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EXPORT-IMPORT BANK

OMB's Method for Estimating Bank's Loss Rates Involves Challenges and Lacks Transparency



G A O

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Highlights of [GAO-04-531](#), a report to congressional committees

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Why GAO Did This Study

The Export-Import Bank (Ex-Im Bank) facilitates U.S. exports by extending credit to foreign governments and corporations, mostly in developing countries. The Federal Credit Reform Act requires Ex-Im Bank to estimate its net future losses, called “subsidy costs,” for budget purposes. Beginning with fiscal year 2003, the Office of Management and Budget (OMB) significantly changed its methodology for estimating a key subsidy cost component: the expected loss rates across a range of risk ratings of U.S.-provided international credits. In response to a congressional mandate, GAO agreed to (1) describe OMB’s current and former methodologies and the rationale for the recent revisions, (2) determine the current methodology’s impact on Ex-Im Bank, and (3) assess the methodology and how it was developed.

What GAO Recommends

GAO recommends that the Director of OMB provide affected U.S. agencies and Congress with technical descriptions of its current expected loss methodology and update this information when there are changes. GAO also recommends that the Director arrange for independent review of the methodology and ask U.S. international credit agencies for their most complete, reliable data on default and repayment histories, so that the validity of the data on which the methodology is based can be assessed over time.

www.gao.gov/cgi-bin/getrpt?GAO-04-531.

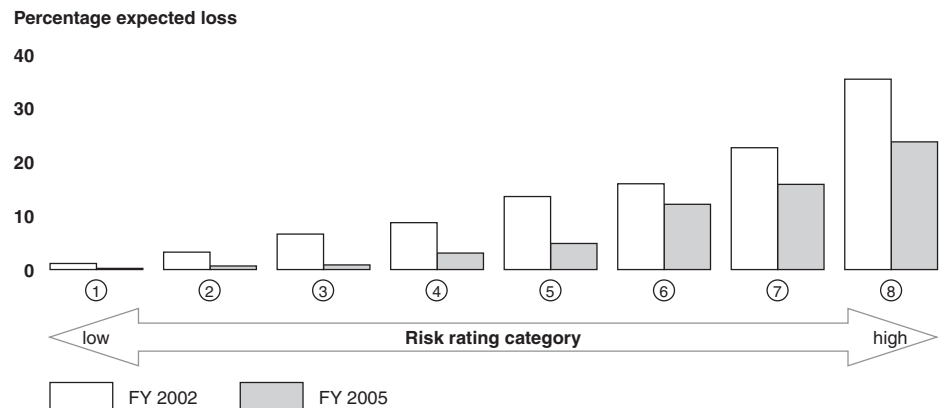
To view the full product, including the scope and methodology, click on the link above. For more information, contact Celia Thomas, (202-512-8987), thomasc@gao.gov.

What GAO Found

OMB changed its method for determining expected loss rates for U.S. international credits, with one basis being that emerging finance literature indicated the former approach might overstate losses to the government. While it formerly used only interest rate differences across bonds to derive expected loss rates, it now uses corporate bond default data, adjusted for trends in interest rates, to predict defaults and makes assumptions regarding recoveries to estimate expected loss rates. As the figure shows, expected loss rates fell under the new approach: they were higher across risk rating categories in fiscal year 2002 (the last year that the former method was used) than in fiscal year 2005. This drop has contributed to lower Ex-Im Bank projections of subsidy costs and budget needs.

OMB’s current method for estimating expected loss rates involves challenges and lacks transparency. Estimating such losses on developing country financing is inherently difficult, and OMB’s shift to using corporate default data has some basis, given the practices of some other financial institutions and limitations in other data sources. However, the corporate default data’s coverage of developing countries has historically been limited, and their predictive value for Ex-Im Bank losses is not yet established. OMB’s method generally predicts lower defaults than the corporate default data it used, whereas more recent corporate data show higher default rates. At the same time, OMB has assumed increasingly lower recovery rates, which serve to somewhat offset the lower default expectations, but the basis for the recovery rates and the changes over time has not been transparent. In addition, despite the method’s complexity, OMB developed it independently and provided affected agencies with limited information about its basis or structure.

OMB Expected Loss Rates for U.S. Government International Credits by Risk Rating Category (Present Value Basis), Fiscal Years 2002 and 2005



Source: GAO analysis of OMB expected loss rates.

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Abbreviations

EL	expected loss
ECA	export credit agency
Ex-Im Bank	Export-Import Bank
FDIC	Federal Deposit Insurance Corporation
FRB	Federal Reserve Board
FASB	Financial Accounting Standards Board
GAAP	generally accepted accounting principles
ICRAS	Interagency Country Risk Assessment System
LGD	loss given default
OCC	Office of the Comptroller of the Currency
OMB	Office of Management and Budget
OECD	Organization for Economic Cooperation and Development
PD	probability of default
SEC	Securities and Exchange Commission
SFAS	Statement of Financial Accounting Standards
U.K.	United Kingdom

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United States Government Accountability Office
Washington, D.C. 20548

September 30, 2004

The Honorable Richard C. Shelby
Chairman
The Honorable Paul S. Sarbanes
Ranking Minority Member
Committee on Banking, Housing and
Urban Affairs
United States Senate

The Honorable Michael G. Oxley
Chairman
The Honorable Barney Frank
Ranking Minority Member
Committee on Financial Services
House of Representatives

As the official U.S. export credit agency (ECA), charged with providing financing to facilitate U.S. exports, the Export-Import Bank (Ex-Im Bank) issues loans, guarantees, and insurance products to foreign governments and corporations, primarily in developing countries. As of September 30, 2003, Ex-Im Bank had a portfolio of about \$61 billion.¹ Like any credit institution, the bank expects that some of the credit it offers will not be repaid, and it estimates these future losses for federal budget purposes according to the Federal Credit Reform Act of 1990.² The act requires that prior to entering into loans or loan guarantees, Ex-Im Bank must have budget authority for its “subsidy costs”—broadly speaking, estimates of net

¹This portfolio valuation includes guarantees, loans receivable, insurance, receivables from subrogated claims, and undisbursed loans. Claims are made to Ex-Im Bank when a loan that it has guaranteed or an insurance policy that it has issued becomes overdue or defaults.

²Pub. L. No. 101-508.

losses on a present value basis.³ The Office of Management and Budget (OMB) has overall responsibility for coordinating cost estimates under credit reform and plays a unique role in determining the subsidy costs of Ex-Im Bank and other federal agencies that offer international credit—it provides these agencies with expected loss rates, a key component of their subsidy costs.⁴ For the fiscal year 2003 budget, OMB significantly changed its methodology for determining these rates.⁵ In its annual financial statements, Ex-Im Bank also accounts for future expected losses by establishing loss allowances in accordance with private sector accounting standards.⁶

The Export-Import Bank Reauthorization Act of 2002 directed GAO to report on the bank’s “reserve practices,” which include its approach for estimating subsidy costs.⁷ In response, we agreed to (1) describe OMB’s current and former methodologies for estimating expected loss rates for U.S. credit agencies’ international credit and the rationale for the recent revisions, (2) determine the impacts of the current methodology on Ex-Im Bank, and (3) assess the current methodology and the process by which it was developed. We also agreed to provide information on foreign ECA and commercial bank practices for estimating expected losses.

³The Federal Credit Reform Act defines the cost of a direct loan as the net present value (at the time of loan disbursement) of loan disbursements, principal repayments, and interest payments, adjusted for estimated defaults, prepayments, fees, penalties, and other recoveries. It defines the cost of a loan guarantee as the net present value (at the time the underlying loan is disbursed) of estimated payments by the government (for defaults and delinquencies, interest rate subsidies, and other payments) minus estimated payments to the government (for origination and other fees, penalties, and recoveries). When the present value of payments exceeds the present value of receipts—that is, when a credit program loses money—a positive subsidy exists. When the converse is true, a negative subsidy exists.

⁴The risk ratings assigned to transactions are also an important determinant of subsidy costs. Information on how risk ratings are determined for Ex-Im Bank is presented in the background section of this report, although an assessment of the appropriateness of ratings was outside the scope of this review.

⁵OMB made a small across-the-board downward adjustment to its expected loss rates for the fiscal year 2002 budget, but this did not entail a change in its basic methodology.

⁶Financial statement loss allowances consist of allowances for losses on loans and claims receivable and liabilities for losses on insurance and guarantee programs. These allowances are a measurement that reflects probable and estimable uncollectible loan balances or potential future liabilities, as required under private sector accounting standards. They are not tied directly to a funding request.

⁷Pub. L. No. 107-189, Sec. 14 (12 U.S.C. 635 note).

To describe and assess OMB's current methodology for estimating expected loss rates, we obtained and evaluated analytical papers and OMB data and assumptions and discussed this information with OMB representatives. We reviewed an OMB paper that described the current methodology in theoretical terms and obtained more complete information by, on several occasions, posing questions to technical staff through OMB's Office of General Counsel. While we obtained sufficient information to generally describe and assess key aspects of the methodology, we did not replicate or validate it. We also did not determine the reasonableness of specific loss rates that OMB has estimated. We note in the report where our description of certain aspects of the methodology is incomplete, but these areas were not material to our conclusions. We discussed the development of OMB's loss estimation methodology with knowledgeable U.S. government officials. We also reviewed relevant research and discussed key issues with selected commercial banks, foreign ECAs and related government agencies, and credit experts. To determine the impact of the current methodology on Ex-Im Bank, we analyzed the bank's budget and financial statement documents and discussed them with bank officials. Appendix I provides a more detailed description of our scope and methodology; appendixes II and III contain descriptions of foreign ECA and commercial bank practices for estimating expected losses. We conducted our review from November 2002 through March 2004 in accordance with generally accepted government auditing standards.

Results in Brief

OMB developed its current methodology for determining expected loss rates, which lowered them, in part because of finance literature indicating that its former approach likely overstated losses to the government. OMB's former methodology for estimating loss rates relied on interest rate differences—"spreads"—between bonds at different risk levels and low-risk bonds such as U.S. Treasury bonds. The former methodology assumed that higher interest rates on bonds at different risk levels signaled the extent to which they presented higher probabilities of default and expected loss. The finance literature indicated that other factors in addition to expected losses, such as tax and liquidity considerations, influence interest rate differences. OMB's current methodology uses rating agency corporate default data and interest rate spreads in a model it developed to estimate default probabilities and makes assumptions about recoveries after default to estimate expected loss rates. This methodology has generally predicted default rates somewhat lower than the underlying corporate rates it uses. Under the current methodology, expected loss rates for 8-year maturity credits were on average about 58 percent lower in fiscal year 2005 than in

fiscal year 2002, in risk categories in which Ex-Im Bank generally undertakes new financing.

With lower loss rates, OMB's current methodology has contributed to Ex-Im Bank projections of lower subsidy costs and budgetary requirements and influenced a modification in the way the bank calculates loss allowances for its financial statements. OMB's new loss rates contributed to the bank's request of smaller budget authority in fiscal years 2003 through 2005 to cover its anticipated subsidy costs. In addition, in fiscal year 2003, Ex-Im Bank's obligation of budget authority for subsidy costs dropped by almost half from fiscal year 2002, while the amount and estimated average risk of the bank's new financing in those years was similar. When Ex-Im Bank reestimated the subsidy cost of its outstanding portfolio at the end of fiscal year 2002 using the new rates, these costs dropped by \$2.7 billion, a decrease attributed by Ex-Im Bank officials primarily to OMB's lower loss rates. Further, the fees that Ex-Im Bank charges to compensate for risk are now projected to generally provide greater coverage of its expected losses. During this period, Ex-Im Bank modified its approach for calculating financial statement loss allowances to be more in line with applicable accounting standards. This involved, among other things, diverging from its former practice of using the same loss rates to calculate loss allowances and subsidy costs. To maintain consistency in its loss allowance estimation and because of the changed nature of OMB's loss rates, Ex-Im Bank generally began using higher loss rates for its loss allowances than it did for its subsidy costs.

The OMB's current methodology for estimating expected loss rates for U.S. agencies' international credits involves challenges and is not transparent. Estimating such losses on developing country financing is inherently difficult, and OMB's shift to using corporate default data has some basis, given the practices of some other financial institutions and limitations in other data sources. However, the corporate default data's coverage of developing countries has historically been limited, and their predictive value for Ex-Im Bank losses is not yet established. More recent corporate default data than what OMB used shows higher defaults in some risk categories. In deciding to use this data to predict default, OMB analyzed Ex-Im Bank historical defaults over a somewhat narrow period. The default data analyzed did not cover other U.S. international credit agencies. OMB's recovery rate assumptions have dropped twice since the methodology was implemented. The lower rates serve to offset lower default projections in the overall estimation of expected loss, but the basis for the recovery rates and the changes over time has not been transparent. Finally, despite the

complexity and implications of the current methodology, OMB developed it independently and provided affected agencies with limited information about its basis or structure.

To improve the transparency of the subsidy cost estimation process and help ensure its validity, we are recommending that the Director of the Office of Management and Budget take five actions. First, we recommend that the Director provide affected U.S. agencies and Congress technical descriptions of OMB's current method of determining expected loss rates. Second, we recommend that the Director provide similar information in the event of significant changes to its method for calculating expected loss rates. Third, we recommend that the Director ensure that OMB periodically update data from nonagency sources, such as the corporate default data used to estimate expected loss rates. Fourth, we recommend that the Director request from Ex-Im Bank and other U.S. international credit agencies the most complete and reliable information available on their default and repayment histories, so that the validity of the information on which the current methodology is based can be assessed over time. Finally, we recommend that the Director provide for, and document, independent methodological review of OMB's expected loss model.

Commenting on a draft of this report, OMB generally agreed to implement these recommendations. OMB also expressed concern about the report's statement that its method for determining loss rates was not transparent, observing that our report generally describes the method. We believe that, while we do present in this report a substantial amount of information on OMB's loss methodology, obtaining that information required considerable resources and effort, and similar information should be more readily available on an ongoing basis to affected agencies and Congress. Ex-Im Bank and the Comptroller of the Currency reviewed the report and made technical comments, which we incorporated where appropriate. The Department of the Treasury, the Federal Reserve Board, and the Federal Deposit Insurance Corporation did not have comments on the report. The Securities and Exchange Commission and the Department of Agriculture's Foreign Agricultural Service reviewed parts of the report for technical accuracy; the Securities and Exchange Commission provided technical comments, which we incorporated where appropriate. We also obtained technical comments from bank and foreign ECA officials on our descriptions of their practices.

Background

Established in 1934, Ex-Im Bank is an independent U.S. government corporation that serves as the official ECA of the United States.⁸ Its mission is to support the export of U.S. goods and services overseas, thereby supporting U.S. export sector jobs. Ex-Im Bank's mandate states that it should not compete with the private sector but rather assume the credit and country risks that the private sector is unable or unwilling to accept. Ex-Im Bank offers various financial products, such as direct loans, loan guarantees, export credit insurance, and working capital guarantees, to foreign buyers of U.S. goods and services and to U.S. exporters. In the last decade, new Ex-Im Bank authorizations of loans, guarantees, and insurance averaged nearly \$12 billion per year.

Because of its mandate, a large percentage of Ex-Im Bank's business is with developing country borrowers that are typically considered more risky than borrowers in developed countries. Nearly 80 percent of Ex-Im Bank's medium- and long-term exposure at the end of fiscal year 2003 was to borrowers from low- and middle-income countries.⁹ According to Ex-Im Bank officials, the types of borrowers it finances within countries have shifted over the last decade: whereas Ex-Im Bank historically financed foreign government (sovereign) purchases of U.S. exports, its new financing is now primarily for purchases by private sector borrowers. This shift is gradually being reflected in Ex-Im Bank's portfolio of outstanding credits, which at the end of fiscal year 2003 included about 36 percent in financing to sovereign governments, about 46 percent in financing to foreign corporations, and about 18 percent in financing to public sector, nonsovereign borrowers.

Both sovereign and private borrowers present some risk of failing to meet payment obligations (i.e., defaulting), potentially causing a financial loss for Ex-Im Bank and the U.S. government.¹⁰ In 1990, to more accurately measure the cost of federal credit programs, the government enacted credit

⁸Ex-Im Bank, which is subject to reauthorization every 4 to 5 years, was last reauthorized in June 2002.

⁹In grouping the countries for which Ex-Im Bank reported exposure in its 2003 financial statement, we used World Bank and Organization for Economic Cooperation and Development income classifications.

¹⁰On a direct loan, default occurs when payments due to Ex-Im Bank are not made as scheduled. On a guaranteed loan, default occurs when payments due to the private sector lender are not made as scheduled, causing the lender to file a claim with Ex-Im Bank.

reform, which required agencies that provide domestic or international credit, including Ex-Im Bank, to estimate and request appropriations for the long-term net losses, or subsidy costs, of their credit activities.¹¹ According to credit reform, Ex-Im Bank incurs subsidy costs when estimated payments by the government (such as loan disbursements) exceed estimated payments to the government (such as principal repayments, fees, interest payments, and recovered assets), on a present value basis over the life of the loan. For each credit activity, Ex-Im Bank assesses the potential future losses based on the risk of the activity. It collects up-front fees or charges borrowers higher interest rates, or both, to offset that loss and receives subsidy appropriations to cover remaining losses.

Credit reform requires credit agencies to have budget authority to cover subsidy costs before entering into loans or loan guarantees. Credit agencies, in their annual appropriations requests, estimate the expected subsidy costs of their credit programs for the coming fiscal year. Credit reform also requires agencies to annually reestimate subsidy costs of previous financing activity based on updated information. When reestimated subsidy costs exceed agencies' original subsidy cost estimates, the additional subsidy costs are not covered by new appropriations but rather are funded from permanent, indefinite budget authority.

To estimate their subsidy costs, credit agencies estimate the future performance of direct and guaranteed loans. Agency management is responsible for accumulating relevant, sufficient, and reliable data on which to base these estimates. To estimate future loan performance, agencies generally have cash flow models, or computer-based spreadsheets, that include assumptions about defaults, prepayments, recoveries, and the timing of these events and are based on the nature of their own credit program. Agencies that provide credit to domestic borrowers generally develop these cash flow assumptions, which OMB reviews, based on their historical experiences. For U.S. international credits, OMB provides the expected loss rates, which are composed of default and recovery assumptions, that agencies should use to estimate their subsidy costs.

¹¹Federal agencies that provide credit to the domestic market include the Departments of Agriculture, Education, Housing and Urban Development, and Veterans Affairs and the Small Business Administration. Federal agencies that provide international credit include the Departments of Agriculture and Defense and the Agency for International Development, Ex-Im Bank, and the Overseas Private Investment Corporation.

The determination of expected loss rates for federal agencies that provide international credit has two components: the assignment of risk ratings for particular borrowers or transactions and the determination of loss rates for each rating category, according to the maturity of the credit.¹² Both of these components, and their relationship to one another, are important in determining overall expected losses. For Ex-Im Bank, risk ratings are determined partly through an interagency process and partly by Ex-Im Bank's risk management division. The appropriateness of these ratings is a key determinant in the overall appropriateness of Ex-Im Bank's subsidy cost estimations.¹³

Through the Interagency Country Risk Assessment System (ICRAS),¹⁴ which OMB chairs, ICRAS agencies determine risk ratings that will be in effect each fiscal year (see box 1 in fig. 1).¹⁵ There are two types of ICRAS ratings—one for foreign government (sovereign) borrowers and one for the private sector climates in foreign countries. Ratings range from 1 (least risky) to 11 (most risky). Ratings for sovereign borrowers are based on macroeconomic indicators, such as indebtedness levels; balance-of-payments factors; and political and social factors. In determining ratings, the agencies take into account country risk ratings assigned by private sector ratings agencies and by the Organization for Economic Cooperation

¹²These expected losses are estimates, based on available information, of the mean, or average, level of future losses expected from particular credit activities. Actual losses can be higher or lower than the expected losses.

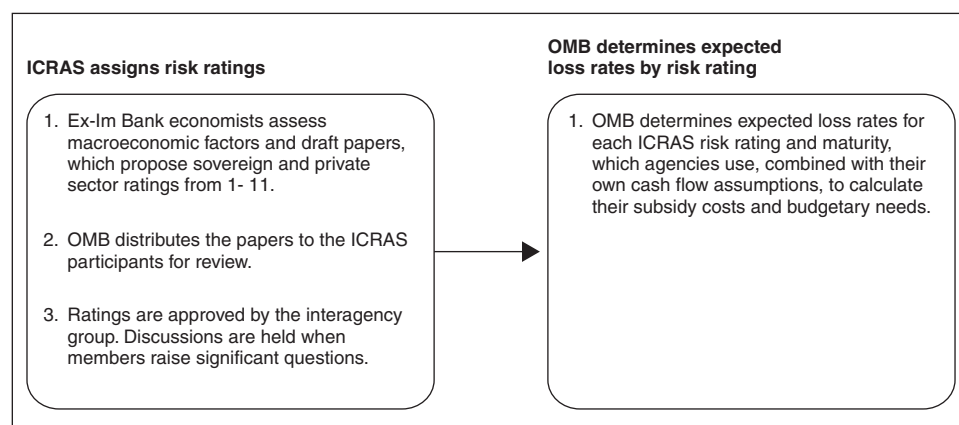
¹³Evaluating the risk rating process or the reasonableness of specific ratings was beyond the scope of this engagement.

¹⁴ICRAS was established in 1991 to create uniformity among the federal agencies involved in providing international credit. According to OMB, these agencies had previously used separate methodologies for estimating their subsidy costs, which often produced different default expectations for the same debtor. The ICRAS working group is chaired by OMB and includes representatives from the cross-border financing agencies, including Ex-Im Bank, the Departments of Agriculture and Transportation, the Overseas Private Investment Corporation, the Agency for International Development, and the Defense Security Assistance Administration. Other interested government organizations, including the Departments of Treasury, State, and Commerce; the Federal Reserve; the Council of Economic Advisors; and the National Security Council are also represented.

¹⁵The ICRAS ratings for some countries are reviewed yearly, while others are reviewed less frequently. Some ratings may be revised more frequently depending on circumstances.

and Development (OECD).¹⁶ Private sector ratings assigned through the ICRAS process also take into account factors such as the banking system and legal environment in a country. Ex-Im Bank generally authorizes, with few exceptions, new business for borrowers with ICRAS ratings of 8 or better.¹⁷ (App. IV contains more information about the ICRAS risk rating process.)

Figure 1: Components of the ICRAS Process



Sources: GAO analysis of Ex-Im Bank and OMB documents.

For Ex-Im Bank’s financing with foreign governments, the ICRAS sovereign risk rating applies. For Ex-Im Bank’s private sector lending, Ex-Im Bank officials assign risk ratings. According to Ex-Im Bank officials, they use private rating agency ratings for a corporation when the ratings are available, which is the case for a minority of borrowers. For most private sector borrowers, Ex-Im Bank officials use the private sector ICRAS rating

¹⁶These comparisons are made based on a table, or concordance, that sets up a cross-walk between ICRAS ratings and the ratings of major private rating agencies, such as Moody’s Investors Service and Standard & Poor’s, as well as between ICRAS ratings and OECD ratings.

¹⁷Ex-Im Bank’s Country Limitation Schedule identifies the countries for which the bank’s support is not available or for which limitations on available credit length exist. See http://www.exim.gov/tools/country/country_limits.html.

as a baseline and adjust that rating depending on their assessment of the borrower's creditworthiness.¹⁸

For the second component, OMB plays a key role. It determines expected loss rates for each ICRAS risk rating and maturity, which U.S. agencies that provide international credit use in preparing their subsidy cost estimates (see fig. 1, box 2). OMB provides these loss rates to ICRAS agencies each fiscal year, in time to be used in preparing budget submissions.¹⁹ To estimate future cash flows, ICRAS agencies use OMB's expected loss rates in their cash flow models. The loss rates are also used to allocate subsidy costs during the fiscal year and to calculate subsidy cost reestimates at the end of the fiscal year. OMB also provides agencies with a credit subsidy calculator, which has been audited, that agencies use to convert agency-estimated cash flows into present values.²⁰

The credit reform act resulted in the establishment of a special budget accounting system to track inflows and outflows associated with agencies' lending activities. Expected long-term subsidy costs for financing activities in a fiscal year appear in an agency's annual budget submission and are subject to congressional approval. However, any increases over time in expected subsidy costs for financing that took place in earlier years are financed from permanent indefinite budget authority and do not have to be appropriated in the annual appropriations process.²¹ In the case of Ex-Im Bank, such changes could result, for example, from changes in the risk assessment for certain countries or changes in loss assumptions for a given

¹⁸For medium-term transactions of less than \$10 million (which represent less than 10 percent of Ex-Im Bank's portfolio), the bank uses a portfolio approach to assign rating categories, assigning an overall category to a country. According to Ex-Im Bank officials, the category assigned to these transactions is generally one risk category higher than the private sector ICRAS rating for the country.

¹⁹For credit programs, OMB also provides the discount rates that are used to calculate subsidy estimates. These rates are built into OMB's credit subsidy calculator.

²⁰PricewaterhouseCoopers LLP audited the credit subsidy calculator in December 1999 to ensure that the calculations it is designed to make are done correctly. The calculator was audited because users, as well as the accountants and auditors who prepare and audit agency financial statements, need to have assurance that it calculates reliable subsidy costs in compliance with applicable legislation and accounting standards.

²¹Permanent budget authority is available as the result of previously enacted legislation and does not require new legislation for the current year. Indefinite budget authority is budget authority of an unspecified amount of money.

risk level. (App. V contains additional information about the credit reform budget accounting system.)

In addition to estimating expected losses for budgetary purposes, Ex-Im Bank measures the expected loss of its portfolio in its own annual audited financial statements. As a government corporation, Ex-Im Bank is required to follow “principles and procedures applicable to commercial corporate transactions.”²² Ex-Im Bank’s financial statements are prepared according to private sector generally accepted accounting principles (GAAP) that require Ex-Im Bank to follow Financial Accounting Standards Board (FASB) accounting guidance when establishing allowances for future expected credit losses.

OMB Developed New Method That Lowered Expected Loss Rates

OMB developed its current methodology for determining expected loss rates for ICRAS agencies, which lowered these rates, based in part on evidence that its former approach overstated likely defaults and losses. For fiscal years 1992-2002, OMB based its expected loss estimates on differences between interest rates on bonds of different risk levels. In developing its current approach, OMB cited emerging academic literature that indicated its former approach may have overestimated likely costs to the government. Ex-Im Bank officials also said they believed, based on their reestimates, that their subsidy cost appropriations had been too high relative to their loss experience since the beginning of credit reform. OMB’s current approach uses historical corporate bond default data, adjusted for trends in interest rate spreads, to predict defaults and applies an assumption regarding recovery rates to estimate expected loss rates. Under the current approach, loss rates across most risk categories dropped significantly.

OMB’s Former Methodology Based Expected Loss Estimates on Differences in Bond Interest Rates

The method that OMB used in fiscal years 1992-2002 based expected loss rates for ICRAS agencies on interest rate spreads between publicly traded U.S. corporate or foreign government bonds and low-risk bonds such as

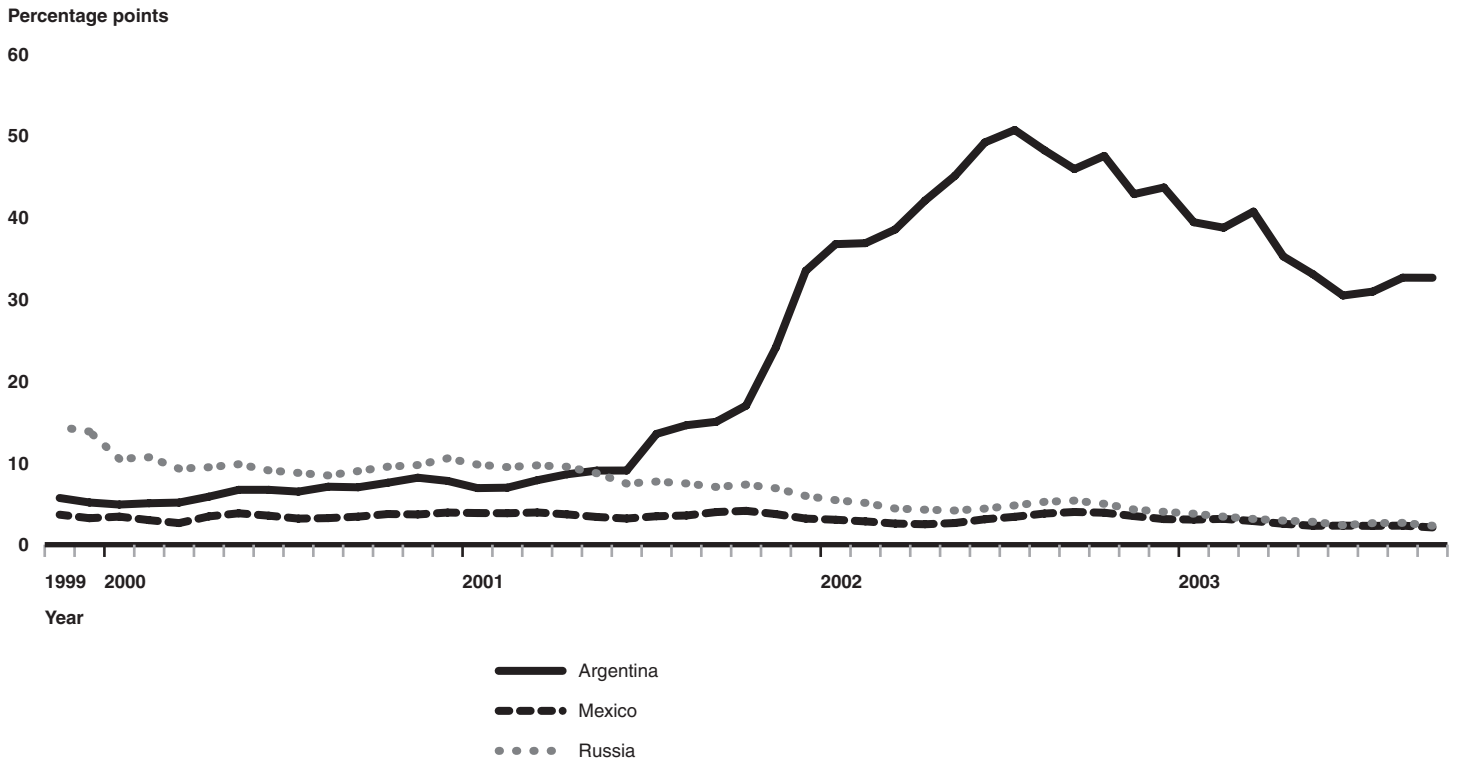
²²The Government Corporation Control Act of 1945 required wholly owned government corporations, including Ex-Im Bank, to follow private sector principles and procedures. Since 1990, the act has required such corporations to undergo annual audits by independent public accountants.

U.S. Treasury bonds.²³ Under this method, estimates of expected loss shifted as the underlying spread data shifted. Interest rate spreads are an indicator of expected loss, in that the size of a spread tends to widen as the perceived risk increases. For example, when interest rates on a foreign bond are 6 percent and U.S. Treasury bond interest rates are 5 percent, the spread between the two is 1 percentage point. The foreign bond in this example provides a higher rate of interest than the U.S. Treasury bond because creditors require a higher return on their capital, at least in part because they perceive that foreign bonds carry a higher risk of non-repayment.

Spreads fluctuate over time depending in part on changes in market views of borrowers' creditworthiness. Figure 2 shows interest rate spreads for Argentine, Russian, and Mexican government bonds over U.S. Treasury bonds from 1999-2003, illustrating how spreads can fluctuate. Spreads increased sharply in 2001 for the Argentine bonds, as Argentina's default on those bonds was imminent. Conversely, the spread for the Russian bonds shown narrowed over the period as Russia's economy improved, while the spreads for the Mexican bonds were consistently the smallest of the three countries.

²³In these years, OMB presented its loss rates, for most ICRAS categories, in terms of risk premiums, which were estimated average differences between the interest rates on traded bonds in a risk category and the U.S. Treasury bond rate. The default costs, or expected losses, associated with those risk premiums were estimated to be the difference between the present value of the loan or loan guarantee's expected cash flows discounted at the Treasury interest rate and the expected cash flows discounted at the risk-adjusted interest rates.

Figure 2: Trends in Interest Rate Spreads for Argentine, Russian, and Mexican Government Bonds as Compared to U.S. Treasury Bonds, 1999-2003



Source: GAO analysis of bond price data from Global Insight.

OMB has used varying underlying instruments to calculate bond spreads and expected losses for ICRAS agencies. In the beginning of credit reform, OMB used the spreads on U.S. corporate bonds at different risk levels to estimate risk premia (and thus expected loss).²⁴ That is, OMB determined the interest rate spread for U.S. corporate bonds within a risk rating category and used those spreads to compute a risk premium for each

²⁴Initially, the spreads were computed relative to the lowest risk, or AAA, corporate bonds. Later, OMB computed the spreads relative to U.S. Treasury bonds.

ICRAS category. In fiscal year 1997, OMB began using the interest rate spreads on other instruments, including foreign government bonds.²⁵

After interest rates on some types of international bonds rose in the late 1990s, OMB determined that basing expected loss rates only on interest rate spreads resulted in estimates that were too high. According to OMB, it was decided in the discussions within the executive branch and with Congress leading to credit reform that only the expected cost to the government was relevant for estimating default losses to the government under credit reform. OMB decided to change its method for determining default losses, primarily because emerging research showed that factors other than expected losses from defaults account for a significant portion of interest rate spreads.²⁶ According to this literature, differences in liquidity and tax considerations, and an aspect of credit risk that OMB termed “portfolio risk,” affect interest rates on international bonds.²⁷

Studies cited by OMB and other related literature indicate that factors other than expected losses from defaults account for a high proportion of interest rate spreads—in some cases, most of the spread—especially on higher-quality bonds. For bonds with risk ratings that correspond to the riskier ICRAS rating categories, 5 and higher (riskier), conclusions from the literature that OMB cited and other literature that we reviewed are less clear. One study cited by OMB found that differences in tax treatment, and compensation for risk beyond expected losses, explained most of interest rate spreads; however, because of limited data, that study did not include bonds in risk categories higher than those corresponding to ICRAS

²⁵We reported in 1994 that expected losses using this method were based on small numbers of spread observations in some ICRAS categories. See GAO, *Credit Reform: U.S. Needs Better Method for Estimating Cost of Foreign Loans and Guarantees*, NSIAD/GGD-95-31 (Washington, D.C.: Dec. 19, 1994).

²⁶Literature cited by OMB included, in part, Jerome S. Fons, “Using Default Rates to Model the Term Structure of Credit Risk,” *Financial Analysts Journal* 50 (1994): 25-32; and Edwin Elton, Martin J. Gruber, Deepak Agrawal, and Christopher Mann, “Explaining the Rate Spread for Corporate Bonds,” *Journal of Finance* 56 (2001): 247-277.

²⁷“Portfolio risk” is the risk associated with the variability of default rates—the likelihood that losses from defaults will be higher in some periods than others. This portfolio risk, although related to default costs, is not included in OMB’s calculation of expected losses because, according to OMB, it is not considered to be a cost to the government and, thus, is not a cost for which the U.S. government would need to budget.

category 4.²⁸ A second study cited by OMB found that market interest rate spreads on bonds were greater than those that would be predicted based on corporate default data. The differences were particularly apparent for bonds in investment-grade categories and were smaller for speculative-grade bonds.²⁹

For the fiscal year 2002 budget, OMB imposed an across-the-board reduction in the expected loss estimates for ICRAS risk categories 1 through 8.³⁰ OMB said that it did this to eliminate part of the spread between other bonds and U.S. Treasury bonds to come closer to measuring only default cost. The risk factors and expected loss estimates for the bottom three categories did not change.

A further rationale for adjusting the expected loss rates, according to Ex-Im Bank officials, was that the bank had calculated several downward reestimates of its subsidy costs since the inception of credit reform. They viewed this as evidence that the bank's original subsidy cost estimates were conservative. According to Ex-Im Bank officials, several factors influence the bank's subsidy cost reestimates, including changes in the outstanding balance of its cohorts (the term "cohort" refers to the financing extended in a given fiscal year, which Ex-Im Bank further subdivides by product type); changes in cohort performance or average riskiness; and changes in OMB's expected loss rates.³¹ Ex-Im Bank calculated a net downward reestimate of about \$368 million in fiscal year 1999, followed by a larger net downward reestimate of about \$1.4 billion in fiscal year 2000 and a subsequent net

²⁸Elton et al., "Explaining the Rate Spread for Corporate Bonds."

²⁹Fons, "Using Default Rates to Model the Term Structure of Credit Risk."

³⁰This amount of the reduction was based on the amount by which the default probability implied by interest rate spreads for ICRAS A-rated credits was greater than published default probabilities for AA and AAA-rated corporations.

³¹According to an Ex-Im Bank official, the bank calculates subsidy cost reestimates at the end of the fiscal year using an approach that is similar but not identical to one of the two approaches specified under credit reform. Ex-Im Bank officials said that to reestimate the subsidy cost of each cohort, they determine the outstanding principal balance at the end of the fiscal year, the weighted average remaining term to maturity, and the weighted average risk rating. They apply the most current OMB expected loss rate that corresponds to each cohort's average risk rating to the cohort's outstanding principal balance to determine the cohort's reestimated subsidy cost. They compare that amount with the amount already set aside for the cohort. If reestimated subsidy costs are less than the amounts set aside the previous fiscal year, this would result in a downward reestimate, the amount of which is transferred from Ex-Im Bank's financing account to the Treasury.

downward reestimate of about \$300 million in fiscal year 2001.³² (In these years, upward reestimates of some cohorts were more than offset by larger downward reestimates of other cohorts.) There were small net downward and upward reestimates in fiscal years 1992 through 1995, and Ex-Im Bank did not calculate reestimates in fiscal years 1996 through 1998. Ex-Im Bank's reestimates represent the bank's ongoing assessment of the riskiness of its post-credit reform financing at a given point in time and are not a final assessment of the performance of cohorts that have not reached maturity at the time of the reestimate. An Ex-Im Bank official noted that future claims or defaults could occur on cohorts that have not reached maturity, possibly causing upward reestimates to certain cohorts in the future.

OMB's Current Methodology Bases Expected Loss Rates on Corporate Default Data, Interest Rate Spreads, and Recovery Assumptions

OMB's current methodology uses rating agency corporate default data and interest rate spreads to estimate default probabilities and makes assumptions about recoveries after default to estimate expected loss rates. The methodology estimates default rates for federal international credits using a complex model that OMB developed. These rates were generally lower for fiscal years 2004 and 2005 than the underlying corporate default rates that OMB used in estimating its rates. OMB introduced its current methodology, which estimates expected loss rates for ICRAS categories 1 through 8, for use in fiscal year 2003, and made modifications for fiscal years 2004 and 2005.³³ (App. VI contains a technical description of the methodology.)

³²Information in this report about Ex-Im Bank's reestimates is based on information that the bank provided for each year in which it calculated reestimates. This information differs slightly in some years from information about the bank's reestimates that is reported in the Federal Credit Supplement to the budget. These figures reflect only the subsidy cost portion of the reestimates cited. Ex-Im Bank also calculates interest costs on the subsidy costs, but these costs are not included in the figures.

³³Expected losses for ICRAS categories 9 through 11 are calculated differently. They are based on market prices (interest rates) on debt issues of countries in these categories. According to OMB, it averaged the limited interest rate observations of international debt for countries in each category. OMB obtained the data from the International Finance Review and WesBruin Capital. OMB changed its method for fiscal year 2004 (1) to exclude collateralized instruments; (2) for performing bonds, to adjust for the difference between bond coupon rates and Treasury rates, excluding issues with unknown coupon rates; and (3) to apply a discount to each ratings category (5 percent for category 9, 10 percent for category 10, and 25 percent for category 11) to reflect that countries with high ratios of bilateral debt (debt owed to other countries) to private debt are more likely to expect debt reduction.

OMB Model Bases Default
Estimates on Corporate Default
Data and Spreads

OMB uses rating agency corporate default data and information on interest rate spreads to determine expected defaults through a complex model. The model has two empirical relationships, one between ratings and defaults and the other between interest rate spreads and defaults. The model combines the relationships to arrive at OMB's expected default rates across ICRAS risk categories. Historical default rates on corporate bonds by risk rating category are the key inputs to both components of the model.

The first component of the model bases the probability that ICRAS agency borrowers will default on default rates for corporate bonds published in 2000 by a nationally recognized private rating agency, Moody's Investors Service. The risk categories associated with the Moody's corporate default probabilities are converted to ICRAS risk categories.³⁴ OMB's model uses two Moody's data series on U.S. corporate bond defaults, which OMB combined into a single series. The data series used for the four lowest-risk ICRAS categories (1-4) includes default rates on rated corporate bonds by risk rating category during 1920-1999. The data series used for the next four (higher risk) ICRAS categories (5-8) includes default rates on rated corporate bonds by risk rating category during 1983-1999.³⁵

The second component of the model uses data on interest rate spreads to make adjustments to the same Moody's historical default data. The current method does not use spread information as the primary indicator of default risk, as OMB's former method did. Instead, it uses spread information as a signal of how current market conditions might differ from those reflected in the Moody's historical data. The model is designed to adjust historical default rates by rating category up or down in cases where interest rate spreads in a category are unusually high or low relative to the average spreads for that category. The adjustment in the model gives greater weights to more recent spreads in calculating the averages. To estimate this relationship, OMB used interest rate data on international bonds from Bloomberg.

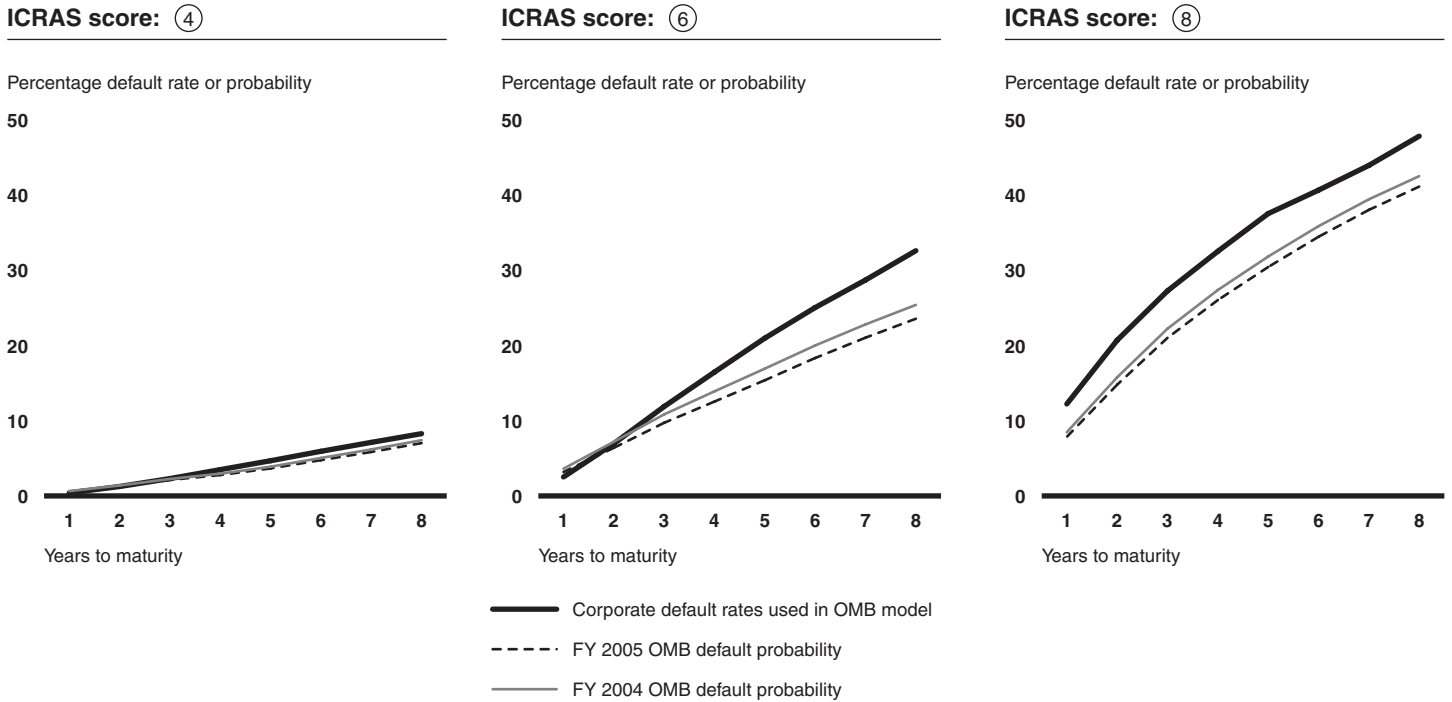
³⁴Moody's ratings are themselves determined by the likelihood of default (default rates) and the severity of default (recovery rates), according to a Moody's official and agency documents.

³⁵OMB converted the default probabilities in the Moody's tables to default probabilities for ICRAS ratings by averaging certain values within each table and making some judgmental decisions, which, according to OMB, generally resulted in choosing values on the higher side of the Moody's ratings when there was not a straight match with ICRAS categories.

The default probabilities reflected in OMB's expected loss rates for fiscal years 2004 and 2005 were generally lower than the corporate default rates that OMB used in its model. Figure 3 illustrates OMB's fiscal year 2004 and 2005 default probabilities for 1-8 years for three ICRAS ratings categories and the Moody's corporate default rates for corresponding risk categories.³⁶ The graph shows that OMB default probabilities are somewhat lower than the corporate default rates for the ratings categories shown. (App. VII presents similar comparisons for ICRAS categories 1-8.) Based on information we obtained on OMB's model, this difference would be expected to result from interest rate spreads' trending significantly downward for some rating and maturity categories. It could also result from features of the model specification. We could not determine the reasons for the difference because we did not replicate OMB's model and, in response to our questions, OMB did not identify specific reasons for the differences. (App. VI contains more information about model specification issues.)

³⁶We compared the Moody's and OMB's default rates for maturities of 1-8 years because the combined Moody's series that OMB used had only 8 years of default rates for ICRAS categories 5 through 8.

Figure 3: Comparison of OMB Default Probabilities for Fiscal Years 2004 and 2005 and Moody's Corporate Default Rates Used in OMB Model for Selected Rating Categories



Source: GAO analysis of OMB data.

Note: OMB default probabilities were calculated from the expected loss rates that OMB generated for the fiscal year 2004 and fiscal year 2005 budgets. The OMB default probabilities are calculated by removing the recovery rate adjustments (12 percent for fiscal year 2004 and 9 percent for fiscal year 2005) from the net default probability tables provided by OMB, which had recovery rates factored in.

Methodology Combines Default Rates and Recovery Rates to Determine Expected Losses

After determining expected default rates, OMB combines the default rates with an assumption about the recovery rate—the percentage of defaulted principal and interest that will be recovered over time—to obtain expected loss rates.³⁷ The assumed recovery rate is a key driver of the expected loss rates. OMB assumed an across-the-board recovery rate of 17 percent for the fiscal year 2003 budget—that is, the government was expected to lose \$830 and recover \$170 for every \$1,000 in defaulted credits. It assumed

³⁷Expected loss is equal to expected default multiplied by one minus the recovery rate. Thus, an expected default rate of 15 percent and a recovery rate of 20 percent would result in an expected loss rate of 12 percent. (This is expressed mathematically as $15 (1 - .20) = 15 (.80) = 12$.)

lower recovery rates of 12 percent for the fiscal year 2004 budget and 9 percent for the fiscal year 2005 budget.

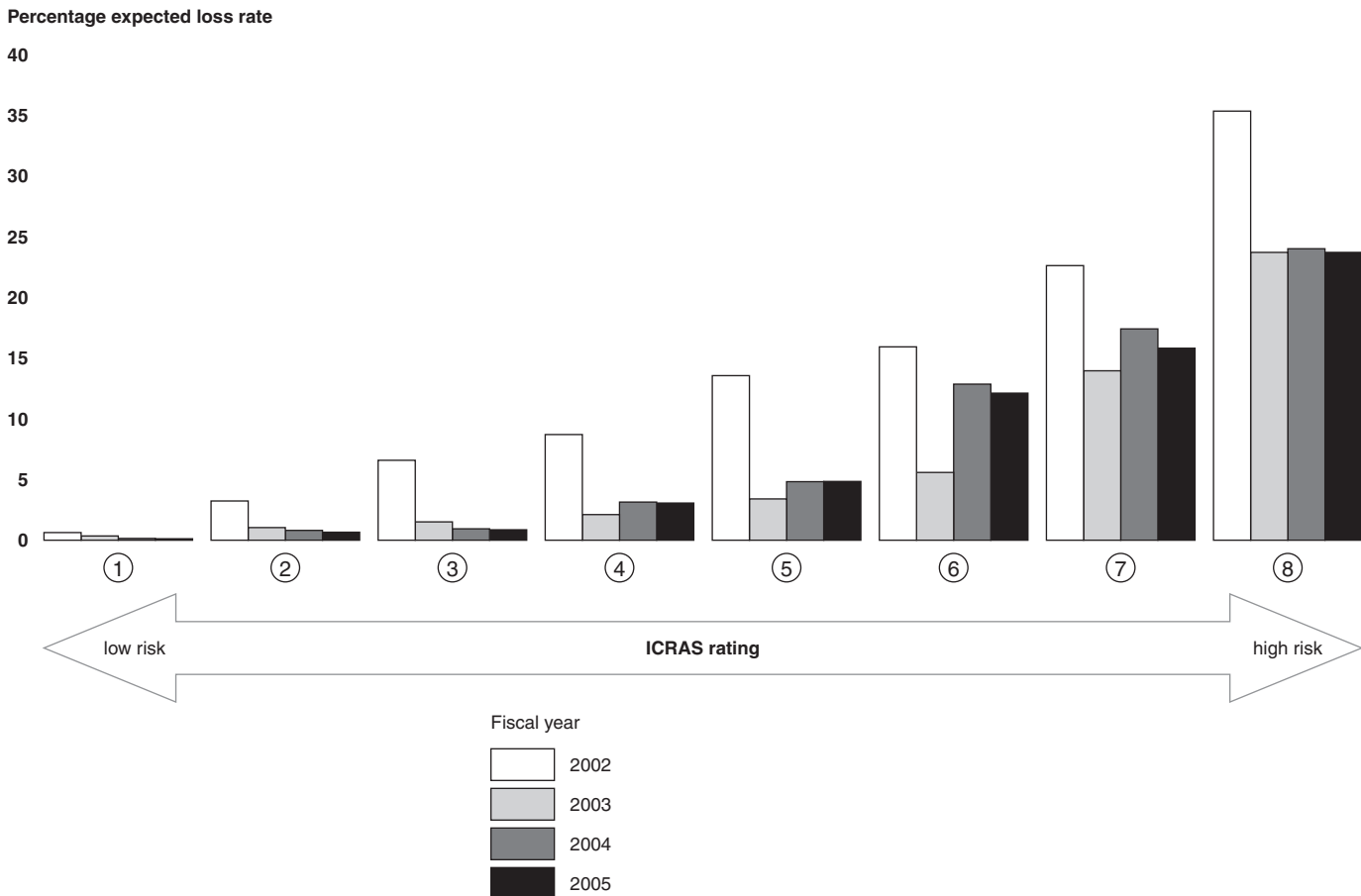
OMB's Current Methodology Lowered Expected Loss Rates

OMB's current methodology reduced the loss rates that U.S. credit agencies are expected to incur on international credits they provide. Between fiscal years 2002 and 2005, expected loss rates fell across ICRAS risk categories 1 through 8.³⁸ As shown in figure 4, expected loss rates for credits of 8-year maturity were, on average, about 58 percent lower on a present value basis in fiscal year 2005 than 2002 (the last fiscal year in which OMB used its former approach to develop the loss rates).³⁹ The largest declines were in risk categories 1 through 5. Expected loss rates for ICRAS agencies have varied over the credit reform period. (See app. VIII for information on trends in expected loss rates for ICRAS agencies between fiscal years 1997 and 2005.)

³⁸Loss expectations rose slightly between fiscal years 2002 and 2005 for ICRAS categories 9 and 10 and declined slightly for category 11.

³⁹We compared the loss expectations in place for 8-year guarantees at ICRAS risk ratings 1-8 using Ex-Im Bank's cash flow worksheets and determined their present value using OMB's credit subsidy calculator. We selected 8-year credits because this maturity is representative of many Ex-Im Bank credits. Specific loss expectations per ICRAS category differ depending on the maturity of the credit, but the general trend and average reduction over the period were similar for the other maturity bands we analyzed.

Figure 4: Comparison of OMB's Expected Loss Rates, in Present Value Terms, for ICRAS Risk Categories 1-8, Fiscal Years 2002-2005



Source: GAO analysis of OMB expected loss rates.

Note: The figure compares loss expectations that were in place in each fiscal year, in present value terms, for each ICRAS risk category based on guarantees of 8-year maturity. We based the analysis on 8-year maturities because this maturity is representative of many Ex-Im Bank credits.

For fiscal year 2003, the first year for which OMB's current methodology was used to develop expected loss rates, rates declined sharply across most ICRAS risk categories. Loss rates for fiscal year 2004 rose for several risk categories, with the biggest change being an increase in the loss rate for ICRAS risk category 6. According to OMB, the expected loss rates changed from fiscal year 2003 to 2004 because of updated country ratings and interest rate data. OMB did not provide more specific information to explain those changes. Also, the lower recovery rate assumptions used in

fiscal year 2004 would be expected to push loss rates upward. Expected loss rates in fiscal year 2005 were generally similar to those in fiscal year 2004, with slight declines for some risk categories. Although OMB's model generated lower default rates for fiscal year 2005 than for fiscal year 2004, a further decrease in its recovery rate assumptions resulted in little change to expected loss rates in fiscal year 2005.

Current OMB Methodology Has Lowered Ex-Im Bank's Projected Subsidy Costs and Budgetary Needs

By lowering loss rates for most ICRAS risk categories, OMB's current methodology has contributed to lower Ex-Im Bank projections of subsidy costs and, therefore, lower budgetary requirements. Ex-Im Bank's obligation of budget authority for new subsidy costs declined significantly for fiscal year 2003, when the current methodology took effect. In addition, Ex-Im Bank calculated a large downward reestimate of the subsidy costs of its outstanding portfolio at the end of fiscal year 2002 using the new loss rates. With lower loss rates, Ex-Im Bank's fees are generally projected to provide greater coverage of expected losses, fully offsetting losses in some budget categories. Finally, during this period, Ex-Im Bank modified its approach for calculating loss allowances in its financial statements. This involved making certain changes to be more in line with applicable accounting standards and, because of the changed nature of OMB's loss rates, using different and higher loss rates than it used in its budget documents to calculate subsidy costs.

Lower OMB Loss Rates Reduce Ex-Im Bank Budget Authority Needed to Cover Subsidy Costs

Partially because of OMB's lower loss rates, Ex-Im Bank required less budget authority to cover its lower subsidy costs. Estimates and obligation of budget authority for subsidy costs are determined by the amount and risk of business the bank expects to, or does, undertake in a year, as well as expected loss rates and fees charged to borrowers. Changes in any one of those factors can alter budget needs. According to Ex-Im Bank officials, OMB's lower loss rates were a key determinant in the declines in its subsidy cost estimates, its budget authority obligated for new subsidy costs, and its 2002 reestimate of subsidy costs.

Ex-Im Bank's requests for budget authority for subsidy costs have dropped since it began using the lower loss rates to estimate subsidy costs. The bank's request for subsidy budget authority in fiscal year 2003 was about 30 percent lower than the average of its requests in the previous 5 years, partly because of lower OMB loss rates and partly because of a substantial

amount of budget authority carried over from the previous fiscal year.⁴⁰ Ex-Im Bank requested no new subsidy budget authority in fiscal year 2004 but anticipated \$460 million in new subsidy cost obligations.⁴¹ The amount of budget authority carried over from previous fiscal years was seen as sufficient to cover anticipated fiscal year 2004 subsidy costs.⁴² Ex-Im Bank requested \$126 million for subsidy budget authority in fiscal year 2005, but it anticipated \$491 million in obligations for subsidy costs.⁴³ The bank continued to have a significant amount of budget authority carried over to fund the difference.

In addition, Ex-Im Bank's obligation, or usage, of budget authority for new subsidy costs dropped when the current methodology took effect, as shown in figure 5. The bank's obligation of subsidy budget authority had dropped in fiscal years 2001 and 2002, in part because of reductions in new financing in those years. Its obligation of budget authority for new subsidy costs in fiscal year 2003 was about 55 percent lower than in fiscal year 2002, even though the total amount of its new financing, and Ex-Im Bank's estimate of its average risk level, in these two fiscal years was similar.⁴⁴

⁴⁰The bank's appropriations in a given fiscal year can be carried over for up to 3 years if they are not completely obligated. This would happen, for example, in years when the actual amount and risk ratings of new financing the bank undertook in a fiscal year were lower than had been anticipated for that year.

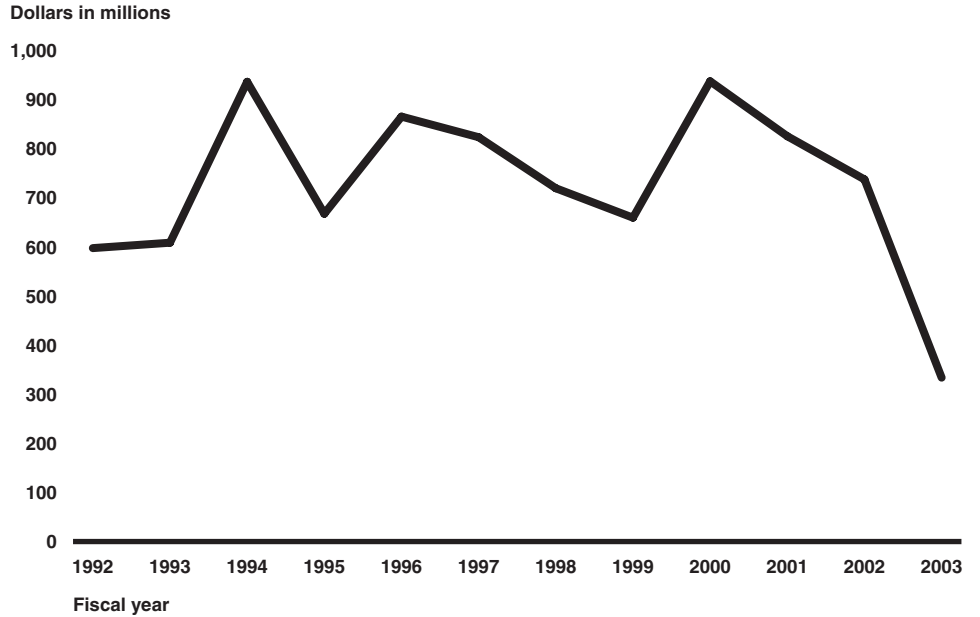
⁴¹The figure includes anticipated obligations of \$440 million for direct and guaranteed loan subsidies and \$20 million for direct and guaranteed loan modifications.

⁴²The carryover resulted in part from Ex-Im Bank obligating substantially less budget authority in fiscal year 2003 than it expected. In its budget submission, the bank expected to obligate about \$655 million for new subsidy costs and modifications. However, it obligated about \$334 million of the \$513 million it was authorized for subsidy costs in fiscal year 2003.

⁴³The bank anticipated obligations of \$471 million for direct and guaranteed loan subsidies and \$20 million for direct and guaranteed loan modifications.

⁴⁴In 2002, Ex-Im Bank authorized about \$10.1 billion in new financing, with an average ICRAS risk weight of 4.9; its obligation of subsidy budget authority that year was about \$738 million. In fiscal year 2003, Ex-Im Bank authorized about \$10.5 billion in new financing, with an average ICRAS risk weight of 5.0; its obligation of subsidy budget authority that year was about \$334 million.

Figure 5: Ex-Im Bank Obligation of Budget Authority for New Subsidy Costs, Fiscal Years 1992-2003



Source: GAO analysis of Ex-Im Bank *Financial Highlights*.

Note: Figure excludes subsidy budget authority obligated for purposes of tied-aid (government-to-government concessional financing of public sector capital projects in developing countries that is linked to the procurement of goods and services from the donor country).

According to Ex-Im Bank officials, OMB's lower loss rates also contributed to a significant downward reestimate of the subsidy costs of the bank's outstanding credits, based on its first subsidy cost reestimate that used the lower rates.⁴⁵ At the end of fiscal year 2002, using the OMB loss rates for

⁴⁵When calculating its reestimates, Ex-Im Bank uses the most current OMB loss rates available. According to Ex-Im Bank officials, its reestimate in fiscal year 2002 was calculated using fiscal year 2004 loss rates. The officials said that the fiscal year 2003 loss rates were not used for any reestimate calculations.

fiscal year 2004, Ex-Im Bank calculated a net downward reestimate of about \$2.7 billion, significantly lowering its estimated subsidy costs for outstanding credits.⁴⁶ Downward reestimates on long-term guarantees represented about 72 percent of the reestimate. About 63 percent of the reestimate was calculated on financing extended between fiscal years 1997 and 2001, much of which has likely not yet matured.⁴⁷

With Lower Loss Rates, Ex-Im Bank Fees Are Projected to Provide Greater Coverage of Losses

With the decline in OMB's loss rates, Ex-Im Bank's exposure fees are projected to generally provide greater coverage of its expected losses.⁴⁸ The determination of the relationship between exposure fees and expected losses and, thus, the calculation of budget subsidy cost, depends on the risk rating for specific Ex-Im Bank transactions. Ex-Im Bank generally sets its exposure fees at, or in the case of some corporate transactions slightly above, the minimum level required by an agreement among certain OECD member countries.⁴⁹

This agreement among OECD countries was designed to increase transparency and provide common benchmarks for ECA exposure fees, thereby reducing fee competition among exporters. Participating ECAs may charge fees above the OECD minimum if they do not view the fees as sufficient to cover their expected losses on a given transaction, but they are expected to charge at least the minimum. For private sector transactions,

⁴⁶The total downward reestimate that Ex-Im Bank calculated in fiscal year 2002 was about \$3.5 billion, of which \$2.7 billion was reestimated subsidy cost and \$0.8 billion was interest cost. At the end of fiscal year 2003, Ex-Im Bank calculated a net downward reestimate of about \$1.9 billion, of which about \$1.4 billion was reestimated subsidy costs and about \$0.5 billion was interest costs.

⁴⁷Percentages on the 2002 reestimates were calculated on subsidy and interest costs combined because information on the trends by cohort was available only in this format.

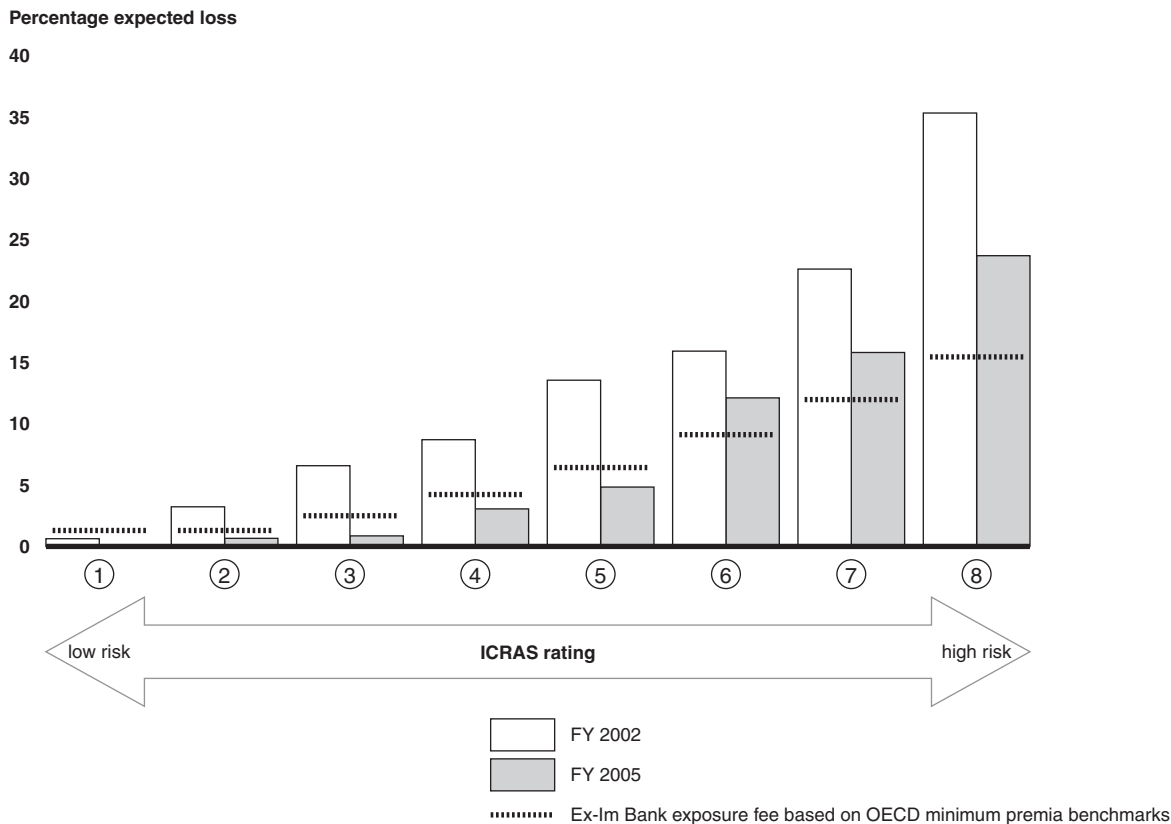
⁴⁸Exposure fees are fees that Ex-Im Bank charges borrowers to cover the risk that the transaction will not be repaid. These fees vary depending on the risk and tenor of the credit being offered. Ex-Im Bank also charges other fees, including application processing fees and commitment fees.

⁴⁹This agreement was among Participants to the Arrangement on Officially Supported Export Credits. Participants to the Arrangement are Australia, Canada, the members of the European Community, Japan, the Republic of Korea, New Zealand, Norway, Switzerland, and the United States. The fee agreement, sometimes called the Knaepen Package after the Belgian official instrumental in its formation, was concluded in 1997 and took effect in 1999. The fees in the agreement result from a political agreement, an averaging of fees in place in 1996 across certain export credit agencies.

participating ECAs that we spoke with often charge fees above the OECD minimum fees. (See app. II for additional information on the OECD minimum fee determination process.)

Using fiscal year 2005 expected loss rates, Ex-Im Bank exposure fees at the OECD minimum fee level would be projected to fully cover expected losses in ICRAS categories 1–5 in certain cases (see fig. 6). In comparison, using fiscal year 2002 expected loss rates, Ex-Im Bank exposure fees at the OECD minimum fee level were projected to cover expected losses only for ICRAS category 1.

Figure 6: Comparison of Ex-Im Bank Exposure Fees^a and Expected Loss Rates by ICRAS Category, Fiscal Years 2002 and 2005



Sources: GAO analysis of OMB expected loss rates and Ex-Im Bank exposure fee based on OECD minimum premia benchmarks.

^aFigure compares Ex-Im Bank exposure fees at the minimum OECD fee level with GAO's analysis of expected loss for credits of 8-year maturity in fiscal years 2002 and 2005 (see fig. 4).

The degree to which Ex-Im Bank's exposure fees are projected to cover its expected losses may differ from this illustration, depending on the type of borrower or transaction. For example, when Ex-Im Bank assigns a corporate borrower a higher risk rating than that of the country where the borrower is located, the bank may incur subsidy costs in more risk categories or may incur larger subsidy costs for corporate borrowers rated in categories 6 through 8.⁵⁰ This is because Ex-Im Bank charges fees for corporate transactions that are close to the OECD minimum fee for the country in which the corporate borrower is located, even when the transaction has a higher (riskier) rating than the country. In addition, the OECD guidance does not apply to some transactions, notably aircraft financing.

In generally setting exposure fees at or near the OECD minimum level, Ex-Im Bank charges fees that are among the lowest of ECAs. Ex-Im Bank's low pricing relative to other ECAs has been noted for some time. According to U.S. and OECD officials, whereas Ex-Im Bank previously appeared to face some pressure to charge higher fees because of its budget costs (and appeared to support raising the minimum OECD fees as well), the lower budgetary costs of Ex-Im Bank's activities have lessened this pressure.⁵¹

Ex-Im Bank Modified Its Method for Determining Financial Statement Loss Estimates, Generally Using Higher Loss Rates Than for Budget Calculations

Beginning with its 2002 financial statements, Ex-Im Bank modified its approach for calculating loss allowances, which involved segmenting its portfolio in line with applicable accounting standards and diverging from its former practice of using OMB loss rates to calculate these allowances. Because Ex-Im Bank prepares its financial statements according to private sector, rather than federal, accounting principles, there has always been some difference between the bank's subsidy cost and loss allowance estimates. This is because of differences in the treatment of fee income

⁵⁰For corporate borrowers that Ex-Im Bank rates as riskier than the OECD sovereign rating for the country where the corporation is located, the bank charges fees that are higher than the OECD fee by 10 percent increments for each difference in rating level. Thus, if Ex-Im Bank rated a corporation in Country A at ICRAS category 5 when Country A is rated at ICRAS category 3, the bank would charge that corporation an exposure fee 20 percent higher than the OECD fee corresponding to ICRAS category 3. However, because that fee would not cover expected loss in ICRAS category 5, Ex-Im Bank would incur subsidy costs in this example.

⁵¹A foreign government official noted that Ex-Im Bank exhibits a greater degree of transparency than other members of the export credit group by explicitly disclosing the subsidy cost of its export credit activities in its budget documents.

between private sector and federal accounting approaches.⁵² While Ex-Im Bank is not required to use OMB loss rates when calculating financial statement loss allowances, Ex-Im Bank officials said that they had historically chosen to do so in order to link the loss estimates prepared for budget purposes with the financial statement loss allowances. However, in its 2002 financial statement, Ex-Im Bank began applying higher loss rates than OMB's loss rates to most of its portfolio. Ex-Im Bank officials said that with the modification, its approaches to calculating subsidy costs and loss allowances differ not only in fee treatment but also in their expectations of loss.

According to Ex-Im Bank officials, the bank modified its financial statement loss allowance methodology for two reasons. First, Ex-Im Bank discussed with its new auditors, Deloitte & Touche, the bank's approach for accounting for guarantees and insurance, which comprise a majority of the bank's portfolio.⁵³ They determined that relevant accounting standards suggested that it would be appropriate to record these credits at their fair market value. This called for using different loss rates than those derived using OMB's current methodology, which focuses on credit loss.⁵⁴ Second, the bank determined that it should value its impaired credits in a manner more consistent with relevant accounting standards.⁵⁵ Deloitte & Touche observed that Ex-Im Bank had not historically separated its portfolio into impaired and unimpaired groupings in accordance with accounting guidance, even though a significant portion of these loans and claims were likely impaired. Total loans and claims represented, on average, about 24 percent of the bank's total exposure during fiscal years 1999-2003.

In addition, when initially estimating its 2002 loss allowances using its former approach and OMB's fiscal year 2003 loss rates, Ex-Im Bank determined that its allowances would have dropped substantially, from

⁵²Private sector accounting does not recognize future fee income before it is received. In contrast, for budget purposes, the present value of future fee income is recognized as an offset to expected losses when a loan or guarantee is made.

⁵³2002 was the first year Deloitte & Touche served as Ex-Im Bank's external auditor.

⁵⁴FASB Interpretation Number 45 addresses Guarantors' Accounting and Disclosure Requirements for Guarantees, Including Indirect Guarantees of Indebtedness of Others, an interpretation of FASB Statements Nos. 5, 57, and 107 and rescission of FASB interpretation No. 34.

⁵⁵Ex-Im Bank officials cited Statement of Financial Accounting Standard 114, which addresses Accounting by Creditors for Impairment of Loan.

about \$10 billion for 2001 to about \$6 billion for 2002, a decrease of about 40 percent. Because of the size of the reduction and the importance of loss allowances as an overall reflection of an institution's expected loss from year to year, the bank's auditor identified this as a key area to be reviewed.

Ex-Im Bank's approach for calculating its loss allowances, beginning with the 2002 financial statement, used different loss rate methodologies for different parts of its portfolio and distinguished between impaired⁵⁶ and unimpaired credits.⁵⁷ To determine the loss allowances for its impaired loans and claims and for all of its loan guarantees and medium- and long-term insurance, Ex-Im Bank applied higher loss rates than those that were used in 2001. These higher rates were used to calculate about 95 percent of the 2002 loss allowance. Ex-Im Bank had asked OMB to provide these higher rates using its former, spread-based methodology.⁵⁸ Ex-Im Bank officials stated that the spread-based loss rates were more appropriate for its outstanding guarantees and insurance because they provided a more market-based valuation that was better suited to a fair value presentation. To determine the 2002 loss allowances for its unimpaired loans and claims, Ex-Im Bank applied OMB's expected loss rates for the fiscal year 2004 budget.⁵⁹ These rates were generally lower than the rates used to calculate the loss allowance in 2001. For 2002, the bank's loss allowances were about

⁵⁶Ex-Im Bank defined as impaired any loans or claims that are 90 days or more in arrears, that are rated in ICRAS categories 9-11, or that have been rescheduled. The bank determined that about 34 percent of the loans and about 95 percent of the claims it reported in its 2002 financial statement were impaired. For fiscal year 2003, about 23 percent of its loans and 95 percent of its claims were impaired.

⁵⁷Ex-Im Bank discloses detailed information about its loss allowance calculation, including the different loss rates it uses, in its Annual Portfolio Review, which is compiled by its Portfolio Management and Review Division.

⁵⁸Ex-Im Bank also applied different loss rates depending on whether the exposures were outstanding or undisbursed. To discount the effect of exposure of cancellations and suspension of disbursements, Ex-Im Bank set the loss percentage for each ICRAS category of undisbursed exposure 15 percent lower than the loss percentage for outstanding exposures.

⁵⁹Usually, the loss rates that Ex-Im Bank applies to its financial statements are the rates that will be in effect in the coming fiscal year. According to an Ex-Im Bank official, fiscal year 2003 expected loss rates were not used in the 2002 financial statement because OMB made the fiscal year 2004 rates available sooner than expected.

6 percent higher than their 2001 level. For 2003, loss allowances were about 4 percent lower than their 2002 level.⁶⁰

Loss Estimation Involves Challenges and OMB Methodology Is Not Transparent

OMB's methodology for estimating the expected loss rates for international credits provided by U.S. agencies involves challenges, and it is not transparent. Assessing the risk of such credit activity, particularly in developing countries, is inherently difficult. Corporate default data similar to those used by OMB are also used by other financial institutions to assess risk, because of the data's broad coverage and limitations in other data sources. However, historically, the data have been based largely on the default experiences of U.S. firms, and the data's historical coverage of developing countries has been limited. In addition, more recent Moody's data than were used in estimating OMB's model show higher defaults in some risk categories. In choosing this data to predict default, OMB analyzed Ex-Im Bank defaults over a somewhat narrow period. In addition, while OMB has assumed increasingly lower recovery rates since implementing its method, its basis for the recovery rates and changes in them has not been transparent. Finally, despite its complexity and the changes it implied, OMB developed the current methodology independently and provided ICRAS agencies with limited information about the methodology.

Assessing ECA Financing Risk is Difficult, and Data Used by OMB May Have Inherent Limitations for Predicting Ex-Im Bank Risk

Assessing ECA financing risk presents data challenges. Available indicators of default risk, including certain financial institutions' own financing histories, often have limitations. Historical data on corporate bond defaults, while used by many institutions, may also have inherent limitations for assessing risk in developing countries, because these data have historically been based primarily on corporations in higher-income countries. In addition, corporate default data now show higher defaults in certain higher-risk categories than the data OMB used. OMB's analysis showing comparability between those data and Ex-Im Bank default

⁶⁰Ex-Im Bank's financial statement loss allowances have averaged about 18 percent of its total exposure since fiscal year 1999. Ex-Im Bank did not establish any allowances for credit losses on its loans and loan guarantees through fiscal year 1988, suggesting that no expected losses were associated with any of these credits. As the bank's independent auditor at this time, GAO expressed adverse opinions about the bank's financial statements for fiscal years 1983–1988, noting that the financial statements were not fairly presented in accordance with GAAP. Ex-Im Bank established financial statement loss allowances for the first time in 1989, in the amount of \$4.8 billion.

experience was based on Ex-Im Bank credits primarily from a relatively narrow period in the 1990s and did not include other ICRAS agencies. OMB representatives, in providing oral technical comments on a draft of this report, said that they inquired about available default data at other ICRAS agencies but were unable to obtain it.⁶¹ OMB's staff paper noted the desirability of adding data from other agencies to its analysis in the future.

Assessing ECA Financing Risk Is Difficult

Data limitations and changing environments present challenges for estimating the risk of ECA financing, according to experts and officials with whom we spoke. Some noted that ECA risk may differ from private bank risk, in that ECAs may be more exposed to emerging markets and may have less diversified portfolios, in part because of concentrations of exposure to particular industries. Officials said that many ECAs incurred large losses during the 1980s debt crisis, and some did so in the 1990s during the Asian financial crisis and other instances of sovereign default. Moreover, the move among some ECAs, including Ex-Im Bank, toward extending more credit to corporate or other nonsovereign borrowers, rather than primarily providing financing to sovereign governments, adds further complexity to estimating risk. According to several ECA officials, corporate activity may involve different risks, which include potentially greater difficulty in recovering assets in cases of default.

Some ECAs and other financial institutions lack data on their own financing that are of sufficient historical coverage and reliability for predicting the risk of future financing activities. In addition, a lack of risk ratings for financing in earlier decades can complicate the use of available historical data. Historical data on the default experience of sovereign bond issuers might be useful in estimating ECA credit risk, and ratings agencies now publish such data. However, according to several experts, the limited risk rating history of sovereign bond issuers is a significant limitation to relying on this data to assess risk in developing countries. Almost no

⁶¹Assessing the availability of default data at other ICRAS agencies was beyond the scope of this review.

developing country sovereign bond issuers have ratings histories that begin before the early 1990s.⁶²

Corporate Bond Default Data Are Widely Used but Lack Broad Historical Coverage of Developing Countries

Corporate bond default rates from nationally recognized rating agencies are widely used by financial institutions in assessing risk but may have certain inherent limitations for predicting defaults in developing countries. Institutions use the data because of the large number of firms and long historical coverage in the rating agencies' databases. However, while international corporations are now well represented in these data, the data historically have included primarily U.S. firms.⁶³ For data with international coverage, the coverage has historically been largely of high-income country borrowers. One study of a major rating agency database found, for example, that 94 percent of the nonbank firms rated were in high-income countries, 5 percent were in upper-middle-income countries, and 2 percent were in lower-middle-income countries.⁶⁴ The data's more limited historical coverage of developing country default experiences may limit the predictive value of the data for such countries, according to some officials. Officials from one institution said that although they used corporate bond data in determining expected default rates, whether countries were in emerging markets was a consideration in their adjustments of the default rates to reflect their own performance expectations.

⁶²For example, in 1985, Moody's and Standard & Poor's rated a total of 15 sovereigns, with 14 of the countries rated in categories corresponding to ICRAS category 1 and 1 corresponding to ICRAS category 5. In 1991, they rated a total of 34 countries, with 21 of the countries rated in categories corresponding to ICRAS category 1, 6 rated in categories corresponding to ICRAS category 2, and 7 rated in categories corresponding to ICRAS categories below 2. By 1999, these rating agencies rated a total of 91 countries, with 58 rated in categories below those corresponding to ICRAS category 2. (These figures use an average of the two agencies' ratings, in cases where they rated a country differently in a given year.)

In addition to the limited coverage of ratings, experts have noted that countries historically have often given preferential treatment to payments on their bonds compared with their loans because bonds represented a relatively small share of a country's international debt.

⁶³For example, in 1980, a very small percentage of bond issuers rated by Moody's were located outside the United States; the non-U.S. share grew to about 18 percent by 1990 and 40 percent by 2000.

⁶⁴The study examined Standard & Poor's data on rated corporations as of 1999. See Giovanni Ferri, Li-Gang Liu, and Giovanni Majnoni, "The Role of Rating Agency Assessments in Less Developed Countries: Impact of the Proposed Basel Guidelines," *Journal of Banking and Finance* 25 (2001): 115-148.

More Recent Moody's Data Show Higher Defaults in Some Risk Categories

More recent Moody's bond default rates are higher for some higher-risk categories than the Moody's data for 1983-1999 that OMB's model uses to estimate default rates. The more recent data show higher default rates for risk levels that correspond to ICRAS categories 7 and 8, the highest risk categories in which Ex-Im Bank undertakes new business. For example, for fiscal year 2005, OMB's model predicted a default rate for ICRAS category 8, assuming a maturity of 8 years, of 41 percent. The Moody's default rate for 1983-1999 was 48 percent, whereas the rate was 52 percent for 1983-2001, and 58 percent for 1983-2003. Based on our review of available information on OMB's default model, the model would be expected to generate higher default rates for these categories if these more current Moody's data were used.

OMB Used Ex-Im Bank Data That Primarily Covered a Limited Period to Establish Comparability with Corporate Data

In deciding to use corporate default data to predict U.S. international credit agencies' defaults, OMB compared data on Ex-Im Bank historical defaults, primarily from a limited period, with corporate default rates. Among ICRAS agencies, Ex-Im Bank generally extends the largest portion of the U.S. government's new foreign credit exposure each year.⁶⁵ OMB did not compare other ICRAS agencies' defaults with the corporate data. OMB representatives, in providing oral technical comments on a draft of this report, said they inquired at other ICRAS agencies about default data but were unable to obtain additional data. OMB recognized in its staff paper the value of adding other agencies' data to its analysis in the future.

The Ex-Im Bank credits that OMB analyzed were primarily from a relatively narrow historical period in the 1990s. OMB examined the default probabilities of certain Ex-Im Bank transactions, sorted by risk rating, and concluded that Ex-Im Bank default rates were generally somewhat lower

⁶⁵Since credit reform, the value of Ex-Im Bank's annual loans and loan guarantees have been the largest among ICRAS agencies, followed by the Commodity Credit Corporation and the Overseas Private Investment Corporation. On a total exposure basis, at the end of fiscal year 2002, Ex-Im Bank represented 40 percent of the U.S. government's credit exposure to sovereign and other official foreign borrowers; the Agency for International Development and the Departments of Agriculture and Defense represented most of the remainder. At that time, Ex-Im Bank also represented about 70 percent of the U.S. government's credit exposure to private foreign borrowers, with the remainder held primarily by the Overseas Investment Protection Corporation and the Department of Agriculture.

than those of corporate bonds across comparable rating categories.⁶⁶ However, a comparison based primarily on lending activity over a relatively short time frame may not be representative of Ex-Im Bank's overall default risk. In addition, according to several experts and officials, data that reflected only the international business climate of the 1990s would not be representative of the risk of international lending.

For this comparison, OMB used data from an Ex-Im Bank database covering guarantees and medium-term insurance transactions from fiscal years 1985-1999. This data set did not include loans, which comprised a significant part of Ex-Im Bank financing through the early 1980s, and which experienced substantial defaults during an international debt crisis that began in the early 1980s.⁶⁷ While we could not determine the specific data that OMB analyzed,⁶⁸ our analysis of the 1985-1999 database indicated that the majority of observations in the overall database, and a strong majority

⁶⁶OMB initially calculated default probabilities directly for different risk categories. Because of the relatively small number of observations in the database, the patterns shown were somewhat erratic, with higher percentages of defaults in some lower-risk categories than in higher-risk categories. OMB then used a statistical model to smooth the patterns of historical defaults across ratings categories for ICRAS categories 1-6.

⁶⁷According to Ex-Im Bank officials, in 2000, they provided OMB a database of the bank's guarantees and medium- and long-term insurance financing activities covering fiscal years 1985-1999, which Ex-Im Bank had created to provide information to a private bank with which they were considering joint financing. According to Ex-Im Bank officials, they did not include loans in the creation of that data set in 1999 because loans had become less important in the bank's financing. Ex-Im Bank officials told us that the reliability of this data is considerably greater for transactions initiated in 1996 or later. Beginning in 1996, the key component databases were updated to increase automatic data entry and verification.

⁶⁸In a written response to our questions, OMB provided information indicating that its analysis was based on data from 1993 and later, but OMB staff stated subsequently that the analysis had used all observations in the data set. Within the data set, credits prior to fiscal year 1992 lack ICRAS risk ratings. OMB staff stated that they assigned ratings by using risk ratings from private rating agencies. However, we determined that very few countries below the highest rating categories were rated by private rating agencies before 1992. This is discussed in footnote 62.

of observations for which risk ratings were available, were from the mid- to late-1990s.⁶⁹

Recovery Rate Assumptions Have Not Been Transparent

The basis for OMB's recovery rate assumptions and the changes over time has not been transparent. During our audit work, OMB did not respond to questions about the specific basis for its recovery rate assumptions of 17 and 12 percent, respectively, for fiscal years 2003-2004. OMB further reduced assumed recovery rates to 9 percent for fiscal year 2005. In discussing recovery rate assumptions during the audit work, OMB cited its staff paper, which contained a recovery rate of 20 percent that OMB said was based generally on the ratio of aggregate recoveries to aggregate claims in Ex-Im Bank historical data. However, in discussions on a draft of this report, OMB representatives said that the market price of credits with the lowest ICRAS rating (category 11) was the predominant basis for recovery rates, although they did initially also consider data on Ex-Im Bank recoveries. OMB representatives said using the market price of the lowest-rated credits is based on the assumption that this value represents the most the U.S. government would recover in the event of a default. They provided information to show that changes in OMB's calculation of market prices of these credits accounted for drops in the recovery rate assumptions over time.⁷⁰ Changes in OMB's calculation of these prices resulted in part from technical comments by Treasury officials.

Our analysis of the 1985-1999 Ex-Im Bank data indicates that the ratio of aggregate recoveries to aggregate claims in that database is about 19

⁶⁹We obtained the 1985-1999 data set from Ex-Im Bank and examined the distribution of transactions across the period covered. We determined that, depending on how one defines the unit of analysis, from two-thirds to over three-fourths of the observations in the data set for which Moody's Investors Service, Standard & Poor's, or ICRAS country ratings were available were from 1994-1999. We also determined that, irrespective of which observations had ratings associated with them, between slightly more than half and two-thirds of them were from 1994 or later. Between 85 and 91 percent of all the observations in the database were from 1990 or later.

⁷⁰Footnote 33 provides more information on how OMB uses market prices in calculating expected losses for ICRAS categories 9-11.

percent.⁷¹ Recovery rates that were based on aggregate data over a limited time period would tend to underrepresent actual recoveries because of the limited period for recoveries to be observed, especially those associated with defaults occurring at the end of the period.

According to financial institution officials and rating agency analysis, recovery rates tend to vary by borrower type and risk and can fluctuate cyclically. OMB's recovery rates assumptions appear to be conservative compared with recovery rates assumed by other financial institutions. Institutions we talked to generally assumed higher recovery rates than OMB, and some tailored their recovery rate assumptions according to the type of borrower. According to rating agency analysis, recovery rates are generally lower for riskier credits and fall during periods when defaults are higher.

If recovery rates assumed by OMB are lower than likely Ex-Im Bank recoveries, they will offset, to some degree, lower expected defaults in the calculation of expected losses. Because expected losses are calculated by combining expected default and expected recovery rates, an unrealistically low recovery rate would necessarily offset an unrealistically low expected default rate, within certain ranges.⁷²

⁷¹We analyzed the Ex-Im Bank data sets primarily at the aggregate level. Recovery amounts in this data set represent recoveries received directly by Ex-Im Bank and do not include payments to the U.S. government through reschedulings of sovereign credits. Ex-Im Bank provided us a second data set that updated the 1985-1999 data through fiscal year 2001. Our analysis showed that the ratio of aggregate recoveries to aggregate claims in the second data set is about 35 percent. Ex-Im Bank officials said that, when recoveries through reschedulings are included, their total recovery rates are higher. Our analysis showed that, when recoveries through reschedulings are included, total recovery rates were about 26 percent for 1985-1999 period and about 43 percent for the 1985-2001 period.

⁷²For example, in a hypothetical situation where the true default probability was known to be 20 percent and the true recovery rate was 30 percent (corresponding to a loss rate of 70 percent), the true expected loss rate would be 14.0 percent ($20 \times .70 = 14.0$). However, an overly low default rate of 15 percent combined with an overly low recovery rate of 10 percent (corresponding to a loss rate of 90 percent) would yield a similar expected loss rate, 13.5 percent ($15 \times .90 = 13.5$).

OMB Developed Method Independently and Provided Agencies Limited Information

Because of OMB's unique role in developing the loss rates that ICRAS agencies use to calculate subsidy costs, these agencies rely on OMB to comply with credit reform requirements that address the agencies' responsibilities for assuring the reliability of their subsidy cost estimates. Despite the complexity of the current methodology and its implications for ICRAS agencies' subsidy costs, OMB developed the current methodology predominantly on its own, receiving some input from one ICRAS agency. Some ICRAS officials said that OMB provided agencies with limited information about the methodology's basis or structure.

Credit reform guidance on developing credit subsidy estimates addresses the procedures and internal controls that agencies should have in place to ensure that their estimates are reliable.⁷³ It states that any changes in factors and key assumptions, such as default and recovery rates, should be fully explained, supported, and documented. The purpose of thorough documentation is to enable independent parties to perform the same steps and replicate the same results with little or no outside explanation or assistance.

OMB representatives said that the current methodology was reviewed within OMB and circulated among the ICRAS agencies, although several ICRAS agency officials told us OMB had provided them limited information. According to these officials, OMB presented its methodology as an essentially completed approach and held several meetings during 2001 and early 2002 to discuss it. Officials who received information and attended certain meetings told us that it was difficult to understand or evaluate the methodology based on the information provided. For example, prior to one meeting, OMB circulated a two-page discussion paper that discussed OMB's rationale for adopting the current methodology and generally described its approach and a technical appendix to a staff paper that contained numerous equations describing a theoretical model.

⁷³Federal Accounting Standards Advisory Board, *Federal Financial Accounting and Auditing Technical Release 6—Preparing Estimates for Direct Loan and Loan Guarantee Subsidies under the Federal Credit Reform Act, Amendments to Technical Release 3: Preparing and Auditing Direct Loan and Loan Guarantee Subsidies Under the Federal Credit Reform Act* (Washington, D.C.: January 2004). This guidance was developed by the Accounting and Auditing Policy Committee, a permanent committee of the Federal Accounting Standards Advisory Board. The committee was organized by OMB, GAO, the Department of Treasury, the Chief Financial Officers' Council, and the President's Council on Integrity and Efficiency as a body to research accounting and auditing issues requiring guidance.

However, OMB representatives told us that some of the equations in this appendix were not actually used in the methodology while other equations not contained in the appendix were used. At one meeting, according to a Department of Agriculture economist, OMB provided only the expected loss rates for fiscal year 2003 and a graph that predicted a decline in Ex-Im Bank subsidy rates. This official said it was not possible to understand the methodology by only examining its results. She said that although she and other ICRAS agencies representatives posed various questions about the method's underlying data and assumptions, OMB representatives did not provide substantive responses and stated that the method was too complex to explain. OMB representatives said the methodology was not reviewed outside the U.S. government.

After presenting the methodology, OMB received comments on the methodology from at least one ICRAS agency. Treasury officials told us that when they examined the proposed expected loss rates for fiscal year 2003, they objected to the substantially lower loss rates for the riskiest countries, those in ICRAS categories 9 through 11; asked to see the underlying data used; and raised methodological issues regarding how those rates were calculated.⁷⁴ The Treasury officials said that while they had some questions about the expected loss rates for other ICRAS categories, they focused their attention on the treatment of the riskiest countries. The reason, they said, was that planned drops in expected loss estimates for these countries would sharply increase the cost to the United States of forgiving existing debt, such as through international agreements to forgive the debt of highly indebted poor countries.⁷⁵ According to Treasury officials, OMB revised its approach for estimating expected losses in ICRAS categories 9 through 11, which resulted in loss rates that were not significantly changed from those in effect before fiscal year 2003.

We found that some financial institutions used outside experts or consultants in developing their loss estimation methodologies. Some also described procedures that exist to ensure their methodology's ongoing objectivity and reliability. For example, other government agencies, audit

⁷⁴Treasury officials determined, for example, that some credits that were being used to determine the market value and implicitly the riskiness of lower-rated country data were backed with collateral, which would be expected to result in lower risk and higher prices.

⁷⁵When the U.S. government forgives a country's debt, the budgetary cost of the debt relief is determined by the estimated value of the debt under credit reform terms. Thus, the lower the estimated value of the debt, the lower the budgetary cost of debt forgiveness.

organizations, and outside experts have been involved in developing or reviewing the methodologies of two foreign ECAs that we contacted. Also, regulatory bodies, audit organizations, and internal risk management groups are involved in overseeing bank loss estimation methodologies.

Conclusions

In passing the Federal Credit Reform Act in 1990, Congress required agencies to develop reasonable estimates about the long-term cost to the government of federal credit programs, to ensure a sound basis for decisions regarding program budgets. For international credit agencies such as Ex-Im Bank, which finances activities in relatively risky markets, predicting long-term costs and determining appropriate budget subsidy amounts is especially challenging. Because of the importance of reasonable program cost estimates under credit reform, such estimates need to be made with appropriate data and using appropriate analytical techniques. While ICRAS agency subsidy costs have several determinants, including the particular risk ratings assigned to different borrowers, OMB's directions to ICRAS agencies regarding loss rates across risk levels are an important element of estimating subsidy costs.

OMB's shift to using historical corporate default data in its methodology for estimating loss rates of ICRAS agency activities has some basis, given the practices of other financial institutions and limitations in available historical data. However, the predictive value of those corporate default data for the financing undertaken by Ex-Im Bank or other ICRAS agencies has not yet been established. Obtaining additional information on agencies' default and repayment experiences over time will allow better assessments of the suitability of using data such as corporate bond default rates.

The lack of transparency of OMB's current loss rate methodology raises questions about how it determines expected loss rates. Because of this lack of transparency, combined with the method's complexity, the multiple ICRAS agencies that use the loss rates have incomplete information about how those rates are determined and what factors are driving changes over time. OMB's unique role in setting ICRAS agency loss rates suggests that greater transparency would be appropriate. In addition, other credit reform tools that multiple credit agencies use to calculate subsidy costs, such as OMB's credit subsidy calculator, have been audited to assure users about their accuracy. Independent review of OMB's methodology would provide similar assurance about the reliability of the loss rates and the subsidy costs developed from these rates, and could help facilitate ICRAS agency financial statement audits.

Recommendations for Executive Action

To improve the transparency of the subsidy cost estimation process and help ensure the validity of estimates over time, we recommend that the Director of the Office of Management and Budget take the following five actions:

- Provide ICRAS agencies and Congress a technical description of OMB's expected loss methodology, including the default model, the key assumptions OMB made, and the data it used.
- Provide similar information in the event of significant changes in its method of calculating expected loss rates.
- Ensure that data from nonagency sources—for example, rating agencies' corporate default data, which are used to estimate expected loss rates—be updated as appropriate.
- Request from Ex-Im Bank and other U.S. international lending agencies the most complete and reliable data on their default and repayment histories and periodically obtain updated information, so that the validity of the data on which the current methodology is based can be assessed as sufficient agency data are available.
- Arrange for independent methodological review of OMB's expected loss rate model and assumptions and document that review.

Agency Comments and Our Evaluation

We provided a draft of this report for formal comment to the Director, Office of Management and Budget; the Chairman, Export-Import Bank; the Secretary of the Treasury; the Chairman, Board of Governors of the Federal Reserve System; the Comptroller of the Currency; and the Chairman, Federal Deposit Insurance Corporation. We also provided a copy of the draft report for technical review to the Chairman, Securities and Exchange Commission, and officials at the Foreign Agricultural Service of the Department of Agriculture. OMB provided written comments on the draft report, which are reprinted in appendix IX. OMB, Ex-Im Bank, the Comptroller of the Currency, and the Securities and Exchange Commission provided technical comments, which we incorporated as appropriate. Other agencies reviewed the report but had no comments. We also obtained technical comments from bank and foreign ECA officials on our descriptions of their practices.

OMB generally agreed to implement the report's recommendations to make more information available on its expected loss methodology, update the nonagency data used in the model, obtain additional agency default data over time, and obtain technical review. OMB also expressed concern about the report's statement that OMB's method for determining loss rates was not transparent, observing that our report generally describes the method. We believe that, while we do present in this report a substantial amount of information on OMB's loss methodology, obtaining that information required considerable resources and effort with certain information provided only during the agency comment period despite repeated inquiries by GAO, and that similar information should be more readily available to affected agencies and Congress on an ongoing basis.

We are sending copies of this report to appropriate Congressional Committees. We are also sending copies of this report to the Director, Office of Management and Budget; the Chairman, Export-Import Bank; the Secretary of the Treasury; the Chairman, Board of Governors of the Federal Reserve System; the Comptroller of the Currency; the Chairman, Federal Deposit Insurance Corporation; the Chairman, Securities and Exchange Commission; and the Administrator, Foreign Agricultural Service of the Department of Agriculture. We also will make copies available to others upon request. In addition, the report will be available at no charge on the GAO Web site at <http://www.gao.gov>.

If you or your staff have any questions about this report, please contact me on (202) 512-4346. Additional GAO contacts and staff acknowledgments are listed in appendix X.



Loren Yager, Director
International Affairs and Trade Issues

Objectives, Scope, and Methodology

The Export-Import Bank Reauthorization Act of 2002 directed GAO to report to the House of Representatives Committee on Financial Services and the Senate Committee on Banking, Housing and Urban Affairs on the reserve practices of the Export-Import Bank (Ex-Im Bank) as compared with the reserve practices of private banks and foreign export credit agencies (ECA). The committees were specifically interested in Ex-Im Bank's method for estimating the subsidy costs of its financial activities for budgetary purposes in accordance with the Federal Credit Reform Act of 1990. Ex-Im Bank subsidy costs are determined, in part, on the basis of a methodology established by the Office of Management and Budget (OMB); OMB's methodology changed substantially in fiscal year 2003.

In response to the mandate, we agreed to (1) describe OMB's current and former methodologies for estimating expected loss rates for international credits and the rationale for the recent revisions, (2) determine the impacts of the current OMB methodology on Ex-Im Bank, and (3) assess the current methodology and the process by which it was developed. We also agreed to provide information on the reserve practices of foreign ECAs and commercial banks.

To describe OMB's current and former methodologies for estimating expected loss rates for U.S. credit agencies' international credit and the rationale for the recent revisions, we reviewed OMB descriptions of the methodologies and discussed the rationale for the changes to the methodology with OMB staff and Ex-Im Bank, Treasury, and Congressional Budget Office officials. We also reviewed finance literature that OMB cited as a basis for modifying its approach, as well as related literature, and examined Ex-Im Bank information about trends in its subsidy cost reestimates (discussed later). Our description of the former methodology is also based on prior GAO work, on OMB memoranda to agencies that participate in the Interagency Country Risk Assessment System (ICRAS) announcing the risk premiums or expected loss rates to be used in preparing budget estimates for upcoming fiscal years, and on our analysis of expected loss rates for fiscal years 1997-2002, as described later. We generally describe how ICRAS risk ratings are established and how Ex-Im Bank rates private borrowers, and while we recognize that the assignment of risk ratings is an important element in the overall reasonableness of expected loss estimates, evaluating the reasonableness of the risk ratings process and of specific ratings was beyond this scope of this engagement.

To describe the current methodology, we examined OMB's written descriptions of its methodology, posed specific questions to OMB staff on

several occasions through their Office of General Counsel, and held some discussions with OMB staff about the methodology. The information and documentation we obtained enabled us to generally understand and describe the methodology and the underlying data, but did not explain all aspects of the methodology or the specific reasons for certain results. We note in the report where our description of certain aspects of the methodology is incomplete. However, these areas were not material to our conclusions.

The primary documentation we initially reviewed, an OMB paper entitled “Proposal for modification of the ICRAS system,” describes (1) OMB’s rationale for adopting its new methodology, (2) analysis OMB performed in developing the methodology, and (3) certain assumptions and equations that describe a general theoretical model.¹ However, because the paper describes a theoretical model and includes limited information on specific analyses performed, data used, key assumptions, and results, and because not all of the elements of the model described in the paper were used by OMB, we required additional information from OMB. To obtain additional information from OMB, we were required to submit written questions to an attorney in OMB’s Office of General Counsel for transmission to OMB technical staff. The attorney also reviewed the responses that the technical staff prepared before they were provided to GAO. OMB staff provided a combination of oral and written responses to our initial set of questions, but because we still lacked important information, we sought additional clarification from OMB. At OMB’s request, we provided OMB staff with a Statement of Fact that (1) described our understanding of OMB’s expected loss methodology based on information provided to that point and (2) identified remaining questions. We met again with the OMB attorney and technical staff, who responded to our questions. We requested an electronic version of the methodology, which OMB did not agree to provide. We attempted to further clarify certain issues, but OMB provided limited responses. OMB representatives provided certain additional technical information in comments on a draft of this report.

To determine the estimated default probabilities generated by the default component of OMB’s methodology for fiscal years 2004 and 2005, we adjusted the expected loss rates for each rating and maturity category that

¹The paper that OMB provided was marked “Draft: For Discussion Purposes Only,” but OMB representatives told us there were no subsequent versions and it should be considered a final paper.

OMB provided to ICRAS agencies by dividing each rate by one minus the recovery rate OMB assumed for each year. We confirmed that process with OMB. To determine the extent to which the default probabilities estimated by OMB's default model differed from the rating agency corporate default rates used as inputs to the model, we statistically compared the model's outputs for fiscal year 2004 and 2005 with the corporate default rates used.

We also determined the current methodology's output in terms of expected loss rates across the ICRAS risk categories. To do so, we obtained electronic copies of Ex-Im Bank's cash flow spreadsheets for guarantees as well as copies of the OMB Credit Subsidy Calculator, which converts agency cash-flow payments into present value terms. To isolate the default or expected loss component of Ex-Im Bank subsidy costs from other components (including fees and interest rate subsidies), we entered consistent information into the Ex-Im Bank cash flow worksheets for each ICRAS risk category for fiscal years 2002 through 2005 and conducted this analysis for 5-year, 8-year, and 10-year credits. We conducted similar analysis for 8-year credits for fiscal years 1997 through 2002. We determined the present value of the results, based on a constant discount rate, using OMB's credit subsidy calculator. We discussed our analysis with Ex-Im Bank officials, who generally confirmed our approach and output.

To determine the impacts of the current OMB methodology on Ex-Im Bank, we examined changes in the components of Ex-Im Bank's subsidy costs and financial statement loss allowances. Specifically, we examined the following:

- To determine the effect of the current methodology on Ex-Im Bank's budget needs, we reviewed Ex-Im Bank budget information from fiscal years 1992-2005 and analyzed changes in the bank's requests for subsidy cost authorization and its obligation of budget authority for subsidy costs over that time period. We also interviewed Ex-Im Bank officials regarding their views on how changes in expected loss rates affected the bank's subsidy costs. We determined that Ex-Im Bank's budget information was sufficiently reliable for the purpose of documenting the bank's changing budget needs and confirmed our analyses with Ex-Im Bank officials. We also examined Ex-Im Bank information, contained in internal documents, on its reestimate calculations for fiscal years 1992-1995 and 1999-2003 and interviewed Ex-Im Bank officials regarding their views on how changes in expected loss rates affected the bank's reestimates. Ex-Im Bank's internal reestimate information differed slightly in some years from information contained in the Federal Credit

Supplement about the bank's reestimates. Both sources of information portrayed similar overall trends, but the Ex-Im Bank internal information covered a longer period of time than the credit supplement information. We also discussed with Ex-Im Bank officials the bank's process for calculating reestimates, and we examined auditor workpapers for the 2002 audit of Ex-Im Bank's financial statement, in which the auditors examined and verified the bank's reestimate for fiscal year 2002. Thus, we determined that the Ex-Im Bank information was sufficiently reliable for the purpose of showing trends in the bank's reestimates since the start of credit reform, as well as the magnitude of the bank's reestimates following the implementation of OMB's current methodology.

- To determine the impact of the current methodology on the changing relationship between Ex-Im Bank's projection of expected losses and its fee income, we compared our analysis of expected loss rates for fiscal years 2002-2005 with the minimum fees that Ex-Im Bank can charge under an agreement among participating Organization for Economic Cooperation and Development's (OECD) member countries. We determined these fees using Ex-Im Bank's Exposure Fee Calculator, available on its Internet site. Ex-Im Bank officials confirmed our analysis. To identify how the relationships between expected losses and fee income could be different for corporate borrowers, we identified the way that corporate ratings are assigned and fees determined, based on interviews with Ex-Im Bank officials and on fee information from Ex-Im Bank's Internet site.
- To determine the impact of the current methodology on Ex-Im Bank's financial statement loss allowances, we reviewed Ex-Im Bank's audited financial statements for fiscal years 2002 and 2003 and the auditor's workpapers supporting its audit of the 2002 financial statement. We determined that the data in the audited financial statements were reliable for the purposes of our analysis. We discussed the modification in Ex-Im Bank's methodology for calculating financial statement loss allowances, including the impact of the current methodology's lower loss rates in calculating those loss allowances, with officials from Ex-Im Bank and its auditor, Deloitte Touche.

To assess the current methodology and the process by which it was developed, we identified and evaluated the basis for key OMB assumptions, methodological components, and data used. We also examined OMB documentation of the process and discussed the process with

representatives from OMB, Ex-Im Bank, Treasury, and certain other agencies that participate in the ICRAS process. We did not replicate or validate the methodology because we lacked complete documentation and did not have access to the computer programs that were used to estimate OMB's default model. We also did not determine the reasonableness of specific loss rates that OMB has estimated.

To assess the methodology, we interviewed cognizant U.S. and foreign officials and experts and reviewed relevant studies. For example, we discussed loss estimation methodologies with credit experts and officials from certain financial institutions, including commercial banks, foreign export credit agencies, and other foreign officials. On the basis of these discussions and this review, we identified challenges, concerns, and practices, such as potential limitations in using certain data for projecting future defaults and the degree to which institutions followed similar or different practices in estimating default and loss.

To determine whether the corporate bond default rates used in OMB's default model have varied significantly since the model was created, we compared the specific Moody's Investors Service corporate bond default rates used in OMB's analysis with updated published versions of those Moody's rates.

We obtained information from OMB regarding its comparison of Ex-Im Bank default rates to the corporate default data used in its model, and we obtained from Ex-Im Bank the historical data sets that Ex-Im Bank said it gave OMB. We obtained certain information from OMB about how it analyzed the Ex-Im Bank data, and while we were able to determine the time period primarily covered by this analysis, we were not able to determine the specific data that OMB analyzed because we were unable to reconcile certain information that OMB provided. In assessing the time period covered by OMB's analysis, we obtained historical country ratings data from Moody's and Standard & Poor's documents and historical ICRAS ratings information from Ex-Im Bank. We used these to determine the proportion of observations in the Ex-Im Bank data sets for which risk ratings at the time of the transaction were available.

We examined OMB's assumptions about recovery rates and compared these with aggregate recovery rates that we calculated on Ex-Im Bank datasets covering guarantees and some insurance for 1985-1999 and 1985-2001, as well as with recovery rate assumptions made by other financial institutions. We discussed the reliability of the Ex-Im Bank data sets and of

the underlying systems used to create the data with Ex-Im Bank officials, who said they view the data they have compiled to be a reasonable representation of their historical experiences and adequate for its intended purposes, which were initially to provide information about Ex-Im Bank's activities to a potential private sector partner. The officials stated that the reliability of data about individual transactions is considerably greater for transactions initiated in 1996 and later because of changes that improved data entry and verification. We determined the data were sufficiently reliable for our purpose of comparing aggregate recovery rate information in the datasets with the recovery rate assumptions used by OMB.

To broadly assess the technical features of OMB's default model, we evaluated information provided by OMB that described the model's equations and how they were estimated, based on standard econometric criteria. We did not conduct a complete technical review because we did not have access to full documentation of the model or the model in electronic format.

To assess the process by which the current methodology was developed, we discussed with OMB representatives and certain other ICRAS officials the respective agencies' role and degree of involvement in developing and providing comment on the methodology. We also reviewed documents that OMB had distributed to ICRAS agencies about its methodology and discussed with ICRAS officials the general time frames in which the methodology was developed and the nature of certain meetings that OMB held to present information about its methodology. The ICRAS officials we interviewed received information about the methodology's development and implementation and have had continuing participation in the ICRAS process. We also reviewed credit reform guidance on preparing and auditing subsidy costs.²

²Federal Accounting Standards Advisory Board, *Federal Financial Accounting and Auditing Technical Release 6—Preparing Estimates for Direct Loan and Loan Guarantee Subsidies under the Federal Credit Reform Act, Amendments to Technical Release 3: Preparing and Auditing Direct Loan and Loan Guarantee Subsidies Under the Federal Credit Reform Act* (Washington, D.C.: January 2004). This guidance was developed by the Accounting and Auditing Policy Committee, a permanent committee of the Federal Accounting Standards Advisory Board. The committee was organized by OMB, GAO, the Department of the Treasury, the Chief Financial Officers' Council, and the President's Council on Integrity and Efficiency, to research accounting and auditing issues requiring guidance.

To provide information on the reserve practices of foreign ECAs, we judgmentally selected a sample of four ECAs that are key competitors of Ex-Im Bank or that were identified by knowledgeable U.S. and private sector officials as entities that had examined or changed their reserve practices in recent years. These included Compagnie Française d'Assurance pour le Commerce Extérieur in France, Euler Hermes Kreditversicherungs-Aktiengesellschaft in Germany, the Export Credits Guarantee Department in the United Kingdom, and Export Development Canada. In each case, we discussed with officials, and reviewed available documentation on, the ECA's statutory mandate, financial activities, and reserve practices. We also reviewed public financial statements where available. We also met with officials from other government organizations in these countries, including treasury or finance ministries. We met with officials from the Office of the Auditor General of Canada, France's Cours des Comptes, and the U.K.'s National Audit Office, because those offices audit the financial statements of the Canadian, French, and U.K. ECAs, respectively. We obtained the perspectives of officials from ECAs and other government agencies on the difficulties associated with developing loss estimation methodologies and using available data. In addition, we discussed these issues with an official from the export credit group of the OECD, and officials at the Office National du Ducretoire/Nationale Delcrededienst in Belgium, including the chair of a group of OECD export credit country risk experts.

To provide information on the reserve, or loan loss allowance, practices of commercial banks, we judgmentally selected a sample of three U.S. commercial banks with large lending portfolios totaling approximately \$800 billion, including large international exposures. For each bank, we spoke with management involved in international lending and the calculation of the bank's loan loss allowance. In addition, we reviewed the banks' financial statements and any documentation that was provided. We also met with several U.S. banking regulators—the Federal Reserve Board, Office of the Comptroller of the Currency, and the Federal Deposit Insurance Corporation—to discuss the loan loss allowance guidance banks are required to follow. We reviewed both regulatory and accounting guidance governing the calculation of the loan loss allowance by commercial banks.

Loss Estimation Practices of Foreign Export Credit Agencies

Significant variation exists among the loss estimation, or reserve, practices of foreign export credit agencies (ECA) that we consulted.¹ Differences in mission, structure, and accounting approaches help explain this variation. Some of these ECAs are expected to avoid competing with private sector financial institutions, which may result in more exposure to emerging market borrowers and riskier portfolios as compared with other ECAs. These ECAs' financial relationships with their governments differed, as did their individual responsibility for covering any losses that might result from their activities. Some ECAs follow an accounting approach that prescribes estimating probable losses over time, while others follow an accounting approach that precludes such estimation. ECAs in Canada and the United Kingdom (U.K.) have recently adopted or plan to implement new methodologies for estimating the likelihood of default and loss associated with their activities. ECAs in France and Germany follow a simpler approach in which the fees they collect on a given transaction, in accordance with an international agreement among export credit agencies, are regarded as sufficient to cover any likely losses on the transaction. The French ECA is studying a new accounting system that would enable it to more closely align its loss expectations with its historical repayment experiences. (App. I contains information about our objectives, scope, and methodology for examining the reserve practices of foreign ECAs.)

ECAs in Canada and the United Kingdom Have Methodologies to Estimate Future Defaults and Losses in Determining Reserve Levels

ECAs in Canada and the United Kingdom determine their required level of loss reserves by estimating the extent of probable losses in their portfolio at a point in time, some of which may result from future defaults. These ECAs' missions, structures, and accounting approaches lend important context to their reserve practices. The Canadian and U.K. ECAs have recently revised (or are in the process of revising) their risk assessment and reserve practices to more precisely measure future losses. In developing their approaches, these two ECAs examined the risk assessment and reserve practices of leading financial institutions and worked with private sector risk assessment specialists. Their approaches

¹We discussed reserve practices with Export Development Canada, Compagnie Française d'Assurance pour le Commerce Extérieur in France, Euler Hermes Kreditversicherungs-AG in Germany, the Export Credits Guarantee Department in the United Kingdom, and the Office National du Ducreire/Nationale Delcrederedienst in Belgium. For ease of reference, we do not use these entities' proper names in this appendix. We recognize that "reserves" is not a technical term, but we use it in this appendix because each ECA used different terminology to refer to its practices.

have similar elements but differ in important respects. The new approaches have been reviewed by specialists outside the ECA.

Mission, Structure, and Accounting Approaches Affect Reserve Practices

The Canadian and U.K. ECAs' mission is to help facilitate national exports, but their particular methods and structure for doing so differ. The Canadian ECA is a wholly owned government corporation that was capitalized with funds from the Canadian government and operates with the full faith and credit of the Canadian government. According to officials of this ECA, the entity is self-sustaining, in that it does not receive annual infusions of budgetary support for its operations or losses. Its largest business activity in terms of volume is short-term export insurance, but it also offers loans and medium-term insurance and loan guarantees. According to the Canadian ECA, it takes a commercial approach to managing its risks to ensure its long-term financial health. This institution makes its own decisions about the credits it will offer and is not prohibited from competing with private sector financial institutions.² Long-term transactions that it determines are beyond its risk capacity and are inconsistent with its long-term health may be referred to the government of Canada for consideration. The Canadian government may accept and manage those risks provided that there is sufficient national benefit to Canada.³

In contrast, the U.K. ECA is a government department that receives annual budgetary support (subject to Parliamentary approval) to help fund its operations and cover its losses. The U.K. ECA is in a time of transition. The ECA's operations were streamlined in 1991, when new legislative authority required it to sell its short-term insurance business and focus on medium- and long-term project finance.⁴ The U.K. ECA is expected to avoid direct competition with U.K. private insurers and banks. It is also expected to undertake and manage its activities to ensure, with a high degree of

²The majority of business the Canadian ECA undertakes annually is transacted in what it calls its Corporate Account.

³These are known as Canada Account transactions and are undertaken infrequently. The Canadian ECA executes the transaction on behalf of the government.

⁴Export and Investment Guarantees Act 1991.

confidence, that it will break even financially.⁵ Simultaneous attainment of these two objectives suggests this ECA has to strike a balance in the types of transactions and the nature of risks it shall undertake. The ECA's risk premia and larger transactions are subject to approval by the U.K. treasury department. The level of treasury department control increased following certain losses the ECA incurred in the late 1990s. Plans are under way to convert the U.K. ECA into a separately capitalized, self-sustaining entity that would operate at arm's length from the U.K. government, responsible for managing its own financial losses.⁶

Different ECA missions and structures can have implications for ECA risk profiles and, thereby, reserve practices. For example, with its broader mandate, about 60 percent of the Canadian ECA's 2003 portfolio exposure was to U.S. and Canadian borrowers. In contrast, most of the U.K. ECA's ten most active markets in fiscal years 2001 and 2002 were emerging markets, representing about three-fourths of its activity in these years.⁷ These different risk profiles affect the level of loss reserves that these ECAs hold. According to the Canadian ECA's financial statements, its allowances for loss averaged about 10 percent of its total exposure during calendar years 2000-2003. According to the U.K. ECA, its allowances for loss averaged about 20 percent of total exposure between fiscal years 2000-2003.⁸ It is important to note that, for business undertaken since 1991, the U.K. ECA is expected to maintain reserves equal to at least 150 percent of

⁵According to U.K. officials, a mandate to break even over the long term has been in effect since the ECA's inception, but over time this has been translated into quantifiable objectives. This mandate currently applies to all business undertaken since 1991 that meets the ECA's underwriting criteria. The mandate does not apply to business that the ECA is directed to undertake on the basis of national interests but that does not meet its underwriting criteria.

⁶According to U.K. ECA officials, the conversion of their entity to a self-sustaining "Trading Fund" is scheduled to take place by 2007.

⁷The U.K. ECA's fiscal year begins on April 1 and ends on March 31. The above figure represents the ECA's activity for the fiscal years ending March 31, 2002 and 2003.

⁸This figure reflect allowances on the U.K. ECA's pre-1991 and post-1991 activities and includes allowances on paid claims and future amounts at risk.

expected losses.⁹ In comparison, the U.S. Export-Import Bank's (Ex-Im Bank) loss allowances have averaged about 18 percent of its total exposure since fiscal year 1999.

Moreover, different degrees of government support affect the extent to which ECAs are responsible for managing their own financial risk and protecting taxpayers from loss. For example, as a self-sustaining entity, the Canadian ECA does not receive annual budgetary support from its government and would be expected to cover any losses it incurs.¹⁰ In contrast, although the U.K. ECA is expected to break even over time, it receives appropriations from the U.K. Parliament to cover anticipated losses and administrative expenses. It also operates with a treasury department guarantee of the obligations arising from its guarantees.

Both the Canadian and the U.K. ECAs follow accrual-based accounting standards, in which revenue and expenses are recorded in the period they are earned or incurred, even though they may not have been received or paid.¹¹ Under such accounting, loss reserves are an estimate of probable losses in a portfolio as a whole. The reserves are normally recorded long before actual defaults occur. This contrasts with cash flow accounting, in which revenue is recognized when it is received and expenses when they are paid. As discussed in the section on the French and German ECAs, this method of accounting precludes the matching of revenue and expenses over time.

⁹The U.K. ECA must achieve a "Reserve Coverage Ratio" of at least 1.5 times the level of future expected losses in its portfolio. Because the U.K. ECA is expected to generally break even, including during periods when losses are concentrated and thus unusually high, it is expected to reserve at a level that is higher than would be needed to cover expected losses on average over a long period. The extra reserves are to cover what are sometimes called "unexpected losses." With these higher reserve levels, reserves should be adequate to cover losses 75 percent of the time, according to U.K. ECA officials.

¹⁰According to the Canadian ECA, its overall operations have resulted in a profit in every year but one.

¹¹The Canadian ECA is required to follow Canadian Generally Accepted Accounting Principles (GAAP), which are similar to U.S. private-sector GAAP and include the use of accrual-based accounting. The U.K. ECA follows U.K. government accounting standards, which are accrual-based standards. This ECA practiced cash flow accounting for many years but switched to accrual-based accounting several years ago.

Canadian and U.K. ECAs
Have Recently Adopted, or
Will Implement, New
Reserve Methodologies

The Canadian and U.K. ECAs have recently revised their existing reserve practices by adopting or moving toward implementing methodologies that are designed to more precisely measure risk in their portfolios and ensure that their reserves reflect those risks. In 2001, the Canadian ECA and the Canadian Office of the Auditor General, who audits the ECA's financial statements, undertook a review of the ECA's reserve methodology with the goal of making it reflect current best practices. The ECA studied the reserve practices of several leading U.S. and Canadian banks and other ECAs, including Ex-Im Bank, and examined new developments in bank regulatory and accounting guidance.¹² According to Canadian ECA officials, it adopted a new risk assessment model that follows the risk assessment approaches used by some other financial institutions with international risk exposures. The new methodology did not have a substantial impact on the ECA's level of reserves, although the entity changed the process by which it calculated its reserves, specifically its components and what it covers. For example, it began establishing reserves for committed undisbursed credits, which it had not done previously.

In 1999 the U.K. treasury department hired a private consulting firm with credit risk expertise to review the effectiveness of the ECA's risk management systems because of concerns about the ECA's financial condition, given the larger than expected losses it incurred during the Asian financial crisis. According to U.K. ECA officials, the consulting firm concluded that the ECA's process for estimating expected loss was reasonable but recommended, among other things, that the U.K. ECA should better assess the risk of, and establish capital to buffer against, unexpected losses.¹³ The U.K. ECA is upgrading its existing risk assessment models and processes in response to the review.

Determining Risk Ratings and
Calculating Probability of
Default

The Canadian and U.K. ECAs each use a combination of rating agency data and their own analyses and adjustments in determining ratings levels and default probabilities. For rating corporate risk, the Canadian ECA uses ratings from major rating agencies such as Moody's Investors Service and

¹²The Canadian ECA examined the Ex-Im Bank loss estimation methodology in place at the time of its benchmarking exercise that began in 1999, which differed from the loss estimation methodology implemented by the Office of Management and Budget for fiscal year 2003 that is described in this report.

¹³*Risk Management Review for HM Treasury and ECGD*, KPMG, December 1999.

Standard & Poor's when they are available; when these ratings are not available, the Canadian ECA's risk department assigns ratings using standard rating agency criteria. They place credits into seven risk categories. The Canadian ECA then estimates its default probabilities for its corporate borrowers using published default rates from Moody's Investors Service and Standard & Poor's, taking into account the maturity of the credits. The Canadian ECA rates sovereign borrowers based on its own research and country knowledge. Once these ratings are assigned, the Canadian ECA uses the default probabilities associated with those ratings from Standard & Poor's and Moody's in determining default probabilities. For both corporate and sovereign borrowers, the Canadian ECA adjusts rating agency default probabilities where it believes such adjustments are necessary.

For determining sovereign default probabilities and risk ratings, the U.K. ECA uses a model it developed in 1991 that assesses countries' likelihood of default, using macroeconomic data such as borrower country indebtedness. Its analysts consider the model's output and additional factors, including other country data, rating agency sovereign ratings and interest rate spreads, in the final assignment of sovereign ratings. For determining expected loss, the expected duration of default periods and the recovery rates when defaults occur are taken into account, along with the probability of default.

For rating corporate transactions, the U.K. ECA uses rating agency corporate risk ratings where they are available. For corporations that are not rated by the major rating agencies, the U.K. ECA assigns ratings using templates developed with a major rating agency. In both cases, once these ratings are obtained, U.K. ECA officials adjust them, in some cases, based on a comparison with country sovereign ratings. For assigning expected losses to different risk ratings, U.K. ECA officials use a Standard & Poor's tool that is based on that rating agency's historical data on ratings transition and default rates and that incorporates other information such as recovery rates.

U.K. ECA officials are moving toward a new modeling process that will directly assess, not only the risk of expected loss, but also the capital needed to cover unexpected losses or the risk of having greater losses concentrated in certain periods. This model was developed in consultation with a U.K. credit risk expert and uses a combination of private ratings agency data on sovereign bond defaults from the 1990s and U.K. ECA data on the 1980s default experience of the U.K. ECA.

Calculating Expected Loss

Once default probabilities have been determined, determining the expected losses from the defaults involves determining the likely amount of loss when defaults occur, based on expected recoveries. The Canadian ECA uses its own historical data, where sufficient, to estimate recoveries for sovereign and nonsovereign borrowers. The U.K. ECA determines its own recovery rates for sovereign borrowers; for corporate borrowers, it makes some use of rating agency recovery data.¹⁴ Both ECAs assume higher losses (lower repayments) for corporate than sovereign defaults.¹⁵ The Canadian ECA also assumes that higher losses will be incurred from defaults on unsecured credits than on collateralized credits. The calculation of expected loss forms these entities' base reserves amount, to which certain upward adjustments are made. These adjustments reflect the potential unexpected losses that are affected by the portfolio effects of concentration and correlation of financing activities.

Adjusting for Portfolio Risk

The Canadian ECA follows a portfolio approach in estimating loss and calculating reserves. In such an approach, the base reserve amount is adjusted upward because of additional risks related to concentrations of exposure and correlations among credits. The Canadian ECA adds reserve amounts for significant exposures to single borrowers, countries, or industries. It also adjusts upward for the possibility that problems in one area (for example, in one country) will spread to other parts of its portfolio.

The U.K. ECA's current approach includes some judgmentally determined upward adjustments to its base expected loss calculations for certain concentrations of risk. These include upward adjustments for public, nonsovereign borrowers, as well as certain systemic risks related to other countries or industries. Its new risk management approach will make such adjustments more systematically, as part of its loss model.

Determining Fees

Canadian and U.K. ECA officials both said that their loss estimation methodologies help them determine what fees to charge borrowers for their products. Both ECAs agree to follow a risk rating and pricing agreement developed by participating Organization for Economic Cooperation and Development (OECD) countries, in which participants

¹⁴For aircraft financing, the U.K. ECA uses data on the recovery or second-hand value of aircraft.

¹⁵For the Canadian ECA, secured commercial debt has a lower probability of loss given default than does sovereign debt.

jointly develop country risk ratings for the purposes of determining the minimum fees to be charged at each risk rating.¹⁶ (More information about this agreement is provided below.) However, according to Canadian and U.K. ECA officials, they may apply higher fees if they determine that the fees do not adequately reflect their own assessment of the potential loss on a transaction. Officials from both ECAs stated that setting fee levels in relation to expected loss is an important component of their financial stability over time.

Canadian and U.K. Reserve Methodologies Were Subject to Internal and External Review

According to officials from the Canadian and U.K. ECAs, their reserve methodologies (including key assumptions and computer models) have been or are being reviewed extensively, both internally and externally, before being adopted. The Canadian ECA's new methodology was positively reviewed by an independent national accounting firm with significant experience in reviewing loan loss methodologies. The U.K. ECA's current reserve practices were subject to review by a private consulting firm. In responding to the consulting firm's recommendations, the ECA has worked with the U.K. treasury, a prominent academic and credit risk expert, and a private rating agency to develop its new approach. Its new risk assessment model is based on a well-known credit risk model that was developed by a leading U.S. bank.¹⁷

ECAs in France and Germany Use Fees to Offset Loss

ECAs in France and Germany base their reserve practices primarily on the fees they collect for their products rather than on systematic estimations of their probable losses. These ECAs are private companies that offer export credit insurance on behalf of their respective governments, following certain risk thresholds that their governments establish for these accounts. Their governments expect these accounts to break even in the long run. The French and German ECAs are not expected to estimate future losses when transacting new business but rely instead on the OECD participating countries' guidance in setting their fees. Neither France nor Germany annually appropriates budgetary funds to cover loss; instead, the fees the

¹⁶This group, the Participants to the Arrangement on Officially Supported Export Credits, is not an official OECD body, but receives support from the OECD Secretariat. Its members include Australia, Canada, the European Community, Japan, Korea, New Zealand, Norway, Sweden, and the United States.

¹⁷The underlying model, CreditMetrics, was introduced by JP Morgan in 1997.

ECAs collect constitute these countries' reserve against future loss. The government ministries that oversee the ECAs conduct independent assessments of country risk in setting or adjusting the risk thresholds that specify the degree to which they will offer credit in certain countries. Further, the French ECA is developing a method, not yet in place, to more independently estimate future losses on the government's export credit activities and to track the actual losses incurred over time.

**French and German ECAs
Provide Export Insurance
and Guarantees on Behalf of
Their Governments and
Follow Government
Accounting Methods**

France and Germany provide and account for their official export credit business in similar ways. In both countries, the official ECA is a private enterprise that insures or guarantees exports on behalf, and at the direction, of the government. In addition to managing their government's export credit business (referred to in both cases as the state account), the French and German ECAs also engage in business for their own account. The French and German state accounts extend primarily medium- and long-term export credit insurance, whereas the private enterprises that manage the state accounts primarily sell short-term insurance.¹⁸ The ECAs are not responsible for any profit or loss incurred on the state account, which transfers to the government.¹⁹ The French and German ECAs both receive administrative fees from the government for their services.

The government ministries that oversee the ECAs make decisions about the degree to which the state accounts will offer export credits in certain countries or to certain borrowers (exposure limits are discussed further below). French and German state accounts are expected to operate in riskier markets where private export credit insurance cannot be obtained. In both countries, the government ministries can also direct the ECA to undertake certain transactions, even if doing so will cause it to exceed established exposure limits, if the government believes the transactions to be in the country's best interest.

The French and German state accounts are both directed to break even over the long term, meaning they should incur neither large gains nor losses. However, assessing compliance with this mandate is difficult,

¹⁸The French and German state accounts do not directly finance exports. Private financial institutions handle this instead.

¹⁹According to French and German ECA and government officials, the state accounts are operated separately from ECAs' private account. Profit on the private account is not used to fund the state account.

because both governments' budgets are accounted for on a cash flow basis. Under cash flow accounting, revenue is recognized when it is received, and expenses are recognized when they are paid. Thus, revenue in a given year is compared with expenses in that same year, regardless of when the underlying transactions occurred. Under this system, it can be difficult to know the degree to which the fees collected in a given year from providing export credit insurance cover any claims made against that insurance in later years. French and German ECA officials acknowledged that this accounting practice limits their ability to fully analyze actual or potential losses on the state account. The French ECA has been developing an alternative accounting approach that would enable such analysis, as discussed later.

**French and German ECAs
Follow Government-
Determined Risk
Thresholds and Use Fees to
Cover Loss**

The French and German approaches to evaluating risk are based primarily on assessing country risk for the purpose of setting exposure limits and using fees to cover losses. The French and German ECAs are not expected to estimate expected losses in advance of undertaking transactions, but the French ECA provides informal risk assessments to the oversight ministry for it to consider when making decisions about undertaking transactions. The French and German governments do not provide budgetary funds at the beginning of a year to cover any losses that might be incurred during the year, but any losses incurred on the state account are automatically covered.

The government ministries that oversee the French and German ECAs analyze borrower countries' risk profiles when making their annual decisions about the exposure limits that will be in effect for a given year. This analysis may consider macroeconomic factors, OECD country risk ratings, and the ECA's experiences with other countries' repayment histories on previously extended credit. In France, the ECA also provides input to this analysis. These exposure limits, or ceilings, are developed to ensure portfolio diversification and constrain the accumulation of excessive risk levels. In both countries, the government determines risk ceilings and provides these to their ECAs to follow in operating the state account. Country risk ceilings can be exceeded only at the government's direction. The German ECA also faces a statutory limit on the total exposure it can undertake in a given year.²⁰

²⁰A German ECA official told us that the statutory limit has never precluded it from undertaking any business that it wanted to undertake for the state account.

In both countries, the fees collected on the export credit business are viewed as a reasonable approximation of the amount of loss likely to be incurred. In setting fees, both ECAs follow the guidance agreed to by the participating OECD countries for assigning risk ratings to sovereign borrowers and charging premium rates. These ECAs add surcharges to the OECD minimum fee rates for corporate borrowers, recognizing the higher risk of corporate business. As discussed below, the OECD fees were politically determined, and both entities have considered whether the premia are sufficient to cover actual losses.

France and Germany differ in how they manage their fee revenue. In both countries, the revenue belongs to the government. However, in France, some fee revenue is kept with the French ECA for the purpose of paying expenses that are incurred on the state account, such as paying a claim on a defaulted credit. Officials of the French ministry that oversees the ECA told us that the amount left on deposit with the ECA is based on their best estimate of the losses that the ministry expects will materialize in a given year. A German ECA official said that all fee revenue it collects is immediately transferred to the German government. When the German ECA has to pay a claim, it must request funds from the German government.

French ECA and government officials told us that the French ECA is developing a new accounting system for the state account that will enable it to analyze, for each underwriting year, the collected fees and the claims corresponding to the transactions covered during the same year. This system will provide the ECA with historical data on payment experience in order to calculate expected losses on a statistical basis. However, the process is not complete, and the information it has produced is not used for official purposes. The approach in development still uses OECD minimum fees as the baseline for estimating loss but will add surcharges to take account of increased risk, for example, when a default is pending. Surcharges will also be added for risks other than sovereign risks. According to French ECA and government officials, a key challenge in developing this approach was compiling payment histories for individual transactions. They also stated that before the French state account would develop a reserve system that does not rely on the OECD minimum fees, further accumulation of historical data on payment experiences will be necessary, a process they expect will take some time.

OECD Participating Countries' Risk Assessment and Fee Arrangement

The agreement of the participating OECD countries regarding country risk classifies countries into seven risk categories on the basis of a country risk assessment model. The model ranks countries according to which is most likely to default, considering indicators of countries' financial and economic situations. It also uses data provided since 1999 by export credit agencies on their payment experiences with countries. Quantitative scores for each country determine its initial risk classification, which can be adjusted by participating countries based on an assessment of political risk and other factors not considered in the model itself.

While the model scores provide some indicator of default probabilities for each country, they are not used in determining what the risk premiums, or fees, should be to cover expected loss for financing to sovereign buyers in a risk category. The fees result from a political agreement, an averaging of fees in place in 1996 across member export credit agencies. Thus, the fees reflect the expected loss of lending to sovereign borrowers at various risk levels only to the extent that the average of 1996 fees across participating countries reflect those expected losses. The minimum common fees are not intended to reflect the generally higher risk of lending to nonsovereign, or private, borrowers within the same country, according to OECD and ECA officials.

Participating OECD countries are collecting data from their ECAs on their financing and repayment experiences since 1999, in order to assess the validity of the current fees as indicators of expected loss. According to an ECA official who chairs a group of country risk expert from OECD countries, collecting enough data to assess the current premiums will take at least 10 years.

Loan Loss Allowance Guidance and Select Commercial Bank Practices

Loans are the largest component of most depository institutions' assets; therefore, the loan loss allowance¹ is critical to understanding the financial condition of a depository institution and changes in credit risks and exposures. Given the importance of the loan loss allowance as an indicator of financial condition, and because adjustments to the allowance affect an institution's earnings, the loan loss allowance is scrutinized by regulatory agencies. Regulators and the accounting profession acknowledge that calculating the loan loss allowance requires significant judgment and that accounting and regulatory guidance are not prescriptive. For the past several years, the organizations involved in developing U.S. private sector accounting standards—the Financial Accounting Standards Board (FASB) and the American Institute of Certified Public Accountants—have been in the process of reviewing current loan loss allowance guidance. Likewise, the U.S. federal banking regulators—the Federal Reserve Board (FRB), Office of the Comptroller of the Currency (OCC), Federal Deposit Insurance Corporation (FDIC), Office of Thrift Supervision, and the National Credit Union Administration—and the Securities and Exchange Commission have been updating regulatory guidance governing the loan loss allowance. While the commercial banks we contacted follow the basic concepts of accounting and regulatory guidance, specific aspects of these banks' allowance methodologies differ. Regulatory guidance requires U.S. banks involved in international lending to address additional risks, in addition to the accounting and loan loss allowance concepts that apply to domestic lending.

Loan Loss Allowance Is an Important Factor in an Institution's Financial Condition

The loan loss allowance plays a key role in the financial condition of a bank.² It reflects a bank's judgment of the overall collectibility of its loan portfolio; that is, the higher the percentage of a bank's loan loss allowance to its total loan portfolio, the lower the estimated collectibility of the loan portfolio and the higher the estimated level of credit risk.³ It also reflects

¹Different phrases are used interchangeably when discussing credit loss reserves, including loan loss reserves, allowance for loan and lease losses, and allowance for credit losses. We will use the phrase "loan loss allowance."

²Loan loss allowance guidance applies to banks and other financial institutions. We discuss banks in this appendix because our review focuses on lending done by commercial banks for purposes of comparison with the Export-Import Bank.

³Credit risk is the potential for financial loss resulting from the failure of the borrower or counterparty to perform on an obligation.

the amount of estimated losses that have occurred in the loan portfolio but have not yet been realized. The loan loss allowance, according to bank regulatory guidance, must be appropriate to absorb estimated credit losses inherent in the loan portfolio. When changes are made in the loan loss allowance, these changes directly affect an institution's earnings. The loan loss allowance is established and maintained by charges against the bank's operating income, which reduces earnings,⁴ or by reversals of the allowance that would increase earnings.

Given the loan loss allowance's effect on earnings and the role the allowance plays in allowing banks to cover probable and estimable losses, U.S. financial regulatory agencies pay close attention to a bank's loan loss allowance. These regulators require banks to establish and regularly review the adequacy of their allowance, and bank examiners assess the asset quality of an institution's loan portfolio and the adequacy of the loan loss allowance. Because regulatory guidance is not prescriptive, bank regulators told us that, through examinations, they assess the "reasonableness" of a bank's loan loss allowance by comparing a bank's loan loss allowance level with industry standards and looking for justification for any methodology that could be considered an outlier. As part of their assessment of public company filings, the Securities and Exchange Commission also reviews banks' loan loss allowance disclosures.

Accounting and Regulatory Guidance Are Not Prescriptive; the Loan Loss Allowance Requires Significant Judgment

Regulatory agencies told us that their guidance is not prescriptive, and accounting and regulatory guidance states that the loan loss allowance requires a significant amount of judgment. Because no single approach has been determined to encompass the wide variety of banks' loan portfolios and their varying degree of risk and unique historical loss experience, regulatory and accounting guidance provide principles and guidelines for banks to follow, rather than specific formulas and factors for banks to use in their allowance calculations. The bank regulators direct institutions to follow U.S. generally accepted accounting principles (GAAP), as it applies to the loan loss allowance, for regulatory reporting purposes. Specifically,

⁴The management of a bank adjusts the level of its loan loss allowance through periodic provisioning to offset charge-offs to reflect the level of estimated losses in the loan portfolio. Provisions are an expense charged against an institution's current earnings and represent the amount necessary to adjust the loan loss allowance to reflect probable and estimable uncollectible loan balances.

banks follow Statement of Financial Accounting Standards (SFAS) 114, *Accounting by Creditors for Impairment of a Loan*, in estimating losses from individual impaired⁵ loans. Further, SFAS 5, *Accounting for Contingencies*,⁶ provides guidance to banks in their calculation of losses for pools of loans, impaired or performing, which are evaluated collectively.

The bank regulators we spoke with—FRB, OCC, and FDIC—stated that regulatory guidance is coordinated across all the banking regulatory agencies and is consistent with GAAP. On March 1, 2004 the banking regulators issued an *Update on Accounting for Loan and Lease Losses*, which addresses recent developments in accounting for the loan loss allowance and presents a list of the current sources of GAAP and supervisory guidance for accounting for the loan loss allowance. One of the sources it lists is *The Interagency Policy Statement on the Allowance for Loan and Lease Loss*, which was issued by FRB, OCC, FDIC, and the Office of Thrift Supervision in 1993. This document discusses the nature and purpose of the loan loss allowance, the responsibilities of a bank's board of directors and management, how banks should determine the adequacy of their allowance and the factors that should be considered in their estimates, and examiners' responsibilities with regard to the loan loss allowance. Prior to the March 2004 *Update on Accounting for Loan and Lease Losses*, the 1993 interagency policy was supplemented by the 2001 Federal Financial Institutions Examination Council⁷ Policy Statement, discussed later.

In addition to the interagency policy, OCC and FDIC issue their own loan loss allowance policy statements that they distribute to banks under their supervision. These statements are in line with the interagency policy.

⁵A loan is impaired when, based on current information and events, it is probable that a creditor will be unable to collect all amounts due according to the contractual terms of the loan agreement.

⁶SFAS 5 defines a contingency as an existing condition, situation, or set of circumstances involving uncertainty as to possible gain or loss to an enterprise that will ultimately be resolved when one or more future events occur or fail to occur.

⁷The Federal Financial Institutions Examination Council is an interagency body empowered to prescribe uniform principles, standards, and report forms for the federal examination of financial institutions by the federal banking regulators and to make recommendations to promote uniformity in the supervision of financial institutions.

**Appendix III
Loan Loss Allowance Guidance and Select
Commercial Bank Practices**

Table 1 provides a summary of the relevant accounting and regulatory guidance governing the loan loss allowance.

Table 1: Summary of Accounting and Regulatory Guidance Followed by Banks in Their Loan Loss Allowance Calculation

Accounting guidance	Regulatory guidance
Individual impaired loans	
<p><i>Conditions:</i> Under SFAS 114, a loan is impaired when it is probable that the bank will be unable to collect amounts due according to the terms of the loan. Banks determine impairment using normal loan review procedures.</p>	<p><i>Conditions:</i> Banks determine impairment using their loan review procedures. Generally, a loan is impaired for the purposes of SFAS 114 if it exhibits the same level of weaknesses and probability of loss as loans (or portions of loans) classified as “doubtful” or “loss.” (See table 2 for risk classifications.)</p>
<p><i>Measurement of impairment:</i> Under SFAS 114, one of the following methods must be used:</p> <ul style="list-style-type: none"> • present value of expected future cash flows discounted at the loan’s effective interest rate, • loan’s observable market price, and • fair value of collateral if the loan is collateral dependent. 	<p><i>Measurement of impairment:</i> SFAS 114 guidance should be followed. Regulators expect that loan loss allowances for all impaired, collateral dependent loans will be based on the fair value of the collateral for purposes of regulatory reports.</p>
Pools of loans	
<p><i>Conditions:</i> Under SFAS 5, the following conditions must be met: (1) it is probable that a loan has been impaired at the financial statement date and (2) the amount of loss can be reasonably estimated. Under SFAS 114, some impaired loans may have risk characteristics in common with other impaired loans, as such a bank may aggregate those loans for evaluation of impairment.</p>	<p><i>Conditions:</i> Banks should follow guidance in SFAS 5 for measuring losses for pools of loans.</p>
<p><i>Measurement of impairment:</i> According to SFAS 5, whether the amount of loss can be reasonably estimated will depend on, among other things, the experience of the bank, information about the ability of individual debtors to pay, and analysis of the loans in light of the current economic environment. In the case of a bank with no relevant experience, reference to the experience of other enterprises in the same business may be appropriate. According to the interpretation of SFAS 5 (FASB interpretation 14), when a reasonable estimate of a loss is a range and when some amount within the range appears at the time to be a better estimate than any other amount within the range, that amount will be accrued. When no amount within the range is a better estimate than any other amount, the minimum amount in the range will be accrued.</p>	<p><i>Measurement of impairment:</i> Because no single approach has been determined to be appropriate for all banks, a specific method to determine historical loss experience is not required.</p> <ul style="list-style-type: none"> • The method a bank uses will depend to a large degree on the capabilities of its information systems. • Acceptable methods range from a simple average of the bank’s historical loss experience over a period of years to more complex “migration” analysis. • There is no fixed historical period that should be analyzed by banks to determine average historical loss experience.

Source: GAO analysis of accounting and regulatory guidance.

**Additional Guidance on
International Lending**

According to bank regulators, the accounting and regulatory guidance discussed above and described in table 1 applies to both domestic and international lending. However, bank regulators stated that because international lending involves more risk than domestic lending, banks that lend internationally must follow additional guidance. The primary

additional risk that banks face when providing international loans is “country risk,” or the risk that economic, social, and political conditions and events might adversely affect a bank’s interests in a country. A specific component of country risk is “transfer risk,” or the possibility that a loan may not be repaid in the currency of payment because of restricted availability of foreign exchange in the debtor’s country.

To address country risk, banks are expected to have country risk management methodologies in place. A 1998 study by the Interagency Country Exposure Review Committee (the “Committee”) found that all U.S. banks conducting international lending had developed formal country risk management programs and policies.⁸ The Committee also found that these banks had formal internal country risk monitoring and reporting mechanisms and that country risk management was typically integrated with credit risk management. To address transfer risk, banks that lend to specific countries must allocate additional allowances, called the Allocated Transfer Risk Reserve.⁹

Transfer risk is one component of the broader concept of country risk and the only component specifically regulated by the bank regulators. The International Lending Supervision Act of 1983 required banks to set up an allocated allowance for assets subject to transfer risk, and the banking regulators accordingly published regulations implementing the requirement. The Committee is responsible for providing an assessment of the degree of transfer risk in cross-border and cross-currency exposure of U.S. banks and sets the minimum amount of the allocated transfer risk reserve.¹⁰ The Committee bases its assessments and ratings on information collected from a number of sources, including country analysis prepared by economists at the Federal Reserve Bank of New York and discussions with U.S. banks.¹¹

⁸The Committee is composed of representatives of the OCC, FDIC, and FRB.

⁹The allocated transfer risk reserve is a specific allowance that is created by a charge to current income. The allocated transfer risk reserve is separate from the loan loss allowance and is deducted from gross loans and leases. As far as financial statement reporting, FRB officials told us that the allocated transfer risk reserve normally appears as part of the loan loss allowance, that is, it is not identified separate of the allowance.

¹⁰The Committee meets three times a year to review countries to which U.S. banks have had an aggregate exposure of \$1 billion or more for at least two consecutive quarters.

¹¹Two of the three banks that we spoke with stated that they were included in the Committee’s process.

Bank regulators emphasized that the Committee’s transfer risk ratings are primarily a supervisory tool and should not replace a bank’s own country risk analysis process. FRB officials also told us that the allocated transfer risk reserve is “narrowly prescribed” in that it applies only to a small number of countries. U.S. commercial bank lending is primarily domestic, and the international lending that is conducted by banks is concentrated in the G-10 countries¹² and Switzerland. The FRB officials stated that only approximately 30 U.S. banks—a small portion of the total number of banks in the United States—receive allocated transfer risk reserve statements.

**Regulatory Guidance on
Portfolio Segmentation and
Risk Ratings**

In addition to loan loss allowance guidance, banks must also follow regulatory guidance regarding loan portfolio segmentation and risk classification. Segmenting the bank’s loan portfolio into groups of loans with similar characteristics, such as risk classification, past-due status, type of loan and industry, or the existence of collateral, is the first step in calculating the loan loss allowance for the SFAS 5 portion. Regulatory guidance states that banks may segment their loan portfolios into as many components as practical. Bank regulators do not prescribe the way that banks should segment their loans; however, regulatory guidance states that loan segmentations should be separately analyzed and provided for in the loan loss allowance. Bank regulators do provide guidance on risk classification, a characteristic by which loan portfolios can be segmented. Table 2 provides definitions of the risk classifications, which are shared by all of the banking regulatory agencies.

¹²The G-10 countries (in addition to the United States) are Belgium, Canada, France, Germany, Italy, Japan, Luxembourg, the Netherlands, Sweden, and the United Kingdom.

Table 2: Regulatory Agencies' Risk Rating Scale

Risk category	Definition
Pass	A pass asset presents no inherent loss (no formal regulatory definition exists for "pass" credits).
Special mention	A special mention asset has potential weaknesses that deserve management's close attention. If left uncorrected, these potential weaknesses may result in deterioration of repayment prospects for the asset or in the institution's credit position at some future date. Special mention assets are not adversely classified and do not expose an institution to sufficient risk to warrant adverse classification.
Substandard	A substandard asset is inadequately protected by the current sound worth and paying capacity of the obligor or of the collateral pledged, if any. Assets so classified must have a well-defined weakness, or weaknesses, that jeopardize the liquidation of the debt. They are characterized by the distinct possibility that the bank will sustain some loss if the deficiencies are not corrected.
Doubtful	An asset classified doubtful has all the weaknesses inherent in one classified substandard with the added characteristic that the weaknesses make collection or liquidation in full, on the basis of currently existing facts, conditions, and values, highly questionable and improbable.
Loss	Assets classified loss are considered uncollectible and of such little value that their continuance as bankable assets is not warranted. This classification does not mean that the asset has absolutely no recovery or salvage value, but rather that it is not practical or desirable to defer writing off this basically worthless asset even though partial recovery may be effected in the future.

Source: OCC guidance.

Bank regulatory guidance states that a bank's rating system should reflect the complexity of its lending activities and the overall level of risk involved; the guidance also states that no single credit risk rating system is ideal for every bank. Large banks typically require sophisticated rating systems with multiple rating grades within the above broad risk classifications. One bank regulator stated that some banks might have a 10-point rating system based on the risk classifications, whereas other banks may have up to 25 different ratings.

Regulatory Agencies and Accounting Organizations Have Been Reviewing Loan Loss Allowance Guidance

For the past several years, financial regulatory agencies and accounting organizations have updated and continued reviewing U.S. private sector accounting standards and regulatory guidance governing the loan loss allowance.

Regulatory Agencies Supplement Existing Guidance

In the late-1990s, Securities and Exchange Commission staff noted in their normal reviews of filings by financial institutions, including banks, that there were inconsistencies between the disclosures about the credit quality of registrant's loan portfolios and the changes in the loan loss allowances reported in the financial statements. The Securities and Exchange Commission staff's review was aimed at determining whether the institutions were complying with GAAP for loan loss allowances. Securities and Exchange Commission staff was concerned, as were some of the bank regulators, that financial institutions were (1) not using procedural discipline in developing loan loss allowance estimates; (2) not documenting their evaluation of loan credit quality or their measurement of loan impairment; or (3) not providing clear disclosure, in the financial statements and management's discussion and analysis, about the provisioning process and allowance analysis.

As a result of the Securities and Exchange Commission staff's review of filings, one bank restated its financial results to reflect a reduction in its loan loss allowance. According to a bank regulator, although the credit quality of the bank's loan portfolio was increasing, its loan loss allowance was not decreasing.

Financial regulatory agencies issued additional guidance on the loan loss allowance. In March 1999, the FDIC, FRB, OCC, Office of Thrift Supervision, and Securities and Exchange Commission issued a joint letter to financial institutions on the loan loss allowance, in which they agreed to establish a joint working group to study the loan loss allowance and provide improved guidance focusing on appropriate methodologies and supporting documentation and enhanced disclosures. In 2001, the Federal Financial Institutions Examination Council finalized and issued its Policy Statement on Allowance for Loan and Lease Losses Methodology and Documentation, which supplements existing regulatory guidance. The

Policy Statement was intended to provide further guidance on the design and implementation of loan loss allowance methodologies and supporting documentation practices. Securities and Exchange Commission staff issued parallel guidance on this topic for public companies in *Staff Accounting Bulletin No. 102*.

Accounting Guidance for
the Loan Loss Allowance is
Under Review

FASB is charged with establishing authoritative private sector accounting principles for financial reporting.¹³ These accounting principles (GAAP) are promulgated primarily through the SFAS issued by FASB. In the past, the American Institute of Certified Public Accountants (the “Institute”) has issued industry and auditing guides to provide accounting implementation guidance, subject to clearance by FASB.¹⁴

The Institute organized a loan loss task force with observers from the OCC, Securities and Exchange Commission and FASB on accounting for loan losses to “narrow the boundaries” of what is acceptable under GAAP. The Institute’s exposure draft of a proposed Statement of Position, “Allowance for Credit Losses,” was released for public comment in June 2003 and discussed the following: the distinction between current and future losses; how to reconcile acceptable methods for measuring loss incurred for specific loans versus pools of loans that are collectively evaluated; disclosure requirements; and the appropriate use of observable data in the loan loss allowance calculation. As discussed in the March 2004 *Update on Accounting for Loan and Lease Losses*, the proposed Statement of Position raised concerns among the banking regulators and other members

¹³Since 1973, FASB has been the designated private sector organization responsible for establishing standards of financial accounting and reporting, which govern the preparation of private sector financial statements. FASB accounting standards are recognized as authoritative by the Securities and Exchange Commission and the Institute.

¹⁴The Securities and Exchange Commission has statutory authority to establish accounting principles but, as a matter of policy, it generally has relied on FASB to provide leadership in establishing and improving accounting principles and standards. The Securities and Exchange Commission issued a Policy Statement on April 25, 2003 recognizing FASB as a designated accounting standard setter.

of the financial community who commented on the draft. In January 2004, after review of these comment letters, the Institute decided to proceed only with guidance to improve disclosures.¹⁵

Reviewed Banks Follow Basic Concepts in Accounting and Regulatory Guidance but Vary in Allowance Methodologies

We spoke with three U.S. commercial banks with large lending portfolios totaling approximately \$800 billion, including large international exposures.¹⁶ The three banks we spoke with follow the basic accounting and regulatory concepts outlined earlier but vary in specific loan loss allowance methodologies, including the sources of and amount of observable data on which their allowance calculations are based. FRB, which is conducting a study to establish “core reserving practices” among banks, confirmed that loan loss allowance practices among banks are not universal. The loan loss allowance varies depending on the type of lending done by the bank and its associated levels of risk. In addition, each bank has a unique historical loan loss experience on which their reserve calculation is based.

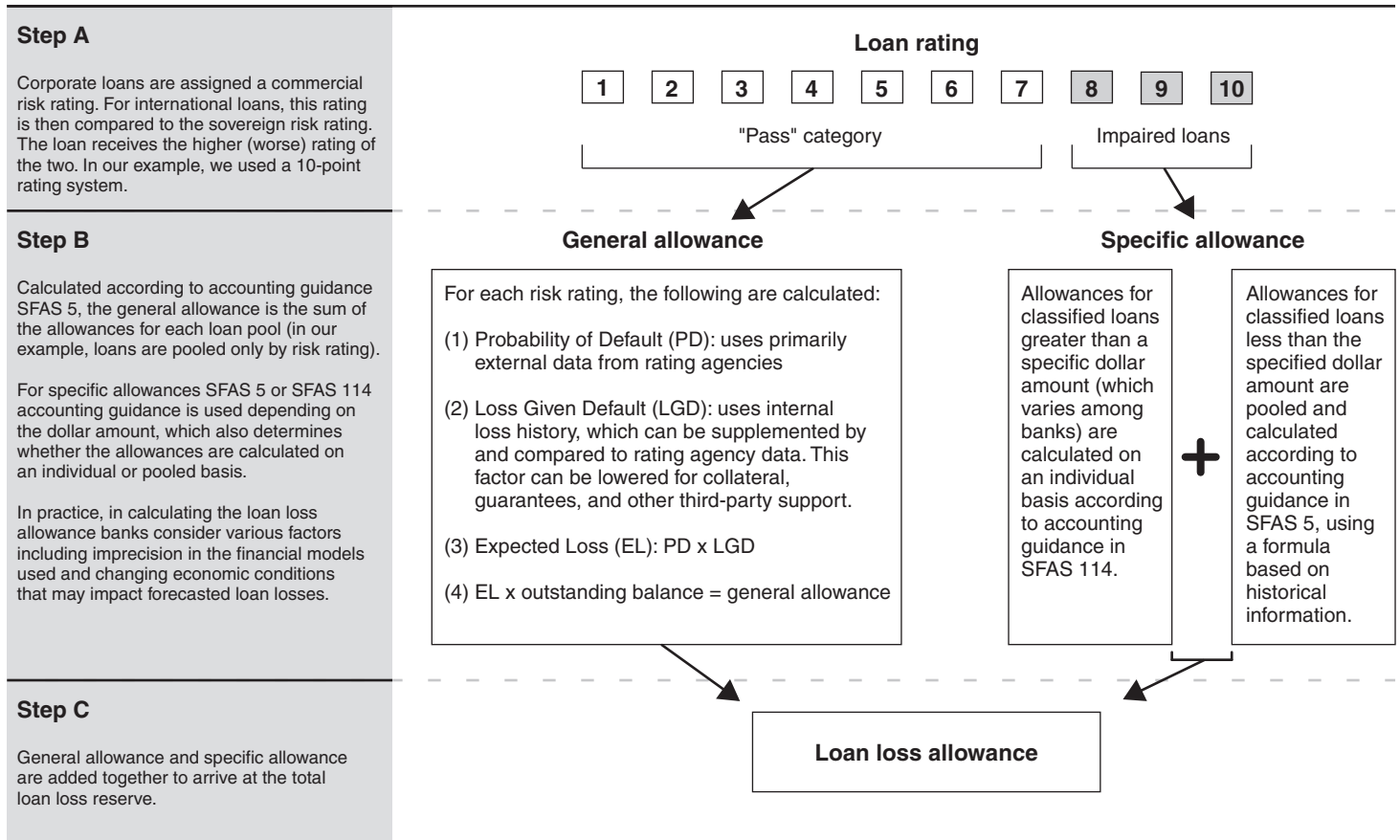
Despite specific differences in loan loss allowance methodologies, banks follow the same basic steps in determining their loan loss allowance levels for both domestic and international loan portfolios. These steps are illustrated in figure 7.

¹⁵The Institute’s loan loss task force will evaluate existing loan loss allowance disclosure requirements and disclosure recommendations received through the comment process and will develop a document on list of recommended disclosure enhancements.

¹⁶See appendix I for a further discussion of our methodology.

**Appendix III
Loan Loss Allowance Guidance and Select
Commercial Bank Practices**

Figure 7: Example of a Commercial Bank's Loan Loss Allowance Process for Corporate Loans



Source: GAO analysis of bank information and accounting and regulatory guidance.

Assignment of Risk Ratings

All three banks stated that their loan portfolios are divided between their commercial and consumer businesses. We focused on the commercial side of the loan loss allowance process of these banks, as it was most relevant to the business of the Export-Import Bank. Within their commercial loan portfolios (including both domestic and international lending), regulatory guidance allows banks to segment their loans according to various factors but risk classification is a primary factor. The banks assign loans different risk classifications, as defined by the bank regulators (see table 2), based on the creditworthiness of the loan.

The calculation of the loan loss reserve is dependent on the risk ratings assigned to loans. The assignment of risk ratings is based on an assessment that includes evaluating an obligor's credit risk based on the company or project and also on external factors, such as country risk for international lending.

The three banks' approaches to the risk rating assignment and review process are multilayered and performed by multiple units within the banks. The banks we spoke with have risk management groups that are divided into specific risk units. The groups charged with evaluating credit risk are involved in assigning risk ratings. Ongoing analysis of the loan portfolio is performed to ensure that risk ratings continue to be accurate. Units within the risk management groups conduct reviews of selected loans in their portfolios throughout the year, sometimes focusing on credits in certain risk ratings ranges.

Factors that banks and bank examiners take into consideration when analyzing risk in a credit exposure include industry risk; financial indicators such as quality of cash flow, balance sheet, debt capacity, and financial flexibility; and management. Officials at one bank told us that they use agency ratings as benchmarks to test the reasonableness of their internal credit risk grading system; however, the agency ratings are considered but not specifically weighted into their rating decision.

All three banks we spoke with have committees that evaluate the country risk levels of their lending portfolios and establish country risk ratings and sometimes geographic exposure limits. Officials at one bank stated that they have a formal model that assigns risk ratings to countries. The model is based on economic, financial, social, and other factors. The three banks incorporate information from external sources—for example, private companies and ratings agency data—into these ratings. However, two banks told us that, although they use external sources for data and qualitative information, all of their analysis is internal.

Officials at one bank told us that their committee holds bimonthly meetings and adjusts ratings monthly. Countries are placed on watch lists when economic conditions are unstable. The watch list is based on triggers, which include economic factors such as the pricing of debt, exchange rates, and other political and social factors.

For international lending, the three banks factor their country risk rating, determined internally, into the rating that they assign a loan. A loan to a

foreign obligor is first rated based on the obligor's creditworthiness, according to the banks we interviewed, then the country risk rating is incorporated to produce an overall rating for that loan. Both the banks and the bank regulators stated that, for international loans, the rating assigned to a loan generally will be no better than the country risk rating for the country in which the debtor is located. However, if a loan is collateralized or guaranteed by a third party, the loan may receive a rating better than the country risk rating.

FRB officials stated that Interagency Country Exposure Review Committee's (the "Committee") country risk ratings and the allocated transfer risk reserve requirements often lag behind the ratings of the ratings agencies and changes already made by the banks in their reserve levels. The three banks stated that they make their own internal judgments regarding the allocated transfer risk reserve and can decide to have a higher allowance than the allocated transfer risk reserve requirement, although they cannot have a lower allowance. The banks, as did FRB officials, also stated that the allocated transfer risk reserve is a lagging indicator and that many specific losses have already been incurred by the time the allocated transfer risk reserve is issued by the Committee.

Calculation of Loan Loss Allowance

Based on direction from regulatory and accounting guidance, the three banks calculate loan loss allowances by grouping loans with similar characteristics into pools and calculating an allowance for each pool (which will be referred to as the "general allowance"). In other cases, banks calculate the loan loss allowance for certain loans on an individual basis (which will be referred to as the "specific allowance"). (Examples of general and specific allowance calculations are illustrated in figure 7, Step B.) In calculating the loan loss allowance, banks also consider and adjust for various factors including imprecision in the financial models used and changing economic conditions that may affect forecasted loan losses.¹⁷ As with all aspects of a bank's loan loss allowance methodology, regulatory

¹⁷The recent exposure draft Statement of Position by the American Institute of Certified Public Accountants emphasizes that the loan loss allowance consists of only these two components. While the term "unallocated reserves" is commonly used in the banking industry, its specific meaning may vary. For some, it refers to adjustments to historical experience factors, while others believe that those adjustments are an element of the allocated allowance for loan losses. Others believe that unallocated refers to allowances for credit losses that are not attributable to individual loans, referred to as the "general allowance" in this appendix.

and accounting guidance require that support for these adjustments be well documented.

Calculation of the General Allowance

In calculating the general allowance, loans are grouped into pools based on similar characteristics—risk classification being a primary factor—and collectively evaluated for impairment. The three banks we spoke with generate expected loss factors for each loan pool by estimating such factors as the probability of default, loss given default, and expected exposure at default. The three banks use internal and external data to estimate the probability of default and loss given default components. FRB officials told us that banks tend to use external data to calculate the probability of default and internal data to calculate the loss given default. The practices of the three banks in our study for the most part conformed to this view. The three banks primarily used internal data to calculate the loss given default, sometimes validated by looking at external data or supplemented with external data, and they primarily used external data sources to calculate the probability of default.

With respect to the probability of default component, the banks weighted external sources differently and used different time periods of analysis. Officials at the three banks told us that they relied on external sources; however, officials at one bank told us that they also internally adjusted the data in their calculation.

The length of the historical loss experience under analysis for the banks we interviewed varied among the loss given default components of the loan loss allowance calculation. The three banks we spoke with used an average of 16 years worth of data for the loss given default component.

Calculation of the Specific Allowance

In their specific allowance calculation, the three banks told us that they calculate loan loss allowance for impaired loans that are larger than a specific dollar amount on an individual basis. Among the banks with whom we spoke, this amount ranged from hundreds of thousands of dollars to millions of dollars. This calculation follows the guidance in SFAS 114. For individual impaired loans, banks typically use the present value of discounted cash flows. One bank told us that expected loss factors based on an assessment of the loans' loss potential are determined by consultation between loan officers and members of the risk management group. The discounted expected future cash flows are generated using expected loss factors, the remaining number of months that the loan is estimated to be nonperforming, the monthly interest rate when the obligation became nonperforming, and the gross principal balance when

the loan became nonperforming. The three banks periodically update their analysis of expected loss factors. A bank regulator told us that in the SFAS 114 calculation, banks may develop best-, base-, and worst-case scenarios in order to make their best estimate.

The three banks pool loans that are for less than the aforementioned dollar amount threshold and estimate losses for the loan pools. The calculation follows guidance in SFAS 5. Two of the banks we spoke with estimate the loss factors used in this calculation based on internal statistical studies of historical loss experience.

Review of the Loan Loss Allowance

The three banks we spoke with review their loan loss allowance at least quarterly, as part of the quarterly financial disclosure statements required by the Securities and Exchange Commission. However, the banks told us that they review large impaired loans monthly but make allowance decisions quarterly. The risk management groups within the three banks have the responsibility for estimating and formulating the allowance parameters and establishing the loan loss allowance. The recommendations and the basis of their formulation are reviewed by senior management, whose conclusions as to the appropriateness of the loan loss allowance, as well as the supporting analysis, are then reviewed quarterly by the bank's board of directors.

Interagency Country Risk Assessment System

Following enactment of the Federal Credit Reform Act in 1990, the Interagency Country Risk Assessment System (ICRAS)—a working group of executive branch agencies engaged in international credit activities—was formed to provide uniformity to the process for evaluating country risk and estimating the program costs. The Export-Import Bank (Ex-Im Bank) uses ICRAS ratings in determining the program costs of its sovereign financing and as a factor in its own rating process for its nonsovereign, or private, financing. The determination of expected loss rates under the ICRAS system has two components: (1) the assignment of risk ratings for particular borrowers or transactions and (2) the determination of loss rates for each risk category. Both Ex-Im Bank and the Office of Management and Budget (OMB) play key roles in the ICRAS process—OMB chairs ICRAS, and Ex-Im Bank provides country risk assessments and risk rating recommendations, which are then distributed to, and agreed on, by all the ICRAS agencies. OMB is then responsible for determining the expected loss rates associated with each ICRAS risk rating and maturity level.

Overview of the ICRAS Framework

ICRAS was formed to satisfy the requirement of the Federal Credit Reform Act of 1990 that common standards for country risk assessments be established for all U.S. government agencies and programs providing cross-border loans, guarantees, or insurance. OMB chairs ICRAS,¹ Ex-Im Bank serves as the secretariat, and several other agencies that undertake foreign lending serve as contributing members. Economists with Ex-Im Bank draft country papers that examine economic, political, and institutional variables. These papers present preliminary ratings on the creditworthiness of sovereign and nonsovereign borrowers in a country. These papers are sent to OMB, which distributes them to other ICRAS agencies for comment. Occasionally, agencies make major written comments indicating disagreement with an Ex-Im Bank–recommended rating. If the agency and Ex-Im Bank continue to disagree after discussion, OMB schedules a meeting of all ICRAS representatives to debate the unresolved issue(s). If there is no disagreement on its contents, or when agreement has been reached, the recommendations of a country paper

¹The ICRAS working group is chaired by OMB and includes representatives from the cross-border financing agencies, including Ex-Im Bank, the Departments of Agriculture and Transportation, the Overseas Private Investment Corporation, the Agency for International Development, and the Defense Security Assistance Administration. Other interested government organizations, including the Departments of Treasury, State, and Commerce; the Federal Reserve; the Council of Economic Advisors; and the National Security Council are also represented.

become binding when OMB puts into effect the recommendations of a “group” of country papers. This occurs twice each year.

Based on the results of this interagency process, OMB publishes two risk ratings for each country—a sovereign rating and a nonsovereign, or private, rating. Each sovereign borrower or guarantor is rated on an 11-category scale, ranging from A through F- (or their numerical counterparts, categories 1-11). Category 1 (or A) is the most creditworthy and category 11 (or F-) is the least creditworthy. According to Ex-Im Bank, four categories, A through C-, are considered to be roughly equivalent to creditworthy private bond ratings. The bottom three categories, F through F-, are used for countries that are insolvent or unwilling to make payments. Categories in-between represent various degrees of repayment difficulties. These ratings must be used in calculating the risk subsidy charged to each agency’s budget when it undertakes a foreign transaction. Each agency is free to set its own policies with respect to fees for different risk categories and cover policy (which specifies the risk levels at which it will undertake new business).

Under credit reform, OMB is responsible for determining the expected loss rates associated with each ICRAS risk rating and maturity level. OMB provides updated expected loss rates to the ICRAS agencies for them to use each year in preparing budget submissions, calculating reestimates, and allocating subsidy costs during the fiscal year.

Country Risk Assessments

In terms of extending export credits, country risks represent risks that threaten the repayment of obligations, apart from the financial viability of the transaction. In general terms, the degree of risk is measured as the product of the probability of payment delays and the probability of subsequent nonrecovery. A payment delay is any failure to make payments of principal or interest on original contract terms. Nonrecovery occurs in the event of default or debt forgiveness or when there are recurring or extended arrears.

Sovereign transactions are those that carry the full faith and credit of the central government receiving the export credit. These would typically include transactions guaranteed by the Central Bank, Treasury, or Ministry of Finance. On a country-by-country basis, other institutions may also be designated as sovereign institutions, acting on behalf of the state. According to ICRAS documents, the ability of a country to service its foreign debt depends on the following major factors: foreign debt service

burden, the government's ability to acquire foreign exchange to repay foreign obligations, macroeconomic environment, and political or social constraints. In addition to indicators reflecting those factors, ICRAS sovereign ratings are also based on ratings of private rating agencies and a group of Organization for Economic Cooperation and Development member countries, as well as information on a country's payment arrears history with the United States and other foreign creditors.

ICRAS ratings for private transactions in a country are based on qualitative and quantitative assessments of the depth of private sector business activity in a country and the strength of private sector institutions. In addition to factors related to vulnerability to foreign exchange crises, the ratings focus on a country's banking system, legal system, foreign exchange availability, business climate, and political stability. They can be either higher or lower than ICRAS sovereign ratings.

Credit Reform Budgeting

The Federal Credit Reform Act of 1990 required that budget authority to cover the cost to the government of new loans and loan guarantees (or modifications to existing credits) be provided before the credits are made. Credit reform requirements specified a net present value cost approach using estimates for future loan repayments and defaults as elements of the cost to be recorded in the budget. This permits policy makers to compare the costs of credit programs with each other and with noncredit programs in making budget decisions.

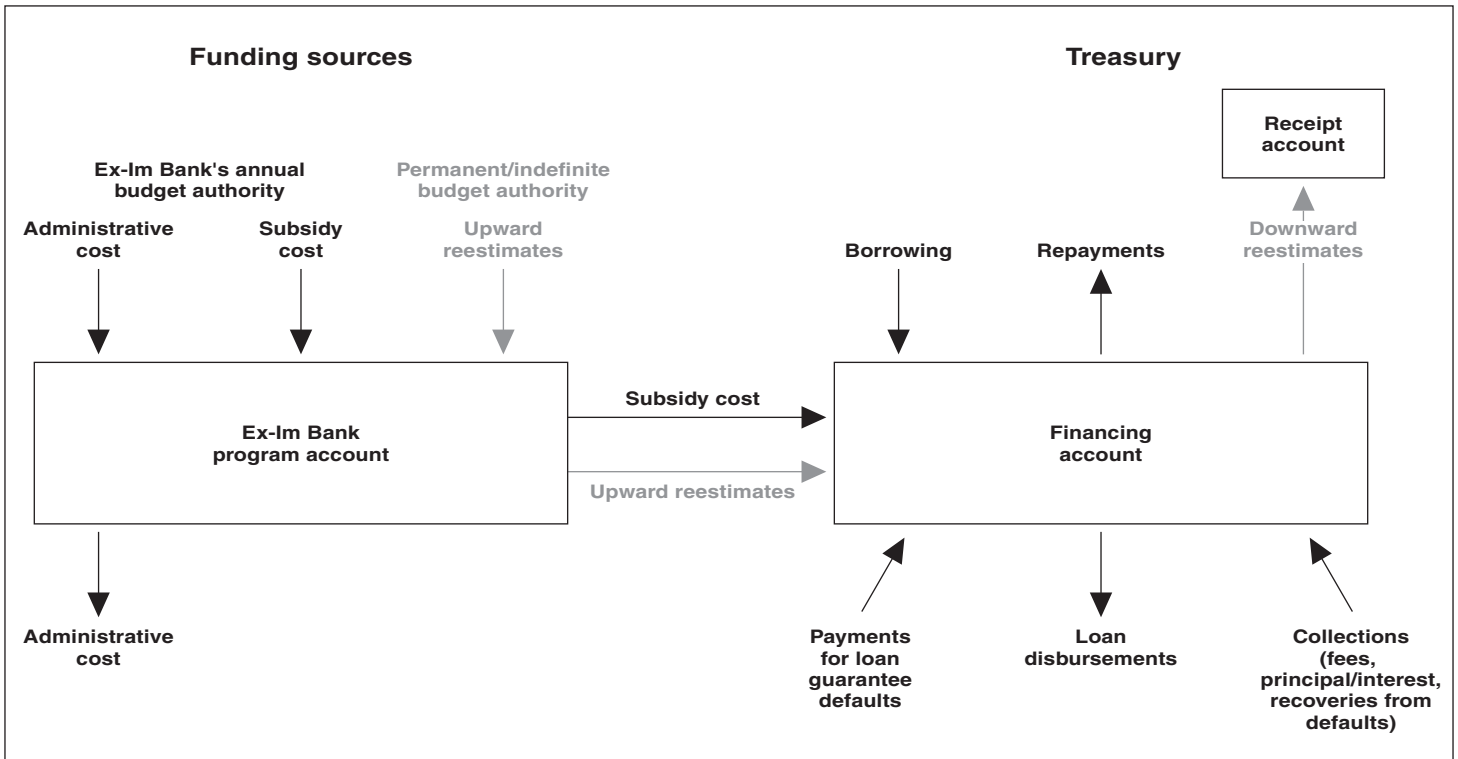
The credit reform act defines the subsidy cost of direct loans as the present value of disbursements—over the loan’s life—by the government (loan disbursements and other payments) minus estimated payments to the government (repayments of principal, payments of interest, other recoveries, and other payments). 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).

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.)

The Federal Credit Reform Act of 1990 set up a special budget accounting system to record the budget information necessary to implement credit reform. It provides for three types of accounts to handle credit transactions. The program and financing accounts are used by credit obligations made since 1991. The program account receives appropriations for administrative and subsidy costs of a credit activity and is included in budget totals. When a direct loan or a loan guarantee 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 loans or loan guarantees over their

lives.¹ It finances loan disbursements and the payments for loan guarantee defaults with (1) the subsidy cost payment from the program account, (2) loans from the Treasury, and (3) collections received by the government. Figure 8 diagrams this cash flow.

Figure 8: Program and Finance Account Budgeting for Ex-Im Bank under Credit Reform



Source: GAO analysis of credit reform guidance.

Each year, as part of the President’s budget, agencies prepare estimates of the expected subsidy costs of new lending activity for the coming year. Agencies are also required to reestimate this cost annually. The Office of Management and Budget (OMB) has oversight responsibility for federal

¹Nonbudgetary 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.

credit program compliance with credit reform act requirements and also has responsibility for approving subsidy estimates and reestimates. In addition, for international credits extended by U.S. agencies, OMB provides agencies with specific guidance, including estimated defaults and recoveries by risk rating category, to be used in determining expected losses for financing activities.

All credit programs automatically receive any additional budget authority that may be needed to fund reestimates. Thus, for discretionary programs, original subsidy cost estimates receive different budget treatment than subsidy cost reestimates.² The original estimated subsidy cost must be appropriated as part of the annual appropriation process. However, upward reestimates of subsidy costs are financed from permanent indefinite budget authority and do not have to be appropriated in the annual appropriations process.³

²Discretionary programs are those controlled through the annual appropriations process.

³Permanent budget authority is available as the result of previously enacted legislation and does not require new legislation for the current year. Indefinite budget authority is budget authority of an unspecified amount.

Technical Description of OMB Model for Estimating Expected Loss of U.S. International Credit Activities

The Office of Management and Budget (OMB) determines expected losses for international credit activities¹ through (1) a complex model that includes two estimates of default probabilities by ratings category and a rule for combining them and (2) an assumption about how much of the value of defaulted credits will be recovered. The default rate estimates use a statistical concept from finance literature that OMB terms “distance to default.” The first estimated relationship—the spread-default relationship—is between interest rate spreads on international bonds and historical default rates of corporate debt. The second estimated relationship—the ratings-default relationship—is between ratings on corporate debt and the historical default rates of that debt. Historical corporate default data are used in estimating both relationships. The model is structured so that the overall estimates of default for different ratings and maturities would be expected to be close to the underlying corporate default rates used. They will differ from the underlying historical default rates when interest rate spreads are higher or lower than their average over the historical period of the data used in the analysis. In addition, available information on the model suggests that there may be certain technical biases in the model’s forecasts.

Distance to Default

OMB’s modeling approach uses a mathematical concept called “distance to default,” a concept used in some finance models, which is a statistical representation of the safety of a credit. The statistical variable has an inverse relationship with default probability—the larger the distance to default, the smaller the probability of default. OMB’s model, in common with many models in academic finance journals, assumes that changes in this variable follow a normal statistical distribution, with a mean of zero, and that changes occur randomly with each time period. Using the assumption of a normal distribution, and given an estimated standard deviation, each distance to default implies a time pattern of annual default rates. Distance to default is estimated by finding the default cost implied by each distance to default and matching that cost to the prices at which bonds of a given rating are trading.

Two forms of distance to default are used in the modeling effort. “Actual distance to default” relates to the actual probabilities of default. “Risk-

¹This description is based on our analysis of information that OMB provided about its current methodology as well as discussions with key OMB officials. We did not review any formal documentation of the methodology.

neutral distance to default,” which is related to interest rate spreads, refers to default rates (and recovery rates on defaulted credits) that are consistent with observed interest rates, assuming that interest rate spreads are attributed only to expected default costs. Finance theory attributes the difference between actual and risk-neutral distance to default to components of the interest rate beyond those that are related purely to default. For example, if lenders are risk averse, rather than risk neutral, they may need to be compensated with more than \$1 of extra interest to bear a risk of loss that may, on average, be \$1, but that may in some cases be substantially more.

Given OMB’s estimated standard deviation of 3.79,² a default rate of 25 percent for a 1-year bond implies an actual distance to default of 2.57. This can be calculated from a standard normal distribution table. Thus, for a given maturity, risk-free rate of interest, and standard deviation, knowledge of any of the following factors—spread, risk-neutral distance to default, or time pattern of default probabilities—allows the calculation of the other two factors.

Spread-Default Relationship

The spread-default relationship is an estimated relationship between interest rate spreads on international bonds and historical default rates of corporate debt, by rating and maturity. The relationship is structured so that its estimated default rates will be close to the historical default rates used when observed spreads are near their average levels and higher (or lower) than the historical default rates when spreads are higher (or lower) than average.

The spread-default relationship is estimated with a regression that uses monthly observations on about 400 sovereign bonds and historical default rates on corporate bonds from Moody’s Investors Service. The dependent variable (the spread-related variable) is the risk-neutral distance to default, which is calculated as a function of the monthly interest rate spreads on the bonds in the sample. The independent variables are (1) the actual distance to default in historical data (the default-related variable), which is calculated for each rating and maturity as a function of the historical corporate default rates used, and (2) the remaining maturity of each bond.

²This is the standard deviation for the first year of the forecast. OMB’s methodology for estimating the standard deviation is discussed later in this appendix.

Appendix VI
Technical Description of OMB Model for
Estimating Expected Loss of U.S.
International Credit Activities

The data used for the spread-related variable in the regression, the risk-neutral distance to default, are Bloomberg's monthly observations on foreign sovereign bonds, denominated in U.S. dollars and issued in 1987 or later.³ The spread on each monthly observation was calculated and transformed into an implied distance to default to be predicted by the regression.

The key independent variable, based on a security's rating, was calculated as follows: ratings from Moody's and two other private ratings firms, Standard & Poor's and Fitch Ratings, were linked to each monthly observation. The average rating⁴ was calculated and used to link each observation to an independent variable, the actual distance to default, calculated as a function of historical default rates obtained from Moody's. The remaining maturity of each bond, the second independent variable, was also taken from the Bloomberg data for each monthly observation.

This spread-related variable, risk-neutral distance to default, is calculated by taking the spread on a bond of a given maturity and converting it to a risk-neutral expected loss. Specifically, the calculation determines the difference between the present value of the payments of the bond, assuming that the bond does not default, and the market price of the bond implied by the bond's yield. The risk-neutral expected loss is turned into a risk-neutral expected default by solving an equation that relates expected loss to expected default rate. This equation calculates the present value of the losses implied by a series of default probabilities, where defaults are converted into a series of dollar losses by multiplying by a constant loss

³These bonds constitute the universe of foreign sovereign bonds from Bloomberg from 1987 or later. According to OMB, observations where the difference between the price bid and the price asked for the bond (the bid-ask spread) of more than 10 basis points (for fiscal year 2003) or 40 basis points (for fiscal year 2004) were eliminated because these observations may have been for illiquid instruments. This resulted in removing about half of the observations because of large differences between the bid and asked price for the bonds. This left 2,184 monthly observations.

⁴Rating categories are those of the nationally recognized statistical rating organizations, which are developed by the private sector and are widely available in financial reporting. OMB translates these ratings organizations' ratings categories into ICRAS categories.

Appendix VI
Technical Description of OMB Model for
Estimating Expected Loss of U.S.
International Credit Activities

rate⁵ and the losses are discounted by the prevailing risk-free interest rate. Thus, a given standard deviation and a mean “distance to default” will generate a time pattern of default rates. This mean is chosen so that the present value of the implied dollar losses equals the risk-neutral expected loss.

The default-related independent variable, actual distance to default, is calculated from Moody’s data on corporate defaults. Two Moody’s tables showing cumulative defaults by risk rating category and maturity were used, one for 1920-1999, and another for 1983-1999. The tables were combined into one table with a default rate for each combination, using the larger of the two default rates for each rating/maturity category. Missing table entries, or reversals (such as a higher-rated category having a higher default rate than the next lowest category) were handled by averaging table entries. A calculation similar to that for the dependent variable is made, finding a mean distance to default for each Moody’s rating category that will generate a time pattern of defaults similar to that in the Moody’s tables.

Estimation of the regression produces the following parameters:

Risk-neutral distance to default = $-0.26 - 0.0074 * \text{maturity} + 0.73 * \text{actual}$
distance to default
(Spread-related variable) (Default-related variable)

The above relationship is then inverted to produce a forecast of the default-related variable, based on the value of the spread-related variable, resulting in the following equation:

Actual distance to default = $(0.26/0.73) + (0.0074/0.73) * \text{maturity} +$
 $(1/0.73) * \text{risk-neutral distance to default}$

An autoregressive parameter is estimated from the residuals of the above regression. This parameter is used to estimate a set of weights for combining distance to default estimates. For every observed month, each bond has a spread and maturity—hence, a predicted actual distance to default. The predicted actual distance to default for each bond/month is

⁵OMB used an “investor loss rate” for this calculation, which OMB said differed from the U.S. government loss rates (or recovery rates) it used to transform its final estimates of default rates into expected loss rates. According to OMB, the investor loss rate it used was based on the market prices of F- (F double minus) credits.

averaged to produce an estimated distance to default for that bond. The weights, derived from the autoregressive parameter, are used to construct the weighted average. The weights are calculated so that more recent months have more weight when taking the average.

The actual distance to default predicted by this regression depends on the interest spread on each bond relative to the average spread for its rating category in the Bloomberg data used in the analysis. If the spread on a particular bond is larger than the historical average spread in the database, then the predicted actual distance to default will be smaller than the historical average.⁶ This would imply that the projected defaults will be larger than the historical average, because projected defaults move inversely with distance to default. Because this part of the OMB model bases default risk on a mixture of both current spreads and past spreads, default risk estimates will change more slowly than will the market assessment of risk, as reflected in changes in interest rate spreads.

Rating-Default Relationship

The relationship between ratings on corporate debt and the historical default rates of that debt is estimated using the Moody's corporate default tables described above. The relationship is structured so that it predicts cumulative default rates by ratings category and maturity that are almost exactly the same as those in the combined Moody's tables. As with the spread-default relationship, it is assumed that distance to default is a normally distributed variable whose mean and standard deviation corresponds to a pattern of defaults over time. A mean for each rating category is estimated, along with a common standard deviation for all rating categories, that minimizes the sum of squared errors between the cumulative default rates predicted by the means and standard deviation and the actual data contained in the Moody's corporate default database. A different standard deviation is estimated for the first year than for subsequent years. This allows the actual distance to default for any given bond in a rating category to differ from the average distance to default for all bonds within a rating category, in addition to allowing a bond's distance to default to change over time.

⁶In regression analysis, when the independent variables are at their mean values, the dependent variable will be at its mean value. Conversely, if a bond is near the average of the spreads observed in the data, then the predicted actual distance to default will be close to the average observed in the Moody's data.

Aggregating the Estimates

The estimated actual distances to default for each bond from the spread-default relationship are averaged together so that there is one estimated distance to default for each rating category. The estimated mean distance to default for each rating category obtained from the spread data is then combined with the estimated mean distance to default from the rating data. A Bayesian (type of statistical) weighting scheme is used, giving more weight to the spread-default relationship. According to OMB, weights vary by rating category, but generally a weight of about two-thirds is given to the spread-default relationship and a weight of about one-third is given to the rating-default relationship.

The result is a single actual distance to default number for each rating category. This average value, combined with the common estimated standard deviation for all ratings, is used to estimate annual default rates for each rating category. An illustration of how spread changes can affect OMB's final default estimates is shown in figure 9.

Figure 9: Illustration of How Spread Changes Can Affect the Final Expected Default Estimates

		Change in spread	Increase in expected default probability
1-year bond	Example 1:	From 5% to 6% (1 percentage point)	<36 basis points
	Example 2:	From 10% to 11% (1 percentage point)	<57 basis points

Two hypothetical examples, representing two data points and based on several assumptions, illustrate how spreads affect expected defaults in the OMB model. First, for a particular 1-year bond, according to the spread-default equation, a change in the spread of 1 percentage point (or 100 basis points) from 5 percent to 6 percent would increase the default probability estimated from the spread-default relationship from 1.4 percent to 1.9 percent. The actual effect in that estimation would be smaller, depending on how much weight is given to recent spread observations compared with earlier ones. Averaging this effect with the outcome of the ratings-default relationship, which is fixed, reduces the impact by about one-third. Thus, depending on specific model specifications, this 1 percentage point increase in the spread would be expected to increase expected default, for that one observation, by something less than 36 basis points (assuming that the rating itself has not changed).

The nonlinear form of the model causes the change in default probabilities for a given change in spreads to vary depending on the levels of the initial spreads and default probabilities. A similar exercise for a 1-percentage-point increase in the interest rate spread from 10 to 11 percent, for one data point, yields an increase in the default probability for that data point of some amount less than 57 basis points.

Source: GAO.

Recovery Rates

To derive expected loss rates for each risk and maturity category from the expected default rates generated by the model, OMB uses an assumption about the percentage of defaulted credits that will be recovered. According to OMB, a common recovery rate of 17 percent was used for fiscal year 2003, a common recovery rate of 12 percent was used for fiscal year 2004, and a common recovery rate of 9 percent was used for fiscal year 2005.

Observations on Potential Technical Limitations of the Model

Available information on the model suggests several potential technical limitations, including the following:

- The independent variable in the regression, actual distance to default, may be measured with error. The model assumes that a particular observation may have a distance to default that is different from the average implied by the rating category. Additionally, the distance to default implied by the rating category does not change over time, while risk may change over time, even within a rating category. Measurement error in an independent variable generally results in a downward bias in the coefficient for that variable.⁷ When the estimated relationship is reversed so that spreads are used to predict default rates, as in the OMB model, this bias will affect the projected default rates.
- As noted, the actual distance to default implied by a rating category remains constant over time, while the risk neutral distance to default, implied by the interest rate spreads on bonds, changes over time. Thus, the regression uses the relationship between spreads and defaults across rating categories to produce an estimated coefficient. This coefficient is then used to estimate default probabilities for a given rating category, which change over time. The supporting documentation for the model does not demonstrate a correspondence between changes in default probability over time within a rating category and changes in default probability across rating categories.
- A regression is designed to predict the dependent variable in such a way that the squared errors in the prediction of the dependent variable are

⁷See Peter Kennedy, *A Guide to Econometrics*, 4th ed. (Cambridge, MA: The MIT Press, 1998), 140-142 and 148. In the case of one independent variable, measurement error always leads to a downward bias. With more than one independent variable, the analysis more complicated. See M. Levi, "Errors in Variables Bias in the Presence of Correctly Measured Variables," *Econometrica* vol. 41, #5 (September 1973).

minimized. Using the regression to predict the risk-neutral distance to default and then inverting the estimated relationship to predict actual distance to default may result in greater errors in the projected distances to default than estimating the regression with actual distance to default as the dependent variable.

- The relationships between risk-neutral distance to default and the two independent variables—actual distance to default and maturity—may not be linear. If this is the case, then spreads might provide an adequate forecast of default probabilities near the means of the Bloomberg data set used in the regression but not for values of spreads that depart from the mean spread in the regression data. This issue could be important for the reliability of estimates for credits with ratings several categories below the average in the Bloomberg data. With sufficient data, the potential for quantitatively important nonlinearities can be assessed by estimating alternative specifications, such as including the squares and cross-products of the independent variables.

Comparison of OMB Default Probabilities for Fiscal Years 2004 and 2005 with Corporate Default Rates Used in OMB Model

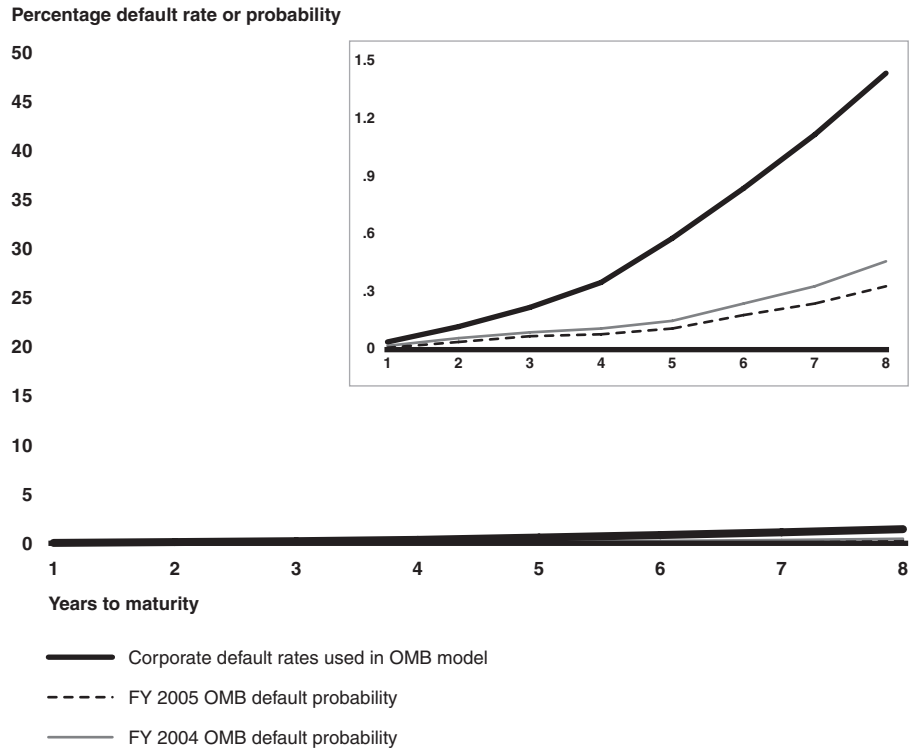
In fiscal year 2003, the Office of Management and Budget (OMB) introduced its current methodology for estimating the expected loss rates of international financing provided by U.S. credit agencies. This methodology is used to estimate loss rates for 8 of the 11 risk-rating categories established by the Interagency Country Risk Assessment System (ICRAS).

OMB's methodology includes two components that are used to estimate default probabilities by ICRAS rating category. One component uses default rates for corporate bonds published in 2000 by a nationally recognized private rating agency, Moody's Investors Service, to calculate the probability that ICRAS agency borrowers will default. It estimates default probabilities for each ICRAS rating category by using one or more underlying Moody's risk category. The other component uses data on interest rate differences, or spreads, to vertically adjust the Moody's corporate default rates by rating category when interest rate spreads are unusually high or low relative to average spreads in that rating category. Once it has determined default probabilities by ICRAS rating category, the methodology applies a recovery rate assumption to derive expected loss rates by rating category.

We compared the default probabilities underlying OMB's fiscal year 2004 and 2005 expected loss rates for ICRAS categories 1 through 8 with the Moody's corporate default data that OMB used in estimating these rates. We determined that the OMB default probabilities were lower for each ICRAS rating category in both fiscal years than were the underlying Moody's default rates. Figures 10 through 17 compare OMB's default probabilities for fiscal years 2004 and 2005 in a given ICRAS rating category with the Moody's corporate default rates used in OMB's model that correspond to each rating category. The figures show that the OMB default rates were generally similar in fiscal years 2004 and 2005, with somewhat lower rates in 2005 for certain ICRAS categories.

Appendix VII
Comparison of OMB Default Probabilities for
Fiscal Years 2004 and 2005 with Corporate
Default Rates Used in OMB Model

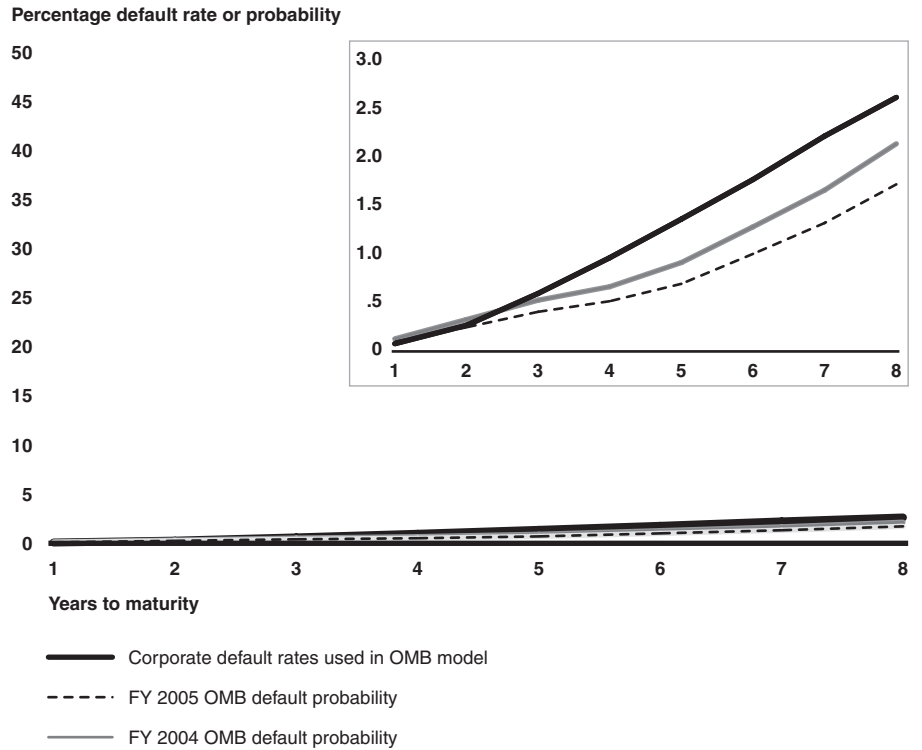
Figure 10: Comparison of OMB Default Probabilities for Fiscal Years 2004 and 2005 for ICRAS Category 1 with Moody's Corporate Default Rates Used in OMB Model



Source: GAO analysis of OMB data.

Appendix VII
Comparison of OMB Default Probabilities for
Fiscal Years 2004 and 2005 with Corporate
Default Rates Used in OMB Model

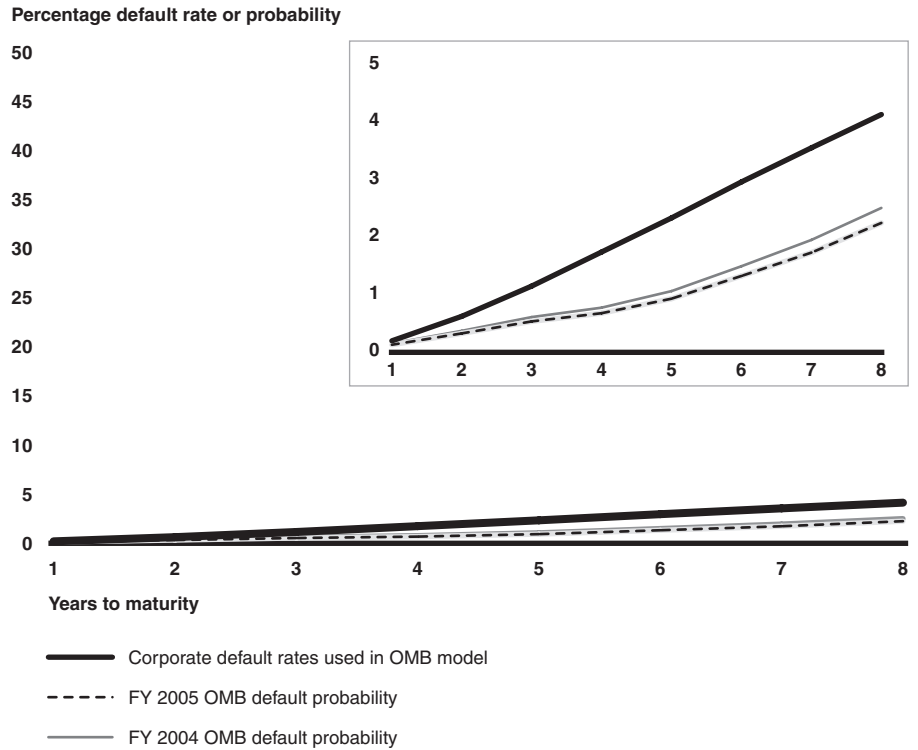
Figure 11: Comparison of OMB Default Probabilities for Fiscal Years 2004 and 2005 for ICRAS Category 2 with Moody's Corporate Default Rates Used in OMB Model



Source: GAO analysis of OMB data.

Appendix VII
Comparison of OMB Default Probabilities for
Fiscal Years 2004 and 2005 with Corporate
Default Rates Used in OMB Model

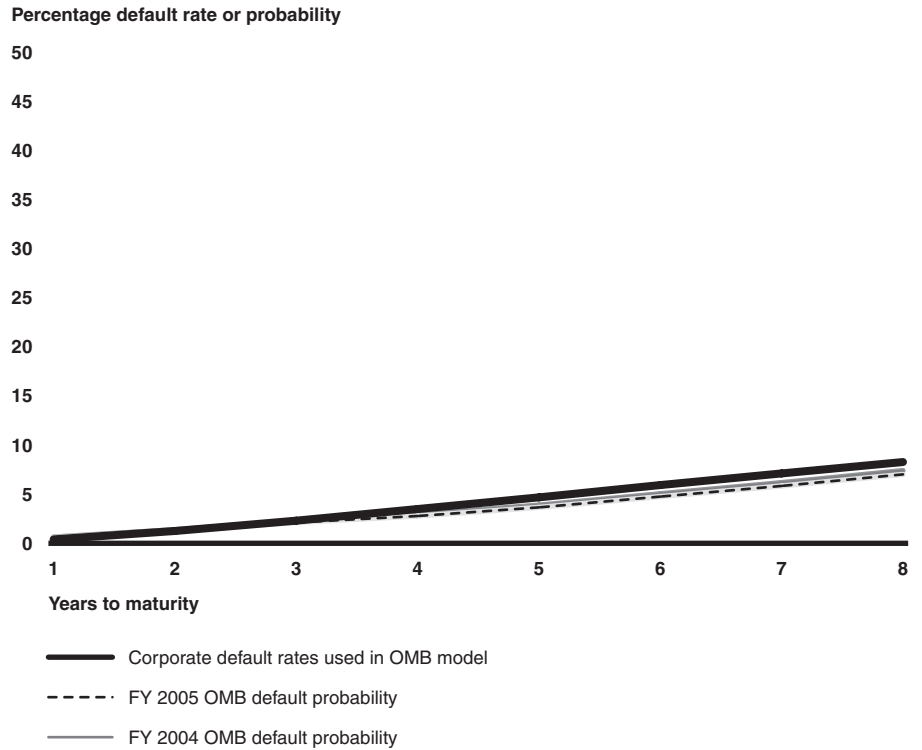
Figure 12: Comparison of OMB Default Probabilities for Fiscal Years 2004 and 2005 for ICRAS Category 3 with Moody's Corporate Default Rates Used in OMB Model



Source: GAO analysis of OMB data.

Appendix VII
Comparison of OMB Default Probabilities for
Fiscal Years 2004 and 2005 with Corporate
Default Rates Used in OMB Model

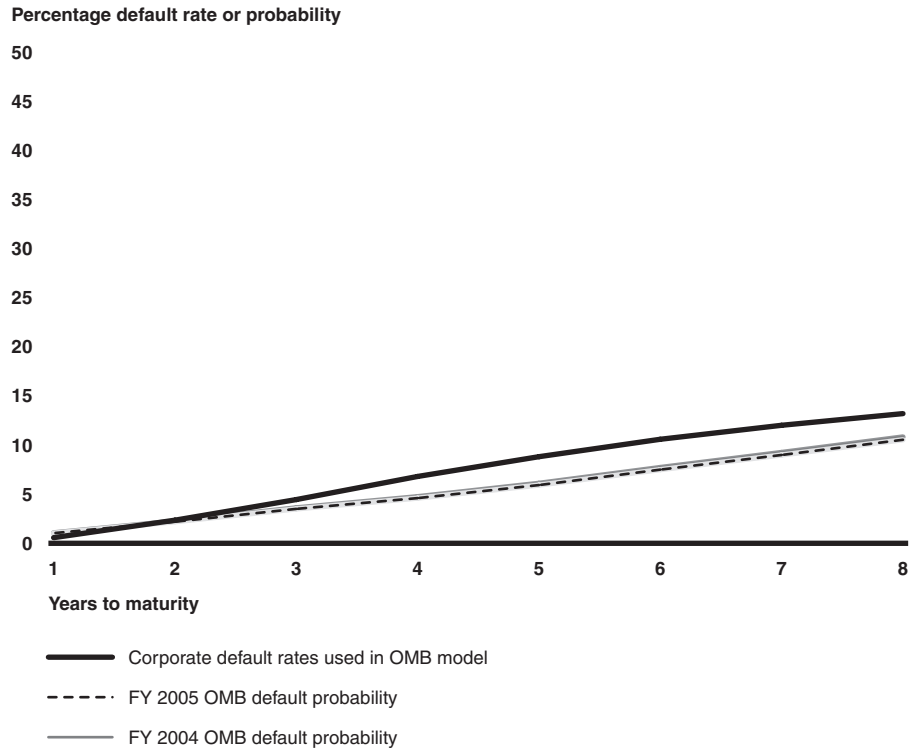
Figure 13: Comparison of OMB Default Probabilities for Fiscal Years 2004 and 2005 for ICRAS Category 4 with Moody's Corporate Default Rates Used in OMB Model



Source: GAO analysis of OMB data.

Appendix VII
Comparison of OMB Default Probabilities for
Fiscal Years 2004 and 2005 with Corporate
Default Rates Used in OMB Model

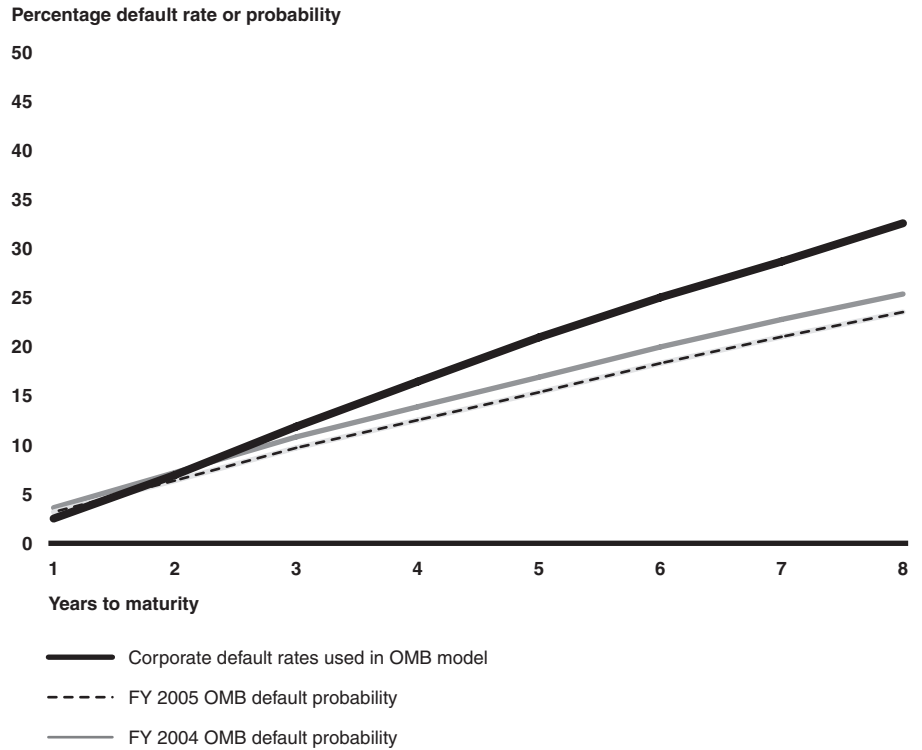
Figure 14: Comparison of OMB Default Probabilities for Fiscal Years 2004 and 2005 for ICRAS Category 5 with Moody's Corporate Default Rates Used in OMB Model



Source: GAO analysis of OMB data.

Appendix VII
Comparison of OMB Default Probabilities for
Fiscal Years 2004 and 2005 with Corporate
Default Rates Used in OMB Model

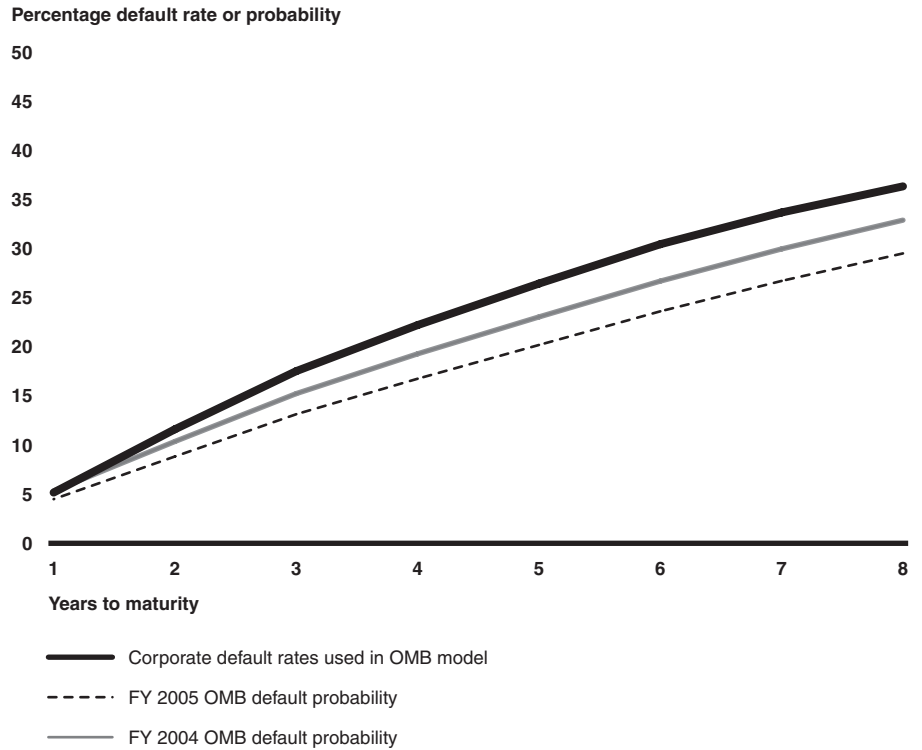
Figure 15: Comparison of OMB Default Probabilities for Fiscal Years 2004 and 2005 for ICRAS Category 6 with Moody's Corporate Default Rates Used in OMB Model



Source: GAO analysis of OMB data.

Appendix VII
Comparison of OMB Default Probabilities for
Fiscal Years 2004 and 2005 with Corporate
Default Rates Used in OMB Model

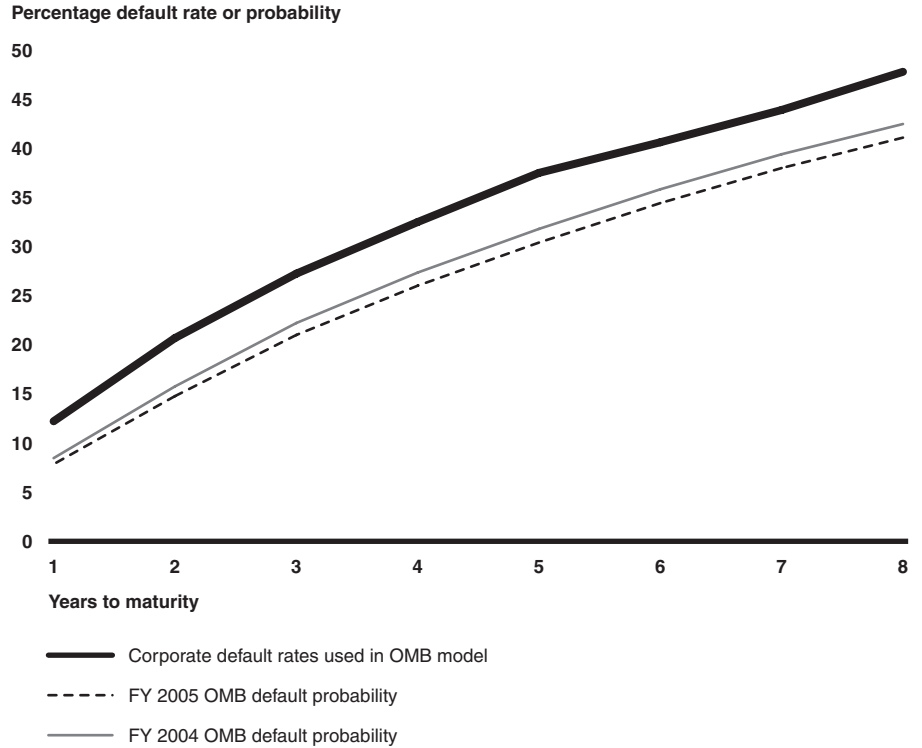
Figure 16: Comparison of OMB Default Probabilities for Fiscal Years 2004 and 2005 for ICRAS Category 7 with Moody's Corporate Default Rates Used in OMB Model



Source: GAO analysis of OMB data.

Appendix VII
Comparison of OMB Default Probabilities for
Fiscal Years 2004 and 2005 with Corporate
Default Rates Used in OMB Model

Figure 17: Comparison of OMB Default Probabilities for Fiscal Years 2004 and 2005 for ICRAS Category 8 with Moody's Corporate Default Rates Used in OMB Model



Source: GAO analysis of OMB data.

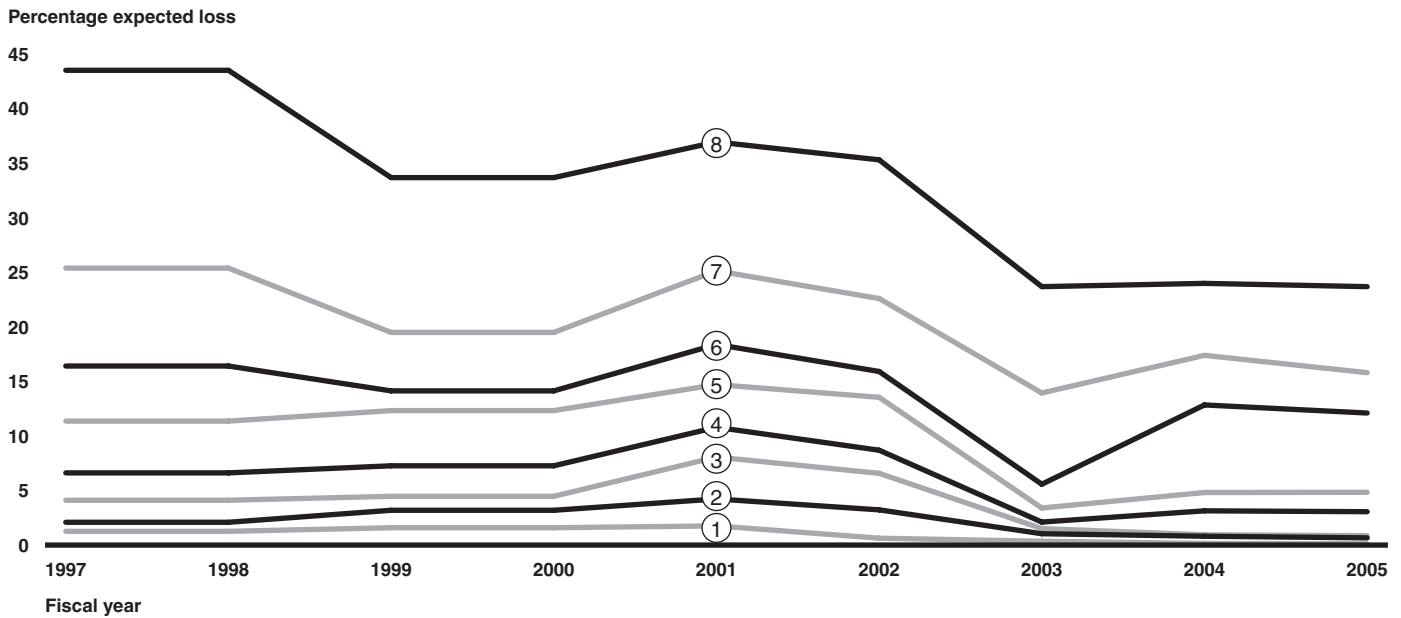
Trends in Interagency Country Risk Assessment System Expected Loss Rates

Through the Interagency Country Risk Assessment System (ICRAS), the Office of Management and Budget (OMB) annually provides expected loss rates to ICRAS agencies to use in preparing their budget submissions and subsidy cost estimates. The expected loss rates, issued for each of the 11 ICRAS risk categories, have changed in percentage terms over time. Figure 18 shows the trends in expected loss rates for ICRAS categories 1 through 8 for credits of 8-year maturity, expressed in present value terms, for fiscal years 1997 through 2005.¹

¹During the period analyzed, the format in which OMB presented expected loss rates varied. For fiscal years 1997 through 2002, OMB presented risk premiums for ICRAS categories 1 through 8, which were grouped into several maturity bands. From these premiums, an expected loss rate could be derived. Beginning in fiscal year 2003, OMB changed its presentation into expected loss rates for ICRAS categories 1 through 8, across different maturities. To show trends over time, we converted the risk premiums into expected loss rates.

**Appendix VIII
Trends in Interagency Country Risk
Assessment System Expected Loss Rates**

Figure 18: Trends in ICRAS Expected Loss Rates for 8-Year Maturity Credits, in Present Value Terms, Fiscal Years 1997-2005



ICRAS score

Source: GAO analysis of OMB expected loss rates.

Note: The present values were calculated for credits of 8-year maturity using OMB's credit subsidy calculator based on a discount rate of 5 percent in each fiscal year.

Comments from the Office of Management and Budget



EXECUTIVE OFFICE OF THE PRESIDENT
OFFICE OF MANAGEMENT AND BUDGET
WASHINGTON, D.C. 20503
SEP 21 2004

Mr. Loren Yager
Director
International Affairs and Trade
Government Accountability Office
Washington, DC 20548

Dear Mr. Yager:

Thank you for the opportunity to comment on your draft report addressing OMB's method for calculating the expected losses of international credits and its impact on the Export-Import Bank.

We appreciate the effort GAO has put into the report and that GAO highlights the reasons for our change in method. Our previous method reflected the best information and theory available at the time of its implementation, but more recent theoretical and empirical evidence suggests that the previous method overstated expected losses. Our new method represents a substantial advance, though we continue to look for theoretical advances and new empirical evidence that may improve the methodology. GAO's report will add to the body of information that will help us to refine the methodology further.

We are, however, concerned by the draft report's statement that the method was not transparent. In this regard, the draft report itself notes that GAO could "generally describe and assess key aspects of the methodology," and the draft report includes a technical appendix that describes our methodology (with calculations of how its estimates respond to changes in interest rates). We readily acknowledge that the model's estimation process is complex, but this complexity was necessary to produce estimates that are as accurate as possible. Complexity when necessary for accuracy should not be deemed to reflect a lack of transparency. The best way to produce accurate estimates was to retain the most compelling feature of our previous method (which was its use of private market prices as a measure of risk) while relating our default estimates to a long-term historical average benchmark.

OMB will continue to press agencies to collect additional data on the performance of their credits. We will also update our corporate default data, and re-estimate the model, addressing the comments made in the draft report's technical appendix. Further, we will rewrite our technical description of the model to include the results of the updated estimation and all the information we included in our responses to GAO's technical questions during the course of our consultation, and provide that description to affected agencies and Congress. We expect to update our corporate data and agency data on a regular basis.

Appendix IX
Comments from the Office of Management
and Budget

While we will continue to solicit feedback from U.S. agencies that use or are affected by ICRAS, we also plan to make the description of the model available and to seek feedback on the model from a range of academics and finance professionals outside of government.

Thank you again for the opportunity to comment on your draft report.

Sincerely,



J. D. Foster
Associate Director for Economic Policy
Office of Management and Budget

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Staff Acknowledgments

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