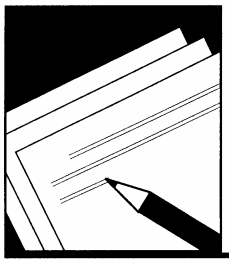
PDP/03/4



IMF Policy Discussion Paper

Issuing Government Bonds to Finance Bank Recapitalization and Restructuring: Design Factors that Affect Banks' Financial Performance

Michael Andrews

INTERNATIONAL MONETARY FUND

 PDP/03/4

IMF Policy Discussion Paper

Monetary and Financial Systems Department

Issuing Government Bonds to Finance Bank Recapitalization and Restructuring: Design Factors That Affect Banks' Financial Performance

Prepared by Michael Andrews[1]

November 2003

Abstract

Bonds issued by the government or government agencies are often used to finance bank restructuring following a systemic crisis. Many conflicting considerations affect the design of the bonds used to pay for public sector investment in bank equity or the purchase of distressed assets from banks. Some bond features can leave restructured banks facing significant risks, laying the foundation for future banking sector problems. Sovereign default makes publicly financed bank restructuring more difficult, but it is still possible to carry out if banks receive sufficient interest income to provide a margin over their cost of funds.

JEL Classification Numbers: G21, G28, H63

Keywords: bank restructuring, systemic crisis, banking crisis, bank recapitalization, bank privatization, government bonds, government debt management

Author's E-Mail Address: mandrews@imf.org

---

[1] At the time of writing, the author was Financial Sector Advisor in the IMF's Monetary and Financial Systems Department. He gratefully acknowledges helpful comments and suggestions from Luis Cortavarria, Fernando Delgado, Alessandro Giustiniani, Peter Hayward, David Hoelscher, Mats Josefsson, Tonny Lybek, Kenneth Sullivan and, the participants in an IMF Monetary and Financial Systems Department seminar who discussed an earlier version of this paper, as well as reviewers from other IMF departments.

Contents Page

I. INTRODUCTION

Bond issuance by a government, or a government agency such as a deposit insurance fund or a specially created asset management company (AMC), is used in many instances of systemic banking crises to finance bank restructuring and is also frequently used to finance the restructuring of state banks for privatization.[2] Although there are many variations in practice, bonds are issued for two generic purposes in bank restructuring:[3] to finance the government purchase of equity in banks;[4] and to finance the purchase of distressed assets from banks. The design of the bonds issued for these purposes can be a crucial determinant of the future financial performance of restructured banks, and thus an important factor in the ultimate success or failure of the restructuring efforts. Appendix I notes some of the key design features in over 40 instances of the use of bonds for bank restructuring. Table 1 summarizes the implications for banks and governments of the issues discussed in this paper.

---

[2] Dziobek and Pazarbasioglu (1997) identify bonds as a tool used in 19 of 24 banking crises. Bonds issued or guaranteed by the governments of Indonesia, Korea, and Thailand were the main instruments to finance governments' contributions to bank restructuring in the Asian crisis, and bonds have been used recently in Ecuador, Nicaragua, and Turkey.

[3] A third use of bonds—the issuance of bonds to the central bank in payment for support provided to insolvent banks—will not be addressed in this paper since it does not affect the future financial performance of restructured banks.

[4] "Equity" is used here in its broadest context. In practice, government may purchase a range of instruments that qualifies as either Tier I or Tier II capital, including common shares, preference shares (convertible or nonconvertible) or subordinated debt. See Enoch, Garcia, and Sundararajan (2002, pp. 327–33).

Table 1. Issues and Implications for Banks and Government

Issue	Banks	Government	Other Considerations
Bonds issued by a government agency	Sovereign guarantee can provide same zero risk-weighting as a government issue. Possibly greater liquidity if bond issues are part of a larger pool of generally homogeneous government debt.	Few advantages except in the rare case where a government agency has the infrastructure already in place for bond issuance, and the government itself does not.	Possibly better secondary market for government debt by having more homogeneous issues rather than some government and some government agency issues.
Direct placement of bonds with banks	Even if negotiable, special purpose bonds may be less liquid than other government debt.	Can be used even if government is unable or unwilling to access the bond market.	Central bank may provide special discount facilities for bank liquidity management.
Restrictions on tradability	Can restrict loan growth and ability to meet liquidity requirements.	May limit banks' ability to invest in risky assets. May be used to ensure banks are able to redeem subordinated debt at maturity.	Central bank may provide special discount facilities for bank liquidity management.
Below market interest rates	May provide insufficient income to ensure bank profitability.	Reduces fiscal cost.	Valuing below market rate bonds at par is inconsistent with International Accounting Standards (IAS).
Fixed or floating interest rates	Exposure to mismatch risk unless fixed rate assets can be matched with fixed rate liabilities.	Fiscal preference based on forecasts of future rates.	May be secondary market preference for fixed or floating rates.
Foreign currency issues	May be needed to close large open positions.	Government bears risk of adverse foreign exchange movements, and will require foreign currency for debt service and redemption.	Bonds indexed to a foreign currency may be used, matching the denomination of obligations to that of tax receipts.
Maturities	Prices of longer-dated bonds may be more volatile and carry higher risk premium in secondary market. May be a lack of long-term liabilities to match with long-term assets.	Longer maturities defer refinancing needs. Range of maturities avoids lumpy refinancing profiles.	Range of maturities may be desirable to establish a yield curve.

There are many issues to be addressed in systemic bank restructuring, and this paper focuses on those related to bond design. Fiscal, debt management, and other related issues, while noted to provide a broader context for the discussion of technical issues relating specifically to bank restructuring, are not fully developed in this paper. Similarly, sovereign default is discussed only in the context of bank restructuring, without a full exploration of the impact of the costs of bank restructuring on debt sustainability.[5] The principal intent is to illustrate the impact that various options for bond design may have on successful bank restructuring.[6]

Compromises are required to address specific issues and concerns, but a successful program requires that bonds placed with banks for restructuring purposes provide sufficient interest income to enable the banks to be profitable, and do not make it difficult to manage exposures to interest rate, maturity, or foreign exchange risks. In general, this will require the use of bonds with market-related terms and conditions. If a restructured bank is insufficiently profitable or has an embedded risk exposure arising from its bond holdings, the likely result will be the loss of the public funds used for recapitalization and a need for subsequent intervention and more costly restructuring.

---

[5] Sovereign default also affects other holders of government debt, including institutional investors such as pension funds and insurance companies. Dealing with losses by these investors is beyond the scope of this paper.

[6] While nontradable bonds are statistically classified as loans pursuant to the 1993 *System of National Accounts*, this paper reflects the common terminology in bank restructuring and generally refers to bonds, even when there are restrictions on marketability.

II. Context for Bond Issuance: The Use of Public Funds

Decisions on bond design are technical issues dealt with after crucial policy decisions have been made to use public funds for bank restructuring, and to finance the expense with bonds issued specially for the purpose. An examination of the costs and benefits of using public funds for bank restructuring is beyond the scope of this paper, which focuses more narrowly on the financing through borrowing of the government expense. The case for use of public funds to recapitalize and restructure banks is that the costs of such extraordinary action are less than the broad disruption in the real economy that might result from the failure of one or more systemically important banks.[7] The benefits from such expenses are difficult to quantify as they largely relate to avoiding disruptive effects, the magnitude and consequences of which are difficult to estimate.[8] However, in most cases of systemic crisis the government has generally opted for public expenditure to preserve some portion of a widely insolvent banking system to ensure that essential banking services continue to be provided to the real economy.

III. Special Purpose Bonds

Once the decision has been taken to use public funds for bank restructuring, the issue then becomes how to finance the expense. The option of government cash expenditures to purchase

[7] The case of government owned banks is somewhat different. Bond design is still crucial for the financial success of the bank, but the decision to recapitalize reflects the recognition and measurement of losses already incurred by government as owner of the bank, rather than a decision to commit government funds to cover a portion of the losses incurred by privately owned banks.

[8] Frydl and Quintyn (2000, pp. 5).

bank equity and/or distressed assets, while theoretically available, may be impractical as the macroeconomic conditions likely to exist in a banking crisis would constrain government revenues and financing sources.

There are clear advantages, such as the existence of broader and deeper secondary markets, if the financing of bank restructuring is part of a larger pool of generally homogeneous government debt. However, in a crisis the only practical solution may be direct placement of bonds with the banks being recapitalized.[9] A transition or developing country may not have an established government debt market with the requisite breadth and depth. Where such a market is established, there may be few domestic institutions able or willing to purchase the additional bonds required to finance bank recapitalization, and international interest may be limited or prohibitively expensive in the wake of a banking crisis. Issuance of treasury bills is another possible way to finance bank restructuring, but this has at least one major drawback. Government will be faced with the need for frequent refinancing of this short-term debt. Use of longer-term debt defers the refinancing needs, and provides time for some of the debt to be retired either from the proceeds of the subsequent sale of the bank equity purchased by government, or from recoveries on the bank assets purchased. Even if it is possible to meet the expense from general government revenues and financing activities, as discussed below there are reasons why it may be desirable to provide recapitalized banks with bonds rather than cash.

[9] Bonds were placed directly with banks in all cases noted in Appendix I except Ecuador 1998–2000, Egypt 1991 and Malaysia 1998–99. In Korea 1998–99, some cash was also provided to banks.

Special recapitalization bonds fall into three broad categories. The most common category consists of bonds issued by the government, but unlike a more usual government bond issuance sold to a wide range of purchasers, recapitalization bonds are placed directly with the banks to be recapitalized, usually as payment for an equity investment or to purchase distressed assets. The two other approaches involve the use of an agency, such as the deposit insurer, AMC, or bank restructuring authority, to issue the bonds and hold the government investment in banks. The bonds may be placed directly with the banks (Macedonia Bank Restructuring Agency 1994; FOBAPROA, Mexico 1995–96;) or alternatively the agency can use a bond issue to finance cash payments to banks being restructured (KAMCO, Korea 1998–99; Danamodal and Danaharta, Malaysia 1998–99). A sovereign guarantee is desirable to enhance tradability of the bonds, and may be necessary to enable the agency to successfully issue bonds. Even when the bonds are placed directly with the restructured banks, a sovereign guarantee may be desirable to provide a zero risk-weighting for the assets (KAMCO, KDIC, Korea 1998–99).[10]

A. Arguments For and Against Special Purpose Bonds

An argument in favor of bonds placed directly with the banks to be recapitalized is that this can be accomplished even without an established domestic market for long-term government debt. Direct placement can also be used if a government is unable or unwilling to access the bond markets in the period following a crisis. The potential drawback to this approach is that the

[10] Bonds that are not viewed as sovereign risk generally will carry a 100 percent risk-weighting under prudential capital rules, and thus increase banks' regulatory capital requirements relative to a portfolio of zero risk-weighted government bonds.

banks receiving payment in bonds for assets or equity may be liquidity constrained.[11] Even with solvency restored, banks may face failure if they have insufficient liquid assets to meet the demands of deposit withdrawals. Banks' ability to raise liquidity by selling bonds, even when the bonds have no trading restrictions and a rate and tenor viewed as attractive by the market, will be limited if there are not other banks with significant excess liquidity, other potential domestic purchasers, or significant interest from foreign investors. One solution sometimes used is for the central bank to provide special discount facilities for recapitalization bonds (Côte d'Ivoire 1991).

There is generally little to gain through the issuance of bonds by an agency rather than the government itself, except in the rare case where the agency may have the infrastructure for bond issuance already in place, and the government does not. One possible benefit is that having the deposit insurer, AMC or restructuring authority issue the bonds can clearly separate bank restructuring costs from other government activities. While it is often desirable in managing a systemic crisis to have a single public agency coordinating bank restructuring, it is quite common for government financing of the expense to be arranged outside of the restructuring agency. With adequate disclosure, either arrangement can provide the necessary transparency regarding the costs of recapitalization and restructuring. From the perspective of the restructured banks, it may not be relevant whether the government or an agency issues the bonds provided

[11] Another drawback is that bond design may be more influenced by considerations related to the building of a bond market, such as providing a range of maturities, or providing largely fixed rate bonds if these are seen as preferred by investors, rather than by concern for the financial performance of recapitalized banks.

there is a broad and deep market. A government guarantee can be used to confer sovereign risk if an agency issues the bonds.

There is a risk that cash, or negotiable bonds that can quickly be turned into cash, might be used by the recipient bank to invest in highly risky assets. Sound governance and competent management are the only true protection against this risk, but the desire to protect the public investment in bank restructuring may lead to use of other measures. Strengthened supervisory oversight can provide some comfort, although at best this will detect reckless lending and investment after the fact. Another measure commonly used is to restrict the tradability of the bonds. At least initially, this keeps banks liquidity-constrained and less able to fund rapid loan growth. Restrictions on trading of bonds used to pay for equity or assets are sometimes relaxed over time (Indonesia 1998–2000; Poland 1991), providing scope for the banks to gradually use recapitalization bonds to access liquidity. When government purchases bank subordinated debt, the bonds used for payment may be nontradable to ensure that the bank is able to redeem the subordinated debt at maturity by returning the bonds to the issuer (Thailand 1999–2000; Turkey 2001). In these cases, the amount of subordinated debt is small relative to the size of the banks, so trading restrictions do not significantly inhibit the bank's liquidity management.

The exact opposite issue can also be a concern, as banks that hold a significant portion of their assets in recapitalization bonds may be slow to resume lending. Banks may prefer the risk-free return on recapitalization bonds to riskier returns from lending. Banks should not be coerced into lending they perceive as unduly risky, but having bond coupon rates well with the spectrum for government debt ensures that banks do not have an undue preference for holding recapitalization bonds rather than investing in loans. However, even if the bond income is not

especially attractive, banks may be capital-constrained and thus still prefer zero risk-weighted bonds to corporate loans risk-weighted at 100 percent.

IV. Interest Rates

The fiscal concern of minimizing the cost of public investment in restructuring can conflict with the need to ensure that restructured banks are sufficiently profitable to return to full health and not exposed to unnecessary financial risks. Fiscal concerns make attractive the issuance of bonds with below market coupons (Bulgaria 1993–94; Côte d'Ivoire 1991), or capitalizing rather than paying interest (Poland 1993–94; Mexico 1995–96). Even setting aside the valuation issues discussed in Section VII of this paper, which could cause a bank stringently applying IAS to report continued insolvency despite receipt of recapitalization bonds, low or zero coupon bonds do not provide an interest income stream to match with the recapitalized bank's ongoing interest expenses. The importance to a bank of the revenue from the recapitalization bonds obviously varies depending on the proportion of other earning assets and potential for noninterest income. If the bond holdings are small as a proportion of the total earning assets of a recapitalized bank, the bank may earn enough other revenue to be profitable even with a below market yield on recapitalization bonds.

In situations where recapitalization bonds are a significant portion of bank assets, failure to pay a market rate will doom the bank to further losses, consuming the public funds used to finance the recapitalization. This is a central point in bank restructuring: the resulting bank must be capable of generating enough revenue to be profitable. A recapitalization plan that does not lead to the bank earning a healthy interest margin merely creates a situation likely to

lead to subsequent problems and further costly restructuring. However, as further discussed in Section VII of this paper, revenue from bonds priced relative to the bank's cost of funds rather than to the bond market interest rates that might prevail during a crisis could be adequate for a viable restructuring plan. These circumstances, where the relevant interest rate is determined by reference to bank cost of funds, might provide an exception to the general desirability of using bonds issued on market terms and conditions for bank restructuring.

The fiscal preference for fixed or floating interest rates will be shaped by expectations of future interest rate movements. Since it is not uncommon for interest rates to be very high in the aftermath of a crisis, government may have a preference for floating rate bonds as these avoid locking into high fixed-rate coupons. However, given the time often required to move to the recapitalization stage of bank restructuring, it is also possible that by the time bonds are issued, the country is well into the post-crisis period with much reduced interest rates. In this case, there may be a greater inclination towards fixed rates as a means of protecting the budget from future interest rate fluctuations. The difficulty with this approach is that it passes the interest rate risk from government to the recapitalized banks. If the amount of fixed rate bonds is small relative to total assets, or if there are fixed rate liabilities (or equity) that can be considered matched against the fixed rate bonds, these risks may be manageable. However, the situation of fixed rate bonds comprising a large percentage of a recapitalized bank's assets should generally be avoided lest increasing interest rates squeeze the banks' margins and threaten the success of the recapitalization program.

V. FOREIGN CURRENCY BONDS

Governments may be reluctant to take foreign currency risks; however, the need to deal with large open foreign exchange positions in the banking sector may argue in favor of foreign currency denominated or indexed bonds. It is not uncommon for banks, in the wake of a currency crisis, to be faced with foreign currency denominated loans that are severely impaired because unhedged borrowers can no longer meet their debt service requirements.[12] Even banks that had balanced positions before such a crisis may be faced with large net short foreign currency positions as they must still repay their foreign currency liabilities while the value of their foreign currency assets has been impaired.

If banks with large net short positions receive domestic currency denominated bonds, they remain exposed to significant foreign exchange risk.[13] Banks with sufficient liquidity may be able to close their position using domestic currency assets to purchase foreign currency denominated assets. However, purchase of large amounts of foreign exchange in a short time period by banks seeking to cover their positions could be significant enough to influence the exchange rate. To deal with these issues, governments (or government agencies) have assumed

[12] A company with income only in the local currency may borrow in foreign currency, taking advantage of lower rates and the expectation that a currency peg will be maintained. If the local currency suddenly depreciates, the borrower is faced with the requirement to repay a foreign currency denominated loan that has become a much higher amount when expressed in the local currency.

[13] Prudential requirements for the calculation of net open positions may exclude "structural" positions, but as a practical matter, recapitalized banks will be exposed to foreign exchange risk in the absence of foreign currency denominated assets to match foreign exchange denominated liabilities.

the foreign exchange risk in order to provide banks with foreign currency denominated recapitalization bonds (Bulgaria, 1994, 1997, 1999; Korea 1998; Mexico 1995–96; Poland 1991; Uruguay 1982–84).

An alternative to issuing foreign exchange denominated bonds is to issue bonds with the principal and interest indexed to a major foreign currency (Indonesia 1998–2000; Nicaragua 2000–2001). This avoids the need for foreign currency to pay coupons and redeem bonds, but provides the banks with an asset that effectively matches foreign currency liabilities, covering the banks' short position.[14] In the case of Indonesia, such "hedge bonds" were issued with a portion of the amount outstanding converted to nonindexed bonds each quarter. In this way, the recipient banks have a period of years to deal gradually with their foreign currency positions, either by running off foreign currency liabilities consistent with the quarterly conversion of the hedge bonds, or by raising foreign currency assets each quarter to replace the portion of the bond portfolios that would no longer be indexed to the dollar.

The fiscal impact of foreign currency or indexed bonds obviously increases if the domestic currency continues to depreciate. However, the alternative to this increased fiscal cost may be the failure of the recapitalization plan, since the recapitalized banks would have to bear this cost through their short foreign exchange exposure. At best this will result in a more protracted recovery period for the banking sector, and at worst will lead to a second round of public

[14] In calculating a bank's open currency position, an instrument with principal and interest indexed to a foreign currency could be considered exposure in that currency for purposes managing currency risk.

expenses for recapitalization. Thus, in designing the bond issue for recapitalization it is dangerous not to address the foreign currency exposure of the banking system.

VI. MATURITY

A number of debt management considerations may influence the choice of maturities for recapitalization bonds. Long maturities defer the government's refinancing needs, and very short maturities are likely undesirable as it would be preferable to avoid the need to roll over large amounts of maturing debt shortly after the completion of a bank recapitalization program. If the recapitalization bonds are a significant amount relative to the stock of outstanding debt, a range of maturities will be desirable to avoid "lumpy" refinancing requirements (Ghana 1990; Hungary 1993–93; Kyrgyz Republic 1995–97).[15] A range of maturities may also be desirable to establish a yield curve. However, long maturities may create mismatch and loss exposure problems for the recapitalized banks.

Long dated bonds issued by developing and transition country governments may carry a substantial risk premium relative to ones with shorter maturities. Even if the bonds carry a floating market rate of interest, mitigating interest rate risk, they may trade at a significant discount as investors may require a premium to take longer term credit risk. If the banks trade or make the bonds available for sale, potential mark-to-market losses may jeopardize capital adequacy. Even if treated as held-to-maturity and thus not marked-to-market, these bonds could

[15] Alternatives to bonds with the full principal due at maturity are also an option, but have seldom been used in bank restructuring. Uruguay 1982–84 is an exception, where principal was repayable in equal semi-annual installments over the term of the bonds.

negatively affect the valuation of the bank in a sale or merger prior to maturity of the recapitalization bonds.

Aside from the maturity risk of long-dated bonds, banks may have difficulty matching long-term liabilities with long dated bonds if they carry fixed rates. Also, the value of long fixed rate bonds will vary significantly as interest rates fluctuate, again raising the issue of either recognizing losses by marking to market, or carrying below market rate assets that may limit flexibility in divesting public ownership. Further, should interest rate fluctuations result in the fixed rate bonds paying below market rates, the resulting squeeze on the margins of the recapitalized bank could imperil the success of the restructuring.

VII. BOND VALUATION AND BANK VIABILITY

There may be instances where the valuation of bonds under IAS does not result in a calculation of bank equity or regulatory capital that accurately reflects a restructured bank's medium term prospects. Other considerations may be important for accounting and statistical conventions, but in bank restructuring the crucial issue is cash flow. In some cases, even below market rate instruments may provide sufficient interest income to make a bank viable. Similarly, even if other sovereign debt is in default, as long as the government continues to service the restructuring bonds, there will be no impact on the banks' expected revenue stream from the bonds.

This is a difficult and controversial issue. On the one hand, accounting for bank restructuring bonds using the market valuation approaches of IAS could help to identify inadequate restructuring plans that are likely to fail because the shortfall in interest income over expenses

makes the bank unviable. On the other hand, there may be circumstances when it will be appropriate for the banking regulator to prescribe an approach other than IAS for the sovereign debt held by banks, provided that the actual interest income received by the bank is sufficient for viability.[16]

A. Accounting Rules

Countries have sought to minimize the fiscal burden of bank restructuring by using low or zero coupon bonds, or bonds where the interest is capitalized rather than paid. Even though the value of such instruments, determined by the discounted present value of the expected cash flows would be significantly less than par, restructured banks have generally valued these assets at par. This accounting treatment can obscure the fact that these restructuring bonds do not provide banks with cash revenues to meet their cash expenses. Nevertheless, use of this accounting treatment has been viewed as attractive by country authorities because it reduces and defers the fiscal cost and financing needs associated with bank restructuring while permitting banks to report that solvency has been restored.

[16] It is not uncommon for accounting treatments prescribed by a regulatory authority to differ in some respects from a country's more broadly applicable accounting standards. A common instance relates to provisioning for nonperforming loans, where prudential rules frequently require establishment of a general allowance for loss, for example, one percent of the total loan portfolio. Under IAS, an allowance should only be established when an impairment event has occurred. Nevertheless, many regulators prescribe general allowances despite its contravention of IAS.

Changes to IAS 39, expected to come into force in 2003, will generally preclude valuation at par of below market rate bonds.[17] Any previous ambiguity has been removed, so even when bonds are classified as held-to-maturity and thus exempt from mark-to-market requirements, initial measurement of assets will have to be made with reference to prevailing market rates of interest. If there is evidence that the market value of recapitalization bonds is below par, such as similar sovereign debt trading at a deep discount, IAS 39 would require banks receiving such bonds to initially value them by discounting the future cash flows using the indicated market interest rate.

In order to avoid qualified audit opinions and to report solvent banks under IAS, the authorities would have to provide bonds with market-related rates, or a larger quantity of below-market rate bonds. This is the desirable and appropriate approach in most cases, however, in times of systemic stress the premium demanded on sovereign debt may be very high, with nominal interest rates of 50 percent or more easily required for a bond to be valued at par under IAS. These circumstances may be an exception to the general principle of providing bonds with market-related terms, as a successful bank restructuring does not necessarily require the cash flow from bonds to reflect bond market interest rates so long as the cash expenses for the bank's funding are below bond market rates.

[17] The proposed insertion into the standard of an example with respect to zero interest assets removes the possibility of an accounting interpretation that below market-rate instruments could be valued at par. See *Proposed Amendments to IAS 39*, paragraph 67.

B. Regulatory Capital Issues

The question sometimes arises whether a zero risk-weighting for capital adequacy purposes is the appropriate prudential treatment for the sovereign debt of a country facing the threat of default, or which has actually defaulted. Almost all countries attach a zero risk-weighting to banks' holdings of government debt denominated in the national currency, [18] and a change to this approach will generally not be appropriate in responding to the crisis. Maintaining the preexisting risk-weighting avoids placing immediate capital adequacy pressure on banks that would be sound except for exposure to their national government's debt, and facilitates use of public funds for bank restructuring. It would likely be impractical to introduce a capital charge for sovereign debt during a crisis, as even sound banks would likely have difficulty raising additional capital. For banks to be restructured at public expense, the recognition of the risk of government default would serve to increase exponentially the investment required to achieve the prudential capital adequacy requirement. It may well be appropriate to consider capital requirements for sovereign debt in the longer term, however, this should happen after the banking system has been stabilized, and if adopted, a phase-in period should be used to permit

[18] The current Basel capital accord provides that claims on central governments denominated in the national currency are zero risk-weighted. The proposed revisions to the capital accord will maintain this weighting. Sovereign debt of OECD countries is also zero risk-weighted. There is an exclusion if the country has rescheduled its external debt within the last five years. Sovereign debt of non-OECD countries, excluding debt denominated in the national currency, is weighted at 50 percent for maturities of less than one year, and 100 percent for maturities of greater than one year. Countries are free to apply more stringent weighting in their national regulations. Mongolia is a rare exception in requiring a 100 percent risk-weighting for domestic currency sovereign debt.

sound banks, and banks recapitalized to a minimum level, to build their capital through retained earnings.

VIII. Valuation Rules in Banking Crises

The valuation of sovereign debt of countries in default or likely to default has implications for all banks, but has special relevance in the case of bank restructuring. For all banks, sovereign default could trigger mark-to-market losses rendering the banking system insolvent. Following sovereign default, application of IAS valuation rules to debt held by banks might make the policy option of committing public funds to bank restructuring prohibitively expensive. Depending on the circumstances, interpretations that could fall within the bounds of IAS would facilitate restructuring, but other cases may require the banking regulator to permit accounting practices that might not conform to IAS.

The situation of potential sovereign default could be dealt with through an interpretation of IAS. Banks are not required by IAS to write down the value or establish an allowance for an asset as long as no impairment event has occurred. A decline in market value of bonds due to threatened sovereign default is not necessarily an impairment event. The proposed revisions to IAS 39 provide that bonds might still be classified as held to maturity and thus not marked to market even if there is a significant downgrade by an external credit rating agency or the bank's internal rating system.[19] It might be argued that until there was actual default on bonds held by banks, the objective evidence of impairment required by IAS prior to establishing an allowance

[19] *Proposed Amendments to IAS 39*, paragraph 86.

for loss does not exist,[20] and thus there would be no need to provision against recapitalization bonds prior to actual default.

After sovereign default, a government still wishing to use the policy option of employing public funds to preserve some portion of an insolvent banking system may need its banking regulator to mandate a valuation approach that varies from IAS. This is clearly a situation where all of the options have significant downsides. The alternative of having depositors bear all losses may be viewed as unacceptable politically and socially. Government will likely lack the fiscal resources to issue sufficient debt with market terms and conditions for bank restructuring. In these circumstances, a clear distinction might be made between new and old sovereign debt, much as is done in many judicial and nonjudicial work-outs. Thus, the banking regulator might mandate a valuation approach requiring banks to recognize losses on old sovereign debt, but permitting new debt to be valued at par provided it paid an interest rate including a margin over the banks' cost of funds, and government continued to service the new debt.

Bonds paying a rate related to the bank's actual cost of funds, rather than a rate related to the sovereign bond market, should provide sufficient income for a successful restructuring. Using bonds with coupons priced relative to a banks' cost of funds and valued at par could lead to qualified audit opinions if there is a significant difference between the market rate of return of sovereign debt and banks' cost of funds. The alternative to comply with IAS would be to provide restructured banks with greater income than is actually required for a successful restructuring, either from the use a greater quantity of below-market interest rate bonds, or from

[20] *Proposed Amendments to IAS 39*, paragraph 111.

bonds paying market interest rates. Moreover, issuing more debt could increase the likelihood of future sovereign default. In these circumstances, qualified audit opinions, or a regulatory directive that banks use accounting standards that differ from IAS for the valuation of sovereign bonds, would likely be preferable to investing more public funds in banks than are actually required to restore solvency and profitability.

It would be preferable to have a consistent valuation approach for all statistical, accounting and prudential purposes, however, differing objectives sometimes lead to different approaches. While not an approach to be advocated in normal times, to facilitate dealing with a crisis the banking regulator might permit banks to use a valuation approach that does not recognize impairment on recapitalization bonds and other domestic sovereign debt unless there is a default or announcement of intention to default on those specific bond series held by the banks. This would likely lead to qualified statements under IAS, as default on any domestic currency denominated sovereign bond would likely be taken as objective evidence of impairment for all domestic sovereign bonds.[21] However, the alternative of requiring provisions if there has been default on other similar sovereign obligations threatens the solvency of otherwise sound banks holding significant quantities of sovereign debt not yet in default. Provided that government continues to service debt held by banks, prudential supervisors could ensure that the accounting treatment matched the economic effect for banks by not considering default on other sovereign obligations as evidence of impairment of the bonds held by banks. Thus, regulatory authorities might prescribe for banks an accounting treatment for sovereign debt that does not require

[21] IAS 39, paragraph 110.

establishment of an allowance unless there has been an act of impairment related specifically to the bond series held by the bank.

IX. CONCLUSION

There are many factors that have to be considered when bonds are being designed for use in publicly funded bank restructuring. The ultimate success of a program cannot be ensured by appropriate bond design, but the converse is certainly true. Attempts to reduce the fiscal costs of bank restructuring by departing from market terms and conditions for recapitalization bonds will not only compromise the restructuring effort, but fiscal costs could ultimately be higher. Banks with insufficient interest income, or risk exposure imbedded in their holdings of recapitalization bonds, are likely to suffer losses leading to the need for subsequent intervention and a renewed attempt at restructuring. Key elements of a good bond design from the perspective of the recapitalized banks' financial performance are:

- market rates of interest to provide sufficient income;
- use of floating rates to deal with interest rate risk and minimize mark-to-market losses;
- short to medium maturities to avoid the likely lack of matching long term liabilities and to mitigate the volatility in valuation of long-dated bonds arising from interest rate fluctuations;
- no trading restrictions to facilitate liquidity management;

- foreign exchange or indexed bonds to cover banks' open positions.

All of these features may not be compatible in the same instrument, leading to the use of several series of bonds that combine different features. Also, as some of the desirable features from the perspective of bank financial performance conflict with fiscal and other government objectives, there will be inevitable tradeoffs. There may be circumstances in dealing with a systemic crisis where the banking regulator will permit variance from IAS in valuing recapitalization bonds, provided that the expected cash flow from the bonds is sufficient to make the restructured bank viable. The features of the final bond design need to result in projections of satisfactory financial performance for the recapitalized banks even in scenarios using much less optimistic assumptions than the banks' business plans. This will generally require bonds with market-related terms and conditions. Anything less results in an unacceptable risk of poor financial performance leading to loss of the public funds expended and the need for further supervisory intervention.

Bond Issues for Bank Recapitalization and Restructuring[1]

Country	Year	Issuer	Purpose	Currency	Marketability/Special Features	Interest Rate	Maturity
Algeria	1992–93	Government	Purchase bad assets	Domestic	Nontradable	10 percent	12 years
Algeria	1996	Government	Recapitalize state banks	Domestic			20 years
Algeria	1997	Government	Purchase bad assets	Domestic			12 years
Bulgaria	1992	Government	Purchase bad assets	Domestic		Central Bank rate plus 1 percent	15 years, 4 year grace period
Bulgaria	1993 (July)	Government	Purchase bad assets	Domestic		Fraction of Central Bank rate	20 years, 5year grace period
Bulgaria	1993 (Oct)	Government	Purchase bad assets	Domestic		Fraction of Central Bank rate	20 years, 5 year grace period
Bulgaria	1993 (Dec)	Government	Purchase bad assets	Domestic		Fraction of Central Bank rate	20 years, 5 year grace period
Bulgaria	1994	Government	Purchase bad assets	U.S. dollars		6 month LIBOR	20 years, 5 year grace period
Bulgaria	1995	Government	Purchase bad assets	Domestic		Central Bank rate	3 years, 4 year grace period
Bulgaria	1997	Government	Purchase bad assets	U.S. dollars		6 month LIBOR plus 3 percent	18 months
Bulgaria	1999	Government	Swap for dollar denominated bonds	Euro		6 month Euribor	19.5 years
Chile	1984	Central bank	Purchase bad assets	Domestic	Nontradable	7 percent real return	4 year
Côte d'Ivoire	1991	Government	Pay government arrears to banks	Domestic	Up to 90 percent discountable at concessional rate by central bank.	3 percent	15 years, 2 year grace period
Croatia	1996	Government	Recapitalize Rijeck banka and Splitska banka	Domestic		8.5 percent	10 years

Bond Issues for Bank Recapitalization and Restructuring[1]

Country	Year	Issuer	Purpose	Currency	Marketability/Special Features	Interest Rate	Maturity
Croatia	1996	Agency for Rehabilitation of Banks	Recapitalize Privrendna banka	DM		5 percent	15 years
Croatia	1996	Agency for Rehabilitation of Banks	Recapitalize Privrendna banka	Domestic		7.5 percent	15 years
Croatia	1996	Agency for Rehabilitation of Banks	Recapitalize Privrendna banka	Domestic		5 percent	15 years
Croatia	1998	Government	Replace earlier bonds	Domestic	Currency clause	6 percent	10 years
Croatia	1998	Government	Compensate for increased London and Paris Club liabilities	Domestic		6 percent	10 years
Croatia	1998	Government	Compensate for increased London and Paris Club liabilities	DM		6 percent	10 years
Egypt	1991	Government	Finance equity purchase	U.S. dollar		LIBOR	10 years
Ecuador	1999–2000	Government	Issued to Government Deposit Insurance Agency to finance its activities-bank recapitalization, liquidity support, pay depositors of closed banks	U.S. dollar	Deposit insurance agency discounted bonds with the central bank to finance activities	First tranche 4 percent fixed; subsequent tranches 14 percent fixed	First tranche 15 years, subsequent tranches 7–12 years
Ecuador	2001	Government	Recapitalize state bank	U.S. dollars	Nontradable	Below market	3 and 5 years
Estonia	1993	Government	Purchase equity and bad assets	Domestic		10 percent	5 to years, one tranche per year, 5 year grace period
Finland	1991	Central bank	Purchase bad assets				
Ghana	1990	Central bank	Purchase bad assets	Domestic		7, 9, 15 percent	2 to 5 years, subsequently rolled over
Greece	1991–95						
Hungary	1992–93	Government	Purchase bad assets	Domestic		Average yield on 3 month treasury bills	20, 25, 30 years
Indonesia	1998–2001	Government	Purchase bank equity	Domestic	Initially 10 percent of bonds tradable, restrictions progressively relaxed until all bonds tradable	12 and 14 percent fixed, variable at 3 month central bank rate, variable at SIBOR for domestic currency bonds indexed to U.S. dollars	3 to 10 years
Korea	1998	KAMCO (AMC), government guaranteed	Purchase bad assets	U.S. dollars	Tradable		

Bond Issues for Bank Recapitalization and Restructuring[1]

Country	Year	Issuer	Purpose	Currency	Marketability/Special Features	Interest Rate	Maturity
Korea	1998–99	KAMCO, KDIC (deposit insurer), government guaranteed	Purchase equity or preferred shares	Domestic	Tradable	Variable U.S. dollars	
Korea	1998–99	KAMCO, government guaranteed	Purchase bad assets	Domestic	Tradable	Fixed (initially) and variable rate	
Kuwait	1992	Central bank	Purchase bad assets	Domestic	Nontradable	Market related	10 and 20 years
Kyrgyz Republic	1995–97	Government	Purchase bad assets	Domestic		5, 25, 50.64, 55.7 percent	6 months, 1, 5, 10, and 25 years
Lao People's Dem. Rep.	1994		Purchase bad assets	Domestic	Nontradable		
Latvia	1994	Government	Purchase bad assets	Domestic	Nontradable	20.4 percent first year, CPI plus 1.5 percent thereafter	Up to 7 years
Lithuania	1996–98	Government	Purchase bad assets	Domestic	Nontradable	Average term deposit rate plus 1 percent	10 years (redemeed before maturity- last tranche in 2003)
Macedonia	1994	Bank Rehabilitation Agency	Purchase bad assets	Domestic	Bonds subsequently acquired by Central bank	Central Bank rate	15 years
Macedonia	1999	Bank Rehabilitation Agency	Purchase bad assets	Domestic			
Malaysia	1998–99	Danaharta (AMC)	Finance the purchase of bad assets	Domestic	Zero-coupon discount bonds	Market-based yield	
Malaysia	1998–99	Danamodal (Bank Restructuring Agency)	Finance the purchase bank convertible preference shares and subordinated debt	Domestic	Zero-coupon discount bonds	Market-based yield	
Mauritania	1993	Government	Purchase bank equity, bad assets and compensate central bank for liquidity support losses	Domestic	Nontradable	Central bank rediscount rate	6 month and 1 year renewable
Mexico	1995–96	FOBAPROA (bank restructuring agency)	Purchase bad assets	Domestic	Nontradable, income from NPLs used to redeem FOBAPRA paper, at maturity banks write off 20–30 percent of FOBAPRA paper outstanding, government covers balance	Variable—3 month t-bill rate, interest capitalized, not paid	10 years
Mexico	1995–96	FOBAPROA (bank restructuring agency)	Purchase bad assets	U.S. dollars	Nontradable, income from NPLs used to redeem FOBAPRA paper, at maturity banks write off 20–30 percent of FOBAPRA paper outstanding, government covers balance	Variable—LIBOR plus 4 percent, interest capitalized, not paid	10 years

Bond Issues for Bank Recapitalization and Restructuring[1]

Country	Year	Issuer	Purpose	Currency	Marketability/Special Features	Interest Rate	Maturity
Nicaragua	2000–01	Central bank	Support sale of performing assets and deposits of failed banks	Domestic	Indexed to U.S. dollars, zero coupon	Market related—margin over central bank bill rate	2 to 4 years
Poland	1991	Government	Cover banks' foreign exchange losses after devaluation	U.S. dollars	Tradable first three years only with central bank consent, thereafter tradable among domestic financial institutions	1991–95; 6 month LIBOR plus 2 percent; from 1996, 6 month LIBOR plus 0.5 percent	1 to 13 years
Poland	1993–94	Government		Domestic		Central bank rediscount rate, but only fixed rate of 5 percent paid, balance capitalized	1.5 to 15.5 years
Slovenia	1992–94						
Sri Lanka	1993		Purchase bad assets				
Tanzania	1992		Recapitalize state bank for privatization			11 percent	20 years
Thailand	1999–2000	Government	Purchase bank equity	Domestic	Tradable	Market related fixed rate	10 years
Thailand	1999–2000	Government	Purchase bank debentures	Domestic	Nontradable	Market related fixed rate	10 years
Turkey	2001	Government	Purchase bank equity	Domestic		Market related	various
Turkey	2001	Government	Purchase bank subordinated debt	Domestic	Nontradable	Market related	various
Uganda	1996	Government	Recapitalize state bank for privatization	Domestic	Nontradable	Variable-average 91 day T-bill rate	1, 3, and 5 years
Uruguay	1982–84	Central bank	Purchase bad assets	U.S. dollars	Banks required to arrange external U.S. dollar s financing to central bank as a condition of the first tranche ("portfolio purchase linked loans"); subsequent tranches provided by central bank to support purchase of failed local banks by foreign banks	LIBOR plus 1.5 percent	7 years, 18 month grace period

Sources: James A. Daniel,1997, "Fiscal Aspects of Bank Restructuring" Working Paper 97/52 (Washington: International Monetary Fund); Claudia Dziobek and Ceyla Pazarbasioglu, 1997, "Lessons and Elements of Best Practice" in William E. Alexander and others, eds. *Systemic Bank Restructuring and Macroeconomic Policy* (Washington: International Monetary Fund); Charles Enoch, Gillian Garcia and V. Sundararajan, 2002, "Recapitalizing Banks with Public Funds: Selected Issues" in Charles Enoch, David Marston and Michael Taylor, eds, *Building Strong Banks Through Surveillance and Resolution* (Washington: International Monetary Fund). Pablo Graf, 1999, "Policy Responses to the Banking Crisis in Mexico" in Bank Restructuring in Practice, BIS Policy Papers No. 6 (Basel, Bank for International Settlements); Carl-Johan Lindgren and others, 1999, *Financial Sector Crisis and Restructuring: Lessons From Asia,* Occasional Paper 188 (Washington: International Monetary Fund); Kanitta Messook and others, 2001, *Malaysia: From Crisis to Recovery*, Occasional Paper 207 (Washington: International Monetary Fund); Karim Nashashibi and others, 1998, *Algeria: Stabilization and Transition to the Market*, Occasional Paper 165 (Washington: International Monetary Fund); Sergtio Pereira Leite and others *Ghana: Economic Development in a Democratic Environment*, Occasional Paper 199 (Washington: International Monetary Fund); Juan Perez-Campanero and Alfredo Leone, 1991, "Liberalization and Financial Crisis in Uruguay 1974 to 1987" in V. Sundararajan and Tomas Balino, eds, *Banking Crises: Cases and Issues*, (Washington: International Monetary Fund); Andrew Sheng, ed., 1996, *Bank Restructuring: Lessons from the 1980s* (Washington: The World Bank); Helena Tang, Edda Zoli and Irina Klytchnikova, 2000, "Banking Crises in Transition Countries: Fiscal Costs and Related Issues" Working Paper 2484 (Washington: The World Bank).

[1] This table has been compiled from the banking crisis literature and various IMF documents. Details of the bonds used to finance bank restructuring are frequently not available, and in some cases, different sources provide conflicting details. The author would be especially grateful for further information to complete or correct the cases cited above, and for details of bonds used in additional cases of bank restructuring.

REFERENCES

Daniel, James A., 1997, "Fiscal Aspects of Bank Restructuring" IMF Working Paper 97/52 (Washington: International Monetary Fund).

———, Jeffrey M. Davis, and Andrew M. Wolfe, 1997, "Fiscal Accounting of Bank Restructuring," IMF Paper on Policy Analysis and Assessment 97/5 (Washington: International Monetary Fund).

Dattels, Peter, 1997, "Microstructure of Government Securities Markets," in *Coordinating Public Debt and Monetary Management,* ed. by V. Sundararajan and Peter Dattels, (Washington: International Monetary Fund).

Dziobek, Claudia, 1998, "Market-Based Policy Instruments for Systemic Bank Restructuring," IMF Working Paper 98/113 (Washington: International Monetary Fund).

———, and Ceyla Pazarbasioglu, 1997, "Lessons from Systemic Bank Restructuring: Lessons and Elements of Best Practices," in *Systemic Bank Restructuring and Macroeconomic Policy,* ed. by William Alexander and others, 1997 (Washington: International Monetary Fund).

Enoch, Charles, Gillian Garcia, and V. Sundararajan, 2002, "*Recapitalizing Banks with Public Funds: Selected Issues,*" in *Building Strong Banks Through Surveillance and Resolution,* ed. by Charles Enoch, David Marston and Michael Taylor, (Washington: International Monetary Fund).

Frydl, Edward J., and Marc Quintyn, 2000, "The Benefits and Costs of Intervening in Banking Crises," IMF Working Paper 00/147 (Washington: International Monetary Fund).

Graf, Pablo, 1999, "Policy Responses to the Banking Crisis in Mexico," in *Bank Restructuring in Practice*, ed. by John Hawkins and Philip Turner, BIS Policy Paper No. 6, (Basel: Bank for International Settlements).

International Accounting Standards Board, 2002, *Proposed Amendments to IAS 39 Financial Instruments: Recognition and Measurement*.

Lindgren, Carl-Johan, and others, 1999, *Financial Sector Crisis and Restructuring: Lessons From Asia*, IMF Occasional Paper 188 (Washington, International Monetary Fund).

Lindgren, Carl-Johan, Gillian Garcia, and Matthew Saal, 1996, *Bank Soundness and Macroeconomic Policy* (Washington, International Monetary Fund).

Nyberg, Peter, 1997, "Authorities Roles and Organization Issues in Systemic Bank Restructuring," IMF Working Paper 97/92 (Washington, International Monetary Fund).

Sheng, Andrew, ed., 1996, *Bank Restructuring: Lessons from the 1980s* (Washington: World Bank).

Tang, Helena, Edda Zoli, and Irina Klytchnikova, 2000, "Banking Crises in Transition Countries: Fiscal Costs and Related Issues," WB Working Paper 2484 (Washington: World Bank).