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After an Attack on Iraq: The Economic Consequences

Conference Summary

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November 21, 2002

EXECUTIVE SUMMARY

On November 12, 2002, CSIS sponsored a conference on the economic consequences of an attack on Iraq. The conference brought together a group of military and political experts, oil market analysts, macroeconomic modelers, and financial market experts who first developed a set of war scenarios and then collaborated on an analysis of the economic consequences of an attack on Iraq.

The economic analysis was based on three war scenarios, developed by CSIS national security expert Anthony Cordesman, who set out a range of possible military outcomes and political repercussions. Perhaps the most important point of the analysis was the wide range of possible outcomes and the difficulty in assigning probabilities to the various possibilities. As a result, we proceeded by developing a range of scenarios that covered a range of possibilities and used these scenarios as the foundation for the economic analysis.

In the benign case, there is a quick and decisive victory. Iraqi oil is off the market for only a short period, there is no damage to oil producing facilities in Iraq or elsewhere in the region, other OPEC countries increase production to offset the loss of Iraqi oil, there are few adverse political repercussions in the region, and there are no serious terrorist attacks in the U.S. or among our allies. In the intermediate and worse cases, there are progressively greater disruptions to oil supply, progressively more adverse political repercussions in the region, and progressively more serious terrorist incidents.

The effect of the war on oil prices in the benign case is modest and unwinds quickly. Indeed, the lifting of uncertainty about the outcome of the war results in a rally in equity markets and improved economic performance relative to the no-war case. The effects are more serious in the intermediate and worse case scenarios. Output growth slows markedly for a couple of quarters in the intermediate case, and the unemployment rate remains over 6% at the end of 2003. In the worse case scenario, the economy falls back into recession, with the unemployment rate reaching almost 7 ½%.

Some of the key conclusions from the study are:

- **In both the no-war and benign war cases, oil prices are projected to be lower than today in one year. In both the intermediate and worse case scenarios, oil prices are higher than today for at least the next two years, and significantly higher in the worse case scenario.**

- **Economic performance is better in the benign war scenario than in to no-war case, because a quick and decisive victory eliminates uncertainty without producing any adverse effects.**

- **There are, however, serious adverse effects on economic performance in the intermediate and worse case war scenarios, and the worse case results in a global recession.**

CONFERENCE PROGRAM

AFTER AN ATTACK ON IRAQ:
THE ECONOMIC CONSEQUENCES

TUESDAY, NOVEMBER 12, 2002

8:30 - 9:00 **Registration**

9:00 - 9:15 **Introduction: The President's Decision**
John Hamre, President and CEO, CSIS

9:15 - 10:45 **Possible Military Outcomes and Geopolitical Ramifications**
Robin Niblett, Executive Vice President, CSIS (Panel Moderator)
Anthony Cordesman, Arleigh Burke Chairholder in Strategy, CSIS
Alina Romanowski, Director, NESA Center, National Defense University
Jon Alterman, Former Member, Policy Planning Staff, U.S. State Department

10:45 - 11:00 **Break**

11:00 - 12:30 **Oil Markets Panel**
Larry Goldstein, President, Petroleum Industry Research Foundation (Panel Moderator)
Herman Franssen, Senior Fellow, CSIS
Adam Sieminski, Director & Global Oil Strategist, Deutsche Bank
Bob Ebel, Director, Energy Program, CSIS

12:30 - 2:00 **Lunch**

2:00 - 3:30 **Implications for the U.S. and World Economies**
Larry Meyer, Distinguished Scholar, CSIS (Panel Moderator)
Joel Prakken, Chairman, Macroeconomic Advisers
Stefan-B. Schneider, Chief International Economist, Deutsche Bank

3:30 - 3:45 **Break**

3:45 - 5:00 **Implications for Financial Markets**
Larry Meyer, Distinguished Scholar, CSIS (Panel Moderator)
Bill Dudley, Chief US Economist, Goldman Sachs & Co.
Bob DiClemente, Managing Director, Salomon Smith Barney
Stefan-B. Schneider, Chief International Economist, Deutsche Bank

5:00 **Adjournment**

ORGANIZATION OF THE CONFERENCE

On November 12, 2002, CSIS sponsored a conference on the economic consequences of an attack on Iraq. The conference brought together a group of military and political experts, oil market analysts, macroeconomic modelers, and financial market experts who first developed a set of war scenarios, then collaborated over a two-month period and finally presented their results on an analysis of the economic consequences of an attack on Iraq at the conference.

Anthony Cordesman prepared a background paper for the group on the range of military outcomes and political ramifications that would arise if there were an attack on Iraq. He set out three war scenarios that served as the foundation for the economic analysis. The oil analysts worked together to develop a consensus path for oil prices in each of the war scenarios, beginning from an agreed upon path in the no-war case.

The macro modelers then used the oil price paths provided by the oil analysts and assumptions about the implications of a war for increased government spending, based on a report from the Congressional Budget Office, as inputs into their macro models. Macroeconomic Advisers (MA) used their model to simulate the effect of the war scenarios on the U.S. economy. After lining up MA's results for the U.S. economy, Oxford Economic Forecasting produced results consistent with MA's for the global economy.

The experience with major oil shocks in the 1970s and leading up to the Gulf War suggests that there were powerful psychological effects of these shocks that significantly amplified the direct effects of higher oil prices on the economy. The macro modelers therefore called upon a group of financial market experts to provide their judgment about the effect of the war in the three scenarios on key financial market variables and on consumer confidence.

A full transcript of the conference will be available shortly. In the meantime, we offer this summary.

MILITARY-POLITICAL OUTCOMES AND SCENARIOS

Anthony Cordesman emphasized the importance of understanding the wide range of possible military outcomes and political repercussions and the difficulty in assigning probabilities to the various possibilities. Nevertheless, the range of outcomes can be usefully grouped into logical packages, or scenarios, noted below under "Scenarios."

Timetable under the U.N. Resolution

UN Resolution 1441 creates a timetable—beginning on November 15, 2002 and extending to February 21, 2003—that stipulates when Iraq must accept the terms of the UN resolution and agree to comply, when the chief UN inspectors are to arrive in Baghdad, when Iraq is to provide the Security Council with full declaration of all of its programs to develop and deliver weapons of mass destruction, when inspectors must have restarted their work, and the last possible date for inspectors to give their report to the Security Council.

It is possible that Iraq could create a crisis that would allow the U.S. to go to war at any point during this period. On the other hand, the inspection process could play out over a much more extended period, leading to months or even years of uncertainty.

Military strategy

Cordesman provided an analysis of the likely military strategy. The most likely attack is a U.S. and British land-air offensive that begins with an intensive air campaign. Key targets will be leadership centers, facilities, and forces capable of using weapons of mass destruction, critical hardened and underground command centers, major communications systems, major security forces headquarters and facilities, and the Republican Guards and key regular Iraqi divisions believed to be loyal to the regime. The suppression of surface-based air defenses will have a high priority, as will suppression of Iraqi air and helicopter forces, though this is seen as much less challenging than suppressing Iraq's surface–to-air missiles.

The U.S. and Britain will have at least three heavy division equivalents ready to move through Kuwait, plus extensive light forces and attack and assault helicopter forces. Special forces will enter Iraq early in the air campaign to help suppress Iraqi missile launches and weapons of mass destruction and seize air bases.

The U.S. will actively seek to avoid Israeli involvement by suppressing Iraqi Scud-launch capabilities and will be prepared for chemical and biological warfare. It will also be prepared for urban warfare in key areas.

A major homeland defense effort will take place. This could involve a call up of the National Guard.

Scenarios

Cordesman set out three scenarios that were then used as a foundation of the economic analysis.

The Benign Case (40 – 60% probability)

There is a quick and decisive victory in a period of four to six weeks, without significant impediments that would seriously complicate the situation. Factors in this scenario include:

- A regime collapse.
- Major urban fighting is localized to a few areas.
- Limited civilian deaths and little collateral damage.
- No meaningful use of weapons of mass destruction (WMD) against U.S. troops, Israel, or the region.
- No reduction in oil production/exports by OPEC.
- Saudi Arabia increases oil production.
- No major popular challenges in allied countries to friendly regional governments.
- No major acts of terrorism in U.S., U.K. or allied countries.
- No major factional divisions or warlords after war.
- No significant damage to oil producing capacity in Iraq or elsewhere.

It is obvious that this list of events looks too good to be true. Nonetheless this scenario might reasonably unfold in general terms.

The Intermediate Case (30 – 40% probability)

In this case the fighting could extend for 6 – 12 weeks, although time may not be the key variable. Core elements of this scenario include:

- Unexpected military resistance in Iraq.
- Low-level civil tensions and clashes in Iraq after the main fighting ends.
- Major covert effort to attack targets in U.S. and U.K. discovered and prevented, or damage limited.
- Serious urban warfare in some areas.
- Moderate civilian deaths, but serious collateral damage/negative press reports.
- Iraq attacks oil facilities in region, with limited damage.
- Iraq makes limited or largely ineffective use of WMD against U.S. troops, Israel.
- Limited Israeli intervention and rising political tension in region.
- Passive Saudi cooperation, and oil production increases but slowly.

Although not all of these developments need or are likely to arise in the intermediate scenario, some combination of the developments identified in this scenario would produce an intermediate case.

The Worse Case (5 – 10% probability)

The fighting in this case could last 90 to 180 days. Key characteristics of the worse case scenario could include:

- Protracted military resistance in Iraq.
- Intense urban warfare.
- Significant casualties and collateral damage.
- Major U.S. and U.K. casualties/political problems with anti-war movements.
- Iraqi people become actively hostile to U.S. and Britain.
- U.S. loses support at the UN.
- Britain, Turkey, or one Gulf ally drops out as U.S. ally.
- Iraq attacks oil facilities in region with WMD and there is significant damage.
- Iraq successfully attacks Arab/Turkish bases or cities.
- Iraq attacks U.S. troops with WMD/prompts major response or highly lethal effects.
- Iraq attacks Israel with WMD/triggers major response or has highly lethal effects.
- Serious Israeli intervention and at least tacit threat of use of WMD.
- Massive political unrest in region.
- Serious terrorist attacks against U.S. and U.K. interests in the region.
- Iraq or its proxies or sympathizers carry out covert attacks in U.S. and U.K.
- Significant civil conflicts in Iraq, which U.S. is unable to control.
- U.S. civil-military and humanitarian effort proves inadequate/inefficient.
- Serious lingering effects in terms of need to repair oil facilities, collateral damage and infrastructure.
- U.S. and U.K. face not only a hostile Iraqi population, but also years of broader Arab hostility.

While there is virtually no chance that this complete mix of events will occur, a combination of several of these developments could occur and produce the worse case scenario.

Post-Conflict Issues

History shows that even the most dramatic military victory merely defeats the enemy; it does not shape or win the peace. In short, the war is not over when Saddam is gone and the major fighting stops. Rather, the uncertainties and problems in the post-conflict period will last longer than those of war. There is a high probability that the world faces years of tension and uncertainty as the internal future of Iraq is decided and as it establishes new relations with its neighbors and the West.

Comments by Alina Romanowski and Jon Alterman

Alina Romaowski of the National Defense University agreed with the broad outline of the scenarios presented by Cordesman. She thought the most likely outcome would be somewhere between the benign and the intermediate cases. She focused on the range of military challenges the U.S. could face. She also emphasized the challenges after the war. For example, we will have to recreate Iraqi constitutions and political institutions. It will be critical that we find a

good model for nation-building, because many nations will have their own ideas. She also pointed out that Iraq has never known democracy and is an unpromising breeding ground for democracy.

Jon Alterman, formerly with the State Department, believes that Saddam Hussein, given his limited military capabilities, will try to undermine the Americans' will to fight and that of the allies to join Americans in the fight. In many ways, Saddam is already successful with that effort, exporting images of starving Iraqis to Europe. Recognizing that the U.S.-led air strike will be the most televised war in history, he also noted the danger that a media campaign could have in creating political instability in the region. Searing images of the struggle will be a persistent wild card in the Gulf, Jordan and other Arab regimes.

OIL PRICE PATHS CORRESPONDING TO THE NO-WAR AND THREE WAR SCENARIOS

The oil price panel consisted of Larry Goldstein (President of the Petroleum Research Industry Foundation), Robert Ebel (Director of the Energy Program at CSIS), Herman Franssen (Senior Fellow at CSIS), and Adam Sieminski (Director and Global Oil Strategist at Deutsche Bank).

No-War Case

The oil panel noted that the countdown to a possible war with Iraq is taking place at a time when the oil market is tight. It is this restraint on production in the face of a modest global rebound in economic activity and hence increased demand for oil that has resulted in higher oil prices so far this year. However, because OPEC has recently been producing well in excess of its quota, there is a lot of oil supply that is on the water en route to consuming countries. As a result, in the no-war case, the panel projected that oil prices would decline from levels near $30 as we began the project (but closer to $25 at the time of the conference) to near $20 by the end of next year and remain at $20 in 2003. In the no-war scenario, the oil price panel assumed that initially there would be a continuation of the present uncertainty about whether or not there would be a war, followed by growing confidence that war would be averted as a result of some resolution without war.

The Benign War Scenario

The oil panel made the following assumptions about the oil market for the benign war scenario:

- Iraqi oil production ceases for three months.
- It is resumed slowly in the second quarter and reaches two-plus million barrels per day (mbd) by the third quarter.
- Other OPEC countries make up for most of the lost Iraqi oil.
- The U.S. announces intent to use the strategic petroleum reserve (SPR), calming the oil market.
- In the end, no drawdown of strategic oil reserves is deemed necessary.
- Even so, there is limited panic buying on the oil market.
- Oil prices therefore spike at the initiation of hostilities.
- But continued high OPEC production and incremental non-OPEC production allow prices to fall to the low $20s by the third quarter.

The Intermediate War Scenario

For the intermediate case, the panel made the following assumptions:

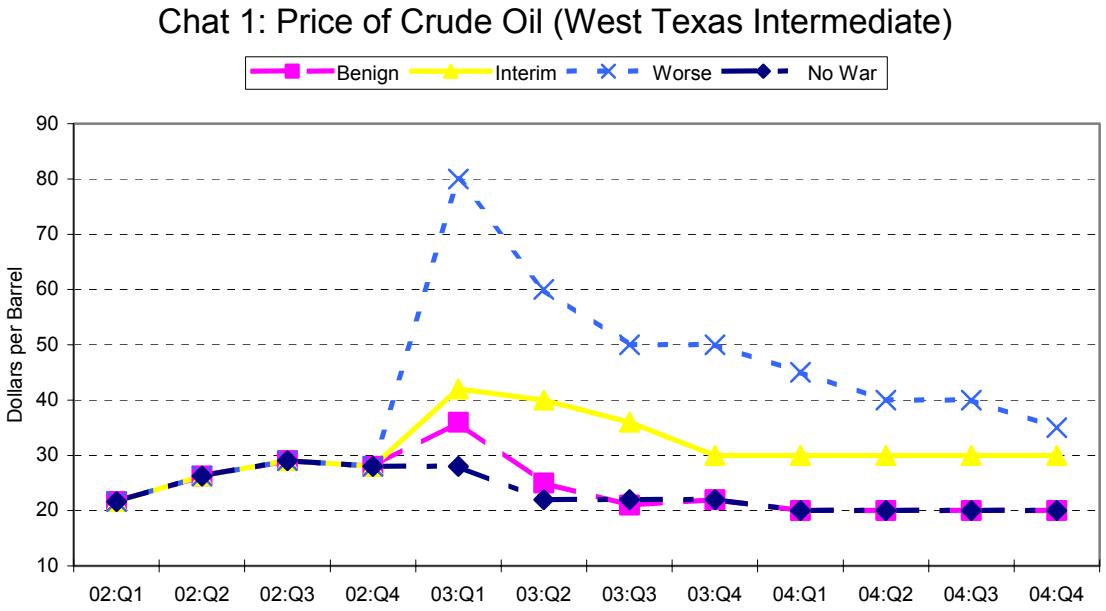
- Iraqi oil is off the market for six months.
- Popular sentiment prevents Gulf Cooperation Council countries from increasing production.
- Fear of oil shortages results in stockbuilding.

- The U.S. government releases one mbd of SPR oil.
- OECD allies do likewise.
- Nevertheless, global stocks remain tight through 2003.
- Lower global growth and hence demand for oil, higher non-OPEC production, and some easing in Middle East oil production cause prices to fall to an average of $30 in 2004.

The Worse-Case War Scenario

The oil panel's assumptions for the worse case are:

- The Republican Guard sets most oil wells in Iraq on fire.
- As a result, Iraqi oil is off the market for all of 2003.
- Acts of sabotage reduce oil exports in other Middle East oil producing countries.
- There is discussion of the use of oil as a political weapon against the U.S.
- There is a major oil supply disruption of five to six mbd.
- There is a quick release of two mbd from SPR and one mbd from other International Energy Agency strategic stocks.
- Consumer hoarding further exacerbates the situation.
- Oil prices spike to $80 per barrel in the first quarter.
- The oil supply-demand situation improves over time, but slowly, with prices falling to an average of $40 in 2004.



- **Chart 1 depicts the oil price paths in the no-war baseline and in the three war scenarios, based on the consensus judgment of the oil price panel.**

THE ECONOMIC ANALYSIS

Macroeconomic Models and Scenario Analysis

Macroeconomic models explain how output, employment, inflation, interest rates, equity prices and other key aggregate economic variables are determined and how they respond to various shocks, including policy changes or shocks of the type being studied here. These models use data over the past few decades to pin down the quantitative relationships that link, for example, oil prices to inflation, consumer spending, and business spending.

In a scenario analysis, the model builder begins with a baseline forecast. In this case, it was the forecast prepared by Macroeconomic Advisers under the no-war assumption. The next step is to introduce a shock and analyze its effect on output, inflation etc. The shock in this case is a war with Iraq as described in the three war scenarios. The scenario analysis then involves a comparison of paths for output, inflation, etc. in the baseline and in the alternative scenario, or in this case, three alternative war scenarios.

Macro models include a variety of channels through which a war with Iraq could affect output, employment, and inflation. Highlighted below are the resulting impacts that an oil price shock could have on inflation, consumer spending, business spending, and the overall economy.

Inflation

- An oil price shock associated with war with Iraq would have a direct affect on inflation.
- For measures of consumer price inflation, this effect is proportional to the weight of oil in overall consumption spending.
- This effect can be amplified as the higher energy prices affect the cost of production and encourage workers to seek larger increases in their nominal wages.

Over time, the effect of the war on output will have an important feedback effect on the future path of inflation. Specifically, to the extent that the effect of the war is to depress output and raise the unemployment rate, the increased slack in the U.S. and global economies will temper the initial rise in inflation due to the direct effect of the increase in oil prices, as well as at least partially reverse the initial rise in oil prices.

Consumer Spending/Business Spending

- An increase in the price of oil reduces real income and real wealth of households, lowering their consumption spending.
- Since a large portion of oil is imported, there is in effect a transfer of purchasing power from U.S. consumers to oil producing countries. A rise in oil prices, for this reason, is often compared to a consumption tax.
- To the extent that oil is produced in the U.S., a price increase transfers purchasing power from U.S. households to U.S. businesses.

- Both foreigners and businesses are assumed to spend less of the diverted purchasing power on U.S. goods than households would have spent.
- As a result a rise in oil prices lowers consumer spending, leading to a decline in production and employment.

Government Spending

Government spending will partially offset some of the adverse effects on household spending.

- The higher government spending on the war will increase the demand for U.S. goods and thereby raise production and employment in the U.S.

Psychological Effects

The uncertainty associated with war, including uncertainty about both the military outcomes and political repercussions, is also likely to have powerful psychological effects on the economy.

- Uncertainty about military outcomes and political repercussions, or higher than expected casualties and increased political instability in the region, could depress consumer confidence and hence further lower consumer spending.
- In addition, these developments could increase the perception of risk and at the same time discourage investors from taking on risk.
- The results could include significant declines in equity prices and increases in the interest rates at which firms could borrow relative to the interest rate on government debt.
- A reluctance to take risk, or a perception of greater risk to the economy, would also depress equity prices, above and beyond the effect of any decline in output due to the direct effect of oil prices on consumer spending.
- The decline in equity prices would further depress consumer spending and raise the cost of financing investment spending by firms.
- The rise in the cost of borrowing by firms would further depress investment spending.

Monetary Policy

The economic outcome will also be affected by the response of monetary policymakers to the effects of the war on output and inflation. Monetary policymakers face two developments with offsetting effects on policy. First, the rise in inflation encourages policymakers to raise interest rates to keep inflation close to their implicit inflation target. Second, the decline in output and associated rise in the unemployment rate encourage monetary policymakers to lower interest rates to raise aggregate demand and facilitate a return toward full employment.

- The actual response of monetary policy will therefore depend both on the precise details of how much relative inflation rises, how much output declines, and on the relative aggressiveness of monetary policymakers in response to changes in output and inflation.

- The models will determine the relative effect on output and inflation in the U.S. and abroad.

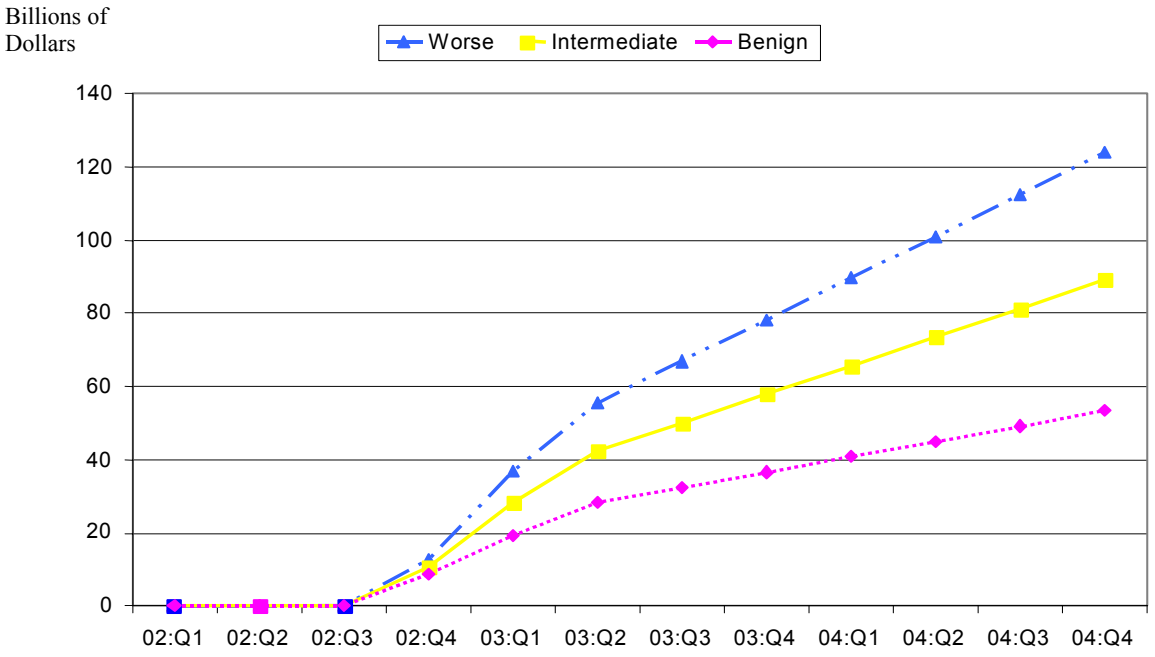
- MA used a policy rule—a version of the Taylor rule—that links the interest rate controlled by the Fed to movements in output and inflation to determine how monetary policy would respond in the three war scenarios.

The Simulation Results for the U.S.

The simulation results for the U.S. can now be summarized. Charts 2-6, below, detail the key inputs into the economic analysis and Charts 7 – 10 present some of the key conclusions of the scenario analysis for the U.S. and the global economy.

The key inputs into the economic analysis are: (1) the oil price paths provided by the oil price panel; (2) the path of government military spending, provided by MA, based on a September 2002 report by the Congressional Budget Office (CBO); (3) the effect on consumer confidence and hence on consumer spending as a result of the psychological effect of the attack and the resulting rise in oil prices, provided by MA, based on their empirical analysis; (4) the response of monetary policy, provided by MA, based on an assumed policy rule; (5) the effect on private interest rates due to the perception of increased risk of lending to firms and decreased willingness to take risk, provided by the financial panel; (6) the effect on equity prices, provided by the financial panel; (7) international feedback effects to the U.S., provided by interaction between MA and Oxford Economic Forecasting.

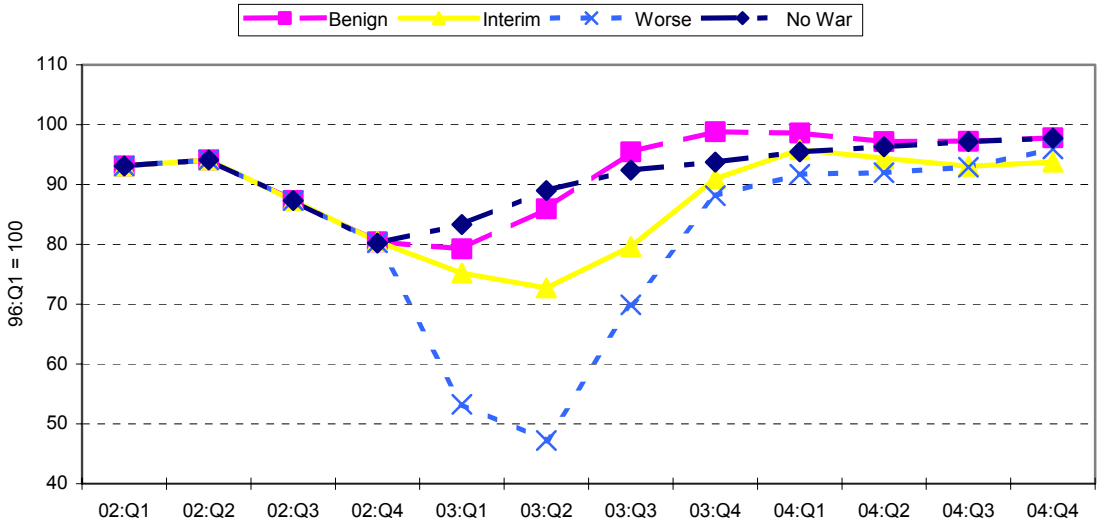
Chart 2: Cumulative (Nominal) Costs of Conflict with Iraq



- **Chart 2 depicts the cumulative cost of the war in each of the three war scenarios, based on a CBO study and MA's assumptions about the length of the war in the three war scenarios.**

The CBO identified four phases of the war: the initial deployment of assets, the war-fighting itself, the redeployment of assets after the war, and the cost of occupation after the war. The cost of deployment and redeployment are fixed sums, assumed to be spread over three months. The cost of the war and of occupation are based monthly run rates, based on the CBO analysis and on MA's assumptions about the length of the war that are, in turn, based on Cordesman's war scenarios. MA then converted the assumed costs into a path for military spending. Spending increases gradually, relative to the path of costs, as the material used for the war is initially taken from existing inventories and replaced through additional production over time.

Chart 3: Consumer Sentiment (University of Michigan)



- **Chart 3 shows MA's conclusions about the psychological effect of the war on consumer confidence.**

In MA's approach, consumer confidence ordinarily does not have much if any independent effect on consumer spending. That is because the same factors that affect consumer confidence also directly affect consumer spending in the MA model. So consumer confidence generally does not add additional information and hence does not directly enter their equation for consumer spending. However, in unusual periods, such as at the outbreak of a war, there is sometimes a significant effect on consumer confidence, above and beyond any effect that arises from changes in income, wealth, unemployment rates, equity prices and other variables that are also assumed to directly effect both consumer confidence and consumer spending. MA used the experience of consumer confidence at the time of the Gulf War to calibrate the psychological effect associated with war-related increases in oil prices in the three scenarios.

Chart 4: Wilshire 5000 Stock Price Index

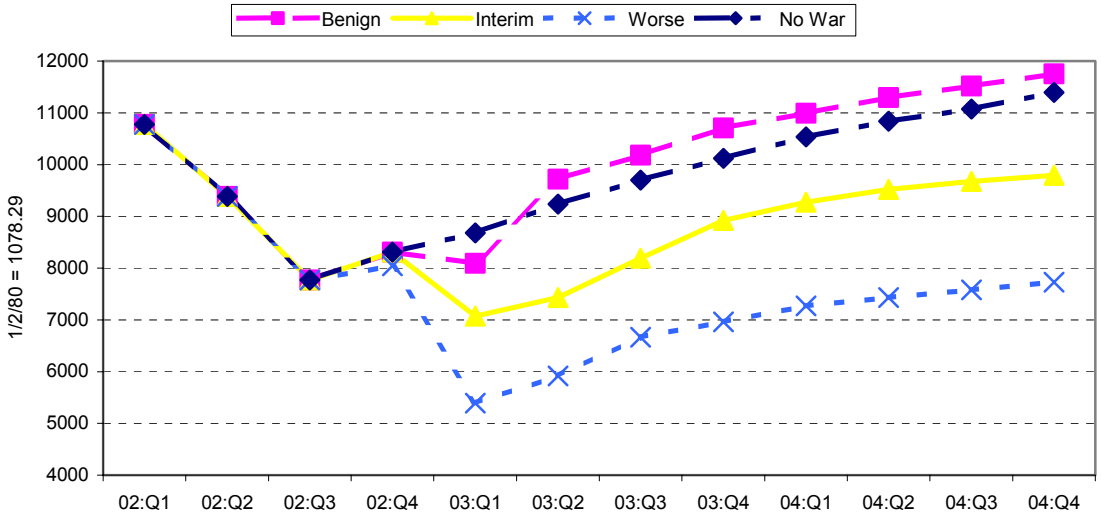
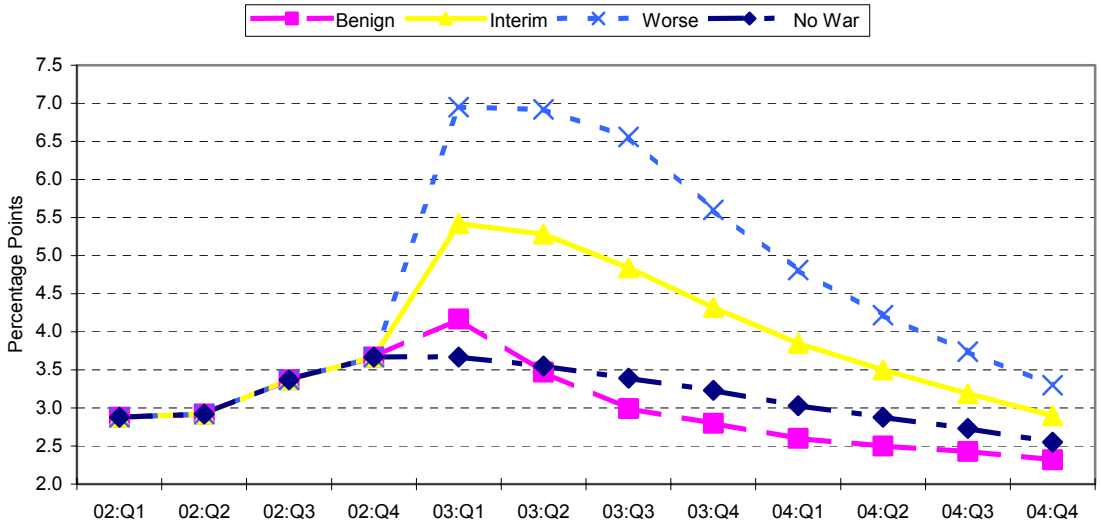


Chart 5: Quality Spread (BAA Bond less 10-Yr Treasury)

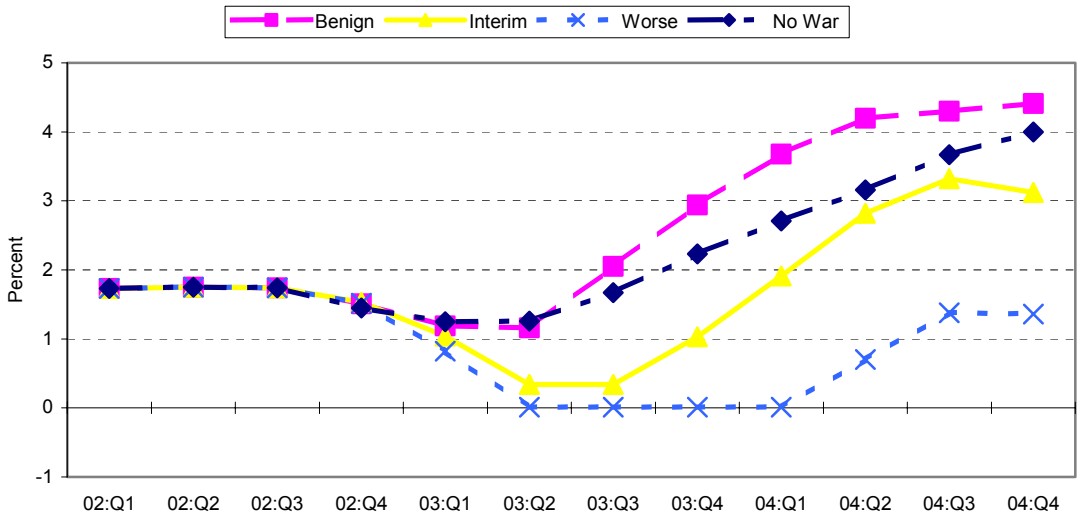


- **Charts 4 and 5 depict the effect of the war on financial markets, based on the input of the financial panel. Chart 4 shows the effects on equity values and Chart 5 for quality spreads.**

The financial market panel believed that an attack on Iraq would have a powerful effect on quality spreads, measured as the difference between the rate on BAA rated corporate bonds and the rate in 10-year government notes. These spreads are already near record levels. Bob DiClemente, Managing Director at Salomon Smith Barney, presented the panel's conclusion at the conference. He noted that there were still significant financial stresses among corporations and that there had been a significant number of "blow-ups" where specific firm-related events

had led to dramatic increases in credit spreads for specific firms. The panel judged that, given this vulnerability, it was likely that the uncertainty associated with an attack on Iraq, especially given the outcomes in the intermediate and worse-case scenarios, could result in a dramatic further widening of these spreads. DiClemente also presented the panel's conclusions about the declines in equity prices in the war-related scenarios.

Chart 6: Federal Funds Rate



- **Chart 6 depicts the response by monetary policy to the economic effects of the war. The federal funds rate, shown in Chart 6 is the policy instrument the Fed uses to affect aggregate demand and influence both GDP growth and inflation.**

At the conference, Goldman Sachs Chief U.S. Economist Bill Dudley noted that earlier episodes of sharp increases in oil price prices were usually accompanied by a tightening of monetary policy and higher interest rates. Dudley pointed out that with inflation low today and little growth momentum, the Fed is likely to focus on sustaining growth rather than preventing a rise in inflation, and therefore ease if there are adverse effects of the war on GDP growth and the unemployment rate. This is also the conclusion MA reached, based on the policy rule used in their model to predict how the Fed would respond to the effect of the war on the unemployment rate and inflation.

Monetary policy thus eases in the intermediate and worse-case scenarios to cushion the effect of the decline in output and rise in the unemployment rate. The specific rule used by MA assumes that policymakers "look through" initial and direct effect of the oil price shock on inflation, and respond only to the extent that the rise in oil prices pass through to other prices in the economy (generally measured in terms of the effect on so-called core inflation rates that strip out the direct effect of the rise in oil prices). In addition, the policy rule allows for quite an aggressive response of monetary policy to lower output, and this dominates the effect of the oil shock on core inflation.

- **Chart 7 – 9 show the effect of the war on key measures of aggregate economic performance—GDP growth in Chart 7, the unemployment rate in Chart 8, and the inflation rate (for the Consumer Price Index) in Chart 9.**

Chart 7: Growth of Real GDP

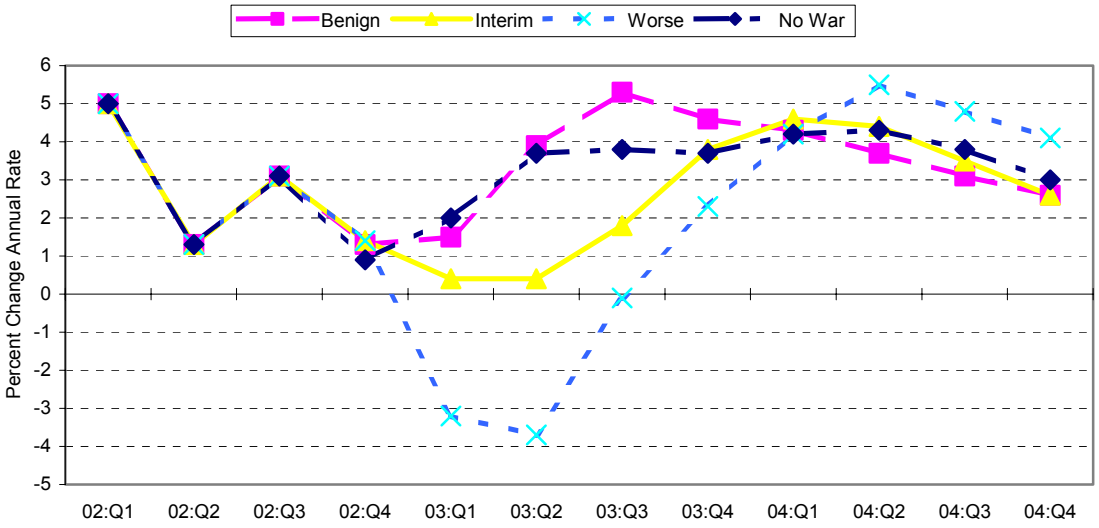


Chart 8: Civilian Unemployment Rate

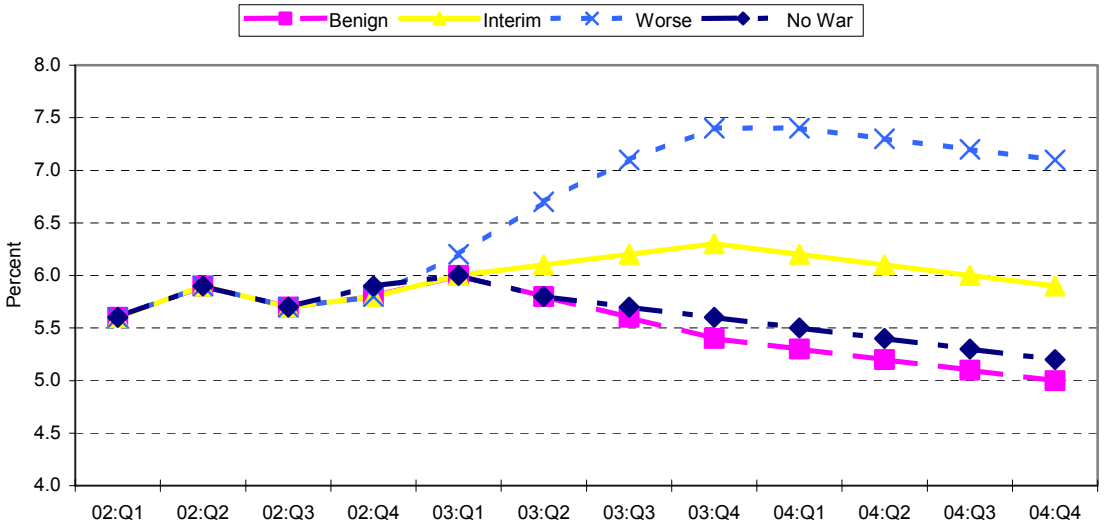
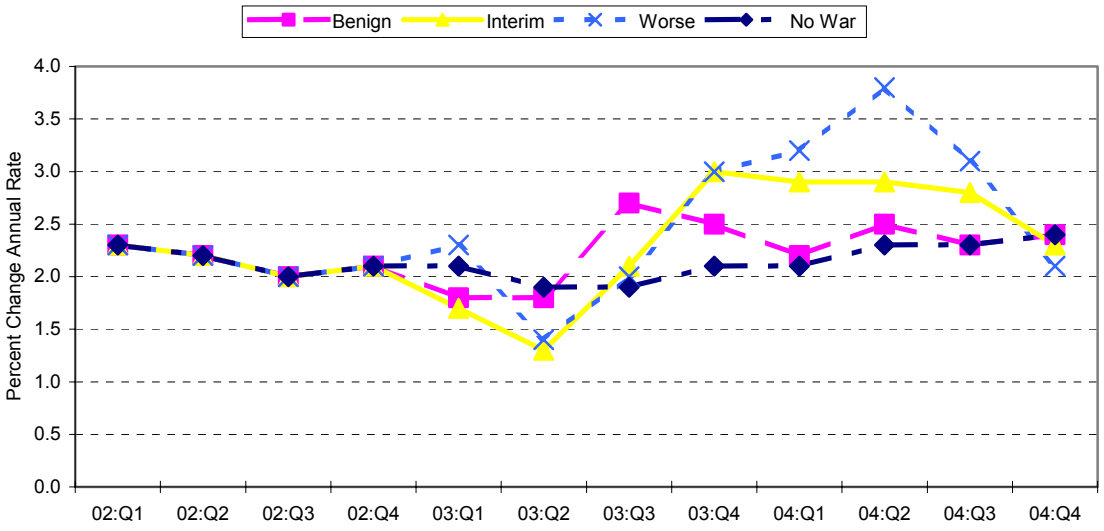


Chart 9: Core CPI



Conclusions for the U.S.

The Benign War Scenario

In the benign war scenario, the effect of the war on the economy is quite limited. In fact, the economy actually grows faster in the first year, compared to the no-war case. The positive effect on aggregate demand results from the higher government spending and especially from the assumption that there would be a relief rally in equity markets when the prevailing uncertainty about whether or not there will be a war and how adverse the effects might be is removed. Inflation rises briefly in this scenario, due to the initial spiking in oil prices, but the effect of the war on oil prices is limited and transient, so inflation quickly declines.

The Intermediate War Scenario

In the intermediate case, the effect on oil prices is larger and more persistent, reflecting less willingness on the part of OPEC to raise oil production to compensate for the decline in Iraqi oil. As a result, the adverse effect on consumer spending—via the decline in real wealth, in real income, and in consumer confidence—is greater and longer lasting. Similarly, the adverse effect on investment, due to the decline in equity values and to higher borrowing costs, is also larger. As output declines, income and hence consumer spending fall further. In this case, growth in the U.S. slows by 1 ¾ percentage points in 2003 and the unemployment rate increases slightly relative to the no-war case and remains elevated through 2004.

The Worse-Case Scenario

In the worse case, oil prices surge dramatically initially, as a result of damage to oil producing facilities in Iraq and elsewhere in the region. Although oil prices fall gradually over time, they remain well above the baseline path throughout the simulation period. The growth rate in the U.S. slows by 4 ½ percentage points relative to the no-war case, and the economy slips back into recession. The unemployment rate rises to near 7 ½%. After the first year, however, growth rebounds, and the unemployment rate begins to edge lower, but it remains over 7% at the end of 2004. Inflation rises sharply at first, but as oil prices decline and as the unemployment rate rises significantly, inflation declines in 2004 to close to the level in the no-war case.

Global Economic Results

An attack on Iraq and the resulting increase in oil prices is a global shock. All countries will face the implications of higher oil price paths, and there are likely to be similar effects on equity prices across the world.

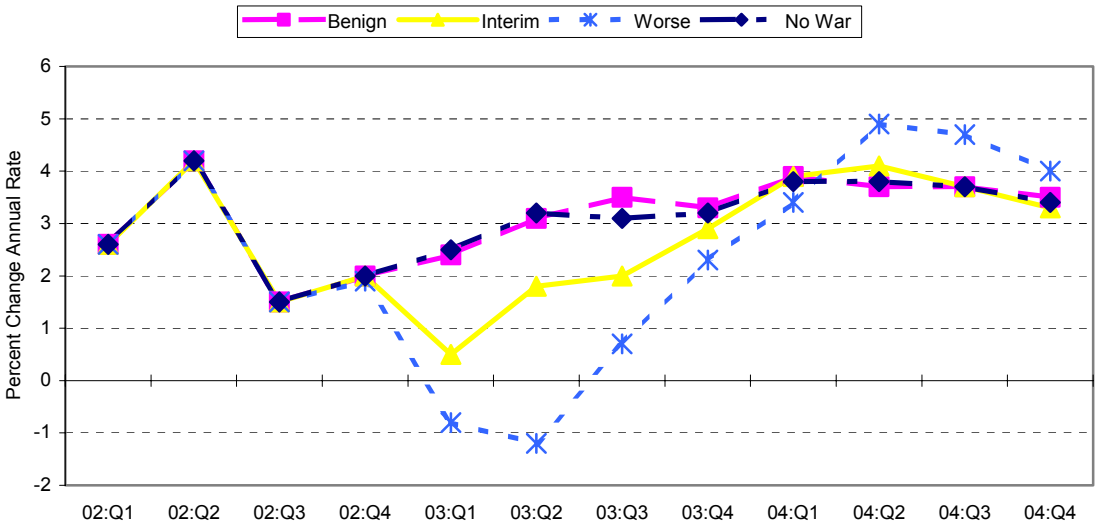
Oxford Economic Forecasting (OEF) produced simulations of the economic consequences of an attack on Iraq for the global economy for each of the three war scenarios. Their results are available for major regional areas—including the Euro area, Latin America, East Asia, as well as for a large number of individual countries.

International feedback effects

The international results are important in two respects. First, MA needed to know the economic consequences of the attack abroad in order to determine the effect on the U.S., because the effect of the attack on incomes abroad will affect the demand for U.S. exports and hence affect the outcome for production and employment in the U.S. The economic impact on the U.S. could also be influenced through an effect on exchange rates. Second, we are interested in the global effects of an attack on Iraq, not just the results for the U.S. We want to understand what factors influence the relative size of the effects on output and inflation in various countries.

In the MA model, international feedback effects arise through the effect on a measure of foreign output growth based on the trade-weighted effects on growth of the 35 leading trading partners of the U.S. Initially, MA made some assumptions about the relative response of foreign real growth and U.S. growth to an attack on Iraq. Then OEF, starting from the MA results for the U.S., provided a consistent set of simulation results for the rest of the global economy. MA and OEF then iterated once more to refine the estimates of the global effects and feedback to the U.S.

Chart 10: Foreign 35-Country GDP



- **Chart 10 depicts the effect of the war on foreign GDP growth, based on a measure of the trade-weighted GDP of the 35 leading trading partners of the U.S.**

Sources of differential responses across countries

There are a number of factors that result in different responses across countries. The effect s of an attack on consumer confidence may not be as great abroad as they are in the U.S. That could be because the U.S. is likely to be more threatened with terrorist attacks and because the U.S. and the U.K. are the countries subject to military casualties. In addition, Stefan Schneider, Chief International Economist at Deutsche Bank, showed graphs of consumer confidence in the Euro area and the U.S. that suggested that the responses of consumer confidence in Euro area had been smaller than in the U.S. at the time of the Gulf War and after September 11th.

The relative importance of oil in consumption and the relative importance of domestic production and imports of oil differ across countries. The smaller the weight of domestic consumption and the smaller the proportion of oil imports, the smaller the adverse shock should be on aggregate demand.

The importance of equities relative to income also varies across countries. In general, for example, wealth effects are about half as large in the Euro area, compared to the U.S.

There will be a no a war-related fiscal stimulus abroad, outside of the U.K. The response of monetary policy may differ across countries. Stefan Schneider noted, for example, that the European Central Bank generally is less aggressive in responding to economic developments than the is U.S., and that Japan, given that its policy rate is already at zero, may have no opportunity to respond to the shock to aggregate demand. Both Euro area countries and Japan may also be hindered in any response by fiscal policy. The Euro countries operate under a fiscal rule given by the Stability and Growth Pact that limits their ability to respond to adverse shocks. The high prevailing deficit-to-GDP ratio and high debt–to-GDP ratio in Japan limit its flexibility.

MA did not assume a fiscal response in the U.S. However especially in the intermediate and worse-case scenarios, some fiscal response would be more likely in the U.S. than in the Euro area or Japan.

The effect on exchange rates

One additional potential international effect would be through movement in exchange rates. The financial panel considered possible effects on exchange rates and came up with reasons why the dollar might appreciate or depreciate. Because oil is priced in dollars, for example, oil price shocks sometimes increase the demand for dollars and lead to an appreciation in the dollar. In addition, at times of uncertainty, there are often flows of capital to the U.S. in search of a safe haven. This would also result in an appreciation of the dollar. On the other hand, to the extent that the U.S. has a sharper decline in GDP than other countries and interest rates fall by more in the U.S., the dollar might depreciate. Finally, to the extent that the war goes badly, that there are terrorist attacks in the U.S., or that there are adverse political repercussions, the dollar might depreciate. In the final analysis, MA decided to use the exchange rate effects that came from OEF's simulations. These generally resulted in a modest depreciation of the dollar, reflecting the sharper decline in output and interest rates in the U.S.

The results for specific regions and countries

Based on the OEF results, the effects on growth of output were a little bit more than 50% as great in the rest of the world, compared to the U.S. The effects on output growth in the U.K were similar to but modestly smaller than those for the U.S. The response in the Euro area was about 60% as large as for the U.S. The impacts in Japan were about as large in the intermediate case and somewhat smaller in the worse case. Table 1 provides simulation results for the effect of an attack on Iraq on real GDP growth in the U.S. on trade weighted foreign GDP growth.

Table 1: International Comparisons: Effects on GDP Growth

	Benign		Intermediate		Worse	
	2003	2004	2003	2004	2003	2004
United States	0.5	-0.4	-1.7	0.0	-4.5	0.9
Foreign (35 Country)	0.1	0.0	-1.2	0.0	-2.7	0.6
Euro area	0.1	-0.1	-1.0	0.4	-2.5	0.7
Japan	0.1	0.1	-2.0	0.6	-3.3	-0.4
East Asia	0.2	0.0	-1.7	-0.1	-3.4	0.4
Latin America	-0.2	0.4	-0.6	-0.1	-2.7	2.2

FUTURE WORK

At the conference and following the conference, there were many comments on the simulation methodology and results. MA will refine their analysis, with the cooperation of the oil market and financial market experts, and in coordination with OEF. CSIS will publish a transcript of the conference, and MA will post a paper with their revised simulation results on the CSIS web page when they are complete. Finally, we will maintain contact among the participants in this project and try to update our analysis in the event of an attack on Iraq.