Initiative on
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Measuring the Cost of the TARP

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SUMMARY

Late last week, the Congressional Budget Office released an estimate for the expected cost of the TARP, the Treasury's Troubled Asset Relief Program that is intended to help stabilize the financial system. Sadly, the CBO report received much less attention than it deserves. CBO estimates that just one quarter of the funds committed to the program will be actual losses — only $64 billion of the $247 billion committed at the time of their analysis would be true costs to the taxpayers. The rest would essentially be a loan from the public that would be repaid at a market rate of interest.

Unfortunately, the political discourse and headlines have focused on the maximum possible loss — that famous $700 billion figure — rather than the expected cost or even a conservative "probable worst case" number. Despite today's grim economic circumstances, it would be virtually impossible to lose that whole amount.

Focusing on the wrong number is dangerous. It is a well-known axiom of politics and business that the answer to a question can be determined by how you frame it. In this case, the key framing issue is how you measure the cost. Telling the public they could lose $700 billion has naturally produced a firestorm of resentment. We might instead have gained at least grudging public support by framing the cost differently, given the dire circumstances. Consider the potential reaction to an estimate of $175 billion of expected losses with a chance it could rise to $300 billion in a very bad case, offset by a reasonable chance the ultimate cost would be lower than expected.

More insidiously, we are less sensitive to differences in likely costs and risk levels when we treat all the parts of the program as if they were going to lose the full amount of their funding commitments. This matters because some uses of TARP funds are expected to lose much more than others. CBO projects that funds for the automakers and AIG are likely to suffer losses of about 55 cents on the dollar while the main bank rescue package loses only 18 cents, less than one third as much. Perhaps the greater losses are outweighed by larger economic benefits to the nation, but we cannot honestly make that choice without the right cost estimates.

The government is being besieged by requests to support municipal bonds, small business loans, consumer loans, mortgages, banks, insurers, etc. Using the right ruler to measure the cost will strongly influence how much Congress and the voters are willing to commit to save our financial system, which programs are funded, and how we execute the rescues.

It will be critical to economic recovery and the long-term health of our financial system that we allocate money to the different rescue programs in a way that maximizes the "bang for the buck". As the rest of this paper will show, this allocation is best done by comparing the expected costs of various programs, rather than focusing on their maximum possible losses. The most useful estimates of expected losses are calculated as the CBO did, using net present value analysis with market interest rates. Given the murkiness of the present environment, it may be useful as well to provide an estimate of the probable worst case loss as a supplemental risk measurement.

Measuring Costs and Allocating Funds

The best overall approach is the one used by CBO to project the cost of the TARP — net present value analysis using a market discount rate. CBO uses the principles of the Federal Credit Reform Act of 1990, (Credit Reform Act), which sharply improved the budget process for federal lending and guarantee costs when it came into force. The approach focuses on making the best estimate of the net cost in today's dollars of all the cash outflows and inflows that will be produced over time by a given program.

This analysis also provides a better guide to the appropriate price to be extracted from the beneficiaries of a rescue plan. For example, assume a particular rescue plan would require commitments of $100 billion and is expected to return a net present value of $90 billion, for a loss of $10 billion. This hypothetical program would have a net cost of $10 billion minus whatever the government charged for the rescue. If we desire the taxpayers to break even, then we would want to charge premiums or take equity stakes or warrants or bonds or other instruments with an expected value of that same $10 billion. Alternatively, the government may wish to make an expected profit or loss, depending on other public policy interests.

The CBO recently published estimates of the likely cost of the first $247 billion committed under TARP. The expected overall cost of $64 billion is 26% of the maximum possible loss. Focusing on the lower figure might in itself lead to different policy decisions than merely considering the maximum loss. Equally significantly, CBO breaks down the estimates to show that the likely cost of the auto-related programs is 63% of the maximum possible loss while the injections of bank capital are expected to cost only 18% of the total committed. Similarly, support given to AIG is projected to cost twice as much per dollar committed as the support for Citigroup. These figures in themselves do not tell us the right course of action, since the benefits of these programs may also be disproportionate, but they make it easier to weigh the pros and cons.

How Can We Measure the Cost of the TARP?

There are at least four fundamental ways to estimate the cost to taxpayers of the capital the government is injecting into banks.

Cash basis. This is the standard way in which the government records the cost of almost all programs. The budget cost in a given period is simply the net cash outflow. If we buy a billion dollars worth of warplanes, the budget shows a cost of $1 billion. This approach was used for federal lending activities until it became clear how much harm it caused when analyzing programs under which one expects to be repaid most of the time. The Credit Reform Act, explained below, was passed to avoid these problems in the future.

Maximum possible loss. We could simply look at the absolute worst case, which is what the headlines and most political commentary on TARP has focused on. The problem is that it ignores expected costs and risk levels altogether, making it easier to spend too much and take excessive risk. There is less political reward for allocating resources carefully if the budget and political debate is going to treat the money as if it were all thrown away.

Net present value (NPV). A long-term financial program is best analyzed by looking at the expected cash outflows and inflows over time and condensing them to a single "net present value" figure. That is, if we loan $1 billion today, at no interest, and get it back next year, the value of the repayment in today's dollars is less than $1 billion. Money today is worth more than money tomorrow, not only because we can earn interest on it, but in recognition of the uncertainties of life that mean we might not be repaid.

Private market valuations. This overlaps heavily with net present value analysis, because investment theory for private sector investors relies heavily on net present value analysis. (Indeed the government's use of it is imported from the private sector. In fact, financial economists originally developed the theories principally for private sector use.) In practice there are some differences. Investors sometimes rely on rules of thumb, such as price/earnings ratios, that in general lead to similar conclusions as NPVs would, but which can produce substantially different results at times. In addition, there can be aberrant market conditions, such as those at present, in which factors such as liquidity take on much more importance, pushing aside net present value analysis. Arguably, the government performs a service to society by allocating resources without regard to such ephemeral market inefficiencies.

Why Net Present Value Analysis?

The Credit Reform Act enshrined net present value analysis as the basis for budgeting for federal lending programs because it eliminated or reduced a number of errors encouraged by cash budgeting. (The following discussion borrows from my paper, "Budgeting for Federal Credit Programs: A Primer", available at www.coffi.org. It has considerably more detail on the Act and why it was adopted.) All of the errors center around sacrificing the long-term for the short-term.

Cash budgeting discourages federal lending. It may be an excellent policy choice to lend $1 billion today expecting to get it back in five years, plus an appropriate rate of interest. However, cash budgeting makes the federal deficit $1 billion worse in the first year, followed by a $1 billion windfall five years later. Political realities generally make this unattractive.

There are incentives to destroy economic value. Cash budgeting favors actions that raise a great deal of cash up-front. For instance, packaging government loans and selling them to the private sector at a distinct economic loss would look good for the federal budget in the near-term. It is worth remembering that a major reason President Johnson sold the first shares in Fannie Mae to investors in the 1960's was because it brought in cash which reduced the budget deficit.

Cash budgeting heavily favors loan guarantees in place of lending. There are times when direct lending may be the better policy choice, but cash budgeting will always make a guarantee look less costly in the near-term. After all, there is no initial outlay when one provides a guarantee; indeed there may be a guarantee fee paid to the government.

Net present value analysis looks at the totality of the expected cash flows, whether they occur in the near-term or many years out. This enables an integrated decision that appropriately discounts future benefits and costs, without ignoring them totally, as cash budgeting was wont to do. There is no artificial five or ten-year horizon that can be gamed by politicians or bureaucrats. All future cash flows are taken into account, to the extent possible.

The downside of NPV analysis is that it requires estimates of the future cash flows, potentially going out for many years. Analysts may be wrong about either the amounts or the timing of those cash flows, just as private sector analysts often make mistakes. Nonetheless, it is better to have a well thought-out guess than to ignore the future altogether. Fortunately, in the case of a program like the capital injections into banks, there are often good publicly traded proxies that can be used to provide a check on the results of the net present value analysis. For example, many large banks already have preferred stock or similar instruments that have some of the characteristics of the preferred being purchased by the government. Over time, the government may also sell off some its bank preferreds as a way to establish a clear private market valuation. Admittedly, private market valuations are based on guesses as well. The difference is that market prices are based on a weighting of all the estimates out there and there is a strong monetary incentive for the analyses to be accurate. If enough investors conclude based on their projections that a security is over- or under-valued, then the price will move commensurately.

Which Discount Rates Should We Use?

There is some disagreement among policy analysts and economists as to the right discount rate to use for government lending programs. The Credit Reform Act specifies that the government's borrowing rate be used. For example, if a cash flow will occur in ten years, then that cash flow will be discounted by the market interest rate for 10-year Treasury bonds. Proponents of this approach argue that the government's cost of funds is the right measure to tell us whether taxpayers will make or lose money by borrowing funds and lending them out.

However, I agree with the substantial majority of policy analysts who believe it is better to use a market discount rate appropriate to an investment with the same level of risk as the lending or investing activity in question. There are at least three major arguments for this approach.

First, this is what economists and professional investors virtually unanimously recommend for private sector investments. An investment in a very risky asset requires a higher interest rate to be attractive than does a low-risk asset. Using a risk-related discount rate takes account of this.

Second, taxpayers should be compensated for opportunity costs, not just direct borrowing costs. If the government could invest in an asset of the same risk as the loan and earn 10%, then there is a significant opportunity cost from charging only 5%, and the discount rate ought not to be that lower figure.

Third, using the Treasury rate encourages the government to make riskier loans. Some of the risk will show up in the projected cash flows, which include default costs, but another part of the risk would normally show up as a risk premium producing a higher required interest rate. Private investors expect a higher average return for taking more risk. If the government does not, then it will tend to be the institution that makes those loans.

The Emergency Economic Stabilization Act (EESA), which authorized the TARP, explicitly requires that OMB and CBO use an approach analogous to the Credit Reform Act, but with a market-related discount rate. CBO has interpreted this to mean that all transactions under the TARP should be analyzed on a net present value basis. OMB has interpreted it differently, arguing that the Credit Reform Act only covered loans and guarantees, leaving other forms of investment to be analyzed on a cash basis. Since the capital injections have been in the form of preferred stock, they have chosen to treat these as having a budget cost equal to the cash outlay. However, OMB has helpfully provided additional analyses on a net present value basis that are comparable to what CBO has produced.

The CBO's approach is clearly preferable to OMB's cash basis accounting, for all the reasons given earlier as to why net present value analysis is superior. The case would be less clear cut if the principal form of capital injection was the purchase of common stock, as this would require a net present value analysis of the entire bank's cash flows, which is difficult and error prone. Nonetheless, the substitute should be to use market values for the common stock wherever possible, rather than cash accounting. Otherwise, investing $1 billion at a fair price would have the same initial budget effect as throwing the money away. Fortunately for the analysts, the standard mode of capital injection under TARP has been the purchase of preferred stock which is very similar economically to making a loan to the bank. There is a known interest rate, leaving the only substantial valuation variables as the discount rate, the assumed maturity (since the bank can largely control the timing of repayment), and the likely credit losses due to insolvencies and missed dividend payments.

How Do the CBO and OMB Estimates for the TARP Compare?

CBO shows a helpful comparison in its report between the subsidy estimates from CBO and the equivalent analyses from OMB. The comparison is limited to the first $115 billion of capital injections under the TARP, as this was all that was in place when OMB did its analysis in early December.

CBO concluded that taxpayers should expect a loss of $21 billion in today's dollars and that this should be the cost shown on the budget. OMB's equivalent net present value analysis, which they argued should not be the basis for the budget cost, showed a loss of $26 billion. OMB presented a second NPV analysis where it used Treasury rates to calculate the discount rate. This showed a gain for the taxpayers of $13 billion. This nicely illustrates the importance of choosing the appropriate discount rate. Effectively, the capital injections would produce a profit if all the taxpayers want is to earn back their interest cost, but a loss if taxpayers target an interest rate commensurate with the market risk.

The divergence of the OMB and CBO estimates illustrate that there will always be differences in opinion that will lead to differing subsidy figures, but that more often than not, the results are in the same ballpark when the analysis is performed at the same point in time or under similar market conditions.

Should We Add Probable Worst Case Analysis?

Unfortunately, recent conditions in the financial markets clearly show the potential for rapid changes in the environment that can make the best initial estimates wrong, sometimes by a wide margin. From a budget point of view, the Credit Reform Act handles this by a system of re-estimation each year, with the changes in expected gains or losses from a program flowing through the budget as the estimates are revised. (Again, see the piece on www.coffi.org for considerably more detail.)

However, the ability to correct estimates after the fact for changing market conditions may not assuage the concerns of policymakers who wish to avoid committing to a program that may prove too expensive if circumstances become adverse. Ideally we would show them a probability distribution of expected net costs, so that they could see the full picture, perhaps even providing some form of uncertainty analysis to represent the effects of our estimated parameters being off. Unfortunately, long experience has shown that it is extremely difficult to present this in a way that Congress or the public finds useful, since neither group is particularly comfortable with probabilistic analyses.

It may, however, be useful to provide a second point estimate, reflecting a "probable worst case". That is, it would show how bad the losses could be in a very bad environment. Ideally, probabilistic analysis would allow us to pick a level of probability, such as 99%, and show what the loss would be that we would expect to be conservative 99% percent of the time. The 99% level is a somewhat arbitrary choice, but feels roughly right and has precedent in the private sector.

It would appear to be quite useful for policymakers to know that, for example, the TARP program might have a maximum cost of $700 billion, but the scorekeepers are 99% confident that the net cost would be no more than, say, $200 billion, and that the expected net cost is, for example, $50 billion. Even if a better estimate might have yielded a 99% probability level of $300 billion or $100 billion, the $200 billion figure still comes much closer than using the maximum loss of $700 billion.

This approach would help distinguish between low-risk, but high maximum loss, programs like the money market guarantee fund and high-risk programs like the auto rescue. Standard NPV analysis using expected figures also makes this distinction quite usefully, but one fears that in present circumstances policymakers will focus on a more conservative figure. If their only choice is to use expected loss or maximum loss, they may well focus on the latter.

There is a useful precedent for this type of probabilistic analysis. Both private sector and public sector analysts of financial institutions look for a bank's capital to be sufficient to cover losses with a high probability of adequacy. The situation is analogous to the financial rescue plans. A bank's balance sheet is theoretically composed of accurate estimates of the most likely values of the bank's assets and liabilities. However, regulators, and the market, require banks to maintain large capital bases as a margin for error, since the expected case results in about a 50% chance that the bank is actually worth less than the balance sheet shows.

When sophisticated banks take on risk from securitizations or other complicated transactions, they generally require an internal allocation of capital sufficient to cover losses at the 99% probability level. (The exact probability level varies with the institution, but the level is always intended to cover all but unlikely "tail" events.) International financial regulators previously blessed this type of probabilistic analysis in the so called "Basel 2" accords governing capital regulation.

OMB explicitly used probabilistic analysis to create its NPV estimates, which are really a weighted average of subsidy estimates, rather than the result of one single case. If such probabilistic analysis is too difficult, as it may well be, budget scorekeepers may be able to construct a reasonable set of assumptions for a probable worst case. There would be less of an onus on them to be precisely accurate, since budget scoring would still rely on expected subsidies, with this new figure as a supplement.

Conclusion

Allocating resources among different financial rescue programs to maximize the "bang for the buck" will be critical to economic recovery and the long-term health of our financial system. This allocation is best done by comparing the expected costs of various programs, rather than focusing on their maximum possible losses. The most useful estimates of expected losses are calculated using net present value analysis with market interest rates. Given the murkiness of the present environment, it may be useful to provide a point estimate of the probable worst case as a supplemental risk measurement.

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