

## **The Financial Viability of the Government-Guaranteed Student Loan Program**

### **Executive Summary**

The current student loan formula, which sets the ceiling rate for the government-guaranteed student loan program and also for the direct loan program, is based on the bond equivalent yield for 3-month T-bills plus a spread of 2.5 percentage points for loans to students who are in school, and a spread of 3.1 percentage points for loans that are being repaid, with the rate reset annually for borrowers. The rate that the student pays on loans is capped at 8.25 percent and the Government pays any excess above this rate in the form of a Special Allowance Payment (SAP); SAPs also reimburse lenders on a quarterly basis for increases in the index interest rate within the year.

The Student Loan Reform Act of 1993 (SLRA) scheduled a change in the formula determining the rate that borrowers would pay for new student loans finalized beginning July 1, 1998. The SLRA requires that lenders' gross yield on new loans be based on "the bond equivalent rate of the securities with a comparable maturity as established by the Secretary of Education", in consultation with the Secretary of the Treasury, plus 1.0 percentage point, with the rate reset every 12 months. For the purposes of the government credit budget, the comparable maturity would be a 10-20 year average annual rate (simple interest). However, most observers have assumed that the comparable maturity that will be chosen will be the 10-year Treasury constant maturity yield.

Lenders under the guarantee program (Federal Family Education Loans, or FFEL) are concerned that loans under the new formula will not be profitable. Part of the reason is the cut in the markup from 2.50/3.10 percentage points over the benchmark rate to 1.0 percentage point; in today's interest rate environment, this results in a large implicit reduction in the interest rate on student loans. In addition, structurally, the move from a system which closely matches interest flows to financing costs (both short-term) to one which imposes a timing mismatch (with interest flows tied to a long term rate) exposes lenders to a new risk, with resultant costs and uncertainties.

This paper provides estimates of lenders' costs (including servicing, default and pre-payment costs as well as cost of funds) and of the return from student loans, under the current student loan formula and under the formula scheduled to become effective on July 1, 1998. We also provide an estimated range for the "target" rate of return on assets to which this return will be compared by banks deciding whether to participate in this program. Although we recognize the diversity of participants in student loan origination, our analysis is focused on large, for-profit bank originators. These institutions span the markets in which other lenders operate, and reflect the continuing consolidation of loan volume into larger lenders. Our estimates of costs and target rates of return reflect this choice of focus. We have based our analysis on a review of the existing literature, financial data from loan originators, and discussions with many experts in this area.

Our results show that under the current formula, lenders are earning a pre-tax rate of return on student loan assets that exceeds a reasonable range of assumed target rates. Switching to the scheduled student loan formula would reduce lenders' net return to a level below this target

range. Such a reduction need not imply an immediate crisis in the market for guaranteed student loans, but it could be problematic for lenders in the longer term.

We also consider the implications of moving back to short-term T-bill interest rates as a basis for determining the student loan rate while holding borrowers harmless -- i.e., pegging the student loan rate at the same level as it would be under the new formula. We find that pursuing this approach for next year would result in a return to banks that is slightly below the range of estimated target rates of return on assets; but, averaging over the next five years, such an approach can meet the lower end of this target range.

Our analysis may be summarized in the following points. First, the new formula will provide a rate of return on student loans that is below the target rate of return of for-profit bank lenders in the government-guaranteed student loan program, under current financial market circumstances. Second, there are inefficiencies associated with the mismatch of (long-term) student loan interest rates and (short-term) bank financing under the proposed formula, and joint benefits could be realized to students and lenders from moving back to a short-term index. Third, an alternative rate setting formula that has been suggested by some, linked to a short-term rate, would maintain bank participation in the government-guaranteed student loan program at little or no net cost to students, relative to the formula now scheduled to become effective in July. Fourth, preserving the existing differential between the mark-up for loans while the student is in school and loans during the in-repayment period would better track gross returns to costs.

Our confidence in the qualitative conclusions of the following analysis is high. Nevertheless, the uncertainties involved in this exercise point out the difficulties with regulatory determination of student loan interest rates. An alternative approach would be to use a more market-based mechanism for determining these rates. For the student loan program, this could mean using some form of auction system to determine who would receive the rights to originate student loans. The successful experience of the Health Education Assistance Loan (HEAL) program using an auction system for allocating the insurance authority for HEAL loans suggests that some form of auction could be considered for the Federal Family Education Loan program.

# THE FINANCIAL VIABILITY OF THE GOVERNMENT-GUARANTEED STUDENT LOAN PROGRAM

## Introduction

The current formula for calculating student loan interest rates -- the ceiling rate for government guaranteed loans and the rate on the direct loan program -- applies to new loans made between July 1, 1994 and June 30, 1998. Under this formula, lenders receive the bond-equivalent yield of 3-month T-bills<sup>1</sup> plus 2.5 percentage points for in-school loans and loans in deferment, or the 3-month T-bill rate plus 3.1 percentage points on loans in repayment. Loans are reset annually for borrowers, with an 8.25 percent cap on the borrower's rate. A lender of guaranteed loans receives a Special Allowance Payment (SAP) in any quarter in which the average rate for 3-month T-bills auctioned during the quarter plus 2.5/3.1 percentage points is greater than the borrower's interest rate (either the formula interest rate established at the last annual re-set or the cap of 8.25 percent). The SAP is the difference between the quarterly re-set rate from the formula and the rate the student pays, divided by four (for a quarterly payment).

---

<sup>1</sup> As used hereafter, the terms 3-month T-bills or T-bills, and 10-year Treasury notes (CMTs) refer to the bond equivalent yield for such securities or securities of that constant maturity.

The Student Loan Reform Act of 1993 (SLRA) scheduled a change in the formula determining the rate that borrowers would pay for new student loans finalized beginning July 1, 1998. The SLRA requires that lenders' gross yield be based on "the bond equivalent rate of the securities with a comparable maturity as established by the Secretary of Education", in consultation with the Secretary of the Treasury, plus 1.0 percentage point, with the rate reset every 12 months.<sup>2</sup> For the purposes of the Federal Budget and credit budget scoring, the comparable maturity would be a 10-20 year average annual rate (simple interest).<sup>3</sup> However, most observers have assumed that the comparable maturity that will be chosen will be the 10-year Treasury constant maturity yield. This yield is a commonly used benchmark in financial markets, is within the appropriate maturity range, is regularly published in official sources, and is forecast in private as well as government budget analyses. Based on the assumption for either of these rates, the formula change for next year would reduce the loan rate to borrowers, relative to the rate they would pay under the current formula.<sup>4</sup> As noted later in this paper, in all likelihood the formula change also would reduce the net return to lenders.

The cost to a borrower for a student loan includes more than the interest on a student loan. The Federal Family Education Loan (FFEL) program authorizes lenders to collect from borrowers an origination fee (currently, 3 percent of the loan principal borrowed), which is paid to the Federal Government, and an insurance premium (no more than 1 percent), which is paid to guaranty agencies. These one time fees, which are intended to offset the Federal subsidy costs and to defray default costs, are disbursed to the Government and guaranty agencies at the same time as the loan is disbursed to the student. The Administration's current budget proposal would cut the total fees charged to students to three percent, and phase out origination fees altogether for needy students.

In principle, the legislated interest rate is a ceiling, below which lenders can compete to offer the most attractive interest rates to students. In practice, direct price competition of this

---

<sup>2</sup> The change in the formula for 1998 and subsequent years evolved late as the SLRA of 1993 went through the Congress, with the intention of reducing the loan interest rate charged students and of tying the interest rate on student loans to the discount rate that the Treasury Department charges the Department of Education for budget scoring purposes. If the 10-year CMT is used as the long-term index, the new formula would have been expected, given the economic assumptions of the FY94 Budget, to have saved students about 60 basis points of interest in the 1998/9 school year. The second motivation for this change has become irrelevant, as budget scoring for credit programs is soon to be changed to the "basket of zeros" approach.

<sup>3</sup>This simple interest rate is the average semi-annual coupon payment on all bonds of 10-20 years of maturity, annualized, divided by the average market price of these securities.

<sup>4</sup> A lower loan rate for students in 1998-99 depends on market interest rates being at a level where the 8.25 percent cap is not in effect. If the cap were in effect, the student loan rate would not be affected by the new formula.

form has been very limited. (One form of this limited competition is some absorption by the lender of some of the borrowers' fees just mentioned. This is done to a limited extent on a school by school basis; no estimates are available of the prevalence, or cost to lenders, but it seems likely to be fairly small.) Many schools have "preferred provider" lists of lenders to whom they direct students and these lists seem to play the dominant role in students' choices<sup>5</sup>. Competition to be on such a list takes place largely in terms of services -- mostly to the schools themselves -- rather than taking the form of direct price competition, and there is considerable variation among schools in their procedures. At some schools, for instance, preferred providers may have other connections to a school and its community, and offer nothing more than customer-relations at the bank; at other schools, however, competition may be keen among providers to offer quick payments to schools, ease in billing, and assured follow-up on delinquencies. Lenders may send representatives to campuses at enrollment time to help with loan processing, may coach students on loan consolidation options, and may provide the school with substantial computer support for financial processing. There appear to be substantial economies of scale in basic loan servicing and it may, therefore, be worthwhile for large servicers to expend additional resources on essentially promotional activities. (As will be noted below, our cost estimates have not attempted to capture such promotional costs.)

Overall, it appears that for a top tier of schools that are attractive to major national lenders, the loan market is "imperfectly competitive" with loan providers likely able to establish reputations and maintain market share for a time at prices above a purely competitive level. For this tier, however, it is likely that the drive to maintain market share and realize economies of scale at least assures effective competition in service provision. For schools relying on local providers, even service competition may not be very effective, and local loan providers may well be able to obtain extra returns from sale of loans in the secondary market as they reach the "in repayment" stage where scale economies for servicing become especially important. For schools whose programs lack the characteristics that appeal to private lenders, the role of not-for-profit public agencies in providing a secondary market is especially important.

Service competition among lenders has become more keen since the inception of the full-scale federal direct loan program, which does offer some directly financial incentives, particularly income-contingent repayment options. Nevertheless, although lenders are not required to charge

---

<sup>5</sup> A financial aid officer of a large mid-western school told us that 85 percent of his students borrow from firms on his preferred provider list.

borrowers the full rate of interest authorized by the student loan formula, our understanding is that direct competition on a loan interest rate basis is rare. Direct interest rate competition seems to be viewed with unease, perhaps in part because there are strict rules against discrimination among students within a given school. More generally, price competition seems to be viewed as socially divisive -- even when, in the secondary market, loans from schools with better repayment records will sell for a higher price than loans from other schools. An important but relatively small exception is the Sallie Mae formula -- the "Great Rewards Program" -- for reducing the loan rate in repayment, based on a borrower's good payment performance over a period of time. We understand that other lenders, particularly some of the major institutions in the national market, have followed Sallie Mae's lead in this respect with similar types of incentives. (The effect of such programs on our profit calculations will be noted below.)

The new loan formula introduces another dimension of cost for lenders, because of the peculiar structure of the proposed loan contract. Under this contract, lenders would receive a return tied to a long-term yield, repriced annually (or effectively quarterly to the lender because of SAP payments), while they would presumably be funding themselves at a short-term rate, the most common among banks being LIBOR. Although the risks resulting from the mismatch between the short-term sources of borrowed funds (liabilities) for lenders and the long-term yields of student loans (assets) are mitigated by the repricing of the rate on the long-maturity asset, the remaining basis risk is notably larger than under the current loan formula with the asset return linked to a short-term rate. Starting in mid-1998, with the new formula for student loans, lenders are consequently very likely to protect themselves against the new risk by hedging the differential interest rate streams through a swap agreement.

The cost of this swap agreement will detract from the overall profitability of the loan contract from the banks' perspective. In addition, because this particular swap contract is somewhat unusual, substantially boosting the demand for such swaps could raise the cost of obtaining such swaps. More structurally, the move from a system which closely matches interest flows to financing costs (both short-term) to one which imposes a timing mismatch (with interest flows tied to a long term rate) exposes lenders to a new long term risk over the future shape of the yield curve.

Evaluating the future prospects for the net return to lenders or for those purchasing student loan contracts in the secondary market requires estimating the spread between lenders' revenues and lenders' costs. The next section describes our methodology for measuring costs.

### **Assumptions for Lenders' Costs**

The following discussion attempts to describe the costs of a for-profit lender big enough to have achieved scale economies in its operations while both originating loans and holding loans in repayment in its portfolio. We realize that analyzing the situation for any one type of lender may not describe accurately the cost structure of all lenders or loans in this diverse market. Indeed, only 41 percent of outstanding student loans are held by banks, while not-for-profit

institutions (essentially state government agencies) hold 26 percent and Sallie Mae, the currently government sponsored enterprise, holds the remaining 31 percent. Student loan originations are very much more concentrated among banks because the origination business is legally limited, with a few exceptions, to banks. Bank originators, however, range considerably in size and funding sources and may experience cost differentials depending on the parts of the student population that they most readily serve.

Our choice of focus was dictated by three considerations. The first, and most important, is trends in financial markets towards consolidation, with the implicit realization of scale economies and specializations of function. This trend has been clear in the case of student loans. The share of the top 25 originators fluctuated between 37 and 42 percent in the late 1980s but from 1990 to 1996 it rose from 42 percent to 59 percent; the share of the top 100 lenders rose from 67 percent in 1990 to 84 percent in 1996. In view of these trends, it made most sense to us to examine the part of the market where expansion has tended to occur.

Second, non-profit entities should experience similar pressures on the return from their loans as a result of the change in the mark-up in the formula over the index interest rate, and the evolution of substantially narrower spreads between long-term and short-term interest rates since 1993. In a relatively tranquil financial environment, public sector entities, which would continue to fund themselves in the tax-exempt market, might not feel that they needed to hedge the basis risk imposed by the new formula. Thus, their costs might not be as severely impacted as banks' costs in the short-term and the availability of loans from these agencies might decline very slowly -- or even increase if they moved to pick up some short-run fall out from the for-profit sector. Over time, of course, failure to hedge basis risk could prove costly for these institutions if financial markets changed abruptly. The emergence of different funding costs than anticipated could impose budget pressures on the parent state governments and, ultimately, affect the rating given by rating agencies to a public sector agency. In this respect, over the longer term, the pressures implied on the not-for-profit sector would parallel those discussed below for commercial banks.

Finally, we have chosen to focus primarily on institutions that are formally loan originators, since without origination there would be no secondary market. The lines between the primary and secondary markets are not hard, and it has become increasingly clear that the secondary market plays a very important role in allowing smaller originators to sell loans profitably at the point in their life cycle when servicing costs could become prohibitive without greater scale economies. Since there are large banks that span both loan origination and secondary market activities, however, analysis of their profitability should assure the profitability of the student loan market overall. That is, given arbitrage in the secondary market for student loans, the analysis should be the same whether banks originate and hold these loans or whether they sell them to secondary holders at a premium; if, for example, there are regular excess returns to selling over holding, there would be no banks engaged in both activities.

Of course, even the for-profit market need not be expected to respond instantly or

massively to adverse changes in profitability. A 1992 study of the student loan market suggested that a 25 basis point reduction in payments to lenders could lead growth of loan volume to be about 1 percentage point lower than it would have been in the absence of the reduction, and a 50 basis point reduction could lower the growth rate by about 2 percent -- amounts that could be accommodated by the not-for-profit guarantee agencies.<sup>6</sup> The time period used for this report spanned a wide range of variation in the spread between interest rates on student loans and other market rates, a range that is larger than the implied effects of the July 1 formula change. On the other hand, however, this time period does not contain any policy changes with nearly the implied effects of this scheduled interest rate reduction. Banks' responses to policy changes in the structure of rates, which are expected to be permanent, might be different from their responses to cyclical swings in the yield curve.

The interest rate and cost assumptions for lenders used in our paper are shown in **Tables 1, 2 and 4** and are discussed below. **Appendix A** includes a more detailed discussion of these assumptions.

- The 1999 Budget projections for **interest rates** are shown in Table 1, along with some other projections for comparison. All of these projections suggest that the yield curve will remain relatively flat, consistent with the structure of current market rates. The projected yield curve is somewhat steeper under Administration projections for 1998 than in projections from other sources but, for 1999, the projections are more similar. Interest rate levels are projected to change rather little and the spread between long-term and short-term rates is projected to remain well below recent historical experience, consistent with a favorable inflation outlook and expectations of federal deficit reduction that adds to national saving.
- Under the new formula, the need for **hedging** affects lenders' returns. Lenders would be expected to swap -- i.e. give up -- their long-term income to obtain a short-term-index-linked income flow that would parallel their cost of funds. We talked with several major financial institutions, which provided estimates of the cost of swaps between a the 10-year constant maturity Treasury yield, reset quarterly, and LIBOR. We were unable to obtain swap estimates for the case of a 10-20 year maturity instrument, which is not currently

---

<sup>6</sup>*STAFFORD STUDENT LOANS, Lower Subsidy Payments Could Achieve Savings Without Affecting Access*, General Accounting Office, January 1992 (GAO/HRD-92-7).



traded. We therefore assume that banks swap the 10-year portion of the risk in this case, and bear themselves (at a cost) the additional variation of this particular index.

We emphasize that the swap quotes we obtained are for a contract that is currently used only to a limited extent. The market for swapping between a fixed 10-year Treasury yield and LIBOR is a deep market, but swap dealers have no natural counter-parties for a floating rate long-term yield and are likely, therefore, to need to hedge themselves on this side of the market through a basket of transactions in the spot and forward markets. The need for the swap dealer to hold one side of the contract may imply that a liquidity premium would develop in this market if the swap were demanded in volume. We assume that swaps would be available and chose a representative estimate of the costs of hedging from quotes provided to us by swap dealers.

Using this estimate of hedging costs, we translated lenders' returns from the long-term indexed formula into a short-term rate of return after the hedge. It should be noted that the cost of these floating rate hedges are, we are told, quite sensitive to the shape of the yield curve. Consequently, our estimates of the future returns from the hedged asset are sensitive to the underlying economic assumptions, which show very little change in the shape of the yield curve by historical standards.

- The **lenders' cost of matched funds** is assumed to be the 3-month T-bill, or the 1-or-3-month LIBOR rate plus a given spread. The spread for an individual lender will depend on its size and creditworthiness and on the exact structure of the financing -- e.g., whether borrowing at a short term rate (LIBOR) or raising new funds by actually selling a package of loans in a securitization. Large lenders will move around among sources in the short-term financial markets seeking the lowest costs. In general, arbitrage will tend to keep costs fairly closely in line. For example, we obtained quotes for swapping T-bills into LIBOR, a highly liquid market in which banks do much marginal funding. These quotes (plus a slight mark-up over LIBOR) for banks' actual funding yielded roughly similar costs to those associated with typical securitizations done in the first half of last year. We have assumed a short-term funding cost in this range.
- Given the cost of funds and an estimate of lenders' return after hedging, we calculate the **net interest spread** earned on the loan asset (see Table 2).
- The **grossed-up interest spread** then allows for a small fraction of a loan asset to be counter-balanced on the balance sheet of a bank by capital rather than debt. That is, a student loan is not assumed to be 100 percent debt financed by the originator, raising the interest spread.
- **Servicing and overhead costs** (an estimate of the total seems likely to be more accurate than estimates of the separate pieces) include a share of expenses such as general management, legal, accounting, human resources, and marketing costs plus direct costs for

servicing the loan such as expenses for collections, borrower correspondence, reporting and account maintenance, and filing guarantee claims. Servicing costs seem to vary among lenders depending on the size of lenders and the efficiency of their operations. Larger lenders probably are more efficient owing to economies of scale. Costs may differ also among parts of the student population depending, e.g., on whether or not the students typically complete four or more years of schooling possibly at an expensive school, thus accumulating a large total loan for given costs of billing.

- The possibility of **default** on loans in repayment also implies some small cost to lenders. Recent data suggest that default rates may be declining. The probability of default on in-school loans, and to a lesser extent loans in consolidation, generally has been small. The Federal Government pays the interest cost on a subsidized student loan while a student is in school. Most important, the Government guarantees 98 percent of a student loan, thereby reducing substantially the cost of default to the lender (currently, a borrower pays a guaranty agency a loan insurance premium of 1.0 percent of the loan amount to help defray default costs).
- Another cost for lenders is the one-time 50 basis point **origination fee** paid by loan originators to the Department of Education. This fee cannot be passed on to borrowers, who already pay a separate 3 percent origination fee to the Federal Government to help offset the cost of the Federal subsidy. In addition to this origination fee, holders of consolidation loans must pay to the Federal Government a **rebate fee**, calculated on an annual basis, equal to 1.05 percent of the loan principal plus interest, which is then added to the 50 basis point origination fee.
- Lenders offering student loans face a risk of prepayment of loans attributable to defaults, loan consolidation, and advance payments from borrowers. Prepayment reduces the life of a loan, thereby increasing the over-the-life cost of certain fixed expenses, e.g., origination support. Consequently, lenders may face a **prepayment risk** that results in a cost to them. Many financial experts, however, think that prepayment costs are not large for student loans because there is little evidence of prepayment on these loans being interest rate sensitive; the absence of interest sensitivity seems reasonable as most borrowers would have accumulated other credit with higher rates that would be more important to prepay when interest rates decline. (This absence of interest sensitivity distinguishes student loans from mortgages for which prepayment means that lenders forego a highly profitable asset in an environment where they cannot make a new loan at as high a rate.)

**Table 2** provides a summary of the cost assumptions used for this paper. The two major costs for lenders are their cost of matched funds and servicing/ overhead costs. For the former, the rates are 5.85 percent (5.15 bond-equivalent average yield on the 3-month T-bill + 0.70 spread) for 1997/98 and 5.77 percent (5.07 T-bill + 0.70 spread) for 1998/99<sup>7</sup>. The estimated

---

<sup>7</sup> The interest rate assumptions are average rates for the school year starting on July 1 and

servicing/overhead cost for loans in repayment status is 95 basis points. For in-school loans, the estimated cost is one-third the cost for loans being repaid, or 32 basis points. All other costs combined are 9 basis points for in-school loans and 18 basis points for loans in repayment. The loan income for a swapped loan tied to a long-term index in 1998/99 or thereafter is assumed to reflect a swapped return of T-bill plus 1.60 if the index is 10-year CMT (given swap quotes plus the 1.0 markup over the long-term index in the new loan formula) or T-bill plus 1.77 for the 10-20 year index.

For the future policy environment, Table 2 shows two scenarios: interest rates tied the 10-year CMT rate, and interest rates tied to the 10-20 year rate. As noted earlier, the latter is the actual cost of these loans as scored in the credit budget and reflects assumptions used in the Federal budget for the overall student loan program; the former is the commonly assumed index by market participants. We compute our results using both rates throughout the report. **Table 4** breaks out the underlying costs in more detail, and shows the effects of considering, as well, loans in consolidation.

### **Target Rate of Return for Student Loans**

The viability of various student loan formulae depends on the appropriate target rate of return for the lender for this particular asset. The ultimate criterion that a financial institution must meet is a competitive rate of return on its capital. The return on its capital and the return on its assets are related by the ratio of capital to assets.

Banking regulations in fact require that two conditions be met for capital adequacy: One condition requires a ratio of capital to *risk-adjusted* assets. The required ratio is 8 percent but recent history shows ratios well above that. The industry-wide average currently stands at around 12.5 percent, down from 13.2 percent in 1994.

Student loans have a risk weighting factor of 20 percent, meaning that in the calculation of risk-adjusted assets, student loans count only to the extent of 20 cents on the dollar. Thus, if a bank aims to hold capital equal to 12.5 percent of risk-adjusted assets, it will hold only \$2.50 in capital for every \$100 in student loans. Applying this capital ratio to a 20 percent target rate of pre-tax return on equity gives a target net return on assets of 50 basis points.

The second requirement (the leverage ratio requirement) is for a minimum amount of

---

are from the Administration's FY1999 Budget.

capital equal to 4 percent of assets regardless of risk weight. As with the risk-based capital standard, banks have tended to have more than required capital in recent years (the average ratio has been above 7 percent). Although these years may mark an historically peculiar period, it is important to note that to achieve standing as a “well capitalized bank” (which 98 percent of banks now have), capital must be at least 5 percent of assets without risk weighting.

Clearly, banks’ circumstances may vary considerably with a bank having excess capital after an exceptionally profitable year permitted large retained earnings, and vice versa. Some banks may be bound at times by one capital requirement and, at other times, by the other required ratio. For a low-risk loan category, however, it seems more likely that the target for overall capital would be controlling rather than the risk-based standard. Some financial market participants (non-bankers) share this view.

If banks had a target rate of return on capital of 12 percent (after-tax, or 20 percent before-tax) -- about the average since 1970 -- a 5 percent target capitalization, on the margin, for fairly safe assets would imply a target return on those assets of 1 percent before tax. Note that this is considerably below the average return that banks have been receiving on their overall portfolios during the recent period of high bank profits. Alternatively, if banks had a target rate of return after-tax of 13.7 percent, the average for the last five years for the 10 largest banks, and a target capitalization of 5 percent, their target before-tax rate of return on assets would be 1.15 percent. With a target rate of return of 12 percent and only 4 percent capitalization, their target rate of return on assets before-tax would be 80 basis points. Alternatively, if banks viewed student loans more as “loss leaders” for community relations and future business, they might accept an after-tax rate of return of about 10 percent with 5 percent capitalization, also implying about 80 basis points as a minimum before-tax target return on these assets. We believe that these assumptions span a relevant range for assessing the prospects for returns to student loans. Thus, *we use a range of estimates for our target pre-tax rate of return on assets of 80 to 115 basis points.*

We recognize that efficient lenders could choose to operate at the margin with lower capitalization, generally meeting the risk-based standards with more differentiation in the assumed capitalization and target rates of returns across types of assets in their portfolios. Whether enough banks would, in fact, be willing to make such fine distinctions with regard to asset categories that were only small parts of their total portfolios (in the aggregate student loans are only about 2 percent of banks’ assets) is an open question. Assuming an excessively high capitalization in estimating banks’ target rate of return implies giving the banks a subsidy in the student loan formula. On the other hand, assuming an unrealistically low capitalization and target rate of return would imply eventual exodus of lenders from the industry. We have chosen a middle ground by using the overall leverage ratio requirements, but by relying on the minimal regulatory level of those requirements, and not the current (much higher) average level of capitalization. But we recognize the potential efficiencies that could emerge, and the resultant lower target rate of return, if loans were concentrated in institutions with lower marginal capitalization requirements.

Our choice of a reasonable range of target returns can be interpreted relative to two frames of reference. The first is the current rate of return to the banking sector. The average pre-tax return on all bank assets (averaged across all banks) was roughly 1.75 percent over the 1993-96 period (latest available comprehensive data). Most analysts with whom we spoke noted that a government-guaranteed asset with a fairly stable interest rate and cash flow profile should receive a pre-tax return below 1.75 percent, although they did not present firm frameworks for determining how much below average a student loan return should be. Indeed, the facts on risk and non-risk adjusted capitalization presented above imply most bank assets are much riskier than student loans, and therefore require a much higher capitalization and return. Thus, it is reasonable to assume that the target rate of return on student loans is much lower than the current average return on assets.

The second criterion for judging the target rate of return is the rate of return on alternative, comparable, assets. A 1997 paper by the CRS<sup>8</sup> on the student loan program presented estimated returns on a couple of alternative assets as a frame of reference for judging returns on student loans. This approach keys on the idea that no profit-maximizing bank would allocate part of its portfolio to an asset that was dominated by other available assets. CRS estimated returns on Ginnie Mae securities<sup>9</sup> at 1.20 percentage points and estimated the return on adjustable-rate mortgages to be 1.25 percentage points; these rates are slightly above the upper end of our range of target rates of return. Although this is an attractive approach in principle, it runs into important difficulties in practice. The usefulness of the CRS estimate of the adjustable-rate mortgage return for comparison may be questioned because it does not take account of “teaser rates,” which have become a very important feature of this market and could significantly lower the rate of return. The Ginnie Mae comparison also may be problematic because the spread between yields on this instrument (even after adjustment for systematic prepayment risks) and other open market rates such as Treasuries appears to be quite volatile. These instruments are held by banks in their investment portfolios more for trading purposes than for holding in their long-term loan asset portfolios.

---

<sup>8</sup> Barbara Miles and Dennis Zimmerman, “Reducing Federal Student Loan Costs: The Options are Narrowing,” Congressional Research Service, February 25, 1997, p. CRS-5.

<sup>9</sup> These are marketable securities backed by pools of government guaranteed or insured mortgages; these securities are considered to be quite liquid in an active secondary market.

## Summary Results and Some Empirical Evidence

As shown in **Table 2**, our estimate of the pre-tax weighted net return to lenders in 1997/98, for in-school loans and loans in repayment, is about 1.63 percent. It appears that, under the current student loan formula, lenders are earning more than their targeted rate of return on assets for student loans. Student loans, however, may yield a slightly lower rate of return than the average return in recent years on banks' total portfolios.

As noted above, this return does not allow for discounts from the maximum student loan rate that banks may charge. For example, Sallie Mae offers a "Great Rewards Program" that allows borrowers who have made 48 consecutive loan payments on time a 2 percentage point discount of the loan rate. Other lenders have similar concessions. For Sallie Mae, the discount translates to about a 10-15 basis point reduction in return for their entire portfolio.<sup>10</sup> If this discount is the competitive standard for the industry, then banks' net returns are actually 1.48 to 1.53 percent after the cost of the discounts. We also did not allow for costs of marketing and promotional activity that would further reduce lenders returns.

On the other hand, this return also does not consider the fact that the interest rate for loans to parents (PLUS) is higher than the current rate for subsidized student loans: this rate is the one-year T-bill rate plus 3.1 percent, which is currently about 100 basis points higher than the rate for subsidized loans. This differential will be reduced somewhat by the costs of hedging this one-year instrument into a shorter term instrument, but it nevertheless provides excess returns to banks who are providing both subsidized and PLUS loans. Since PLUS loans are roughly 10 percent of loan volume, this implies at most a 10 basis point increase in net returns for the average bank, so it once again does not greatly affect our calculations.

In addition, we do not consider in our basic calculations the effect of loans in consolidation, although these are examined in some detail in Table 4. Until recently, the loan interest rate for loans in consolidation was the weighted average of the interest rates on all outstanding loans being consolidated, rounded up to the nearest whole percent; this figure is currently 9.0 percent. Under this system, the net return on loans in consolidation roughly mirrors the average return on loans in-school and in repayment. The future of net returns on loans in consolidation is unclear. Under the Emergency Student Loan Consolidation Act, passed in October, 1997, the rate for consolidation loans will be the T-bill rate plus 3.1 percent until October, 1998 (capped at 8.25 percent). We assume that when the LCA expires, the formula for determining consolidation loans will revert to its previous form. This results in a return to

---

<sup>10</sup> Sallie Mae estimates that on the basis of current experience, less than 20 percent of borrowers qualify for a discount under these terms.

consolidation which is much higher than the return to loans in-school or in repayment under the scheduled interest rate change, raising the overall average return to banks under the new system by 12-14 basis points.

The financial statements for 1996 for two major student loan originators are very consistent with our estimates. For one wholly student loan subsidiary, the annual pre-tax rate of return for 1996 was 1.65 percent; for another bank, their internal calculation of the implied rate of return to their student loan department was 2 percent. For the first bank, partial data for 1997 indicates a reduction in the rate of return to about 1.3 percent. The decline in returns for 1997 likely reflects, in part, the fact that the structure of interest rates in the short-term market became less favorable to lenders for a while last year than our assumptions allow. In particular, the Treasury bill rate, to which the short-term cost of funds is pegged in the assumptions used to analyze the current formula, tended to decline relative to other short-term rates (such as LIBOR) during the past year. In this situation, our assumptions may under-estimate the cost of matched funds for lenders. But this phenomenon appears to have been a temporary initial reaction to the financial disturbances in Asia (a "flight to quality"), and more recent data suggest that this trend has been reversed. We have therefore assumed that banks will continue to be able to fund in a variety of markets with the spreads among rates similar to those that prevailed in the earlier part of 1997, before the Asian difficulties emerged.

Another source of profit data is Sallie Mae. Of course, this secondary market agency is not a loan originator, but its joint ventures and pre-purchase agreements bring it close to the origination market. Its rate of return on assets for 1997 (from partial data once again) is similar to that reported above for the student loan subsidiary: 1.2 to 1.3 percent. Their slightly lower return than our calculation may reflect, in part, premiums that it pays on loans acquired in the secondary market rather than aspects of its costs that are directly relevant to originators. Furthermore, its rate of return on capital is much higher than would be implied for banks because, as a Government Sponsored Enterprise, Sallie Mae can operate now with a lower capitalization. Thus, for the present, it too seems to be earning at least an adequate rate of return. In the future, Sallie Mae can be expected to continue to operate a high-volume, low-margin activity as long as costs in the market for securitizations permit it to move a considerable volume of assets off its books fairly quickly. Sallie Mae's situation will change in an important respect, nonetheless, because of its transition to privatization. As a private entity, the holding company can be expected to be required by credit rating agencies to have higher capitalization than it now has; this will be relevant for its required return on assets which could become somewhat more similar to that of banks.

The return to lenders would fall significantly if the new student loan formula were changed from the 3-month T-bill rate plus 2.5/3.1 percentage points to a longer rate (either for 10-year Treasury notes, or to 10-20 year interest rates) plus 1.0 percentage point, in part because of the new risk associated with this change which raises the all-in cost of funding as a result of hedging. **Table 2** shows that switching to the new student loan formula for loans in-school and in-repayment could reduce the weighted average pre-tax return to lenders from 1.65 percent

under the current formula in 1997/98 to 0.38 percent to 0.55 percent under the new formula next year, if the 1999 Budget assumptions are borne out. These estimates, if correct, would be below the minimum target rate of return on assets for lenders.

It may be noted, however, that these findings are somewhat sensitive to substantial interest rate movements within a year, i.e., between the time (end of May) when the student loan rate is determined by formula and the time when a lender actually makes a loan and finances it. For example, if the new formula were in place for the current school year, using the 10-year CMT rate, the net return on assets for student loans in-school and in-repayment would be 1.1 percent. This is in the range of providing a satisfactory rate of return. However, this rate of return would have been achievable only because yields fell significantly after mid-1997, lowering the cost of funds relative to May of 1997 when the formula sets the student loan rate.

The fact that the yield curve is projected to be so much less steep than historical experience is the primary reason that the change in formula leads to low rates of return on assets. Adjusting the data for the years when the loan formula rate exceeded the 8.25 percent cap on the student loan interest rate, the 10-year rate plus 1.0 percentage point has been less than the 3-month T-bill rate plus 3.1 percentage points by an average of only 30 basis points since the early 1960s. The 1999 Budget assumptions project this difference to be 137 basis points in 1998, 131 basis points in 1999, and 121 basis points from 2000 through 2007 (with the T-bill based index higher); other projections have a similar contour. As noted above, swap dealers have documented to us that the interest spread for student loans tied to a long-term index (with an quarterly reset) would be very sensitive to the yield curve; that is, with the historically much steeper yield curve, banks would have earned a much higher profit on their student loans.

This historical pattern documents the difficulties with tying student loan interest rates to a long term index, when banks finance themselves on a short-term basis. This approach introduces a substantial risk into the banks portfolio, with two resultant costs. The first is the non-trivial hedging costs of mitigating this risk by swapping a given loan. The second is the long term, unmitigated risk that lenders face as the yield curve changes. The difficulty of using a long-term index for student loans should be considered in light of the joint uncertainties for students and lenders that is implied by the experience between 1993 and 1998. The slope of the yield curve is notoriously uncertain; mis-judgements about it played a major role in problems of the thrift institutions decade ago. Making the profitability or the availability of guaranteed student loans dependent on such uncertainties seems to many to entail risks for both the users and the providers of student loans.

Regardless of this point, however, it is fairly clear that given average non-interest costs (averaging across in-school and in-repayment) of 87 basis points, a 100 basis point mark-up of the student loan rate over an index rate leaves very little room for profits except under favorable spreads between long-term indexed income and short-term indexed borrowing costs. And, as **Table 3** illustrates, this point is true looking forward over the next five years of projected interest rates as well. The first rows of Table 3 show that the rate of return to the banks would remain



high if the current system were maintained. But the next rows show that the rate of return under the new legislation will remain below the target rate into the future as well as in the current environment.

### Returning to a T-bill Index

The results in **Tables 2 and 3** imply that lenders will not receive a reasonable estimate of their target rate of return in the government-guaranteed student loan program if the scheduled change of formula takes place this July. As shown in Table 3 (second block of rows), the five year average return under the new formula would be 34-53 basis points, given the administration's economic assumptions. It should be noted that there is some variation in returns from one student loan year to the next in the table that arises largely from projected changes in the level of interest rates within each year; as noted above, in a year when the cost of funds falls relative to the level of interest rates in the second calendar quarter, which sets the student loan rate, the student loan becomes more profitable for the lender.<sup>11</sup>

Some have suggested an alternative formula, which would hold borrowers harmless so that the total cost to a student next year would be no higher than under the new formula. Holding borrowers harmless over the next year would require that the student loan interest rate for 1998/99 is reduced to 3-month T-bill plus 1.73 percent to T-bill plus 1.98 percent, depending on whether the 10 year or 10-20 year rate is used (see **Table 3**). This appears to provide returns to lenders, in the range of 50-75 basis points, which fall just below their target rate of return. But, averaging the 10-20 year rate over the coming five years, the rate which holds borrowers harmless rises to T-bill plus 1.83 percent to T-bill plus 2.11 percent. The latter figure provides a rate of return which meets the lower bound of the range of target rates of return.

Another possible formula would involve allowing lenders the minimum rate of return that would make student loans profitable according to a target rate of return criterion. We calculate that the loan rate under this approach would range from T-bill plus 2.1 percentage points to T-bill plus 2.45 percentage points (corresponding to a target rate of return on assets of 80 to 115 percentage points); this uses the second quarter interest rate for each year to set the appropriate markup. All of these loan rates would be somewhat higher than would prevail under the formula now scheduled to go into effect at mid-year. Any of the rates would represent, however, a significant reduction in the cost relative to the current system (roughly 45-80 basis points from the

---

<sup>11</sup>For example, note that from 2000/01 to 2000/02, the spread between the 91 day and 10 year rates is unchanged, while the rate of return to banks falls by 5 basis points. The reason for this seeming discrepancy is that short-term interest rates are projected to be falling after the second quarter of 2000, boosting lenders' profitability in that year. Interest rates are projected to be flat after the second quarter of 2001, so that bank profitability is lower. Thus, movements in interest rates after the second quarter can affect bank profitability, even while constant year-year second quarter interest rates imply the same rate to borrowers.

current markup of 2.9, using a weighted average of the rates in-school and in repayment).

While the discussion thus far has been phrased in terms of a single markup over the interest rate index, our research has confirmed the significant differences in lenders costs for loan in-school and in-repayment, as is recognized by the current 60 basis point differential. Continued recognition of these cost differences in the formula setting returns would help to even out returns across types of lenders. For example, the “hold students harmless” alternative described above, based on the five year average of the 10-20 year Treasury rate, could be expressed as a rate of T-bill plus 1.7 percent for loans in-school, and T-bill plus 2.3 percent for loans in repayment. This would yield the same weighted average markup over T-bills, but would reflect underlying cost differences in servicing these two types of loans.

### **Market-Based Mechanisms**

The uncertainties involved in this exercise points out the difficulties with regulatory determination of student loan interest rates. An alternative approach would be to use a more market-based mechanism for determining these rates. For the student loan program, this could mean using some form of auction system to determine who would receive the rights to originate student loans.

One form of auction could be a single price (interest rate) auction for amounts of guaranteed loans to be originated. With this type of auction, bids would be accepted in rank order from the lowest to the highest (interest rate) until the total target quantity of new student loan originations, as estimated by the Secretary of Education, had been awarded. The maximum interest rate that all successful bidders could charge would be the rate for the last bid accepted. Lenders submitting this bid would receive the rights to originate the amount of loans on which they bid. All others bidding a lower rate than the marginal bid also would obtain the right to originate their proposed amount of loans but could charge a rate on these loans up to the maximum rate set in the auction. Some successful bidders could receive a return -- if they charged the maximum rate -- that would be more than they need to originate their share of the total loans. Competition should assure that this differential would be small, however, because lenders would not want to submit a bid price much higher than they need, otherwise they could fail to obtain any of the rights to originate student loans.

The experience of the Health Education Assistance Loan ( HEAL) program suggests that such an auction can work. HEAL is a federally-insured loan program for graduate students in schools of medicine and other health professions. The interest rate for both borrowers and lenders is reset quarterly, but rates on HEAL loans are capped at the rate for 3-month T-bills plus 3.0 percentage points. Since FY 1993, there has been an auction system for allocating the insurance authority for HEAL loans and the interest rate spread over the T-bill rate has been well below the cap and declining every year. The lowest rate bid in the first auction was T-bill plus 2.4

percentage points. For the most recent auction in February, 1997 (for the school year 1997/98), the successful bid was T-bill plus 1.5 percentage points.

The success of the HEAL auction, however, does not necessarily imply that an auction will guarantee large savings for FFEL. The successful bidders for the HEAL program, in the latest round, have been not-for-profit State agencies, although Sallie Mae won a larger share of the market in earlier rounds. As such, their debt is not taxable, which allows them to borrow at rates that are well below the cost of funds for others who are not exempt from taxes. If an adjustment is made for the difference between the interest rates for a tax-exempt and a taxable security, the effective student loan interest rate might not be much, if any, different between the HEAL and FFEL programs. Moreover, the HEAL program involves only \$85 millions currently and probably less than \$400 million if an authorization/appropriation is enacted by next fall. The experience with this small program may not be completely transferable to a \$20-25 billion program that has a 98 percent guarantee rather than 100 percent and whose borrowers are more diverse and do not have the same risk characteristics as HEAL borrowers.

### **Concluding Remarks**

The results presented in this paper rest on a number of assumptions about the cost structure of the student loan program, projections of the term structure of interest rates and the costs of hedging loans tied to long-term interest rates, and estimates of the target rate of return for lenders. These results therefore have a degree of uncertainty that is not necessarily reflected in our tables. Nevertheless, most of our conclusions are fairly robust to variations in assumptions.

Our analysis may be summarized in the following points. First, the new formula will provide a rate of return on student loans that is below the target rate of return of for-profit bank lenders in the government-guaranteed student loan program, under current financial market circumstances. Second, there are inefficiencies associated with the mismatch of (long-term) student loan interest rates and (short-term) bank financing under the proposed formula, and joint benefits could be realized to students and lenders from moving back to a short-term index. Third, an alternative rate setting formula that has been suggested by some, linked to a short-term rate, would maintain bank participation in the government-guaranteed student loan program at little or no net cost to students, relative to their expectations about the formula now scheduled to become effective in July. Fourth, preserving the existing differential between the mark-up for loans while the student is in school and loans during the in-repayment period would better track gross returns to costs.

Our confidence in the qualitative conclusions of the following analysis is high. Nevertheless, the uncertainties involved in this exercise point out the difficulties with regulatory determination of student loan interest rates. An alternative approach would be to use a more market-based mechanism for determining these rates. For the student loan program, this could mean using some form of auction system to determine who would receive the rights to originate student loans. The successful experience of the Health Education Assistance Loan (HEAL)

program using an auction system for allocating the insurance authority for HEAL loans suggests that some form of auction could be considered for the Federal Family Education Loan program.

**TABLE 1: INTEREST RATE ASSUMPTIONS  
(Percent)**

Source	1997	1998	1999	2000	2001	2002	5-yr. ave.
<b>OMB ('99 budget)</b>							
3-month T-bill	5.17	5.13	5.01	4.91	4.81	4.81	4.93
10-year note	6.75	5.86	5.80	5.80	5.70	5.70	5.77
Spread	1.58	0.73	0.79	0.89	0.89	0.89	0.84
memo: 10-20 simple a/	6.77	6.11	6.03	6.03	6.03	6.03	6.05
<b>Blue Chip (Feb. '98)</b>							
3-month T-bill	5.17	5.24	5.24	--	--	--	--
10-year note	6.75	5.80	6.00	--	--	--	--
Spread	1.58	0.56	0.76	--	--	--	--
<b>CBO (Jan '98)</b>							
3-month T-bill	5.17	5.45	5.34	4.93	4.82	4.82	5.07
10-year note	6.75	6.00	6.10	6.00	5.90	5.90	5.98
Spread	1.58	0.55	0.76	1.07	1.08	1.08	0.91
<b>DRI (Jan '98)</b>							
3-month T-bill	5.17	4.95	4.53	4.21	4.20	4.22	4.42
10-year note	6.75	5.64	5.78	5.63	5.47	5.33	5.57
Spread	1.58	0.69	1.25	1.42	1.27	1.11	1.15
<b>Implicit Forward Rates b/</b>							
3-month T-bill	--	5.17	5.40	5.33	5.64	5.33	5.37
10-year note	--	5.67	5.80	5.92	6.03	6.14	5.91
Spread	--	0.50	0.40	0.59	0.39	0.81	0.54

Note: Data for 1997/98 are actual data for the last week in May 1997 prior to June 1; all other OMB data are for the second calendar quarter, while data from other sources are for calendar years, as published. All bill rates are converted to a bond equivalent basis.

a/ The average simple annual interest rates for 10 to 20 year Treasury bonds, as used in credit budget scoring.

b/ Forward rates for June of each year, as of February 10, 1998.

<b>TABLE 2: INTEREST SPREAD AND COST ASSUMPTIONS</b>						
<b>(Percent or Basis Points)</b>						
	<b>Current Policy</b>		<b>Future Policy: 10-year CMT</b>		<b>Future Policy: 10-20 year</b>	
<b>Income or Cost Category</b>	<b>In-School</b>	<b>Repayment</b>	<b>In-School</b>	<b>Repayment</b>	<b>In-School</b>	<b>Repayment</b>
Loan income, after hedging if needed a/	Bills + 2.50	Bills + 3.10	Bills + 1.60	Bills + 1.60	Bills + 1.77	Bills + 1.77
Lenders' cost of matched funds b/	Bills + 0.70	Bills + 0.70	Bills + 0.70	Bills + 0.70	Bills + 0.70	Bills + 0.70
For 1997/8 & '98/9	5.85	5.85	5.77	5.77	5.77	5.77
Interest spread	1.82	2.42	0.96	0.96	1.13	1.13
<b>Grossed-up interest spread c/</b>	2.11	2.71	1.25	1.25	1.42	1.42
<b>Servicing and other costs d/</b>	0.41	1.13	0.41	1.13	0.41	1.13
Net income on assets before tax, '97/8 & '98/9	1.70	1.58	0.84	0.12	1.01	.29
<b>Weighted average net income on assets e/</b>	1.63		0.38			0.55

Note: Costs are representative of large for-profit lenders who both originate loans and hold loans in-repayment in their portfolios.

a/ For current policy, loan income is the formula determination, based on Q2 interest rate; for future policy, loan income is determined under the formula and then reduced by the cost of hedging the loan to convert it into a short-term denominated asset.

b/ The cost of matched funds is assumed to be essentially the same whether raised in a T-bill denominated securitization or borrowed in the LIBOR market, possibly entailing a T-bill/LIBOR swap.

c/ Interest spread is grossed up here and in following tables; interest costs are reduced by 5 percent of the total, because that amount is assumed to be financed by equity.

d/ Includes servicing and overhead costs, origination fees, default risk and prepayment risk (for detailed component separately, see Table 4).

e/ Weights are 36.08% in school and 63.92% in repayment. Net income on assets is before tax.

**TABLE 3: SUMMARY TABLE OF STUDENT LOAN PROGRAM RESULTS**  
**Administration Economic Assumptions**  
**(Percent)**

<b>Formula or Net Rate of Return</b>	<b>1997/98</b>	<b>1998/99</b>	<b>1999/2000</b>	<b>2000/01</b>	<b>2001/02</b>	<b>2002/03</b>	<b>5-yr. ave.</b>
<b>1. Current Formula:</b>							
<b>1a.</b> 3-month T-bill +2.5/3.1	7.67/8.25	7.63/8.23	7.51/8.11	7.43/8.01	7.31/7.91	7.31/7.91	7.43/8.03
<b>1b.</b> Estimated net return to lender	1.63	1.66	1.64	1.64	1.59	1.59	1.62
<b>2. Future Formula:</b>							
<b>2a.</b> 10-year CMT + 1.0	n.a.	6.86	6.80	6.80	6.70	6.70	6.77
<b>2b.</b> Estimated net return to lender	n.a.	0.38	0.36	0.36	0.31	0.31	0.34
<b>2c.</b> 10-20 year, simple interest + 1.0	n.a.	7.11	7.03	7.03	7.03	7.03	7.05
<b>2d.</b> Estimated net return to lender	n.a.	0.55	0.52	0.51	0.53	0.53	0.53
<b>3. Alternative Formulas:</b>							
<b>3a.</b> To hold student harmless, CMT	n.a.	Bills + 1.73	Bills + 1.79	Bills + 1.89	Bills + 1.89	Bills + 1.89	Bills + 1.83
<b>3b.</b> Estimated net return to lender	n.a.	0.51	0.55	0.65	0.60	0.60	0.58
<b>3c.</b> To hold student harmless, 10-20 yr	n.a.	Bills + 1.98	Bills + 2.02	Bills + 2.12	Bills + 2.22	Bills + 2.22	Bills + 2.11
<b>3d.</b> Estimated net return to lender	n.a.	0.76	0.78	0.88	0.93	0.93	0.85
<b>4. Range for Target Rate of Return</b>	.80 to 1.15	.80 to 1.15	.80 to 1.15	.80 to 1.15	.80 to 1.15	.80 to 1.15	.80 to 1.15

Note: Formula estimates are a weighted average for loans in-school and in repayment. The weights are based on the relative share of loans outstanding for each loan status, i.e. in-school = 36.08 percent and repayment = 63.92 percent.  
Net rates of return to lender and the range for the target rate of return are before-tax returns on assets.

n.a. Not applicable

**TABLE 4: RISK-ADJUSTED PRE-TAX NET RETURN for FFEL STUDENT LOANS 1997 and 1998**  
**Administration Economic Assumptions**  
**(Percent)**

		7/1/97 to 6/30/98			7/1/98 to 6/30/99	
	<b>In-school or Deferment</b>	<b>Repayment</b>	<b>Consolidation</b>	<b>In-school or Deferment</b>	<b>Repayment</b>	<b>Consolidation h/</b>
<b>Student Loan Interest Rate (future, CMT) a/</b>	<b>7.67</b>	<b>8.25</b>	<b>9.00</b>	<b>6.86</b>	<b>6.86</b>	<b>8.25/9.00</b>
<b>Student Loan Interest Rate (future, 10-20 yr) a/</b>				<b>7.03</b>	<b>7.03</b>	<b>8.25/9.00</b>
Loan Income, net, CMT b/	7.67	8.27	9.00	6.73	6.73	8.12/8.87
Loan Income, net, 10-20 yr b/				6.90	6.90	8.12/8.87
<b>Less Costs:</b>						
Lenders' cost of matched funds c/	5.85	5.85	5.85	5.77	5.77	5.77
Adjusted cost d/	5.56	5.56	5.56	5.48	5.48	5.48
Origination/holding fee e/	0.06	0.04	1.10	0.06	0.04	1.10
Servicing costs/overhead f/	0.32	0.95	0.47	0.32	0.95	0.47
Default risk	0.00	0.07	0.07	0.00	0.07	0.07
Prepayment risk	<u>0.03</u>	<u>0.07</u>	<u>0.07</u>	<u>0.03</u>	<u>0.07</u>	<u>0.07</u>
<b>Subtotal</b>	<b>5.97</b>	<b>6.69</b>	<b>7.27</b>	<b>5.89</b>	<b>6.61</b>	<b>7.19</b>
<b>Net Return (future, CMT)</b>	<b>1.70</b>	<b>1.58</b>	<b>1.73</b>	<b>0.84</b>	<b>0.12</b>	<b>1.49</b>
<b>Net Return (future, 10-20 yr)</b>				<b>1.01</b>	<b>0.29</b>	<b>1.49</b>
<b>Weighted Average Net Return (future, CMT) g/</b>		<b>1.64</b>			<b>0.52</b>	
<b>Weighted Average Net Return (future, 10-20 yr) g/</b>					<b>0.67</b>	

Note: OMB estimates for interest rates are from the 1999 budget. Loan rates are determined in Q2 of calendar year; costs of funds are determined by the average interest rate from Q3 of first year through Q2 of following year.

a/ New formula for 1998/99 evaluated on the alternative indexes, 10-year CMT and 10-20 year average rate.

b/ Loan income takes account of SAP payments, and of hedging costs when the formula is tied to a long-term index.

c/ Lenders' cost of matched funds is T-bill + 70 basis points.

d/ Cost of funds, reduced by 5 percent; only 95 percent of the loan principal is assumed to be financed by debt.

e/ Fee is amortized over life of loan; part of it becomes a prepayment cost in the case of default or other early loan payoff. Consolidation loans involve an extra fee.

f/ Assumes that servicing/overhead costs in-school are 33 percent of the cost for repayment; for consolidation loans, these costs are 50 percent of those for loans in repayment.

g/ Weights are 31.53%, 55.88%, and 12.58% for loans in school, in repayment, and in consolidation, respectively.

h/ For 1998/99, the loan rate on consolidations is assumed to be 8.25 percent for the first quarter of the school year, before the expiration of the LCA, and to revert to the current upward rounded average of prior rates thereafter.



## Appendix A

This Appendix provides details and sources related to the assumptions used in this paper.

1. Table 1 shows that several different *forecasts of interest rates* project a relatively flat yield curve for coming years. Although the *Blue Chip Economic Indicators* consensus forecast for the next two years reflects such a flat yield curve, the levels of their projected rates are slightly higher than those forecast by the Administration in the *FY 1999 Budget*, as are CBO's forecast rates, which also are shown in the Table. A recent DRI forecast, on the other hand, has interest rates close to or slightly below the Administration's projections, but with the emergence of a somewhat steeper yield curve in 1999 and 2000. The differences among these forecasts are small by historical standards and not large enough to change the qualitative conclusions presented in the subsequent tables.

Using the latest budget economic assumptions for 10-year Treasury notes, the student loan interest rate under the new formula would be 6.86 percent (5.86+1.0) for 1998/99, and 6.8 percent (5.8+1.0) for 1999/00. If OMB assumptions for 10-20 year average Treasury security yields on a simple interest basis are used, the comparable rates would be 7.11 percent (6.11 + 1.0) for 1998/99 and 7.03 percent (6.03 + 1.0) for 1999/00.<sup>12</sup>

2. Lenders have several options for obtaining *funds to finance their portfolio* of student loans. One, they can finance their loans by using the bank deposits of their customers. Two, they can sell new debt, which many lenders opt to do. Three, lenders can securitize some of their loan portfolio by a public issuance of student loan asset-backed securities. And four, lenders can roll-over or reduce their financing costs by selling their student loans to a secondary market institution; in some cases, lenders receive a premium for selling their loans.

We consulted a number of financial experts about lenders' cost of financing through new debt issues or securitizations. We did not consider the alternative of financing issuance through drawing on existing bank deposits. Larger banks, in particular, not only may have some instability in their deposit base but also will be rationing deposit funds among many loan departments that are claimants for financing. Consequently, at the margin, these institutions are likely to impose an internal cost of funds that would be closer to an external borrowing cost in short-term markets (so called "managed liabilities") than to yields on customer deposit accounts.

---

<sup>12</sup> The 10-year CMT estimates are based on the second calendar quarter rate for 10-year Treasury notes for 1998 and 1999 plus 1.0 percentage point. The 10-20 year average simple interest rates are based on the estimated market yield as of October 1 of the budget year.

An analysis of actual public debt financing for 1997 indicates a significant amount of securitizing. Nearly all of these securitizations were based on T-bills. This may be because student loans are indexed to T-bills, which would preclude a basis risk and the need to hedge by arranging a swap agreement. Another explanation could be that lenders expected the spread between T-bills and LIBOR to narrow but were taking advantage of “cheap” T-bill financing during 1997.

Based on a sample of actual public financings, the average cost of matched funds for the first 11 months of 1997 was T-bills plus about 65 basis points, but the more recent offerings were as high as T-bills plus 85-89 basis points. These new higher cost estimates, as noted in the text, presumably reflect the flight to quality that led to a historically large spread between T-bills and LIBOR. This spread reverted much closer to normal in the first month and a half of 1998, but we have been told by some dealers that technical aspects of the bill market could cause it to be a bit volatile in the next few months. *For our analysis, we assume the cost of matched funds is T-bills plus 70 basis points. This would translate to LIBOR plus about 5 points.* Using FY1999 budget assumptions, the estimated cost of matched funds for 1997/98 is 5.85 percent (5.15 + 0.70), based on the average projected T-bill rate for the “student loan year” from the third quarter of 1997 through the second quarter of 1998 (see Table 2).

3. When there is a basis risk between lenders’ assets and liabilities, the net interest margin between the interest rate on student loans and the cost of funds through debt issues is affected by the *cost of a swap*. The basis risk between T-bill indexed assets, such as student loans under the current student loan formula, and LIBOR-based liabilities that are a common alternative for banks is not great because it is not subject to yield curve risk. The risk between 10-year CMT-indexed assets (reset annually), or assets indexed to the 10-20 year average rate, and LIBOR-based liabilities is substantial because of the possibility of disparate movements of long-term and short-term yields. It is this newly increased basis risk that must be taken into account in estimating the net interest margin under the new formula.

Recent estimates provided to us of the cost of swapping T-bills for LIBOR fall within a relatively narrow range. This is not surprising because this is an active and efficient market.<sup>13</sup>

---

<sup>13</sup> A swap agreement will be for several years during which both the levels and the relationships between various interest rates may be expected to change. Swap dealers formulate their bids based on models that reflect the historical patterns in these relationships, as well as the

Most of the cost estimates to swap T-bills for LIBOR centered around 65 basis points. When the cost of matched funds is factored in, total all-in costs would be about 70 basis points, assuming that the cost of matched funds in 1997 is LIBOR plus 5 basis points. Note that this swap cost is centered around the same level as the securitization costs discussed above.

Under the new loan formula, lenders presumably would continue actually to raise funds at a rate near, or closely correlated to, LIBOR but would enter into a long-term (amortizing) swap to hedge against basis risk. Lenders financing their student loan portfolio by this option would issue LIBOR-indexed securities and simultaneously enter into a swap where they would agree to pay the swap counter-party the 10-year CMT plus or minus some spread in exchange for LIBOR.

Since they would be both paying LIBOR on their original financing and receiving LIBOR on the swap, fluctuations in their short-term cost of funds would be canceled out. But this reduction in risk comes at a cost since the lenders would be giving up the 10-year CMT part of their return and would be left with the spread over the 10-year CMT (or the 10-20 year average interest rate index) in the student loan formula, plus or minus the spread in the swap contract. If the student loan originator wanted to borrow in a T-bill based instrument (securitizations being the instrument that is likely to come in this form), the lender might swap LIBOR back to bills and that swap spread would also have to be taken into account in calculating the net interest margin.

Indeed, *this is the assumption used in the presentation in Table 2 above, where the swap margin of CMT plus 5 for LIBOR and the reverse swap of LIBOR for bills plus 65 converts the formula return on the student loan from CMT plus 100 to a return in terms of bills of T-bill plus 160.* If the student loan rate were indexed to average annual simple interest rate on 10-20 year Treasury securities, banks would have a more complex problem in hedging their yield because there is no

---

current spreads between different yields and the future evolution of these yields that seems to be implicit in current market quotes (futures rates and forward rates implicit in the shape yield curve at the present time). Actual swap quotes will also be influenced by supply and demand considerations at any point in time as well as by transactions costs of the dealers and counter-party risks.

market for directly swapping this yield index. We have assumed that one third of the surplus yield from the 10-20 year index over the 10-year CMT would be absorbed in additional transactions and swap costs.

The estimated costs of swapping CMTs for LIBOR were obtained from a number of major swap dealers. These dealers told us that such a market, with the CMT reset quarterly (consistent with the lender receiving SAP payments) does exist because it has been useful for mortgage servicers. *These dealers generally provided quite similar swap spreads, with such a contract quoted at about CMT plus 5 basis points for LIBOR. As noted above, this is the swap spread that we have assumed.* Some dealers did mention that a substantial increase in the demand for these swaps could affect the quotes because there is not a natural counter-party to take up the opposite side of the contract from the student loan originator. Therefore, the dealer must carry that side of the contract, hedging it in turn with a sequence of transactions in the forward market.

Swap estimates, we also were told, will be heavily influenced by the term structure of interest rates at the time the swap contract is executed. This means that a lender is able to insulate his net return on any given loan from short-term fluctuations in his funding costs, but that this net interest margin may vary considerable among loans made in different financial market circumstances. Because the interest rate assumptions in the FY 1999 Budget imply little change in the yield curve over the next few years, we have assumed that the estimated cost of a swap for the current interest rate environment remains applicable over the forecast horizon.

4. Estimating *overhead costs* for their student loan program requires lenders to allocate the share of their fixed costs that are incurred for this purpose. A large secondary market company that purchases student loans quoted us 15 basis points for overhead expenses. A guaranty agency quoted us 35 basis points. As noted earlier, it is possible that some lenders may misallocate their costs between overhead and servicing. Therefore, the more reliable number may be the total of overhead and servicing costs combined. Our estimate for this total number is examined in the following discussion of servicing costs.

5. There are two approaches that lenders may use to estimate their *servicing costs*. One is to view these costs as the ratio of all such costs incurred in any given time period to the total value of the loan portfolio for that period. Alternatively, servicing costs could be thought of in terms of the average annual cost over the life of a single loan as a percent of the average annual remaining principal of the loan. Looking at servicing costs the latter way, the ratio rises sharply over the life of the loan because the loan principal declines from year to year while servicing cost rises sharply during the in-school period and then levels off during the repayment and consolidation periods until close to final repayment. Obviously, both of these approaches for estimating servicing costs depend on the average maturity of a lenders portfolio: a lower average maturity will be influenced by the lower relative cost of servicing the portfolio and a higher average maturity will be influenced by the higher costs relative to the remaining principal.

A 1993 CRS study<sup>14</sup> noted that Sallie Mae reported their servicing costs were 66 basis points. A private guaranty agency estimates that servicing costs are about 60 basis points for a traditional bank. A similar figure is also cited in the latest Sallie Mae annual financial report as the cost of servicing Sallie Mae's entire portfolio over the course of a year, i.e., total servicing costs as a percent of total loans.

A later (1997) CRS study<sup>15</sup> estimated Sallie Mae's in-school servicing costs are 35 basis points, but their costs for the repayment period are much higher, about 100 basis points. This latter figure apparently was based on the average annual servicing cost of a loan over the life of the marginal loan as a percent of the remaining principal of the loan outstanding. We think this approach of using averages of large numbers to estimate servicing costs overstates servicing costs.

The financial statements filed with the Securities Exchange Commission by a major originator of student loans report that their combined operating expenses averaged about 110 basis points from 1992 to 1994, 102 basis points in 1995, and about 95 basis points in 1996 and 1997. This significant decline in operating expenses reflects largely the larger volume of student loans they hold, the economies of scale resulting from this larger volume, and increased productivity from a more experienced workforce. Similarly, a guaranty agency that estimated its overhead costs were 35 basis points also estimated its servicing costs were 60 basis points, for a combined total of 95 basis points.

If we consider servicing and overhead costs as one cost in order to avoid the problem of

---

<sup>14</sup> Barbara Miles and Dennis Zimmerman, "Federal Family Educational Loans: Reduced Costs, Direct Lending, and National Income," Congressional Research Service, February 22, 1993, PP. CRS-18 and 19.

<sup>15</sup> Miles and Zimmerman, 1997, *op. cit.*

allocating these costs to the correct category. *Our assumption for total servicing/overhead costs is 95 basis points for loans in repayment. It costs lenders less to service student loans when students are in school and when loans are consolidated. Thus, we assume overhead and servicing costs for loans in the in-school status are one-third of the cost of loans in repayment and loans in consolidation are one-half of the cost of loans in repayment. (Details of the servicing and other operational expenses borne by lenders are summarized in Table 4; these costs are cumulated in the “servicing and other costs” line of Table 2.)*

6. Because student loans are guaranteed by the Federal Government, the *risk of default* is very small. During the in-school period it is almost nonexistent. The Federal Government pays the interest costs for subsidized loans while the student is in school. *Several sources told us their default costs are low; one source said their default costs are only 7 basis points. We assume this is a reasonable estimate of default costs for loans in repayment.*

7. Loan originators are required to pay a 50 basis point *origination fee* to the Department of Education. Although this is a one-time fee paid when the loan is originated, we have assumed that the cost of the fee is amortized over the average lifetime of a student loan, which has fallen in recent years to about 9 years (3 years in-school and 6 years of repayment). Thus *the annual amortized cost of the origination fee is about 6 basis points for over the full life of the loan.* However, since some of these loans will default, or otherwise be paid early, a part of these costs, in repayment, are shifted to the prepayment cost line discussed below. For consolidation loans, the 5 basis points origination fee is added to the 1.05 percent rebate fee, for a total fee of 1.10 percent.

8. Many financial market experts think that *prepayment costs* are not a serious problem because borrowers tend not to have the resources to prepay their loans until well after they have graduated. Others, however, think that prepayment risks can be a problem, partly because borrowers may have a tax incentive to take out a home equity loan to prepay their student loan, if the spread is not too large. Until recently, interest on student loans has not been tax deductible. The Taxpayer Relief Act of 1997, enacted last summer, allows certain individuals who have paid interest on qualified education loans to claim a deduction for this expense. However, the Act limits the interest deduction to the first 60 months in which interest payments are required and also limits the amount of interest that can be deducted.

In addition, prepayments may occur because of consolidations -- indeed, there have been reports in the past that some lenders may have been offering price incentives to discourage students from consolidating or prepaying their loans and moving into the direct loan version of the program -- but this source of prepayments has become much less important recently. Consolidation has been reduced because of the logjam of applications and the temporary suspension of the program that allows borrowers to consolidate their guaranteed loans into a consolidated direct loan. Moreover, in the future, the squeeze on lenders' net return because of the new student loan formula may make it impossible for lenders to continue offering these price incentives. And finally, the Emergency Student Loan Consolidation Act of 1997 (LCA), enacted

in October, 1997, could discourage many lenders from offering to consolidate students loans for borrowers. The LCA makes it more costly for lenders to offer students the option to consolidate their loans, because it changes the formula for determining consolidation loan rates. The LCA also makes consolidation less attractive to lenders, because the law is only temporary and because the start up costs to configure computer programs will be expensive. The long run impact of the LCA is unclear, and obviously depends on whether this temporary legislation is extended.

Estimates of prepayment costs appear to be somewhat arbitrary. The CRS estimated that lenders prepayment costs are high.<sup>16</sup> But various lenders have told us that they do not view prepayment as a major cost. One clear cost associated with prepayment is that there are fewer years over which to amortize origination fees. If the typical prepayment happens when there are about 4-1/2 years remaining in the life of the loan, then this is about 25 basis points of increased costs in that year (since the lender was typically going to have the extra years over which he was amortizing 5-to-6 basis points per year). Given typical default rates, this is an expected cost over all loans of about 5 to 7 basis points. Although the costs of prepayment are higher if a student prepays in school (since the student is “un-amortizing” more years), the number of students who do so is much smaller. *We assume the prepayment cost for lenders is 3 basis points while students are in school, and 7 basis points in repayment.* These estimates are consistent with the cost estimated by several sources before the enactment of LCA.

---

<sup>16</sup> Miles and Zimmerman, 1993, *op. cit.* Subsequent conversations with Barbara Miles confirm that their prepayment cost estimate was too high.