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## Research

### ■ War in Iraq May Torpedo America's Wealth, Says New Stanford Business School Study

March 19, 2003

**STANFORD GRADUATE SCHOOL OF BUSINESS** — As President Bush rattles the sabers of war, pundits have been quick to sum up the costs of America's war chest. Yet, new research by Stanford Graduate School of Business faculty members suggests that the experts are missing the mark. They say threat of war has already caused the U.S. stock market to shrivel \$1.1 trillion in value, and when the bombs start to rain on Baghdad, America's wealth may shrink even further.

Economics

Research by

**Andrew Leigh**  
John F. Kennedy School of Government  
Harvard University

**Justin Wolfers**  
Assistant Professor of Political Economy

**Eric Zitzewitz**  
Assistant Professor of Strategic Management

The study, coauthored by Justin Wolfers and Eric Zitzewitz of the Stanford Graduate School of Business, and Andrew Leigh who is a doctoral student at the John F. Kennedy School of Government at Harvard, examines the impact of the looming war on oil prices, the economy, and the stock market. To gauge the financial market's point of view on these impacts, the trio used a novel financial instrument — the Saddam Security — an Ireland-based online exchange at [www.tradesports.com](http://www.tradesports.com) that pays \$10 per share if Saddam is ousted by June 30, 2003. The price of the security indicates the market's estimate of the probability of war at any given time. Using trading prices, the authors examine how the market responds to daily increases and decreases in the risk of war.

This is what they find:

**Oil prices.** As the probability of war rises, oil prices rise, indicating that the market estimates that war raises oil prices by \$10 per barrel in the short-term. Oil futures, traded on the New York Mercantile Exchange, indicate that the oil price disruption is expected to last about 18 months and that war may lead to slightly lower oil prices in the long run. However, they estimate that any "oil dividend" of war with Iraq would be fairly modest — a one-time benefit of an average \$250 per American.

**Stock market.** Using Saddam Security prices to measure the probability of war, the authors estimate that waiting for war has already reduced the S&P 500 by 15 percent, or the equivalent of a \$1.1 trillion loss of wealth — since September, 2002 — when compared with a no-war alternative. This decline reflects the market's average expectations of the cost of war. Delving deeper, they find substantial uncertainty about the likely cost of war, including a 70 percent probability that eventual effect of war on the market will be a further decline of 0 to 15 percent, a 20 percent probability of a 15-

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30 percent decline, and a small but significant 10 percent probability of a catastrophic plunge in excess of 30 percent. Which of these scenarios will actually occur will unfold over coming weeks.

"What this means is that by mid-March, about 95 percent of the war's effect on the U.S. stock market has already been priced in and \$1.1 trillion of the nation's wealth has disappeared," says Wolfers who is assistant professor of political economy at Stanford Business School.

"From here on out as the war unfolds, there's a 70 percent probability that the market will rally a bit — say, the war goes better than expected — but there's a 30 percent probability that we're on the verge of another drop, which could be steep," warns Zitzewitz, an assistant professor of economics.

**Industry sectors.** The blows to the U.S. equities market are concentrated in the consumer discretionary sector, airlines, and information technology. On the other hand, war bolsters the gold and energy sectors. Surprisingly, benefits for the defense industry are somewhat muted.

**Other countries.** Analyzing the response of stock markets in 44 other countries, Leigh, Wolfers and Zitzewitz find that those most likely to be adversely affected by war in Iraq are countries that are major oil importers, or are tightly enmeshed in the world economy. "Those hardest hit by the war include Turkey, Israel, and several European nations," said Leigh.

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March 18, 2003  
For immediate release

### **New Study Examines Market's View of Cost of War in Iraq**

Military intervention to oust Saddam Hussein is likely to have a substantial negative effect on the US stock market, according to a new study by Andrew Leigh (Harvard), Justin Wolfers (Stanford) and Eric Zitzewitz (Stanford).

Instead of adding up the budgetary costs of war (as other analysts have done), the three researchers study what financial markets believe the effects of war will be on oil prices, the economy, and the stock market. They use a novel financial instrument – the Saddam Security. Saddam Securities trade on a new online exchange, tradesports.com, and pay \$10 if Saddam is ousted. The price of the security gives the market's estimate of the probability of war at any given time. Using trading prices, the authors examine how the market has responded to daily increases and decreases in the risk of war.

Leigh, Wolfers and Zitzewitz find that as the probability of war rises, oil prices rise – indicating that the market estimates that war is likely to raise oil prices by \$10 per barrel in the short term. Oil futures indicate that the oil price disruption is expected to last about 18 months and that war may slightly lower long-run oil prices. They estimate that any “oil dividend” of war with Iraq would be fairly minimal, however. For the US, it would equate to a one-time benefit of US\$250 per person.

Larger effects are found in the stock market. Using Saddam Security prices to estimate the probability of war, Leigh, Wolfers and Zitzewitz estimate that going to war will reduce the US S&P 500 by 15 percent, equating to a US\$1.1 trillion loss of wealth, compared with the no-war alternative. They also find that the US market is factoring in a number of scenarios, including a 70 percent probability that it will lead to market declines of 0 to 15 percent, a 20 percent chance of 15 to 30 percent declines, and a 10 percent risk of a fall in excess of 30 percent.

The results suggest that expert analyses may be missing some of the true costs of war.

As of mid-March, about 90 percent of the effect on the US stock market has been priced in. This implies that as war unfolds, there is a 70 percent probability that the US market will rally a little (i.e., if the war goes well), but a 30 percent probability that it will fall, potentially by an additional 15 percent or more.

Analyzing the response of stock markets in 44 other countries, the authors find that those most likely to be affected are countries that are major oil importers, or heavily enmeshed in the world economy. Those hardest hit are likely to be Turkey, Israel, and several European nations. War is associated with a 4 percent fall in the Australian stock market.

The study is available at [www.stanford.edu/people/jwolfers](http://www.stanford.edu/people/jwolfers). For comment, please contact Andrew Leigh ([leighan@ksg.harvard.edu](mailto:leighan@ksg.harvard.edu)) or Justin Wolfers ([jwolfers@stanford.edu](mailto:jwolfers@stanford.edu)).

#### **About the authors**

- Andrew Leigh is a PhD student at the John F. Kennedy School of Government, Harvard University, and an expatriate Australian
- Justin Wolfers is an Assistant Professor of Economics at Stanford Business School, and an expatriate Australian.
- Eric Zitzewitz is an Assistant Professor of Economics at Stanford Business School.

## 1.100.000.000.000 dollar

**W**at kost een oorlog?

Stel, u wilt de Amerikanen een lesje leren in hun nationale volkssport door een schadeclaim in te dienen bij de Amerikaanse overheid met als argument dat de waarde van uw aandelen



is gedaald door de oorlog. Hoeveel kunt u eisen?

Het lijkt op het eerste gezicht een kansloze exercitie om dat exact te bepalen. De schattingen van de experts lopen nogal uiteen. Daarnaast, zo zal de overheid zich verdedigen, kunnen de boekhoudschandalen zoals Ahold of de toch al ingezette recessie, de schade aan uw portemonnee hebben veroorzaakt.

Gelukkig kunt u terugvallen op de wetenschap. Een recente analyse van de Amerikaanse onderzoekers Leigh, Wolfers and Zitzewitz van de toonaangevende universiteiten Stanford en Harvard, rekent de schade keurig voor u uit. De oorlog tegen Irak heeft u als Nederlandse aandeelhouder 10 procent rendement gekost. Het lijkt vreemd dat dit zo nauwkeurig is te bepalen, maar het gaat hier om uitermate elegant en ingenieus onderzoek.

Sterker nog, als u een goed beeld wilt hebben wat we na een jaar of 50 beleggingswetenschap kunnen, dan is dit onderzoek een 'must read' ([http://papers.ssrn.com/sol3/papers.cfm?abstract\\_id=388762](http://papers.ssrn.com/sol3/papers.cfm?abstract_id=388762)). Het is wel een oefening in hogere kansrekening. De onderzoekers hebben de hand weten te leggen op de prijsontwikkelingen van aandelen die werden verhandeld via het internet: de Saddam Security. Een belegger in deze aandelen kreeg uitbetaald als Saddam voor een bepaalde datum uit Irak zou zijn verdreven. Op basis van de koersen van deze Saddammen valt op ieder moment in de tijd nauwkeurig te schatten wat de kans op een oorlog zou zijn in Irak.

Door deze kansen te koppelen aan aandelen- en optiekoersen en de olieprijsontwikkeling, kunnen ze het effect van de oorlog uitermate concreet analyse-

ren. De oorlog zelf heeft de olieprijsen met 10 dollar per vat doen stijgen. Dit is echter een kortetermijn-effect geweest. Op de lange termijn is er nauwelijks een effect op de olieprijsontwikkeling. Toen de kans op oorlog toenam,

daalden de koersen. Een 10 procent-stijging van die kans leidde tot een daling van de Amerikaanse beurs met zo'n 1,5 procent.

De Amerikaanse belegger heeft uiteindelijk dus zo'n 15 procent schade ondervonden. Dat valt in het niet bij de Turkse belegger: 60 procent waardeverlies. Zo'n 30 procent van het risico op aandelen de afgelopen tijd, is terug te voeren op de oorlogsdreiging. Voor oliekoersen is dit maar liefst 75 procent van alle recente koersschommelingen.

De oorlog heeft - niet verbaazingwekkend - vooral effect op de bedrijven in de luchtvaart, de consumentenindustrie, de IT en de financiële sector gehad. Zo zijn de koersen van luchtvaartmaatschappijen als gevolg van de oorlog met zo'n 37,5 procent gedaald. Dit negatieve effect, zo laten de onderzoekers zien, heeft niet alleen te maken met het negatieve effect van de oliestijging op de economische groei. Er is meer aan de hand. Wat kunnen de onderzoekers niet achterhalen, maar ze vermoeden dat dit is toe te schrijven aan of het effect van het dalende vertrouwen onder consumenten en ondernemers door de oorlog of de negatieve verdere effecten die beleggers verwachten van het toekomstige buitenlandse beleid van de regering Bush.

Even voor alle duidelijkheid: een 15 procent-daling van alleen al de Amerikaanse aandelen komt uit op een slordige 1,1 biljoen verlies. Wereldwijd komt dat ruwweg neer op 2 biljoen dollar en dan praten we alleen over het waardeverlies van beursgenoteerde ondernemingen. De persoonlijke schade voor de Irakezen is, zoals de auteurs opmerken, bijvoorbeeld niet meegenomen in deze analyse.

Ben Jacobsen

DUTCH NEWS PAPER JUNE 14, 2003  
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When the contact was first offered, trading mostly came from Wall Street, but then the se popular with the City of London. More recently people from France, Germany and Asia h Tradesports noticed slight differences in opinion, with Americans and British more bullish

Europeans taking the other side of those bets.

Tradesports also offers contracts on the capture of Osama Bin Laden for various time horizons and homeland security terrorism alert levels. There wasn't much action in the green and blue contracts but the yellow and orange alert contracts were actively trading while this article

"If people trade them, the information could be useful in figuring out the impact of, say, something that would drive us to red alert," Mr. Zitzewitz said. "These political markets give you a real time picture of what is happening." Even much smaller markets than the one for Saddam securities have done a good job in predicting U.S. presidential elections, for example.

The basic idea of using data from such securities as a tool in decision making is broadly applicable and there is a lot of potential there," Mr. Zitzewitz commented. He and his co-authors present their findings in a paper titled, "What Do Financial Markets Think of War in Iraq?"

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## Markets hold key to Saddam's survival

**Three thousand random internet surfers may know more about whether Saddam Hussein holds onto power than any expert.**

An Irish online gambling firm, Tradesports.com, has launched an electronic futures markets on the career of Iraqi President Saddam Hussein.

As the war has bedded down, Tradesports.com's clients have become gloomier about the prospects of ousting Saddam Hussein quickly, with more than 15% now betting that he will still be in power by the end of June.

According to Tradesports.com, this sort of online marketplace has an uncanny record of predicting impenetrable events.

### **Ins and outs**

Tradesports.com's Saddam Securities work on the so-called "all-or-nothing" principle, one already well established in betting on elections in the United States.

An individual futures contract has an end date, paying out either \$10 if Saddam Hussein has been ousted by then, or nothing if he has not.

Someone who believes that there is a 50:50 chance of his survival, therefore, would be willing to pay about \$5, after making a modest adjustment for Tradesports.com's 1.5% cut.

If Saddam Hussein is chucked out, our punter makes \$5 profit; otherwise, his \$5 stake is lost.

At present, Saddam Securities for end-June are trading at 83-88 points out of 100, having been as high as 97 - in other words, near certainty of regime change - in the early days of the war.

### **Dumb, but clever**

Should the coalition forces be worried?

Possibly, argues John Delaney, chief executive of Tradesports.com.

Few - or even none - of the Saddam Securities traders may be experts on the situation in Iraq, but the agglomeration of vast numbers of erratic predictions can be a surprisingly sharp guide.

"The price you see today is the cumulative effect of some 115,000 separate investment decisions," Mr Delaney points out.

"The market has more wisdom than any expert."

### **Boffins on board**



Mr Delaney is backed up by three US academics - from Harvard and Stanford universities - who tracked Saddam Securities in the months leading up to the Iraqi war.

The academics concluded\* that the market was a reliable indicator of wartime sentiment, and was surprisingly quick at assimilating information.

And Darpa, the US military technology agency that invented the internet in the 1970s, has long recognised the value of market-based assessments, arguing that futures markets distil into one indicator the otherwise incoherent babel of opinion.

Its FutureMap project - part of a creepy-seeming military programme called Total Information Awareness - aims to invest in online marketplaces to mine ideas about future international scares.

### **Watch out, Tony**

As more clients climb on board, Saddam Securities' level of accuracy will only increase.

Mr Delaney insists that the Saddam Securities can be used as a serious investment tool, especially as they seem to be closely correlated with movements in oil prices.

Most of his clients are respectable City professionals, he says, and the futures are pegged on regime change, not a ghoulish measure such as casualty figures.

There is an equivalent futures market on George W Bush - whose rating, incidentally, has dropped from a high of 67% likely to survive the next election to just 60-62% today.

A market on Tony Blair - another political career pegged on the war - is in the pipeline.

\*Andrew Leigh, Justin Wolfers, Eric Zitzewitz: *What do financial markets think of war in Iraq?* March 2003.

Story from BBC NEWS:  
<http://news.bbc.co.uk/go/pr/fr/-/1/hi/business/2906143.stm>

Published: 2003/04/01 13:01:45 GMT

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# The Harvard Crimson ONLINE EDITION

Originally published on Tuesday, April 01, 2003 in the News section of The Harvard Crimson.

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## Study Finds Heavy Cost of War Anticipation

By TESS MULLEN  
CONTRIBUTING WRITER

Anticipation of the war in Iraq has cost the stock market almost \$1.1 trillion since September 2002, according to a study released by Harvard and Stanford researchers based on people's bets on when Saddam Hussein will be deposed.

"By mid-march, about 95 percent of the war's effect on the U.S. stock market has already been priced in and \$1.1 trillion of the nation's wealth has disappeared," Justin Wolfers, the study's co-author and an assistant professor at Stanford's Graduate School of Business said in a press release.

Wolfers, Eric Zitzewitz '93, an assistant professor at Stanford's Graduate School of Business, and Andrew Leigh, a doctoral student at the Kennedy School of Government, conducted the study, which compared stock market fluctuations to the price of the "Saddam Securities."

Researchers used the securities—online wagers on the likelihood that Saddam will be deposed by a certain date—as an indicator of people's perception of the possibility of war. They correlated an increase in these bets values with market losses.

The Saddam Securities are issued by Tradesports, a website that enables the trading of wagers on the outcome of sporting matches, political competitions and other events.

The market is now 15 percent lower than it would have been had the United States not gone to war, the study found.

Expectations that short run oil prices would rise, investor and consumer confidence would fall and concerns about another terrorist attack lead to the market's decline, said Zitzewitz.

Leigh said that some people may have been skeptical about the study at first due to its use of the unconventional securities.

"I think it takes people a little while to realize that it's a serious study because we use an unusual instrument to determine the cost of war," he said.

Leigh argues, however, that Saddam Securities are an accurate measure—because people "put their money where their mouth is."

Zitzewitz said that a Lehman Brothers analysis of the market effects of the war has yielded similar results.

"I think that people are broadly agreeing with what we've done," Zitzewitz said.

Zitzewitz said that he and his co-authors were motivated to do the study because their wanted to “say something relevant to the debate about the war.”

Although the study focused on the threat of war’s effect on the market, Zitzewitz also described potential long term outcomes, postulating that there is a 30 percent chance that the market is on “the verge of another drop.”

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## Markets and war

## Gun-shy

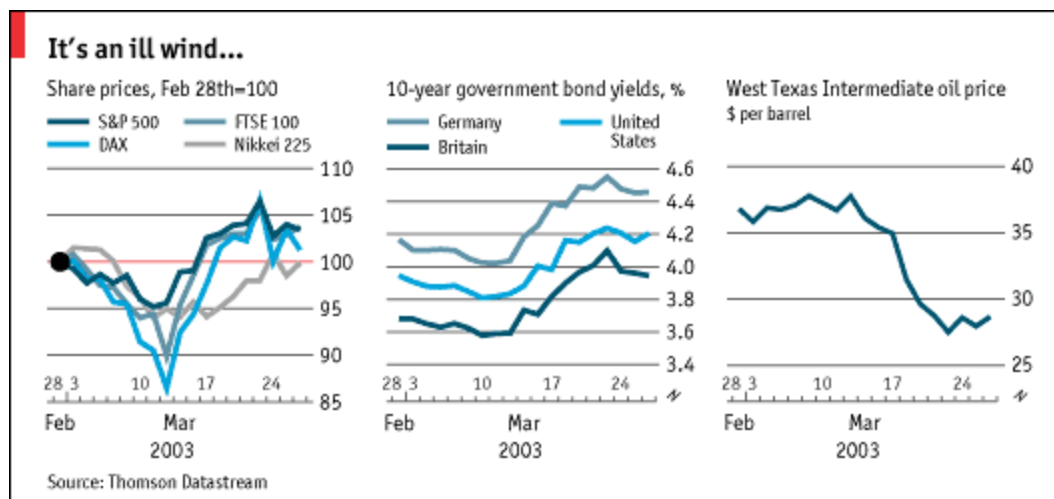
Mar 27th 2003

From The Economist print edition

Formerly hawkish traders take cover, as war's reality sinks in

AS COALITION troops headed towards Baghdad, they found the going harder than some pundits had expected. Stockmarkets responded by beating a hasty retreat from their exuberance in the week before war began. Punters seemed to realise that their early, eager assessments of the war's outcome—stockmarkets saw double-digit gains in the week leading up to the opening shot—needed tempering.

At the end of the first week of war, the S&P 500 was 2.9% below its high on March 21st and the FTSE 100 was down by 1.8%. Continental European bourses, which had bounced even higher than those in the belligerent countries, also suffered more in the fall. Last week's stunning rise is said to have wrong-footed some hedge funds with short positions; the quick about-turn may well have caught them for a second time. After all these gyrations, by March 26th most stockmarkets were a little stronger than they had been at the end of February (see chart).



Such manic swings are to be expected in wartime, especially in equity markets. Some economists have recently made much of financial markets' uncanny mimicry of human psychology, especially adolescent mood swings. Recent weeks have provided fine evidence of such violent under- and over-shooting, especially if Donald Rumsfeld is right to aver that, owing to America's overwhelming force, the ultimate outcome of the war against Iraq is not in doubt.

Government debt has had an equally dizzying ride since the start of March. After yields fell to four-decade lows, government bonds sold off a bit, but now seem to be sought after once more. In the

oil markets, talk has swung from worries over shortages, to fears of a glut, as prices have fallen to their lowest this year.

Emerging markets are being closely watched to see if Turkey's problems might spark contagion. The country has suffered since it refused America use of its bases for a land assault on Iraq. In recent days, Turkey's government debt has rebounded as spreads over American Treasuries have tightened, because hopes of an American aid package have revived.

If one cannot be sure which way asset prices will move, only that they will move around a lot, there is still money to be made. Volatility measures, especially intra-day variations in share prices, have been hitting new highs. This has been a boon for options traders. They have had a fine time trading in volatility in recent weeks, which some see as close to printing money. But the appeal of such bets may be diminishing, as the markets now expect less pronounced swings ahead.

With all markets so beholden to the fate of one man, Saddam Hussein, how useful it would be to be able to hedge against his fate directly. Fortunately, financial innovators such as TradeSports and NewsFutures already offer contracts that pay you for correctly guessing whether Mr Hussein will still be the leader of Iraq on a specific date. These, pity for the coalition, have fallen in price in recent days by a few percentage points. At TradeSports the contracts now point to a 17% chance of his demise (or, at least, loss of power) by the end of March, 77% by the end of April and 92% by the end of June.

Economists from Harvard and Stanford Universities recently used such securities to gauge the war's likely effects on the markets. They think the war is likely to trim equity prices by 15%, a destruction in America alone of \$1.1 trillion dollars in wealth. Their outlook for oil prices is a bit more optimistic, suggesting stable prices at pre-war levels in the months after the war.

Of course, many hope that the bets on Saddam's demise will pay off soon. But even if the war is a success, there is much less in the world economy to be optimistic about. The American economy is beset by worries that weak manufacturing will start shrinking again, and the travails of service industries such as the airlines and retailing will worsen. Despite all the references to the last Gulf war, nobody expects history to repeat itself exactly. Valuations are, by most historical standards, far above 1991 levels. Whatever Saddam's fate, shares will not find it easy coming home from this war.

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## Fear and the market

### Stanford professors put a price on war worries

[Sam Zuckerman, Chronicle Economics Writer](#)

Saturday, March 22, 2003

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URL:

Investment pros have been debating for months how much the threat of war in Iraq was hurting the stock market.

Now, using an ingenious way of calculating the effect of war fears on stocks, two Stanford business school professors have concluded that the Standard & Poor's 500 Index lost about 15 percent of its value, or about \$1.1 trillion since investors began to focus on a potential conflict in the second half of 2002.

In a just-published research paper, Stanford's Justin Wolfers and Eric Zitzewitz, along with Harvard graduate student Andrew Leigh, studied an online betting site that lets the public speculate on the ouster of Saddam Hussein. So-called Saddam Securities, traded on the Irish Internet betting exchange TradeSports.com, pay holders \$10 if the Iraqi leader loses power before specified dates, such as March 30 or June 30.

Not surprisingly, the price of the Saddam Security changed day to day, depending on the latest news. At times when a U.S. attack seemed inevitable, such as after Secretary of State Colin Powell's speech at the United Nations last month, the price went up. When a diplomatic solution seemed possible, the price went down.

"It provided a daily indicator of the probability of war," said co-author Wolfers.

By comparing daily changes in the price of Saddam Securities with movements on Wall Street, the researchers were able to measure precisely how shifting views of the likelihood of war affected stocks. That allowed them to calculate how much of the stock market's troubles over the last year reflected war fears.

Using a similar method, the authors found that the prospect of war in Iraq caused oil prices to rise about \$11 a barrel.

It may seem less than credible to use an Internet sports betting site to make sophisticated economic calculations. But those who have studied online betting forums say they often provide highly accurate measures of opinion. The Iowa Electronic Markets, which allow people to bet on presidential races, have given on-the-mark readings.

"I put a fair amount of credence in it," said Hal Varian, dean of the School of Information Management and Systems at UC Berkeley. "What do you say when someone spouts an opinion? You say, 'Put your money where your mouth is.' "

It's no secret that professional stock traders follow news events obsessively. And analysts agree that worries related to a war in Iraq, including the possibilities of terrorist reprisals, chemical warfare and interruption of oil flows, dragged down the market.

That raises the question of why the stock market rallied so strongly once war became virtually 100 percent probable. Wolfers argues that stocks are rising because many of the war risks traders worried about appear ill-founded.

"There is no immediate willingness to lob a dirty nuke on New York," he said. "We learned that some of the worst scenarios weren't going to happen."

Still, Wolfers said, stocks will continue to trade lower than they otherwise would because of effects the war has produced, including heightened risks of terrorist attacks and tensions between the United States and major trading partners such as France and Germany.

For what it's worth, as of Friday, sellers were asking \$9.80 for the June Saddam Security.

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washingtonpost.com

## Study: War Costs Stock Market \$1.1 Trillion

Reuters

Friday, March 21, 2003; 8:58 PM

By Michael Kahn

SAN FRANCISCO (Reuters) - Even before the United States went to war against Iraq, the threat of conflict had drained \$1.1 trillion from the value of the U.S. stock market, according to a study released on Friday.

The research, which was released as the market posted its biggest single-week gain since the jump that followed the Sept. 11 hijacking attacks, tracked the performance of a novel financial instrument called the "Saddam Security," essentially a bet that the Iraqi leader will be deposed.

The researchers at Stanford University and Harvard University looked at how much value the U.S. stock market lost as online bets increased that the United States would go to war to oust Saddam Hussein.

While the S&P 500 index rallied 7.5 percent this week in anticipation of a swift conclusion to the war, the rising probability of a conflict had already knocked 15 percent off where the stock market would have been if the United States had not taken on Iraq, the study said.

Most of those losses came in shares of consumer goods companies, airlines and technology companies and those relying on discretionary spending, researchers said.

"All the news this week has been about timing," said Eric Zitzewitz, an assistant professor of economics at Stanford's School of Business who co-authored the study. "The cost of war was priced in a while ago."

To assess the impact of war jitters on the market, the researchers tracked an online bet offered by a Tradesports, an Internet-based "betting exchange" based in Ireland.

Since September of last year, Tradesports ([www.tradesports.com](http://www.tradesports.com)) had been offering a financial instrument that pays \$10 per share if the Iraqi leader is ousted by a certain date.

### 'SADDAM SECURITIES'

The trading in those "Saddam Securities" provides a proxy for how the market saw the probability of concluding a war ending in Hussein's ouster, the researchers said.

For instance, the March "Saddam Security" last traded at \$7.80 on Friday, implying a 78 percent chance Hussein will be ousted by end-month. That was up from a previous close of 65 percent and up sharply from 17 percent earlier this month.

The researchers then correlated that record of market-based probability to changes in oil and stock prices and related futures and options to see how markets have reacted to the war risk, the researchers said.



"A lot of experts have looked at the budgetary costs of the war," Zitzewitz said. "We thought that was only looking at the tip of the iceberg. We wanted to look at the effect on financial assets."

Other experts have estimated that the direct cost of a U.S. war to the government would be between \$22 billion and \$140 billion, depending on how long the conflict runs and how willing the United States is to fund Iraq's reconstruction.

Meanwhile, the stock market has priced in a 70 percent probability that the eventual impact of the war on the market will lead to a decline of zero to 15 percent and a 20 percent chance of a 15 to 30 percent dip, the study said.

The worst-case scenario was what the researchers said was a small but significant 10 percent probability of a steep plunge of more than 30 percent.

"What this means is that by mid-March, about 95 percent of the war's effect on the U.S. stock market has already been priced in and \$1.1 trillion of the nation's wealth has disappeared," said Justin Wolfers, an assistant professor of political economy at Stanford Business School.

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**War: The Long And The Short Of It**  
**Alan Mitchell**  
**Australian Financial Review, March 22, 2003**

'In light of the unusually large uncertainties clouding the geopolitical situation ... the committee does not believe it can usefully characterise the current balance of risks.'

Churchill's fog of war has descended over the US Federal Reserve's Open Market Committee. On Tuesday the committee was unable to judge whether the present US economic weakness is temporary anxiety created by the war or a more long-term problem.

There are three broad scenarios. The most optimistic is a relatively quick and successful war, after which the oil price quickly returns to about \$US25 a barrel and the US economy resumes its recovery. This scenario is consistent with the sharp fall in oil prices and the rally on equity markets following the March 11 pledge by OPEC ministers to "ensure that the [oil] market remains stable and well supplied".

It is also closest to Alan Greenspan's forecast late last year. Late last year he told Congress that he was "doubtful if the impact [of a war in Iraq] on the economy is more than modest, largely because this is not Vietnam or Korea". Obviously it is the scenario least likely to require further monetary or fiscal policy action.

In the second scenario the war is quick and clean but the economy does not easily resume its recovery. War anxiety triggers a further sell-down of the still richly priced US equity markets.

In this case the war is the proximate but not the fundamental cause of the renewed economic weakness.

The real problems are the "imbalances" that plague the US economy, including the equity markets, in which the average price-earnings ratio on leading industrial shares is still about twice the long-run average.

The equity markets have regained almost two-thirds of the ground lost since mid-January, not least because of the improved oil outlook. However, continued weakness of US production indicators and an end to the market rally could be a sign that past monetary and fiscal stimulus has been inadequate. Further action on both fronts would be justified, although some re-engineering of the Bush administration's fiscal strategy might be necessary to satisfy Congress and the financial markets.

The third scenario is the Bush-Blair nightmare: a long war and huge military expenditures by the US, and a prolonged period of economy-crushing oil prices. This third scenario raises the most difficult economic policy issues of all and requires the most radical re-engineering of fiscal policy.

The first task facing the Federal Reserve is to distinguish between the first and second scenarios.

The movements in equity prices appear to fit scenario one. Three academics, Andrew Leigh of Harvard University and Justin Wolfers and Eric Zitzewitz of Stanford University, have mapped movements in "Saddam securities" against movements in equity prices, oil prices and interest rates.

The Saddam security is a widely played financial instrument, originating from an Irish web-based betting exchange, that pays \$US10 if Saddam Hussein is no longer president of Iraq on a prescribed date. The security is widely traded and, according to the academics, has provided a reasonable market measure of the probability of a war in Iraq.

As the analysts at BT Funds Management observed in a letter to clients early in the week, equity prices have moved broadly in line with the predictions of the Leigh-Wolfers-Zitzewitz model. Since early December the probability that Hussein will be removed from office by June 30 has risen from about 40 per cent to close to 100 per cent. According to the model, that should mean, on average, a fall in the S&P 500 of about 9 per cent. In fact the S&P 500 fell 12 per cent before equity and oil prices turned around immediately after the OPEC meeting. The net decline following the rally in share prices is 4 per cent.

This is consistent with the market betting on a short war and a benign oil market. Leigh and his associates infer from S&P 500 options prices that the market is putting a 70 per cent probability on share prices falling between 0 and 15 per cent and a 10 per cent probability on shares falling by more than 30 per cent.

However, the three academics point to a puzzle in their results. The response of equity prices to changes in the price of Saddam securities is out of proportion to the response of oil prices and the economic consequences that would normally be expected to follow from the changes in the oil price. This may reflect the underlying fragility of the markets.

Fragile financial markets are prone to dramatic adjustments as already nervous investors take fright at some minor addition to the accumulating bad news.

The longer and dirtier the war, the more the optimism of the equity markets will be tested.

Estimates of the likely economic cost of the war vary enormously. At one extreme, the Congressional Budget Office puts the direct cost of removing Hussein at between \$US22 billion (\$37 billion) and \$US29 billion; at the other, Yale University's William Nordhaus puts the cost at \$US50 billion to \$US140 billion. According to Nordhaus, the combined effects of the war and an associated oil price shock could lower US economic output by an average of 0.8 per cent a year over the next decade.

In a widely quoted modelling exercise, Warwick McKibbin of the Australian National University and Andy Stoeckel of the Centre for International Economics have estimated the wider economic impact of the war for their Economic Scenarios series.

They show that even a short war could be costly for the world economy.

A short war (one year including the occupation followed by two years of reconstruction, financed by the major countries) could end up reducing US economic output by 1 per cent in 2006, with the negative impact on Europe and Japan of between 0.5 and 0.7 per cent. Australia's GDP loss would peak at about 0.7 per cent in 2004.

A long war (five years including occupation plus five years of reconstruction) could leave US GDP 2 per cent lower for the four years from 2005 to 2009. The loss in output suffered by the US might not be enough to cause a recession if current official projections of GDP growth are right. But it would be a major dampener on growth.

Australia could also lose 2 per cent of GDP for a period of about three years.

The McKibbin-Stoeckel scenarios are shown in the accompanying graph. In both cases it was assumed that the price of oil would jump to about \$US50 a barrel, almost double its baseline or "business as usual" price of \$US25. In the case of a short war, oil falls below its baseline once the war is over. With the development of Iraq's fields, the price is almost 20 per cent below baseline a decade later. In the more damaging long war, the oil price remains substantially above baseline for six years and does not return to it in the next decade.

The short war has a negative economic effect despite the initially stimulatory effect of increased military spending. In the US, fiscal stimulus in 2003 gives way to the impact of higher interest rates and increased pessimism in 2004. In addition, the combined effects of temporarily higher oil prices and increased uncertainty (a hike in the equity risk premium) cut into investment in 2003 and 2004.

The impact on Europe and Japan is less than for the US and Australia because their direct costs are limited to the reconstruction phase.

In the long war scenario, the depth and duration of the decline in growth, investment and equity markets is greater. The prolonged high prices cut into private consumption, profits and equity prices. The protracted uncertainty compounds the fall in share prices as investors switch into other assets such as bonds and real estate.

All major countries experience lower investment, output and consumption over the duration of the war, occupation and reconstruction.

The simulated costs of the war are shown in the accompanying table. For Australia the estimates have been revised slightly to take account of lower estimates of direct expenditure on the war.

The McKibbin-Stoeckel simulations are sobering and well within the range of plausible outcomes. No wonder that the Federal Reserve is waiting for the fog to clear a bit.

Loss in GDP \$US billion (year 2002 values)

	Short War		Long War			
	2003	2003-10	2003	2003-10		
US	34	490	65	1466		
Japan	33	122	38	426		
Australia		3 11	4	57		
Europe	47	156	67	744		
Rest of OECD		7 51	10	148		
China	3	2	4	56		
Non-oil developing countries			36	128	35	466
Eastern Europe and Russia			11	73	15	182
Total	174	1033	238	3546		

Source: Economic Scenarios.com

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Posted on Fri, Mar. 21, 2003

## Stanford study says war has already cost nation \$1.1 trillion

Associated Press

Stanford - -- A Stanford University study says the war in Iraq has already costs the nation one-point-one (t) trillion dollars -- and that number continues to grow.

The study looked at the impact of the war on the stock market, oil prices and the economy in general.

The university researchers say that speculation about war caused a 15 percent decline in the Standard and Poors 500 financial index since September of last year.

The study also says that the oil market has been disrupted by war plans and combat -- with oil prices soaring, driving gasoline prices through the roof.

The study says the war will also have a major impact on other nations.

The researchers say Turkey, Finland, Sweden and Israel will be the overseas nations hardest hit financially by the conflict.

The study was co-authored by Stanford Assistant Professor of Economics Eric Zitzewitz, Assistant Professor of Political Economy Justin Wolfers and Harvard University doctoral student Andrew Leigh.

(KCBS)

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## Asciende a un billón 100 mil millones dólares costo de la guerra

Advierten especialistas que los costos impactarán en la economía de al menos 44 países y causarán un déficit sin precedentes en Estados Unidos

Notimex

El Universal online

San Diego, California

Viernes 21 de marzo de 2003

**11:45** El costo de la guerra en Irak asciende hasta hoy a un billón 100 mil millones de dólares, que impactarán en la economía de al menos 44 países y causarán un déficit sin precedentes en Estados Unidos, de acuerdo con expertos.

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Un estudio conjunto de economistas de las universidades de Stanford y Harvard divulgado este viernes en California asegura que el despliegue armado en Irak alcanzó el costo de un billón (millones de millones) 100 mil millones de dólares "y continúa en aumento".

Cuando los aliados hicieron el primer disparo en Irak, la economía estadounidense arrastraba las pérdidas que ocasionó la especulación sobre la guerra durante un semestre en la bolsa, los precios del petróleo y la economía en general, según analistas.

El índice financiero de las 500 principales corporaciones estadounidenses se redujo entre septiembre pasado y esta semana en 15 por ciento, destacaron los economistas Eric Zitzewitz, Justin Wolfers y Andrew Leigh, coautores del estudio. "Para mediados de marzo la bolsa se había afectado tanto que el costo sumaba un billón cien mil millones de dólares", informó Wolfers. Los tres economistas estimaron que los precios del petróleo continuarán inestables con tendencia a la alza durante los próximos 18 meses, cuando alcanzarán una ligera disminución.

Al menos 44 países, los más dependientes de importaciones de crudo, verán afectadas notablemente sus economías mientras continúe la volatilidad del mercado petrolero, aseguraron. De acuerdo con el análisis, España y Reino Unido, aliados de Estados Unidos en la guerra que inició el jueves, se incluyen en la lista de las naciones que más repercusiones económicas sufrirán por la ofensiva en Irak y el costo de los preparativos hasta hoy.

Zitzewitz advirtió que "los mercados europeos serán impactados tanto como el estadounidense, si no es que más".

Otros países mencionados en la lista de los más afectados son Turquía, Finlandia, Suecia, Polonia, Francia e Italia.

El subdirector del Centro de Políticas y Prioridades Presupuestarias, Robert Greensten, advirtió que el plan del presidente George W. Bush, de combinar una reducción de impuestos con la guerra, mantendrá un impacto sin precedentes en la economía local.

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## The 'Saddameter' clocks up likely costs

March 20 2003

By Leon Gettler

Stockmarkets might be rallying as investors bet that the US will smash Iraq, but watch out for the "Saddameter" and "Saddam Security".

A new joint study from Harvard University and Stanford Business School suggests that war will reduce the S&P 500 by 15 per cent, equating to \$US1.1 trillion (\$A1.85 trillion) worth of sharemarket losses.

Analysis of futures trading found that the US market was factoring in a number of scenarios: a 70 per cent chance of war having a moderately negative 0-15 per cent impact; a 20 per cent chance of it wiping out 15-30 per cent; and a 10 per cent risk of a fall in excess of 30 per cent.

By comparison, the S&P 500 slipped 6.5 after the outbreak of the Korean War and 5.5 per cent after September 11.

Justin Wolfers and Eric Zitzewitz, assistant professors of economics at Stanford, and Andrew Leigh from Harvard University, have used a so-called "Saddam Security" to help predict and measure how markets will respond to war.

Trading on a new online exchange the Saddam Security has purportedly provided a running market estimate of the probability of war.

The researchers tracked Saddam Security movements, and compared them with oil futures markets. Using a mathematical technique called regression analysis, they then compared the Saddam Securities with the "Saddameter", a device created by Slate.com columnist William Saletan to predict the likelihood of invasion.

They found war was likely to raise oil prices by \$US10 a barrel in the short-term, but could be a positive for gold mining and oil stocks.

## **Stanford: Threat of war a drag on American wealth**

New research by Stanford Graduate School of Business faculty members suggests that political experts are missing the mark in their punditry over war with Iraq.

The researchers say threat of war has already caused the U.S. stock market to shrivel \$1.1 trillion in value, and when the bombs start to rain on Baghdad, America's wealth may shrink even further.

The study, co-authored by Justin Wolfers and Eric Zitzewitz of the Stanford business school, and Andrew Leigh, a doctoral student at the John F. Kennedy School of Government at Harvard University, examines the impact of war on oil prices, the economy, and the stock market.

As the probability of war rises, oil prices rise, indicating that the market estimates that war is likely to raise oil prices by \$10 per barrel in the short-term, the Stanford report says. Oil futures, traded on the New York Mercantile Exchange, indicate that the oil price disruption is expected to last about 18 months and that war may lead to slightly lower oil prices in the long run. However, the researchers estimate that any "oil dividend" of war with Iraq would be fairly modest -- a onetime benefit of an average \$250 per American.

The study's authors estimate that waiting for war has already reduced the S&P 500 by 15 percent, or the equivalent of a \$1.1 trillion loss of wealth when compared with a no-war alternative. This decline reflects the market's average expectations of the cost of war, they say.

"What this means is that by mid-March, about 95 percent of the war's effect on the U.S. stock market has already been priced in and \$1.1 trillion of the nation's wealth has disappeared," says Wolfers, who is assistant professor of political economy at Stanford Business School.

"From here on out as the war unfolds, there's a 70 percent probability that the market will rally a bit -- say, the war goes better than expected -- but there's a 30 percent probability that we're on the verge of another drop, which could be steep," says Zitzewitz, an assistant professor of economics.

To gauge the financial market's point of view on these impacts, the trio used a novel financial instrument -- the Saddam Security -- an Irish-based online exchange at <http://www.tradesports.com> that pays \$10 per share if Saddam is ousted by June 30, 2003. The price of the security indicates the market's estimate of the probability of war at any given time. Using trading prices, the Stanford researchers examined how the market responds to daily increases and decreases in the risk of war.

Zitzewitz defends the unusual basis for the research, pointing out that the online site "essentially is a financial marketplace." He says conclusions drawn from it have more value than some expert's opinion that "in the marketplace you've got to put your money where your mouth is."

# On the Internet, betting on Hussein's fate is heavy

THE BOSTON GLOBE

Cyberspace wagering seen as good predictor

By Farah Stockman

GLOBE STAFF

Want to know the odds that Saddam Hussein will be dead by June? One-and-a-half to one, according to BETONSPORTS.com, an Internet gambling site. What about the odds that he will be ousted by the end of March? Two to one,

according to TradeSports.com. And the likelihood of him in exile, smoking Cuban cigars with Libyan leader Moammar Khadafy? Five to one.

In an era of frenzied speculation about a war in Iraq, for-profit websites have taken in millions of dollars in wagers on Hussein's fate. Two weeks ago, two MIT students added their political take to the fray. Believing that the real motive for war involves ensuring low-priced gasoline in America, their non-

BETS, Page B5

TUESDAY, MARCH 11, 2003

## Cyber betting heavy on Hussein's fate

► BETS

Continued from Page B1

profit gambling game pays its winner in gasoline and donates its profits to war victims in Iraq.

"Blood for oil? You bet!" reads [www.marchtowar.com](http://www.marchtowar.com). "While the rest of the country eagerly anticipates war with Iraq, one lucky soul will reap the benefits right away."

If it all sounds like an off-color joke, consider those who are taking it seriously: investment banks, Ivy League academics, and even the Department of Defense.

Andrew Leigh, a student at Harvard's Kennedy School of Government, studied TradeSports and found its odds surprisingly good predictors of reality. "If a government that is not involved is really interested in knowing when Saddam will be ousted, [TradeSports] is as good an indicator as they are likely to get from experts."

The idea isn't new. For years, political analysts have found strong evidence that gambling odds are better indicators of election results than opinion polls. In sports, gamblers' odds are far more accurate than the best guess of any one expert.

Economists say this is because bettors are literally invested in their opinion, so they are more likely to make informed choices. Also, the odds reflect a large number of bettors and the vast amount of information they all processed before they bet.

Betting schemes can be such good predictors that the Pentagon "has inquired about the possibility of using these markets to provide advanced warning of future events," said Forrest Nelson, a professor at the University of Iowa who cofounded an experimental "political stockmarket." These

markets could help the military evaluate the risks of "everything from the overturn of some government to terrorist attacks," Nelson said.

Of course, predicting the future is not at all what any of these websites set out to do.

At MIT, Tad Hirsch and Ryan McKinley, put up their site as a political statement: When you can't prevent a war, you can at least bet on when one will happen.

"In December and January, it was pretty clear to everyone at that this war was largely inevitable," Hirsch said. "All the discussion seemed to focus on exactly what date is this going to start."

With that in mind, they designed a game that took bets on the exact moment the war would begin, down to the last second. Then they partnered with Boston Mobilization, a nonprofit group that applied for and received a permit for charity gambling.

Since the site opened Feb. 27, it has generated about 400 bets and a total of about \$2,000. Eighty percent of the pool will be donated to humanitarian aid groups in Iraq. The remaining 20 percent will be given to the bettor with the closest guess — in the form of gasoline gift cards.

"That's right, we're giving away free gasoline to the winner of our Baghdad Bonanza Betting pool," the site states. "So fire up the S.U.V. — it won't be long now."

Hirsch's site doesn't generate odds, but patterns do emerge: Most bets cluster around mid- to late March. Bettors had been guessing on dates as far away as October, but Thursday, after President Bush said Hussein had used up his last chance, bettors returned to nearer dates.

"It's even better than an opin-

ion poll because they are actually putting stakes in something," Hirsch said. "It's a fascinating slice of American popular opinion."

For-profit wagering on Hussein's fate has become so sophisticated that probabilities fluctuate like the stock market during current events. Betting around the time of Bush's speech saw the chances of Hussein's demise go from 21 to 35 percent on TradeSports.com, which operates like a "futures" trading market.

As trading opened Friday, the Iraqi dictator had a 35 percent chance of being out of power by the end of March, a 73 percent chance by the end of June and an 82 percent chance by the end of July. The market also saw brisk trading in Osama bin Laden "futures" after rumors of his capture this week.

Over 3,000 people from more than 20 countries have wagered about \$730,000 on Hussein since TradeSports offered the option last September alongside cricket and soccer teams. More Americans bet on his downfall than people from other countries, TradeSports CEO John Delaney said. Bettors, including Wall Street investors, stand to win "tens of thousands of dollars" on Hussein. It's not clear whether such betting is legal for gamblers in the United States, where Internet casinos are outlawed.

Although TradeSports, which takes 4 cents commission on every trade, was not set up to predict the

future, Delaney has been getting information requests from people who want to use it that way, most recently from Credit Suisse First Boston, a global investment bank.

David Carruthers, head of the Costa-Costa Rica-based BETONSPORTS.com, said more than \$700,000 in Hussein bets have been placed on his site, including bets on whether ground troops

will go into Iraq within a week of the start of the war. In early February, there was a one-to-one chance of it. Now it's one-to-three. Just to keep the mood light, the site also offers betting on whether "violent aliens will arrive on earth and claim" Hussein as one of their own. The odds? One to 150.

Popular as it is, thorny questions remain: Isn't there something macabre about wagering on war? Or, why don't war bookies just go wild and allow bets

on the obvious gamble: the number of civilian casualties?

"We're trying not to go beyond the bounds of good taste," Carruthers said. "There are no-go areas."

At MIT, the fledgling "Baghdad Bonanza" has received just a few nasty letters about the site. The most recent one: a US Marine Corps colonel complaining that the military US troops are barred from betting.

"He's very upset we're not letting him play," Hirsch said. "But we figure that they'll have an unfair advantage."

**'It's even better than an opinion poll because they are actually putting stakes in something. It's a fascinating slice of American popular opinion.'**

TAD HIRSCH, MIT



**Australian Monday 24/2/2003**  
**Business News Page 28**  
Circulation: 128,494  
Size: 312.49 sq.cms.

# Economic effects of war start to mount



**Sid Marris**  
Economics correspondent

**A**S more detailed work is done on the possible economic effects of a Middle East conflict, the outlook becomes grimmer.

Getting a grip on those effects has proved difficult so far.

This is understandable, given the wide variety of scenarios.

Most research has concentrated on the costs to the US government of military action.

Estimates have varied from \$US50 billion (\$83 billion) to \$US140 billion for the immediate costs of a short campaign, according to the Centre for Strategic and International Studies.

Initial work from market analysts has concentrated on oil price effects.

Many believe there will be a large spike in the oil price which will drive up prices generally and suppress demand.

This would slice a "manageable" 0.5 per cent off US growth, says one analyst.

Most, too, including the Bank of England, believe any war will be short, and that oil prices will then return to more reasonable levels of under \$US30 a barrel by year's end.

But then there is this sombre warning of "recession vulnerability" from Morgan Stanley's Stephen Roach last week.

**'The world is in a far more precarious state than it was some 12**

**years ago'**

**Stephen Roach**  
**Morgan Stanley**

The world economy has changed significantly in the past decade, he says, with the emergence of a "lopsided US-centric global growth dynamic".

Over the past seven years the US has accounted for 64 per cent of the cumulative increase in the world's gross domestic product.

"Consequently, I am left with the uncomfortable conclusion that the world is in a far more precarious state than it was some 12 years ago," he says.

Economists are still grappling with estimates but markets, of necessity, are having to draw their own immediate conclusions.

Expatriate Australians Andrew Leigh at Harvard University and Justin Wolfers at Stanford University and American colleague Eric Zitzewitz have tried to tap these market decisions and form some analysis.

The basis of the work is an unusual online betting service operating out of Ireland.

Www.tradesports.com runs a \$US10 wager — nicknamed Saddam securities — on when Iraqi President Saddam Hussein will be deposed.

The service's operators say a high proportion of clients comes from Wall Street.

The researchers have found correlations between movements in the Saddam securities and real life events — speeches, UN reports, news items — and, using all of these, have made some predictions about effects based on these betting decisions.

The spot price of oil moves closely with the Saddam security, so that a 10 per cent rise in the probability of war saw oil prices rise \$US1 a barrel.

The effects in equity markets are larger.

The bad effects are concentrated in the consumer and discretionary

sectors, airlines and information technology but gold and energy get a boost.

Given markets are already responding to these trends, including guesses about the effect of the war on prices, the researchers conclude there is a 50 per cent chance the stock market will range between a 10 per cent fall and a 5 per cent rise.

At the extreme, there is a 10 per cent chance the market will fall by 25 per cent.

A much more in-depth attempt is the work of ANU professor and Reserve Bank board member Warwick McKibbin and Centre for International Economics director Andrew Stoeckel.

Their modelling attempts to put a solid base on the economic costs of war, as mapped out in theory by William Nordaus of Yale University.

They find a \$US2 billion drop in the level of Australia's GDP and a \$US34 billion fall for the US in the event of a short war.

World economic growth would be cut by 0.7 percentage points.

The flow-on costs, from the costs of peacekeeping to dislocation of markets, is as much as \$US18 billion for Australia by 2010 and \$US491 billion for the US, again for a short war.

Like Federal Reserve chairman Alan Greenspan, who warned earlier this month that the US government deficit would put pressure on interest rates, McKibbin subscribes to the orthodox view that government deficits "crowd out" private sector investment.

This means that any short-term expansionary effects from government spending on defence will be overrun.

This conclusion should make Treasurer Peter Costello even more keen to ensure there is no dip into a cash deficit here.



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ECONOMIC PREVIEW

## Total focus on war

### Weekly data should detail how well we are coping

By [Rex Nutting](#), *CBS.MarketWatch.com*  
Last Update: 6:20 PM ET Feb. 21, 2003

**WASHINGTON (CBS.MW) -- Markets are beginning to disregard any news that's not war-related.**

Economic news, in particular, fails to impress investors the way it used to.

Case in point: Friday's benign inflation reading gave stock futures a brief bump. [See full story.](#) But all the gains evaporated when the TV screens flashed the alert about a burning oil facility on Staten Island.

Oil, gold, bonds, currencies and stocks all reacted violently, if briefly, to the black smoke rising over the harbor. [See Market Snapshot.](#)

With war perhaps only a couple weeks away, war news (or terrorism news) trumps economic or corporate news every time. [See our Countdown to War coverage.](#)

Three academics have written a paper showing that the financial markets have been closely attuned to Saddam Hussein's fortunes.

"The U.S. economy is extremely sensitive to the cost of war," said Andrew Leigh, Justin Wolfers and Eric Zitzewitz. In particular, the economy is sensitive to the probability of war with Iraq. [Read their paper.](#)

Correlating the market in Saddam futures run by the bookmakers at <http://www.tradesports.com> with movements in global markets, Leigh, Wolfers and Zitzewitz figure that a 10 percent rise in the probability of war lowers the S&P 500 by 1 to 2 percent and increases crude oil prices by \$1 barrel.

### Saddam is the new Abbey Joseph

Lehman Brothers' economists come to similar conclusions, finding that the market has not fully priced in 100 percent chance of war. The rising and falling fortunes of Saddam explain between 30 and 70 percent of the daily variation in the markets for the past five months, Lehman chief economist Ethan Harris wrote in a recent note to clients.

Taking their model to its logical conclusion, Lehman figures the certainty of war would push the S&P 500 to about 778 (from about 850 now), raise the price of crude oil to \$37.50 (from \$35.50) and drop the yield on the

10-year Treasury note to 3.66 percent (from about 3.90 percent).

## **Drag on growth**

The drag from the war matters.

Leigh, Wolfers and Zitewitz figure the oil premium costs each American \$250.

"Increasing oil prices will dampen economic activity," said Bob DiClemente, economist at Salomon Smith Barney, stating the obvious. "If prices were to hold steady at current levels, first quarter discretionary outlays would be curbed by about \$30 billion, knocking more than a percentage point off first-quarter consumption."

"There is less disposable income for other things," said Geoffrey Somes, senior economist at FleetBoston, who figures the "energy tax" amounts to about \$50 billion.

Businesses are also being hurt by the higher energy costs. Anecdotal evidence suggests that firms are not able to completely pass on those costs to consumers, which means profit margins are being squeezed.

"The enormous uncertainty ... still continues to cast a heavy pall on firms' planning for the future," said Federal Reserve Gov. Ben Bernanke in a speech Friday in which he concluded that financial conditions are ripe for a healthy recovery. [See full story.](#)

If the war were to end well and Venezuelan production were to be completely restored, DiClemente reckons oil prices would decline to about \$20 a barrel, "the equivalent of a nearly \$100 billion tax cut" for the economy.

## **The data**

The monthly economic data released by the government and the private groups in the coming week can't match the war news for impact on the markets. But the numbers will help reveal how well consumers and businesses are going on with their lives despite the cloud of war.

The data will cover the gamut, from capital spending to consumer attitudes to home sales. We'll also see the first revision to fourth-quarter gross domestic product.

The big number comes Thursday, when the Commerce Department reports on January's durable goods orders. Orders fell 0.2 percent in December, including a 0.3 percent decline in core investment good orders.

Economists think orders rebounded in January, if only because some gremlin in the statistics has strengthened the first month of each quarter for the past five quarters. The consensus looks for a gain of 1.5 percent in total orders.

DiClemente looks for a much bigger spike in orders of about 6.5 percent. He thinks aircraft and auto orders rebounded sharply, but even excluding transportation, he thinks orders rose 2 percent.

Others see more modest gains. "Business investment has selectively improved, with moderate growth in high-tech orders and shipments," said Mickey Levy, chief economist at Banc of America.

## **Consumers**

While businesses may be showing their growing confidence by increasing their investments (if only modestly), consumers have been growing increasingly pessimistic. So far, however, their poor attitudes haven't slowed



their spending much.

Consumers have plenty of worries. Besides the constant threat of terrorism, they see a very weak job market and a disappointing stock market. They don't have much confidence in government to make it better, either.

The two main monthly confidence surveys will be released. The Conference Board's index should fall to about 76.8 in February from 79.0 in January, economists say. The University of Michigan index should drop to about 78.8 from 79.2 in early February, according to the **CBS.MarketWatch.com** consensus. [See Economic Calendar.](#)

The two home sales numbers will also be released during the week. Home sales can't get much stronger. New home sales probably remained well above the 1 million annualized pace in January., perhaps falling to 1.03 million from an incredible record 1.08 million in December.

Existing home sales likely fell back to a 5.73 million pace in January from the 5.86 million estimated in December, the third-highest rate ever.

Finally, the Commerce Department will revise its estimates of fourth-quarter GDP. Economists look for a modes upward revision to 1.1 percent from 0.7 percent. Inventory growth and construction spending were stronger than the original estimates, probably enough to offset the record trade deficit.

Economists think the economy is growing at about a 2.4 percent annual pace this quarter.

Rex Nutting is Washington bureau chief of CBS.MarketWatch.com.



# Money&Business

Section **3**

STRATEGIES

MARK HULBERT

## There's a Futures Contract for Everything (Even Iraq's Fate)

**F**EW people would disagree with the forecast that stocks would drop if war started tomorrow in Iraq. But two Stanford economics professors, Eric Zitzewitz and Justin Wolfers, go further, predicting that the market would drop 5 percent.

Academics rarely make precise short-term market predictions. The professors arrived at theirs by using standard econometric analysis and an unusual derivative that trades at [www.tradesports.com](http://www.tradesports.com), based in Dublin. At this Web site, you can bet on whether Duke will win the N.C.A.A. basketball title, whether "Chicago" will win the Oscar for best picture or where the Dow Jones industrials will end 2003. According to John Delaney, the site's chief executive, most of its active users are traders from Wall Street or Chicago futures exchanges.

The derivative on which the professors base their unpublished research is indeed unconventional: a futures contract on Saddam Hussein's presidency. The contract, which was trading at \$7.50 on Friday, will pay \$10 if Mr. Hussein is not Iraq's president on June 30; otherwise it will pay nothing. Because the professors assume that Mr. Hussein won't step down voluntarily, they argue that the contract reflects traders' as-

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essment of the probability of a war resulting in his ouster. The contract's current price suggests that the market assesses this probability as 75 percent between now and midyear.

The professors acknowledge that the contract may seem too bizarre to be the basis of serious research. They further concede that its trading volume is low, just over \$140,000 over the last five months. Yet, for a variety of reasons, they say its price accurately gauges the probability of an Iraqi war.

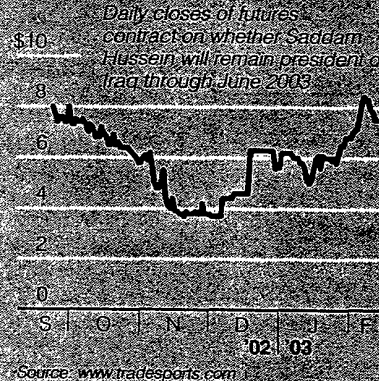
To counter concerns about the contract's volume, the professors point out that it is still higher than that of the Iowa Electronic Market, a real-money futures exchange administered by the University of Iowa that allows speculating on the American presidential election. Despite trading volume that has averaged just \$108,000 an election, these Iowa contracts have had an excellent track record. Their average forecast error for the popular vote in the last four presidential contests has been 1.37 percentage points, about half the average error of nine major polling organizations, according to a study by four professors at the university.

Professors Zitzewitz and Wolfers say they believe that markets in general reflect more wisdom than any single person can possibly have, and thus do a better job of assessing probabilities. That holds true not only for large markets, they say, but also for small and unconventional ones.

The professors concede that Web-based futures, which are largely unregulated, could be skewed by someone willing and

### Betting Against Saddam

A futures contract, traded on a Web site based in Dublin, will pay \$10 if Saddam Hussein is not Iraq's leader on June 30. Based on the contract's current price, the market puts that probability at about 75 percent.



The New York Times

straightforward. First, they measured how much the Standard & Poor's 500 index fell, on average, when the price of the contract increased, and vice versa. These measurements let them estimate how low the S. & P. 500 would drop if the contract approached \$10, which they believe would be likely on the day a war breaks out. They also calculated how high it would go if the contract fell to zero, reflecting zero probability. Their study, conducted with the assistance of Andrew Leigh, a Harvard graduate student, is at <http://faculty-gsb.stanford.edu/zitzewitz/Research/iraq.pdf>.

**T**HEIR analysis projects a 20 percent difference in the S. & P. 500's level at the contract's two price extremes. From this, they concluded that on the day a war begins, the cumulative effect of the buildup to war would be a 20 percent drop in the S. & P.

With the \$10 contract trading at \$7.50, the professors believe that 75 percent of the overall 20 percent drop has already occurred. That implies that when a war begins, the market would drop no more than an additional 5 percent.

If their forecasts prove accurate, the professors will overcome at least some of the concerns about the Saddam Hussein futures contract. In any case, with a proliferation of such unconventional trading instruments, we should anticipate more analyses like theirs in coming years. □

able to place sizable buy or sell orders well above or below the current price. But they doubt that this is the case for the contract on Mr. Hussein's ouster, believing that no one has an obvious motive to do so.

Once the professors were satisfied that this contract was a legitimate basis for research, arriving at their conclusion was