real societal costs of the war.

STROBL: There was a reason why we chose this particular day for this conference and that is so we could fit on Dr. Stiglitz's calendar, and I think we would all say it was worth it. Dr. Stiglitz, thank you very much. We're going to take a 10-minute break.



ECONOMIC CONDITIONS FOR WAR AND PEACE

Andrew W. Marshall

Mark Harrison

JERRY PANNULLO (Director, Economic and Manpower Analysis Division, Office of the Secretary of Defense, Program Analysis and Evaluation): Our next panel is Economic Conditions for War and Peace. Our panelists are Andy Marshall and Professor Mark Harrison.

Mr. Marshall's education is from the University of Detroit, Wayne University, and he holds a graduate degree in economics from the University of Chicago. He's the Defense Department's Director of Net Assessment.

Professor Harrison is the author of the book *Accounting for War, Soviet Production Employment and the Defense Burden, 1940 to 1945*. He has a bachelor's in economics from Cambridge and a doctorate degree in modern history from Oxford. He is currently the professor of economics at the University of Warwick in the United Kingdom and is also a distinguished visiting fellow at Stanford University's Hoover Institution.



The first speaker is Mr. Marshall.

ANDREW W. MARSHALL: Well, the first thing I guess I'd say is this is a huge topic actually and I've had some trouble trying to decide exactly what to focus on. I have decided to talk about the extent to which economic considerations are important in both the onset of war and during the conduct of war, and in both cases to talk a little bit about trends.

In terms of the onset of war, economic considerations can be an important factor. For instance, in the case of World War II, the Japanese entry into the war, the attack on Pearl Harbor, was in part triggered by actions that we had

taken to cut off their access to oil, and they certainly had ambitions to expand their control of the area and create an economic co-prosperity sphere. But in a broader sense, it seems to me the more fundamental causes of war are that we're primates. We're obstreperous, war-like, quarreling animals. If you talk about the basic kind of causes, it's more important to talk to the anthropologists, the primatologists, the ethologists, people like that.

Read Lionel Tiger and Robin Fox, *The Imperial Animal*, and things of this sort. Warfare or fighting seems built into the human experience. It may differ in frequency or proximate causes. Clearly things have changed over time in the sense that once upon a time warfare had objectives of plunder or taking territory, but also it was an occasion for, particularly the male, to gain honor and status. So the motive for fighting is not just gain, but also the occasion to display special qualities and status. Perhaps also for nations, status matters.

Aaron Friedberg described in his book [*The Weary Titan: Britain and the Experience of Relative Decline, 1895–1905*], how the British watched the growth of Germany, technical competence, etcetera, and they began to feel threatened in terms of their status.

Similarly, we ourselves may well go through something like that if China continues to grow. There are economic aspects of warfare, but, a lot of it is built into human beings, and then concern for status, honor, and factors of that sort.

Again, in the current situation or in the future as you try to consider what nations might fight for, there are energy and other resources; water for example is a particular possibility—access to water. Water flows across political boundary lines. A lot of the rivers in Asia come off the Tibetan plateau. The Chinese have had some plans for diverting some of it or changing the flow of the water, things of that sort.

Specialized minerals is another example. In the immediate aftermath of World War II when people thought that uranium was very scarce and that there were only a very few deposits of it, there was great concern over control of those deposits. There may in the future be other such particular materials, metals, and so on. A friend of mine up on Wall Street was talking to me about indium. You find some particular metals or other things that have a very special use. Very often it is military. In the case of indium, it is used in night vision devices. It then became important in these new TV plasma screens, all of a sudden the demand shot up, and the price went through the roof. So you get technical developments creating a huge demand for particular kinds of metals or other materials that the control of which could potentially be of interest.

Earlier, of course, economic considerations were perhaps more important in the sense of the opportunities for plunder. When you had settled societies

living near or adjacent to more agrarian areas, as the Chinese society was for a long time—more settled, more prosperous—and there were people had superior military skills. They would raid to get wealth and presumably honor and prestige in their own culture. But over time through a combination of various strategies the Chinese managed the situation. They began paying tribute to the nomadic peoples, trying to civilize them, and so on.



Now, in the conduct of warfare, economic considerations are very interwoven, particularly in more recent times and undoubtedly into the future, with industrial scale warfare. One factor is that for a long time now we've been living in a situation where the more developed world, in contrast to the Chinese situation, has the superior military skills. We're not facing the same basic problem that used to exist.

What it's led to, of course, particularly beginning in World War II, is the notion of strategic attack directly on the economy, bypassing the military. That possibility is, if anything, increasing because technology has moved in the direction of long-range precision strike capabilities. So the issue of targeting the economy or targeting the leadership or targeting society in the opposing country, understanding of that economy, of the particular target, exactly which buildings to hit, which window to put the missile through, and so on, is there. So economic understanding is essential for some kinds of warfare.

Also there's financial warfare directly targeting the other side's financial system and the leadership's financial system. Also in any larger-scale war between nations, you have the denial of access to particular materials. I mean not only just blockades. In World War II there was a very extensive economic warfare effort. A lot of it—after the war when people looked at it—was not entirely effective. Big efforts were made to prevent the Germans from obtaining supplies of certain metals that were important in alloys. The Germans then invented new alloys. Or in the case of copper—I remember the analysis showing that for a locomotive it took many, many pounds, even maybe a ton or so of copper—but the Germans eventually adapted, and they used a minimal amount of copper.

In modern society, people can adapt and change given enough time. So there are very complex issues connected with the economic aspects of waging warfare. Obviously, it would be a big issue looking to the future, given the ability of society with science, knowledge, and substitution of materials that are possible.

If you look to the future, the conduct of this kind of long-range precision strike regime we are in the midst of evolving has a big economic aspect to it. On the other hand, a few years ago Martin Shubik wrote an interesting article pointing out an interesting and important way of looking at the basic situation we find ourselves in—consider the number of people 10 committed men could kill before they were put down. It's hard to judge what the level is, but the shape of the curve is clear. The number didn't change for a long time, but in recent times it has gone way up.



That's the situation modern societies are in. It's not just that they have vulnerabilities but it's also about the kind of opportunities they offer to small groups bent on attacking them. There are available commercially or relatively easily obtained a whole variety of materials that people can make poisons out of, can make bombs out of, can make materials that could cause great fires and so on.

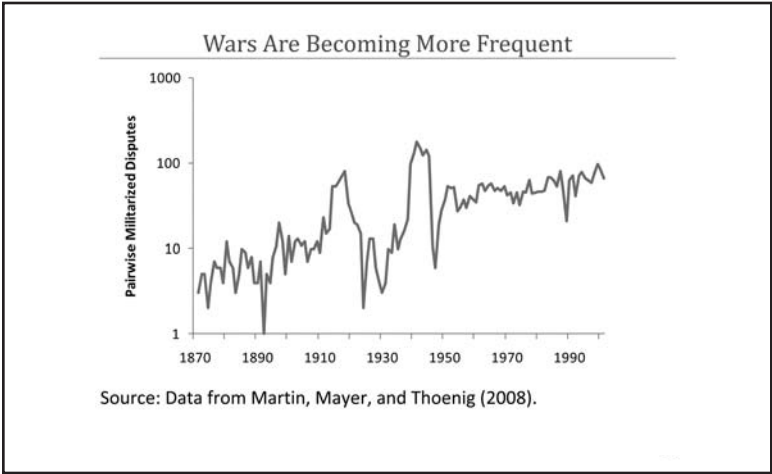
Just in the last few days, I was reading a book about World War II about the British agent "Zigzag" who went to Germany as a double agent and was taught how to make explosives out of things you buy at the drugstore, the candy store, and so on. Well, the manual this man prepared was really a big encyclopedia of sorts, but it demonstrates the opportunities that are available and are just there for the asking. They are the byproduct of the economies we have in all of these areas, of the industrial materials which are available.

So on the one hand, we have a high-end conventional warfare capability. Probably one big feature of this long-range strike, the opportunities to strike targets leads to economic analysis, understanding of the other side's economy and so on. On the other hand, this same society is vulnerable, has all the aspects that make it susceptible to a very different kind of attack. Let me close with that.

MARK HARRISON: First of all, it's a pleasure and an honor to be here. Like Mr. Marshall, I wasn't quite sure what to talk about so I thought I would start by talking about some data.

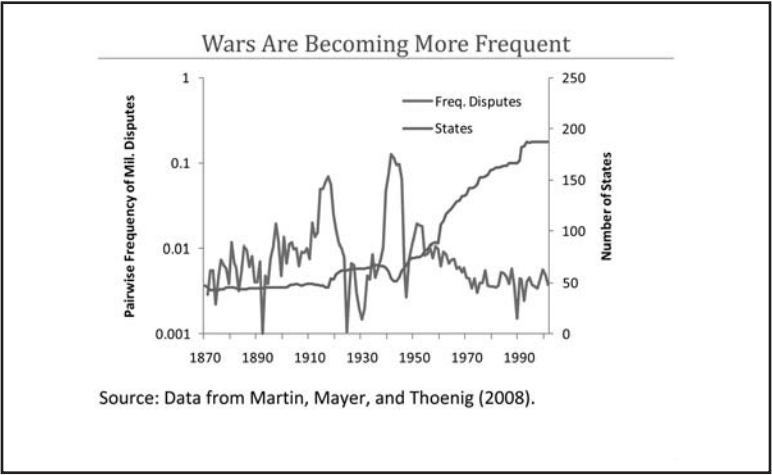
This chart shows not the number of wars but the number of pairs of countries that have been engaged in bilateral militarized disputes in the world at any one time since 1870. One of the striking things about it is it shows a very clear trend. It's a trend that's rising at around $2\frac{1}{4}$ percent a year, and it's been rising since 1870.





The two World Wars show up as a disturbance, but essentially the nature of it is to compress the number of conflicts that would normally have taken place into short periods of time in the beginning and the end of the period that we think of as the two World Wars. Of course, the intensity of warfare varied a lot over this period. The number of conflicts is also important. As I say, it shows this rising trend.

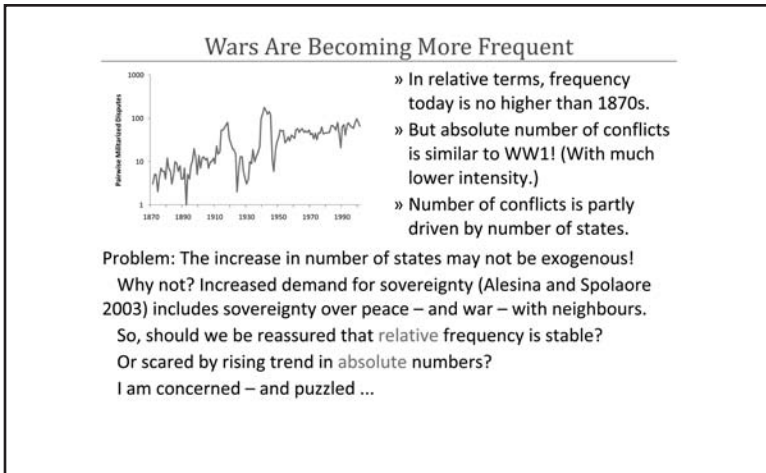
The notion is that we can decompose this figure into two components. Because it's for disputes between pairs of countries, one thing that influences it is the number of pairs.



You can see that the number of countries has changed a lot over this period. It's increased, most dramatically in the most recent period. Each additional country, of course, produces a very large number of extra pairs. If you strip that out of the trend that I showed you a minute ago, what you then get is something like the underlying frequency normalized by the number of states, and this does not show a trend. It shows a lot of disturbance, peaks for the two World Wars and coming back down again.



When I looked at these figures, I asked myself: What is it that we should be more concerned about? Should we be more concerned about the rising trend of the absolute numbers of conflicts, or the stationary probability of disputes between pairs? I came to the view that really we ought to be more concerned about the rising trend and I want to explain why.



If we look at the relative frequency it was no different recently than in the 1870s, which sounds fine. If we look at the absolute numbers of conflicts, it's recently been similar to what took place in World War I, of course, with lower intensity.

The important thing here is the increase in the number of states, but my main sense is that we should not think of the number as exogenous. When states break up and new states come into existence, that means increased demand for sovereignty over decisions affecting peace and war, and an increased number of states that can come into conflict with neighbors.

My general sense is we are looking at something that should concern us. I'm more worried now than when I started thinking about this presentation. I'm also puzzled. The puzzlement is because what we see seems to go against a lot of things that western political philosophy has led us to expect.

The two things I'm going to talk about are globalization and democratization.

Too Frequent?

What we expected from globalization: As the world became richer and more interdependent, the frequency of wars should have declined.

- » Trade is a positive-sum interaction; war is negative-sum.
- » Trade costs have fallen; war costs have risen.
- » One-sided gains from victory in wars vulnerable to reversal.
- » War is a gamble; to start a war brings 60 percent probability of defeat (Eckhardt 1989, using data for 1700 to 1987).

There's a long tradition that says the world is becoming richer and there are very good reasons why nations should increasingly prefer trade over war. Several reasons are up on the screen. I will dwell briefly on the last thing there, which is based on collected data on all wars from the 1700s to 1987, 300 years of war. Bill Eckhardt, the compiler, classified them by the side that started them. What he established was that the probability of winning a war that you started is less than 50 percent. When we think of war as a gamble, that's one of the reasons why we might think that nations should avoid it as an alternative to trade.

There is also democratization. This is a little bit more complicated. Again, we have a long-standing tradition of political thought that says that democracy is essentially good for peace.

Jack Levy back in 1988 said liberal democratic states don't fight each other. There's been a lot of debate as to why that might be so. Some of it has to do with democratic political structures that in some way or other ensure that democratic leaders don't start a war unless they are prepared to bear the costs. There is another discussion about democratic norms that require self-restraint. In autocratic states, you would expect the opposite on both counts.

Too Frequent?

What we expected from democratization: "Liberal or democratic states do not fight each other" (Levy 1988). Whether because of:

- » Structures that impose restraint; in democracies, leaders that lose wars are more likely to lose office (Bueno de Mesquita and Siverson 1995).

- » Norms that imply self-restraint.

In autocratic states, in contrast:

- » Political leaders can transfer costs of risky actions onto others (Jackson and Morelli 2007).

- » If defeated, can retain supporters' loyalty at lower cost (B&S 1995).

So, the rising share of democracies among the world's states should have tended to crowd out inter-state conflict ... Except:

When we take into account that the share of democracy is rising in the global community, we might think that ought to tend to crowd out war. If you look at the political science literature, some exceptions have been put forward. Many of you probably know this literature better than I do.

Too Frequent?

Some qualifications:

- » New democracies are vulnerable to risky ventures in nation-building (Mansfield and Snyder 1995, 2002). Example: former Soviet and Yugoslav states.

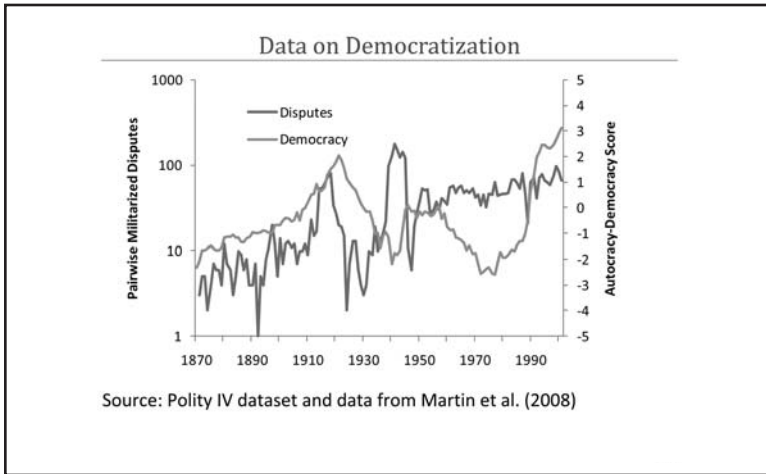
- » Democracies where leaders are subject to term limits are as likely to make war as autocratic states – and term limits are increasingly widespread (Conconi, Sahuguet, and Zanardi 2008). Example: Honduras.

- » In all democracies, leaders whose policies are failing have an incentive to gamble on resurrection (Majumdar and Mukand 2004; Stiglitz and Bilmes 2008). Example: Iraq.

But none of these seems fully up to explaining a trend that has been rising exponentially for 130 years ...

One strand looks at new democracies and suggests new democracies are vulnerable to adventures in nation-building that can lead to conflict. Another much more recent piece of research, which I find quite striking, is by Paola Conconi and her collaborators. They show that term limits in democracy are important. Leaders who are up to the end of their terms have less incentive to restrain themselves since they are going to lose office anyway. That's the authors' interpretation. I searched their paper for an example and Honduras is the

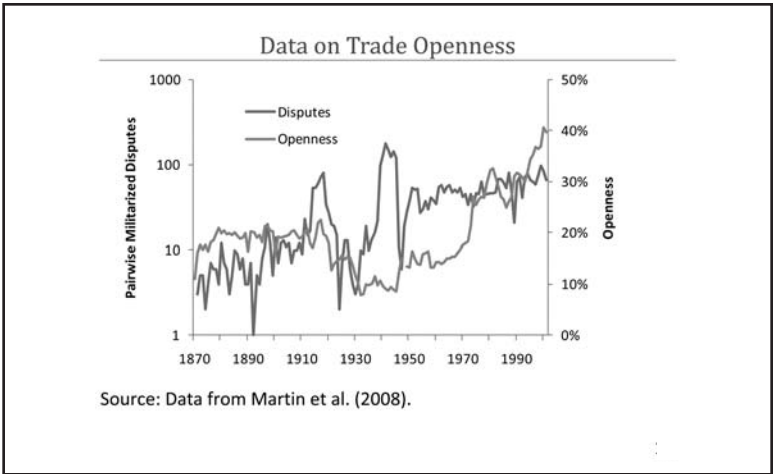
only one I found. Finally, you've got a very persuasive argument that concerns leadership in all democracies, which suggests leaders whose policies are failing often have an incentive to gamble, to hope that something will turn up. There's both a theoretical and applied literature that leads to the same suggestion. I find all of these interesting but I don't find them capable of bearing the burden of explaining a trend that's been there for 130 years.



Let me show you a little bit more data. Let's start with what's been happening to democracy over the last 130 years. It's a checkered story, but you can see two periods in which democracy is decisively on the increase, one is the period until 1914 and the other is in the much more recent past. The democratic peace argument looks bad when you superimpose the trend of the number of disputes because there's a large stretch of world history when democracy and wars were spreading together. This concerns me and suggests that there are confounding factors at work.

Similarly, let's think about this common measure of trade openness. You can see the world becoming more open before 1914 and much more open since 1945. You can superimpose the chart of the number of disputes on it and it just doesn't look right if we think that trade is supposed to crowd out war.

At this point, I want to reflect on the challenge that I think we face. There's a vast body of literature on this subject, a vast academic literature, which in many ways I think is of much higher quality than it used to be. It's been transformed by creating large international historical cross-country databases on war and peace, on constitutions, economic variables, and so on, which can now be analyzed. But as far as I can see, the results are still quite variable in quality.



You look at this literature and it's full of results that I really wouldn't care to bet the value of my house on. One of the common features of it is that it models international relations like a machine. In many ways it resembles the stage of the literature on economic growth 5 or 10 years ago when you got these big cross-country data sets, and estimation strategies. They appeared to say, "Let's plug in education, let's plug in investment, press the button, and out comes growth."

A lot of the literature on international relations is much the same, there are buttons called democracy and trade, and peace is supposed to come out—but it just doesn't work. At least it works only within very broad standard errors. Maybe that's not good enough. Where do we go next? Well, there seem to be three directions.

How Much Do We Really Know?

We may know less than we should, given the vast international relations literature on war and peace.

- » Transformed by establishment of open-access large-scale cross-country panel datasets in last 30 years.
- » Quality has been variable.
- » Many dubious regressions and potentially biased estimates (critical review by Green, Kim, and Yoon 2001).
- » Estimation strategies that model global IR as a machine with big push-buttons: "Democracy," "Trade."

Where next?

How Much Do We *Really* Know?

Three correctives:

- » Look inside the regressors: democracy and trade are complex phenomena, may have multiple or non-linear effects. Example: term limits.
- » Check: are cross-section results consistent with what time series and narratives tell us? Example: new states.
- » Reasonable focus on the “demand” for war may have led to neglect of “supply-side” or capacity-for-war aspects. Examples: fiscal and commercial capacities for war.

Globalization and democratization should have diminished the appetite for war – and may do so in cross section. But may also have promoted the capacity for it over long periods ...

One is to try to look inside the regressors—the buttons you are supposed to push. Another is to check consistency of the cross-section results with variation over time. Often we find what’s said about the cross-section of data is not true in the narrative. That’s important because we live in time. We’re interested in what’s going to happen next, and that means time series have importance for us that is not always reflected in cross-sectional data. Finally, in this literature there’s a very reasonable emphasis on what makes people choose war. I think that has led to some extent to the literature’s neglect of the capacity or supply-side aspects of war.

I’m going to make a few remarks regarding how I think globalization and democratization have increased the capacity of war over long periods of time, maybe contributing to the state of insecurity in the world.

Fiscal Capacity for War

Middle ages: Citizens were poor. Tax compliance was low and sovereign debt was unattractive. The medieval ruler had to split revenues with local overlords and tax farmers.

Sixteenth century: The typical European ruler could get hold of less than 5 percent of the income of a territory as central revenue (Karaman and Pamuk 2008).

Seventeenth and eighteenth centuries: Fiscal revolution in northwest Europe saw English and Dutch fiscal ratios reaching 20 percent of national income.

Other regions were stuck with < 5% (O’Brien 2005; K&P 2008), so there was divergence.

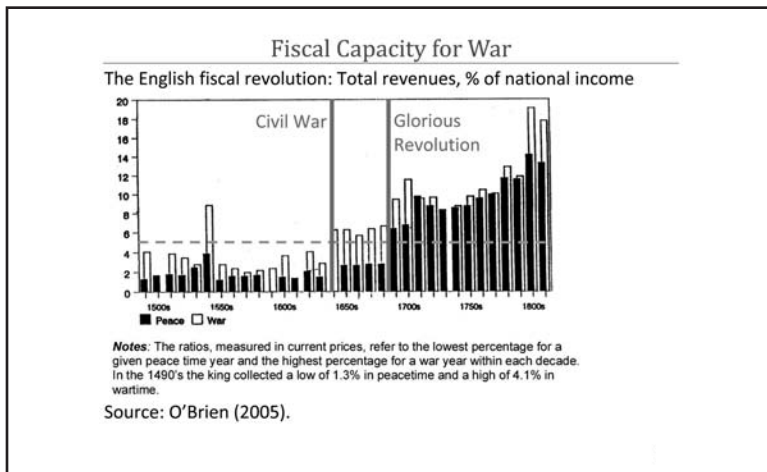
I'm going to talk about two things, the fiscal capacity and the commercial capacity for war. The fiscal capacity for war is more obvious. You go back to the Middle Ages. People were poor and did not want to pay taxes. They resisted the demands of their landowners and rulers.



The ruler could not borrow without difficulty, and could collect revenues only by splitting very large shares with local overlords.

When you get to the 16th century and start to measure these things, the way it looks is the typical European ruler could never get more than 5 percent of the revenues of the country into the central budget. Five percent was a real upper limit. What comes after that is a fiscal revolution in the 17th and 18th centuries. We've got the English and Dutch pushing out their fiscal ratios to 20 percent of national income.

Here is a chart that shows the English fiscal revolution. The blue dotted line shows 5 percent. The dark bars show the minimum peacetime level in each decade. The white bars are the maximum wartime level of revenue. You can see until the 1650s it was rarely above 5 percent. Then two things happened: the Civil War and the Glorious Revolution. After that it's never below 5 percent.



Fiscal Capacity for War

What drove the transformation of public finance (Tilly 1990, Ferguson 2001, Acemoglu, Johnson and Robinson 2005)?

- » Foreign policies aggressively promoted the Atlantic trade.
- » The extension of naval power won taxpayers' support.
- » And built tax compliance.
- » Credible guarantees against default widened the market for sovereign debt.
- » New restraints on the executive? Yes – in everything but war.

What drove the transformation of public finance? Well, cutting off the head of the king was the start of it. Absolute monarchy gave way to constitutional rule. Constitutional governments aggressively promoted British commerce with the full support of the taxpayers, so for the first time in history there was ready tax compliance. The king could borrow. With more accountability of the executive, sovereign debt could be guaranteed. When I say restraints on the executive, the executive was restrained in everything except war.

By the time we get to the 20th century, we're reaching a time where fiscal divergence is at its widest. You can see where democracies can now with effort put half of the national income into war. In contrast, Europe also has these big

Fiscal Capacity for War

Twentieth century: at first, fiscal divergence widened:

- » Liberal market economies could put 45-60 percent of national resources into both world wars.
- » In contrast, in WW1 the agrarian empires struggled to mobilize their own backyards (Broadberry and Harrison 2005). Examples: the Ottoman, Romanov, and Habsburg empires.

Later, the non-democracies caught up:

- » By WW2, dictators had learned to exploit repression to match wartime fiscal ratios of the capitalist democracies (Harrison 1998). Examples: Germany, Japan, and USSR.
- » But did not match them in terms of commercial capacity for war ...

agrarian empires that struggled to mobilize resources. In Russia, Austria, to some extent even in Germany, it was hard because they had agrarian hinterlands that could not easily be taxed. But later on in the century, you find the non-democracies catching up and the dictators learn to emulate the democracies by ruthless modern repression. At this point, at least among the great powers, there's fiscal convergence. But not in the commercial capacity for war—so let me spend a couple of minutes on that.

Commercial Capacity for War

A twentieth-century paradox:

- » Since Napoleonic wars, European governments have worried about food security. (Or was that just the voice of the farming lobbies?)
- » Yet, in two world wars, the countries that limited engagement with the international economy and protected their agriculture were first to run short of food and fuel (Olson 1966).

Easier for Britain to supply its war economy from across the world than for Berlin and Vienna to be fed from thirty miles away.

In both world wars, the Allies multiplied military value of coalition resources through long-distance economic cooperation that the Central/Axis Powers could not match.

That war and trade are not exclusive can also be found in postwar panel data ...

We start off with a 20th century paradox, which is that people are concerned even today about food security, fuel security, where are we going to get our cobalt from and so on. And yet you look at two World Wars, you look at the countries that before the war had limited engagement with the world economy because they wanted self-sufficiency. They thought that would help them in the coming conflicts— and they were the first to run short of food and fuel.

In two world wars, Britain was able to maintain its food standards, never mind its armies, much more easily from the other side of the world. Looking beyond the purely national aspect, in each of these wars there are two coalitions. It's the free-trade, market-oriented coalition that was able to multiply the military value of its resources through international exchange and coordination.

To me what this says is, maybe, war and trade are *not* exclusive. I'm going to show you what Philippe Martin and his co-authors have found, using data since 1950. Remember the chart I showed you in the very beginning. I took their data. What they focused on was the relative frequency of wars, normalized for the number of country pairs. It's a very interesting piece of work. What they looked at was the difference between bilateral trade and multilateral trade: these have different effects on the propensity to go to war.

Commercial Capacity for War

Using data from 1950, Martin et al. (2008) find significant effects of trade on the pairwise frequency of conflict:

- » Greater bilateral openness reduced the frequency of war.
- » And greater multilateral openness raised it.
- » Since both increased, there was a net effect.
- » For any country pair separated by less than 1,000 km, globalization from 1970 to 2000 raised the probability of a military conflict from 3.67 to 4.46 percent, i.e. by one fifth.

In sum ...

When you go to war with your neighbor you sacrifice trade with your neighbor. We live in a globalized world where it's possible to maintain long range multilateral trade at the same time as fighting your neighbor. Their argument is that the increased scope of multilateral trade has reduced the cost of bilateral war. Over the period since 1950 both bilateral and multilateral trade have increased. What's the net effect? What they argue is, and this is more or less a quotation, that for any country pair separated by less than 1,000-kilometers, globalization in terms of trade has raised the probability of conflict by around one fifth.

Commercial Capacity for War

Historical narratives and quantitative research concur that foreign trade is not an alternative to war.

- » Multilateral trade has made bilateral war less costly.
- » While trade costs have fallen, open economies have found it easier to wage war (against some), at the same time continuing to reap gains from trade (with others).

In summary, we've got both historical narratives and quantitative research that say that foreign war and trade are not alternatives.

Implications

Four findings:

- » Normalised by number of countries (or people), the risk of war is no higher than in the 1870s.
- » Normalised by the number of planets we have to share, it is of the same frequency (if not intensity) as during WW1.
- » There has been a steady upward trend over 130 years – and this should concern us.
- » The trend may turn out to be driven by things we would otherwise welcome as improvements in the state of the world ...

If you normalize war by the number of people, or countries, the risk of war is no higher today than it was in the 1870s. If you think of the number of planets that we have to share, which is one, exactly, then the number of wars that have taken place recently is of the same frequency as during World War I. There's been an upwards trend over the last 130 years, a steady trend, which may turn out to be driven by things that we would otherwise normally welcome.

Implications

Things we would otherwise welcome:

» Hunger for self-determination, leading to formation of new states – each a new focus for potential conflict.	» Falling trade costs have allowed countries to benefit from greater economic interdependence.
» Democracy is becoming more typical – and, with better public finance, democracies can raise taxes or borrow to promote national ventures, without recourse to repression.	» Wider markets have increased scope for countries to insure against shocks – so, small states that reduce risks through multilateral exchange may become more inclined to risky behaviour in bilateral relations.

There are two sides to this. One is about trade, one is about democracy. If we think about democracy, there's a hunger for self-determination, but self-determination carries risks. It can lead a country into nation-building adventures. Democracy is a good thing, but it increases tax compliance, and so puts more resources into the hands of government. They can use it, among other things, for war.

Globalization means falling trade costs, which has allowed countries the benefits of greater economic interdependence, but one of the things about this is more scope for insurance. Countries can insure themselves against the shocks arising from the world economy by diversifying the markets in which they buy and the assets they hold. As we know, people who insure themselves can behave in a riskier way. It's called moral hazard. So, these things that look good in themselves contain unpleasant subtexts.

I did think of stopping there but then I thought, what's the lesson? It just means, be ready for the worst, and I would like to say something slightly more positive.

Implications

We could stop here:

- » The news is mixed-to-bad.
- » There is nothing to be done except build defenses.

More positively, we may need answers to two questions (and I don't have them):

- | | |
|--|--|
| <ul style="list-style-type: none"> » Democracy is good, but without nation there is no democracy, and nation-building is a double-edged process. Question: How can we encourage democracy to spread in ways that don't offer gains to nation-building adventurists? | <ul style="list-style-type: none"> » Falling trade costs and wider multilateral exchange promote development, but may also cheapen war. Question: How can we lock countries into regional or global trade without freeing their hands for confrontational foreign adventures? |
|--|--|

One of the questions we don't have answers to is how do we get the benefits of democratization, how can we unpack democracy to find those aspects of it that encourage the freedoms and liberties that we value, without giving free rein to leaders who take their countries into regrettable and dangerous adventures?

In the same way, freer trade promotes development, but it also cheapens war. We know that. How can we lock countries into either regional or global trade without freeing their hands for local confrontations that may then spin out of control and have global effects?

That's the summary. I'd better stop. Thank you.

Summary

Wars are increasingly frequent, and the trend has been steadily upward since 1870.

A long and strong tradition says that extensive globalization and democratization over this period should have reduced appetites for war far below their current level.

This traditional view is clearly incomplete. What's missing?

The biggest gap in the analysis may be the economic factors that influence the capacity for war. There are factors traditionally thought of as goods because they reduce the willingness to go to war, conditional on the capacity to do so. The same factors may also have been increasing the capacity to wage war and so its frequency.

We need better understanding of how to promote these goods without incurring adverse side-effects.

GARY BLISS (Office of the Under Secretary of Defense for Acquisition, Technology and Logistics): I'm an ossified bureaucrat with AT&L. I have a question for both presenters. For Mr. Marshall, you talk about cultural factors. Yet I heard nothing in your talk about Huntington's idea of the clash of civilizations. I wish you could talk to that a bit and how it relates particularly to Islam and China in the current situation.



For Dr. Harrison, I would re-label your talk as war as a normal good. To the extent that propensity for war is correlated apparently with the per capita GDP growth, I found myself wondering in many of the interesting cases. In the last hundred years, the provocateur has often been the country with the lower per capita GDP, the current Iraqi war notwithstanding, although it was certainly true of the first Gulf War. I would note that the Japanese per capita GDP at Pearl Harbor was about 15 percent of ours.

MARSHALL: Well, I think culture is very important. Certainly the style of warfare or the nature of how the war might be initiated, the choice of methods of warfare. Particularly in the Chinese case, they have a long history, have their own traditions of statecraft and there are also reasons to believe that Asian cultures, contrast to people raised in western cultures, have a different way of looking at the world. There's been some interesting work. The book *The Geography of Thought: How Asians and Westerners Think Differently...and Why*, by Richard Nisbett and, the work of a very interesting French philosopher,

François Julien, who wrote interestingly about the differences in Western and Sanic cultures.

The Muslim culture I know much less about. The cultural differences may have more to do with the style of warfare, the whole approach to warfare, its frequency, etcetera.

HARRISON: I appreciate the suggestion for the title. It's a great question. What you say is absolutely correct. I'm reluctant to spend a lot of time creating a very complex rationalization or explanation. There was a section that I cut out which was about the returns to conquest. Essentially the message from the limited experience that we have was that richer industrialized economies are much better targets than poor ones.

I suppose one could spend a little bit of time thinking about the extent to which countries with high GDP might either be more willing to make transfers in order to avert war or to provide transfers in the event of being beaten. In the case that you mentioned, the poor economy was the loser, which I guess tells us something about the richer countries being the ones to achieve victory.

JEFF WERLING (University of Maryland): Dr. Harrison, there's another data set out there. It's been cited a couple of times by *The Economist* and I believe I saw it at another PA&E conference that shows wars are at an all-time low right now, and I don't know if they normalized to something. I was a little surprised. I've seen it cited many times that the trend has been exactly the opposite. Are you aware of that data set?

HARRISON: Yes. The difference is the duration of wars and the number of countries taking part. It's also true, if you take the casualties associated with war—it is not clear that's on an upward trend. It's one series among several. I guess you could exercise some judgment as to which you derive most reassurance from.

MOLLY MCINTOSH (CNA): I have a question for Dr. Harrison. To what extent can you explain the normality of war if you separate out persistent pairings, persistent bilateral disputes over time, or also look at the definition of how you define bilateral impacting. If we have a state which has a lot of internal disputes, those aren't measured as a bilateral dispute. The state breaks up and now we have official bilateral disputes. To what extent can we explain this by taking those into considerations?

HARRISON: There are parallel data sets that cover things like civil wars and if you look at the trend in the number of civil wars, it's very similar to the chart that I showed you which shows the number of states. That is strongly suggestive of some sort of relationship between the propensity to civil war and propensity to declare a new state. Now what it doesn't tell you is which way

the causation goes. States can be born out of civil war. Having been created, they can become focuses for civil conflict. I think there are a lot of unanswered questions here, and I guess it's something that we need to unpack, but I can't unpack it any more for you now.

JOMANA AMARA (Naval Postgraduate School): Dr. Harrison, looking at your data over time I wasn't quite sure what you had on your left side axis where you talked about frequency. Was that the frequency of occurrence, was that the size of the war, or was that the number of the casualties?

The other thing was the timeframe. Your timeframe was pretty large. As you are trying to deconstruct the reasons for things happening over time I would submit that 100 years ago the reasons—looking at the rich versus poor argument, the colonization was definitely from rich to poor. We could be seeing more aggression in the past century, poor versus going after rich assets. I think without breaking it down to timeframes, the analysis becomes more difficult. Without understanding exactly what frequency means on that access, whether it's casualties, whether it's interstate or intrastate, and I would submit to you if you break it down to the two different types of conflicts, the results would also be quite different along the timeframe.

HARRISON: [REFERRING TO SLIDE #1.] This axis reflects the number of pairs of countries in dispute at any one time, the numbers of pairs in dispute. That's the answer to your first question.

AMARA: There was one that talked about frequency, I thought.

HARRISON: [REFERRING TO SLIDE #4.] You could think of this. The red line here is the same series as before, divided by the number of country pairs. My sort of joking comment was that this second one is normalized by the number of pairs, while the first one [SLIDE #1] was normalized by the number of planets.

[STILL REFERRING TO SLIDE #4] These are very small proportions. By the time we get to 1990, there's something like 15 or 16 thousand pairs of countries. Clearly, there are something like 70 or 80 disputes a year, which is a very small proportion of the total number of pairs.

Thinking about definitions brings me back to an earlier question about the number of wars. This is the number of country pairs in dispute but it is also based on a broader definition of conflict probably than the one you [Werling] are thinking of because in many of these cases there was not a declaration of war but a more transient use of force or, in some cases, a display of force. You send a fleet. There's no more than a warning shot or something of that nature. So it's a broader definition.

The second question—

AMARA: The timeframe.

HARRISON: One of the big things that's driving this in the early part of the chart is empires. Many countries were not independent states. Empires created large regions in which there would not be war but could be colonial rebellions and another data set is intrastate conflicts.

AMARA: Your data includes all of the intrastate and interstate conflicts?

HARRISON: It captures interstate conflicts only. I find it frustrating that there is this separation because there is clearly a spectrum that starts with interstate conventional war and goes all the way to organized criminality because the boundary definition between organized crime and civil unrest is often unclear. It's part of the compartmentalization that we have. Nonetheless, it's where we are now.

AYEH BANDEH-AHMADI (IDA): To what extent do you think we should expect more or less conflict either as a result of the wars going on right now or other things going on in the world? Maybe to put the question more tractably, what are the factors that you look at, the critical factors to try to predict which direction it's going to go in terms of either economic factors in the Middle East or other policies, other behaviors of countries politically? The question is directed at both of you.

MARSHALL: When you look ahead, you have a situation in which the developed world is largely out-reproducing itself. Sources of future population growth are in places like India, sub-Saharan Africa, some parts of the Muslim world—not all, but where there are population pressures leading to out migration, you would think there is likely to be more warfare there.

Also you need to look at differential economic trends because presumably that leads to some shift in the relative status of countries and you get some possibility of war if they are rivals. I would look at that. As to frequency, my own notion is this is going to go on. Wars will be relatively frequent, with no long periods of peace.

HARRISON: I would only add one thing, which is that some of the ingenuity that goes into thinking about defense and security should go into thinking about the nature of democracy. On the plane over I read Paul Collier's book, *The Bottom Billion*. One of the things I find most useful is that he reflects at length about the relationship between democracy and developing country conflicts. One of the points he makes is that democracy has different aspects which have different implications in different situations, and he separates out the nature of electoral competition from the way that democracy governs itself. His argument is that we don't put enough emphasis on the latter.

What the West needs to do is to think, when it wants to promote democracy, which parts of democracy require the most emphasis. What happens after the election is more important in determining the propensity to engage in conflict than simply being able to say, "Yes, we've been able to hold an election."

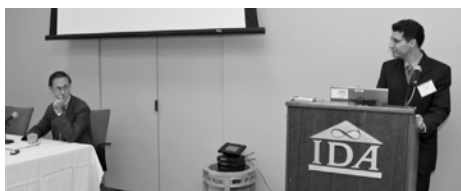
PANNULLO: Thank you Mr. Marshall and Dr. Harrison



CLOSING REMARKS

David S.C. Chu

JERRY PANNULLO (Director, Economic and Manpower Analysis Division, Office of the Secretary of Defense, Program Analysis and Evaluation): Dr. Chu received undergraduate degrees in economics and mathematics and a Ph.D. in economics, all from Yale University. He was the head of Program Analysis and Evaluation as a director and Assistant Secretary of Defense. Dr. Chu held senior executive positions with the RAND Corporation and he is currently the Under Secretary of Defense for Personnel and Readiness.



DAVID S.C. CHU: I am indeed honored and humbled to be part of a program that includes so many distinguished speakers.

This is a broad subject. As a concluding speaker what I'm going to do is review what we think we know about these topics, perhaps more in the mode of what we've tried as economists to address. I should acknowledge that I have to challenge what economists can bring to bear on these questions. After all, it's only in the last generation or two that economists have commented extensively on military issues.

Only since Hitch and McKean wrote their landmark volume have economists picked up this subject in any significant way. Indeed, it's remarkable to me how thin the economics literature is on military subjects. I congratulate Professor Feldstein. He's trying to get his students interested in writing on this topic.

ECONOMISTS' CONTRIBUTIONS:

Despite the limited economics literature, I will argue that economists have made landmark contributions to how the nation governs its military establishment and how contemporary national security decisions are made.

As many of you know, the planning for the budgets of the Department of Defense owes much to intellectual discourse among RAND economists in the 1950s. Many people might have less than complimentary things to say about the system they devised (the Planning, Programming and Budgeting

System), but it has endured for over 40 years as the way the Department thinks about its future, the way it constructs its plan about the future. Most remarkable, it's an approach that has been adopted, and is warmly embraced, by the permanent structure of the enterprise.

The uniformed leadership supports it. Indeed, during the Bush 41 Administration, when the deputy secretary mused whether we needed such a system for making decisions, the military leadership told him you can abolish it for the Department as a whole, but we're going to keep it because we need it in order to think about our future as individual military services.

The success of economists in changing thinking inside the Department of Defense can be seen if you look at any major decision today, especially investment decisions. There's typically a long discourse about the cost effectiveness of the investment. You might criticize the quality of the argumentation, but it is framed in terms of the cost versus the effectiveness of the proposal. I would challenge you to find another cabinet department in the Federal Government where that intellectual construct is so extensively employed.

In my current post it's striking the degree of influence economists have had. This is understandable because our principal focus is on an economic issue: How are we going to make a volunteer force succeed? Economists have very significantly affected the mechanisms employed to achieve success. The military uses targeted compensation in a highly effective manner. Notwithstanding Professor Stiglitz's comments, special incentive compensation is approximately 5 to 10 percent of the Department of Defense budget for all military pay and allowances, in peace and in war.

That's not in general how the civil servants of the American government are paid. There is not the same emphasis on figuring out how we get people to volunteer for what we want them to do.

As you think about the contributions of economists, you might be ambitious and argue that some of the ideas behind the concept of mutually assured destruction associated with the cold war were initiated by Professor Schelling. I'm not so sure I want to claim such a large role for economists in that intellectual history. But it is one of the questions the conference organizers asked us to address.

THE THREE QUESTIONS OF THE CONFERENCE:

The organizers originally specified three questions that we were asked to address: First, the domestic economic implications of military activity; second, economics as an instrument of war; and third, what economists might have to say about deterrence. I'll start with the domestic economy,

the effects of military activity on the domestic economy, particularly in time of conflict. This is a subject that in the 1980s loomed large.

One of the arguments against the Reagan Administration's investment program was that it would break the economy. Some of the veterans in this audience know we invested a rather substantial effort in demonstrating that if we're only spending 4 or 5 percent of gross domestic product on the military, it's very hard to break the economy. I believe we demonstrated at that level of economic activity there was no serious problem created by what the administration proposed.



That was not the first time that the economists played a significant role in the economic issues associated with major national security decisions. In the 1960s the same office, I'm told, had a significant role in the American management of the South Vietnamese economy, especially in the later stages of the war. With other cabinet agencies, they designed the aid programs, trying to maintain a vibrant economy for South Vietnam's citizens with a war going on. By the late sixties they were reasonably successful, granted at the price of a significant infusion of American economic assistance to sustain the excess of imports over exports.

I know less about the role economists played in the Korean War and World War II. There certainly was a use of tools that the Chicago school would find abhorrent. In World War II, and to a lesser extent in Korea, price controls were used to try to regulate the allocation of scarce assets. Whether that was a good or bad idea, I leave to the academic establishment to answer.

The second subject that was posed for us was the issue of using economic pressures as an instrument of war. There's been less discussion of that by economists. Professor Engerman touched very briefly on sanctions as an instrument.

My sense is the political scientists have devoted a lot more energy to the question of sanctions than have economists. I do think it is an issue where economists might bring additional insight as to what the actual effect of sanctions might be, with their microeconomic tools. My sense of the literature is that sanctions haven't worked all that well. They haven't been tried very hard, either.

As many here appreciate, there has been in the past a great deal of interest in the question of bottlenecks. Is there some key sector in the economy that we could target—if we only found that leverage point could we win the war at small cost? There is a popular literature that contends that leverage point in World War II was ball bearings and/or petroleum.

We spent a lot of resources in going after those targets. I'm not a good student of the Strategic Bombing Survey, but my impression of it is that the Survey concluded it didn't work. German industrial production, under the extraordinary attack it sustained, actually rose in the later stages of the Second World War. That was known to us because we were skillful in analyzing German serial numbers, which were collected by economists going behind enemy lines. If any of you knew Richard Ruggles and his economic historian partner, Bill Parker, a less likely duo to be conducting a special operations type of reconnaissance couldn't be imagined, but they did it. They went behind enemy lines to read the serial numbers to try to determine what the actual production was at that time.

I understand from Professor Ruggles that their findings were largely ignored by the contemporary intelligence community. Their findings were not consistent with preconceptions. This might be a lesson for economists: that we should merchandise our results better. The Bombing Survey results raise the question of motivation as a factor in productivity, and the importance of human capital as the really key resource, especially when the economy is under duress.

This is consistent with comments from Professor Harrison, the ability of the society to find another solution to the problem, if your key actors are, in fact, well informed and skilled in their professional endeavors. But the idea of economic bottlenecks was an idea that didn't die. I'll keep this at the unclassified level: This idea was certainly present in the nuclear targeting plans throughout the cold war period. Some thought that we could find the potential bottleneck, and just attack that, and everything else would collapse. If the idea of potential bottlenecks should arise again, economists should be ready to speak to it!

A third issue raised for us to consider is the contribution of economists to deterrence. Certainly there was a great deal of work over the years, including that by Martin Shubik, who was mentioned earlier this afternoon, using game theory to think about this set of issues.

I do wonder, however, whether any of that affected national policy, which I believe was largely driven by a political science perspective, based on what we thought worked vis-à-vis the opponent. It would be interesting to know now that the Soviet archives are at least partially

open, what did our opponent actually think? Is our presumption, in fact, matched by the records of what they did think? That's a topic not just of historical relevance, but important also to contemporary decisions.

A great deal of American decisionmaking about how we use our forces today is informed by our view of what impression we think those forces create. That's been the centerpiece of the Navy argument for presence over the decades, and remains an argument that the United States Marine Corps uses regarding certain deployments.



Is it as effective as we believe? Much of the work on this subject has largely reflected what our foreign policy elites believe. I'm not sure we've analyzed the question of what the affected audience actually believes as a result of our efforts.

On the issue of deterrence: It is a very different problem today—as everyone appreciates in this enterprise—than it was in the cold war. I do think a very interesting question is whether we can bring in the behavioral economists to contribute to this debate, helping us understand how well groups, powers, nation states, and other types of actors react to moves by those who seek to deter their use of weapons that have a particularly adverse set of consequences both for the immediate theater and more generally for the world at large.

WHAT ELSE SHOULD ECONOMISTS ADDRESS?

There is, of course, as I have tried to suggest, much more than these three issues to which economists might or indeed have attempted to contribute. I will not try to deal with the intriguing set of issues that Andy Marshall and Professor Harrison raised in their fascinating comments this afternoon, which attempted to address the economic causes of our conflicts or, perhaps more broadly, the capacity of economies to wage warfare if they choose to do so. I think it's a very interesting line of inquiry. It might well be worth additional investment.

I would like to speak to three subjects that merit additional attention by economists. First, how economists can help address the question of cost versus benefits; second, the role economists play in devising incentives that play such an important part in public policy design; and third, the

economists' contribution to attempts to predict future events and guide public policy choices.

Cost versus benefits: I think it is critical to acknowledge that any endeavor where lives are at stake really transcends our ability to discuss costs in pure dollars and cents terms. To put a price on life really requires establishing the context in which we're trying to answer this impossible question. One context is the compensation offered by the U.S. Government if your life is lost in its service. While it is not at the level of expenditure by some government programs devoted to saving lives, it is much larger for the military than the Stiglitz paper indicates, because we do pay very significant benefits across the lifetimes of the survivors.

For the global question—are the present set of conflicts worthwhile?—if you are going to discuss the costs, you need to also discuss the benefits. I missed Cindy Williams' and Mike Gilmore's presentations this morning, in which they attempted to do that for the present conflicts.

An important issue, in estimating the cost of a conflict, of course, is: What is the purpose of asking the cost question? Without some discussion of purpose you can't specify which costs you are going to measure.

In the first Persian Gulf War the purpose was to gauge what we should ask the allies to contribute, if not in units participating in the conflict, then in the monetary cost of the war. What should we charge? (Perhaps the answer should have been, all the market could bear!) We in the Department did make an effort to try to estimate what the marginal costs of the conflict were, not perhaps in the global way that Professor Stiglitz and Mike Gilmore attempted, but at least in terms of the costs incurred by the Department of Defense.

Internally in the decisionmaking of the Department, this comes up all the time. We are going to do X. What are the costs related to that decision? Bureaucratic incentives sometimes discourage an accurate answer. All too often when we go to increase capacity in the Department, the costs are extensive. Whenever we go to reduce the capacity of the Department, the cost savings appear to be modest. In some cases, they are actually asserted to be negative!

There is sometimes a real problem, too, in discerning the purposes of the programs whose costs we are trying to estimate, and therefore how to think about costs versus benefits Stan Horowitz brought that point out in his questioning of Professor Stiglitz regarding the VA program. The VA program is largely an income transfer program to veterans who have not done well in their lives. If you look at the medical causes for which we compensate, they are dominated by the afflictions of old age: hearing

loss, heart problems, and musculoskeletal difficulties. If you also look at who benefits, what you see at the moment is that it's largely the veterans of a conscript era. There's a fascinating public policy question concerning what the costs will look like and what public policy should be for the veterans of an all-volunteer



force. The Dole-Shalala commission attempted to address this, arguing we should change the paradigm for what is the veteran's benefit, for what is the income compensation benefit if you are injured. Now it is largely measured on a blue-collar standard in Detroit in the 1940s, that estimates what it will take to replace the income that it is believed you will lose because of your injury.

Originally, the Dole-Shalala commission proposed that VA income compensation benefits should end when you become eligible for Social Security, which is how they would pay for much more generous up-front assistance designed to improve your earning ability and your quality of life. In effect, this shifts benefits to younger veterans. You can look at who is getting the benefits today. It's largely people in older age ranges. There are some exceptions, of course, but it's generally not veterans of the younger age groups.

Think about the program purpose. Again, Dr. Engerman's paper on this subject is fascinating in pointing out that we may begin as a society with program motivations that are driven by the proper feeling we ought to compensate those who have suffered in a conflict. Later, we enlarge eligibility. This is not a new behavior. We enlarge the ambit of the program to embrace a much larger community, which raises the costs very significantly.

Professor Engerman raises a further interesting question in his paper and that is, why are we concerned about the costs of these conflicts except as a political matter? If we were reasonably good at predicting costs in advance, maybe we would be willing to look at alternative courses of action.

I do ask you to think about a counter-factual world in which the Secretary of State goes to the United Nations, and the President of the United States goes on TV to offer Saddam Hussein, or whomever, a substantial bribe to leave office. I say this not to poke fun at the idea but to underscore the importance of thinking about the framework within which one could make such offers.

Some of the current generation of behavioral economists could perhaps instruct us in how we could construct what amounts to a scheme for bribery that would be politically palatable. What are the analogous decisions in our society where we are comfortable making large payments in order to get institutions or events to move in our direction? There is an analog, I would assert (not based on any extensive research), in our foreign aid programs.

If you look where our foreign aid goes, it goes to a small number of countries, and it goes to those countries to maintain a security posture of which we approve. What conflicts would allow debate inside the government to address constructively the costs of military action, and ask would I be willing to pay X, Y, or Z to avoid them, and how would I persuade the American people that's an appropriate course of action?

I was tempted to argue that the very substantial expenditure by the United States on military capability over the last two generations has brought us 60 years of relative peace in which the globe has prospered, until I read Professor Engerman's paper in which he argues that 40 million people have died since World War II!

The second issue I would like to talk about is the very positive role economists have played in helping the government discover that incentives do matter, and that public programs can be designed, military programs included, with incentives that work. I would offer the all-volunteer force as a wonderful case in point. We have sustained that force even in time of significant conflict, including the mobilization of the reserves with very little complaint (more complaint, perhaps from spouses and families than from the reservists themselves).

Some careful work done by one of your fellows argues that, in fact, three-quarters of reservists, counting all the cash and near-cash compensation, do better in uniform than they do in their civil lives. The opportunity costs cited by Professor Stiglitz are therefore not as substantial as he would argue.

Dave McNicol in an earlier incarnation tried to encourage the development of better contract incentives. How do you structure contracts so we get an outcome we want? The Department doesn't always listen to research of that kind, I acknowledge, but there has been a substantial contribution by economists nonetheless, I would argue. We are better off as a result. When you look at defense acquisitions, the outcomes in the later stages of the cold war were better than they were in the early stages.

Then there's the whole question of competition. I do think the economists have played a successful role in encouraging the United States government to think hard about—if you believe the task is commercial

in nature—can you construct a way of confronting that issue and moving the activity to a commercial provider?

You all know about the emphasis on competition over various administrations. The value of competition has also been a lesson learned in reverse. In the first Clinton term, the Secretary of Defense, in his “last supper” meeting, encouraged consolidation of defense contractors, and basically, in my judgment, ignored the lessons of history. That history argues that competition was key not just to good price outcomes, but also to innovation. Consolidation, interestingly, was stopped with a thud in the second Clinton term.

Finally, economists have made major contributions to management questions within the Department, not just how we target compensation for military personnel, but also to the whole set of concepts involving working capital funds. They have not always functioned as we would wish, but I think some important outcomes have been achieved by trying to find the right internal prices.

There’s also the question of distortions. Professor Stiglitz did raise this as an issue, I believe correctly. It’s an interesting question whether the significant long-term American military effort of the last 50, 60 years has had an adverse effect on the flow of talent to the nonmilitary sectors. We have until very recently been successful in attracting some of the nation’s most able engineers and scientists to work on defense problems. That comes with opportunity costs because they are not working on other problems in our society.

The third issue I would like to address is this question of prediction, offering the decisionmakers tools with which they can try to use the past to look to the future. It’s fascinating to me to see that the Department has come to accept those estimates. That’s not always the way it was in the Department. The issues have changed somewhat—one of the earlier issues was predicting the compensation necessary to sustain an all-volunteer force. There is the excellent work done by many in this room on estimating supply of manpower to the Department, what it would take to be successful, and our policy decisions really do rest on those estimates.

It is surprising to me given the ambition of economists that they haven’t much tried to predict the outcomes of battles or campaigns or, in Professor Harrison’s even more ambitious world, to determine what’s the likelihood of conflict happening. I do think an interesting intellectual question is: Why aren’t economists willing to take up some of those issues? Perhaps it relates to the reality that in that kind of macro-issue there’s an early easy judgment on whether



you are right or wrong; I could cite as a parallel example the reluctance of economists to predict gross domestic product more than a few quarters out.

In short, I would argue that economists have contributed an enormous amount to this Department and to American national security decisionmaking in the last two generations, but as my remarks suggest, a great deal more is possible. Just to name one topic where I think economists could help the Department a great deal, and help the nation's government a great deal, I'll mention the question of alliances.

How do you get an alliance to advance the common cause? There is Robert Solow's vintage article, which correctly points out the free rider problem that exists, and I think nicely predicted that the Carter administration 3 percent real growth policy was destined for failure. If the United States did more, the European allies would do less. Every year in the 1980s we would do our best to berate the European allies, trying to persuade them to do more. The free rider observation would have predicted it wasn't going to work. If you do more, by definition, they will do less. It's only when they are frightened that you will abandon the field that the allies will pull together.

In terms of what we can do individually, I do think that a great deal more is possible. What Professor Feldstein is trying to do at Harvard, trying to get the graduate students to pay attention to these subjects, is exactly what is needed. I do think creating more forms in which to receive and debate and critique papers and ideas is a second essential element.

As I go off to collect my annuity, I therefore look forward to being invited to return to similar conferences in the future! Thank you.

JOMANA AMARA (Naval Postgraduate School): Regarding your comment on alliances and war outcomes, I would submit that you just go to the manpower sessions so you don't get to see the rest of the work that's been done on alliances and predicting outcomes of war. There's a lot of literature right now on reconstruction, and economists are very much involved in that. I don't have a question. It's just a comment.

MOLLY MCINTOSH (CNA): One thing that you said that really perked my ears up is that incentives matter. We always want them to matter. Particularly like you cited for the disability benefit, another instance is in retirement of the military. Both disabilities benefits and retirement seem to me to be different compensation programs as talked about today, and to the extent that discount rates are



greater than the interest rate, might we be better served to give it up front either in lump sum or to front-load it, things like that.

If you think there's actually a serious scope for amending the disability benefits program, you should think also seriously about amending the retirement program.

CHU: The disability program is largely an income transfer program and, therefore, isn't really tied to the immediate needs of the Department of Defense or the military establishment.

The reason I believe the retirement issue could be addressed in the next administration is because of the reception that I believe the Quadrennial Defense Review report has received. We are required every 4 years to start, not necessarily to finish, a review of compensation. We did finish this one.

In one volume they pick up the issue that you raise. It's a sufficiently big issue that we devoted a separate volume to it in the reporting process. It is the big compensation challenge out there. As you know, the economists for years have argued that if we're willing to change the retirement system, we probably could get better retention patterns, more closely aligned with what we really want, which is having more younger people stay a bit longer and not have people hang on because they seek vesting at 20 years. Further, we would like to have some people serve much longer careers, rather than have so many retire at relatively young ages. The cost-of-leaving model, which the economists generated, argues there's an optimal time to leave. Our people are smart, and they more or less follow the patterns that are predicted—for officers, depending on grade, in the 24 to 26 years-of-service range.

We can get a better force and also one that is tailored by skill area, which is not something as easily done today. We can save money doing so. Estimates vary by how much. One of the reasons we put this material in a separate volume—volume two—is because it is such a sensitive issue.

I've been impressed by the degree to which the report has been treated civilly both on the Hill and in the trade press. It has not have been denounced as a nefarious money-saving scheme, or anything like that. There may well be an opportunity for further debate.

We were helped a lot by a group (the Defense Advisory Committee on Military Compensation) that was chaired by the late Admiral [Donald] Pilling. Admiral Pilling made an important equity argument for reform. Of the entering enlisted cohort, only 8 in 100 ever get to collect. So while we have accrual accounting for retirement, as you know, the accrual is all focused on a very small sliver of the total. The rest of the cohort doesn't

see any of that money. There's a substantial unfairness in a system of that sort. As you all know, there's also great inefficiency. The discount rate being positive, estimated to be between 10 and 20 percent for the applicable populations, this benefit—while of enormous value once you get to 20 years of service—is not of much value when you are 18 or 20 years old trying to make a decision about going into the service.

The long-winded answer is, yes, I think it is an issue. I think it's an issue for the next administration. I think it is part of a much larger debate about the operating costs of the Department and whether in order to deal with the pressures on the federal budget, notwithstanding Professor Feldstein's glorious call for more investment expenditure by the Department of Defense, the reality is likely to be greater pressures on the defense budget. In that environment there may well be room for such a debate.

There is a lot of interesting work going on here. The one lesson we should take from the last attempt to change the retirement system is that we need to think very hard about the transition mechanism. As you know, what the Defense Advisory Committee recommended, what the Quadrennial report likewise said, is use the successful transition for civil service.

Civil service also went through a change in the retirement systems in the 1980s. Instead of occurring at a fixed date, which is the way the military transition was organized leading to the politically untenable situation where someone one day ahead of me was getting a better deal, such that the whole thing collapsed circa 1999, the civil service sorting out offered each person a choice of which system he or she would join. The new generation, of course, was offered only one choice, the new system.

What it created is much more of a mixed picture of who is ahead of you, and that may be a much more effective sorting out process. Don't wait to transition. Indeed, if the new system for retirement is of the sort I described, more compensation up front, less deferred, there would be a lot of young people saying that's what I want, I'll take that. We may be at a point where everyone can win.

PANNULLO: Thank you Dr. Chu. I also thank some of the behind-the-scenes people who made the conference run so smoothly: from the Institute for Defense Analyses, Stan Horowitz and Ayeh Bandeh-Ahmadi, and from the Office of the Secretary of Defense, Mike Strobl.



Appendix A

The following material accompanied Michael Gilmore's presentation.



Costs of the Wars in Iraq and Afghanistan

CBO's focus is Federal budgetary costs

CBO has provided Congress with updated cost projections under different scenarios since September 2002

Data come from:

- Supplemental budget requests submitted by the Administration
- Budget justification materials provided by the Department of Defense (DoD)
- Reports accompanying appropriation acts
- Data on obligations from the cost-of-war reports compiled by the DoD Comptroller

November 17, 2008

Congressional Budget Office

Costs of the Wars in Iraq and Afghanistan

How different cost estimates arise

- Separate and sometimes conflicting data sources
- CBO adopts the Federal budget convention of using current dollars (no adjustment for inflation) – most economists prefer present-value figures
- CBO estimates marginal increases to the regular defense budget (but hard to tell when regular and supplemental funds are mixed during execution)
- Interest payments: CBO does not attribute debt service costs to particular activities in the federal budget

November 17, 2008

Congressional Budget Office

Costs of the Wars in Iraq and Afghanistan

Different cost estimates: Regular Defense Budget

- Congressional Research Service stated that DoD spent \$2.5 billion “planning the invasion” of Iraq
 - Implausible: would have required about 45,000 additional planners, or two “Pentagon-equivalents” if planning process took six months
- Some have attributed up to \$133 billion of Fiscal Year (FY) 2003 – FY 2007 increases in regular defense budget to the wars in Iraq and Afghanistan
 - Increases were already planned in FY03 FYDP, which was submitted in Feb 2002 but largely developed during CY 2001
 - Pay raises above ECI through 2006, TRICARE for Life, and enhancement to military retirement annuity had already been enacted

November 17, 2008

Congressional Budget Office

Costs of the Wars in Iraq and Afghanistan

Different cost estimates: Veterans Benefits

- Disability claims
 - CBO estimates 10% of non-deployed veterans from first Gulf War era developed service-connected disabilities
 - 40% of all first Gulf War veterans were granted disability, but one quarter received a 0% rating
 - To estimate claims to current conflict, CBO would net out the baseline 10% of peacetime disabilities, retain 40% above baseline, and then subtract another 25% of those (0% rating)
- Projected VA medical costs for FY 2009
 - \$3,900 for OEF/OIF
 - \$7,200 for all VHA patients
- No consistent or reliable numbers on TBI and PTSD

November 17, 2008

Congressional Budget Office

Costs of the Wars in Iraq and Afghanistan
 Estimated War-Related Appropriations
 Fiscal Years 2001-2008 (billions of then-year \$)

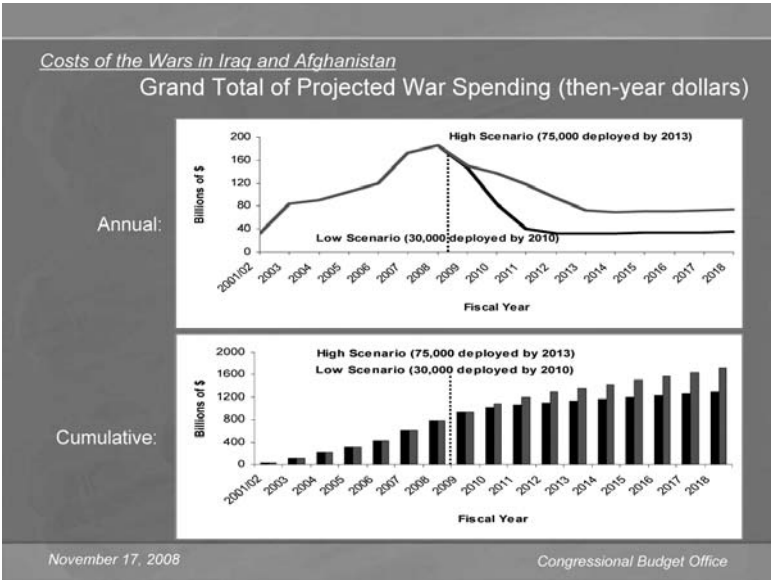
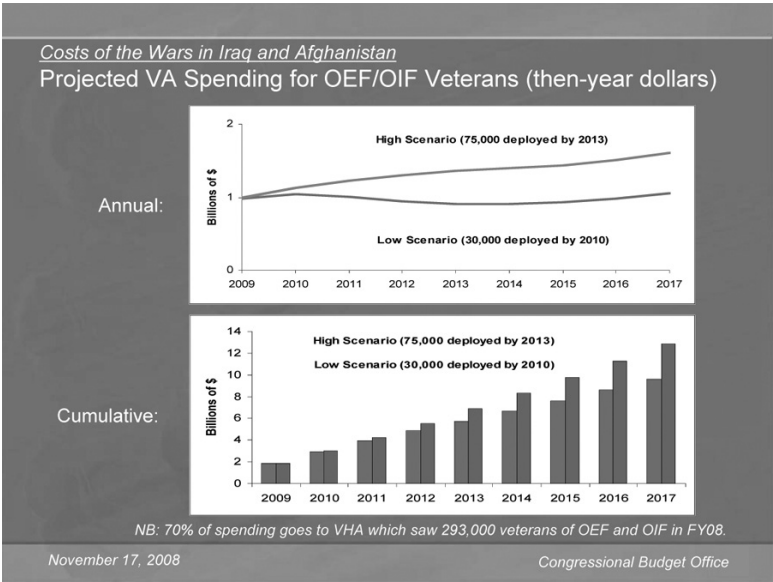
	2001/02	2003	2004	2005	2006	2007	2008	TOTAL
Operation & Maintenance	25	44	41	51	65	79	85	390
Procurement	1	10	7	18	25	52	65	177
Military Personnel	4	16	18	19	18	18	19	112
Other ^a	*	6	4	7	3	6	5	30
Indigenous Security Forces	0	0	5	7	5	13	6	36
Diplomatic Operations & Foreign Aid	2	8	17	3	4	5	4	43
Veterans' Benefits	0	0	0	0	0	1	1	2
TOTAL	32	84	91	105	120	173	185	790

^aIncludes Research Development Test & Evaluation, Military Construction, Family Housing, transfers from regular appropriations

Source: CBO

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Congressional Budget Office



Costs of the Wars in Iraq and Afghanistan

Funding for Operations in Iraq, Afghanistan and
Elsewhere for the War on Terrorism
Relative to Past Conflicts

Conflict	FY2008 \$ (billions)	Total cost / total GDP during war period
World War I	371	20%
World War II	3,275	31%
Korea	705	4%
Vietnam	663	1%
Persian Gulf	94	1%
War on Terrorism (FY02 thru FY08)	828	1%

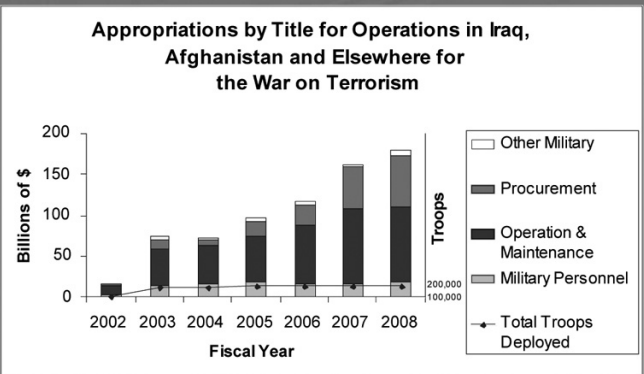
Sources: Paul Poast, Bureau of Economic Analysis, CBO

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Congressional Budget Office

Costs of the Wars in Iraq and Afghanistan

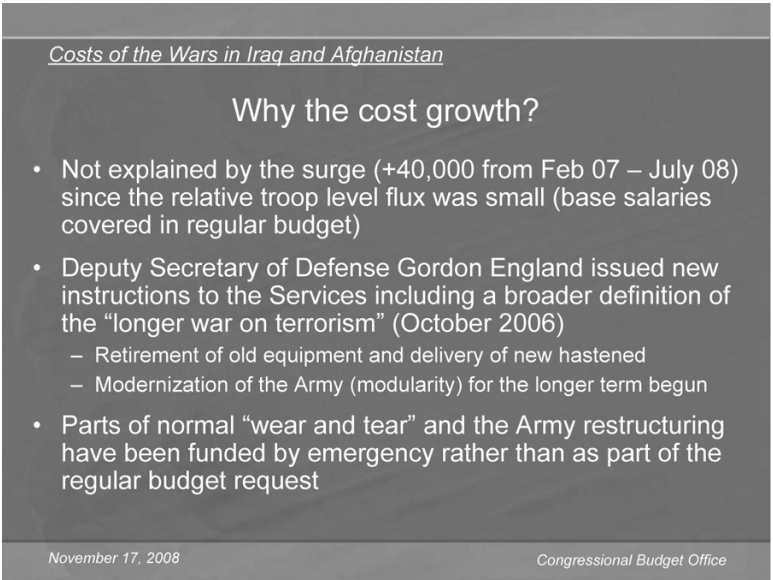
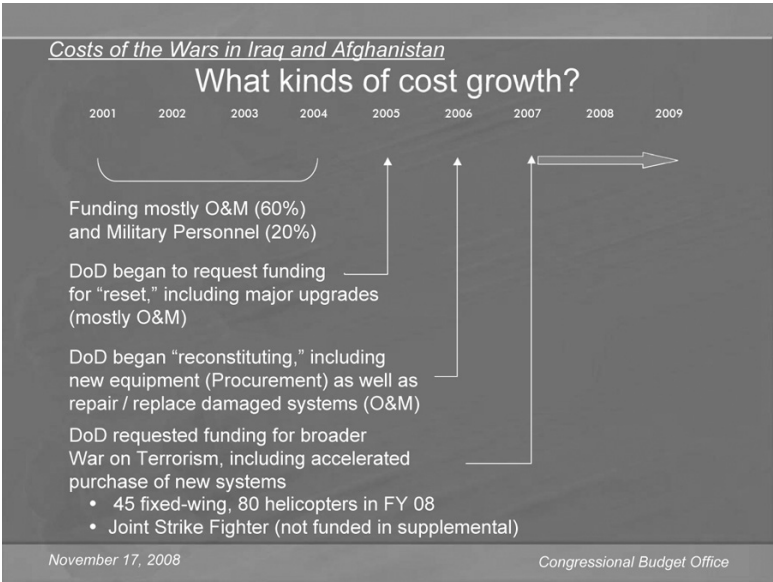
Growth in Appropriations for DoD



Source: CBO

November 17, 2008

Congressional Budget Office



Appendix B

Agenda

0800–0830	Continental Breakfast
0830–0845	Welcome <i>Larry D. Welch</i> , IDA and <i>Jerry Pannullo</i> , OSD(PA&E)
0845–0930	Keynote Address <i>Martin S. Feldstein</i> , George F. Baker Professor of Economics, Harvard University, and President Emeritus, National Bureau of Economic Research
0945–1045	Costs and Benefits of the Global War on Terror <i>J. Michael Gilmore</i> , Assistant Director for National Security, Congressional Budget Office <i>Cindy Williams</i> , Principal Research Scientist of the Security Studies Program at the Massachusetts Institute of Technology
1100–1200	Economic History of War <i>Stanley L. Engerman</i> , John H. Munro Professor of Economics and History, University of Rochester
1200–1330	Luncheon Presentation <i>Joseph E. Stiglitz</i> , University Professor, Columbia University
1345–1445	Economic Conditions for War and Peace <i>Andrew W. Marshall</i> , Director, Office of Net Assessment, U.S. Department of Defense <i>Mark Harrison</i> , Professor of Economics, University of Warwick (UK), and Distinguished Visiting Fellow, Hoover Institution, Stanford University
1500–1545	Closing Remarks <i>David S.C. Chu</i> , Under Secretary of Defense for Personnel and Readiness, U.S. Department of Defense
1600–1715	Reception

Appendix C

Attendees

Adebayo M. Adedeji

Principal Analyst
Congressional Budget Office

Jomana Amara

Assistant Professor, Defense Resources Management Institute
Naval Postgraduate School

Ayeh Bandeh-Ahmadi

Adjunct Research Associate
Institute for Defense Analyses

Elizabeth Bass

Analyst
Congressional Budget Office

Russell W. Beland

Assessment Advisor, Office of Program and Process Assessment
Office of the Secretary of the Navy

Gary R. Bliss

Deputy Director, Enterprise Information and OSD Studies
Office of the Under Secretary of Defense (Acquisition, Technology, and Logistics)

Jerome Bracken

Adjunct Research Staff Member
Institute for Defense Analyses

Natalie R. Bragg

Research Assistant
Institute for Defense Analyses

Brooke Brody-Waite

National Security Program Examiner
Office of Management and Budget

Gregg Burgess

Managing Director, Simulation & Analysis Center
Office of the Secretary of Defense (Program Analysis and Evaluation)

Richard Burke

Deputy Director, Resource Analysis
Office of the Secretary of Defense (Program Analysis and Evaluation)

Kel Burt

Operations Research Analyst
Office of the Secretary of Defense (Program Analysis and Evaluation)

Soyong Chong

Operations Research Analyst
Office of the Secretary of Defense (Program Analysis and Evaluation)

Eric W. Christensen

Managing Director, Health Research and Policy
CNA

David S. C. Chu

Under Secretary of Defense (Personnel and Readiness)

Carl J. Dahlman

Program Executive Officer
Office of the Under Secretary of Defense (Personnel and Readiness)

Gregory A. Davis

Research Staff Member
Institute for Defense Analyses

Paul Dickens

Chief Executive Officer
PFDickens, LLC

Colin M. Doyle

Research Staff Member
Institute for Defense Analyses

Stanley L. Engerman

John H. Munro Professor of Economics, and Professor of History
University of Rochester

Martin Feldstein

George F. Baker Professor of Economics Harvard University
President Emeritus of the National Bureau of Economic Research

J. Michael Gilmore

Assistant Director for National Security
Congressional Budget Office

Matthew Goldberg

Deputy Assistant Director for National Security
Congressional Budget Office

Lawrence Goldberg

Research Staff Member
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Heidi L. W. Golding

Principal Analyst
Congressional Budget Office

Vance Gordon

Operations Research Analyst
Office of the Secretary of Defense (Program Analysis and Evaluation)

Ruth Greenstein

Vice President, Finance and Administration
Institute for Defense Analyses

Andrew O. Hall

Ph.D. Candidate, R.H. Smith School of Business
University of Maryland

Roger M. Harrison

Professor of Economics
University of Warwick

Ken Hayashida

Operations Research Analyst
Office of the Secretary of Defense (Program Analysis and Evaluation)

Gregory G. Hildebrandt

Visiting Economics Professor
Naval Postgraduate School

Paul F. Hogan

Senior Vice President
The Lewin Group

Stanley Horowitz

Assistant Director, Cost Analysis and Research Division
Institute for Defense Analyses

Fernando Huerta

Operations Research Analyst
Office of the Secretary of Defense (Program Analysis and Evaluation)

Gary C. Hufbauer

Reginald Jones Senior Fellow
Peterson Institute for International Economics

Jack A. Jackson

Research Staff Member
Institute for Defense Analyses

Jacob A. Klerman

Principal Associate
Abt Associates

James Lacey

Research Staff Member
Institute for Defense Analyses

Brian LeFebvre

Program Analyst, Program Analysis and Evaluation
Department of Homeland Security

Michael Leonard

Director, Strategy, Forces and Resources Division
Institute for Defense Analyses

Robert A. Levy

Research Analyst
CNA

Ronald Lile

Director, Defense Cost and Resource Center
Office of the Secretary of Defense (Program Analysis and Evaluation)

Phil Major

Vice President, Programs
Institute for Defense Analyses

Andrew Marshall

Director, Net Assessment
Office of the Secretary of Defense

Martin McGuire

Heinz Chair Emeritus Professor of Economics
University of California, Irvine

Molly F. McIntosh

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David L. McNicol

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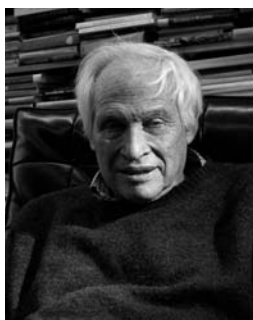
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Appendix D

Speaker Biographies

David S. C. Chu is the Under Secretary of Defense for Personnel and Readiness. In this capacity, he is the Secretary of Defense's senior policy advisor on recruitment; career development; and pay and benefits for active duty, Guard, and Reserve military personnel as well as Department of Defense civilians. He is also responsible for overseeing the state of military readiness, the Defense Health Program, the Defense Commissaries and Exchanges, the Defense Educational Activity, and the Defense Equal Opportunity Management Institute. Dr. Chu earlier served in government as the Director and then Assistant Secretary of Defense for Program Analysis and Evaluation. In that capacity, he advised the Secretary of Defense on the future size and structure of the armed forces, their equipment, and their preparation for crisis or conflict. Dr. Chu has also served as the Assistant Director for National Security and International Affairs in the Congressional Budget Office as well as in several senior executive positions with RAND, including Director of the Arroyo Center and Director of RAND's Washington Office. He holds a bachelor's degree in economics and mathematics and a doctorate in economics from Yale University. During his service in the Army, Dr. Chu became an instructor at the U.S. Army Logistics Management Center, completed a tour of duty in Vietnam, worked in the Office of the Comptroller, Headquarters, 1st Logistical Command, and obtained the rank of captain. He holds the Department of Defense Medal for Distinguished Public service with silver palm.





Stanley L. Engerman is John H. Munro Professor of Economics and Professor of History at the University of Rochester, where he has taught since 1963. His primary research focuses on the economic development of the United States, Britain, and the West Indies, particularly the history of slavery and emancipation. Dr. Engerman is a member of the American Academy of Arts and Sciences, a distinguished fellow of the American Economics Association, and

past president of both the Economic History Association and the Social Science History Association. He is coauthor of *Time on the Cross: The Economics of American Negro Slavery and Naval Blockades in Peace and War: An Economic History Since 1750*. His most recent book is *Slavery, Emancipation, and Freedom: Comparative Perspectives*.



Martin Feldstein is the George F. Baker Professor of Economics at Harvard University and President Emeritus of the National Bureau of Economic Research, a private, nonprofit research organization that has specialized in producing nonpartisan studies of the American economy for more than 80 years. He served as President and CEO of the National Bureau of Economic Research from 1977 to 1982 and from 1984 to 2008. Dr. Feldstein is also a director of two corporations (American

International Group and Eli Lilly) and an economic adviser to several businesses and government organizations in the United States and abroad. In 2004, he served as President of the American Economic Association. From 1982 through 1984, he was Chairman of the Council of Economic Advisers and President Reagan's chief economic adviser. Dr. Feldstein is a member of the American Philosophical Society, a corresponding fellow of the British Academy, a fellow of the Econometric Society, and a fellow of the National Association of Business Economists. He is also a member of the Trilateral Commission, the Council on Foreign Relations, the Group of 30, and the American Academy of Arts and Sciences. In 1977, Dr. Feldstein received the John Bates Clark Medal of the American Economic Association, a prize awarded every 2 years to the economist under the age of 40 who is judged to have made the greatest contribution to economic science. He is the author of more than 300 research

articles in economics and a regular contributor to *The Wall Street Journal*. He holds bachelor's, master's, and doctorate degrees from Oxford University as well as a bachelor's degree from Harvard College.

J. Michael Gilmore is the Director of the National Security Division at the Congressional Budget Office, where he directs analyses of major policy and program issues in national defense, international affairs, and veterans' affairs. He oversees investigations of long-term implications of current defense policies and programs, alternative approaches to military career management, implications of transformation for equipping and operating general-purpose and strategic forces, and potential future resource demands for operating and supporting U.S. military forces. Prior to his tenure at the Congressional Budget Office, Dr. Gilmore was the Deputy Director for General Purpose Programs in the Office of the Secretary of Defense, Program Analysis and Evaluation (PA&E) where he served as the principal staff adviser to the Secretary of Defense for issues regarding U.S. general-purpose forces and supporting programs. During his PA&E tenure, he conducted analyses of strategic defense and military satellite communications programs and directed teams of analysts in the Cost Analysis Improvement Group. Prior to government service, Dr. Gilmore was a defense analyst for McDonnell Douglas Corporation and a scientist at Lawrence Livermore National Laboratory, where he performed research on nuclear fusion. He holds a bachelor's degree in physics from the Massachusetts Institute of Technology and master's and doctorate degrees in nuclear engineering from the University of Wisconsin at Madison.



Mark Harrison is a professor of economics at the University of Warwick in the United Kingdom and a distinguished visiting fellow at Stanford University's Hoover Institution. He is an economic historian and specialist in Soviet affairs. Dr. Harrison was one of the first Western economists to work in the Russian archives following the fall of Soviet communism. His work focused on bringing new knowledge about the Russian and Soviet economy into mainstream economics and international economic history, especially through projects on



the two world wars. Dr. Harrison has written and edited a number of books on the economic history of twentieth century wars. He received the Alec Nove Prize from the British Association for Slavonic and East European Studies for his book *Accounting for War: Soviet Production, Employment, and the Defence Burden, 1940–1945*. His articles have appeared in leading journals of economics, economic history, and Russian studies. He has a bachelor's in economics and politics from Cambridge University and a doctorate degree in modern history from Oxford University.



Andrew W. Marshall is the Director of Net Assessment within the Office of the Secretary of Defense. He has held this post since 1973, when, as a staff member at the National Security Council, he helped found the Office of Net Assessment. In his current capacity, he continues to provide the Secretary of Defense, other top-level managers, and senior military commanders with assessments of the military balance in major geographic theaters and mission areas. His work

addresses asymmetries in the capabilities, organizations, operational concepts, and strategies of the US and key military competitors and of other major actors. He has collaborated with groups in other countries pursuing related strategic assessments, including continuing exchanges with the governments of France and Japan. Mr. Marshall chaired two working groups on long-term security and nuclear policy in the 1980s and has served on a variety of delegations and groups that helped shape U.S. nuclear strategy. He directed the Department of Defense's lessons-learned analyses of the 1973 Arab-Israeli War and of the Falkland Islands War. Currently, his office focuses on assessing possible changes in future warfare, the key competitions likely to emerge over the next 2 or 3 decades, and the future security environment of the United States, particularly with respect to Asia. Prior to his current position, Mr. Marshall worked at the RAND Corporation on economic and strategic studies of nuclear policy and long-term U.S.-Soviet political-military competition. He attended the University of Detroit and Wayne University and holds a graduate degree in economics from the University of Chicago.

Joseph E. Stiglitz holds the rank of University Professor at Columbia University in New York and is Chair of Columbia University's Committee on Global Thought. He is also the co-founder and Executive Director of the Initiative for Policy Dialogue at Columbia. He has taught at Yale, Princeton, Stanford, the Massachusetts Institute of Technology, and he was the Drummond Professor and a fellow at All Souls College, Oxford. He is a recipient of the John Bates Clark Award, given biennially by the American Economic Association to the economist under 40 who has made the most significant contribution to the field. Dr. Stiglitz also received the 2001 Sveriges Riksbank Prize in Economic Sciences in Memory of Alfred Nobel for his analyses of markets with asymmetric information. He was a lead author of the 1995 Report of the Intergovernmental Panel on Climate Change, which shared the 2007 Nobel Peace Prize. During the Clinton administration, Dr. Stiglitz was a member and chairman of the Council of Economic Advisers. Afterwards, he became Chief Economist and Senior Vice-President of the World Bank. In 2008, Dr. Stiglitz was appointed by French President Nicolas Sarkozy to chair the Commission on the Measurement of Economic Performance and Economic Progress. During his career, Dr. Stiglitz helped found informational economics, a branch of economics exploring the consequences of information asymmetries, and he pioneered the concepts of adverse selection and moral hazard, which have now become standard tools for theorists and policy analysts alike. He has made major contributions to macroeconomics and monetary theory, to development economics and trade theory, to public and corporate finance, to the theories of industrial organization and rural organization, and to the theories of welfare economics and of income and wealth distribution. In the 1980s, Dr. Stiglitz helped revive interest in the economics of research and development. His work has helped explain the circumstances in which markets do not work well, and how selective government intervention can improve their performance. Dr. Stiglitz founded *The Journal of Economic Perspectives* and his many books have been translated into over 35 languages. His most recent book is *The Three Trillion Dollar War: The True Cost of the Iraq Conflict*, coauthored with Linda Bilmes and published in 2008.





Cindy Williams is a Principal Research Scientist in the Security Studies Program at the Massachusetts Institute of Technology. Her work there includes an examination of the processes by which the U.S. Government plans for and allocates resources among the activities related to national security and international affairs and an examination of personnel policies in the armed forces of Western nations. She formerly served as Assistant Director for National Security at the Congressional Budget

Office; as a director and in other capacities at the MITRE Corporation; as a member of the Senior Executive Service in the Pentagon's Directorate of Program Analysis and Evaluation; and as a mathematician at the RAND Corporation. Her areas of specialization include U.S. national security policies and budgets, military personnel policy, and command and control of military forces. Dr. Williams holds a Ph.D. in mathematics from the University of California, Irvine. She is an elected fellow and a member of the board of directors of the National Academy of Public Administration and a member of the Naval Studies Board, the Council on Foreign Relations, and the International Institute for Strategic Studies. She serves on the editorial board of *International Security* and the advisory board of the Scowcroft Institute of International Affairs at the Bush School of Government and Public Service of Texas A&M University.

REPORT DOCUMENTATION PAGE				Form Approved OMB No. 0704-0188	
Public reporting burden for this collection of information is estimated to average 1 hour per response, including the time for reviewing instructions, searching data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding this burden estimate or any other aspect of this collection of information, including suggestions for reducing this burden to Washington Headquarters Service, Directorate for Information Operations and Reports, 1215 Jefferson Davis Highway, Suite 1204, Arlington, VA 22202-4302, and to the Office of Management and Budget, Paperwork Reduction Project (0704-0188) Washington, DC 20503. PLEASE DO NOT RETURN YOUR FORM TO THE ABOVE ADDRESS.					
1. REPORT DATE (DD-MM-YYYY) 17-11-2008		2. REPORT TYPE Final		3. DATES COVERED (From - To) Oct 2008 - May 2008	
4. TITLE AND SUBTITLE 2008 Defense Economics Conference: The Economics of War				5a. CONTRACT NUMBER DASW01-04-C-0003	
				5b. GRANT NUMBER	
				5c. PROGRAM ELEMENT NUMBER	
6. AUTHOR(S), Last Names First Pannullo, Jerry Strobl, Michael Horowitz, Stanley A. Bandeh-Ahmadi, Ayeh				5d. PROJECT NUMBER	
				5e. TASK NUMBER BA-7-2020	
				5f. WORK UNIT NUMBER	
7. PERFORMING ORGANIZATION NAME(S) AND ADDRESS(ES) Institute for Defense Analyses 4850 Mark Center Drive Alexandria, VA 22311-1882				8. PERFORMING ORGANIZATION REPORT NUMBER IDA Document NS D-3717	
9. SPONSORING/MONITORING AGENCY NAME(S) AND ADDRESS(ES) Director, Economic and Manpower Analysis Division Office of the Secretary of Defense, Program Analysis and Evaluation Pentagon, Room BE798 Washington, DC 20301-1800				10. SPONSOR/MONITOR'S ACRONYM(S) OSD(PA&E)	
				11. SPONSORING/MONITORING AGENCY REPORT NUMBER	
12. DISTRIBUTION AVAILABILITY STATEMENT Approved for public release; distribution unlimited.					
13. SUPPLEMENTARY NOTES					
14. ABSTRACT Since 1991, the Office of the Secretary of Defense, Program Analysis and Evaluation, and the Institute for Defense Analyses (IDA) have conducted an annual conference on defense economics. In 2008, the conference topic of the economics of war provided an opportunity to consider the economic causes of war, the use of resources in war, the impact of war on the economy, and the use of economic tools in warfare. This document contains the proceedings of the 2008 conference, which was held at IDA in Alexandria, Virginia, on November 17, 2008.					
15. SUBJECT TERMS Economics; Defense Economics; Department of Defense; Warfare; U.S. Economy					
16. SECURITY CLASSIFICATION OF:			17. LIMITATION OF ABSTRACT	18. NUMBER OF PAGES	19a. NAME OF RESPONSIBLE PERSON (Last Name First)
a. REPORT Unclassified	b. ABSTRACT Unclassified	c. THIS PAGE Unclassified			Pannullo, Jerry
					19b. TELEPHONE NUMBER (Include area code) 703-697-2936