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Measuring and Managing Federal Financial Risk

A View from the Hill

Donald B. Marron

This timely conference began with an unusual but important question: what do Social Security, terrorist attacks, farm programs, Hurricane Katrina, private pensions, student loans, and environmental risks have in common?

The answer, as the following chapters demonstrate, is federal financial risk. The Federal Government has established itself as perhaps the world's largest provider of financial services, including property and casualty insurance, pensions, student loans, health insurance, mortgage insurance, and loan guarantees. In so doing, the government has taken on a correspondingly broad range of financial risks.

However, it is unclear whether policymakers and the general public fully appreciate the magnitude of these risks. Thus, the goal of the conference was to explore ways in which measurement, management, and understanding of these risks might be improved.

My particular charge was to provide a view from Capitol Hill. In some ways, that is an impossible order—no one could possibly summarize the views of our 535 elected representatives on Social Security, terrorism insurance, farm programs, and so forth. What I can offer, however, is perspective on how the policy process works and how information about budget impacts, in general, and financial risk, in particular, gets analyzed, communicated, and used. That perspective offers three particular insights.

First, the most useful techniques for measuring federal financial risk will

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This chapter is based on a presentation at the February 6, 2007 conference; at the time, the author served as Deputy Director of the Congressional Budget Office (CBO). The views expressed here are his own and should not be attributed to the CBO.

be those that fit well within the realities of the budget process. Transparency and ease of use, not just technical accuracy, are crucial considerations.

Legislators often design or change programs under tight budgets and tight deadlines. Tight budgets mean that policy development is often an iterative process, with legislators making repeated changes to ensure that a proposal neither goes above budgeted amounts (which could kill it) nor leaves money on the table. Tight deadlines place a premium on the scoring agencies providing scores quickly at each iteration. In that environment, simple, quick, and robust models often have more practical use than complex models (which may take hours to run) or fragile models (which may analyze a particular program structure extremely well but be difficult to adjust when legislators tweak the program's design).

Similar considerations apply at the agency level. The agencies of the executive branch take the lead in implementing federal financial policies and in reporting their costs in the budget. Agencies do not always have access to the same level of financial and economic sophistication that exist at, say, the Congressional Budget Office (CBO). For that reason, the potential benefits of sophisticated approaches to financial measurement and management must sometimes be balanced against the need for implementable approaches.

A similar balance must also be struck between technical sophistication and transparency. Understandably, legislators and their staffs are often hesitant to rely on the results of purely "black-box" models. Policymakers value being able to understand the rationale behind those models and their implications for budget scores. Transparent, explainable modeling approaches are thus particularly useful, so policymakers can understand how legislative changes translate into scoring changes.

Second, measures of financial risk can be useful, even if they are not incorporated in official budget measures. Official budget measures carry great weight because of their role in the legislative process, but they are not the only source of budget information. The CBO, for example, often provides supplementary information in response to questions from interested legislators. Such information usually takes the form of additional detail about the assumptions underlying a particular budget score. In cases where financial risk is an issue, however, the additional information may also take the form of alternative measures of the budget impact of particular policy changes.

During the 2005 debate over pension legislation, for example, the CBO prepared official budget estimates that reflected the somewhat arcane cash budgeting used for the Pension Benefit Guarantee Corporation (PBGC).¹ However, that budgeting does not fully capture the financial impacts of the

1. See, for example, Congressional Budget Office, Cost Estimate, *H. R. 2830, Pension Protection Act of 2005*, December 2, 2005. Available at: <http://www.cbo.gov/ftpdocs/69xx/doc6935/hr2830.pdf>.

PBGC on the federal budget. In particular, it excludes the present value of some benefit payments that fall outside the budget window, ignores the costs of financial risk, and omits some impacts that are treated as nonbudgetary. To address these omissions, the CBO had earlier been asked to develop techniques for analyzing the full financial impact of the PBGC.² In response to Congressional queries, the CBO was able to use those techniques to provide supplementary information about how proposed legislation would change those alternative financial measures.³

The financial statements of the United States are another source of financial information about the Federal Government.⁴ Those statements, which have received increasing attention in recent years, present the government's financial position using the principles of accrual accounting; the budget, in contrast, relies almost exclusively on cash accounting. The key difference between the two approaches is timing. Cash accounting records budget impacts when cash comes into or out of the Federal Treasury. Accrual accounting, on the other hand, records transactions when an economic event occurs (e.g., when a commitment to spend money in the future is made), even if the resulting cash flows happen in a different year. The difference between these accounting approaches can be significant, particularly for certain activities—for example, pensions for federal employees, claims against government insurance, and large capital investments—in which cash flows may be separated by many years from the moment at which key economic events occur.⁵ In recent years, the financial statements have suggested that the fiscal situation of the Federal Government has been weaker than portrayed by standard budget measures, primarily because the government has been accruing future pension obligations to employees and veterans that are not reflected in the current cash budget.

Third, it is useful to distinguish between different elements of measuring and managing financial risk: uncertainty about outcomes, the spread of budget impacts over multiple years, the time value of money, and the

2. Congressional Budget Office, *The Risk Exposure of the Pension Benefit Guaranty Corporation*, September 2005. Available at: <http://www.cbo.gov/ftpdocs/66xx/doc6646/09-15-PBGC.pdf>.

3. See, for example, Congressional Budget Office, letter to the Honorable Carolyn McCarthy on the net economic costs of the Pension Benefit Guarantee Corporation, December 29, 2005. Available at: <http://www.cbo.gov/ftpdocs/70xx/doc7002/12-29-PBGC.pdf>.

4. The most recent statements are by the Department of the Treasury Financial Management Service, 2007 *Financial Report of the United States Government*. Available at: <http://fms.treas.gov/fr/07frusg/07frusg.pdf>.

5. For a detailed comparison of the two approaches to federal accounting, see Congressional Budget Office, *Comparing Budget and Accounting Measures of the Federal Government's Fiscal Condition*, December 2006. Available at: <http://www.cbo.gov/ftpdocs/77xx/doc7701/12-07-FiscalMeasures.pdf>. For a brief overview of how the two measures complement each other, see Donald B. Marron, *The ABCs of Long-Term Budget Challenges*, opening remarks at the Congressional Budget Office Director's conference on Budgeting and Accounting for Long-Term Obligations, December 8, 2006. Available at: <http://www.cbo.gov/ftpdocs/77xx/doc7703/12-08-OpeningRemarks.pdf>.

cost of risk bearing. Full-blown measurement of financial risk requires appropriate treatment of all four of these elements. However, each of those elements poses challenges within traditional budgeting techniques. Improvements at each level may enhance the budget process, even if all four are not fully addressed.

The first step in addressing risk, of course, is recognizing that a range of future outcomes is possible. Program outlays may depend on the outcome of future events such as the magnitude of disasters, the frequency of loan defaults, or the level of commodity prices. Over time, the scoring agencies have made substantial progress in ensuring that such uncertainty is reflected in baseline projections and budget scores of policy changes. In projecting potential outlays under farm support programs, for example, the agencies do not rely on a single projection of future crop prices. Instead, they use a probabilistic approach that reflects the potential distribution of future crop prices and the resulting distribution of farm support payments. That distribution can then be used to calculate the expected value of future payments.⁶

The second step in addressing risk is accounting for the fact that future budget impacts may be spread over multiple years. The use of ten-year budget windows in the Congressional process means that the budget impacts of some programs are captured fully in the budget process. However, many programs have impacts that go beyond ten years. That is particularly common for financial programs. A loan guarantee, for example, would typically be in place for the full life of the insured loan, which may extend for twenty or thirty years. This timing mismatch used to put direct loans at a substantial disadvantage relative to loan guarantees. A ten-year budget window would typically capture all of the outlays of providing a direct loan but only some of the repayments; repayments outside the window would not be scored. Conversely, all the inflows (from fees) from a loan guarantee would appear inside the window, while many outflows (due to future defaults) would be ignored, because they occur outside the budget window. This imbalance between the length of obligations and the length of the budget windows was one of the driving forces behind the Federal Credit Reform Act of 1990 (FCRA). Under the FCRA, many financial obligations are analyzed based on their entire lifetime of expected cash flows. This framework allows a more balanced comparison of different financial structures.⁷

The third step in reflecting financial risk is accounting for the time value

6. Congressional Budget Office, *Estimating the Costs of One-Sided Bets: How CBO Analyzes Proposals with Asymmetric Uncertainties*, October 1999. Available at: <http://www.cbo.gov/ftpdocs/15xx/doc1589/onesided.pdf>.

7. For a discussion of the FCRA and its impacts, see Congressional Budget Office, *Estimating the Value of Subsidies for Federal Loans and Loan Guarantees*, August 2004. Available at: <http://www.cbo.gov/ftpdocs/57xx/doc5751/08-19-CreditSubsidies.pdf>.

of money for programs that stretch across multiple years. This is an area of weakness for standard budgeting techniques. In most cases, programs are evaluated based on their direct budget impacts over periods such as five or ten years. By convention, those impacts are simply summed across years without any accounting of the time value of money. As a result, a proposal that would move \$1 billion in spending from ten years in the future to today would be scored as having no direct budget impact over a ten-year window, despite the real increase in overall spending.

That problem could be addressed in two ways. One approach would be to express budget impacts in terms of net present value. Scoring agencies would project the year-by-year budget impacts of policy proposals, just as they do today, but instead of simply adding up the nominal budget impacts across all the years in the scoring window, the agencies would use a discount rate (or a year-by-year series of discount rates) to determine the net present value of the budget impacts. Treasury interest rates would be the natural discount rates to use in such calculations.

That approach would incorporate the time value of money in a manner that is familiar to economists and financial analysts but would represent a significant break from a long-standing tradition of focusing solely on year-by-year streams of nominal budget impacts. If budget policymakers wish to maintain that tradition, they could turn to a second approach that imputes the future interest costs (or savings) that would result from particular budget policies. In that alternative, the scoring agencies would project the direct year-by-year budget impacts of policy proposals, just as they do today, and then, in addition, would add a projection of the future change in government interest payments that would result from the proposals. A proposal to increase spending, for example, would be scored not only as increasing federal outlays directly, but also as increasing the federal debt, resulting in higher interest payments through the end of the budget window; an increase in taxes would similarly be credited with reducing interest payments through the end of the budget window.⁸

It is easy to show that this approach, imputing interest costs, results in budget scores that are equal to the *future value* of program spending as measured in the last year of the budget window. In other words, this approach is functionally equivalent to the present value approach, except that budget

8. This approach is already used when scoring agencies analyze the budget as a whole. The innovation here is suggesting that this approach could also be used for analyzing individual budget proposals. Doing so would yield budget projections that are perfectly consistent with analyses of the overall budget. When adding together the individual budget proposals, the imputed interest costs resulting from proposals to increase spending or reduce revenues would get netted against any interest savings that would result from proposals to reduce spending or increase revenues. Thus, the net change in interest payments imputed to the individual budget proposals would add up to match the change in interest payments estimated for the budget as a whole.

scores are expressed in terms of the budget impact in a future year (the end of the budget window) rather than the current year.⁹

These approaches would add some additional complexity to the budget process. Policymakers would have to become comfortable with the use of discounting or would have to accept the idea of adding interest costs on top of direct budget impacts. In either case, the benefit would be that budgeting would reflect the time value of money. At the moment, however, budget calculations reflect the time value of money only for a limited set of government programs—most notably, those that are subject to the FCRA. Under the FCRA, the future cash flows of a loan, loan guarantee, and so on are measured as a net present value, calculated using Treasury interest rates of appropriate maturity.

The final stage of incorporating financial risk—which has been addressed in very few instances—is to reflect the cost of risk bearing. As noted in other chapters, this cost is usually excluded from federal budgeting. The sole exceptions occur in instances where doing otherwise would obviously lead to perverse outcomes. Thus, the federal budget records neither gains nor losses when the government changes the way it finances itself (e.g., by changing the maturity of the debt). Nor does it record gains or losses when the Railroad Retirement Fund takes inflows and invests them in assets (e.g., corporate bonds) that have higher expected returns than Treasuries. When Congress created the Troubled Asset Relief Program (TARP), finally, it required that risk be considered when valuing the securities that the government would purchase under the program.

The logic underlying those budget accounting decisions is very simple: the government should not record a gain or loss when it trades one asset for another of equal value. If the government issues \$1 billion in Treasuries and uses the proceeds to purchase \$1 billion in corporate bonds, for example, the immediate effect on the budget should be zero. The net worth of the government is unchanged, since the value of the new asset exactly offsets the value of the new liability. (The corporate bonds may generate profits over time, of course; the point is that they do not create those gains immediately.)

This example highlights a problem with the way that the FCRA measures the cost of federal financial programs. If the FCRA were applied to the purchase of corporate bonds, it would show an immediate gain to the federal budget. Why? Because the expected return on corporate bonds is higher than the interest rate on Treasuries of comparable maturity. As a

9. To illustrate, consider a simple example in which budgeting is done over a three-year window, a proposal would increase spending by \$100 in the first year of the budget window, and the Treasury interest rate is 10 percent. In that case, the budget score would be \$100 in the first year (the spending), \$10 in the second year (interest on the \$100 the government had to borrow in the prior year to pay for the new spending), and \$11 in the third year (interest on the original spending and on the prior year's interest payments; in other words, the interest is compounding). Adding those together, the total budget score over the window would be \$121, which is equal to the future value of the original spending ($\$100 \times 1.1 \times 1.1$) in the third year.

result, the net present value of the expected returns on the corporate bond (calculated using Treasury rates) would be greater than the initial cost of purchasing the bonds.

That perverse result occurs because of a mismatch between the discount rate used in the FCRA and the discount rate that financial markets actually use to value corporate bonds. The FCRA would use Treasury rates, regardless of the riskiness of the bond, but financial markets use discount rates that reflect the bond's financial risk.

This example is important, not because the FCRA is used to value federal investments in corporate bonds (it is not), but because it is used to value other risky assets such as loans and loan guarantees. Like corporate bonds, loans and loan guarantees are risky; as a result, financial markets value their expected cash flows using discount rates that incorporate a risk premium. Discounting their expected cash flows using risk-free Treasury interest rates is thus likely to be misleading. The FCRA likely overstates the value of the loans and loan guarantees that the Federal Government offers and thus understates the budgetary cost of providing that financing.¹⁰ That understatement could be corrected, however, if the FCRA instead used risk-adjusted discount rates—that is, rates that reflect the cost of bearing financial risk.¹¹

Conclusion

There is clearly room for improvement in the measurement and management of the federal budget, generally, and in the management and reporting of financial risk, in particular. Improvements have been made over the years both through statute (e.g., the FCRA) and innovations by the scoring agencies (e.g., use of expected values), but more remains to be done. Some improvements may require the use of modern financial techniques—for example, greater use of risk-adjusted discount rates—but significant gains may also come from simpler changes (e.g., greater recognition of the time value of money).

10. Federal loans and loan guarantees usually have a positive “beta” and therefore should be valued using a positive risk premium. Of course, there may be instances in which loans or loan guarantees have a negative “beta”; in those cases, the FCRA approach would understate the value of the loan or loan guarantee and thus overstate the cost to the Federal Government.

11. One prominent use of risk adjustment has been in the CBO's analysis of proposals to add individual accounts to Social Security. Focusing solely on the expected returns of such accounts would potentially be misleading, since it would not reflect the costs of risk bearing. For that reason, the CBO has often used risk-adjusted returns, equal to Treasury interest rates, when modeling such proposals. See, for example, Congressional Budget Office, letter to the Honorable Max Baucus, analysis of H.R. 3304, *Growing Real Ownership for Workers Act of 2005*, September 13, 2005. Available at: <http://www.cbo.gov/ftpdocs/66xx/doc6645/09-13-BaucusLetter.pdf>.