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# CREDIT REFORM

## U.S. Needs Better Method for Estimating Cost of Foreign Loans and Guarantees







**United States  
General Accounting Office  
Washington, D.C. 20548**

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**National Security and  
International Affairs Division**

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December 19, 1994

The Honorable Robert C. Byrd  
Chairman  
The Honorable Mark O. Hatfield  
Ranking Minority Member  
Committee on Appropriations  
United States Senate

The Honorable Jim Sasser  
Chairman  
The Honorable Pete V. Domenici  
Ranking Minority Member  
Committee on the Budget  
United States Senate

The Honorable David R. Obey  
Chairman  
The Honorable Joseph M. McDade  
Ranking Minority Member  
Committee on Appropriations  
House of Representatives

The Honorable Martin Olav Sabo  
Chairman  
The Honorable John R. Kasich  
Ranking Minority Member  
Committee on the Budget  
House of Representatives

This report responds to section 590 of the 1993 Foreign Operations, Export Financing, and Related Programs Appropriations Act (P.L. 102-391) and a request from the Chairman, Senate Committee on the Budget, that we evaluate the adequacy of the executive branch's methodology for implementing international aspects of the Federal Credit Reform Act of 1990. The legislation required that we (1) evaluate the executive branch's method for calculating country risk ratings and cost estimates for foreign loans and loan guarantees and develop our own estimates and (2) determine the probability of default for each country. We were also requested to review the executive branch's authority to reschedule international debt owed to the U.S. government and the implementation of the act's provisions for rescheduling international debt.

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The requirement to evaluate risk premiums for international lending recognizes the greater difficulty of making risk estimates for international credit compared to domestic credit, and is part of a broader question of how to apply the principles of credit reform to international credit programs.<sup>1</sup> For example, whereas domestic credit programs usually consist of a large number of similar loans over which risk is spread, international credit is more likely to consist of a small number of direct loans and loan guarantees with individually negotiated terms. Some have questioned whether credit reform fits well in the international arena; however, since the Credit Reform Act applies to international credit programs, having a sound method for estimating the cost of foreign loans and loan guarantees is important. Its importance arises from the need to ensure that the subsidy costs of such programs are accurately presented in the President's budget and that the necessary annual appropriations are enacted to cover the costs, before the direct loans are obligated and loan guarantees committed.

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## Results in Brief

Executive branch estimates of the subsidy cost for international loans and loan guarantees can be better determined by using an empirically rigorous method. The executive branch's method for calculating the subsidy cost of international loans and loan guarantees was to (1) rate countries' debt on a scale, from the most creditworthy to the least creditworthy after considering 35 subitems, most of which were 5-year expectations of economic performance indicators; (2) calculate the cost of country risk based on these assigned ratings and corresponding risk premiums; and (3) calculate the subsidy cost which, in addition to country risk cost, includes interest rate costs (or income) and fee income.

We found a number of weaknesses in the executive branch's method, particularly in the method it used to calculate risk premiums for countries of higher risk.<sup>2</sup> The principal weakness was that the executive branch's method was not based on econometric tests and measurements. Other weaknesses include (1) employing too little of the available data in its analysis, (2) using an incorrect key assumption on how financial markets work as a substitute for missing data, (3) obtaining the same risk premiums for loans and bonds, (4) not revising risk premiums with the

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<sup>1</sup>Risk premiums reflect the probability of default for a country by maturity and are applied to scheduled payment streams to obtain loan repayment projections.

<sup>2</sup>Country risk costs are the costs due to the risk that international loans or guarantees may not be fully repaid. Country risk cost in the international context is analogous to default cost in the domestic context. It is one component, albeit often the largest, of the subsidy cost as defined in the Credit Reform Act.

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most current information from financial markets, and (5) not adequately disclosing sources of bias. The executive branch also did not distinguish between new loans to countries of higher risk that have relatively large effects on old loan repayment and those loans that do not, because it believes that the Credit Reform Act precludes it from making this distinction in its cost estimates. We do not dispute its position on the legislation. However, our analysis indicates that, by not making this distinction, the subsidy cost estimates for new loans that have large effects on old loan repayments will tend to be overstated.

Our method for calculating the costs of international loans and loan guarantees also employed three steps: we (1) calculated country risk ratings by statistically combining those that appeared in two leading publications for financial institutions, (2) transformed our country risk ratings into risk premiums using data from financial markets for less risky debt and econometric test and measurements of the secondary market for more risky sovereign debt, and (3) calculated subsidy costs by using present value analysis. For all debt, we also estimated the extent to which new loans affected old loan repayments. In estimating the cost of risky debt, we based our estimates on 20 loans owed by 20 countries, whereas the executive branch based its calculations on 5 bond observations.

To compare the implications of using our estimation method to that of the executive branch, we estimated costs for the \$13.7 billion of international loans and guarantees authorized in fiscal year 1992, as if the estimates had been made during October 1993.<sup>3</sup> We estimate that the total U.S. government subsidy cost was \$3 billion using our method,<sup>4</sup> about 2-1/2 times the \$1.2 billion estimate using the method employed by the executive branch.<sup>5</sup> Most of the difference was due to differences in estimates of country risk cost. If we had not distinguished between new loans that had large effects on old loan repayments and those loans that did not, our estimates of total subsidy cost would have been \$4.6 billion.

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<sup>3</sup>When we began this review, the ratings, market data, and allocation of loans and guarantees we used were the most recent available that were consistent with the methods employed.

<sup>4</sup>Subsidy costs of a loan are determined by the net sum of the following components expressed in present value: (1) the interest costs or the negative of the interest revenues, since a loan can be made at rates less or greater than the U.S. government can borrow; (2) the negative of the revenues received from any fees collected; and (3) country risk cost.

<sup>5</sup>Throughout this report, we refer to the cost estimates we made based on the fundamental principles of the executive branch's method as "executive branch estimates" or "those by the executive branch." Executive branch re-estimates made later in fiscal year 1993 would not have changed.

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Cost estimates using either the executive branch's or our method will differ depending upon market expectations for a particular time and group of foreign loans and guarantees. For example, if our country risk cost estimates had been made based on more recent secondary market prices, then our estimates would have been smaller because prices on the secondary market were generally higher. Also, in future years, we would generally expect there to be relatively more rollover of loans than occurred in 1992, when large amounts of funds shifted toward countries in Central and Eastern Europe and the newly independent states of the former Soviet Union thereby increasing our estimates of country risk cost.

We believe our subsidy and risk-based cost estimates are conservative for that time because (1) even though our estimates were based on the market price of privately owned sovereign debt, in the long run, we believe sovereign foreign debtors are more likely to pay off debt owned by the private sector;<sup>6</sup> (2) we used the price of privately owned sovereign debt, which was traded, as a proxy for privately owned sovereign debt that was not traded, since traded debt is more liquid and should command a higher price; and (3) we purposely made an assumption that caused our estimates to be conservative.<sup>7</sup>

Our estimates and those calculated using the method employed by the executive branch of the international credit programs' subsidy and country risk cost rates (estimated cost divided by funds lent or guaranteed) are presented in table 1.

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<sup>6</sup>The private sector is fairly exclusively motivated to maximize its profitability, whereas the U.S. government has a multiplicity of other goals, including enhancing foreign policy objectives, promoting U.S. defense goals, and helping domestic constituent interests. In Jeremy Bulow, Kenneth Rogoff and Afonso S. Bevilacqua, "Official Creditor Seniority and Burden Sharing in the Former Soviet Bloc," *Brookings Papers on Economic Activity*, no. 1 (1992), pp. 195-234, the authors present empirical evidence, econometric tests, and theoretical arguments that are suggestive of this view. Although it is theoretically possible that concern about trade, defense, or foreign policy might motivate sovereign debtors to preferentially repay the U.S. government, in the long run this does not appear to be supported by the evidence to date. In the future, however, this question may be better tested econometrically and answered. In any event, our method and the executive branch's method are both based on the market price of privately owned debt. This consideration will tend to bias both cost estimates in the same direction.

<sup>7</sup>We purposely underestimated subsidy costs by assuming all 1992 repayments on old loans up to the size of the new loans were due to the new loans. Risk-based cost is high because many new loans to recipients greatly exceeded the amount owed on old loans, partly because funds then were being shifted toward countries of Eastern Europe and the newly independent states of the former Soviet Union.

**Table 1: Program Cost Rate Estimates for Fiscal Year 1992 Credit Authorized Using the Executive Branch's and Our Methods**

	Rates in percents/Dollars in thousands				
	Subsidy cost rate		Country risk cost rate		Credit authorized
	GAO	Executive branch	GAO	Executive branch	
AID housing guarantee	13.5	9.0	18.7	14.1	\$83,000
CCC GSM 102	25.1	7.4	25.7	8.0	5,446,615
CCC GSM 103	2.5	10.4	3.0	10.9	86,240
DSAA FMS	9.5	10.1	6.0	5.7	345,000
EXIM guarantee	18.7	5.4	21.7	8.4	6,595,682
EXIM loan	14.4	9.9	16.7	11.5	808,800
USDA P.L. 480	75.4	72.8	28.4	25.9	368,110
All programs	22.1	8.4	22.6	8.9	\$13,733,447

Note: AID, Agency for International Development; CCC, Commodity Credit Corporation; GSM, General Sales Manager; DSAA, Defense Security Assistance Agency; FMS, foreign military sales; EXIM, Export-Import Bank; USDA, U.S. Department of Agriculture.

We also estimated 170 countries' long-run probabilities of default based on systematic estimates from financial markets where privately owned sovereign debt is traded. Our estimates varied depending upon the riskiness of the countries and ranged from 92.1 percent for Cambodia to 0 percent for the highest rated countries such as Japan, Switzerland, and Germany. (See app. V for our estimates of the long-run probabilities of default.)

Given the broad authorities contained in the statutes authorizing the various loan programs, and the absence of any prohibitions to the contrary, we have no reason to question the conclusion of the executive branch that it has the authority to reschedule international loans. In addition, we believe Office of Management and Budget (OMB) guidance relevant to Paris Club rescheduling is consistent with the Credit Reform Act's requirements.<sup>8</sup> However, an OMB official told us that agencies were not following some aspects of the OMB guidance. They had not been including the cost of possible rescheduling at below-market interest rates

<sup>8</sup>The Paris Club is the mechanism the United States and other official creditors use to reschedule debt from foreign countries that are unable to meet their external debt obligations. Paris Club meetings are organized by the French Finance Ministry. Traditional participants of the Paris Club are the 24 members of the Organization for Economic Cooperation and Development. The Department of State represents the U.S. government in Paris Club negotiations.

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in their initial estimates, which is inconsistent with the act's requirements that the budget include the full subsidy cost of credit programs in the year in which the loan obligations or loan commitments are made. Also, except for EXIM, agencies are not making annual re-estimates on international loans and guarantees. Annual re-estimates by the agencies should indicate any increases in costs; budget authority for such cost increases are covered by a permanent indefinite appropriation. (See app. VI for a further description of the legal treatment of international debt rescheduling.)

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## Background

Before fiscal year 1992, the federal budget treated the cost of a new loan in the year authorized as the net of loan disbursements minus repayments in that year and the cost of a new guarantee as zero (except when offset by origination fees.) Only if and when the U.S. government paid out funds to settle claims on a previously made guarantee did the cost of the guarantee appear in the U.S. government budget. Consequently, the budget underestimated the long-term costs of loan guarantees and overestimated that of direct loans. As a result, agencies began issuing fewer loans and more guarantees, even though, in principle, long-term country risk costs for both should be about the same.

The Federal Credit Reform Act of 1990 corrected this distortion. It required U.S. agencies, beginning in fiscal year 1992 to estimate and budget for the long-term costs of a loan or guarantee in the year authorized, using present-value analysis.<sup>9</sup>

To implement the Credit Reform Act—which was enacted in November 1990—executive branch agencies with program responsibility for foreign loans and guarantees each made their own cost estimates from October to December 1990. In January and February 1991, many of these estimates were criticized by congressional committees and the Congressional Budget Office (CBO) for two reasons. First, some agencies had not clearly defined and stated assumptions they had made in arriving at their estimates. Second, one agency's stated assumptions were often inconsistent with those made by another. Consequently, the U.S. government formed a working group known as the Interagency Country Risk Assessment System (ICRAS) to uniformly evaluate for the executive

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<sup>9</sup>Present-value analysis calculates the value today of a future stream of income or cost. A dollar available today is worth more than a dollar in the future because it could have earned interest in the interim. Conversely, a cost paid in the future is reduced when valued today.



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branch the country risk contained in foreign loans and guarantees.<sup>10</sup> To transform ICRAS' creditworthiness measures into estimates of country risk costs, OMB, EXIM and the Departments of State and Treasury formed a committee in October 1991 to devise uniform country risk interest rate premiums.

Three risk premium proposals were presented, which differed primarily in regard to the risky countries—those rated lower than Moody's and Standard and Poor's Baa/BBB ratings. A proposal by CBO, which generally had the highest risk premiums and consequent country risk cost estimates, was unacceptable to the Departments of State and Treasury. The Departments of State and Treasury proposed the lowest risk premiums for new debt issued after fiscal year 1991 (all under credit reform) and higher risk premiums for older debt (not under credit reform). They argued that this new debt was less likely to be rescheduled at the Paris Club than the older debt, but OMB rejected this proposal. The third proposal, presented by EXIM, along with some of the work supporting the CBO proposal, formed the basis of the risk premiums adopted by this committee.

OMB requires executive branch agencies to calculate the costs of foreign loans and guarantees using annually updated ICRAS ratings and, until now unchanged, country risk interest premiums when foreign loans or guarantees are budgeted, authorized, disbursed, or modified. Throughout the life of the loan or guarantee, OMB guidance requires agencies to make annual re-estimates of costs.

The ultimate test of country risk and associated cost estimates is the accuracy of these estimates, which can only be measured years after estimates are made. However, meaningful professional judgments about country risk and country risk cost methods can be made using criteria such as whether (1) the method is well grounded in theory, (2) it uses generally accepted statistical estimating methods, and (3) sources of bias are identified and the estimates are qualified for any bias.

The Credit Reform Act requires that the executive branch measure loan and guarantee subsidy costs on a "cost to the U.S. government" basis rather than on a "benefit to borrower" basis, which produces higher cost

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<sup>10</sup>OMB is Chairman and EXIM is Secretariat of ICRAS. Other ICRAS members are the Departments of State, Treasury, and Agriculture; DSAA; Overseas Private Investment Corporation; AID; the Council of Economic Advisers; and the Federal Reserve Board. We recognize that the Federal Reserve is not an agency of the executive branch, even though we refer to the method that uses ICRAS ratings as the executive branch method.

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estimates.<sup>11</sup> We measure cost on a cost to the U.S. government basis. The executive branch and CBO also measure cost using the same basis.

U.S. government agencies had \$49.5 billion in international loans and \$48.7 billion in international guarantees outstanding on September 30, 1992. (See app. I for a further description of the Credit Reform Act and its implications.)

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## Evaluation of the Executive Branch's Method

A number of weaknesses exist in the method employed by the executive branch to estimate country risk and the associated subsidy cost, the most significant weakness being that the executive branch's method was not based on econometric tests and measurements. Most other weakness originated in the method employed by the risk premium committee when setting the premiums for countries with ratings below Baa/BBB, where most of the country risk cost occurs.

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## The Executive Branch's Method

The executive branch's method for calculating the cost of international loans and loan guarantees was a three-part process. First, the executive branch rated countries for country risk. Then the cost of country risk was calculated based on these ratings and corresponding risk premiums assigned by the risk premium committee in October 1991. Finally the subsidy cost was calculated, which, in addition to country risk cost included interest rate cost (or income) and fee income.

The executive branch's ratings were based on 35 subitems, most of which were 5-year expectations of economic indicators. These 35 subitems were grouped in 5 subrating categories: payments history, macroeconomics, the debt burden, balance of payments adjustment capacity, and political and social factors. ICRAS scored the 35 subitems, 5 subrating categories, and the overall summary country ratings on an 11-grade scale from "A" for the most creditworthy to "F- -" for the least creditworthy.

During October 1991 the risk premium committee developed its method for transforming ICRAS credit ratings into risk premium used to measure country risk cost. The risk premium for ICRAS' top three categories, A, B, and C were based on 19 bond observations. These three ICRAS categories correspond to Moody's and Standard and Poor's ratings Baa/BBB or higher. Historical average 3-year risk premiums for bonds with these same ratings as the bond observations became the risk premiums for these three

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<sup>11</sup>Administrative costs are budgeted separately under credit reform.

ICRAS categories. The risk premium committee based the risk premium for the next four ICRAS categories, C-, D, D-, and E, on only five observations of bonds—three Ba/BB rated bonds and two B/B rated bonds. The risk premium committee derived 16 risk premiums for these 4 ICRAS categories from the risk premiums for these 5 observations, without using econometric methods.<sup>12</sup>

The risk premium committee extrapolated risk premiums from the E category to obtain risk premium for the last 4 categories E-, F, F- and F- -. In these categories, the executive branch's method assumed that the level of country risk did not affect the relative size of one maturity's risk premiums compared to another's. At least one member of the committee checked to ensure that the risk premiums for the long-term debt were roughly consistent with the general range of prices from the secondary market. The executive branch then calculated subsidy costs using present value analysis.

## Weaknesses of the Executive Branch's Method

Although we recognize that the executive branch had only a short amount of time after enactment of the Credit Reform Act to develop appropriate methods to estimate country risk and its cost, we found that the method it developed and employed had several weaknesses, the principal one being the lack of econometric tests and measurements. The most significant weakness originated in the method employed by the risk premium committee, especially for countries with ratings below Baa/BBB where most of the country risk cost occurs. In particular, the risk premium committee's method

- employed too little data below ICRAS C rated countries for the large amount of information needed;
- frequently assumed that the level of country risk had no effect on the relative size of the risk premiums for different maturities;
- obtained the same risk premiums for both loans and bonds, resulting in executive branch country risk cost estimates for loans being less than for bonds, which was the opposite of what we found on the emerging market;<sup>13</sup>

<sup>12</sup>The four ICRAS rating categories multiplied by four maturity categories—1, 5, 10, and 30 years.

<sup>13</sup>This situation occurs because principal is generally due on bonds at maturity but is due for loans from issuance until maturity. As a result, the average payment due on a bond occurs further in the future, and, other things being equal, the executive branch discounts it more heavily.

- had not been updated, even though new information from financial markets had been available and OMB officials had told us throughout our review that the risk premiums for short-term loans to the riskiest countries were too low;
- did not disclose the sources of bias, except for acknowledging that the risk premiums of short-term loans to the riskiest countries were too low; and
- made no distinction between new loans to risky countries that have relatively large effects on old loan repayment, cause relatively small increases in U.S. government exposure, and thereby have relatively small country risk costs, and those new loans to risky countries that do not.

Additionally, we found some weaknesses in ICRAS' rating method. Most of the 35 subitems ICRAS used to form sovereign risk ratings were ICRAS' 5-year expectations of economic, political, and social variables that are intuitively appealing predictors of the ability and willingness to meet loan obligations; however, many subitems did not pass econometric tests for significance in the professional economic literature. In addition, subitems were not combined with weights based on econometric estimations, and the subitems' predictive ability was not tested.

Because of weaknesses in estimating country risk and its costs, executive branch estimates could be influenced by external considerations, such as pressure to grant loans or guarantees to particular countries. This could weaken agencies' ability to make sound lending decisions and the Congress' ability to make sound funding decisions. For example, some executive branch officials told us that in 1992 officials from the Departments of State and Treasury exerted some pressure to raise executive branch ratings, mostly for countries in Central and Eastern Europe and the newly independent states of the former Soviet Union, although the reported effects of that pressure were modest.

## Our Method

Our method for calculating the costs of international loans and guarantees is also a three-step process. However, unlike the executive branch, our method is based on the rigorous use of econometric tests and measurements, and distinguishes between new loans that affect repayments on old loans owed the U.S. government (rollovers) and new loans that increase exposure.

We first obtained continuous country risk ratings by statistically combining those that appeared in September 1992 in two leading magazines for financial institutions. Second, we transformed our credit ratings into risk premiums. We obtained the risk premiums relative to the

riskless Aaa/AAA rate for less risky debt, Baa/BBB or higher, directly from financial markets in which similar privately owned bonds are traded and transform them into country risk values of debt.<sup>14</sup> We obtained the country risk value of risky U.S. government-owned sovereign loans from the secondary market in which similar privately owned loans are traded, using econometric tests and measurements. For both risky and nonrisky loans, we estimated the value of debt that is a complete rollover; that is, it causes an equal amount of old loan repayment. We then estimated the extent that each new loan causes old debt repayments, the average propensity to repay old loans, and the remaining part increases U.S. government exposure. To obtain the country risk value of new loans, we averaged these country risk values of sovereign debt; one for complete rollovers, the other for complete increased exposure. We then transformed these country risk new loan values into country risk new loan interest rate premiums above the Aaa/AAA rate using present value analysis.

Finally, like the executive branch, we calculated subsidy cost using present value analysis. (For a more detailed explanation see app. III.)

## Country Risk Ratings

The executive branch's country risk ratings developed in the last half of fiscal year 1992 for the fiscal year 1994 budget process had some similarity but had important differences from (1) two contemporaneous, professionally recognized, country risk ratings and our country risk ratings that statistically averaged these professionally recognized ratings and (2) contemporaneous prices on the secondary market of privately owned, dollar-denominated, variable interest rate debt owed by developing country governments. The executive branch's country risk ratings differed from each of these external standards substantially more than these external standards differed from each other.

## Recommendations

We recommend that the Director, OMB, revise the executive branch's method of estimating the cost of country risk so that it econometrically utilizes available information from the secondary market on how prices are affected by country risk and other debt characteristics. We also recommend that the Director of OMB ensure that (1) ICRAS' rating method is revised so that it makes greater use of empirically tested criteria and weights, (2) agencies make initial estimates of subsidy costs that include estimates of potential rescheduling at below-market rates, and (3) agencies make annual re-estimates of subsidy costs.

<sup>14</sup>For the most creditworthy debt, we used bonds because we had no loan information.

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## Matter for Congressional Consideration

A stated purpose of the Credit Reform Act was to measure more accurately the costs of U.S. government credit programs so that better decisions could be made on the allocation of resources among credit programs and between credit and other spending programs. Making a distinction between new loans to risky countries that have relatively large effects on old loan repayments and those new loans that do not would improve the quality of the subsidy cost estimates. Because of the greater difficulty in making risk estimates for international credit programs, the Congress may wish to consider how the principles included in the Credit Reform Act ought to be applied to direct international lending and lending guaranteed by the U.S. government.

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## Agency Comments and Our Evaluation

OMB provided comments on this report on behalf of itself; the Departments of Agriculture, State, and the Treasury; and EXIM. (See app. VII.) OMB generally agreed with the economics we employed to measure country risk and its cost and acknowledged some weaknesses in ICRAS' method for estimating costs.

However, OMB indicated that the Credit Reform Act precluded it from making distinctions in its cost estimates between new loans that affect old loan repayments (rollovers) and those loans that do not. To overcome the problem, we are suggesting that the Congress may wish to consider how to apply credit reform principles to international credit programs. The question of rollovers should be part of that consideration.

OMB also believed that, even if this distinction were permitted, estimating subsidy costs based on new loan rollovers was impractical because it would involve estimating thousands of fluctuating subsidy estimates for 167 separate countries. After carefully considering OMB's comment, we believe OMB overstated the nature of the problem. For example, not all of these countries would be involved in a subsidy estimate; we made the calculations for 70 countries. Furthermore, calculations could be simplified by (1) statistically relating variable interest rate, dollar-denominated sovereign loan prices to grouped ratings; (2) estimating by credit rating group, agency loan, and guarantee allocation levels; and (3) calculating two scenarios—one high cost without rollover and another low cost with maximum rollover, then deciding what the leading point estimate should be. Since one of the primary goals of the Credit Reform Act was to more accurately measure costs of U.S. government credit programs, we believe that making this distinction would improve the quality of subsidy estimates.

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OMB agreed that prices on the secondary market formed the best basis for making cost estimates; however, it said that secondary market prices varied substantially. It expressed concern that our cost estimates depended on observations during a 2-week period 2 years ago. We agree that our cost estimates depend upon market observations during this 2-week period. Our draft report qualified our estimates by pointing out that differences in estimates depend upon market expectations for a particular time and group of foreign loans and will generally change if either of these conditions are affected. It also pointed out that our cost estimates for risky countries were based on dollar denominated, variable interest rate loans owed or guaranteed by risky countries' governments. In contrast, the secondary market index OMB referred to in its comments included many other types of debt, including foreign currency debt, fixed-rate debt, bonds, and private nonsovereign guaranteed debt. Such an index is more likely to vary because of movements in world interest rates and foreign exchange rates than the type of loans that we used for the relevant comparison.

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## Scope and Methodology

We conducted our review in Washington, D.C., and collected data and discussed various issues in this report with members of ICRAS and officials of OMB; CBO; EXIM; the Overseas Private Insurance Corporation; AID; and the Departments of Treasury, State, Agriculture, and Defense. We evaluated the executive branch's country risk ratings for the fiscal year 1994 budget against contemporaneous external standards for measuring country risk and for internal consistency, mostly through the use of regression analysis. We also evaluated its rating method in terms of the degree that it had support from econometric tests. We developed our own country risk ratings by statistically averaging two contemporaneous professionally accepted ratings. We further developed our method of transforming country risk ratings into country risk cost using econometric estimates on data derived from the secondary market. A complete description of our method to estimate country risk and its cost is contained in appendix III.

We performed our review from December 1992 to October 1994 in accordance with generally accepted government auditing standards.

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We are sending copies of this report to the Director, OMB, the President, EXIM, and the Secretary of the Treasury. We will also make copies available to others on request.

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Please contact us on (202) 512-4128 and (202) 512-4812, respectively, if you or your staff have any questions on this report. Major contributors to this report are listed in appendix VIII.



Harold J. Johnson  
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Abbreviations

AID	Agency for International Development
CBO	Congressional Budget Office
CCC	Commodity Credit Corporation
DSAA	Defense Security Assistance Agency
EXIM	Export Import Bank
FMS	Foreign Military Sales
GSM	General Sales Manager
ICRAS	Interagency Country Risk Assessment System
OMB	Office of Management and Budget
USDA	U.S. Department of Agriculture

# Background: Credit Reform

This background appendix also is a part of three other reports on credit reform implementation: an evaluation of the use of negative subsidy credit receipts, an evaluation of decisions to include certain programs under the Federal Credit Reform Act, and the use of estimated future credit savings to offset current spending.<sup>1</sup>

The federal government uses direct loans and loan guarantees as tools to achieve numerous program objectives such as assistance to housing, agriculture, education, small businesses, and foreign governments. At the end of fiscal year 1993, the face value of the government's direct loans and loan guarantees totaled a reported \$861 billion, of which \$201 billion was in direct loans and \$660 billion was in loan guarantees.

After over 20 years of discussion about the shortcomings of using cash budgeting for credit programs and activities, the Federal Credit Reform Act of 1990 was enacted on November 5, 1990, as title 13B of the Omnibus Budget Reconciliation Act of 1990, Public Law 101-508. The Credit Reform Act changed the budget treatment of credit programs so that their costs can be compared more accurately with each other and with the costs of other federal spending. It also was intended to ensure that the full cost of credit programs over their entire lives would be reflected in the budget when the loans were made so that the executive branch and the Congress might consider them when making budget decisions.

In addition, it was recognized that credit programs had different economic effects than most budget outlays, such as purchases of goods and services, income transfers, and grants. In the case of direct loans, for example, the fact that the loan recipient was obligated to repay the government over time meant that the economic impact of a direct loan disbursement could be much less than other budget transactions of the same dollar amount.

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## Credit Reform Was Designed to Remove Difficulties Caused by Cash Treatment

Before credit reform, it was difficult to make appropriate cost comparisons between direct loan and loan guarantee programs and between credit and noncredit programs. Credit reform requirements were formulated to address the factors that caused this problem.

Two key principles of credit reform are (1) the definition of cost in terms of the present value of cash flow over the life of a credit instrument and

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<sup>1</sup>See *Credit Reform: Appropriation of Negative Subsidy Receipts Raises Questions* (GAO/AIMD-94-58, Sept. 26, 1994), *Credit Reform: Case-by-Case Assessment Advisable in Evaluating Coverage and Compliance* (GAO/AIMD-94-57, July 28, 1994), and *Credit Reform: Speculative Savings Used to Offset Current Spending Increase Budget Uncertainty* (GAO/AIMD-94-46, Mar. 18, 1994).

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(2) the inclusion in the budget of the costs of credit programs in the year in which the budget authority is enacted and the direct or guaranteed loans are disbursed.

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## Credit Reform Was Designed to Allow Appropriate Cost Comparisons

Before credit reform, credit programs—like other programs—were reported in the budget on a cash basis. This cash basis distorted costs and, thus, the comparison of credit program costs with other programs intended to achieve similar purposes, such as grants. It also created a bias in favor of loan guarantees over direct loans.

Loan guarantees appeared to be free while direct loans appeared to be very expensive because the budget did not recognize that at least some of the loan guarantees would default and that some of the direct loans were to be repaid.

For direct loans, the budget showed budget authority and outlays in the amount that loan disbursements exceeded repayments received in that budget year. This cash approach overstated direct loan costs in the initial years of a program when loan disbursements were likely to be greater than repayments. Conversely, this treatment understated costs in later years when loan repayments were more likely to be much larger relative to disbursements. Cash-based budgeting did not recognize that at least a portion of the loan outlays would be repaid in the future. In contrast, for loan guarantees, the budget did not record any budget authority or outlays when the guarantees were made (except the negative outlay resulting from any origination fees), even though they were likely to entail future losses. It showed budget authority and outlays only when, and if, defaults occurred.

Credit reform changed this treatment for direct loans and loan guarantees made on or after October 1, 1991. It required that budget authority to cover the cost to the government of new loans and loan guarantees (or modifications to existing credit instruments) be provided before the loans, guarantees, or modifications are made. Credit reform requirements specified a net cost approach using estimates for future loan repayments and defaults as elements of the cost to be recorded in the budget. This puts direct loans and loan guarantees on an equal footing; it permits the costs of credit programs to be compared with each other and with the costs of noncredit programs when making budget decisions.

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## Credit Reform Identifies the Government's Cost of Credit Activities

Credit reform requirements separate the government's cost of extending or guaranteeing credit, called the subsidy cost, from administrative and unsubsidized program costs. Administrative expenses receive separate appropriations. They are treated on a cash basis and reported separately in the budget. The unsubsidized portion of a direct loan is expected to be recovered from the borrower.

The Credit Reform Act defines the subsidy cost of direct loans as the present value—over the loan's life—of disbursements by the government (loan disbursements and other payments) minus estimated payments to the government (repayments of principal, payments of interest, and other payments) after adjusting for projected defaults, prepayments, fees, penalties, and other recoveries. It defines the subsidy cost of loan guarantees as the present value of cash flows from estimated payments by the government (for defaults and delinquencies, interest rate subsidies, and other payments) minus estimated payments to the government (for loan origination and other fees, penalties, and recoveries).

According to Office of Management and Budget guidance, credit programs have a positive subsidy, that is, they lose money, when the present value of estimated payments by the government exceeds the present value of estimated receipts. Conversely, negative subsidy programs are those in which the present value of estimated collections is expected to exceed the present value of estimated payments; in other words, the programs make money (aside from administrative expenses).

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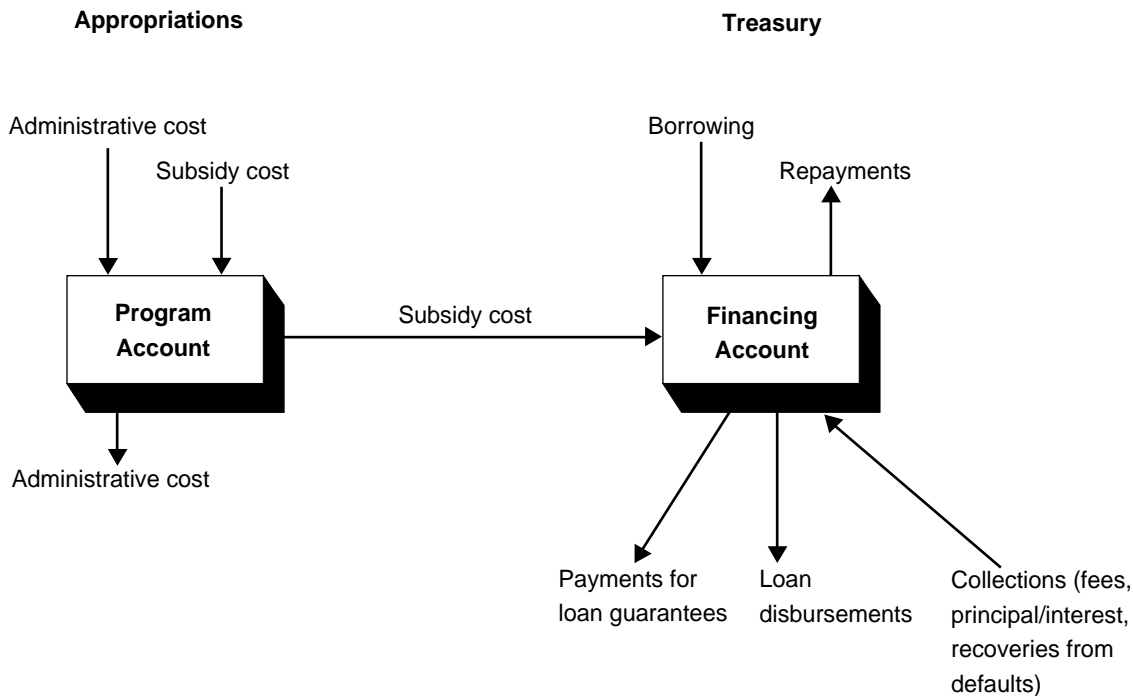
## Credit Programs Now Use Three Budgetary Accounts

The Credit Reform Act set up a special budget accounting system to record the budget information necessary to implement credit reform. It provides for three types of accounts—program, financing, and liquidating—to handle credit transactions.

Credit obligations and commitments made on or after October 1, 1991—the effective date of credit reform—use only the program and financing accounts. The program account receives separate appropriations for administrative and subsidy costs of a credit activity and is included in budget totals. When a direct or guaranteed loan is disbursed, the program account pays the associated subsidy cost for that loan to the financing account. The financing account, which is nonbudgetary, is used to record the cash flow associated with direct loans or loan guarantees over their

lives.<sup>2</sup> It finances loan disbursements and the payments for loan guarantee defaults with (1) the subsidy cost payment from the program account, (2) borrowing from the Treasury, and (3) collections received by the government. Figure I.1 diagrams this cash flow.

Figure I.1: Credit Reform Cash Flow Simplified



If subsidy cost calculations are accurate, the financing account will break even over time as it uses its collections to repay its Treasury borrowing.

Direct loans and loan guarantees made before October 1, 1991, are reported on a cash basis in the liquidating account. This account continues the cash budgetary treatment used before credit reform. It has permanent,

<sup>2</sup>Nonbudgetary accounts may appear in the budget document for information purposes but are not included in the budget totals for budget authority or budget outlay. They do not belong in the budget because they show only how something is financed, and do not represent the use of resources.

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indefinite budget authority<sup>3</sup> to cover any losses. Excess balances are transferred periodically—at least annually—to the Treasury.

In addition to the three accounts specified in the Credit Reform Act, OMB has directed that credit programs or activities with negative subsidies must have special fund receipt accounts to hold receipts generated when the program or activity shows a profit. OMB guidance provides that these funds cannot be used unless appropriated.

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## OMB and Treasury Provide Implementation Guidance

OMB and the Department of the Treasury provide guidance on implementing credit reform. OMB's written guidance is contained primarily in OMB Circulars A-11, A-34, and A-129.<sup>4</sup> OMB also has issued memorandums to provide additional implementation guidance addressing specific situations. The Treasury's guidance is provided in materials such as Basic Transactions Relating to Guaranteed Loans and Subsidies (Apr. 30, 1992), which contains a number of illustrative cases developed by its Financial Management Service and distributed to agencies as examples of how to account for credit reform transactions.

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## Individual Program Characteristics Raise Credit Implementation Questions

Fiscal year 1994 is the third year that credit programs have been required to comply with credit reform. Both agencies that operate credit programs and those that provide implementation guidance—OMB and Treasury—have had to address a variety of situations for which the Credit Reform Act does not provide explicit direction. Questions have arisen and continue to arise as the agencies implement credit reform. Several groups have been created, such as the Federal Credit Policy Working Group, the Credit Reform Steering Committee, and Interagency Country Risk Assessment System (ICRAS) to address these implementation issues and questions.

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<sup>3</sup>Permanent budgetary authority is available as a result of permanent legislation and does not require annual appropriation. Indefinite budget authority is budget authority of an unspecified amount of money.

<sup>4</sup>OMB Circular A-11 is entitled Preparation and Submission of Budget Estimates; Circular A-34 is entitled Instructions on Budget Execution; Circular A-129 is entitled Managing Federal Credit Programs.



# Our Estimates of Country Risk and Its Cost

This appendix presents our estimates of the cost of country risk in a variety of forms, although all cost and cost rate estimates are on a cost to the U.S. government basis. We first present our estimates of the country risk cost rate (country risk cost divided by loan size) for each of 170 countries, one set of estimates for loans (or loan guarantees) that have no effect on old loan repayment in table II.1 and a set of estimates for those loans that have a maximum effect on old loan repayment in table II.2. In table II.3 we present our country program estimates of the cost of country risk for fiscal year 1992 authorized international loans and loan guarantees. In table II.4 we present our program country risk cost rate estimates, those from a sensitivity test, and those from the executive branch.

Table II.1 presents our continuous and grouped country risk rating estimates for each of 170 countries and, by maturity, our estimates of the new loan country risk cost rate when new loans have no effect on old loan repayments. For the most creditworthy borrowers—those with our group rating of A—our country risk cost rate estimate is zero.

**Table II.1: Our Ratings and Estimates of Country Risk Cost Rates When New Loans Have No Effect on Old Loan Repayment**

Rates in percents

Country	Our rating	Our group	Maturity 1 year	Maturity 5 years	Maturity 10 years	Maturity 30 years
Afghanistan	15.1	F-	82.4	82.8	82.9	83.4
Albania	17.9	F-	78.9	79.3	79.5	80.0
Algeria	41.4	E-	49.2	49.6	49.9	50.8
Angola	22.8	F	72.7	73.1	73.4	74.0
Antigua and Barbuda	26.3	F	68.3	68.7	69.0	69.7
Argentina	44.5	E	45.3	45.7	45.9	46.8
Armenia	16.2	F-	81.1	81.4	81.6	82.1
Australia	94.0	B	0.2	0.8	1.3	3.4
Austria	97.7	A	0	0	0	0
Azerbaijan	16.4	F-	80.8	81.1	81.3	81.8
Bahamas	75.0	C-	0.8	2.4	4.3	10.6
Bahrain	81.1	C-	0.8	2.4	4.3	10.6
Bangladesh	27.8	F	66.4	66.8	67.1	67.9
Barbados	50.1	E	38.2	38.6	38.8	39.6
Belarus	24.8	F	70.2	70.6	70.9	71.6
Belgium	97.0	B	0.2	0.8	1.3	3.4
Belize	48.3	E	40.5	40.8	41.1	41.9

(continued)

**Appendix II**  
**Our Estimates of Country Risk and Its Cost**

Rates in percents

<b>Country</b>	<b>Our rating</b>	<b>Our group</b>	<b>Maturity 1 year</b>	<b>Maturity 5 years</b>	<b>Maturity 10 years</b>	<b>Maturity 30 years</b>
Benin	15.9	F-	81.4	81.8	81.9	82.4
Bhutan	21.3	F-	74.6	75.0	75.2	75.9
Bolivia	28.4	F	65.6	66.1	66.3	67.1
Bosnia-Herzegovia	22.5	F	73.1	73.5	73.7	74.4
Botswana	52.9	D-	34.6	35.0	35.2	36.0
Brazil	39.6	E-	51.5	51.9	52.2	53.1
Brunei	86.6	C	0.4	1.2	2.2	6.2
Bulgaria	29.3	F	64.5	64.9	65.2	66.0
Burkina Faso	26.5	F	68.0	68.5	68.7	69.5
Burma (Myanmar)	16.5	F-	80.7	81.0	81.2	81.7
Burundi	27.1	F	67.3	67.7	68.0	68.7
Cambodia	7.4	F- -	92.2	92.3	92.4	92.6
Cameroon	32.0	F	61.1	61.5	61.8	62.6
Canada	97.3	A	0	0	0	0
Cape Verde	19.4	F-	77.0	77.4	77.6	78.2
Central African Republic	24.7	F	70.3	70.7	71.0	71.7
Chad	22.2	F-	73.5	73.9	74.1	74.8
Chile	76.1	C-	0.8	2.4	4.3	10.6
China, People's Republic	76.7	C-	0.8	2.4	4.3	10.6
Colombia	59.7	D-	26.0	26.3	26.5	27.1
Congo	18.5	F-	78.1	78.5	78.7	79.3
Costa Rica	35.7	E-	56.4	56.9	57.1	58.0
Cote d'Ivoire	23.0	F	72.5	72.9	73.1	73.8
Croatia	25.1	F	69.8	70.2	70.5	71.2
Cuba	11.8	F- -	86.6	86.9	87.0	87.4
Cyprus	71.8	C-	0.8	2.4	4.3	10.6
Czechoslovakia	66.1	D	17.9	18.1	18.2	18.7
Denmark	95.8	B	0.2	0.8	1.3	3.4
Djibouti	27.5	F	66.8	67.2	67.5	68.2
Dominican Republic	24.6	F	70.4	70.9	71.1	71.8
Ecuador	29.0	F	64.9	65.3	65.6	66.4
Egypt	35.1	E-	57.2	57.6	57.9	58.7
El Salvador	23.3	F	72.1	72.5	72.7	73.4
Estonia	27.3	F	67.0	67.5	67.7	68.5
Ethiopia	17.4	F-	79.5	79.9	80.1	80.6
Fiji	49.6	E	38.8	39.2	39.4	40.3
Finland	94.6	B	0.2	0.8	1.3	3.4

(continued)

**Appendix II**  
**Our Estimates of Country Risk and Its Cost**

Rates in percents

<b>Country</b>	<b>Our rating</b>	<b>Our group</b>	<b>Maturity 1 year</b>	<b>Maturity 5 years</b>	<b>Maturity 10 years</b>	<b>Maturity 30 years</b>
France	97.9	A	0	0	0	0
Gabon	39.4	E-	51.7	52.2	52.4	53.3
Gambia, The	33.8	E-	58.8	59.3	59.5	60.4
Georgia	18.7	F-	77.9	78.3	78.5	79.0
Germany	98.3	A	0	0	0	0
Ghana	34.6	E-	57.8	58.2	58.5	59.4
Greece	80.0	C-	0.8	2.4	4.3	10.6
Grenada	17.9	F-	78.9	79.3	79.5	80
Guatemala	23.7	F	71.6	72.0	72.2	72.9
Guinea	28.2	F	65.9	66.3	66.6	67.4
Guinea-Bissau	20.2	F-	76.0	76.4	76.6	77.2
Guyana	14.1	F-	83.7	84.0	84.2	84.6
Haiti	16.7	F-	80.4	80.8	81.0	81.5
Honduras	22.4	F-	73.2	73.6	73.9	74.5
Hong Kong	91.6	C	0.4	1.2	2.2	6.2
Hungary	64.0	D	20.6	20.8	20.9	21.5
Iceland	88.1	C	0.4	1.2	2.2	6.2
India	52.9	D-	34.6	35.0	35.2	36.0
Indonesia	75.5	C-	0.8	2.4	4.3	10.6
Iran	36.7	E-	55.1	55.6	55.9	56.7
Iraq	11.0	F- -	87.6	87.9	88.0	88.3
Ireland	93.8	B	0.2	0.8	1.3	3.4
Israel	70.8	C-	0.8	2.4	4.3	10.6
Italy	95.2	B	0.2	0.8	1.3	3.4
Jamaica	27.4	F	66.9	67.3	67.6	68.3
Japan	98.5	A	0	0	0	0
Jordan	29.9	F	63.7	64.2	64.4	65.2
Kazakhstan	23.2	F	72.2	72.6	72.9	73.5
Kenya	37.8	E-	53.8	54.2	54.5	55.3
Korea, Democratic People's Republic	11.1	F- -	87.5	87.7	87.9	88.2
Korea, Republic of	89.5	C	0.4	1.2	2.2	6.2
Kuwait	78.6	C-	0.8	2.4	4.3	10.6
Kyrgyzstan	18.7	F-	77.9	78.3	78.5	79.0
Latvia	26.1	F	68.5	69.0	69.2	70
Lebanon	18.3	F-	78.4	78.8	79.0	79.5
Lesotho	36.9	E-	54.9	55.3	55.6	56.5
Liberia	12.6	F-	85.6	85.9	86.0	86.4

(continued)

**Appendix II**  
**Our Estimates of Country Risk and Its Cost**

Rates in percents

<b>Country</b>	<b>Our rating</b>	<b>Our group</b>	<b>Maturity 1 year</b>	<b>Maturity 5 years</b>	<b>Maturity 10 years</b>	<b>Maturity 30 years</b>
Libya	32.4	E-	60.6	61.0	61.3	62.1
Lithuania	26.3	F	68.3	68.7	69.0	69.7
Luxembourg	96.8	B	0.2	0.8	1.3	3.4
Macedonia	26.9	F	67.5	68.0	68.2	69.0
Madagascar	26.1	F	68.5	69.0	69.2	70
Malawi	20.4	F-	75.7	76.1	76.4	77.0
Malaysia	87.0	C	0.4	1.2	2.2	6.2
Mali	26.4	F	68.2	68.6	68.8	69.6
Malta	79.6	C-	0.8	2.4	4.3	10.6
Mauritainia	20.1	F-	76.1	76.5	76.7	77.3
Mauritius	49.1	E	39.4	39.8	40.1	40.9
Mexico	67.6	D	16.0	16.2	16.3	16.8
Moldova	15.8	F-	81.6	81.9	82.1	82.6
Mongolia	18.6	F-	78.0	78.4	78.6	79.2
Morocco	47.1	E	42.0	42.4	42.6	43.5
Mozambique	12.5	F-	85.7	86.0	86.1	86.5
Namibia	29.8	F	63.9	64.3	64.6	65.4
Nepal	32.1	F	61.0	61.4	61.7	62.5
Netherlands	98.2	A	0	0	0	0
New Zealand	92.3	C	0.2	0.8	1.3	3.4
Nicaragua	13.5	F-	84.5	84.8	84.9	85.3
Niger	32.3	F	60.7	61.2	61.4	62.2
Nigeria	28.0	F	66.1	66.6	66.8	67.6
Norway	96.3	B	0.2	0.8	1.3	3.4
Oman	73.2	C-	0.8	2.4	4.3	10.6
Pakistan	41.8	E-	48.7	49.1	49.4	50.3
Panama	27.7	F	66.5	67.0	67.2	68.0
Papua New Guinea	48.3	E	40.5	40.8	41.1	41.9
Paraguay	34.5	E-	57.9	58.4	58.6	59.5
Peru	19.1	F-	77.4	77.8	78.0	78.5
Phillipines	35.8	E-	56.3	56.7	57.0	57.9
Poland	37.2	E-	54.5	55.0	55.2	56.1
Portugal	92.3	C	0.4	1.2	2.2	6.2
Qatar	76.8	C-	0.8	2.4	4.3	10.6
Romania	36.9	E-	54.9	55.3	55.6	56.5
Russia	26.8	F	67.7	68.1	68.3	69.1
Rwanda	27.0	F	67.4	67.8	68.1	68.8

(continued)

**Appendix II**  
**Our Estimates of Country Risk and Its Cost**

Rates in percents

<b>Country</b>	<b>Our rating</b>	<b>Our group</b>	<b>Maturity 1 year</b>	<b>Maturity 5 years</b>	<b>Maturity 10 years</b>	<b>Maturity 30 years</b>
Sao Tome and Principe	18.1	F-	78.7	79.0	79.2	79.8
Saudi Arabia	86.5	C	0.4	1.2	2.2	6.2
Senegal	29.1	F	64.8	65.2	65.5	66.2
Seychelles	27.7	F	66.5	67.0	67.2	68.0
Sierra Leone	12.8	F-	85.3	85.6	85.8	86.2
Singapore	96.3	B	0.2	0.8	1.3	3.4
Slovakia	53.2	D-	34.2	34.6	34.8	35.6
Slovenia	32.5	E-	60.5	60.9	61.2	62.0
Somalia	10.5	F- -	88.2	88.5	88.6	88.9
South Africa	61.7	D-	23.5	23.7	23.9	24.5
Spain	95.7	B	0.2	0.8	1.3	3.4
Sri Lanka	35.0	E-	57.3	57.7	58.0	58.9
St. Lucia	26.4	F	68.2	68.6	68.8	69.6
St. Vincent and Grenadines	37.4	E-	54.3	54.7	55.0	55.8
Sudan	12.1	F- -	86.2	86.5	86.6	87.0
Sweden	96.1	B	0.2	0.8	1.3	3.4
Switzerland	98.5	A	0	0	0	0
Syria	32.0	F	61.1	61.5	61.8	62.6
Taiwan	95.7	B	0.2	0.8	1.3	3.4
Tajikistan	17.7	F-	79.2	79.5	79.7	80.2
Tanzania	18.4	F-	78.3	78.6	78.8	79.4
Thailand	83.5	C	0.4	1.2	2.2	6.2
Togo	26.4	F	68.2	68.6	68.8	69.6
Trinidad and Tobago	43.1	E	47.0	47.5	47.7	48.6
Tunisia	58.4	D-	27.7	28.0	28.1	28.8
Turkey	72.8	C-	0.8	2.4	4.3	10.6
Turkmenistan	19.5	F-	76.9	77.3	77.5	78.1
Uganda	16.4	F-	80.8	81.1	81.3	81.8
Ukraine	25.9	F	68.8	69.2	69.5	70.2
United Arab Emirates	85.7	C	0.4	1.2	2.2	6.2
United Kingdom	97.7	A	0	0	0	0
Uruguay	51.2	E	36.8	37.2	37.4	38.2
U.S.S.R.	26.8	F	67.7	68.1	68.3	69.1
Uzbekistan	20.6	F-	75.5	75.9	76.1	76.7
Vanuatu	37.1	E-	54.6	55.1	55.3	56.2
Venezuela	59.2	D-	26.6	26.9	27.1	27.8
Viet Nam	22.7	F	72.8	73.3	73.5	74.1

(continued)

**Appendix II**  
**Our Estimates of Country Risk and Its Cost**

Rates in percents

Country	Our rating	Our group	Maturity 1 year	Maturity 5 years	Maturity 10 years	Maturity 30 years
Yemen, Republic of	26.2	F	68.4	68.9	69.1	69.8
Yugoslavia	20.5	F-	75.6	76.0	76.2	76.8
Zaire	17.1	F-	79.9	80.3	80.5	81.0
Zambia	16.4	F-	80.8	81.1	81.3	81.8
Zimbabwe	42.7	E	47.5	48.0	48.2	49.1

Table II.2 presents our estimates of country risk cost rates, by country, when each dollar of new loan causes one dollar of repayment on old loans. Countries with our risk rating score of less than 67.7 percent are not presented, but they have a country risk cost rate of zero.

**Table II.2: Our Country Risk Cost Rate Estimates by Country When Each Dollar of New Loan Causes One Dollar of Old Loan Repayment**

Rates in percents

Country	Maturity 1 year	Maturity 5 years	Maturity 10 years	Maturity 30 years
Australia	0.1	0.7	1.2	3.2
Austria	0	0	0	0
Bahamas	0.4	2.0	3.9	10.1
Bahrain	0.4	2.0	3.9	10.1
Belgium	0.1	0.7	1.2	3.2
Brunei	0.2	1.0	2.0	5.9
Canada	0	0	0	0
Chile	0.4	2.0	3.9	10.1
China, People's Republic	0.4	2.0	3.9	10.1
Cyprus	0.4	2.0	3.9	10.1
Denmark	0.1	0.7	1.2	3.2
Finland	0.1	0.7	1.2	3.2
France	0	0	0	0
Germany	0	0	0	0
Greece	0.4	2.0	3.9	10.1
Hong Kong	0.2	1.0	2.0	5.9
Iceland	0.2	1.0	2.0	5.9
Indonesia	0.4	2.0	3.9	10.1
Ireland	0.1	0.7	1.2	3.2
Israel	0.4	2.0	3.9	10.1
Italy	0.1	0.7	1.2	3.2
Japan	0	0	0	0
Korea, Republic of	0.2	1.0	2.0	5.9

(continued)

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**Our Estimates of Country Risk and Its Cost**

Rates in percents

<b>Country</b>	<b>Maturity 1 year</b>	<b>Maturity 5 years</b>	<b>Maturity 10 years</b>	<b>Maturity 30 years</b>
Kuwait	0.4	2.0	3.9	10.1
Luxembourg	0.1	0.7	1.2	3.2
Malaysia	0.2	1.0	2.0	5.9
Malta	0.4	2.0	3.9	10.1
Netherlands	0	0	0	0
New Zealand	0.1	0.7	1.2	3.2
Norway	0.1	0.7	1.2	3.2
Oman	0.4	2.0	3.9	10.1
Portugal	0.2	1.0	2.0	5.9
Qatar	0.4	2.0	3.9	10.1
Saudi Arabia	0.2	1.0	2.0	5.9
Singapore	0.1	0.7	1.2	3.2
Spain	0.1	0.7	1.2	3.2
Sweden	0.1	0.7	1.2	3.2
Switzerland	0	0	0	0
Taiwan	0.1	0.7	1.2	3.2
Thailand	0.2	1.0	2.0	5.9
Turkey	0.4	2.0	3.9	10.1
United Arab Emirates	0.2	1.0	2.0	5.9
United Kingdom	0	0	0	0

Table II.3 presents our country program estimates of the credit reform cost rates for fiscal year 1992 authorized international loans and guarantees on a cost to the U.S. government basis. We estimate the total subsidy cost for all of these programs to be \$3 billion, or 22.1 percent of the \$13.7 billion of loans and guarantees. The total country risk cost for all of these programs was \$3.1 billion. Each program had a positive subsidy cost, consisting mostly of country risk cost, except for Public Law 480, which has heavily subsidized loan interest.<sup>1</sup> On the basis of cost rates, Public Law 480 was the most costly program—75.4 percent—because of its high interest cost (47 percent) and country risk cost (28.4 percent); Commodity Credit Corporation’s (CCC) General Sales Manager (GSM) 102 program had a slightly lower rate of country risk cost, 25.7 percent.<sup>2</sup> CCC GSM 103 program and the Defense Security Assistance Agency’s (DSAA)

<sup>1</sup>Public Law 480 loans are a principal form of U.S. government development assistance to the least developed countries. Because they have low interest rates, lengthy grace periods, and long maturities, they are heavily subsidized by the U.S. government.

<sup>2</sup>This program provides guarantees on bank loans with maturities up to 3 years that finance U.S. agricultural exports.

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**Our Estimates of Country Risk and Its Cost**

Foreign Military Sales (FMS) were the least costly programs, at 2.5 and 9.5 percent, respectively.

**Table II.3: Our Cost Rate Estimates by Country and Program for Fiscal Year 1992 Authorized International Loans and Guarantees**

Rates in percents/Dollars in thousands

<b>Program/country</b>	<b>Subsidy cost rate</b>	<b>Risk cost rate</b>	<b>Interest cost rate</b>	<b>Fee income rate</b>	<b>Loans and guarantees authorized</b>
<b>AID housing guarantee total<sup>a</sup></b>	13.5	18.7	0	5.2	\$83,000
India	17.7	23.1	0	5.4	28,000
Indonesia	8.4	13.5	0	5.1	20,000
Portugal	-5.1	0	0	5.1	15,000
Tunisia	14.3	19.4	0	5.1	5,000
Zimbabwe	30.6	35.7	0	5.1	15,000
<b>CCC GSM-102 total</b>	25.1	25.7	0	0.6	\$5,446,615
Algeria	-0.6	0	0	0.6	542,254
Angola	72.2	73.5	0	1.3	4,312
Ecuador	-0.6	0	0	0.6	1,176
Egypt	-1.3	0	0	1.3	21,462
El Salvador	-0.6	0	0	0.6	686
U.S.S.R.	48.6	49.2	0	0.6	1,831,940
Ghana	56.0	56.6	0	0.6	3,528
Grenada	76.3	76.9	0	0.6	196
Guatemala	-0.6	0	0	0.6	3,234
Hungary	13.6	14.2	0	0.6	2,548
Indonesia	1.0	1.6	0	0.6	14,600
Kenya	52.0	52.6	0	0.6	9,800
Korea, Republic of	-0.4	0.2	0	0.6	390,432
Mexico	-0.6	0	0	0.6	1,282,448
Pakistan	12.4	13.0	0	0.6	250,000
Panama	50.1	50.7	0	0.6	490
Romania	47.9	48.5	0	0.6	48,608
Russia	48.6	49.2	0	0.6	643,820
Senegal	-1.3	0	0	1.3	15,288
Sri Lanka	27.8	28.4	0	0.6	26,264
Trinidad and Tobago	1.4	2.0	0	0.6	45,472
Tunisia	-0.6	0	0	0.6	25,872
Turkey	0.6	1.2	0	0.6	29,008

(continued)



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Rates in percents/Dollars in thousands

<b>Program/country</b>	<b>Subsidy cost rate</b>	<b>Risk cost rate</b>	<b>Interest cost rate</b>	<b>Fee income rate</b>	<b>Loans and guarantees authorized</b>
Ukraine	67.5	68.1	0	0.6	109,020
Venezuela	14.4	15.0	0	0.6	95,452
Yemen, Republic of	21.0	21.6	0	0.6	29,400
Zimbabwe	46.0	46.6	0	0.6	19,306
<b>CCC GSM 103 total</b>	2.5	3.0	0	0.5	\$86,240
Algeria	-0.5	0	0	0.5	26,754
Jordan	-0.5	0	0	0.5	5,978
Mexico	-0.5	0	0	0.5	4,214
Morocco	-0.5	0	0	0.5	17,738
Panama	47.3	47.8	0	0.5	3,234
Trinidad and Tobago	1.4	1.9	0	0.5	1,078
Tunisia	-0.5	0	0	0.5	22,344
Yemen, Republic of	20.0	20.5	0	0.5	4,900
<b>DSAA FMS total</b>	9.5	6.0	3.6	0	\$345,000
Greece	9.5	6.0	3.6	0	320,000
Turkey	9.5	5.9	3.6	0	25,000
<b>EXIM guarantee total<sup>b</sup></b>	18.7	21.7	0	3.0	\$6,595,682
Algeria	35.0	39.6	0	4.6	846,540
Argentina	29.4	34.5	0	5.1	106,077
Australia	-0.7	1.2	0	1.9	130,675
Bahamas	-2.6	1.0	0	3.6	350,120
Barbados	-3.2	0	0	3.2	264
Belize	39.4	42.6	0	3.2	3,635
Brazil	-5.1	0	0	5.1	183,054
Cameroon	40.5	48.3	0	7.8	56,705
Chile	0.7	4.3	0	3.5	94,085
China	1.1	3.2	0	2.1	330,395
Colombia	4.6	7.4	0	2.7	234,990
Czechoslovakia	13.2	15.3	0	2.1	162,268
El Salvador	59.4	65.3	0	5.9	20,405
Guatemala	50.7	55.0	0	4.3	21,004
India	28.6	30.6	0	2.0	769,817
Indonesia	-2.4	1.5	0	4.0	364
Israel	0.4	3.5	0	3.0	87,170
Jamaica	-5.9	0	0	5.9	5,452

(continued)

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**Our Estimates of Country Risk and Its Cost**

Rates in percents/Dollars in thousands

<b>Program/country</b>	<b>Subsidy cost rate</b>	<b>Risk cost rate</b>	<b>Interest cost rate</b>	<b>Fee income rate</b>	<b>Loans and guarantees authorized</b>
Kenya	-2.0	0	0	2.0	150
Latin American Multinational <sup>c</sup>	24.4	27.1	0	2.7	80,238
Mexico	9.0	11.5	0	2.4	1,020,212
Morocco	23.6	25.6	0	2.0	114,171
Nigeria	33.1	39.1	0	6.0	21,266
Norway	-0.6	1.3	0	1.9	42,310
Oman	0.9	2.7	0	1.8	37,245
Pakistan	35.4	37.4	0	2.0	33,979
Panama	35.9	38.0	0	2.1	4,346
Philippines	27.4	32.2	0	4.8	133,851
PEFCO <sup>d</sup>	0	0	0	0	57,919
Poland	39.3	41.5	0	2.2	277,041
Russia	62.3	66.4	0	4.0	64,625
Sri Lanka	6.4	11.3	0	4.9	6,724
Thailand	-1.0	1.7	0	2.7	41,397
Tunisia	29.2	31.1	0	1.9	52,808
Turkey	0.9	4.2	0	3.2	136,954
Uruguay	17.7	20.4	0	2.6	10,005
Venezuela	24.3	27.1	0	2.8	1,057,421
<b>EXIM loans total</b>	14.4	16.7	0.8	3.0	\$808,800
Algeria	49.1	49.2	0.3	0.4	59,258
Argentina	35.5	39.9	0.6	5.0	2,009
Belize	40.2	44.8	-1.3	3.3	3,394
Cameroon	58.0	71.3	-5.4	7.9	4,286
China, People's Republic	6.5	6.2	2.2	1.9	72,354
Czechoslovakia	26.8	25.4	3.5	2.1	24,458
Fiji	53.2	51.1	4.9	2.8	4,346
India	35.4	40.0	-3.6	1.1	14,468
Indonesia	-1.0	5.2	-2.7	3.5	145,328
Israel	7.8	5.6	5.6	3.4	58,720
Kenya	-4.8	0	-0.9	3.8	7,397
Mexico	11.4	13.1	1.6	3.4	27,832
Nigeria	42.4	47.5	1.2	6.2	109,247
Pakistan	60.3	56.9	3.9	0.5	2,322
Philippines	33.3	41.8	-5.0	3.5	5,179

(continued)

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**Our Estimates of Country Risk and Its Cost**

Rates in percents/Dollars in thousands

<b>Program/country</b>	<b>Subsidy cost rate</b>	<b>Risk cost rate</b>	<b>Interest cost rate</b>	<b>Fee income rate</b>	<b>Loans and guarantees authorized</b>
Poland	59.8	65.5	-0.7	5.0	1,576
Thailand	1.6	3.4	0.9	2.7	178,135
Tunisia	31.0	33.4	1.5	3.9	7,899
Turkey	1.2	4.4	0.6	3.8	11,871
Uruguay	23.1	20.0	3.1	0	465
U.S. banks <sup>e</sup>	1.9	0	2.3	0.3	64,038
Venezuela	31.3	31.5	3.3	3.5	4,218
<b>USDA P.L. 480 total<sup>f</sup></b>	<b>75.4</b>	<b>28.4</b>	<b>47.0</b>	<b>0</b>	<b>\$368,110</b>
Belarus	92.7	42.9	49.8	0	24,000
Congo	95.3	45.4	49.8	0	5,000
Cote d'Ivoire	90.9	44.1	46.8	0	10,000
Egypt	49.8	0	49.8	0	40,410
El Salvador	86.9	37.0	49.8	0	29,400
Estonia	91.5	41.6	49.8	0	10,000
Guatemala	75.5	42.7	32.8	0	14,900
Guyana	96.9	47.0	49.8	0	7,100
Jordan	86.2	36.3	49.8	0	20,000
Latvia	92.1	42.3	49.8	0	10,000
Lithuania	92.0	42.1	49.8	0	10,000
Moldova	96.4	46.5	49.8	0	10,000
Morocco	55.5	8.7	46.8	0	45,000
Philippines	77.0	27.1	49.8	0	20,000
Romania	84.7	34.8	49.8	0	10,000
Sierra Leone	91.8	41.9	49.8	0	9,400
Sri Lanka	49.8	0	49.8	0	13,000
Suriname	90.6	55.5	35.1	0	14,900
Tajikistan	95.7	45.9	49.8	0	10,000
Tunisia	29.8	0.1	29.7	0	15,000
Zimbabwe	79.0	32.2	46.8	0	40,000
<b>All programs</b>	<b>22.1</b>	<b>22.6</b>	<b>1.4</b>	<b>1.9</b>	<b>\$13,733,447</b>

(Table notes on next page)

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Note: The country risk cost rates differ for a given country principally because our estimate of that country's average propensity to repay (APP) generally varies by program. In our analysis, we treated each program independently.

<sup>a</sup>AID, Agency for International Development.

<sup>b</sup>EXIM, Export-Import Bank.

<sup>c</sup>Loans and/or guarantees made to more than one Latin American Country.

<sup>d</sup>Private Export Funding Corporation.

<sup>e</sup>U.S. bank loans for which Export-Import Bank provides funds or guarantees.

<sup>f</sup>USDA, U.S. Department of Agriculture.

Table II.4 presents estimates of country risk cost rates for each of the seven international loan or guarantee programs in fiscal year 1992 by (1) us, in which we made the low-cost assumption that all repayments on old loans (or guarantees) up to the size of the new loans (or guarantees) were due to the new loans (or guarantees); (2) a sensitivity test that assumes new loans or guarantees have no effect on old loan repayments, which we call the "high-cost scenario," and (3) the executive branch methodology. We also present the authorized funds lent or guaranteed by each program. Overall, we estimate a country risk cost rate for these programs, of 22.6 percent, whereas the executive branch's estimate was 8.9 percent. Our individual program country risk rate estimates exceed those of the executive branch except for GSM 103.

**Table II.4: Estimates of Program Country Risk Cost Rates by us, a Sensitivity Test, and the Executive Branch**

Rates in percent/Dollars in thousands				
	GAO	High-cost scenario	Executive branch	Credit authorized
AID housing guarantee	18.7	38.7	14.1	\$83,000
CCC GSM 102	25.7	45.5	8.0	5,446,615
CCC GSM 103	3.0	39.9	10.9	86,240
DSAA FMS	6.0	6.4	5.7	345,000
EXIM guarantee	21.7	27.1	8.4	6,595,682
EXIM loan	16.7	22.2	11.5	808,800
USDA				
P.L. 480	28.4	39.4	25.9	368,110
All programs	22.6	34.1	8.9	\$13,733,447

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# Our Country Risk Cost Estimation Method

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For the past several years, we have used an empirical method to estimate country risk costs of international lending activities to developing countries in which the U.S. government engages or guarantees, or over which it has supervisory or regulatory authority.<sup>1</sup> During this time, our method has evolved and become more sophisticated, although the fundamentals have remained unchanged. The method continues to (1) depend heavily on the price of privately owned, variable interest rate, dollar-denominated, sovereign lesser developed country debt that is traded on the secondary market; (2) use the close statistical relationship between professionally recognized measures of creditworthiness and the price of this debt to calculate its risk-based value and cost; and (3) determine if there are any likely biases in the estimate.

We believe our method is preferable to others we are aware of because it is empirically based and not subject to any institutional bias to underestimate risk-based cost. Unless the secondary market is very risk averse, we also believe that our estimates of the U.S. government's country risk costs for fiscal year 1992 authorized international loans and loan guarantees are conservative, given the time they were formed. Nonetheless, three key issues need to be discussed to properly qualify our country risk cost estimates.

The first was whether our sample size of debt traded on the emerging market was large enough to capture the market's real behavior. Our sample of trades on 38 debt instruments owed by 21 different countries contained information on dollar-denominated, variable interest rate, sovereign debt owed the private sector from this market during the 2-week period beginning the last week of May 1992. The sample empirically fit many theoretical relationships well.

The second issue was whether the price relationship we estimated for these traded instruments could be extended to proxy the prices of similar debt instruments held by the private sector that were not traded. We believe that these proxies may have a systematic bias to overestimate the price of these nontraded instruments because they will, on average, be less liquid. It may be assumed that a lower price would generally have been paid by investors for these less liquid instruments. This assumption tends to cause our estimates of the U.S. government's country risk costs to be conservative.

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<sup>1</sup>A listing of related GAO products appears at the end of this report.

The third issue is whether sovereign debt owed the private sector—from which our country risk cost estimates were derived—is more or less likely to be repaid in the long run than sovereign debt owed the U.S. government. This issue addresses the long-run probability of repayment, not short-term considerations that may be present when a creditor lends more new funds than are currently due and, as a result, is temporarily being repaid on old loans when others are not. In this case, this creditor's new loans are simply rolling over old loan repayments and increasing its exposure and long-term costs. The private sector may be more likely than the U.S. government to receive fuller payment from a sovereign developing country debtor in the long run. The reason for this situation is that the private sector is fairly exclusively motivated to maximize its profitability, whereas the U.S. government has a multiplicity of other goals, including enhancing foreign policy objectives, promoting U.S. defense goals, and helping domestic constituent interests.

In support of this view, a recent paper presents econometric evidence, other empirical evidence and theoretical arguments that suggest that the order of payment preference is first, the International Monetary Fund; second, private creditors; and last, advanced country governments such as the United States.<sup>2</sup> We believe that this distinction also tends to cause our estimates of the U.S. government's country risk costs to be conservative.

Even though it is theoretically possible that concern about trade, defense, or foreign policy might motivate sovereign debtors to preferentially repay the U.S. government, in the long run we know of no evidence that this scenario is occurring, although in the future this question may be better tested econometrically and answered. In any event, since our's and the executive branch's methods both mark to market U.S. government-owned debt based on privately owned debt traded in financial markets, this consideration tends to bias both cost estimates in the same direction.

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## Country Risk Ratings

To obtain continuous country risk ratings, we statistically combined ratings that appeared in September 1992 in two leading magazines for

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<sup>2</sup>Bulow, Jeremy, Kenneth Ragoff, and Afonso S. Bevilacqua. "Official Creditor Seniority and Burden Sharing in the Former Soviet Bloc." *Brookings Papers on Economic Activity*, no. 1 (1992), pp. 195-234.

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financial institutions, Euromoney and Institutional Investor.<sup>3</sup> We first calculated each country's z score from these two ratings and then averaged the two z scores.<sup>4</sup> When only one z score for a country was available, it became the average. To obtain our continuous ratings on a scale from 0 to 100, similar to the risk ratings on which our rating is based, we treated each country's average z score as if it were generated from a z probability distribution. We then set that country's rating to be 100 times the cumulative distribution (probability) of its average z score.

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## Estimating Cost

The process for measuring country risk costs for purposes of meeting the requirements of credit reform legislation is rather lengthy. Some of the length arises because country risk values of debt are observed from financial markets, but country risk cost of a new loan needs to be calculated on a cost to the U.S. government basis that is relative to Treasury rates. First, we obtained the risk premiums relative to the riskless Aaa/AAA rate for less risky debt, Baa/BBB or higher, directly from financial markets in which similar privately owned bonds are traded and transformed them into country risk values of debt.<sup>5</sup>

Next, we obtained the country risk value of risky U.S. government-owned sovereign debt from the secondary market in which similar privately owned debt is traded using econometric analysis. For both risky and nonrisky debt, we also estimated the value of debt that is a complete rollover; that is, it causes an equal amount of old loan repayment. We then estimated the extent that each new loan causes old debt repayments, the average propensity to repay old loans, and the remaining part increases U.S. government exposure. To obtain the country risk value of new loans, we averaged these country risk values of sovereign debt; one for complete rollovers, the other for complete increased exposure using APP and I-APP as weights for each loan. We then transformed these country risk new loan values into country risk new loan interest rate premiums above the

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<sup>3</sup>September 1992 Euromoney credit ratings covered 169 countries and were a compilation of nine subcategories, including a survey of political risk analysts; debt indicators; access to various markets, including the Euro-bond market; and credit ratings when performed by Moody's and Standard and Poor's, two of the world's leading credit rating agencies that rate only those developing countries that are among the most creditworthy. The September 1992 Institutional Investor ratings we used evaluated 126 countries based on anonymous ratings from 75 to 100 of the world's largest banks' country risk departments. Bank ratings of the bank's home countries were not used; ratings were combined using a weighting scheme, which Institutional Investor claimed gave greater weight to those banks with more sophisticated country risk departments.

<sup>4</sup>A z score is a random variable that has been transformed by finding the difference between it and its estimated mean and dividing this difference by its estimated standard deviation. This transformed random variable has a mean of zero and standard deviation equal to one.

<sup>5</sup>For the most creditworthy debt, we used bonds because we had no loan information.

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Aaa/AAA rate using present-value analysis. These country risk premiums and the Treasury rate were then used to calculate the subsidy and component costs of a loan on a cost to the U.S. government basis.

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## Country Risk Value

We estimated country risk value of privately owned, sovereign debt based on the financial markets in which such debt is traded. For debt issued by countries that we rated about the same as Moody's and Standard and Poor's in their categories of Baa/BBB to Aaa/AAA, respectively, we based our estimates on historical interest rate differentials between bonds with Moody's and Standard and Poor's ratings and the risk-free Aaa/AAA rate. For more risky debt, we estimated country risk values based primarily on our analysis of the secondary market in which privately owned developing country debt is traded internationally.<sup>6</sup> Of the countries the U.S. government authorized loans or guarantees to in fiscal year 1992, 83 percent were below Baa/BBB.

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## The Secondary Market

A large portion of the developing country sovereign debt traded on the secondary market is variable interest rate debt; thus, the price of this debt does not change because of general interest rate movements on world financial markets. Prices of this debt are discounted from face value in the secondary market to reflect investors' assessments of the large country risk associated with this developing country debt or indicate that other factors may be present that impair the value of the debt.

If investors were risk neutral, and no market forces—other than the evaluation of risk by investors—were present, then the price of this variable interest rate debt would be an unbiased measure of its country risk value. Under these circumstances, for example, if debt owed by a country had a price of 40 percent of face value, then the market expects that this debt would, on average, pay back only about 40 percent of its face value. Thus, about 60 percent of face value is the market's expected cost of holding the loan to the institution that had issued the loan.

If no other market forces were present, prices of variable interest rate debt would respond only to changes in investors' perceptions of country risk. For example, if investors believed this developing country debt had less country risk than its price indicated, investors would have an incentive to buy this debt and, as a group, would cause the price of this debt to

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<sup>6</sup>Trading volume on the secondary market has grown very quickly. It was approximately \$2 billion (face value) in 1985, \$5 billion in 1986, \$70 billion in 1990, \$240 billion in 1992, and \$400 billion in 1993.



increase. Similarly, if investors believed this developing country debt had more country risk than its price indicated, then investors would have an incentive to sell this debt and, as a group, would cause the price of this debt to be lower.

Our analysis of the secondary market for the last week in May and the first week in June 1992 indicates that market prices of variable interest rate developing country debt were based almost exclusively on investors' perceptions of the country risk in this debt. According to the market specialists we spoke with, this situation occurred because other market forces that were especially pronounced 7 and 8 years ago appeared to be minimal during this 2-week period.<sup>7</sup>

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## Estimating the Debt's Country Risk Value

To estimate the country risk value of privately owned, less developed country debt, we regressed secondary market prices for variable interest rate, dollar-denominated, privately owned sovereign loans and bonds on our country risk rating of the debtor developing country and on various characteristics of the debt instrument.<sup>8</sup> We obtained the following results:

$$\begin{aligned} \text{(III.1) PRICE} &= -1.50 + 1.28*\text{GAO} - 0.25*\text{ARR} + 49.0*\text{D} \\ &\quad (-0.3) \quad (13.8) \quad \quad (-2.9) \quad \quad (4.4) \\ &\quad -0.44*\text{D}*\text{GAO} - 1.57*\text{D}*\text{MAT}, \quad \bar{R}^2 = 0.934, n = 38, \\ &\quad (-2.5) \quad \quad (-5.9) \end{aligned}$$

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<sup>7</sup>See *International Banking: Supervision of Overseas Lending Is Inadequate* (GAO/NSIAD-88-87, May 5, 1988). In that report, we developed estimates of appropriate bank reserves based on what is now called the secondary market. We also discussed our earlier analysis in this area, which was summarized in our April 2, 1987, testimony, when we had found that, overall, market forces other than investors' risk evaluation had caused developing country market prices to be much too high and market-based reserves (accounting's measure of cost) much too low for investors' perceptions of market risk. These market forces included (1) the "contamination effect," which caused large U.S. banks to restrict their supply of discounted foreign debt for sale on the secondary market for fear that if they sold any part of a developing country's debt, their auditors would require that they mark to market all of that developing country's remaining debt; (2) debt-equity swap programs that allowed a developing country to purchase (through an intermediary) its debt on the secondary market and thereby increase demand for its debt for other than risk evaluation reasons; and (3) least important and with opposite directional effect, "dumping," or selling primarily motivated by reasons other than risk evaluation.

<sup>8</sup>There is a period of a few weeks each year in which the Institutional Investor country ratings we used are theoretically most compatible with the emerging market due to the way these external ratings are created. In 1992 this was the 2-week period beginning the last week of May, and we therefore obtained necessary secondary market data from this time. All data we needed was available to us by October 1992 and, without modifying our method we would not have been able to update our estimates with market expectations until October 1993, 1 year later.

PRICE equals the average price for the developing country debt instrument during the 2-week period beginning the last week of May 1992, net of the then-market price of any collateral or guarantees for that debt instrument; GAO equals our continuous country risk rating of the debtor country; MAT equals the years remaining until maturity of the debt instrument; ARR equals the months in arrears (if any) of the debt instrument; D is a dummy variable, equal to 0 for loans and 1 for bonds, used to capture differences between loans and bonds; and the “t” statistics are in parentheses.<sup>9</sup>

The data sample was quite diverse in terms of price, credit rating, maturity, and months of arrears of the debt instruments, and it was relatively equally split between the number of loans and bonds. It consisted of all dollar-denominated, variable interest rate sovereign debt that traded at a discount on the emerging market for which we were able to collect meaningful data, plus one loan and one bond for each of the five least creditworthy countries whose variable interest rate, dollar-denominated debt traders told us would trade at par (100). In all, the sample was composed of 21 different countries with 20 loans and 18 bonds and was heavily weighted to one country, Venezuela, which had issued eight bonds with variable interest rates. In this regression data, the mean, standard deviation, and range for price were 68.1, 29.3, and 8.2 to 100, respectively; for our country risk ratings they were 55.4, 19.9, and 19.1 to 68; for months in arrears they were 8.3, 19.3, and 0 to 84; and for maturity (years) they were 11.5, 5.7, and 1.2 to 27.8.

Overall, the regression results were good. The explanatory power of the regression was high, and independent variables had the directional effect expected from theory and were statistically significant at the 99-percent confidence level.<sup>10</sup> In addition, as expected from theory, the regression indicates that bond prices are greater than loan prices, as long as the

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<sup>9</sup>The “t” statistic is the estimated coefficient divided by its estimated standard deviation and is used to test whether an estimated coefficient is statistically different from zero. We dropped the coefficient for loan maturity because when we included it in an earlier regression, it was small (–0.27 cents per year) and was not statistically significant (t = –0.7).

<sup>10</sup>Similar results were obtained when we dropped the 10 instruments that trade at par. For the remaining 28 observations, the regression results were the following:

$$\text{PRICE} = +1.00 + 1.20*\text{GAO} - 0.26*\text{ARR} + 79.5*\text{D} - 1.02*\text{D}*\text{GAO} - 1.38*\text{D}*\text{MAT}, \bar{R}^2=0.925, n=28$$

(0.2) (9.6) (-3.1) (5.5) (-3.8) (-5.4)

debtor country has a credit rating sufficiently high to issue bonds.<sup>11</sup> The regression also indicates that for these more creditworthy developing countries, the price of bonds declines slightly as maturity dates are lengthened.

The loan portion of this regression is used throughout this report because (1) in fiscal year 1992 the U.S. government lent or guaranteed funds internationally only in the form of loans and (2) relevant lender characteristics of the U.S. government appear to be closer to private loan holders than private bond holders.<sup>12</sup> Figure III.1 depicts the estimated relationship between our credit rating and loan prices when the months in arrears of a loan are assumed to be zero. The large range of loan prices and large range of our associated credit ratings is visually apparent, as is the positive effect (high positive correlation) of the credit rating on prices.<sup>13</sup>

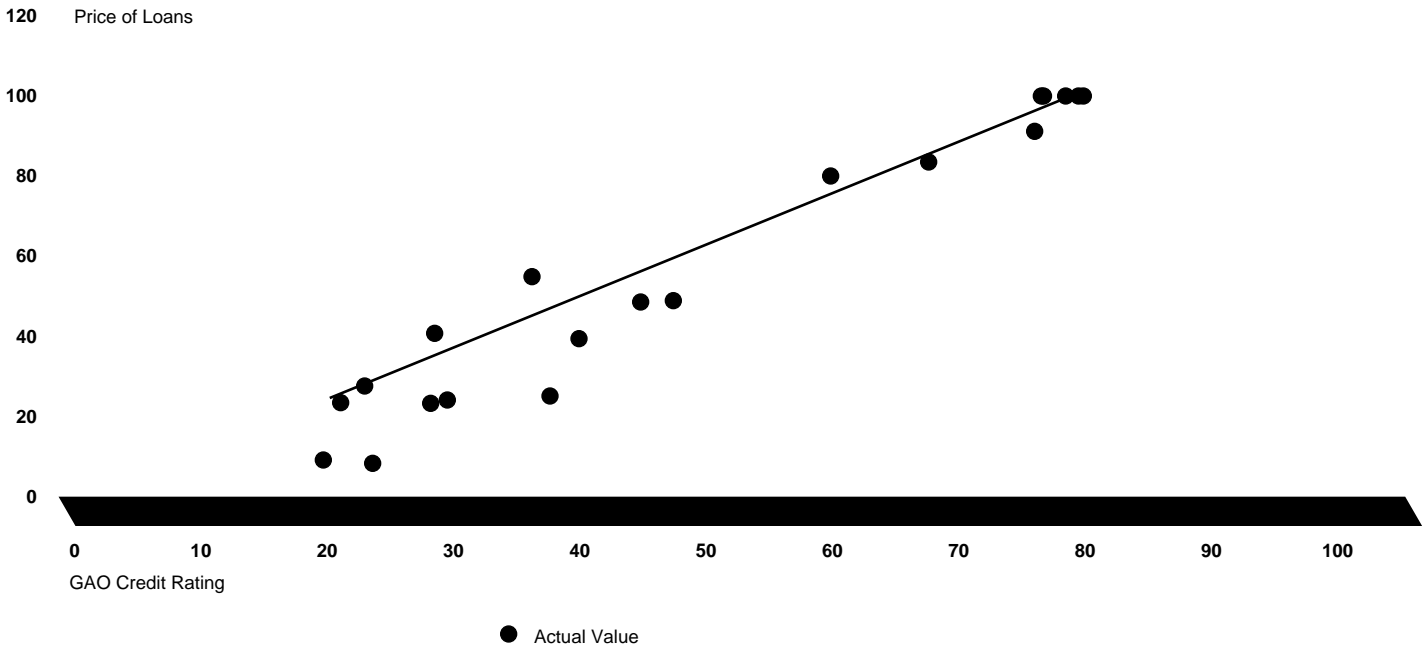
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<sup>11</sup>Developing country debt traders gave us three reasons why investors believe bonds are more likely to be paid than loans and thus command a higher price. First, bonds are often owned by individuals, who are more likely to sue and less likely to agree to debt relief than banks. Second, in the 1980s bonds had often been a small part of a country's external debt. Given the difficulty of getting debt relief from individual bond owners, developing countries had a greater incentive to stay current on their bond payments. Third, bonds have been fully serviced by Latin American developing countries during the most recent developing country debt crisis, even when these same developing countries have been delinquent in repaying bank loans.

<sup>12</sup>We specified the regression in equation III.1 so that it could be separated: bonds had no effect on the estimated regression coefficients of the implied loan price equation, and loans had no effect on the estimated regression coefficients of the implied bond price equation. In short, we would have obtained the same estimates for loans if we had dropped all bonds from our sample.

<sup>13</sup>The actual values of price are closer to the regression plane than the regression line depicted in figure III.1 because the regression plane includes the negative effect of months interest arrears on loan prices, but the regression line depicted in figure III.1 does not.

Figure III.1: Loan Prices and Our Credit Rating



We used the results of the loan portion of this regression to estimate the value of privately owned, variable interest rate loans issued by 124 countries with credit ratings lower than the Baa/BBB range. We then normalized these loan values to obtain values of privately owned loans relative to the risk-free Aaa/AAA rate.<sup>14</sup> We then used these normalized values of privately owned loans as our measures of the country risk value of loan debt to the U.S. government relative to the Aaa/AAA risk level.

<sup>14</sup>Because we relied on information from two markets, we needed to merge these two different sets of information concerning creditworthiness and the price at which these instruments traded. In the first market, we had information on the spread above the Aaa/AAA rate of fixed-rate debt and the effect of a country's creditworthiness for the more creditworthy countries (rated Aaa/AAA through Baa/BBB). In the secondary market, we used information on how creditworthiness and other characteristics affected the price of variable interest rate debt for countries with credit ratings equivalent to the lower end of Baa/BBB or lower. We normalized our risk-based values from the secondary market by setting them equal to the price implied from the regression in equation III.1 times 99.2 percent because variable rate instruments began to be priced at par (100), when issued by the least creditworthy Baa/BBB debtors, and 1-year fixed-rate instruments by these borrowers had a country risk value rate derived from the first market of 99.2 percent.

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## Value of New Loans

The Credit Reform Act attempts to ensure better estimates of the U.S. government's cost of new loans and new loan guarantees. As a result, the effect of new loans on repayment of past loans should be important in obtaining these estimates of value and cost. Since the U.S. government is a large, non-anonymous lender that repeatedly makes loans or guarantees to recipient countries, in many instances the granting of new funds by the U.S. government causes repayments to be made on old loans owed to or guaranteed by the U.S. government. This raises the value and lowers the cost to the U.S. government of the new loan. However, the executive branch views the act as precluding it from accounting for these considerations in its cost estimates, and it thereby tends to overestimate the cost of new loans and loan guarantees. Our analysis and estimates were not bound by this restriction. Our analysis first considered the case in which the granting of new loans has no effect on old loan repayment—an average propensity to repay old loans of zero. This might occur if (1) the debtor's creditworthiness was high enough so that all currently scheduled repayments would have been made without the incentive of new loans or (2) there were no currently scheduled repayments from the country. The government's country risk value of the new loan would then be identical to the government's value of this outstanding debt.

We then considered the second case in which the new U.S. loans or guarantees simply roll over existing debt on a dollar-for-dollar basis—one dollar of new lending causes one dollar of repayment on old debt, or an average propensity to repay of one. This might occur for a debtor country with low creditworthiness that would not have made any scheduled repayments on old U.S. government loans this year if it did not receive new U.S. loans or loan guarantees. In this case, the U.S. government's cost of this new loan is simply the time cost of extending loan repayments due this year into future years as prescribed by the new loan, which we calculated to be quite inexpensive.

We would expect to find that a new loan often induces some currently scheduled repayments but less than the amount of the new loan; that is, the new loan has an average propensity to cause old loan repayments that lie between zero and one. If we knew the value of this average propensity to repay, calculating the country risk value of the new loans would be simple— $(1-APP)$  times the country risk value if there were no rollover, as in the first case, plus  $APP$  times the country risk value if there were 100-percent rollover, as in the second case. To estimate the cost of new loans or guarantees authorized in 1992, we could then transform these

country risk values, which are relative to Aaa/AAA rates, into estimates of the cost of country risk on a cost to the U.S. government basis.

Because we know of no other empirical measures of the average propensity to pay, we assumed the following simple behavior:

- The more creditworthy the country, or the larger its scheduled repayments, the more repayments it will make on old loans without any new loan incentive. Greater creditworthiness has no additional effect once all scheduled repayments have been made.
- If new loans are not too large, more new loans cause more old loan repayment, although any induced repayment will be less than or equal to the size of the new loans. Too large is defined as that point at which actual repayments equal scheduled repayments.
- If new loans are too large, larger new loans will have no additional effect on old loan repayment.
- If new loans are not too large, the more creditworthy the debtor, the more a new loan will induce repayment.

These considerations are captured in the following equations:

$$(III.2) \quad Z = X + \text{ROLL}, \quad \text{ROLL} \leq L$$

$$(III.3) \quad X = F(\text{GAO}) * S \quad F' > 0;$$

$$(III.4) \quad \text{ROLL} = G(\text{GAO}, L) \quad \begin{matrix} G_1 \geq 0, 1 \geq G_2 > 0 & \text{for } \text{ROLL} < S - X \text{ or } Z < S \\ G_1, G_2 = 0 & \text{for } \text{ROLL} = S - X \text{ or } Z = S \end{matrix}$$

$$(III.5) \quad \text{APP} = \text{ROLL}/L$$

APP is the average propensity to repay old loans or guarantees as a percent of new loans or guarantees, ROLL is the dollars paid on old loans induced by the new loan, X is the amount of repayment on old loans that would have occurred if no new loans or guarantees were granted, Z is the dollars of old loan repayments made, S is the dollars of old loan repayment scheduled, L is the dollars of new U.S. government loans and guarantees granted, and GAO is our country risk creditworthiness measure.

Equations III.2 to III.4 yield the following:

$$(III.6) \quad Z = F(\text{GAO}) * S + G(\text{GAO}, L) \quad \text{for } Z \leq S$$

Although more precise estimates of ROLL than we present may be obtained by estimating equation III.6 using cross-section time-series analysis, we took a different approach that lessened the time we needed to perform the analysis. This approach did not affect our major conclusion. As of October 1992, it is likely that the executive branch's method greatly underestimates budget and country risk costs for fiscal year 1992 authorized international loans and guarantees.

For our estimate, we purposely made an assumption that caused our cost estimates to be conservative. We overestimated the rollover by setting ROLL equal to the minimum of the loan size, L, or payments made, Z. For a sensitivity test we called the high-cost scenario, we assumed the rollover equaled zero. This would have been our best estimate if we had followed the executive branch's interpretation of the act's restriction on accounting for the cost effect of rollovers. Our estimate and the high-cost scenario, which were primarily based on emerging market expectations during the 2-week period beginning the last week of May 1992, yielded country risk cost estimates for fiscal year 1992 authorized international loans and guarantees that were generally much greater than those of the executive branch. If more recent data had been obtained from financial markets, it is likely that our estimate and sensitivity test would each have resulted in lower cost estimates because prices on the emerging market were generally higher.

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Country Risk Cost of the  
Loan to the  
U.S. Government

We then transformed this country risk value of the new loan relative to the Aaa/AAA rate into a country risk interest premium. We did this by setting this country risk value equal to premium payments on a standardized loan with interest payments at the Aaa/AAA rate of the same maturity. We then solved this equation for the appropriate internal rate of return. The country risk interest premium was the difference between the internal rate of return and the Aaa/AAA rate.

We then used this country risk premium to calculate the country risk cost of the loan on a cost to government basis. This cost is the difference between the present values of the scheduled loan repayments, one discounted with the Treasury rate for the same maturity, the other discounted with the loan's country risk interest premium plus this same Treasury rate.

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# Evaluation of the Executive Branch's Methods and Estimates

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Although the executive branch had only a short amount of time after enactment of the Credit Reform Act to develop appropriate methods to estimate country risk and its cost, we found that the method it developed and employed had several weaknesses. The principal weakness was that it was not based on rigorous econometric tests and measurements. Most weaknesses originated in the method employed by the risk premium committee, especially for countries with ratings below Baa/BBB, where most of the country risk cost occurs. These weaknesses could lessen the U.S. government's ability to make sound lending decisions and the Congress' ability to make sound funding decisions.

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## Country Risk Cost Method

Members of the risk premium committee told us that they felt very pressed for time when they met during October 1991 because premiums were needed immediately for calculating the fiscal year 1993 budget. Nineteen observations of bonds formed the basis for obtaining the risk premiums for ICRAS' top 3 categories, A, B, and C. These ICRAS categories correspond to Moody's and Standard and Poor's ratings Baa/BBB or higher. For the next four ICRAS categories, C-, D, D-, and E, there were only five observations of bonds—three Ba/BB-rated bonds and two B/B rated bonds. Historical average 3-year risk premiums for bonds with the same ratings as the bond observations became the risk premiums for the top seven ICRAS categories. Without using econometric methods, the risk premium committee derived 16 risk premiums for ICRAS categories C-, D, D-, and E from the risk premiums for these 5 observations.<sup>1</sup> To help fill in the gaps, two ICRAS categories' premiums were obtained by averaging those from adjacent ICRAS categories. The lowest four ICRAS ratings were obtained by extrapolating the E categories' risk ratings. In these categories the risk premium committee's method assumed that the level of country risk did not affect the relative size of one maturity's risk premiums compared to another. At least one member of the committee checked to ensure that the risk premiums for long-term debts were loosely consistent with prices of risky debt from the secondary market. The quality of the estimates that resulted was poor because the risk premium committee's method

- employed too little data below ICRAS' C rated countries for the large amount of information needed;
- frequently assumed that the level of country risk had no effect on the relative size of the risk premiums for different maturities;

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<sup>1</sup>These are four ICRAS rating categories times four maturity categories—1, 5, 10, and 30 years.



- obtained the same risk premiums for loans and bonds, resulting in executive branch country risk cost estimates for loans that are less than for bonds, which is the opposite of what we found on the secondary market;
- had not been updated, even though (1) new information from financial markets had been available and (2) Office of Management and Budget (OMB) officials told us throughout our review that the risk premiums for short-term loans to the riskiest countries were too low;
- did not disclose the sources of bias, except for these short-term loans to the riskiest countries; and
- made no distinction between new loans to risky countries that have a relatively large effect on old loan repayment, cause a relatively small increase in U.S. government exposure, and thereby have relatively small country risk cost from those new loans that do not.

The executive branch views the Credit Reform Act as precluding a distinction for cost purposes between new loans that roll over old loans and those that do not. Our analysis indicates that overestimates of cost tend to occur when such distinctions are not made. For example, when we purposely ignored this distinction, our subsidy cost estimate for all 1992 authorized loans and loan guarantees increased 51.6 percent to \$4.6 billion, and our cost estimates for loans and loan guarantees to many very risky countries increased by a much larger percentage.

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## Country Risk Cost Estimates

The executive branch's estimate of the cost of country risk on a cost to the U.S. government basis for a loan of a given maturity is the difference between the present value of loan payments when (1) the discount rate is the U.S. treasury rate of the appropriate maturity and (2) the discount rate is the sum of the U.S. treasury rate and the applicable executive branch risk premium, both for the appropriate maturity.<sup>2</sup> The applicable executive branch premiums are presented in table IV.1 for each executive branch rating category and loans of representative maturity as well as our average rating for countries that received that executive branch rating during the last half of fiscal year 1992.

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<sup>2</sup>To be compatible with cost calculations for domestic programs under credit reform, in practice the executive branch uses a slightly different method to calculate country risk cost. It uses a risk premium along with the Treasury rate to project a future stream of expected defaults and then calculates the present value of this stream by discounting with the Treasury rate.

**Appendix IV  
Evaluation of the Executive Branch's  
Methods and Estimates**

**Table IV.1: Executive Branch Ratings and Risk Premiums**

Rates in percents					
Executive branch rating	Our average rating	Risk premium by loan maturity			
		1 year	5 years	10 years	30 years
A	96.0	0.25	0.30	0.30	0.40
B	82.2	0.40	0.45	0.50	0.75
C	60.8	0.80	0.90	1.00	1.35
C-	45.2	1.87	1.81	1.64	1.96
D	41.2	4.01	3.62	2.92	3.17
D-	30.4	5.71	4.84	4.39	4.64
E	30.3	9.11	7.29	7.34	7.59
E-	27.8	13.66	10.94	11.00	11.38
F	24.6	22.76	18.23	18.34	18.96
F-	21.0	31.87	25.52	25.67	26.55
F- -	15.8	50.08	40.10	40.34	41.72

Note: The executive branch recognizes that short-term loans issued before the debtor's Paris Club contract cutoff date are more likely to be rescheduled than other loans and treats them as if they had longer maturities—10-year loans for those they rate "C" or better and 30-year loans for those they rate lower.

Table IV.2 presents the corresponding executive branch estimates of country risk cost rates (cost divided by loan size) for loans on a cost to U.S. government basis when the average fiscal year 1992 U.S. treasury rate for a maturity is used.

**Table IV.2: Executive Branch Country Risk Cost Rates**

Rates in percents					
Executive branch rating	Our average rating	Executive branch country risk cost rate estimates by loan maturity			
		1 year	5 years	10 years	30 years
A	96.0	0.2	0.8	1.3	3.1
B	82.2	0.4	1.2	2.1	5.6
C	60.8	0.8	2.3	4.1	9.7
C-	45.2	1.8	4.5	6.5	13.6
D	41.2	3.7	8.7	11.2	20.4
D-	30.4	5.2	11.4	16.1	27.5
E	30.3	8.0	16.4	24.6	38.6
E-	27.8	11.6	23.0	33.4	48.9
F	24.6	17.9	33.9	46.5	61.8
F-	21.0	23.4	42.4	55.6	69.6
F- -	15.8	32.4	54.6	67.3	78.4

**Appendix IV  
Evaluation of the Executive Branch's  
Methods and Estimates**

Tables IV.3 and IV.4 present our country risk cost rate estimates, which were largely based on the secondary market during the 2-week period beginning the last week of May 1992, in a manner similar to the executive branch estimates in table IV.2. Table IV.3 presents our estimates of the country risk cost rate of the new loan if the new loan has no effect on repayments on old loans and the loan is, on the average, as creditworthy as the corresponding executive branch category. Similarly, table IV.4 presents our estimates of the country risk cost rate of the new loan if the new loan causes an equal amount of principal repayments on old loans owed the U.S. government.

**Table IV.3: Our Country Risk Cost Rate Estimates for Loans That Do Not Affect Old Loan Repayment**

Rates in percents					
Executive branch rating	Our average rating	Our cost rate estimates by loan maturity			
		1 year	5 years	10 years	30 years
A	96.0	0.2	0.8	1.3	3.4
B	82.2	0.4	1.2	2.2	6.2
C	60.8	24.6	24.8	25.0	25.7
C-	45.2	44.4	44.8	45.0	45.9
D	41.2	49.4	49.9	50.1	51.0
D-	30.4	63.2	63.6	63.9	64.7
E	30.3	63.2	63.7	63.9	64.7
E-	27.8	66.4	66.9	67.1	67.9
F	24.6	70.4	70.8	71.1	71.8
F-	21.0	75.0	75.4	75.6	76.2
F--	15.8	81.5	81.9	82.0	82.5

**Appendix IV  
Evaluation of the Executive Branch's  
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**Table IV.4: Our Country Risk Cost Rate Estimates for Loans That Cause an Equal Amount of Old Loan Repayment**

Rates in percents					
Executive branch rating	Our average rating	Our cost rate estimates by loan maturity			
		1 year	5 years	10 years	30 years
A	96.0	0.1	0.7	1.2	3.2
B	82.2	0.2	1.0	2.0	5.9
C	60.8	0	0	0	0
C-	45.2	0	0	0	0
D	41.2	0	0	0	0
D-	30.4	0	0	0	0
E	30.3	0	0	0	0
E-	27.8	0	0	0	0
F	24.6	0	0	0	0
F-	21.0	0	0	0	0
F- -	15.8	0	0	0	0

The executive branch did not consider the effect that a new U.S. government loan to a country can have on that country's repayments on old U.S. government loans. Although the executive branch believes that the Credit Reform Act precludes them from accounting for this effect in their cost estimates, this effect is critical for obtaining more accurate estimates of the U.S. government's costs, a basic goal of the act. Our analysis showed that when the U.S. government lends or guarantees loans to a developing country so that new funding does not cause more repayments on old loans owed the U.S. government, the additional costs of the new loan are quite high. In contrast, when these new loans or loan guarantees induce relatively large principal repayments on past loans or loan guarantees, the additional costs are quite low.

For example, for a 1-year, \$100 million loan or loan guarantee given to an average E-rated country, which has no effect on contemporaneous principal repayment on old U.S. government loans, we estimate its country risk cost on a cost to the U.S. government basis to be \$63.7 million. This estimate is considerably higher than the executive branch's estimate of \$8 million. If the \$100 million loan or loan guarantee causes \$100 million of contemporaneous principal repayments on old loans owed the U.S. government to be made (APP = 1), we estimate its country risk cost to be zero. If the \$100 million loan or loan guarantee causes \$50 million of contemporaneous principal repayments to be made (APP = 0.5), we estimate its country risk cost to be about \$31.9 million; if the loan causes

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\$25 million of old loan repayments (APP = 0.25), we estimate its country risk cost to be about \$47.8 million; and so on.

A very close approximation for the country risk cost rate of this loan on a cost to the government basis is APP times the appropriate entry in table IV.4 plus (1-APP) times the corresponding entry in table IV.3.<sup>3</sup>

In theory, our estimates of country risk cost based on markets during this 2-week period beginning the last week of May 1992 may be greater or less than the executive branch's, depending upon the size of the APP, but our estimates of country risk and subsidy costs for fiscal year 1992 authorized foreign loans and guarantees were almost always much higher than those using the executive branch's method, although both estimates of fee income and interest cost were quite close. Our estimate of country risk costs for all \$13.7 billion of authorized fiscal year 1992 foreign loans and guarantees was \$3.1 billion, about 2-1/2 times the \$1.2 billion estimate using the executive branch's method.<sup>4</sup> In six of the seven programs for which we estimated program costs, our estimates of program country risk were greater than those of the executive branch.

Although our country risk estimates are generally much greater than those of the executive branch, we believe our estimates of country risk cost are conservative for the time they were made for the reasons discussed in appendix III. Even if the emerging market was very risk averse, and we revised our estimates of country risk cost downward to compensate, our revised estimates at this time for all fiscal year 1992 loans and guarantees would probably still be much greater than those of the executive branch.

For the first 50 countries on our rating scale out of about 170 that we estimated (roughly comparable to those countries the executive branch rated A or B), the executive branch's country risk cost estimates were most similar to ours because (1) we both based our subsidy rates on the same yield differentials and (2) the cost differences between new loans that do not affect repayment and those that cause maximum repayment are least for these more creditworthy countries. This first reason is demonstrated by the similarity in cost rates for executive branch A and B rated countries in tables IV.2 and IV.3. The second reason is illustrated by

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<sup>3</sup>This relationship would be exact if the country risk cost concepts were relative to the Aaa/AAA rate. We could also closely estimate the cost of a new loan to any of 170 countries by multiplying its APP times the appropriate entry in table II.2 plus (1-APP) times the corresponding entry in table II.1.

<sup>4</sup>The executive branch appropriately does not employ OMB's interest rate premiums to estimate the risk-based costs of the Overseas Private Investment Corporation's program because this program primarily involves the risk on foreign direct investment.

comparing our cost rate estimates for loans having no effect on repayment in table IV.3 with those for loans that have maximum effect on old loan repayment in table IV.4.

However, from about the 50th most creditworthy country on our rating scale to the least creditworthy country, which have the highest country risk and country risk cost (roughly C or lower on the executive branch rating), our country risk cost estimates for loans differed greatly from the executive branch's primarily for three reasons. The most important reason was that we systematically estimated how prices on the secondary market of variable interest rate, dollar-denominated developing country sovereign loans were affected by country risk and other characteristics using statistical analysis. In this range the risk premium committee based 32 risk premiums on only 5 bonds and used secondary market loan prices only to see if implied costs of the riskiest long-term loans were in the range of those implied by the secondary market. Instead of using econometric analysis to fill in the gaps, the executive branch assumed in the lowest five ICRAS categories that the relative size of one maturity's risk premium to another is unaffected by the level of country risk, a relationship we found to be untrue for privately owned, variable interest rate sovereign loans on the secondary market.

Also, from our analysis of the secondary market, we found a large difference in country risk cost between new loans to developing countries that do not affect repayment on old loans and those that do. This distinction tended to lower our estimates from what they would have been had we followed the executive branch and not made this distinction. The least important reason was due to the differences between our and the executive branch's country risk ratings of developing countries. Additional small differences in estimates occurred because the executive branch (1) used the same country risk interest differential for loans with a rather wide range of maturities, whereas we customized the interest rate risk differential to each loan's maturity and (2) transformed annual interest rates into a semiannual or quarterly basis using an approximation that greatly affects cost estimates when maturity is short and interest rates are large, whereas we did not employ this approximation.

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## Country Risk Method and Estimates

Executive branch ratings are based on 35 subitems, most of which are 5-year expectations of economic indicators. These 35 subitems are grouped in 5 subrating categories: payments history, macroeconomics, the debt burden, balance of payments adjustment capacity, and political and

social factors. ICRAS scores the 35 subitems, 5 subrating categories, and the overall summary country rating on the 11-grade scale.

The preferred method for measuring the worth of the executive branch's ratings would be to measure their accuracy in predicting future debt-servicing problems over long periods of time and then compare their accuracy to that of professionally recognized (external) ratings. However, because executive branch ratings have only existed a short time, this method of measurement was not available. Therefore, we compared executive branch ratings to professionally accepted external standards, measured their internal consistency, and reviewed the method that generated them.

The executive branch country risk ratings developed during the latter half of fiscal year 1992 for the fiscal year 1994 budget have both a fair amount of similarity and differences compared with (1) contemporaneous Euromoney and Institutional Investor country risk ratings and our ratings, which statistically combined these two professionally recognized ratings;<sup>5</sup> and (2) contemporaneous prices of privately owned, dollar-denominated sovereign less developed country, variable interest rate debt available on the secondary market. In addition, the executive branch's rating method was only loosely based on econometric tests. Although at least one official had reviewed the professional economic literature for these tests, many subitems were included that had not passed econometric tests, and the weights ICRAS used to combine the 35 subitems were not determined by econometric methods.

To ensure that differences between executive branch ratings and these external ratings were not due to the fact that executive branch ratings were grouped ratings and the external ratings were continuous, we transformed these continuous external ratings into discrete ratings consisting of 11 groups. For example, we transformed our continuous ratings as follows: the top four groups were countries with similar credit ratings to countries that Moody's and Standard and Poor's rated Aaa/AAA, Aa/AA, A/A, and Baa/BBB, respectively; the remaining seven groups were formed so that countries with close continuous ratings under our rating system were in the same group. We then transformed the continuous Euromoney and Institutional Investor ratings each into discrete ratings in a similar manner.

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<sup>5</sup>These three external ratings of creditworthiness are continuous and range from lowest creditworthiness at just above 0 to highest creditworthiness at just below 100.

**Appendix IV  
Evaluation of the Executive Branch's  
Methods and Estimates**

To evaluate ICRAS ratings, we first compared the then-latest executive branch country risk ratings (used for the fiscal year 1994 budget) to our own continuous contemporaneous ratings. We found that there was both a fair amount of similarity and difference between the ICRAS ratings and our own. For each of the executive branch's 11 categories (A to F- -), table IV.5 presents the number of countries; our highest, average, and lowest country score; and the standard deviation.

**Table IV.5: The Executive Branch's  
Country Risk Ratings Measured on  
Our Creditworthiness Scale**

Executive branch ratings	Number	Our credit ratings			Standard deviation
		Low	Average	High	
A	21	87	96.0	99	2.8
B	20	53	82.2	94	10.0
C	21	26	60.8	80	14.5
C-	18	28	45.2	62	9.2
D	9	30	41.2	50	7.7
D-	8	18	30.4	41	8.5
E	10	23	30.3	37	4.3
E-	20	19	27.8	45	5.9
F	21	16	24.6	39	6.8
F-	24	7	21.0	40	7.1
F- -	16	11	15.8	26	4.4

Note: These numbers have been rounded to disguise individual ICRAS country ratings that are classified.

In this context, the standard deviation measures how much countries with the same executive branch credit rating vary in our measure of country risk. We also compared grouped Euromoney ratings to continuous Institutional Investor ratings and then grouped Institutional Investor ratings to continuous Euromoney ratings in a similar manner as a standard. If the executive branch's ratings conformed very closely to our ratings, we would expect to find low standard deviations and progressively lower average values on our rating scale and would be able to distinguish accurately members of one category from those two to four categories apart when we made the pair-wise comparisons. However, except for a progressively lower average, these tests for closeness were not met. Virtually all standard deviations were large; the average standard deviation when ICRAS ratings were compared with our own continuous ratings was 77 percent higher than the average standard deviation when we compared grouped Euromoney ratings with continuous Institutional Investor ratings



and 95 percent higher than when we compared grouped Institutional Investor ratings with continuous Euromoney ratings.

We then compared the power to distinguish one category from another when we made these pair-wise rating comparisons. We considered one category distinguished from another if two standard deviations below the higher category's average exceeded two standard deviations above the lower category's average. All three pair-wise comparisons were very poor at distinguishing adjacent rating groups. When we compared ICRAS ratings to our own continuous ratings the two ratings were able to distinguish 11.1 percent of the comparisons made two categories apart, 25 percent of the comparisons made three categories apart, and 28.6 percent of the comparisons made four categories apart. In contrast, when we compared grouped Institutional Investor ratings to continuous Euromoney ratings, the two ratings were able to distinguish 77.8 percent of the comparisons made two categories apart and 100 percent of the comparisons made 3 or 4 categories apart. Also, when we compared grouped Euromoney ratings to continuous Institutional Investor ratings, the two ratings were able to distinguish 33.3 percent of the comparisons made two categories apart, 75 percent of the comparisons made three categories apart, and 100 percent of the comparisons made four categories apart.

We then used regression analysis to measure both the systematic similarities and differences between these executive branch ratings and contemporaneous professionally recognized ratings that were published in Euromoney and Institutional Investor in September 1992.

Table IV.6 presents the coefficient of determination,  $R^2$ , which measures the percentage of explained variance of the dependent variable when we regressed the two external ratings—the September 1992 Euromoney ratings and the September 1992 Institutional Investor ratings—on the executive branch ratings.

**Table IV.6: Comparison of Executive Branch Ratings With Other Country Risk Ratings**

<b>Dependent variable</b>	<b>Independent variable</b>	<b>R<sup>2</sup> percent</b>
EM	Executive branch	84.1
II	Executive branch	79.6
EMGRP	Executive branch	85.8
IIGRP	Executive branch	84.9
Average		83.6

Note: EM, Euromoney; II, Institutional Investor; GRP, grouped external ratings.

**Appendix IV  
Evaluation of the Executive Branch's  
Methods and Estimates**

In contrast to the results presented in table IV.6, when we regressed these two external ratings on each other, continuous rating against continuous rating and grouped rating against grouped rating, the average R-squared was substantially higher at 94 percent—94.1 percent when the continuous Euromoney rating was the dependent variable and 93.8 percent when the grouped Euromoney rating was the dependent variable.<sup>6</sup> We concluded that these two external ratings were each closer to each other than they were to executive branch ratings.

Table IV.7 presents the results from our regressions that compared contemporaneous secondary market prices of privately owned, dollar-denominated, variable interest rate, sovereign developing country debt (stripped of any guarantees and collateral) with the executive branch ratings and each of the other risk ratings.<sup>7</sup> The coefficients of determination are lowest when executive branch ratings are the risk measure, indicating that secondary market prices are less closely related to executive branch ratings than the other ratings.<sup>8</sup> We also measured the internal consistency of these executive branch ratings and found them to be generally internally consistent, although less so than we expected.

**Table IV.7: Comparison of Secondary Market Prices With Country Risk Ratings**

<b>Risk measure</b>	<b>R<sup>2</sup> percent</b>
Executive branch	84.4
II	92.8
EM	95.1
GAO	94.3
IIGRP	90.6
EMGRP	89.2
GAOGRP	93.9
Average excluding executive branch	92.7

Note: See table IV.6 for explanation of terms describing risk measure.

<sup>6</sup>The number of observations in each regression was 119. The coefficient of determination was unchanged when we switched the independent variable with the dependent variable. When we regressed our continuous ratings and then our grouped ratings on these executive branch ratings, R-squared was 87.3 percent and 86.5 percent, respectively.

<sup>7</sup>These regressions also included the months of interest arrears, the type of instrument (loan or bond), and the maturity of the debt instrument. They have the same form and are based on the same data as in equation III.1, except for generally different measures of country risk. The number of observations for each regression is 38.

<sup>8</sup>The t statistic of the risk measure is also lowest when executive branch ratings are the risk measure.

We regressed numerical representations of all 188 of the executive branch's latest ratings on numerical representations of their 5 subrating category ratings (A = 11, F- = 1). We found that 6.3 percent of the executive branch rating variance was unexplained by these subratings and that the weight of each subrating was 32 percent for macroeconomics, 31.9 percent for payments history, 17 percent for debt burden, 14.3 percent for balance of payments adjustment capacity, and 9.8 percent for political and social factors.

We also reviewed the 35 individual rating subitems used by the executive branch in these 5 broad categories. Although many of these subitems are the executive branch's expectations of various measures of a country's condition 5 years into the future, it did not adequately combine these expectations. Executive branch officials told us that they did test some of these indicators but acknowledged that the indicators could be further studied. They did review the professional literature when individual subitems were selected. However, many of the 35 subitems did not have empirical studies backing their use. The executive branch did not perform a systematic econometric study to help it choose appropriate weights for individual subitems so that its ratings would be more likely to accurately forecast future payment problems.

Also, two subitems tended to be misaligned with the others. They were high when the other 33 subitems tended to be low and vice versa, even though all were measured on the same A to F- scale. In addition, executive branch subitems do not include any measure of monetary policy or any measure of exchange rate overvaluation, both of which are often considered by professional country analysts to be important.

We also found that there was a good deal of empirical redundancy in the 35 subitems, although this is not necessarily a bad characteristic. When we performed step-wise regressions of the overall executive branch ratings on the 35 subitems to determine which subitems were the most important and which were redundant, we found 15 subitems that appeared to be most important and the remaining 20 subitems to be redundant.<sup>9</sup>

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<sup>9</sup>We used criteria that a subitem had to increase the amount of adjusted "explained" variance of the overall rating ( $R^2$ ) in a regression of it and that other subitems already labeled "important" had to join the list of important subitems.

# Our Estimates of the Long-Run Probability of Default for Loans by Country and Maturity

Numbers in percents

<b>Country</b>	<b>Maturity 1 year</b>	<b>Maturity 5 years</b>	<b>Maturity 10 years</b>	<b>Maturity 30 years</b>
Afghanistan	82.4	82.4	82.4	82.4
Albania	78.8	78.8	78.8	78.8
Algeria	49.1	49.1	49.1	49.1
Angola	72.6	72.6	72.6	72.6
Antigua and Barbuda	68.2	68.2	68.2	68.2
Argentina	45.2	45.2	45.2	45.2
Armenia	81.0	81.0	81.0	81.0
Australia	0.2	0.8	1.3	3.2
Austria	0	0	0	0
Azerbaijan	80.7	80.7	80.7	80.7
Bahamas	0.8	2.4	4.2	10.1
Bahrain	0.8	2.4	4.2	10.1
Bangladesh	66.3	66.3	66.3	66.3
Barbados	38.1	38.1	38.1	38.1
Belarus	70.1	70.1	70.1	70.1
Belgium	0.2	0.8	1.3	3.2
Belize	40.4	40.4	40.4	40.4
Benin	81.4	81.4	81.4	81.4
Bhutan	74.5	74.5	74.5	74.5
Bolivia	65.5	65.5	65.5	65.5
Bosnia-Herzegovia	73.0	73.0	73.0	73.0
Botswana	34.5	34.5	34.5	34.5
Brazil	51.4	51.4	51.4	51.4
Brunei	0.4	1.2	2.1	5.8
Bulgaria	64.4	64.4	64.4	64.4
Burkina Faso	67.9	67.9	67.9	67.9
Burma (Myanmar)	80.6	80.6	80.6	80.6
Burundi	67.2	67.2	67.2	67.2
Cambodia	92.1	92.1	92.1	92.1
Cameroon	61.0	61.0	61.0	61.0
Canada	0	0	0	0
Cape Verde	77.0	77.0	77.0	77.0
Central African Republic	76.9	76.9	76.9	76.9
Chad	73.4	73.4	73.4	73.4
Chile	0.8	2.4	4.2	10.1
China, People's Republic	0.8	2.4	4.2	10.1

(continued)

**Appendix V**  
**Our Estimates of the Long-Run Probability**  
**of Default for Loans by Country and**  
**Maturity**

Numbers in percents

<b>Country</b>	<b>Maturity 1 year</b>	<b>Maturity 5 years</b>	<b>Maturity 10 years</b>	<b>Maturity 30 years</b>
Colombia	25.9	25.9	25.9	25.9
Congo	78.1	78.1	78.1	78.1
Costa Rica	56.3	56.3	56.3	56.3
Cote d'Ivoire	72.4	72.4	72.4	72.4
Croatia	69.7	69.7	69.7	69.7
Cuba	86.6	86.6	86.6	86.6
Cyprus	0.8	2.4	4.2	10.1
Czechoslovakia	17.8	17.8	17.8	17.8
Denmark	0.2	0.8	1.3	3.2
Djibouti	66.7	66.7	66.7	66.7
Dominican Republic	70.4	70.4	70.4	70.4
Ecuador	64.8	64.8	64.8	64.8
Egypt	57.1	57.1	57.1	57.1
El Salvador	72.0	72.0	72.0	72.0
Estonia	66.9	66.9	66.9	66.9
Ethiopia	79.5	79.5	79.5	79.5
Fiji	38.7	38.7	38.7	38.7
Finland	0.2	0.8	1.3	3.2
France	0	0	0	0
Gabon	51.6	51.6	51.6	51.6
Gambia, The	58.7	58.7	58.7	58.7
Georgia	77.8	77.8	77.8	77.8
Germany	0	0	0	0
Ghana	57.7	57.7	57.7	57.7
Greece	0.8	2.4	4.2	10.1
Grenada	78.8	78.8	78.8	78.8
Guatemala	71.5	71.5	71.5	71.5
Guinea	65.8	65.8	65.8	65.8
Guinea-Bissau	75.9	75.9	75.9	75.9
Guyana	83.6	83.6	83.6	83.6
Haiti	80.4	80.4	80.4	80.4
Honduras	73.1	73.1	73.1	73.1
Hong Kong	0.4	1.2	2.1	5.8
Hungary	20.5	20.5	20.5	20.5
Iceland	0.4	1.2	2.1	5.8
India	34.5	34.5	34.5	34.5
Indonesia	0.8	2.4	4.2	10.1

(continued)

**Appendix V**  
**Our Estimates of the Long-Run Probability**  
**of Default for Loans by Country and**  
**Maturity**

Numbers in percents

<b>Country</b>	<b>Maturity 1 year</b>	<b>Maturity 5 years</b>	<b>Maturity 10 years</b>	<b>Maturity 30 years</b>
Iran	55.0	55.0	55.0	55.0
Iraq	87.6	87.6	87.6	87.6
Ireland	0.2	0.8	1.3	3.2
Israel	0.8	2.4	4.2	10.1
Italy	0.2	0.8	1.3	3.2
Jamaica	66.8	66.8	66.8	66.8
Japan	0	0	0	0
Jordan	63.6	63.6	63.6	63.6
Kazakhstan	72.1	72.1	72.1	72.1
Kenya	53.6	53.6	53.6	53.6
Korea, Democratic People's Republic	87.4	87.4	87.4	87.4
Korea, Republic of	0.4	1.2	2.1	5.8
Kuwait	0.8	2.4	4.2	10.1
Kyrgyzstan	77.8	77.8	77.8	77.8
Latvia	68.5	68.5	68.5	68.5
Lebanon	78.3	78.3	78.3	78.3
Lesotho	54.8	54.8	54.8	54.8
Liberia	85.5	85.5	85.5	85.5
Libya	60.5	60.5	60.5	60.5
Lithuania	68.2	68.2	68.2	68.2
Luxembourg	0.2	0.8	1.3	3.2
Macedonia	67.4	67.4	67.4	67.4
Madagascar	68.5	68.5	68.5	68.5
Malawi	75.7	75.7	75.7	75.7
Malaysia	0.4	1.2	2.1	5.8
Mali	68.1	68.1	68.1	68.1
Malta	0.8	2.4	4.2	10.1
Mauritania	76.0	76.0	76.0	76.0
Mauritius	39.3	39.3	39.3	39.3
Mexico	15.9	15.9	15.9	15.9
Moldova	81.5	81.5	81.5	81.5
Mongolia	77.9	77.9	77.9	77.9
Morocco	41.9	41.9	41.9	41.9
Mozambique	85.7	85.7	85.7	85.7
Namibia	63.8	63.8	63.8	63.8
Nepal	60.9	60.9	60.9	60.9

(continued)

**Appendix V**  
**Our Estimates of the Long-Run Probability**  
**of Default for Loans by Country and**  
**Maturity**

Numbers in percents

<b>Country</b>	<b>Maturity 1 year</b>	<b>Maturity 5 years</b>	<b>Maturity 10 years</b>	<b>Maturity 30 years</b>
Netherlands	0	0	0	0
New Zealand	0.2	0.8	1.3	3.2
Nicaragua	84.4	84.4	84.4	84.4
Niger	60.6	60.6	60.6	60.6
Nigeria	66.1	66.1	66.1	66.1
Norway	0.2	0.8	1.3	3.2
Oman	0.8	2.4	4.2	10.0
Pakistan	48.6	48.6	48.6	48.6
Panama	66.4	66.4	66.4	66.4
Papua New Guinea	40.4	40.4	40.4	40.4
Paraguay	57.8	57.8	57.8	57.8
Peru	77.3	77.3	77.3	77.3
Philippines	56.2	56.2	56.2	56.2
Poland	54.4	54.4	54.4	54.4
Portugal	0.4	1.2	2.1	5.8
Qatar	0.8	2.4	4.2	10.1
Romania	54.8	54.8	54.8	54.8
Russia	67.6	67.6	67.6	67.6
Rwanda	67.3	67.3	67.3	67.3
Sao Tome and Principe	78.6	78.6	78.6	78.6
Saudi Arabia	0.4	1.2	2.1	5.8
Senegal	64.7	64.7	64.7	64.7
Seychelles	66.4	66.4	66.4	66.4
Sierra Leone	85.3	85.3	85.3	85.3
Singapore	0.2	0.8	1.3	3.2
Slovakia	34.2	34.2	34.2	34.2
Slovenia	60.4	60.4	60.4	60.4
Somalia	88.2	88.2	88.2	88.2
South Africa	23.4	23.4	23.4	23.4
Spain	0.2	0.8	1.3	3.2
Sri Lanka	57.2	57.2	57.2	57.2
St. Lucia	68.1	68.1	68.1	68.1
St. Vincent and Grenadines	54.2	54.2	54.2	54.2
Sudan	86.2	86.2	86.2	86.2
Sweden	0.2	0.8	1.3	3.2
Switzerland	0	0	0	0
Syria	61.0	61.0	61.0	61.0

(continued)

**Appendix V**  
**Our Estimates of the Long-Run Probability**  
**of Default for Loans by Country and**  
**Maturity**

Numbers in percents

<b>Country</b>	<b>Maturity 1 year</b>	<b>Maturity 5 years</b>	<b>Maturity 10 years</b>	<b>Maturity 30 years</b>
Taiwan	0.2	0.8	1.3	3.2
Tajikistan	79.1	79.1	79.1	79.1
Tanzania	78.2	78.2	78.2	78.2
Thailand	0.4	1.2	2.1	5.8
Togo	68.1	68.1	68.1	68.1
Trinidad and Tobago	46.9	46.9	46.9	46.9
Tunisia	27.6	27.6	27.6	27.6
Turkey	0.8	2.4	4.2	10.1
Turkmenistan	76.8	76.8	76.8	76.8
Uganda	0.4	1.2	2.1	5.8
Ukraine	80.7	80.7	80.7	80.7
United Arab Emirates	68.7	68.7	68.7	68.7
United Kingdom	0	0	0	0
Uruguay	36.7	36.7	36.7	36.7
U.S.S.R.	67.6	67.6	67.6	67.6
Uzbekistan	75.4	75.4	75.4	75.4
Vanuatu	54.5	54.5	54.5	54.5
Venezuela	26.6	26.6	26.6	26.6
Vietnam	72.8	72.8	72.8	72.8
Yemen, Republic of	68.3	68.3	68.3	68.3
Yugoslavia	75.5	75.5	75.5	75.5
Zaire	79.8	79.8	79.8	79.8
Zambia	80.7	80.7	80.7	80.7
Zimbabwe	47.4	47.4	47.4	47.4



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# Legal Aspects of Rescheduling International Debt

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## Authority to Reschedule

The principal programs under which foreign debt is owed to the United States are loans and loan guarantees made under the Export-Import Bank Act of 1945; loans under Public Law 480; loans and loan guarantees under the Foreign Assistance Act of 1961, as amended; Foreign Military Sales (FMS) loans under the Arms Export Control Act; and loan guarantees under the Commodity Credit Corporation Charter Act. A 1970 opinion of the Attorney General addressed the rescheduling of Indonesian loans under a number of these and other programs. Default on all of the loans was imminent. Relying on the broad authority contained in the authorizing statutes and the absence of any prohibitions to the contrary, the Attorney General concluded that the executive branch had the authority to reschedule the loans. We examined that opinion and found no reason to question its conclusions. Indeed, in 1987, we reviewed an executive branch proposal to reschedule a FMS loan when default by a borrower was imminent, and did not object to the proposal.<sup>1</sup>

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## Requirement for Budget Authority

The Federal Credit Reform Act requires the President's budget to include the estimated net long-term cost to the government (on a present value basis) of credit programs in the year in which the loan obligations or loan guarantee commitments are to be made. It further requires that budget authority to cover this cost be provided in advance of the obligations and commitments.

Section 504(e) of the act provides that a direct loan or loan guarantee shall not be modified in a manner that increases its cost to the government unless budget authority is set aside for the additional cost. The act's implementing guidance, contained in OMB Circular A-11, provides that "administrative work-outs of troubled loans or loans in imminent default" are not loan modifications requiring additional budget authority. Under Circular A-11, the expected effects of an administrative work-out<sup>2</sup> on repayment are to be included in the original subsidy cost estimate for a loan or loan guarantee. The executive branch treats Paris Club rescheduling of loans in imminent default as administrative workouts. Despite OMB guidance, however, an OMB official told us that agencies have not included the estimated costs of Paris Club rescheduling of loans at below-market interest rates in their initial subsidy estimates. The official told us that these rescheduling costs would show up for the first time in the annual re-estimating process. This treatment of Paris Club

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<sup>1</sup>B-226718, August 19, 1987.

<sup>2</sup>Circular A-11, sec. 33.5(o) provides that "work-outs are actions undertaken to maximize repayments under existing direct loans or to minimize claims under existing loan guarantees."

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**Appendix VI**  
**Legal Aspects of Rescheduling International**  
**Debt**

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rescheduling costs is inconsistent with OMB guidance and the act's requirement that the budget reflect the full subsidy costs in the year in which loan obligations or loan guarantee commitments are made.

Additionally, the OMB guidance requires that agencies reestimate subsidy costs annually throughout the life of the loan. This guidance requires that re-estimates are to be recorded in the current year column of an agency's budget. The OMB official told us that the Export-Import Bank is the only agency that re-estimates subsidy costs for international loans and guarantees at least annually.

# Comments From the Office of Management and Budget

Note: GAO comments supplementing those in the report text appear at the end of this appendix.



EXECUTIVE OFFICE OF THE PRESIDENT  
OFFICE OF MANAGEMENT AND BUDGET  
WASHINGTON, D.C. 20503

SEP 8 1994

Mr. Ronald Kushner  
Assistant Director, International Affairs Issues  
U.S. General Accounting Office  
Washington, D.C. 20548

Dear Mr. Kushner:

Please find enclosed a response to your draft report evaluating the Executive Branch's implementation of the international aspects of the Federal Credit Reform Act of 1990.

I hope you find our comments useful as you consider revisions to your draft report.

Sincerely,

A handwritten signature in black ink that reads "Gordon M. Adams".

Gordon M. Adams  
Program Associate Director  
National Security and  
International Affairs

Enclosure

**Executive Branch Response to GAO Report**

The GAO circulated a draft report entitled CREDIT REFORM: The Executive Branch Method of Estimating the Cost of Foreign Loans and Guarantees Needs Improvement for comment in July 1994. In an effort to provide a comprehensive response to the report, OMB has coordinated comments from Eximbank, as well as the Departments of Agriculture, State and Treasury.

**GAO Report.** The GAO draft report criticized the international credit scoring system used by the Executive Branch and CBO in FY 1992, saying it:

- Used too little data from prices on the secondary debt market in its analysis;
- Did not use econometric or statistical methods to estimate needed risk premia;
- Did not revise risk premia in line with the most recent information from financial markets;
- Did not take into account the effects of new loans to risky borrowers on repayment of old loans to these borrowers; and
- Is open to bias in country risk ratings because of the lack of fixed weighting of assessment criteria.

As a consequence of these criticisms, the GAO recommends that the Executive Branch use a different budget subsidy estimation system that would:

1. Give each of 167 borrowing countries an individual risk rating rather than assigning the country to one of the 11 risk categories now in use; and
2. Lower subsidy estimates for new US Government credit when those credits increase the probability of repayment on an existing US Government credit to the same country.

On this last point, GAO asserts that "in many instances the granting of new funds by the U.S. government causes repayments to be made on old loans owed to or guaranteed by the U.S. government. This raises the value and lowers the cost to the U.S. government of the new loan." (Page 63, GAO Draft Report)

The U.S. agencies participating in the Interagency Country Risk Assessment System (ICRAS) note that this GAO draft study comes as the Executive Branch, in consultation with

**Appendix VII  
Comments From the Office of Management  
and Budget**

Congressional staff, is reviewing how agencies should measure the risks and budget costs of international credit programs.

The relevant agencies found several of the points raised in the GAO report thought provoking. All of the agencies are receptive to better ways of estimating credit subsidies. Furthermore, the Administration welcomes the report's conclusion that the Executive Branch's conduct of official debt reschedulings at the Paris Club has been consistent with its legal authority.

There were other GAO analyses and recommendations, however, with which the Administration does not concur. These concern the specifically recommended application of market prices, the use of "loan rollovers" to determine subsidies, and the use of fixed weights to determine country ratings.

Application of market prices. The Credit Reform Act of 1990 defines the subsidy cost of credit programs as the net present value of specific cash flows to the Government. To help estimate these cash flows, the Administration strongly supports the use of market prices as indicators of the perceived risk of various sovereign borrowers. Therefore, agencies agree with GAO's view that such market prices should be given a greater role in the determination of budget subsidy estimates and loan asset values. Markets provide the best information available as to the consensus expectations of risk. These data are a useful source of information on perceptions of country risk, and will be taken into account as the Executive Branch revises and updates budget estimates.

There are, however, caveats. First, the GAO report advocates using econometrics to derive values for individual countries for which market values are not available. Such an approach may have serious limitations when applied to developing countries and transition economies, such as those in Eastern Europe, given the paucity of good information. When prices are not available, predictive variables may not be available.

Second, market prices used in analysis should correspond as closely as possible to the characteristics of the debt that is being assessed, and should be tempered with recognition of the nature of the markets. For example, the Executive Branch and CBO should analyze the effects on price of past reschedulings or other impairments; the effects of low liquidity on price; the choice of appropriate instruments as benchmarks; the market valuation of any credit enhancements; factors that influence only private market participants (e.g., tax considerations); and the effect of supply factors spilling over from other markets.

The methodology for incorporating market prices must be able to distinguish between types of instruments as well as price movements arising from changes in underlying fundamentals and those arising from short-term, transient factors. For these and other reasons, the Executive Branch believes the GAO estimate of \$3 billion in FY 1992 subsidies is inaccurate. For example, the draft report estimates of subsidy cost derived from these prices was based on a data set that is extremely limited and too dated -- observed trades of

See comment 1.

See p. 13.

**Appendix VII  
Comments From the Office of Management  
and Budget**

38 debt instruments owed by 21 countries over a two-week period in May-June 1992. The attached graph show the window of time chosen, in the context of the volatile market.

See comment 2.

Risk and "rollover". As a general matter, agencies disagree with the draft report's recommendation calling for a differentiation in estimated subsidy cost between net increases in outstanding credit and lending that "rolls over" maturing credit. The effects of new loans on the repayment prospects of other loans are excluded from the definition of net subsidy costs in credit reform legislation. Subsidy costs are to be recognized at the point of credit extension, not deferred into the future by rolling over loans.

See p. 12.

Estimating subsidy costs based on new loan "rollovers" presents enormous practical difficulties. Using "rollovers" to determine the subsidy presumes that agencies know not only the amounts they will lend in the future to a given country, but also what other U.S. Government agencies intend to lend to those same countries. This is simply not the case.

See p. 12.

Moreover, the administrative burden on agency budget staff of estimating thousands of fluctuating subsidy estimates (assuming perfect knowledge of loan rollovers) for 167 separate countries would be staggering.

See comment 3.

Fixed weights and bias. Agencies also question the draft report's suggestion that empirically determined fixed weights on the factors used to assess country risk would yield more accurate and objective results. The use of fixed weights, determined by history, would preclude the application of informed analytical judgement so necessary in a rapidly changing world.

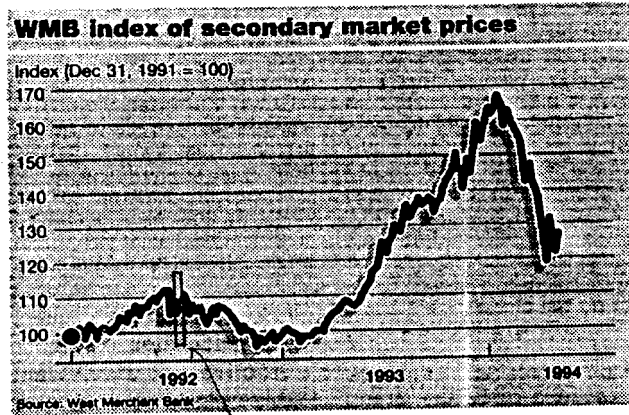
See comment 4.

Moreover, the policy bias feared by the report is contradicted by its own finding of a high degree of consistency between ICRAS ratings and those of private analysts. We believe the remaining degree of discrepancy is consistent with important differences between risks to the U.S. Government and those to private lenders. For example, the U.S. Government has sanctions that are not available to the private sector to enforce repayment, such as legislative provisions that prohibit new assistance to any country that is in default during a period in excess of one year.

See comment 5.

Summary. Agencies in the Executive Branch found the GAO draft report to raise many provocative issues worthy of further analysis. There is scope for the increased use of market prices to derive better assessments of subsidy costs when assessing sovereign risk. The proposed GAO system for estimating subsidy costs, however, has serious limitations, the most important of which is its impracticality.

Appendix VII  
Comments From the Office of Management  
and Budget



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The following are GAO's comments on OMB's letter dated September 8, 1994.

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## GAO Comments

1. We agree that estimates should be caveated, as we did in our draft report, when the subsidy cost of U.S. government loans is based on market prices of privately owned loans. We believe our method is professionally reputable because it (1) is well grounded in theory, (2) uses generally accepted statistical estimating methods, and (3) discloses sources of bias and qualifies estimates for any bias. One important strength of our method is its ability to obtain price estimates for private loans that did not trade. We did this by first measuring the systematic effect of creditworthiness and other loan characteristics on market prices for private loans that are traded and then applied these systematic effects to the creditworthiness and other characteristics of private nontraded loans to obtain estimates of their prices.
2. We do not dispute OMB's interpretation of the act. However, we believe that making a differentiation in estimated subsidy cost between net increases in outstanding credit and lending that rolls over maturing credit more accurately measures the true costs of federal credit programs. Therefore, we have suggested that the Congress may wish to consider how the principles included in the Credit Reform Act ought to be applied to international credit programs.
3. The agencies misinterpreted our comments concerning the use of variable weights in determining ICRAS' country ratings. Our criticism was that ICRAS' ratings were not adequately based on statistical tests. Many of ICRAS' component economic indicators had not passed statistical tests of significance, and econometric techniques were not used to determine component weights, whether they are fixed or variable. Using judgment has its costs. As ratings are based less on empirical data and more on judgment, they are more likely to have been affected by external considerations, such as pressure to grant loans or guarantees to particular countries.
4. We found that while there was a fair degree of similarity between ICRAS ratings and those of private analysts, there also was a fair amount of difference. The agencies have not provided any empirical evidence that ICRAS and private ratings diverge because of differences in the probability of repayment of U.S. government versus private creditors.



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5. We believe this method is not onerous because calculations would not have to be made for all 170 countries and certain statistical operations could be used to simplify the process. Further, because of weaknesses in estimating country risk and its costs, executive branch estimates could be influenced by external considerations. In contrast, our method is systematically and statistically based on markets where similar debt is traded, and our country risk measures are derived from an empirical estimating method that did not require us to make qualitative judgments.

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# Related GAO Products

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Loan Guarantees: Export Credit Guarantee Programs' Costs Are High  
(GAO/GGD-93-45, Dec. 22, 1992).

Loan Guarantees: Export Credit Guarantee Programs' Long-Run Costs Are High  
(GAO/NSIAD-91-180, Apr. 19, 1991).

Financial Audit: Commodity Credit Corporation's Financial Statements for 1989 and 1988  
(GAO/AFMD-91-5, July 29, 1991).

Financial Audit: Export-Import Bank's 1989 and 1988 Financial Statements  
(GAO/AFMD-90-80, July 19, 1990).

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Federal Supervision of Overseas Lending by U.S. Banks  
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(GAO/NSIAD-88-87, May 5, 1988).

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Comments on International Lending Institution Safety Act of 1987,  
April 25, 1987, letter from the Comptroller General of the United States to  
the Chairman, Senate Committee on Banking, Housing and Urban Affairs.

Legislative and Administrative Obstacles to Writedowns and Swapping of  
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