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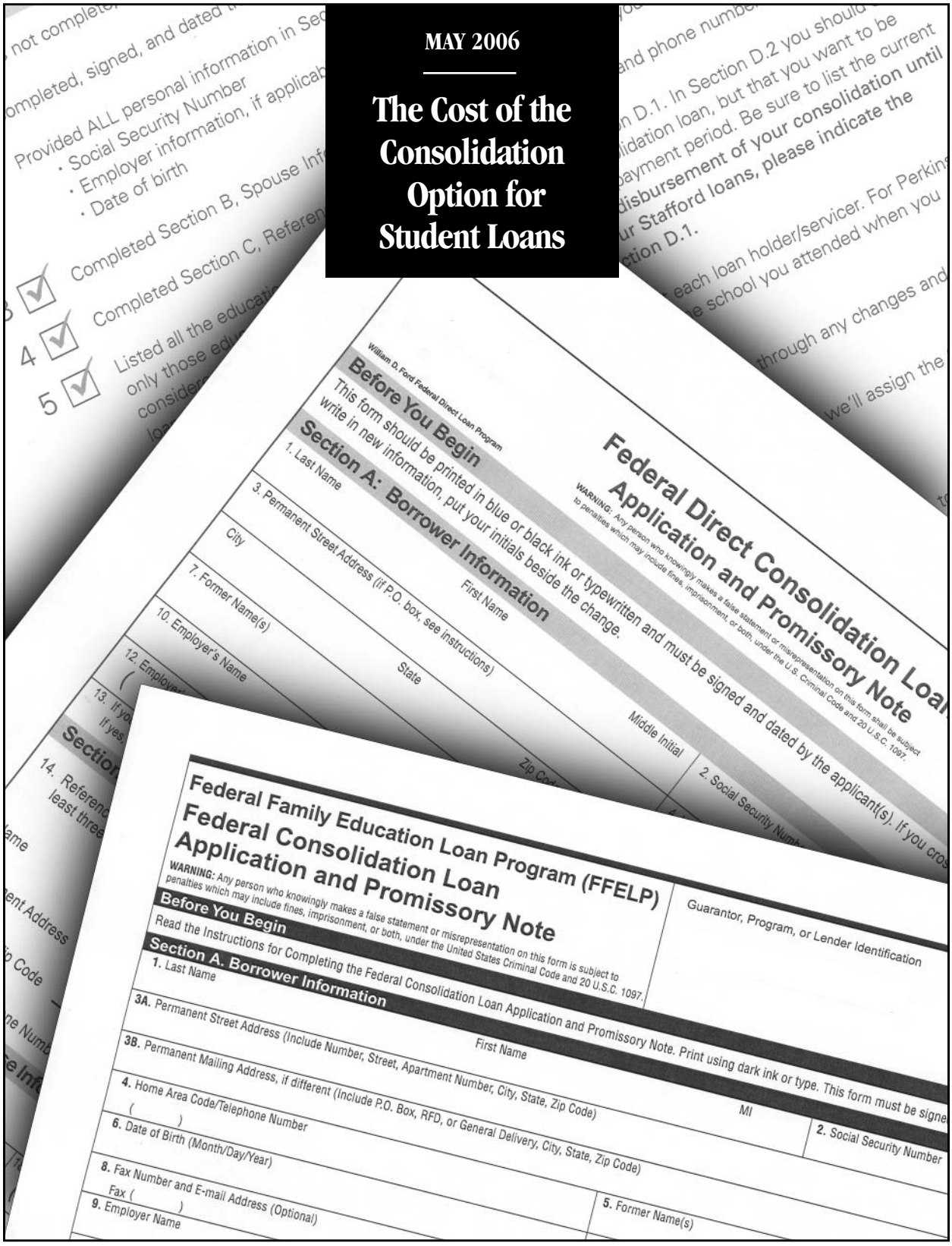
The Cost of the Consolidation Option for Student Loans



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Preface

Federal student loans provide borrowers with options to modify the terms of those loans after origination. One option allows borrowers to consolidate their loans, combining individual loans into a single obligation and converting from a variable interest rate to a fixed rate that is based on a short-term interest rate. Under that consolidation option, borrowers also have more flexibility to extend the term to maturity of their loans.

The option to convert a variable-rate loan into a fixed-rate loan at the prevailing variable rate conveys a substantial benefit to borrowers and imposes a corresponding cost on the government and taxpayers, which is difficult to assess using conventional budgeting techniques. This paper—prepared in response to a request from the Honorable Jim Nussle, Chairman of the House Budget Committee, and the Honorable John Boehner, former Chairman of the House Education and the Workforce Committee—uses options-pricing methods to estimate the cost of the consolidation option. In keeping with CBO's mandate to provide objective, impartial analysis, the report makes no recommendations.

Steven Weinberg and Damien Moore prepared the paper under the supervision of Robert Dennis and Marvin Phaup. Nabeel Alsalam, Chad Chirico, Paul Cullinan, Deborah Kalcevic, Angelo Mascaro, Bill Randolph, and Judy Ruud of CBO offered many helpful comments. Deborah Lucas of Northwestern University and the National Bureau of Economic Research reviewed several drafts of the paper and provided valuable suggestions. Will Melick of Kenyon College also provided beneficial comments. (The assistance of external reviewers implies no responsibility for the final product, which rests solely with CBO.)

Christine Bogusz edited the paper, and John Skeen proofread it. Maureen Costantino prepared the report for publication and designed the cover, and Lenny Skutnik printed copies of the paper.

Donald B. Marron
Acting Director

May 2006

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Summary

The federal government's student loan programs for higher education convey substantial financial benefits to borrowers because of their broad availability and favorable terms. They offer:

- Interest rates that are independent of a borrower's credit status and typically several percentage points below those on purely private loans;
- Deferred repayment of the debt while the borrower is in school; and
- An option to convert from a variable interest rate to a fixed interest rate, usually on more favorable terms and with a longer period until maturity.

Of the various provisions included in a federal student loan contract, the option to consolidate individual loans contributes greatly to a borrower's benefits and the cost of the program to the government and taxpayers. Most of the benefit comes from the fact that consolidation allows a borrower to convert loans with variable interest rates (which will not be issued after June 30, 2006) into one loan with a long-term fixed rate at the currently prevailing variable rate, which is linked to short-term market rates. Borrowers can choose when to consolidate, and they tend to do so when market conditions allow them to lock in long-term loans at the lowest interest rates.

The magnitude of the benefits from consolidation varies significantly across time and among borrowers. Generally, benefits are realized disproportionately by borrowers who consolidate during periods when short-term interest rates are low and long-term interest rates are higher. For example, the benefit to borrowers averaged $26 per $100 in principal for loans consolidated in the 2004 program year, whereas for loans consolidated in 2000, the average benefit was only $2 per $100 in principal.[1] Benefits are also relatively greater for borrowers with the largest loan balances (usually borrowers with professional degrees), because the maximum extension of the loan's term to maturity increases with the size of the loan. Benefits are also relatively high for borrowers with poor credit ratings, who might not be able to obtain a loan in the private market or who would pay higher interest and fees for a loan without a federal guarantee.

The government's costs increase when borrowers consolidate their loans because the resulting fixed-interest-rate loan is usually more deeply subsidized than the original variable-rate loans it replaces. The Congressional Budget Office (CBO) estimates that the present value of the cost of the consolidation option has averaged $4.60 per $100 of loans originated.[2] That is, the option to consolidate has cost the government (and benefited borrowers) about the same amount as forgiving the repayment of nearly 5 percent of borrowers' loan principal. Today's relatively small difference between long- and short-term interest rates implies that if the rules in effect before July 2006 continued, the prospective cost of the consolidation option would be lower than that historic average. In CBO's estimation, the average cost of the option for the 2006-

1. Those estimates are for the value of loans *consolidated* in 2004 and 2000, not the value of the option for loans originated in those years. The latter is the estimate recognized for Congressional scorekeeping purposes according to provisions of the Federal Credit Reform Act.

2. That estimate is based on the behavior of interest rates over the past 20 years and the terms of consolidation in effect since 1998. The cost of the option to consolidate is the difference in the present value of the government's cash flows with and without the option to consolidate. Consolidation is not the only means available to borrowers to extend the term of their loans, and many borrowers would extend the term even if consolidation was not available. Thus, the cost of consolidation excludes the cost of any term extension that would have occurred without the consolidation option.

2015 period would be about $1.50 per $100 of the principal amount.

The changes scheduled to take effect in July 2006 fundamentally change the terms of the student loan program, fixing the interest rate on original and consolidated loans at 6.8 percent and 6.875 percent, respectively. Those changes eliminate the possibility of consolidating at a rate below 6.875 percent. Under the rules in effect after July 2006, the average cost of consolidation for the 2006-2015 period will be about 40 cents per $100 of loans originated, CBO estimates. One important reason for the sharp reduction in cost is that consolidation provides few benefits to borrowers eligible to increase their loan maturity through the extension provision of their existing loans.[3]

Other implications of this analysis include the following:

- Changing loan terms to reduce (or increase) the cost of a single feature of a program may have the opposite effect on the program's total costs. For example, the change from a variable interest rate to a fixed rate reduces the cost of consolidation, but it may increase the overall cost of the student loan program.

- Changing the interest rate on consolidated loans to one that matched the market rate on loans with the same term to maturity would reduce both the cost of consolidation and the program's total costs.

- Ending both the option to consolidate and the right to extend terms under other provisions of a loan would reduce costs more than ending only the consolidation option.

Lawmakers have frequently adjusted the terms of the student loan program. The analysis in this paper illustrates the financial costs to the government that would result from policy alternatives that have existed or been considered in the past. It also applies to options that might be considered by the Congress for use in other credit programs.

3. That estimate assumes that borrowers who consolidated their loans were not eligible to extend the loans' term to maturity under any other provisions.

The Cost of the Consolidation Option for Student Loans

Almost all new government loans to assist students in paying for higher education are Stafford loans, either made directly by the government under the Federal Direct Student Loan (FDSL) Program or made by private lenders and guaranteed by the Department of Education under the Federal Family Education Loan (FFEL) Program.[1] Under terms in effect through June 2006, Stafford loans carry a variable interest rate that is adjusted annually at the beginning of July. That variable rate is the interest rate on the three-month Treasury bill (based on the last Treasury auction in May) plus a markup. The markup is 1.7 percentage points while the borrower is in school, in a six-month grace period after leaving school, and in periods of deferment and 2.3 percentage points for the remaining life of the loan. The interest rate borrowers pay is capped at 8.25 percent. Borrowers typically decide whether to consolidate their loans soon after they have finished their education. By consolidating, borrowers combine their variable-rate loans taken out in different years into a fixed-rate loan at the current variable rate.

Private lenders offer terms that are substantially less favorable than those on Stafford loans. In the private market, lenders typically charge a variable interest rate that is 2 to 3 percentage points higher than that on Stafford loans, and the interest rate is not capped. In addition, private lenders have more restrictive policies on loan deferments and forbearance.

For Stafford loans, borrowers pay less than the government's cost of their loans. In general, the subsidy stems from the fact that the interest rate and fees charged by the government are insufficient to cover the costs of late payments, defaults, market risk, loan servicing, and the collection of bad debts.[2]

Like Stafford loans, Parent Loans for Undergraduate Students (PLUS) are offered by guaranteed lenders as well as directly by the federal government. Such loans (under terms prevailing through June 2006) are variable-rate loans with the borrower's interest rate set at the three-month Treasury bill rate plus a markup of 3.1 percentage points. The variable rate is capped at 9 percent. PLUS borrowers also have an option to consolidate their loans. Although the estimates in this paper are restricted to the consolidation option in the Stafford program, the analysis also applies to the PLUS program.

The division of activities between the government and guaranteed lenders differs substantially for the direct and guaranteed loan programs. Under the direct-lending program, the government disburses loan principal and receives repayments from borrowers. The government also incurs all administrative costs, including those for servicing and collection, and receives cash from recoveries on defaulted loans. Under the FFEL guaranteed program, lenders are responsible for financing, originating, and servicing the loans. The government makes periodic special-allowance payments (SAPs) to lenders to supplement payments received from borrowers, and it assumes almost the entire cost of guaranteed loans that default.

1. See Congressional Budget Office, *Private and Public Contributions to Financing College Education* (January 2004). For a more detailed description of the student loan programs, see Congressional Budget Office, *Subsidy Estimates for Guaranteed and Direct Student Loans* (November 2005).

2. A subsidy is also given for so-called unsubsidized Stafford loans. Unsubsidized in that case means only that the borrower is responsible for repaying the interest that accrues on the loans while he or she is in school. But the interest rate itself is a below-market, subsidized rate.

The Option to Consolidate

Borrowers in the direct and guaranteed student loan programs may consolidate one or more loans into a single loan, extend that loan's term to maturity, and fix the interest rate at the weighted average of the current short-term (variable) rates on those loans. At consolidation, three changes occur that significantly affect the flow of payments among borrowers, lenders of guaranteed loans, and the federal government:

- The interest rate to borrowers no longer varies;
- The term to maturity of the loans is extended;[3] and
- For the guaranteed program, private lenders receive a reduced net payment from the government. However, in present-value terms, the savings to the government from that lower subsidy rate are partly offset, and in some cases more than fully offset, by the longer duration of the consolidated loan.

Extension of the Loan's Term to Maturity

The consolidation option is not the only means by which borrowers can extend the term to maturity of their loans. Since 1998, borrowers have had the option to extend the term beyond the standard 10 years without consolidating. For direct loans, borrowers can extend the term to about the same maturity (depending on the size of their loans) as they can by consolidating and still retain the right to consolidate later. For guaranteed loans, the option to extend without consolidating is more restricted: extension for 25 years is available only on loans with a balance of $30,000 or more from a single lender.[4] Although some borrowers extend their loan's term to maturity without consolidating, most extensions occur with consolidation because of the more-favorable loan terms.

Thus, not all of the costs of extending a loan's term to maturity are appropriately considered to be costs of consolidation. Estimates of the government's costs for the consolidation option in this analysis exclude the costs of extension that would have occurred if the consolidation option was not offered.

Special Allowance Payments to Lenders

For unconsolidated guaranteed loans, lenders receive the higher of:

- The interest rate the borrower pays on the loan (2.3 percentage points above the rate on the 90-day Treasury bill) and
- 2.34 percentage points above the rate on 90-day commercial paper (CP), or promissory notes usually issued by corporations.[5]

If the rate paid by borrowers is less than the CP-based rate, the government makes a special allowance payment to lenders for the difference. For consolidated loans, lenders continue to receive the higher of the borrower's rate (now a fixed rate) and the CP-based rate.[6]

After consolidation, the CP-based interest rate paid to lenders is increased to 2.64 percentage points above the rate on 90-day CP. However, for a consolidated loan, lenders also pay a 1.05 percent annual consolidation fee to the federal government. The net effect is to lower the interest rate guaranteed to lenders by approximately 0.75 percentage points on consolidated loans. If the borrower extends the loan's term to maturity but does not consolidate, the guaranteed interest rate to lenders does not change; it is same as for the original loan.

Benefits to Borrowers

The consolidation option provides borrowers with two distinct financial benefits. First, by allowing borrowers to refinance to a long-term fixed-rate loan at the interest rate that applies to a variable-rate loan, the government has effectively extended them long-term credit at a short-term

3. The amount by which borrowers can extend the term to maturity of their loans when consolidating is based on the outstanding balance: for a balance of at least $7,500, the term may be extended to 12 years; for at least $10,000, 15 years; for at least $20,000, 20 years; for at least $40,000, 25 years; and for at least $60,000, 30 years.

4. The Deficit Reduction Act of 2005 restricts the option for an extension under the direct loan program to the same terms available under the guaranteed loan program: up to 25 years for loans with a balance of $30,000 or more.

5. For borrowers who are in school and during the grace period afterward, the lender's guaranteed interest rate is the CP rate plus 1.74 percentage points. One possible rationale for the link between the SAP and the commercial paper rate is that the CP rate may approximate the cost of funds to the lender, and the spread over the CP rate may approximate the costs to service the loan.

6. Under the Deficit Reduction Act of 2005, if the rate paid by borrowers exceeds that CP-based rate, lenders retain only the CP-indexed rate and pay the difference to the government.

rate. (That provision disappears when the program's rules change in July 2006.) The consolidation option is especially valuable when short-term interest rates are low relative to long-term rates because the low short-term rate can be locked in for the life of the loan. Conversely, if short-term rates are higher than long-term rates, borrowers can defer consolidation. Under rules in effect through June 2006, a borrower can know the subsequent year's consolidation interest rate before deciding whether to consolidate at the current year's rate, further increasing the value of the option.

Second, because student loans carry a below-market interest rate, extending the term to maturity of a loan lengthens the period over which the borrower receives a subsidy, thus increasing its value.[7] Extending the term of a loan also lowers the borrower's monthly payment. (Some borrowers might prefer the lower monthly payment, even at a higher interest rate.) Finally, a single payment is likely to be more convenient for borrowers with multiple loans.

Factors Affecting Costs to the Government

The benefits to borrowers who consolidate their loans impose corresponding costs on the government. The costs depend on the initial level and volatility of interest rates over the life of the consolidated loan, differences between the interest rates the government charges and the rates charged by private lenders, and the behavior of borrowers.

Term Structure of Interest Rates. The costs of consolidation depend on the term structure of interest rates—the relationship between interest rates and a loan's term to maturity. Consolidation is more costly to the government the further short-term rates are below long-term rates. That is, the greater the gap, the further the new locked-in rate will be below the market rate for a loan of comparable maturity. (See Appendix B for more details.)

Interest Rate Volatility. Bigger period-to-period changes in market interest rates increase the frequency of large gaps between long-term and short-term rates. Thus, the more volatile interest rates are, the higher the government's expected costs of consolidation will be.

Interest Rate Cap. Under current law, the interest rate on Stafford loans is capped at 8.25 percent. Consequently, the total cost to the government of unconsolidated Stafford loans is higher when market interest rates are high (above 8.25 percent, for example) than when interest rates are well below the cap. Although a reduction in the cap (to 5 percent, for example) would reduce the value of the consolidation option, the overall cost of the program would be far higher. In other words, lowering the cap would reduce the potential gain from consolidation because the borrower's rate on unconsolidated loans could not exceed 5 percent. At the same time, a rate with such a low ceiling would increase the interest subsidy to the borrower.

Different Interest Rates Charged by the Government and Private Lenders. When the government lends money at a below-market rate or pays lenders of guaranteed loans to make loans at below-market rates, it confers a subsidy on the borrower at the expense of taxpayers, who ultimately bear the cost of the benefit. The greater the difference between the legislated government rate and the market interest rate, the higher the cost of consolidation will be.

Borrowers' Behavior. The government's costs of consolidation depend on whether and when borrowers choose to exercise that option. Many factors influence those decisions, including interest rate conditions and borrowers' total amount of outstanding loans and access to other sources of credit. Other individual factors that may influence the decision to consolidate include a borrower's financial sophistication, the desire to reduce the number of separate monthly bills, and the willingness to invest the time and effort to complete the necessary paperwork. If borrowers choose not to consolidate their loans, then the government's costs will diminish.

Two features of the student loan program favor consolidation early in the life of a loan. First, loans consolidated while borrowers are in school, in the military or other designated service, or during the six-month period after leaving school bear interest rates 0.6 percentage points below those consolidated at a later time.[8] Second, the repayment schedule for original loans is set to amortize those loans over 10 years, which means that the principal balance declines over time. All else being equal, the benefit to borrowers from consolidation increases along with

7. Term extension through consolidation is the only way many borrowers in the guaranteed loan program can extend the term of their loans.

8. The reduction of 0.6 percentage points will not apply to loans originated after June 2006.

the principal balance, implying a larger gain from early consolidation.

The very low level of short-term Treasury rates since 2002 has increased consolidation rates to 80 percent of the estimated eligible loan volume.[9] That increase may also reflect the stronger marketing of consolidation loans by Stafford lenders. Current consolidation rates are unlikely to be maintained when interest rates rise. The higher interest rate for the 2005-2006 program year has already significantly reduced the government's cost of consolidation relative to that cost in the recent past, both because the cost per dollar of loans consolidated has fallen and because the consolidation rate is expected to decline.[10]

The Budgetary Costs of Consolidation

The budget accounts for student loans under rules specified in the Federal Credit Reform Act (FCRA). For most federal credit programs, that law requires that the budget recognize the long-term expected cost of a loan or loan guarantee—including the expected value of defaults—when the loan is disbursed. Furthermore, the budgetary cost also must include—when the loan is originated—the expected costs of changes in loan terms from the exercise of any option embedded in the loan agreement.

The budgetary costs under the FCRA do not include all the costs to the government of its credit programs, however. For example, by requiring the use of Treasury interest rates to calculate the present value of expected cash flows to and from the government, the FCRA omits the cost of market risk. The market value of options, such as the student loan consolidation option, cannot be estimated accurately using conventional budgeting methods without also taking into account the relationship between the cash flows from a credit instrument and the state of the economy.[11] Moreover, there are some costs (such as administrative costs for direct loans) that the budget recognizes as they are paid, rather than as part of the expected cost of the loan or guarantee as it is made. As a consequence, budget calculations of costs under FCRA are incomplete.

By contrast, the market cost of a loan or loan guarantee is a more comprehensive estimate of the value of all resources used by that activity, valued at market prices and using risk-adjusted discount rates. Thus, the market cost includes estimates of all the foreseeable costs attributable to the loan or guarantee as well as the fees and interest rates that the market would charge for similar loans. The estimates of the costs of consolidation in this analysis are for the full market cost to the government, including the cost of market risk.

The Government's Costs of Consolidation

For Stafford loans, the government's cost of the consolidation option is the difference in the present value of the government's cash flows (discounted at market rates) with and without the option to consolidate.

The government's cash flows in the direct loan program are the disbursement of principal and the stream of repayments over time net of administrative costs and losses due to default. The government's cash flows in the guaranteed loan program are the special allowance payments made to lenders (net of fees) and outlays for defaults (net of recoveries).

The government's cash flows change with consolidation. Specifically, the change in a loan's term to maturity affects a borrower's schedule of repayments, the size and duration of the net payments by the government to lenders, and the period over which the government must pay administrative costs for the direct loan program. In estimating the market-based costs of consolidation, all cash flows in this analysis are discounted to present values using risk-adjusted interest rates.

9. "Estimated eligible loan volume" is defined as the average annual volume of originations over the previous five years.

10. The volume of loans consolidated in the 2005-2006 program year has been greater than normal as borrowers consolidate their loans in anticipation of sharply higher short-term interest rates in the 2006-2007 program year. Perhaps also contributing to that higher rate of consolidation might be misconceptions by borrowers about the terms of the consolidation option in future years from enactment of the Deficit Reduction Act of 2005. Those new terms will not affect the consolidation option for existing variable-rate loans, however.

11. See Congressional Budget Office, *Estimating the Value of Subsidies for Federal Loans and Loan Guarantees* (August 2004).

Table 1.

Average Costs of Consolidation for Variable-Rate Loans

Policy Alternative	Average Cost (Per $100 in originations)	
	Estimated Using Historic Interest Rates	Estimated Using Projected Interest Rates
Consolidation at a fixed rate of the three-month Treasury bill rate plus 2.3 percentage points	$4.60	$1.50
Consolidation at a fixed rate of the 10-year Treasury note rate plus 2.3 percentage points	40 cents	40 cents
Consolidation at the variable rate on the original loan	60 cents	50 cents
Consolidation at a fixed rate of the three-month Treasury bill rate plus 3.3 percentage points	$2.80	70 cents
Consolidation at a fixed rate of the three-month Treasury bill rate plus 3.3 percentage points or at a variable rate of the annually adjusted three-month Treasury bill rate plus 2.3 percentage points	$2.90	70 cents

Source: Congressional Budget Office.

Costs of Consolidation Estimated Using Historic Interest Rates

Under rules in effect from 1998 through June 2006 and under the assumption of a distribution of interest rates similar to that of the past 20 years, the Congressional Budget Office (CBO) estimates that the cost of the option to consolidate a variable-rate loan into a fixed-rate loan averages about $4.60 per $100 of loan principal originated (see Table 1).[12] That estimate is a dollar-volume weighted average of the costs for both the FFEL and FDSL programs. Under current law, the interest rate is fixed at the three-month Treasury bill rate plus 2.3 percentage points.

Under the change in law scheduled to take effect in July 2006, the interest rate to borrowers on new student loans will be fixed at 6.8 percent. The option to consolidate will continue to be available, but at an interest rate of 6.875 percent. Moving to a fixed interest rate on the original loan eliminates borrowers' opportunity to lock in a short-term rate when it is well below the long-term rate. As a result, under those new terms, the cost of the consolidation option (based on extending a loan's term to maturity) will be 40 cents per $100 of principal originated, CBO estimates, under the assumption of interest rates like those that prevailed over the past 20 years. (Because the terms of the original loans—which are at a fixed rate—differ from those in effect through June 2006, that estimate is not included in Table 1.)[13]

Costs of Consolidation Estimated Using Projected Interest Rates

If current loan terms remained unchanged, the projected costs of consolidation would average $1.50 per $100 originated, CBO estimates (see Table 2). Those costs were estimated using a distribution of interest rates consistent with CBO's most recent economic projections. CBO has calculated that distribution so that the projec-

12. If consolidation was not available, the cost of extending the term to maturity of the original 10-year variable-rate loan under existing extended repayment provisions would have averaged $2.70 per $100 of originations, CBO estimates. Therefore, compared with the cost of the 10-year variable-rate loan, the total additional cost of a long-term fixed-rate loan (the cost of both the consolidation and extension options) averaged $7.30 per $100 of loans originated.

13. In that calculation, only those borrowers who cannot obtain longer maturities under the extended repayment provisions of the original loan will exercise the consolidation option. In that case, CBO estimates that consolidation will account for about 30 percent of the total dollar volume of loans that are either consolidated or extended.

tion of rates begins at the current rates and implies a long-term rate that converges with CBO's baseline projection of such rates.[14] Consolidation, including the expanded option to extend a loan's term to maturity under the rules for consolidated and unconsolidated loans scheduled to take effect in July 2006, will cost about 40 cents per $100 in loan principal originated, in CBO's estimation. (That estimate also is not shown in Table 1, for the same reason as that given earlier.)

Those projected costs are lower than historic costs because the market conditions of the past several years—with very low short-term interest rates and a wide gap between short- and long-term rates—have only a small likelihood of recurring over the next 10 years.

The Costs of Consolidation Under Alternative Policies

At various times, the Congress has considered changing the interest rate on consolidated loans, including several alternatives to the current formula. Those alternatives would allow borrowers to consolidate their original variable-rate loans at a fixed rate, at a variable rate, or at a choice of either a fixed or variable rate. Since the passage of the Deficit Reduction Act of 2005, those alternatives may no longer be under consideration; nonetheless, they provide useful illustrations of the effects of various changes in terms on the cost of consolidation.

The primary factor that determines the cost of consolidation under the alternatives considered in this analysis is the extent to which the interest rate at consolidation falls below the appropriate market-based rate. The estimated cost of consolidation assumes that original loans continue to have variable rates with extended repayment terms, as under the rules in effect before July 2006. Thus, the change in the cost of consolidation represents the relative cost of each of these alternatives.

Consolidation at a Fixed Long-Term Interest Rate

Under this alternative, an original variable-rate loan could be consolidated at a fixed interest rate—specifically, the rate on the 10-year Treasury note plus 2.3 percentage points—capped at 8.25 percent. The cost of consolidation would be 40 cents per $100 originated, CBO estimates (see Table 1). That cost is significantly lower than the cost of consolidation under current law (before July 2006) and is comparable to the cost of consolidation at a variable rate because the fixed rate is linked to the appropriate market interest rate on long-term debt.

Consolidation at a Variable Interest Rate

This alternative is essentially the same as the option many borrowers had before July 2006 to extend the term to maturity of their variable-rate loans without consolidating. The loans would continue to have the same variable interest rate as under the original loans. Borrowers with total loan balances of less than $30,000 and those with loans from more than one lender would benefit from this option because it would allow them to extend the term to maturity of their loans and make one monthly payment.

The cost of consolidation under this alternative would be 60 cents per $100 using historic interest rates and 50 cents per $100 using projected interest rates. Virtually all of the cost would stem from more borrowers becoming eligible to extend the term to maturity of their existing loans, which carry a below-market interest rate. In comparison with the cost of consolidation under terms in effect through June 2006, the costs under this alterative are significantly lower because the rate applied to the loans is reset annually on the basis of the change in the short-term interest rate.

Consolidation at a Fixed Short-Term Interest Rate

Under this alternative, a variable-rate original loan could be consolidated at the rate on three-month Treasury bills plus 3.3 percentage points. This alternative is identical to the policy in effect through June 2006 except that the spread over the three-month Treasury bill rate applied to consolidated loans would be raised by 1 percentage point. Using historical interest rates, CBO estimates that the cost of this alternative would be $2.80 per $100 in loans originated, substantially less than the cost under the terms in effect through June 2006 because of the higher interest rate. Using projected interest rates, CBO estimates that this alternative would cost 70 cents per $100.

The cost of consolidation would be higher under this alternative than it would be if consolidation was indexed to the rate on 10-year Treasury securities—even though the markup on the three-month Treasury bill rate was 1 per-

14. For CBO's latest interest rate projections, see Congressional Budget Office, *The Budget and Economic Outlook: Fiscal Years 2007 to 2016* (January 2006), Chapter 2.

CBO simulated future short-term Treasury rates using a Cox-Ingersoll-Ross one-factor model in which the mean value reverts to slightly above 5 percent.

centage point higher than the markup on the 10-year Treasury note rate—because this alternative would still enable borrowers to lock in a rate for a long-term loan that was indexed to a short-term rate.

Consolidation at a Fixed or Variable Interest Rate

Under this alternative, which was considered by the House of Representatives in 2005, borrowers could choose to consolidate their loans at a fixed or variable interest rate. If borrowers chose the fixed rate, they could consolidate their loans at the rate for three-month Treasury bills plus 3.3 percentage points. The terms are the same as in the previous alternative, as is the cost ($2.80 per $100 in originations using historical interest rates).

If borrowers chose the variable rate, the interest rate would fluctuate over the life of the consolidated loan at 2.3 percentage points above the annually adjusted three-month Treasury bill rate. However, under terms that are in effect through June 2006, many borrowers can obtain a long-maturity variable-rate loan at that spread by extending repayment without consolidating. Therefore, adding this choice increases the average cost very little.

Using historical interest rates, CBO estimates that the government's cost for this alternative would be $2.90 per $100 of loans originated. Using projected interest rates, CBO puts the cost at 70 cents per $100, the same as in the previous alternative. The cost of consolidation under this alternative is lower than the cost under terms in effect through June 2006 primarily because the fixed rate is 1 percentage point higher.[15] But consolidation is still costly under this alternative because the fixed interest rate is not indexed to a long-term market interest rate.

15. Most of the volume of loans consolidated could have instead been extended at a variable rate under the extended repayment plan. Therefore, from a borrower's perspective, a consolidation policy that allowed a choice between a fixed rate and a variable rate would not significantly differ from current policy, which allows only a fixed rate when consolidating.

APPENDIX

A

Assumptions Underlying the Cost Estimates in This Analysis

The assumptions underlying the cost estimates in this analysis are important to their interpretation. In addition, many of the values required to calculate the costs of student loan consolidation are highly uncertain. Except as noted, the assumptions are the same for both the direct and guaranteed loan programs. The sensitivity of the cost estimates to alternative assumptions is reported at the end of this appendix.

Interest Rates

Differences between short- and long-term interest rates have a large effect on the estimated costs of consolidation. The Congressional Budget Office (CBO) has estimated costs of the student loan program under two scenarios for the distribution of interest rates. One scenario is based on historical interest rates from the past 20 years, and the other is based on projected interest rates, as reported in CBO's latest *Budget and Economic Outlook*.[1] In both scenarios, the variability of interest rates is estimated from the annual variation in short-term Treasury rates over the past 20 years; long-term rates are based on the averages of projected short-term rates in future years. Over the past 20 years, the average long-term interest rate has been almost 7 percent, about 2 percentage points higher than the short-term rate. Over the next 10 years, however, the average long-term interest rate is projected to be about 5.5 percent, about half a percentage point higher than the projected average for the short-term rate.

Administrative Costs

In the guaranteed loan program, lenders are responsible for paying most administrative costs. In the direct loan program, however, the government pays those costs directly to employees and contractors. Because data on the total administrative costs for the direct loan program are not available, CBO assumes—on the basis of comparable market prices—that those costs are 50 basis points per year per dollar of outstanding direct loans.

Rates of Consolidation

Since 1998, borrowers have consolidated 70 percent of their outstanding student loans, on average; that amount has varied significantly over time, from a low of 40 percent in 2000 to a peak of more than 80 percent in 2004.[2] The rate of consolidation has been highest when the gains to borrowers from consolidation are also high.[3] Thus, under current law, the frequency of consolidation and accompanying term extension in any year increases with borrowers' gains from consolidation in that year.

CBO attributes the link between interest rates and rates of consolidation to the ability of borrowers to lock in a variable rate rather than their ability to extend the term to maturity of their loans. In evaluating policy alternatives in which the interest rate at consolidation does not vary over time, CBO assumes that a constant 40 percent of eligible borrowers will consolidate. Furthermore, for all loans that are consolidated or have their term to maturity extended, CBO assumes that those activities will occur

1. See Congressional Budget Office, *The Budget and Economic Outlook: Fiscal Years 2007 to 2016* (January 2006).

2. The consolidation participation rate for a given year is determined by dividing the value of loans consolidated in that year by the average amount of loans originated over the preceding five years.

3. The gains to borrowers and government's costs of consolidation are the difference between the present value of the original loan and the present value of the consolidated loan. That value approximates the value received by borrowers from exercising the option to consolidate immediately.

just before or just after repayment of the original loans begins.[4]

Because term extension is not a feature that is unique to consolidated loans, CBO had to make an assumption about the fraction of borrowers who would extend the term to maturity of their loans if consolidation was not available. In CBO's estimation, 40 percent of eligible borrowers would exercise the extended repayment provisions of their existing loans if consolidation was not available. That figure is symmetrical with the assumed rate of consolidation when borrowers do not have the right to lock in a short-term variable rate because term extension and consolidation are close substitutes for each other.

Defaults

The Department of Education reports annually on default rates by loan cohort. In recent years, cumulative two-year and lifetime default rates on original loans have been about 5 percent and 15 percent, respectively.[5] Recovery of defaulted loans is very high in an accounting sense, as the majority of borrowers who default eventually repay the outstanding principal, accrued interest, and any penalties. However, the significant administrative costs of recovery, the delay in recovering amounts from defaulted loans, the continuation of favorable interest-rate terms, and the write-off of some uncollectible loans suggest that the economic rate of recovery from default is less than 70 percent of the principal outstanding at the time of default. In addition to the direct costs of default, the department incurs significant expenses offering forbearance and deferment to borrowers in financial difficulty.

Rather than model the complex interaction between forbearance, default, and recovery, CBO assumes a constant annual rate of default adjusted for recovery and forbearance of 1 percent per year.[6] If CBO used a default rate that was 0.5 percent per year higher or lower, the estimated cost of consolidation would change by less than 25 cents per $100 in loan originations.

Discount Rates

The discount rate applied to cash flows is composed of a rate appropriate to default-free cash flows obtained from Treasury interest rates and a spread for the market risk associated with default. The private market for student loans offers one source of information about the likely magnitude of the market risk premium. Variable-rate student loans offered by private lenders have interest rates that range from 3 to 7 percentage points above short-term Treasury rates, depending on a borrower's credit history and job prospects. For a typical borrower, market rates are usually about 4 to 5 percentage points higher than short-term Treasury rates. However, in addition to incorporating a premium for market risk, the spread on Treasury rates includes administrative costs and the value of expected losses from defaults. CBO calculates that the market risk of the loans is 2 percentage points, on the basis of the assumption of a 4 percentage point spread over the short-term U.S. Treasury rate, a 1 percentage point annual cost of administration (including marketing and servicing), and a 1 percentage point loss from expected defaults.

To test for the sensitivity of the results to those assumptions, CBO reestimated the cost of the consolidation option with discount rates that were 1 percentage point higher and 1 percentage point lower. In each case, the cost estimates changed by about 50 cents per $100.

Other Assumptions

This analysis does not include the effects of loan prepayments, deferments, or forbearance. The estimate of the ratio of loans in the direct versus guaranteed loan programs is based on the average over the past 10 years. The mix of loan maturities that borrowers select upon consolidation and borrowers' choices about consolidating during the grace period are based on data obtained from private lenders and the Department of Education.

4. Under current law, when a borrower consolidates during the grace period before repayment begins, he or she locks in the in-school interest rate, which is 0.6 percentage points lower than the rate in regular repayment. CBO estimates that approximately 40 percent of borrowers will obtain that discount, an assumption that it includes in its estimated costs of consolidation.

5. The Department of Education declares borrowers to be in default after they are more than 270 days behind in their monthly payments, a definition that is more generous to borrowers than that used by private lenders. In addition, the reported cohort and lifetime default rates for original loans do not include defaults that occur after borrowers consolidate their loans. The Department of Education estimates a lifetime default rate of approximately 20 percent on consolidated loans.

6. On an annual basis, two-year cohort default rates are significantly higher than lifetime cohort default rates, which would seem to indicate that default rates vary with the age of a loan. There is insufficient data to model variation in default rates by loan age, however.

APPENDIX

B

The Economics of the Consolidation Option

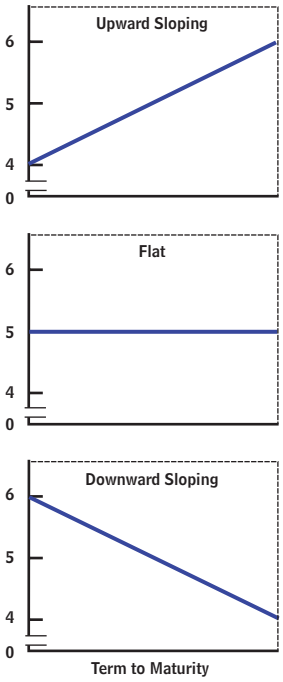
Under terms in effect through June 2006, when borrowers consolidate their student loans, they can lock in the prevailing short-term interest rate for the life of the loan. In the private market, that option would be available only in exchange for a considerable premium, because the cost of lending at a fixed rate of interest over a long period includes current as well as future short-term interest rates (and any risks associated with them). As a result, market-determined long-term interest rates capture the market's expected path for short-term rates plus a term premium.

The consequences of lending at fixed interest rates tied to short-term rates can be illustrated with a simple example. Consider the three sets of prevailing interest-rate conditions shown in Figure B-1. Each diagram shows the interest rate over various loan maturities, a relationship referred to as the term structure of interest rates or, alternatively, the yield curve. The first case—an upward-sloping yield curve—reflects the market's expectation that short-term interest rates will rise in the future. The second and third cases—flat and downward-sloping yield curves, respectively—reflect the market's expectation of no change in short-term interest rates or falling short-term interest rates.[1]

Consider the present value of an original loan with a floating interest rate and a consolidated loan with a fixed interest rate. For simplicity, assume that both loans have the same term to maturity and ignore the interest rate cap on such loans. A floating-rate loan tied to short-term interest rates will hold its value despite any changes in short-term interest rates. As interest rates rise, the future value of promised cash flows tends to fall, but that decline is offset by the increase in interest paid on the loan. Thus, a $100 student loan might have a present value of $85 in all three interest-rate scenarios. (The constant difference between the amount of the loan and its present value reflects the fact that the interest rate charged is insufficient to cover the cost of the loan.)

Figure B-1.

The Market Value of a $100 Loan



Original Floating Rate	Consolidation at Short-Term Rate
$85	$75
$85	$85
$85	$95

Source: Congressional Budget Office.

In contrast, the same loan with an interest rate fixed at the prevailing short-term rate will vary in its present value depending on the shape of the original yield curve. When the yield curve is upward sloping, the borrower obtains a fixed rate significantly below the longer-term rate that reflects expected short-term interest rates, making the loan

1. The figure does not include the term premium in long-term interest rates.

less valuable than the original variable-rate loan ($75, as indicated in Figure B-1). For a flat yield curve, there is no difference in value between the fixed and variable rates because the interest rate locked in coincides with the long-term rate. The downward-sloping yield curve would make the fixed-rate loan more valuable than the variable-rate loan because the loan would carry a rate that exceeds the prevailing long-term rate.

The difference in value between a fixed-rate loan and a variable-rate loan is the cost of consolidation at the time of its exercise under the prevailing interest rate conditions. If consolidation was equally likely under all three yield-curve scenarios, one might expect that, on average, the cost of providing the consolidation option would be near zero. But the incentives to the borrower holding the option suggest that when a fixed-rate loan is most valuable to the lender (case 3), it is least desirable to the borrower, so the option is less likely to be exercised. A borrower is most likely to exercise the consolidation option when the yield curve is upward sloping and least likely when the yield curve is downward sloping. On average, the consolidation option thus imposes a financial cost on the government even if all three yield curves are equally likely.[2] In purely private markets, lenders would offer only fixed-rate consolidation loans that were indexed to a longer-term interest rate because they could lose money otherwise.

2. In fact, upward-sloping yield curves are more frequent than downward-sloping ones. Thus, even if borrowers consolidate at random without regard to the benefit of doing so, consolidation will be costly to the government.