

Appendix: More on Subsidy Estimation for Federal Credit Programs

This appendix explains the differences between fair value and budgetary estimates of credit subsidy costs, and elaborates on why a fair-value approach is the conceptually right choice for measuring credit subsidy costs and ways in which that approach can be implemented. For further discussion see Lucas and Phaup (2010) and Lucas (2012). It also explains some of the reasons for the differences between the subsidy rates used in Gale (2001) and the ones used here.

For credit programs that involve uncertain cash flows extending over many years, equating program cost with net cash flows in a given year is widely understood to be misleading. For that reason, the Federal Credit Reform Act of 1990 (FCRA) mandated a switch to an accrual form of accounting for traditional credit programs. On an accrual basis, the subsidy associated with federally-backed credit represents the *ex-ante* value of the resources committed to borrowers at the time of loan origination in excess of the value of what borrowers are expected to pay for them over the life of the loan.¹ Defining credit subsidies on an *ex ante* or accrual basis makes credit subsidies more comparable with other federal spending than cash basis accounting. For example, a dollar's worth of assistance could be delivered to students in the form of an outright grant in a given year, or as the capitalized cost of offering a subsidized interest rate on a federal student loan made in the same year. (By contrast, most press accounts of federal credit costs focus on the losses absorbed by the government *ex post* rather than at the time that contingent resources were committed.)

Specifically, the subsidy conferred to a borrower who obtains federal credit assistance is the difference between the present value of the government's projected cash outflows and inflows

¹ As is the case for most measures of fiscal policy, in this analysis the focus is on cost not benefits. The two could differ—borrowers could derive more or less utility from the credit extended than its cost to taxpayers.

over the life of the loan. The choice of discount rates significantly affects those present value calculations. For credit programs whose costs are required to be calculated under the rules specified in FCRA, the law prescribes that projected net expected cash flows be discounted at maturity-matched Treasury rates. The mandated use of Treasury rates for discounting causes the subsidy costs reported in the budget to be systematically lower than what a private financial institution need to be paid to extent credit on the same terms. That is because a private institution would also factor in the cost market risk (and any other priced risks such as prepayment risk) in its choice of discount rates. Another practice that contributes to the understatement of reported subsidy costs is that most transactions costs are excluded, although they are reported elsewhere in the budget on a cash basis.

By contrast, a fair-value approach produces estimates of the cost of credit subsidies that either correspond to or approximate market prices. Conceptually, the same projected state-contingent cash flows are used as in FCRA calculations, but the discount rates differ from Treasury rates because they reflect the cost of market risk and other priced risks.

An argument sometimes made against using a fair-value approach for measuring government cost is that market risk does not involve costs for the government because it can borrow at Treasury rates. However, when the government finances a risky loan or loan guarantee by selling a safe Treasury security, it is effectively shifting risk to taxpayers or other federal stakeholders that serve as involuntary equity holders in federal investments: if the borrower defaults, the Treasury security ultimately must be repaid for through higher taxes or lower government spending in the future. This is simply the application of the logic of the Modigliani-

Miller theorem to government investments; absent frictions, the cost of capital for a project or investment depends on the risk of the project's cash flows, not on how it is financed.²

The resulting understatement of official subsidy costs from discounting at Treasury rates is most evident in those programs that report a gain to the government while at the same time delivering credit at rates that are well below those charged for credit of similar risk in competitive markets, such as is the case for student loans and FHA mortgage guarantees. In fact, the net effect of traditional federal credit programs was to reduce the reported budget deficit in 2010 by \$14.1 billion. Taken literally, that would suggest that federal credit programs were a fiscal drag on the economy rather than a stimulus.

In general, there are three basic approaches that can be used to estimate the fair value of federal financial transactions: comparable market prices, risk-adjusted discount rates, and derivative pricing. The choice between them in a given instance is a matter of data availability and the nature of the contract (e.g., some guarantees are most easily valued as options); each should provide the same answer if correctly implemented. Directly comparable products usually do not exist in the private market, either because they would be unprofitable or because aggressive pricing by the government crowds them out, which necessitates model-based approaches rather than direct price comparisons in most instances.

The fair value subsidy rates in Table 1 differ considerably from those reported by Gale (2001) for a number of reasons that are explained here. During the 1980s OMB produced annual estimates of the economic cost of credit programs that were conceptually similar to fair value estimates in its "Special Analysis F" volume of the federal budget. Gale (1991) reports OMB

² For a more complete discussion of federal budgeting practices for credit and other financial instruments, and of the case for fair value accounting for the government, see Lucas and Phaup (2010).

subsidy rates from that time of 2 percent for mortgages, 25 percent for farm credit, 32 percent for student loans, 14 percent for small business, and 19 percent for tax exempt bonds. The high subsidy rates for farm credit reflect the very risky loans that were being made at that time that eventually necessitated a bailout of the Farm Credit System; those programs have since been restructured to be safer. OMB's higher estimated subsidy rate on student loans is consistent with the more heavily subsidized interest rates at that time. The subsidy rates on small business loans were also higher in the past; SBA's expected losses have fallen because of significant program changes since that time. For housing credit, the subsidy estimate reported here for the GSEs is more than twice OMB's estimate of housing credit subsidies, and FHA and VA subsidy rates here are also considerably higher. The elevated 2010 subsidy rates reflect the severe disruptions in housing finance markets at that time. Under more normal market conditions subsidy rates are likely to be closer to OMB's earlier estimate.

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