JOINT ECONOMIC COMMITTEE
SENATE REPUBLICANS
SENATOR SAM BROWNBACK, SENIOR REPUBLICAN SENATOR

February 28, 2008

DEMOCRAT JEC REPORT HINTS AT EXISTENCE OF A VALUE CREATION MACHINE
OVER $1 TRILLION OF ESTIMATED COSTS IN QUESTION

Using dubious techniques to account for financing costs associated with war efforts, a recent Joint Economic Committee (JEC) Majority report arrives at estimates that overstate costs by as much as $1.1 trillion.[1]

The report released in November 2007 and titled "War at Any Price? The Total Economic Costs of the War Beyond the Federal Budget" contains questionable accounting of "opportunity costs" of funds borrowed by the Federal government for the wars in Iraq and Afghanistan.

Aside from highly debatable estimates of possible economic effects of the wars on the economy stemming from such things as increases in energy prices, the accounting for opportunity costs adds $1.1 trillion to the budgetary costs associated with direct appropriations for the war. That opportunity cost accounting is controversial and, by making reasonable assumptions, the $1.1 trillion of additional war costs computed in the JEC Majority's report vanish.

Understanding the Overstatement of War Opportunity Costs

To understand this overstatement, it is useful to review some elementary concepts, highlighted in italics in what follows.

Opportunity Cost—The opportunity cost of using a resource (a good, money, time, etc.) on one activity is the value of the next-most-highly-valued alternative use of that resource.

The JEC Majority's study counts as war costs the dollar value of direct appropriations for war spending. It then adds to that a (highly debatable) value of what could be earned if the government had not borrowed funds for war efforts and some of those funds were used in private investment opportunities to generate future returns. There is, possibly, according to the notion entertained in the study, a "hidden" opportunity cost to war spending associated with private investment that is "displaced" by use of currently borrowed funds to finance war spending.[2]

---

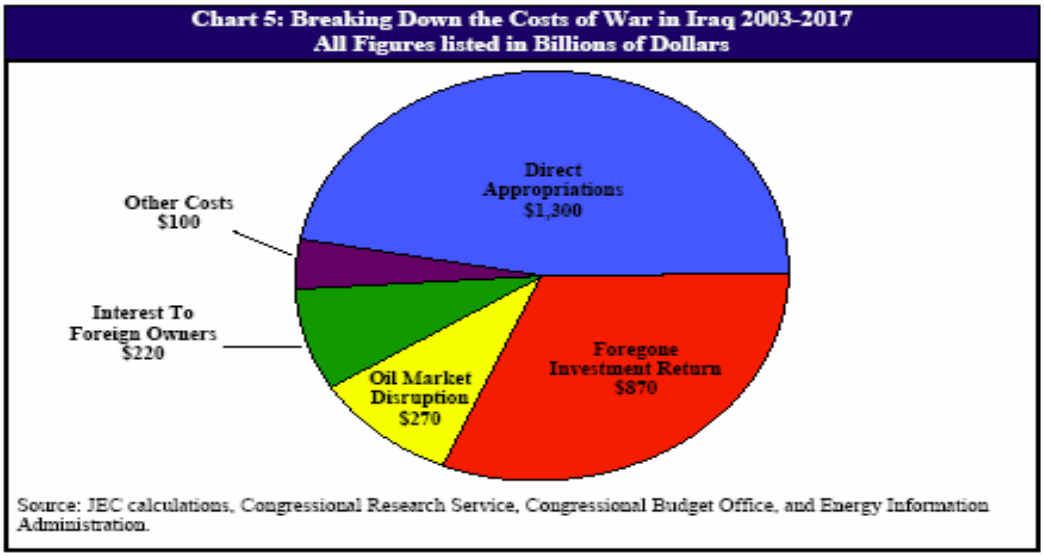
[1] Linda Bilmes and Joseph Stiglitz ("The Economic Cost of the Iraq War: An Appraisal Three Years after the Beginning of the Conflict," 2006 National Bureau of Economic Research Working Paper #12054) use similar techniques to accounting for war financing costs. Nobel Prize winning economist Gary Becker has referred to their techniques as "dubious."

[2] In commenting on estimation of war costs in a recent paper by Bilmes and Stiglitz ((Bilmes, Linda and Joseph E. Stiglitz, 2006, "The Economic Cost of the Iraq War: An Appraisal Three Years after the Beginning of the Conflict."), who account for financing costs associated with debt-financed war spending in much the same way as the accounting used in the JEC Majority report), Professor Gary S. Becker, 1992 Nobel Prize winner in Economic Sciences, writes that:

> "They also have "conservative" estimates that include additional interest on government debt, but I do not understand why this should be counted since they already count military spending as a cost."

The magnitude of war costs in the Majority report's war cost computation that arise because of displaced investment amounts to $870 billion ("Foregone Investment Return") plus $220 billion ("Interest to Foreign Owners") shown in Chart 5 of the report (reproduced below). That is, the costs associated with displaced investment amount to more than $1 trillion.

When adding opportunity costs of the use of resources for the war ("Foregone Investment Returns" and "Interest to Foreign Owners") to direct resource costs ("Direct Appropriations" in the Chart below), war costs are almost doubled relative to consideration of direct resource costs alone[3]



On page 10 of the JEC Majority's report, we are told that "…the JEC estimates that Iraq-related borrowing between 2003 and 2017 will create an additional income loss of almost $1.1 trillion in present value to U.S. citizens." In a footnote explaining where that $1.1 trillion comes from, the report notes that "This is the present value of the lost returns to investment that did no *[sic]* take place due to the diversion of capital into Iraq war spending, as well as the present value of the post-tax returns to investments that were funded with foreign capital." To try to understand these estimates, we need to consider notions of present value, future value, and discounting.

Present Value (PV) and Future Value (FV): To account for differences in the value of $1 today and the value of $1 in some future period, attention must be paid to inflation and to what is often called the "time value of money." Here, for simplicity, we will abstract from

---

In his discussion of war costs, economist William Nordhaus (William D. Nordhaus, 2002, "The Economic Consequences of a War with Iraq," in *War with Iraq: Costs, Consequences, and Alternatives*, American Academy of Arts & Sciences, Committee on International Security Studies) writes that his estimates of costs "…omit interest costs, which are not appropriate economic costs as they reflect decisions about financing rather than costs."

[3] Interest payments associated with war financing that the JEC Majority's report assumes are paid to "foreign owners" of debt are regarded entirely as an economic loss. The report does not allow for or analyze any possible exchange rate effects or any possible effects stemming from foreign direct investment or from international trade associated with the interest payments. Evidently, the resource value of interest paid to foreign holders of U.S. government debt simply disappears and is forever lost.

inflation by assuming none, since inflation has little bearing on the highly questionable manner in which the JEC Majority accounts for war costs.[4]

The time value of money is simply a reference to interest rates. $1 today is not the same as $1 tomorrow. If the interest rate is, for example, 3%, then by taking $1 today and investing it at a simple annual interest rate of 3%, you could get $1.03 at the end of the year. So, $1 today, given a market interest rate of 3%, is equivalent to $1.03 at the end of the year. Alternatively stated, the future (in one year) value of $1 is $1.03 given a 3% interest rate. And, $1.03 received a year from now is the same, when "discounted" back to the present, as having $1 today. That is, the present value of $1.03 received one year from now is $1 given a 3% "discount rate" (which is the same as the interest rate).

More generally, if the annual simple interest rate available in markets is represented by r, then investment of $1 (present value) today generates a gross return (future value) of $1 × (1+r) at the end of the year. Alternatively, the present value of $1 × (1+r) received at the end of the year is $1 today.

These relations between present and future (one year ahead) values can be summarized by:

A PV of $1 has a FV of $(1+r) when the interest rate is r.

A FV of $1 has a PV of $\left(\frac{\$1}{(1+r)}\right)$ today when the interest rate is r.

Some Simple Truisms:

1. If you borrow and receive $1 today, and promise to repay the principal along with interest in the future, then the present value (discounting at your borrowing rate) of your borrowing is $1 (because the value of $1 today is the same as $(1+r) in the future).
2. If the government borrows and receives $1 today, and promises to repay the principal along with interest in the future, then the present value (discounted at the government's borrowing rate) of the borrowing is $1.

Yet, according to the JEC Majority's calculation of present value, while number 2 is true, the *social* present value of the government borrowing $1 today actually *exceeds* $1. In their calculations, if the government borrows $1, and promises to repay the principal along with interest in the future, the present value turns out to be *more than* $1.

How does the JEC Majority magically turn $1 of borrowed resources into more than $1 of present social value? Have they discovered a money, wealth, and value creating machine? What's next: gold from water, a perpetual motion machine?

Unfortunately, the Majority's discovery of a wealth creating machine relies on discounting that Nobel Prize winning economist Gary Becker has labeled "dubious."

[4] Except that when accounting for interest payments to foreign purchasers of government debt, the report seems to use *nominal interest rates* (i.e., unadjusted for inflation effects on purchasing power) while *real* (i.e., inflation adjusted) *interest rates* are used to account for interest payments and foregone investment effects associated with borrowing from domestic residents.

Suppose that you are considering the purchase of a candy bar that costs $1 today using a dollar from your family's cookie jar. And suppose that you can borrow or lend money at a simple annual interest rate of 7%.

If you buy the candy bar, you pay the $1 cost. But, you could have taken that $1, lent it out (effectively making an investment) at 7%, and received $1.07 at the end of the year. What is the present value of that foregone loan (investment opportunity)? Using an interest rate of 7%, the present value is $1 = $\left(\frac{\$1.07}{(1+.07)}\right)$, which is exactly the amount it costs to buy a candy bar.

In that case, using $1 to buy a candy bar involves foregoing a possible investment return that has a present value of $1. Either way you look at it, whether valuing the candy bar at its direct cost (the current $1 purchase price) or at its opportunity cost (the $1 of present value, when discounting at 7%, foregone by not having made an investment), the cost of the candy bar is $1.

But, under certain familial circumstances, the foregone investment opportunity would actually end up costing your family more than $1 of present value.

How? What if your family discounts between today and future periods at a different rate than 7%, maybe 3%? According to opportunities available to your family in markets for borrowing and lending, interest rates are 7%.

Given your familial discount rate of 3%, your family is willing to give up 1 unit of a resource today in exchange for 1.03 units at the end of the year. Anything more than 1.03 would increase family happiness. Anything less will lead to family sadness.

Equivalently, your family is willing to give up 1.03 units of resources at the end of the year in exchange for receiving 1 unit today. Any future sacrifice less than 1.03 units at year's end would increase family happiness. Anything more will lead to family sadness.

Note that if you discount $1.07 at the end of one year using a 7% discount rate, the present value of $1.07 in one year is $1 today. If you discount $1.07 at the end of one year using anything less than a 7% discount rate, you get a present value above $1. If you discount at your familial discount rate of 3% the $1.07 that you could earn at the end of the year by foregoing the candy bar purchase and, instead, making a loan, then the present value to your family of what you have foregone is around $1.04 = $\left(\frac{\$1.07}{(1+.03)}\right)$.

From your family's point of view, buying a $1 candy bar today actually costs more than $1. You spent $1, but you also displace an opportunity to have used that $1 to make a loan which would have generated a return with present family value of around $1.04. Netting out the $1 that you spent on the candy bar, you have foregone providing your family with an extra $.04 of value, leading to a total effective candy bar cost of $1.04. Thus, using a JEC Majority-style method of discounting, a $1 candy bar purchase that you make today actually costs your family $1.04 of value.

In the JEC Majority's analysis, the social rate of discount is 3% while returns available in private investment opportunities are 7%. An expenditure by government of $1 today

(financed by debt or taxes) will displace a private opportunity to have used that $1 to generate $1.07 at the end of the year, the present social value of which (discounting at the social 3% rate of return) is around $1.04 = $\left(\frac{\$1.07}{(1+.03)}\right)$.[5]

When you consider that the JEC Majority report is looking at hundreds of billions of dollars of direct appropriations in their analysis, and foregone returns are compounded over many years, it is easy to see how over $1 trillion of social value is displaced using their social discounting scheme and assumptions about riskless returns available on private investments.

Government Borrowing in Capital Market Equilibrium

According to the JEC Majority's report, government can borrow at a rate of 3% (based on an observed average of market real yields on government debt). But that borrowing displaces private investment, for which a 7% return is available (based on an average of observed *risky* real yields on private investments).[6] The 7% returns cannot be taken to be risk-adjusted or riskless rates of return, unless there is some unspecified large market failure or capital markets are out of equilibrium over very long periods of time. If 7% risk-adjusted rates existed on private investments while government debt only promises a rate of return of around 3%, then no one would be purchasing the government debt.

In capital market equilibrium with efficient markets, the risk-adjusted borrowing rate of the government equals the risk-adjusted rate on private investments. If not, and if the rate available on private investments exceeds the rate paid by the government, then investors would shun government debt (driving its price down and interest rate up) and flock to private investment opportunities (driving their prices up and returns down) until an equilibrium exists at which the risk-adjusted government borrowing rate equals that on private investment.

So, How does the JEC Majority Come Up With The Present Value of $1 of Government Borrowing Actually Representing More Than $1 of Present Social Value?

The answer comes from assuming that the private-sector rate of return is 7%, that private-sector investment is displaced by government borrowing, and that foregone future private returns (accruing at a 7% rate) should be discounted back to the present at a "social rate of time preference," or discount rate, of 3% (not 7%).[7]

---

[5] The JEC Majority report actually assumes that debt-financed spending of $1 today will generate a total loss of $.40, paid to foreign owners of debt, and, for the $.60 assumed to borrowed domestically, the discounted (using a 3% rate) value of a foregone stream of net displaced private investment returns that would accrue at a rate of 7% (also discounted using a 3% rate) on that $.60. Calculating costs in this war (allowing a division between foreign and domestic debt, with differential cost effects) still leads to a $1 of current government spending generating *more than* $1 of loss of current social value.

[6] The government borrowing rate is assumed, for simplicity, to be the riskless rate. To the extent that government borrowing involves risk, government debt would trade at a risk premium relative to the underlying riskless rate.

[7] The approach used in the report converts lost investment into consumption equivalents using a "shadow cost of capital approach." While use of shadow pricing involves many questionable assumptions, the main consequence is

The JEC Majority's methodology is borrowed from work by William Cline (William R. Cline, June 1992, *The Economics of Global Warming*, Institute for International Economics) on analyses of global warming, for which, according to the JEC Majority's report: "There is substantial agreement that this approach is theoretically correct…"

It is debatable how substantial that agreement is, but it is interesting to note that Cline identifies that his method "…would seem the most appropriate *for benefit-cost analysis of global warming (italics added)."* Such analysis involves discounting of benefits and costs of pollution abatement, where benefits and costs can accrue at highly uneven and differential rates across time and where the relevant span of attention is on the order of hundreds or thousands of years. The analysis in the JEC Majority's report, however, involves no possibility of benefits associated with war expenditures, and therefore is not a benefit-cost analysis. Moreover, the relevant horizon in the Majority's report is 15 years at most, not hundreds of years for which Cline has developed his arguments.

Why use 7% as the private-sector investment return and 3% as the social rate of time preference? The JEC Majority's report refers to certain suggestions made by the Office of Management and Budget (OMB) for use in cost-benefit analysis. In defense of the analysis performed in the JEC Majority's report, Rep. Maloney and Sen. Schumer have appealed to OMB Circular No. A-94.[8] That Circular provides "Guidelines and Discount Rates for Benefit-Cost Analysis of Federal Programs." The JEC Majority's report *does not,* however, follow many of the guidelines set out in Circular A-94:

- The Circular applies to *Benefit*–Cost Analysis (including "Cost-Effectiveness" analysis, which also involves consideration of benefits). The JEC Majority's report calculates costs only, however.
- The Circular identifies, with respect to use of one component of the JEC Majority's analysis, called a "shadow price of capital" approach, that: "To use this method accurately, the analyst must be able to compute how the benefits and costs of a program or project affect the allocation of private consumption and investment. OMB concurrence is required if this method is used in place of the base case discount rate." There was no concurrence between OMB and the JEC Majority, and the JEC Majority's report simply *assumes* that all interest costs associated with war financing derived from domestic sources displace investment.
- The Circular identifies that sensitivity analysis should be performed to determine how sensitive analytical outcomes are to changes in assumptions. The JEC Majority's report performs no sensitivity analysis.
- The Circular identifies that, in performing a benefit-cost analysis: "The analysis should include a statement of the assumptions, the rationale behind them, and a review of their strengths and weaknesses. Key data and results, such as year-by-year estimates of benefits and costs, should be reported to promote independent analysis and review." The JEC Majority's report falls far short on this front. Assumptions are not made clear

to increase the measure of opportunity cost constructed in the JEC Majority's report and, consequently, amplify the report's estimate of war costs that arise from the questionable opportunity cost calculations.

[8] See press release at:
http://maloney.house.gov/index.php?option=com_content&task=view&id=1515&Itemid=61

and little rationale is offered for many of them, let alone discussion of strengths and weaknesses. Key data are not provided, inhibiting independent analysis and review.

Some Perhaps Unpleasant (for the JEC Majority) Implications of the JEC Majority's Analysis

- The U.S. government currently borrows from the Social Security "Trust Funds" to use funds for general government spending. According to the Office of the Chief Actuary of the Social Security System, the effective interest rate for the Old-Age and Survivor's Insurance the Disability Insurance Trust Fund, combined, was 5.25% in 2007. This means that last year, the government borrowed from the Trust Funds at a rate of 5.25%. Subtracting off 2.9% average consumer price inflation during 2007 gives a real, or inflation-adjusted, return of roughly 2.25%.
    - By JEC Majority calculus, Trustees of the Social Security System should be ordered to stop lending to the Federal government and, instead, invest payroll tax revenue at the available real opportunity rate of 7%, well above the 2.25% currently earned by lending to the government. Then, the Social Security system can forego the 2.25% paid by the government on funds borrowed from the Trust Funds, capture that 7% return available on private investments, and increase resources available to retirees.
    - Social value is being foregone by lending payroll tax revenue to the general government rather than allowing it to earn interest in private investment opportunities.
    - Proposals similar to this, which called for allowance of personal retirement accounts where taxpayers could ask that some of their payroll taxes be diverted away from the traditional Social Security system and toward private investments, were deemed to be a "risky scheme" by prominent Democrats. To the contrary, according to the JEC Majority report, such a "risky scheme" is precisely the seemingly riskless alternative available when considering how to use funds that the government borrows for the war effort.
- The JEC Majority's analysis suggests that it could be social-value-enhancing for government to borrow as many dollars as possible at rates below 7%, lend them in the private sector at 7% (the opportunity rate of return assumed by the JEC Majority), and end up with positive net current social value.
    - Yet even Cline, who developed the "methodology" used in the JEC Majority's report, identifies that "…it is by no means clear that a government investment fund could find capital investment projects that would yield the relatively high real rates of return typically supposed for private capital." According to Cline, if a government fund "…invested through financial intermediaries, it would earn no more on a risk-compensated basis than the long-term government bond rate, a return much closer to the SRTP [social

rate of time preference] than to the rate of return on private capital investment."

- Exactly! On a risk adjusted basis, the appropriate discount rate to use for government borrowing ***and*** for any displaced investment returns associated with that borrowing is a risk-adjusted safe rate of return like the 3% rate used in the JEC Majority's report to perform social discounting. The risky 7% should *not* be considered the relevant available opportunity return.

- According to the JEC Majority's report, every marginal dollar borrowed by the U.S. government should be borrowed from abroad. Given the report's assumptions, interest payments associated with borrowing from abroad "…flow out of the country and constitute an economic cost." Evidently, those payments simply disappear and do not displace private capital. By contrast, interest payments associated with borrowing domestically displaces private investment leading to "true economic costs" to society that end up being a multiple of the amount of interest payments. Thus, we lose less paying interest to foreign holders of our debt than domestic holders.

- According to JEC Majority calculus, every debt-financed government undertaking has a "true," or total-economic, cost of roughly $2. The recent economic stimulus package, for example, scored by the Congressional Budget Office at around $152 billion, has a true economic cost of around $304 billion.

  - For every dollar of proposed additional real government spending, it should now be noted that the true social cost is two dollars of value.

- Taxes on savings should immediately be reduced. This follows from the assumed existence of private investment opportunities that exist in the JEC Majority report which provide risk-adjusted returns of 7%. Since those returns are above the social rate of discount, society is saving too little. We need much more savings to drive the private rates of return down. To accomplish this socially valuable goal, it would be socially desirable to encourage more savings by cutting taxes on savings.

- Government should cut taxes and increase debt, thereby creating additional social value. By cutting taxes on domestic income, there will be a dollar-for-dollar increase in the amount of resources available for private investment, which can earn a 7% return. For each dollar of additional debt, there will be a displacement of only $.60 of private capital investment. The other $.40 is funded, according to the JEC Majority report's assumptions, by foreign holders of U.S. government debt. That $.40 is lost, but does not displace domestic capital investment.

  - The net result of a $1 debt-financed tax cut can be calculated as follows. From the tax cut, we get $1 of added private investment and, from the debt financing, we get a displacement of $.60 of such private investment, for a net gain of $.40 of private investment that earns 7% returns. That $.40 of investment will return, discounting future 7% returns at the social rate of discount of 3%, more than $.40 of current social present value. Netting out the $.40 loss present value associated with the foreign investment still leaves us with a gain in current social present value.