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and the Collateral Crunch:
The Advantages of Adopting
Transferable Puts**

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Abstract

Current methods of failed bank resolution are unnecessarily expensive for taxpayers and impose substantial costs on borrowers at failed banks. This situation is due to distorted incentives imbedded in the standard contract between the government and acquirers of failed banks, which result in more loan foreclosures than if the loan were held by a well-capitalized bank. This paper proposes a modification to the standard contract in the form of a transferable put, which would introduce market-based incentives to the disposition of failed bank assets.

The views expressed in this paper are those of the authors and do not necessarily reflect official positions of the Federal Reserve Bank of Boston or the Federal Reserve System. This proposal was first discussed with the FDIC in November 1991.

Failed Bank Resolution and the Collateral Crunch: The Advantages of Adopting Transferable Puts

The resolution of failed banks has received substantial public attention because of the potential ramifications to the taxpayer and to local economies where the government controls sizable portfolios of assets. While considerable research has focused on bank closure policies (Benston et al. 1989, Kane 1990, and Davies and McManus 1991), and on the effects of capital regulation on portfolio decisions of existing banks (Furlong and Keeley 1987 and 1989, Flannery 1989, and Kim and Santomero 1988), research to date has not dealt with the effects of the disposition of the assets of failed banks, a subject of increasing importance given the large number of failures.

This paper shows that current government policies regarding the disposition of failed bank assets may be unnecessarily expensive to the taxpayer and may also create serious credit problems in the local community. Loans in failed banks controlled by the Federal Deposit Insurance Corporation (FDIC) are treated much differently than they would be, had they remained in the private sector. Current contracts encourage the acquirers of failed banks to return too many loans to the FDIC. In addition, the servicing agreement that the FDIC signs with the servicers of these returned loans has incentives that encourage more frequent foreclosure than would be the case if the loans were held in the portfolio of a well-capitalized bank. Many of these problems could be avoided by altering procedures for the disposal of failed bank assets to conform more closely to what would have happened if the assets had continued to be held in banks.

Current banking problems, particularly in New England, have been distinctive because of the rapid growth in "performing nonperforming loans," loans whose payments of principal and interest are current but whose

collateral value has dropped below the face value of the loan. The FDIC now holds substantial numbers of these loans as a result of bank failures. For example, \$1.4 billion of performing nonperforming loans were transferred to the FDIC from Bank of New England. Many of these loans are traditional commercial loans whose security has become impaired following the significant decline in real estate prices. In a healthy financial institution, the lender would have an incentive to continue working with the borrower as long as the lender had a reasonable expectation of receiving full payment eventually. In contrast, troubled assets of failed banks are managed for the FDIC by servicers that have neither the incentive nor the ability to work out loans in the way that a well-capitalized bank might.

Under the current FDIC procedure, the FDIC takes all bad assets of a failed bank and disposes of the loans itself or through servicers hired by the FDIC. An alternative proposed here would utilize a transferable put, which could return the management of at least some of these loans to private banks. For performing nonperforming loans held in "bad banks" by the FDIC, the borrower could go to any financial institution, bringing the same government guarantee on the loan that is extended to acquirers of failed banks.

Such a plan would have several advantages over current procedures. More loans would be managed by the private sector, reducing assets managed by the FDIC. Not only would this save incentive fees and expenses currently paid by the FDIC to manage its bad asset pool, but also borrowers would have access to lenders more willing to work out the loan. If a private market for failed bank assets were established, banks would be more aggressive in ascertaining borrowers' prospects, and incentive problems found in the current servicing arrangements would be avoided. For loans that no bank is interested in

acquiring even with government guarantees, the FDIC at least has market information on banks' expectations for the future prospects of the borrower.

The first section of the paper describes the current procedures for disposing of failed bank assets. The second section shows why these procedures result in too many assets being controlled by the FDIC. The third section shows how current servicing agreements result in too many loans being foreclosed. The fourth section describes how disposal problems could be reduced by providing transferable puts. The final section discusses the advantages and disadvantages of returning to the private sector the performing nonperforming loans in failed banks controlled by the FDIC.

I. The Disposition of Loans at Failed Banks

The overwhelming majority of bank failures are resolved through purchase and assumption rather than the payoff of deposits. In these transactions, a healthy bank purchases the deposits and the good loans of the failed bank, while the FDIC retains the problem loans.

As part of the contract, the FDIC usually hires the purchaser to collect, for a fee, on these problem loans, which are placed in the special asset pool. The FDIC prefers not to collect on the problem loans itself because it lacks sufficient staff and expertise to do it as effectively as the private sector. Furthermore, the FDIC cannot sell these loans to banks or other investors, because unlike the market for Third World debt, a secondary market for troubled small business loans does not exist. Presumably, the large expense of the initial evaluation and the subsequent monitoring relative to the size of the loan make such transactions uneconomical. The problem is further compounded by the poor loan documentation frequently encountered at

failed banks; as a result, these loans may not meet normal underwriting standards at most healthy banks.

The purchaser of the failed bank is given a government guarantee of the good loans it has assumed, in the form of a put option on the FDIC. This put option requires the FDIC to repurchase any loan that becomes classified as a problem loan.¹ The loan is then added to the bad asset pool managed by the purchaser. A typical put option lasts three years.² The FDIC pays the purchaser face value for a loan put back in the first year; a 2 percent discount from face value is taken in the second year and a 4 percent discount in the third year, after which no more loans can be returned to the FDIC.

Several limitations are placed on the purchaser's ability to put a loan back to the FDIC. In particular, the purchaser loses the put if it materially alters the terms of the loan or if it fails to return the loan to the FDIC within 90 days after its becoming classified as a problem loan. Further, if the purchaser reclaims a loan out of the bad asset pool, it cannot put the loan back a second time. It is, therefore, in the interest of the purchaser

¹ Clearly, the way problem loans are classified plays a crucial part in failed bank resolutions. Loans are classified by examiners into four categories in the order of increasing probability of loss to the bank: other assets especially mentioned (OAEM), substandard, doubtful, and loss. OAEMs cannot be placed into the bad asset pool and are not covered by the put option. Only loans classified as substandard or worse are eligible. Substandard loans are defined as "inadequately protected by the current sound worth and paying capacity of the obligor or of the collateral pledge, if any. . . . They are characterized by the distinct possibility that the bank will sustain some loss if the deficiencies are not corrected" (Comptroller's Handbook for National Bank Examiners, March 1990, Section 215.1).

² The length of the put option may vary. The contracts with both Fleet Financial Group for the purchase of Bank of New England and Key Bank of Western New York for the purchase of Goldome have puts that last three years. The contract with Chase Bank of Connecticut for the purchase of Citytrust has puts for two years.

to identify problem loans and turn them over to the government as quickly as possible, in order to avoid receiving less than full face value from the FDIC.

II. The Treatment of Nonperforming Loans

Recent bank failures have been notable for the number of loans that are current on payments of principal and interest but classified as a result of impaired collateral. These performing nonperforming loans often result when small businesses take out loans to finance working capital and put up real estate as the collateral required by banks. Although such loans are classified as real estate loans for reporting purposes, they are used to finance projects whose payoffs are independent of the value of the collateral. While a healthy bank will carefully evaluate the unsecured part of the loan as well as the collateral, the current FDIC servicing contracts place greater emphasis on liquidating collateral. This difference is the focus of the model presented in the next section.

Treatment by a Healthy Bank

Consider the following simple model of performing nonperforming loans, which is an extension of the collateral model proposed in Chan and Kanatas (1985). A firm borrows an amount (F) (which includes principal and interest) and posts collateral that has a value of c_t . We assume that the borrower cannot raise additional collateral after the loan has been initiated. The borrower uses the loan to finance a project that will pay off at time T . The payoff is uncertain and has a cumulative density function $H(y)$. If the lender forecloses on the project before time T , the lender will receive only the collateral. If the lender waits until the project is completed, he will

receive the collateral plus any unsecured portion of the loan. The unsecured part of the loan, u_t , if any is:

$$(1) \quad u_t = F_t - c_t$$

The value of the unsecured debt is:

$$(2) \quad V(u_t) = \int_0^{u_t} y_t dH(y_t) + u_t(1 - H(c_t)).$$

The first expression in equation (2) is the expected value if the project's outcome is worth less than the unsecured debt, and the second expression is the expected value of the unsecured debt if the project's outcome is worth more than the unsecured debt. The sum of the two expressions is the total value of the unsecured debt $V(u_t)$. Note that in the case of a performing nonperforming loan, the value of the collateral is less than the principal and interest on the loan.

If the project is foreclosed on before completion, the borrower loses c_t ; if the project is completed, the borrower receives the project's payout, y , minus the face value of the loan plus interest. The borrower will continue the project as long as a positive probability exists that y will exceed what is owed on the bank loan.

If the value of the project decreases below the face value of the loan, a healthy lender would still work with the borrower as long as equation (3) is satisfied:

$$(3) \quad V(u_T) + c_T > (C_t - f) e^{rT}.$$

The left expression is the expected value of the unsecured loan and the collateral upon completion of the project; the right expression is the outcome if the lender forecloses, sells the collateral with foreclosure cost, f , and reinvests the funds until T . For loans with impaired collateral, a healthy bank is more likely to work with a borrower the greater the value of the unsecured loan, the greater the future value of the collateral, and the greater the foreclosure costs.

Treatment by the Acquirer of a Failed Bank

The acquirer of a failed bank could keep performing nonperforming loans in the bank; however, the incentives in the agreement with the FDIC will cause it to return most if not all classified loans to the FDIC. The agreement provides that the acquirer has up to 90 days to return a classified loan and receive the full face value of the loan. Performing nonperforming loans are still making payments of interest and principal but their value is below the face value:

$$(4) \quad V(u_t) + c_t < F.$$

Since the face value exceeds the value of the loan, the acquirer should always return the performing nonperforming loan to the FDIC. In addition, many acquirers of failed banks also get servicing fees for assets that are returned to the FDIC. This would inflate the right-hand side of equation (3), providing further incentive to return assets of the failed bank. If the incentives are sufficiently lucrative, the bank has an incentive to use very

conservative estimates in evaluating loans, so that the maximum number of loans is returned.

It should also be remembered that the face value of the loan, F , is received with certainty by the acquirer, while the loan itself has an uncertain outcome; this would further discourage banks from retaining the loan if they are at all risk averse. Since the full face value of the loan is received only in the first year (with discounts to the full face value in subsequent years), acquirers of failed banks have an incentive to classify all loans the first year, and to use conservative evaluations for those that may be classified in subsequent years. Finally, any classified loan retained on the books would require that the bank allocate scarce capital to reserve against future losses on the loan, which could substantially increase the cost of retaining the loan and thus depress the value of the left side of equation (3).³

³ The presence of a classified loan on the bank's books increases the bank's required capital in two separate ways:

First, the bank is required to reserve against the possible loss by increasing its allowance for loan and lease losses (ALL). Until the new risk-based capital standard went into effect in 1990, the ALL account was counted as capital for the purposes of capital adequacy. The Risk-Based Capital Guidelines (12 CFR Parts 208 and 225) exclude ALL from Tier 1 capital, which consists mostly of equity, and allow only a limited portion of it in Tier 2 capital.

Second, the presence of classified assets increases the bank's overall capital requirement, regardless of the increase in ALL, because capital ratios required by the regulators are usually higher than the official minimum ratios. The ratios are adjusted upwards to take account of other relevant factors, with asset quality the most important. According to the Board of Governors of the Federal Reserve System, "In all cases, banking institutions should hold capital commensurate with the level and nature of all of the risks, including the volume and severity of problem loans, to which they are exposed" (August 2, 1990 Press Release, p. 2).

III. Treatment of Failed Bank Assets

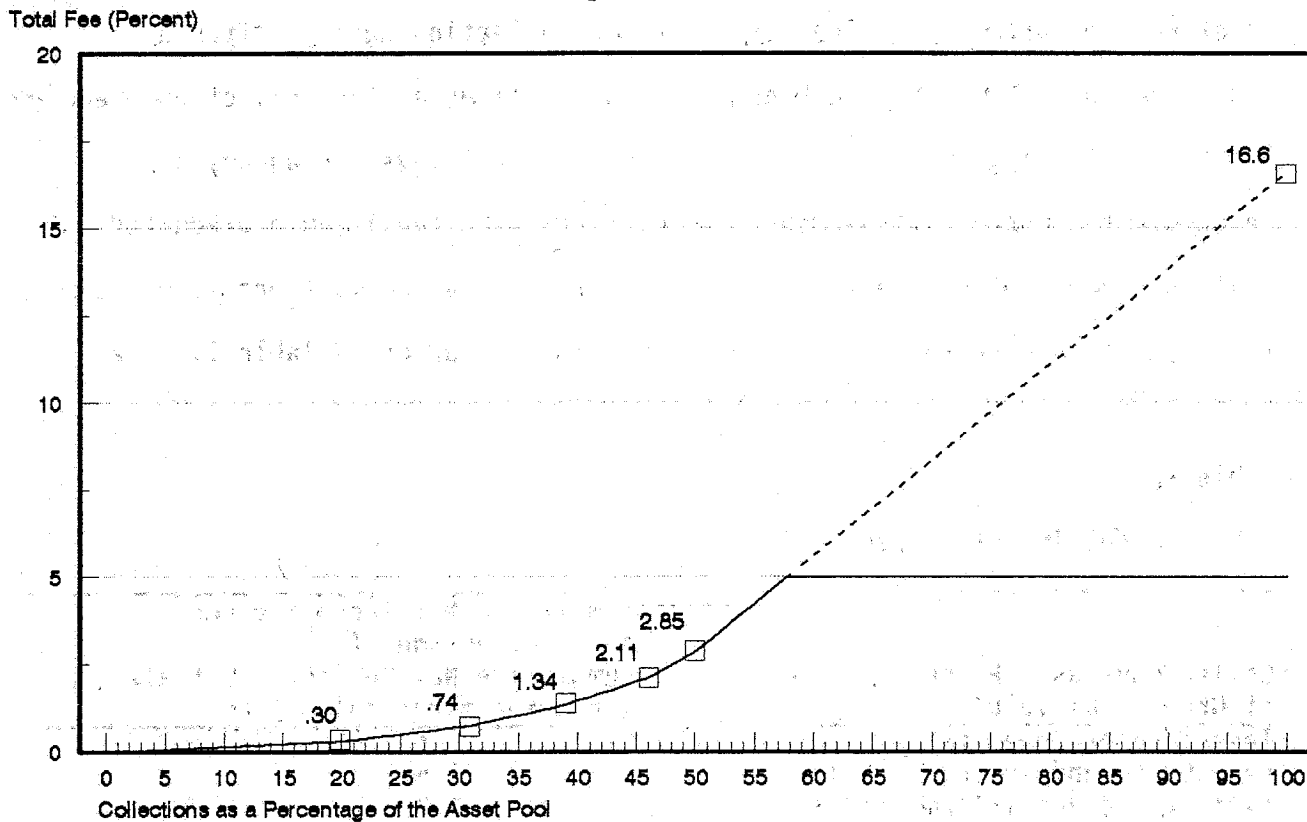
Once a classified loan is put back to the FDIC, it is added to the bad asset pool managed, for a fee, by a private collection agency, often a subsidiary of the purchasing bank. The FDIC reimburses the collection agency for all collecting expenses. In addition, the FDIC pays the agency an incentive fee based on the amount it collects. The fee is on a graduated scale based on net cumulative collections, defined as collections minus double the collection expenses. The fee schedule is reproduced in Table 1. The

Table 1
Schedule for Incentive Fees

Collections as a Percentage of Gross Pool Value	Cumulative Net Incentive Fee as a Percentage of the Cumulative Net Collection Strata (from the first column)
less than or equal to 0%	0
over 0% to and including 20%	1.5
over 20% to and including 31%	4.0
over 31% to and including 39%	7.5
over 39% to and including 46%	11.0
over 46% to and including 50%	18.5
over 50%	27.5

incentive fee is capped at 5 percent of gross collections, that is, collections from which no expenses have been subtracted. Figure 1 graphs the relationship between the total (as opposed to marginal) incentive fee and the total amount collected, assuming no collection costs. The figure shows that, in the extreme case of no collection costs, the 5 percent cap becomes binding after collections exceed 57.8 percent of the asset pool. The presence of collection costs would shift the curve to the right, thus increasing the

Figure 1
Total Incentive Fee as a Percentage of Collections
Assuming No Collection Costs



percentage of collections at which the 5 percent cap becomes binding. In any case, after the cap becomes binding, the collection costs cease to matter to the collection agency. (It will be recalled that the FDIC reimburses the agency for all costs; the incentive fee is in addition to costs.)

The collection agency's profit-maximizing decision, therefore, falls into two separate cases--when the 5 percent cap is binding and when it is not. In Case 1, when the 5 percent cap is binding, the incentive fee will be given by Equation (5).

$$(5) \quad I_1 = .05 * \min [F, c_t]$$

where I_1 is the incentive fee.

In Case 2, when the 5 percent cap is not binding, the incentive fee is given by Equation (6).

$$(6) \quad I_2 = b * \min [F, c_t - 2f]$$

where f is the cost of foreclosure, and b is the rate of the incentive fee, given by the slope of the graph in Figure 1.

Neither the FDIC nor the servicer is in a position to provide a long-term lending relationship with the borrower. The servicer has a fixed-term contract with the FDIC to liquidate the portfolio. As a result, if the horizon of the servicer is less than T , the payoff date of the loan, the servicer will be deciding when to foreclose rather than whether to foreclose. Thus, a critical difference between the servicer of the bad asset pool and a healthy bank is the lending relationship. With the servicer, the banking relationship will be severed; the only question is when. With a healthy bank, the banking relationship will not be severed so long as the inequality in

equation (3) holds. The two conditions for foreclosure of a loan by the FDIC servicer that would not occur if it had been held by a healthy bank are described by equations (7) and (8):

$$(7) \quad (V(u_t) + c_t) e^{-rt} > (c_t - f).$$

$$(8) \quad V(u_t) + c_t < F.$$

For a loan to be foreclosed by the FDIC servicer but not by a healthy bank, it must have a value below the face value of the loan but also have a greater current value than the proceeds of the foreclosure, minus the costs.

The servicing contract has the most perverse incentives for loans that are least impaired. It is for these loans that the servicer has an incentive to liquidate the collateral, even though the servicer might achieve lower costs if a longer horizon were chosen. The incentives are less perverse in cases where the loan is nonperforming and the collateral could never pay off the loan. For extremely troubled loans, taking possession of the collateral may be necessary in order to prevent further deterioration of the FDIC's position. In such cases, maximizing the value of the asset can be achieved only by removing the current owners through the foreclosure process.

Note that by providing incentives for the acquiring bank to put all classified assets back to the FDIC, all social costs of foreclosing prematurely on a viable business are ignored. The collecting agency receives no benefits from maintaining a viable business, since it will not be extending credit to the business in the future. In addition, the costs to society of unemployed labor and capital are ignored in the servicing contract.

IV. The Transferable Put

It is clear that the current process of failed bank resolution is biased in favor of putting the loans back to the FDIC. The foreclosure bias is most damaging for the performing nonperforming loans, which have been classified because of impaired collateral.

The transferable put feature would modify the contract between the FDIC and the failed bank purchaser in two ways. First, it would eliminate the 90-day deadline the purchaser currently must meet in order to put a classified loan back to the FDIC. The purchaser would be able to keep the loan on its books for as long as it is profitable. If, subsequently, the borrower's condition deteriorates, for up to three years the purchaser would be able to return the loan to the FDIC for the full face value minus the put discount.

Second, the put would be transferable by the borrower to a different lender. If the purchaser of the failed bank puts the loan back to the FDIC, the borrower would be able to offer it to other banks before it is placed in the bad asset pool. If another bank were interested, it could purchase the loan, which would retain the same put option that was allowed to the original purchaser. If no other bank were interested, the loan would be placed in the bad asset pool managed by a collection agency, as it is now.

For a classified loan to be attractive either to the original purchaser of the failed bank or to another bank, its treatment under the capital regulations would have to be changed, in order to prevent it from subjecting the bank to a higher capital requirement. Such a change in treatment would be fully consistent with existing risk-based capital requirements. Since the loan is protected by the government guarantee, it poses no risk to the acquiring bank, except for the 2 or 4 percent discounted portion in the second

and third year of the put. Accordingly, the guaranteed portion of the loan should be treated under the capital rules as a government obligation rather than a loan to a private borrower.

The risk-based rules for capital assign all assets in a bank's portfolio to four categories--0 percent, 20 percent, 50 percent, and 100 percent--corresponding to the percentage of the asset against which capital must be held. All loans to private businesses are in the 100 percent category, and capital must be held against the entire value of the asset. Government securities backed by the full faith and credit of the federal government are in the 0 percent category, meaning that no capital need be held against them. Government and agency-sponsored securities not backed by the full faith and credit of the U.S. government are in the 20 percent category. If the bank were to make a new loan, not only would the government guarantee for three years not be available, but the loan would be weighted at 100 percent in calculating capital for the risk-based standards. Thus loans acquired with puts have a substantial initial advantage for capital-constrained banks.⁴

In addition to being more attractive on capital grounds, the loan would have favorable risk-return characteristics. While carrying a competitive interest rate comparable to that on other loans, the loan covered by the put is virtually risk free in the first year, with a small discount in the second

⁴ This argument applies only if the risk-based capital requirements are binding on the margin. This would not be the case if the bank were constrained by the leverage ratio instead. The leverage ratio is the ratio of Tier 1 capital to total (non-risk-weighted) assets. The minimum requirement is 3 percent for banks with a CAMEL rating of 1, and 4 to 5 percent for the banks with a lower rating. For many banks, especially those with a lower CAMEL rating, the leverage ratio results in a higher capital requirement than the risk-based ratio. For banks in this position, the loan covered by the put would have no capital advantage over a regular loan. It would not, however, have the disadvantage of a higher capital requirement.

and third year. The main advantage of the transferable put over the current arrangement is that it would keep performing nonperforming loans out of the bad asset pool controlled by the FDIC and in the private banking system. For loans kept out of the bad asset pool, the FDIC not only saves the costs of servicing the loan, it also receives the face value of the loan, rather than the foreclosure value of the loan. Banks would be interested in loans if the expected future value exceeds the future value of the initial outlay on the loan:

$$(9) \quad V(u_{t+3}) + c_{t+3} > F(1+r)^3.$$

Loans currently classified because of slightly impaired collateral, but whose collateral is expected to rebound because of changes in demand or a more liquid market, would be attractive loans to retain in banks rather than in the bad asset pool.

The FDIC may find this a less costly option, though it is not without risks. The potential cost, C , is:

$$(10) \quad c_t - d_i c_{t-1+i} = C,$$

where d_i is 1 plus the discount on the put in year i . If the loan is placed in another failed bank in the first year, the FDIC is in the same position it would have been, had the transferable put not been used. In the second year the FDIC is worse off only if the collateral value has dropped by more than the 2 percent discount, and in the third year, by more than 4 percent. Thus, unless the collateral is expected to drop by more than 2 percent a year, the costs to the FDIC are zero.

The potential benefits are shown in equation (11):

$$(11) \quad F - (1+I_1) c_t - f > 0.$$

The FDIC receives the face value of the loan instead of the value of the foreclosed collateral less the servicing fee and the foreclosure costs. As long as collateral is declining by less than 2 percent a year and some loans are retained by banks, the FDIC would be better off with a transferable put. The FDIC is worse off only if the losses on loans whose collateral declines by more than 2 percent a year exceed the savings on loans that are retained by banks.

V. Conclusions

The addition of a transferable put feature to the procedures for resolution of bank failures would confer a number of advantages. First, it would result in cost savings for the FDIC. More loans would be retained in the private banking system, while fewer loans would be transferred to the bad asset pool. As a result, the FDIC would save on both the incentive fee and the expenses paid to the collecting agency for managing the asset pool.

Even more important, making the put transferable would allow viable businesses to avoid foreclosure and liquidation. It would eliminate the conflicting incentives now present when the purchaser of the failed bank and the collecting agency are part of the same organization.

This analysis has assumed no uncertainty about the future price of the collateral. In reality, banks are uncertain whether a lower spot price is a result of a decrease in liquidity, which would leave the long-run price unaffected, or a drop in the demand for the asset, which would decrease the

long-run price as well. The transferable put would allow market participants with different expectations to make economic decisions on the basis of their beliefs. As a result, banks that believe the long-run price is unaffected would have a chance to work out performing nonperforming loans that would otherwise be left to the collecting agency.

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