Comment on Debbie Lucas and Marvin Phaup: The Cost of Risk to the Government and Its Implications for Federal Budgeting

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Debbie Lucas and Marvin Phaup present an excellent overview of how economists and policy makers should think about risk taking in the public sector. The first part reviews the economic theory of risk sharing and of how risks are priced. The second part applies the principles of state-contingent claims pricing to practical questions of budget accounting. I agree wholeheartedly with the two main points: Taking a systematic risk has a cost to the government; and the market value of such risks should be reflected in the budget.

The theoretical part reviews state-contingent claims pricing—the standard technical framework for pricing risks in Finance—in a way that should be readable in policy circles. The key insights are that taking systematic risks is costly and that options are valuable. Lucas and Phaup also discuss how finance theory can be adapted to deal with realistically incomplete markets. The main lessons are that public policy can improve risk sharing and that that well-designed risk-sharing policies can improve social welfare.

The applied part applies state-contingent claims pricing to questions of budget accounting. The key points are that assets and liabilities should be valued at market; that cost-benefit calculations should be based on economic opportunity cost; that costs should be recognized when they are accrued and not when the cash outlays occur; and that costs and benefits to the government should be distinguished from broader social cost and benefits. In a series of insightful applications, Lucas and Phaup demonstrate how these principles apply to the accounting for government activities that involve economic uncertainty, notably to loans and loan guarantees.

Because the paper well summarizes the state of the art, I have no substantive disagreements. Hence my comments dwell mostly on issues where the state of the art is unsatisfactory and on issues that may complement Lucas and Phaup's exposition.

Incomplete Markets: A challenge for economic theory

In the theory section, the least satisfactory topic is the pricing of risks when markets are incomplete. When market prices are readily available, the economics profession's message for policy makers is clear and simple: use the market prices, and follow the market in distinguishing systematic from idiosyncratic (diversifiable) risks. When markets are incomplete, however, economists' theoretical answers, as reviewed in the paper, seem to be more a list of special cases, each requiring special considerations, than a set of general principles.

To evaluate a policy intervention in an incomplete markets environment, two questions are helpful to identify the economic issue at hand and to organize the list of special cases:

1. What is the source of the market incompleteness?
2. Does the government have a comparative advantage over the private sector in addressing this source of market incompleteness?

At a microeconomic level, the sources of the market incompleteness are mostly problems of asymmetric information – moral hazard and adverse selection. At the macroeconomic level, the source of market incompleteness is often the inability of future generations to participate in financial and insurance markets.

The question about comparative advantage helps clarify what is assumed about the government's ability to address the problem—an important issue that is often not addressed explicitly in policy debates. If government intervention faces the same information problems as the private sector, there is a strong case for using market prices even when markets are incomplete. This may mean placing a zero value on a "security" with no private market.

A case for "adjustments" to market prices is much stronger if the government has an identifiable comparative advantage. The government has, for example, enforcement powers through tax authorities, threats of criminal punishment, and a multitude of investigative and regulatory agencies. In some instances, this may give the government a comparative advantage in collecting information and in suppressing moral hazard. In such cases, the government's production cost—the cost of producing superior information—is arguably the relevant marginal cost, contrary to Lucas and Phaup's principle of using private cost as benchmark.

Macroeconomic Risks: Key issues that deserves more attention

In the applied section, my main concern is that Lucas and Phaup devote most attention to microeconomic issues—the accounting for loans and credit guarantees—without sufficiently alerting readers to huge macroeconomic risks for which the accounting is arguably much worse.

The "elephants in the room" here are the public debt, the government's commitments to Social Security and Medicare, and public employee pensions.

Public debt is commonly issued in form of safe (default-free) debt securities, which are safe for bondholders but hugely risky for the taxpayers who are liable for the debt service. The welfare implications are discussed in Bohn (2001, 2005). Briefly, my analysis suggests that unless old people are intrinsically much more risk averse than younger cohorts, efficient intergenerational risk sharing calls for contingent debt—for obligations offering returns that are sensitive to macroeconomic and demographic variables.

Lucas and Phaup argue in this context that "considerations of generational equity" may justify the use of below-market risk-free interest rates. This argument blurs the distinction between budget accounting and social optimality—a distinction the authors correctly emphasize elsewhere—and it needlessly undermines the principle of market pricing. Generational considerations do not invalidate standard principles: Budget accounting should use market prices for both safe and risky claims; and welfare involves more than accounting. Regarding the latter, a straightforward application of Bohn (2001, 2005) implies that certain aggregate risks have social cost below their market prices—namely, risks to which future generations are less exposed than current market participants. Thus, if below-market risk-free rates were accepted for "equity" reasons, the same argument would justify below-market risk premiums—but neither makes sense.

Turning to Social Security and Medicare, the accounting is much disputed. With cash flows approaching a trillion dollars and disputed obligations in the tens of trillions, these programs are so huge that the choice between trust fund accounting, unified budget accounting, or accrual accounting swamps all other government accounting questions. Keeping two or more inconsistent sets of books is considered fraudulent in most areas of accounting. Yet the U.S. government is telling social security participants that their benefits are held in trust—appealing to trust fund accounting—while using unified budget accounting for most fiscal decision-making; and in the unified budget, social security revenues are used to cover other expenditures.

Either accounting system would be internally consistent and therefore more acceptable than the current mishmash. But both systems are inferior to accrual accounting because they ignore other government assets and liabilities. The U.S. government is actually publishing accrual-based financial statements, namely in the annual "Financial Report to the U.S. Government," a publication that has received remarkably little attention in the policy debate. U.S. government financial statements are also in Bohn (1992)—consistently for 1947-1989, a period long enough to identify trends and to make intertemporal comparisons.

Pension promises to the government's own civilian employees and to military veterans should be less controversial than Social Security because the government is acting as employer in this context. Hence the same accounting principles as for private pension plans should apply. (One might quibble that military service is special, but unlike social security recipients, veterans have served the government.) Available estimates suggest that accrued employee and veterans pensions amount to 4-5 trillion dollars, or about as much as the public debt. Pension liabilities are ignored, however, in almost all accounts of government indebtedness. The notable exception is—again—the Financial Report to the U.S. Government.

There are two broad arguments for accrual accounting in the public sector. First, public accounting is centrally about accountability to the public. Economists and the accounting profession should therefore insist that the government follows generally accepted accounting principles (GAAP) to the maximum extent possible. A host of mundane government accounting questions can be resolved straightforwardly by reference to how private companies account for similar activities. Accountability derives from the fact that the government cannot change the rules without changing the rules for everyone, which would be visible, costly, and time-consuming. Secondly, accrual-based debt and deficit measures are more insightful for economic analysis than cash numbers. As explained in Bohn (1992), this applies especially in economies where citizens have property rights (so accruals matter) and governments must use distortionary taxes to extract resources from their residents.

The only area that may require an extension of private sector accounting principles is the accounting for contributory pay-as-you-go transfer systems. Because promised transfers are backed by future taxes—an exercise of sovereign power—they do not have a private sector counterpart to which one could appeal for GAAP. Yet the legalistic position that social security and Medicare are not liabilities because Congress could abolish them instantly, defies economic reality. In this area, the ideal accounting standard is debatable (see Bohn 2007 for my preferred rules), but getting away from the current multiplicity of accounting systems is probably more important than the details.

A relevant distinction here is between official government reporting and the analysis by outside economists. This is analogous to the relationship between corporate accounting and the financial analysts community. Whereas outside analysts may apply discretion and judgment for the interpretation, official financial reporting requires strict rules and consistent principles to ensure accountability, in the government no less than in the corporate sector.

Three Examples

Three examples should help clarify the general accounting issues.

First, consider government holdings of marketable securities; say corporate stocks in the railroad retirement fund. Marketable securities are straightforward from a microeconomic perspective because government production is not an issue and market prices are observed. There is no asymmetric information. The main questions are normative and macroeconomic: What is the optimal policy? Should the government take systematic risk in security markets? These are standard questions of optimal asset-liability management. One challenge is perhaps the intergenerational aspect: If government policy improves intergenerational risk sharing, a clever politician may argue that the risk-reduction should be recognized ex ante as a cost reduction. This argument would, however, confuse accounting and welfare. Even if a government's portfolio shift improves welfare, there is no reason not to value the portfolio at market prices.

Second, consider student loans. Student loans are a prime example of a government activity that poses microeconomic problems of adverse selection and moral hazard. Market prices reflect private lenders' cost of collecting debts. The key economic question here is if the government has a comparative advantage. Because tax authorities can withhold future tax refunds and threaten audits, one may suspect that the IRS is more effective in collecting debts than private debt collectors. If so, the accounting question reduces to when and how the government's lower cost of producing information is recognized; and there is a good case for using the government's "production cost" (probabilities of suffering defaults) to value student loans. Otherwise efficient government lending would be discouraged. At market discount rates, negative subsidy rates are not implausible. They would simply reflect the government comparative advantage—monopoly power over enforcement tools.

Third, consider flood insurance. Flood insurance faces adverse selection problems like student loans, but without government production. The main issues are therefore how to compute the subsidy and how to hold policy makers accountable in a timely manner when new subsidies are granted. In this example, Lucas and Phaup's arguments for accrual accounting and for using market prices are impeccable and worth endorsing strongly. The reason I mention flood insurance is because this type of example is probably much more common than the securities and student loan examples (which I selected to raise objections). That is, for most applications Lucas and Phaup are right on target.

What is a risk premium?

The term "risk premium" is widely used but should be clarified to avoid confusion between true risk premiums and mere spreads between safe and risky interest rates. Consider a promised future payment X, say, on a student loan. Let the actual payment x be distributed on [0,X] with expected value E[x]. The percentage difference between X and E[x] is known as the expected default rate, E[x]=(1-default rate)*X. If r is the safe interest rate, the market value V of the promised payment can be expressed in terms of a "risk spread" over the safe interest rate as

$$V = X/(1+r+\text{risk spread})$$

Alternatively, the same value V can be written in terms of a risk premium as

$$V = E[x]/(1+r+\text{risk premium}).$$

For diversifiable risks, asset-pricing theory predicts a zero risk premium. Then V equals the expected payment discounted at the safe rate. The risk spread is nonetheless positive whenever the expected default rate is non-zero.

For systematic risks, asset pricing theory specifies that market values are obtained as expectation over state-contingent payments weighted by an appropriate pricing kernel: V=E[u*x], where u denotes the pricing kernel and E[u]=1/(1+r) is the safe discount factor. The value V can be expressed equivalently in terms of the covariance of payoffs and pricing kernel, V = E[x]/(1+r)+cov(u,x). Compared to the formula V = E[x]/(1+r+risk premium), one finds that a positive or negative covariance implies a positive or negative risk premium. Again, the risk premium differs from the risk spread whenever the default rate is non-zero.

For Lucas and Phaup's examples, which are mostly in the area of government credit, I suspect that the systematic risks are quantitatively small compared to the uncertainty surrounding the respective default probabilities. In the Chrysler bailout case, for example, the main issue is not how correlated Chrysler's value is with aggregate U.S. consumption or other risk factors, but how likely it was ex ante that the various contingent claims would pay off. The central problem for practical budgeting is therefore to estimate default risks reliably and in a manipulation-proof fashion. True risk premium would be more important for valuing macroeconomic risks, e.g., the risks implied by alternative pension or debt-management policies.

Conclusions

My discussant quibbles should not distract from the main message: Lucas and Phaup provide an excellent survey and convincing prescriptions for government budgeting that should be considered authoritative, especially in the areas of government credit and insurance. My main concerns are about the treatment of macroeconomic risks and about the lack of public

accountability due to the U.S. government's parallel use of multiple and mutually inconsistent accounting systems.

References:

Bohn, Henning, 1992, Budget Deficits and Government Accounting, Carnegie-Rochester Conference Series on Public Policy 37, 1-84.

_____, 2001, Intergenerational Risk Sharing and Fiscal Policy, mimeo, UC Santa Barbara.

_____, 2005, Who Bears What Risk? An Intergenerational Perspective, in: David Blitzstein, Olivia S. Mitchell, and Stephen P. Utkus (eds.), Restructuring Retirement Risks, Oxford University Press, 10-36.

_____, 2007, Comments on "Accounting for Social Security, Revised", mimeo, UCSB, available at http://www.fasab.gov/pdffiles/si16_bohn.pdf.