STUDIES OF SMALL BUSINESS FINANCE

Equity Participation Agreements and Commercial Bank Loans to Small Business Firms

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THE INTERAGENCY TASK FORCE ON SMALL BUSINESS FINANCE

Board of Governors of the Federal Reserve System
Federal Deposit Insurance Corporation
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Small Business Administration
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and Commercial Bank Loans
to Small Business Firms

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EQUITY PARTICIPATION AGREEMENTS AND COMMERCIAL BANK LOANS TO SMALL BUSINESS FIRMS

I. Introduction

One of the controversial pricing issues in commercial banking is the use of conditional equity participation agreements (EPA) in lieu of or in addition to interest charges on loans to business firms. In some cases, stock purchase warrants are used as the participation vehicle. In other circumstances incremental cash payments above the basic interest rate are used. The timing and amount of the cash increment depend on some indicator of the borrower's performance, e.g., stock price, net worth, total sales, or net profits. Both types of agreements have been employed in connection with term loans, revolving credits, and real estate development and mortgage loans to business firms.

While equity incentive financing is not a new concept, its use in bank loans to business is a significant departure from the traditional pricing methods of U.S. banks. Because it involves an equity link to the borrower, the practice is regarded by some as altering the debtor-creditor relationship felt to be fundamental to banking. Accordingly the practice is quite controversial. Banks, their customers, legal counsel, and bank regulatory agencies express uncertainty as to the legality of EPA's and their likely implications as a means of compensation for bank credit.

This paper analyzes the potential role of EPA's in the financing of business by commercial banks, discusses the legal and regulatory implications and bank policy questions involved along with the financial policy implications for the borrower and suggests the direction of
future uses of this practice in banking. It also focuses specifically on the potential use of the EPA connection with commercial bank loans to small business firms.

II. Scope, Method, and Limitations

Because the concept of "equity kickers" or EPA is so controversial, this paper is devoted in large measure to the analysis of the legal and regulatory implications of EPA as a bank pricing device and to the consistency of EPA with modern finance theory.

Essentially, we make the case that EPAs are consistent with legal and regulatory boundaries facing banks and with sound practices and policies of bank pricing and corporate finance. Upon this base, we then argue that, while certain problems exist, it is feasible to use EPA in connection with bank loans to small business.

The methodology employed in this research is an eclectic collection. The legal and regulatory issues have been analyzed through the review of statutes and rulings, followed by interviews with representatives of the Comptroller of the Currency, the Federal Reserve Board and the Financial Institutions Bureau of the State of Michigan. Bank counsel and lenders from ten banks were also interviewed in this process.

In establishing a theoretical framework in which to consider the usefulness of EPA, the concept of agency cost is central. The argument is that the EPA may be an economical substitute for the usual protective
covenants employed by banks and, in that respect, may be mutually beneficial to lender and borrower. With respect to the valuation of the EPA, the option pricing model is used. To accommodate the thin-market problem of the shares of small firms, a capital asset pricing model approach (modified to use accounting data rather than market data) is used.

While little systematic empirical work has been done on this topic, a review of existing work is presented. Also, an empirical analysis of bank policy with respect to protective covenants on loans to small business is presented to demonstrate the nature of the risk-reduction steps taken by banks with this type of credit.

The research is limited in several ways and leaves room for extended treatment of issues raised herein. In particular, empirical analysis shows great promise, both on a systematic survey basis and on a case-by-case basis. Also, financial modeling of both the bank pricing process and the small firm capital structure decision in the presence of EPA would produce useful results. Finally, an intensive comparative analysis of the legal and regulatory boundaries facing banks with the limits of the Glass-Steagall Act, while inevitably necessary, is beyond the scope of this paper.

III. Legal and Regulatory Considerations

The use of equity participation agreements in bank lending operations raises a number of important questions.
A. What type of consideration may a bank legally take as income on a loan?

B. When warrants are involved, what is the bank's position under Securities and Exchange Commission statutes and rules with respect to registration and insider activity?

C. On what basis will the warrants received by the bank be taxed?

D. Does the equity kicker affect the yield on the loan for purposes of compliance with state and usury laws?

These questions, in a sense, hold the key to the extent to which equity participations, and warrants in particular, may come to be used by banks at large. Some of the issues involved depend upon future regulatory interpretation. Others render significant certain provisions which the bank should negotiate in the warrant or cash over-ride agreement.

Acceptable Consideration

Those national banks which have used equity participations to date have based their decision on Comptroller's Ruling 7312.

Ruling 7312. Loan Agreement Providing for Share in Profits, Income or Earnings

A national bank may take as consideration for a loan a share in the profit, income, or earnings from a business enterprise of a borrower. Such share may be in addition to or in lieu of interest. The borrower's obligation to repay principal, however, shall not be conditioned upon the profit, income, or earnings of the business enterprise. [1]

The language of this ruling authorizes national banks to take a conditional consideration payment based on "profit, income, or earnings." Cash over-rides are thereby placed clearly within the
charter powers of national banks. Interpretation advanced by the Comptroller's Office is that permission to use warrants or rights to acquire the equity securities or convertible debentures of the borrower as consideration is also implicit in this ruling. [2]

The Comptroller's guidelines are interpreted as providing that under such an agreement, the bank may not pay cash for the warrants nor may any part of the principal amount of the loan be legally earmarked as the purchase price of the warrants. Any warrant taken in such a transaction may be held for an indefinite period, even after the loan is repaid. However, if the warrants are exercised (rather than sold separately) the shares so acquired must be disposed of promptly.

Many national and state banks have been reluctant to proceed with warrant plans due to uncertainty about the legality of holding an equity claim. It is therefore interesting to review the statutes and regulatory opinion bearing on the issue.

Section 24 of the National Banking Act clearly prohibits a national bank from purchasing and dealing in stock for its own account.

The business of dealing in securities and stock by the association (national bank) shall be limited to purchasing and selling such securities and stock without recourse, solely upon the order, and for the account of, customers, and in no case for its own account, and the association shall not underwrite any issue of securities or stock... Except as hereinafter provided or otherwise permitted by law, nothing herein contained shall authorize the purchase by the association for its own account or any shares of stock of any corporation. [3]

The consistent opinion of the courts has been that a national bank has no power to purchase or acquire corporate stock for its own account except to protect itself against loss on a debt owed to the bank. [4]
Several cases have involved this point and tend to support the opinion expressed above. [5] Two comments reflect this support:

. . . A national bank is not authorized to engage in "the business of buying and selling stocks, as a source of revenue or profit, which would subject the capital contributed by the stockholders to the hazards of speculation, independently of the ordinary risks of banking." Hotchkin v. Third National Bank of Syracuse, 219 Mass. 234, 237, 106 N.E. 974, 975; U.S.C. supp. IV. Title 12 sec. 24, 12 U.S.C.A. sec. 24. (26 N.E. (2d) 365)

. . . Furthermore, the purpose of said section 24 is to limit a national bank to conducting the business of dealing in securities and stock in any manner other than upon a "without recourse" basis. (50 N.E. (2d) 200)

While a national bank may not purchase corporate stocks for its own account, it may purchase corporate bonds. Such bonds may, however, be convertible into common stock or have stock purchase warrants attached. Regarding purchase of such bonds by national banks, the Comptroller of the Currency has issued the following regulation:

When a bank purchases an investment security convertible into stock or with stock purchase warrants attached, entries must be made by the bank at the time of purchase to write down the cost of such security to an amount which represents the investment value of the security considered independently of the conversion feature or attached stock purchase warrants. Purchase of securities convertible into stock at the option of the issuer is prohibited. [6]

Furthermore, with respect to these bonds, the Comptroller's Investment Securities Regulation 3 provides that:

Purchase of securities convertible into stock at the option of the holder or with stock purchase warrants attached is prohibited if the price paid for such security is in excess of the investment value of the
security itself, considered independently of the stock purchase warrants or conversion feature. If it is apparent that the price paid for an otherwise eligible security fairly reflects the investment value of the security itself and does not include any speculative value based upon the presence of a stock, purchase of such a security is not prohibited. If the price paid for a convertible security provides a yield reasonably similar to that of non-convertible securities of similar quality and maturity, a speculative value will not be deemed to exist. [7]

Many convertible bonds would be clearly ineligible for bank purchase when they are "in the money" because of the premium difference between their price and the price of comparable "straight" bonds. It is this premium which is taken to reflect the speculative value of the bonds.

The Comptroller, in the same section, provided added comment:

It does not follow, however, that the current market price will always reflect that feature and while, admittedly, it is sometimes difficult to determine the degree to which convertibility influences the market price, convertible issues should not be indiscriminately rejected as ineligible securities. If the convertible bonds are selling at a figure very closely within the price range of non-convertible issues of comparable quality and yield and are otherwise eligible, they must be regarded as eligible investment securities. [8]

While the bank may, with qualification, purchase a convertible bond or one with warrants, there are further limits on what it may do with any stock which results from conversion or exercise of warrants.

Corporate stock (either preferred or common) acquired by a national bank as "salvage" on an uncollectible loan or otherwise, may not be held definitely or for speculative purposes, but must be disposed of within a reasonable time. [9]

The bank would have to sell the stock or otherwise dispose of it within a short time after execution of the right.
However, the bank need not exercise the warrants to obtain financial benefit from them. If the warrants are registered and traded, they may be sold easily in the open market. Warrants may also be transferred or sold to an affiliate owned by the bank or to a trust created for the benefit of the bank's stockholders. They may be distributed directly to stockholders as dividends, transferred to the bank's pension or profit-sharing trust, or to the bank's holding company, if one exists.

For state chartered banks, the state statute is the controlling legislation. In Michigan, for example, the statute and regulations are silent with specific respect to either type of EPA, although banks are expressly prohibited from owning corporate stock.

Two major questions face national and state banking supervisory agencies:

1. Does acceptance of warrants by the bank constitute dealing in securities?

2. Does the action violate the legislative policy underlying the prohibition of a bank's ownership of stock?

The first question might be solved by examination. Scrutiny of the volume and nature of warrants and the underlying equity securities by bank examiners should show whether the bank is acting intentionally as an underwriter or dealer in any specific case. Since the warrant carries no stockholder rights, it may be argued that merely holding the warrants does not violate the three basic legislative policy reasons for the prohibition of bank ownership of stock. The first of these is the variable nature of equity values. The second is to prevent too great a
diversification of bank interests, which might dilute the ability of bank executives to properly attend to the banking functions of the corporation and thereby endanger the public welfare. The third is to prevent banks from owning their debtors and providing opportunities to drain or favor these debtors.

Despite the uncertainty expressed by bankers and their counsel regarding the legality of EPA, the recent financing of First Pennsylvania Corporation seems to be conclusive proof that—short of a court test—the regulatory agencies believe the use of EPA to be within the legal lending powers of banks (and banking regulatory agencies!).

In that financing, the Federal Deposit Insurance Corporation and a group of 22 private banks provided $500 million in credit to First Pennsylvania Corporation, a bank holding company. The characteristics of the credit and its terms are set forth below.

... the FDIC's five-year $325 million loan ... will be interest-free for one year and bear interest set at 125% of the FDIC investment portfolio yield for the subsequent four years. At the current portfolio yield the interest rate would be 10.67%. The FDIC loan will be subordinate to the assistance from the banks, but senior to the First Pennsylvania Bank's existing subordinated debt holders and stockholders.

The $175 million in loans from private banks will be for five years, at a certificate of deposit rate established annually. They will be subordinate to depositors and other general creditors but senior to other subordinated creditors, including the FDIC.

As part of the package, First Pennsylvania will issue to the FDIC and the assisting banks warrants to purchase 20 million shares of its common stock at $3 per share. The warrants have a seven year life and any proceeds must be invested by the holding company as equity in the bank. [10]
This credit arrangement has since been approved by First Pennsylvania stockholders. The pricing scheme very clearly employs warrants in what is obviously a trade-off for reduced interest payments both initially and over the life of the loan. The spirit of the transaction is evident in the following comment:

Bank regulators believe the aid package provides "substantial rewards" to those who have agreed to help First Pennsylvania and will prevent shareholders from receiving a complete "bail-out." [11]

It may be inferred from this remark that the trade-off of a "certain" level of interest for a return conditional on the profitability of the borrower has been accepted by the regulatory agencies. It may also be inferred that the "reward" for the partial "bail-out" is recognition by regulatory agency and by bank lenders of the use of the conditional equity participation as a premium for the acceptance of greater risk in a loan.

These appear to be important inferences, especially in the light of the following comment:

Some banks have used income participation clauses with commercial term loans and with loans on income properties, such as apartment houses. Although the authors believe that such clauses make economic sense, legislative threats to make all the interest on such loans non-deductible for the computation of income taxes and to outlaw income participations and warrants as forms of equity (which banks are legally prohibited from holding) will probably continue to keep banks from using this technique very widely. [12]
Should this use of EPA survive without successful legal and administrative challenge, it may well resolve the uncertainty in the minds of bank lenders and result in an increased consideration of EPA as pricing vehicles.

Securities and Exchange Commission Rules

When warrants are taken rather than a cash over-ride, both the borrower and the bank must consider the implications under the Securities Act of 1933 and the Securities and Exchange Act of 1934.

Under the Act of 1933, every public distribution of securities must be registered unless exempted. While a bank loan with warrants may be construed a private placement and thereby exempt from registration, the ultimate disposition of the warrants may be considered a public distribution. An investment letter from the bank to the borrower and from any future assignee to the bank may obtain exemption for the warrants. A surer course would be for the borrower to register both the warrants and the underlying securities.

If the bank disposes of the warrants pursuant to a Securities and Exchange Commission Registration statement, which is true and complete, the probability of liability is small. If a registration statement is not used, the bank must sell the warrants privately or, if publicly distributed, the sale must be at such a time that the bank can no longer be judged an underwriter. This may be two years or more after receiving the warrants. Even so, if the bank has information which would materially and adversely affect the value of the warrants, such
information should be transmitted to the buyer, whether private or public. Otherwise, insider liability is possible under the Act.

If the stock purchase warrants taken by a bank in lieu of interest come from a corporation with securities registered under the Securities Exchange Act of 1934, the question of insider activity could become a serious consideration. If the borrower is not already registered and if registration of the warrant is felt unnecessary, the SEC reporting requirements would be avoided. This does not mean that potential insider liability is avoided, however.

Stock purchase warrants are defined in the Act as "equity securities" for purposes of regulation. Therefore, warrant holders are subject to the same regulations as are stockholders. The statutory definition of an insider includes directors, officers, underwriters and "each security holder of record holding more than 10 percent of any class of a security of the issuer (other than an exempted security)."[13]

Aside from fitting this definition through its warrant holdings, the bank might well be considered an insider due to information obtained even before the loan was made, for example, from previous credit or Board of Directors membership. Thus, stopping short of the 10 percent limit, however defined, may be no assurance of immunity from insider requirements.

If the bank were held to be an insider, it would be required to file a financial statement and statements regarding remuneration and material contracts between the borrower and the bank under Sections 12(b) and
13(b) of the Securities Exchange Act. Also, information regarding the bank's conditional equity position and credit transactions between the bank and the borrowers would be required in any proxy statements issued by the borrower.

Furthermore, under Section 16(b) of the Act, the bank would be required to file a statement of ownership when the warrants are acquired and a statement of changes in ownership monthly thereafter. The bank would also be liable for short-swing profits under Section 16(b) if the warrants were exercised within six months of receipt. Even if held longer, the bank has potential liability for the abuse of insider information. It is entirely possible that the SEC could, under Section 12(b), exempt the issuer or any security holder from the disclosure requirements in any particular case. Nonetheless, the possibility of disclosure and insider responsibility is very real when a bank takes warrants with a loan.

Income Tax Treatment

One of the reasons why a bank would choose to take warrants instead of a cash over-ride is the favorable tax treatment afforded the capital gain arising from the price appreciation of the warrants. This naturally raises the question of how the warrants might be taxed. It appears that there are two basic possibilities, each with a different outcome from the bank's viewpoint.

1. Current recognition of value. Under this approach, the bank would take the warrants into ordinary income at fair market value at
time of receipt, amortizing the value of the warrants over the life of the loan. If the warrants were sold at a profit more than six months after receipt, the unamortized part of the initial value would be a tax-free return of capital while the balance would be a long-term capital gain. Should the warrants become valueless, expire, or be sold for less than their original value, a capital loss would be recognized. For tax purposes the bank should always sell the warrants rather than exercising them and then selling the stock. The Comptroller of the Currency would require almost immediate sale of such stock and, since the tax holding period begins at the date of exercise, any gain on the sale of the stock would be considered short-term for tax purposes.

2. **Deferred recognition of value.** This approach appears less desirable for the bank and would be similar to the argument the Internal Revenue Service might advance. It is based on the contention that no income is received by the bank until the warrants are sold by the bank, since the warrants had no readily ascertainable fair market value at time of receipt. Income at sale could be fully taxable as ordinary income. Such an argument would most likely be made if the warrants or the underlying stock were not traded publicly.

In either event, the banking organization would benefit by "upstreaming" the warrants to its parent holding company. Any gain realized on the sale or exercise of the warrants will be taxed as ordinary income if the warrants are held by the bank but at capital gain rates if held by the holding company.
One of the reasons a borrower might take an EPA as part of the pricing contract on a bank loan is that the cash of the equity given in lieu of interest may be tax deductible for the borrower. This is a very "gray" area but, in the process of interviews for this paper, several instances of this treatment were found. The claim is made at the time the warrants are exercised by the lender and the amount claimed is the difference between the exercise price and the price of the equity at the time of exercise.

**Usury Considerations**

To the extent that warrants constitute additional interest, the total interest on a loan could exceed state usury limits. In most states, but not all, usury statutes do not apply to corporations. In Michigan, for example, an interest rate above the usury ceiling may be charged if agreed to in writing by the corporation.

However, the usury law does apply to corporations in the two largest states, California and New York. One device used in these states is to establish the equity participation formula so that it, plus the contract interest payment, constitutes a yield on the loan which is within the usury rate limit. There is still some uncertainty concerning the measurement of yield for usury law purposes. If the yield in any one accounting period is calculated, it appears likely that the ceiling will be exceeded. For example, an amortized loan may be nearly written off when a substantial profit is realized on the sale of warrants by the bank. The yield, calculated for that period alone, will be much higher
than if the gain had been spread over the life of the loan. It is not yet clear how the various state statutes will be interpreted on this question.

Many states' usury laws require that usurious intent at the time the loan was made must be proven to successfully prosecute. The lender would have to know the value of the warrants and demand a combination of warrants and contract rate which he knew would exceed the usury limit. Warrants are difficult to value objectively and it is felt that this fact makes it difficult to prove usurious intent. Furthermore, substitution of warrants for a portion of the contract rate is considered inconsistent with an intention to exceed the usury limit. These factors differ by individual state, and local counsel should be sought in particular cases.

IV. Technical Considerations Regarding the Equity Participation Vehicle

If our arguments to this point have been persuasive, one may conclude that EPA are permissible under law and banking regulations and that they may be fitted into SEC and usury law requirements. Two questions now arise and will be addressed in this section:

A. What kind of EPA vehicles are likely to be used?

B. How can the value of the EPA be estimated by lender or borrower?

The answers to these questions are sufficiently complex when the object of discussion is a large corporate borrower, the common stock of which is widely traded and perhaps listed on an exchange. In this
paper, of course, we are largely concerned with the small firm borrower, usually characterized by privately-held stock or lack of a substantial public market in the common shares. In this type of case, the valuation problem is both important and difficult.

**Types of EPA Vehicles**

There are two major types of EPA vehicles used: the stock purchase warrant and the cash over-ride conditional payment. The important characteristics of each are concisely described below.

**Stock purchase warrants.** Under this arrangement, the bank, at the time the loan is closed, acquires warrants which give the bearer an option to buy from the borrowing firm a certain number of shares of the borrower's stock at a certain price for a certain period of time.

The bank does not possess stockholders' rights (e.g., voting and dividend rights) when it holds warrants. It does, however, have an interest in those factors which affect the value and marketability of the warrant and the underlying stock. Accordingly, the bank must try to negotiate those terms in the warrant agreement which protect this interest. The warrant agreement should provide for adjustment in case of any type of recapitalization, as well as for continuity of the claim in case of merger. Also, it should provide for notification and information concerning actions which might affect the company and the value or outstanding amount of its stock.

Typically, when issued, the exercise price of the warrants will exceed the current price of the stock. It may be fixed over time or may
progress, rising as time passes or as the number of warrants exercised increases. The warrants will normally be detachable to allow for separate sale by the bank. The expiration date of the warrants is a matter of negotiation and may run beyond the maturity date of the loan. The borrower may be able to bargain for a call feature on the warrants or for a "flush out" clause which permits the borrower to trigger exercise of the warrant by lowering the exercise price at its discretion. Both of these devices give the issuers flexibility in future financing.

In determining warrant terms, the bank and the borrower must negotiate the length of the exercise period and the distance of the exercise price from the current market price. These characteristics affect the probability of the warrant going to a high premium early in its life, given the basic considerations of high probable expected value of the stock and protection from dilution.

**Cash over-rides.** A cash over-ride is an incremental cash payment, over and above the regular interest payment, made by the borrower to the lender. The major distinction between this device and the warrant approach is that the cash compensation comes directly from the borrower rather than from some third party.

The increment is taxed as ordinary income as received and does not provide the bank with the capital gain tax advantage of warrants. The amount of the increment is typically dependent upon the value of some variable related to the operating performance of the borrower or the project being financed.
One approach bases the performance-related supplement on some current flow variable such as total sales or net profits of the firm. If the purpose of the loan is not tied to some specific, revenue generating program, but is expected to increase the total net profit of the firm, this device offers certain advantages. Cash income is realized by the bank in direct proportion to increases in the performance indicator thus removing the intermediate step of having the performance reflected in the price of the stock. The problem of secondary sale of warrants is thereby removed.

Where the credit advanced is identifiable with a particular project or asset, the flow variable may relate to the project rather than the firm as a whole. The advantage of this device is that the expected value of the project's flow variable may be more predictable than that of the borrower's firm as a whole. The lender may have particular expertise which allows him to be confident in estimating the success of, say, a real estate development. An EPA based on the project may be considered to have a higher probable expected value than one based on the borrower's total performance.

Valuation of the EPA Vehicle

An understanding of the value of the EPA vehicle is important to borrower and lender since it reflects part of a tradeoff against some accommodation offered in the loan: a reduced interest rate, easier repayment terms, greater acceptance of risk, or some other financial variable concession. Valuation is important, not only at the time the
loan is made, but also during the entire life of the EPA. The lender, over this time period, faces the constant question of whether or not to sell or exercise the warrants or the right to the conditional cash over-ride. The borrower faces the question of exercising a call on the EPA (if available) and of predicting the likely exercise of the EPA, with its attendant financial implications.

As a starting point it is useful to define the "theoretical" value of an EPA and to show how it might relate to the value of the underlying assets of the borrower. For simplicity, we shall use the conventional relationship between a warrant and the stock to which it is related. This concept may also be applied to the cash over-ride vehicle.

The theoretical value of a warrant can be determined by the relationship:

\[ V_t = N P_s - E \]

where \( N \) = the number of shares that can be purchased with one warrant
\( E \) = the option price associated with the purchase of \( N \) shares
\( P_s \) = the current market price of one share of the stock

To illustrate this relationship with numbers, assume that the XYZ Corporation has warrants outstanding for which \( N = 1 \) and \( E = $14 \). On a day when the company's stock price closes at, say, $17, the theoretical value of the warrant (if it were exercised) is:

\[(1) (17) -$14 = $3\]
As is well-known, the market value of this warrant need not be (and probably will not be) $3 at that particular moment. In general, the relationship between market value and theoretical value may be represented as shown below in Figure 1.

Figure 1

The highest value of the warrant resides on the X curve, which represents the value of the stock. The value would approach this limit if the warrant had a very long life (expiration date) and was not expected to be exercised until far in the future.
The lowest value of the warrant (as a function of current stock prices) is shown as zero up to the exercise price and as the Y curve thereafter. It is the theoretical value of the warrant assuming a valuation one moment (i.e., a very short time) from execution.

Typically, the value relationship lies between the two parameters, as described by the three convex curves. The gap between the market line and the theoretical value line is at its maximum at the exercise price. It is also larger for the warrant with a longer time to expiration (line 3) than for those with shorter time to expiration (lines 2 and 1). Over the life of the warrant, as the time to expiration declines, the relationship shifts downward (i.e., from a line 3 type to a line 1 type) toward the instantaneous theoretical value.

The dominant factor in determining market value of a warrant is the volatility of the underlying stock, that is, the range of possible outcomes (i.e., stock prices) over the period to expiration date. This is an important concept in thinking about evaluating contingent equity claims and is demonstrated in the following example.

Assume that warrants are available in two stocks, A and B. The expected value of the stock at the end of the period is the same ($40 per share) and the warrant exercise price for each is the same ($38). The probability distribution of the price of the two stocks is as follows:
Probability Stock A Stock B
.10 $30 $20
.25 36 30
.30 40 40
.25 44 50
.10 50 60

Value of Option A
= 0(.10)+0(.25)+($40-$38)(.30)+($44-$38)(.25) ($50-$38)(.10=$3.30

Value of Option B
= 0(.10)+0(.25)+($40-$38)(.30)+($60-$38)(.25) ($60-$38)(.10)=$5.80

Thus, the expected value of the warrant is higher for the stock with the greater variance in possible stock price. This reflects the greater opportunity from more favorable outcomes under B than under A. Since the warrant cannot have a negative value, and its minimum value is zero under both A and B, the risk-return relationship in B is more favorable than in A.

In the (efficient) marketplace, the value of the warrant is kept in equilibrium with the underlying stock price through arbitrage. To understand this, let us assume that a stock which sells for $50 per share, has the probability distribution of expected value shown below:

<table>
<thead>
<tr>
<th>Probability</th>
<th>Percentage Change</th>
<th>Ending Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>.666</td>
<td>+20%</td>
<td>$60</td>
</tr>
<tr>
<td>.333</td>
<td>-10</td>
<td>45</td>
</tr>
</tbody>
</table>

Expected value = (.666)($60) = (.333)($45) = $55
If there exist warrants permitting the purchase of one share per warrant at an exercise price of $50, the expected value of the warrant at the end of the period (based on the stock data above) is:

\[(.666)(10) = (.333)(0) = 6.667\]

The purchaser of the stock can hedge the risk in the stock by writing options (i.e., issuing warrants) against the stock and selling those claims to interested investors.

The number of options (warrants) to write is determined by the "hedge ratio" (HR).

\[
HR = \frac{uV_o - dV_o}{uV_s - dV_s} = \frac{10 - 0}{60 - 45} = \frac{2}{3}
\]

where \(uV_o\) = end of period value of option when stock is $60
\(dV_o\) = end of period value when stock is $45

This means that for each two shares of stock purchased, the investor should write (sell) options (warrants) to buy three shares of the stock. The hedge has the following characteristics, given the relationships cited.

<table>
<thead>
<tr>
<th>Ending Stock Price</th>
<th>Value of Stock Held</th>
<th>Value of Short Position</th>
<th>Value of Combined Positions</th>
</tr>
</thead>
<tbody>
<tr>
<td>$60</td>
<td>$120</td>
<td>-$30</td>
<td>$90</td>
</tr>
<tr>
<td>$45</td>
<td>90</td>
<td>0</td>
<td>90</td>
</tr>
</tbody>
</table>
From the stock purchaser's point of view, hedging reduces the risk of the stock purchase to zero. The initial value of the option may be determined by assuming that the investor will price it to earn the risk-free rate which is expected to prevail over the holding period. Assume this is the Treasury bill rate and its value is 5 percent.

\[
\begin{align*}
[210 - 3(V_0^\delta)] & \times 1.05 = 210 \\
3.15 (V_0^\delta) & = 210 - 90 \\
V_0^\delta & = \frac{90}{3.15} \\
V_0^\delta & = 54.762
\end{align*}
\]

The overall investment at the beginning of the period is:

\[
$100 - 3 (54.762) = 85.714
\]

and the return on this position is:

\[
\frac{$90 - 85.714}{$85.714} = 5\%.
\]

The expected return from the stock for the period is:

\[
\frac{$55 - 50}{$50} = 10\%.
\]

for the option, the return is:

\[
\frac{$6.667 - 54.762}{$4.762} = 40\%.
\]

In efficient markets the price of the option (given the specified relationships) will tend toward an equilibrium value of $4.762. Above this price, the option writer would be able to achieve a riskless hedge and earn a return above the risk-free date. Below this price, the buyer of the options would sell the stock short and invest the proceeds in, say, a Treasury bill at the risk-free rate. The yield on this combination of stock, option, and risk-free investment transaction would
exceed the risk-free rate. Knowledge of either of these opportunities attracts arbitragers who will transact until excess profits are competed away.

A very important advance in the valuation of conditional equity claims is the Black-Scholes option pricing model. While greater degrees of complexity could be introduced, we will examine the formula for a "European" option (one which can be exercised only at maturity) on a stock which pays no dividend. The well-known accompanying assumptions are:

1. There are no transactions costs; options and stocks are infinitely divisible; and information is available to all without cost.
2. No imperfections exist in selling short an option or stock.
3. The short-term interest rate is known and constant throughout the duration of the option contract.
4. Stock prices follow a "random-walk" in continuous time pattern.

The product of the Black-Scholes model is the equilibrium value of the option or, in this case, the EPA warrant. The formulation of the model is as shown below:

\[ V_0 = V_s N(d_1) - \frac{E}{e^{rt}} N(d_2) \]

where \( V_s \) = the current price of the stock
\( E \) = the exercise price of the option
\( r \) = the short-term interest rate continuously compounded
\( t \) = the length of time in years to the expiration of the option
\( e = 2.71828 \)
\( N(d) \) = the value of the cumulative normal density function
\( d_1 = \frac{\ln \left( \frac{V_s}{E} \right) + \left( r + \frac{1}{2} \sigma^2 \right) t}{\sigma \sqrt{t}} \)

\( \ln = \) national logarithm
\( \sigma = \) the standard deviation of the annual rate of return on the stock continuously compounded
Essentially this model is useful because it expresses the value of the option as a function of the short-term interest rate, the time to expiration, and the variance rate of return on the stock but not as a function of the expected return on the stock.

The necessary input variables are five: the current stock price, the time to expiration of the option, the exercise price, the short-term interest rate, and the standard deviation of the stock price. The first four of these are observable for traded stocks and the fifth is readily calculated from past stock performance data. Empirical tests of this model have produced satisfactory results and, as indicated above, its use has been extended to more complex conditions.

The condition faced by persons trying to place a value on a small-firm EPA option (warrant or over-ride) is complicated by the lack of a market for the underlying assets, i.e., it is not a privately or closely-held stock. An approach to the solution of this condition is suggested below.

**A Non-Market Valuation Model**

In the absence of a public market for the stock, valuation must proceed on the basis of the value of the assets underlying the stock. Essentially, a measure of the net worth would have to be accepted by parties to the negotiation—possibly book value, replacement value, or some appraised value by mutual consent. The shares of stock could be set against this value to determine per share price and exercise price.
The variance in the observed cash flows (from proper accounting records) could be used as a proxy for the variance of the stock price, inasmuch as the cash flows affect the value of the net worth. In this fashion the model can be adapted to the circumstances of a small firm with no public market for its stock or to a component division or product line of a firm.

In 1968 Ball and Brown hypothesized that the change in income over period \( T \) for business unit \( j \) is linearly related to the change in income over the same period for the market. This relationship can be expressed as:

\[
\Delta I_{j,t-T} = \alpha_{1jt} + \kappa_{2jt} \Delta I_{M,t-T} + \hat{\epsilon}
\]

where \( \Delta I_{j,t-T} \) is the change in income for entity \( j \) at time \( t \) over the period \( T \), \( \Delta I_{M,t-T} \) is the change in income for the market at time \( t \) over period \( T \), \( \alpha_{1jt} \) is the intercept, \( \kappa_{2jt} \) is the slope, and \( \hat{\epsilon} \) is the error term.

Empirical studies verified that indeed there was a high correlation between changes in income for a business unit and changes in income for the market as a whole. Furthermore, the slope, \( \kappa_{2jt} \), can be interpreted as a measure of the systematic risk of the business unit.

This concept was modified and expanded by Gordon and Halpern. They contend that the growth in earnings for a business unit is correlated to the growth in earnings of the market.

Let \( \gamma_{j,t} \) be earnings per share for quarter \( t \), \( \gamma_{j,t-4} \) be earnings per share for the same quarter one year earlier, \( g_{j,t} = \ln(\gamma_{j,t}/\gamma_{j,t-4}) \) be the rate of growth in earnings per share as of quarter \( t \).
As a measure of growth in market earnings, a similar calculation was performed, where $Y_{Mt}$ is the total profits after taxes for quarter $t$ as reported in the National Income and Product Accounts, U.S. Department of Commerce, Survey of Current Business.

The impetus for measuring the growth in earnings as a ratio between earnings as of quarter $t$ and earnings for the same quarter the previous year was that this calculation eliminates changes in earnings due to cyclical sales patterns. Also, earnings of a firm may lead or lag earnings of the market, so measuring earnings, growth over a year's time tends to reduce this lead of lag effect.

Finally, taking the natural log of the earnings ratio eliminates the absolute magnitude of the earnings as a factor in determining the rate of growth in earnings.

For each business unit $j$, there is a linear relationship between its growth in quarterly earnings and the growth in quarterly earnings for the market:

$$g_{j,t} = \alpha_{jt} + c_j g_{Mt} + \epsilon_t$$

where $c_j$ is a non-market measure of the systematic risk of the business unit.

Gordon and Halpern found a high degree of correlation between $\hat{\beta}_j$ and $\hat{c}_j$ for a publicly traded firm $j$. From a sample of 17 public utilities and 32 industrials over the period 1957-68, they calculated a product moment correlation coefficient of .66 between $\hat{\beta}$ and $\hat{c}$. 
Initially a higher correlation was expected, but they concluded that a perfect correlation should not be expected because earnings may lead or lag the market, whereas changes in stock price instantly reflect the firm's current and expected earnings.

It seems clear that modern finance theory and practice offer techniques which are useful in placing a value on the EPA, even when the borrowing firm is one with privately held or thinly traded stock. This is by no means a claim that such estimation is a trivial problem. It is a suggestion that the problem is not totally insurmountable and probably tractable with existing financial technology.

V. Application of EPA: A Theoretical Framework for Analysis

Up to this point we have argued that the use of EPA is quite within the legal and regulatory boundaries of bank lending and that the value of the EPA can be measured and realized by the parties involved. We now turn to the question of appropriate use: when, why, and under what circumstances is the EPA likely to be a useful pricing variable?

In this section we present a theoretical framework within which this question may be considered. The framework builds upon (1) the concept of agency costs and (2) the application of the option pricing model to the issue of capital structure and the relative values of debt and equity. After treating the EPA question in this theoretical framework, we shall consider (in a later section) the "practical" arguments usually advanced by banks and borrowers for and against EPA.
The Incidence of Agency Costs

One of the important advances in financial theory in recent years has been the recognition of the nature of agency costs and their influence on the capital structure of business firms. [14] The conceptual and analytical framework provided by this approach is helpful in considering the potential use of EPA.

As a starting point we will accept Jensen and Meckling's definition of the agency relationship:

"... a contract under which one or more persons (the principal(s)) engage another person (the agent) to perform some service on their behalf which involves delegating some decision making authority to the agent. [15]

In this type of relationship, the potential for conflict of objectives is very real, and both parties have an interest in the effects of this potential.

In most agency relationships the principal and agent will incur positive monitoring and bonding costs ... and in addition there will be some divergence between the agent's decisions and those decisions which would maximize the welfare of the principal.

We define agency costs as the sum of:

1. the monitoring expenditures by the principal
2. the bonding expenditures by the agent
3. the residual loss (the dollar equivalent of the reduction in welfare experienced by the principal due to the divergence between the agent's decisions which would maximize the welfare of the principal). [16]

The notion of agency has been applied to corporate finance, and particularly to the capital structure question. In a scenario characterized by simplifying assumptions, the base case is one in which
the firm's owner-manager faces three alternative sources of funds: personal investment of 100 percent of the firm's finance, the use of outside equity, or the use of outside debt. Under the "personal investment" alternative, the entrepreneur is "his own boss" and may conduct the firm according to his own personal preferences.

If and when stock is sold to outsiders, however, the entrepreneur becomes the "agent" of the investing "principals." His actions may potentially clash with the objectives of the principals and the agency costs cited above arise.

The agency costs are borne by the original owner-manager. If, for example, equity is sold to outsiders, monitoring costs will be incurred by them as a practical measure. Also, the owner-manager will incur bonding costs as a means of assuring outside investors of his fealty to their goals.

These agency costs are borne by the original owner-manager because they will be considered by the outside investors in establishing the price they are willing to pay for the firm's equity shares. If the firm and its operations are such as to demand high monitoring costs, the value of the stock will be lower than otherwise. In such a case the owner-manager may incur bonding costs to offset this "discounting" process. The new cost is the discount plus the bonding cost and they are both borne ultimately by the entrepreneur.

The original owner-investor can avoid these agency costs by self-financing--but we shall presume that the desired scale of the
firm's operation requires capital beyond his means. In this case, outside debt becomes an alternative.

In the extreme case, one can imagine the entrepreneur borrowing money and, first, buying out the outside equity holders to eliminate the agency costs. Further, we might expect this person to finance all further expansion with debt—particularly when we consider the tax-deductability of interest and the upside potential of leverage. Realistically, the extreme is not realized, due in no small part to the existence of agency costs connected with debt.

Because of the nature of the usual debt contract, the creditor has fairly significant agency concerns. Typically, the lender puts up cash in exchange for a promised return of principal and a periodic interest payment which is either fixed absolutely or fixed relative to some index of prices. By setting a rate appropriate to the perceived risk in the proposed use of the funds the lender makes a commitment based on trust that the owner-manager will use the funds in the way proposed and will make no "surprising" changes in the nature of the firm's business.

In general terms, the lender must protect himself against the possibility that the owner-manager—receiving the funds from the lender—will adopt investment strategies with wider variance in expected returns than the ones upon which the decision to lend was made. The incentive for the entrepreneur to shift in this direction is very real: by accepting higher-variance projects and thereby increasing the upside potential the possible return to the equity is increased; because the
increased scale of the firm has been financed at the margin by debt, the
greater proportion of the down-side risk is now borne by the lender.
This raises the value of the equity and lowers the value of the debt:
essentially, wealth has been transferred from the debt-holder to the
equity-holder. Clearly the lender has a monitoring incentive and
responsibility.

This general condition (i.e., the need to monitor) is reflected in
the restrictive covenants and collateral requirements which are applied
to debt; in the not uncommon use of short-term notes which require
review and recontracting each quarter; and in the participation by
lenders as board members in the decisions of the firm.

In general, if a lender believes a prospective borrower is in a
business situation where (for reasons of personal ethics or the nature
of the firm's occupation) dramatic risk changes are possible during the
life of the loan, the lender should compare the total agency costs
against the promised return and decide either to:

1. forego the lending opportunity,
2. impose constraints to reduce the probability of such
   changes (thus increasing monitoring and bonding
costs),
3. increase the price of the loan to cover the
   increased agency costs.

We may demonstrate the effect of agency costs upon the cost of
capital, with this cost expressed entirely in terms of percentage cost
per dollar of finance, with the key relationships shown in Figure 2.
The solid line shows the effect on the weighted average marginal cost of capital of increased leverage (the ratio of Debt Equity) due to the tax effect. This effect derives, of course, from the deductibility of interest expense for income tax purposes.

The broken lines demonstrate the effects of two important factors: the probability of bankruptcy and the burden of agency costs. The argument behind the upward slope of the "tax plus bankruptcy" line is that as the D/E ratio increases, the probability of bankruptcy (or, more generally, failure) increases, thus requiring a higher return on the capital provided.
The monitoring cost is shown as being smaller than the bankruptcy cost and as increasing at a greater rate (relative to the change in leverage) than does the bankruptcy cost.

It seems clear from this illustration that the monitoring cost can be substantial and that it bears directly on the equity holder through its upward impact on the cost of capital.

As mentioned earlier and as reflected in the solid line in Figure 2, there are commonly cited incentives for the entrepreneur to seek to use debt (i.e., tax relief, leverage) as a source of funds beyond personal investment and outside equity. Agency costs limit the volume of debt used because, beyond a certain proportion of debt to equity, the agency costs of debt dominate the agency costs of outside equity. This tendency is related to the upward revision of the probability of bankruptcy as the ratio of debt to equity increases. It is important to note that this point on the debt-equity scale differs among industries and firms as a function of the riskiness of their investments.

The fraction of funds raised from outside sources affects total agency costs, as shown in Figure 3.
The point on these curves which will be chosen by an owner-manager will depend primarily upon his available store of personal investment funds. If he can invest a lot, the percentage of outside financing is reduced and agency costs are accordingly lower.

The Role of EPA in Reducing Monitoring Costs

How does the EPA relate to the concept of agency costs? How can it be used to reduce monitoring costs? Why would the banker want to use EPA? Why would the borrower acquiesce to its use as part of the loan contract? These questions will be addressed using the option pricing model as applied to the valuation of a levered firm.
Let us first consider the position of a bank lending officer considering a loan to a relatively new and small business firm operated by a single owner-manager. The fundamental objective of the banker with respect to this loan is to collect the real value of the interest and retrieve the real value of the principal according to the maturity schedule. We will assume that the banker is familiar with the firm's industry, product and market and, based on this familiarity, accepts the operating plan (i.e., proposed use of the funds) put forth by the borrower.

A major cause for concern in this case is the possibility that the owner-manager may depart from the accepted operating plan once the loan funds have been transferred. The banker has approved the loan and its price based on a certain level of perceived risk; by "changing the plans" the entrepreneur may increase the riskiness of the enterprise and the bank loan.

The incentive for the entrepreneur to do this is based on the argument that by accepting projects with greater variance of expected returns, the possible return to the equity is higher. At the same time, of course, the greater variance increases the probability of bankruptcy. In the event of bankruptcy, the losses facing the corporate equity holder are limited to the value of the net worth. The creditor, in general, has no claim beyond the value of the assets of the corporate borrower.
The option pricing model has been applied to the capital structure problem and is useful in this context. It provides insight and a useful framework for valuing the equity and debt of a levered firm.

To make this application, one must think of the equity of the firm as a call option against the firm's total value (the underlying assets). The writers of the option are the holders of the firm's debt. The exercise date is the maturity date of the debt and the exercise price is the maturity value of the debt.

At maturity the stockholders have a straightforward choice: to exercise the call or to forego. The "exercise" is represented by paying off the amount owed on the debt and essentially buying the firm from the debt holders. By foregoing the option, the stockholders are defaulting on the loan, thereby delivering the firm's assets to the debt holders. The decision rule is: if the firm's total market value exceeds the debt, stockholders will pay off the debt; if market value is less than the debt, the stockholders forego the exercise (i.e., they default) and the assets of the firm go to the creditors.

As demonstrated in our earlier discussion of the option pricing model, the value of an option increases with the variance of its possible returns. The stockholder in the subject firm therefore has an incentive--once the money has been obtained from the borrower--to engage in projects with higher risk (i.e., greater variance of possible returns). Under the usual terms, the net benefit will accrue to the equity. Just as significantly, the gain is at the expense of the debt.
holder: the debt is now worth less because—with no increase in expected return—the risk of the debt has been increased by the greater variance of returns.

Essentially, as shown earlier, wealth has been transferred to the equity holder from the debt-holder. The usual precaution in situations where this kind of shift is possible (either because of the ethics of the borrower or the nature of the market served by the firm) is for the lender to apply a number of protective covenants which bind the borrower with respect to use of the funds and conduct of the business.

To demonstrate this process and to illustrate two useful applications of the EPA concept, we shall use an example presented by Van Horne. [17]

In the example, Van Horne considers a company with total value of $4 million and newly issued debt of $3 million (a single-payment discount loan with maturity of five years). The standard deviation of the continuously compounded rate of return on the overall value of the company is 12 percent. Using the Black-Scholes option pricing model, the value of the option is calculated to be $1,780,526. Under the notion that the stock is really an option on the assets of the firm, the implication is that the stock is worth $1,780,526 and the debt is worth $4,000,000 - $1,780,526 = $2,219,474.

Suppose that the borrowing firm increases the riskiness of its business so that the standard deviation is 36 percent rather than 12 percent. Applying the same model, the stock value is shown to be
$2,084,431 and the debt value is to $1,915,569. The value of the firm has not changed but its total value has been redistributed from debt to equity.

The potential value of the EPA stands out quite clearly in this situation. The incentive for the equity-holder to raise the firm's variance is found in the wealth transfer from bank to stockholder. Imposition of the EPA would limit the amount of net wealth transfer to the stockholders which can be accomplished with any given change in variance. This is true because the increases in variance is not accomplished "free of charge" by the equity holder--his downside risk is the total loss of the equity he owns and there is likely to be an amount of sensitivity to that, perhaps even a marginal utility schedule which could be derived.

Consider also the "exercise of the option" decision rule introduced earlier. The rule states that the stockholders will "exercise" the option (i.e., pay off the debt) if the value of the firm exceeds the value of the debt; otherwise they will forego (i.e., default). This puts the lender in the position of taking the assets of the firm at a value just equal to or below the value of the debt. After considering bankruptcy costs, the lender almost certainly faces a loss on the loan.

Now imagine that the lender has an EPA which provides for, say, 25 percent of the equity via warrants. With this claim on the equity the "break-even" value of the firm for stockholder exercise is $3.25 million. At that point the net value of the option (the equity) to the
other shareholders is zero if they default. The assets pass to the lender (at a value of $3.25 million) and may be used to offset the debt ($3 million). The EPA thus provides a cushion to the lender for the absorption of bankruptcy costs, thereby improving the lender's likelihood of coming out of bankruptcy with full recovery of principal.

The significance of the EPA is that it can be used as an alternative to some of the protective covenants listed earlier. The motive for this is two-fold. First, the covenants—while protecting the creditor—may have severe and unintended side effects on the borrower and may represent an "overkill." Second, the covenants—while curtailing the firm's activities—may not be comprehensive, thus permitting the firm to pursue the more aggressive path despite the wishes and efforts of the lender. In contrast, the EPA is a sure-fire, possibly lower-cost protector against upside variance increases.

The conclusion drawn here is that the EPA can be used as a risk-reduction device by the lender. From the borrower's viewpoint the use of the EPA would be acceptable if its value did not exceed the value of the concessions granted by the lender in terms of reduced protective covenants. In short, the EPA can be used as a device for reducing the real costs of monitoring the agency relationship. This can reduce the cost of capital to the firm and, in the end, offset the potential decline in the value of the firm's equity.
The Role of the EPA as a Reward Device

The other general way in which the EPA can be useful to both lender and borrower is in those situations where an unusual accommodation is given by the lender which makes possible the realization of gains by the equity-holder. The EPA is then viewed as a reward to the lender for the special accommodation. Several examples of this approach stand out.

Most striking perhaps is the "bail-out"—most recently illustrated by the First Pennsylvania financing. At stake was the continuity of the borrowing company and the accommodation took the form of, first and foremost, granting a term loan at all, and second, providing a relatively low interest rate. The argument is that the accommodation should be rewarded and the clear implication is that the form of the reward is both acceptable under legal and regulatory standards and acceptable to the lenders in lieu of a periodic interest payment.

Another example is the substitution of the EPA for interest when the tax benefit of leverage is not available to a firm. If a firm has no taxable income, the pre-tax and after-tax costs of debt are identical. In Figure 2 the solid line would be horizontal instead of negatively sloped. The after-tax cost of debt approaches the after-tax cost of equity finance. By substituting EPA, the cash flow burden of the borrower is reduced, and since no interest payment is shown as a contingent liability, the debt-equity ratio is not impaired. This accommodation contributes to an improved value of the equity, in which value the lender shares via EPA.
As a final example, consider the impact of inflation when a long-term loan is involved. If the impact on the firm's value is positive, that value is realized in the value of the equity but not directly in the value of the debt. Where this possibility may cause lenders to decline long-term loan opportunities, the EPA can be one of several alternative ways of providing lenders an incentive to place loans with long maturities.

We argue, based on this discussion, that EPA can be used as a positive pricing vehicle in commercial lending. The major point is that the arrangement can be of benefit to both parties. On the one hand, the EPA can be used as a means of rewarding a bank for credit or unusual services which were critically important in the generation of profits by a borrowing firm.

VI. The Potential Role of EPA in Bank Loans to Small Business

With the background provided by the earlier sections, we are able to move to a consideration of the possible usefulness of EPA in connection with bank financing of small firms. In this section we will examine the following three questions:

A. From available evidence, to what extent do banks use EPA with loans to small firms?

B. What risk-reduction mechanisms do banks use in connection with loans to small business?

C. How are commercial banks positioned with respect to their ability to realize the gain in value forthcoming through the EPA?
Banks Use of EPA With Loans to Small Firms

There has been little systematic data collection regarding the use of EPA by commercial banks. A survey done by the Comptroller of the Currency as of August 31, 1970 showed that, of 502 banks sampled (including all national banks with deposits above $225 million), 42 had equity participation loans outstanding. There were 112 such loans with a total value of $158.9 million. This amounted to roughly 3/10 of 1 percent of the commercial and industrial loans held by the sampled banks at the time of the survey.

The loans tended to be concentrated among larger banks, with 64 percent held by banks with deposits of $1 billion or more. While data by size of borrower were not presented, data by size of loan were given. [18] Of the total, 81 percent were loans of $1 million or more, 5 percent were loans of $500,000 to $999,999 and 8 percent were loans of $100,000 to $499,999. These data do not suggest that the use of EPA by banks was directed toward smaller firms.

A survey done by Boyd as of March 1, 1971 of a sample of 150 banks drew responses from 96 banks, 18 of which used equity participation loans. [19] Unfortunately, no breakdown by size of loan or size of borrower was given.

In a 1966 study of "incentive financing," Hayes gathered case examples of equity-based loans to business firms by life insurance
companies. Regarding the type of firm using this type of finance he reported,

My interviews and discussions with a wide range of people concerned with institutional investment uncovered a general conviction that only marginal or new businesses in a few high-risk industries have had to resort to incentives to obtain needed financing. However, my study of active incentive financing indicates this is not true at all.

On the contrary, it appears that the great bulk of the business organizations accommodated with incentive financings have seen well-established companies from a wide variety of industries scattered all over the country. [20]

As the theoretical framework developed earlier suggests, the EPA is useful as a positive pricing vehicle and there is no reason in financial logic why its use need be confined to some "down and out" category of "desperate" borrowers. We should not be surprised to have these observations suggest that EPA are used in large firm financings.

It must also be remembered that the SBIC and venture capital firm are another source of EPA credit to smaller, newer business firms. One might argue that all of the EPA-linked credit to small firms is coming through the SBIC vehicle. As an indication of this activity, consider that SBIC-financed firms in 1979 had median employment of ten people, median gross revenue of $487,000 and median total assets of $327,000. This is good evidence of specialization with "small" firms. The distribution of investment, by type, in 1978 and 1979, is shown below in millions of dollars. In Table 1 below:
Table 1

<table>
<thead>
<tr>
<th></th>
<th>1978</th>
<th></th>
<th>1979</th>
<th></th>
<th>Percentage Change</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>$</td>
<td>%</td>
<td>$</td>
<td>%</td>
<td></td>
</tr>
<tr>
<td>Straight Debt</td>
<td>$118.4</td>
<td>50.0%</td>
<td>$134.5</td>
<td>48.0%</td>
<td>13.6%</td>
</tr>
<tr>
<td>Debt with Equity</td>
<td>89.0</td>
<td>38.0%</td>
<td>67.7</td>
<td>24.1%</td>
<td>(23.9)</td>
</tr>
<tr>
<td>Equity Only</td>
<td>25.2</td>
<td>11.2%</td>
<td>77.9</td>
<td>27.9%</td>
<td>209.1</td>
</tr>
<tr>
<td></td>
<td>$232.6</td>
<td>100.0%</td>
<td>$280.1</td>
<td>100.0%</td>
<td></td>
</tr>
</tbody>
</table>


These data are for the entire SBIC industry, not just the bank-related SBIC's. It is evident that the annual flow of "debt with equity" is quite modest ($89 million in 1978, $68 million in 1979) and that the flow of straight equity is of roughly the same size. When one bears in mind that these SBIC's are subsidized through government loans and tax concessions and that they are highly levered, the small annual flow of equity-related funding to small business is all the more remarkable.

The sum of this information, viewed against the theoretical framework established earlier, indicates that banks have not made a great volume of EPA-linked loans and that the volume of those made (either directly or through SBIC's) to small business has been very modest.

Risk-Reduction Devices Used in Bank Credit to Small Firms

It is, of course, true and well-established that banks make loans to small firms. In fact, the greatest number of commercial loans are to
small and medium sized firms. A bank, due to existing branching laws, is dependent on the economic health of its "service area" for its deposits. There is an incentive to make loans to local emerging businesses to assure local employment, payrolls and liquid balances, as well as a source of future loan demand.

Despite this incentive, banks are very risk-conscious in their lending to smaller business firms. They are also conscious of the "price and terms" inelasticity of smaller firms. [21] This reflects the notion that smaller firms tend to have fewer alternative sources of funds and, because of this inefficiency, are subject to interest rates above prime and to covenants which can be more confining than those required of a firm with broader options.

To gain some insight regarding the lending practices and preferences of commercial bankers with respect to small firms, results of an empirical study done by this author are presented. The research consists of the completion of a test instrument and questionnaire distributed to 100 lending officers at banks in Michigan. The loan officers were given nine loan descriptions--six new, technology-based firms (NTBF) and three new, non-technology-based firms. They were asked to decide whether or not to grant the requested loan, to state the accompanying terms and explain their decision process. Results presented below are compared with those achieved when the same instrument was applied to bankers in California and in the Ozarks region by Shapero. [22]
The Shapero study compared results obtained from bankers in the Ozarks region with those obtained from bankers in San Francisco and Los Angeles. The hypothesis was that important differences in propensity to loan to NTBF in both credit terms and general approach to the lending opportunity would appear between the two groups. The California banks were thought to be better acquainted with technology-based industry and more accustomed to tailoring bank credit to the needs of new ventures; they were expected to show a high propensity to lend. The Ozarks bankers were felt to be less experienced with this type of credit request and less likely to lend. The results (Table 2) showed no difference between the two groups in the percentage of loan applications approved for NTBF; in each group 65 percent of the applications were approved.

The major differences between the two groups of bankers were in their general approach to the loan problems and in the relationship between banker and borrower implied by the approach.

The California bankers were really distinguished from those in other areas studied by their lower requirements for collateral, by their higher demand for additional managerial and financial constraints and by the differences in the weight they placed upon factors that influenced their loan decisions. [23]

The California group approved a much larger percentage of loans on an unsecured basis or with only a personal guarantee than did the Ozarks group. Offsetting this low reliance on collateral were much stiffer requirements concerning managerial and financial constraints and frequency of reporting. Financial condition of the borrower was cited
by the California group as the most critical factor in denying a loan in 74 percent of the cases, in contrast to 59 percent of the cases turned down by the Ozarks group, suggesting a much more analytical and objective approach to the loan. In only 7 percent of the loan denials did the California bankers cite the vague term "bank policy" as the dominant factor among Ozark bankers this was cited in 21 percent of the disapproved loans.

Shapero et al. concluded that the geographic-area differences reflected differences in loan-officer attitudes and philosophies. Among officers familiar with NTBF, the guarantee of security was sought in the ability of the firm to react effectively to changes in its environment. These bankers typically made loan approval conditional on operational changes, addition of key people or other resources, or modifications of existing policies. They insisted on frequent reporting and imposed short maturities on their loans so that the periodic loan renewals forced frequent reviews of operating results. This approach implied a commitment from the banker to work along with the new company and to contribute actively to its development.

Among loan officers not familiar with the problems of NTBF, the guarantee of security was sought in the tangible assets of the firm and of its principals. Conditions imposed were designed to protect the bank in event of failure.

Loan officers in the Ozarks group appeared to be much more concerned than their California counterparts with making a proper initial judgment which, once made, they could live with. [24]
In summary, Shapero et al. concluded that the group of California banks could be designated as a developmental banker group and that the Ozarks group might be described as judgmental. The researchers suggested that the presence or absence of the former group may determine whether or not an area gains new industry.

Findings from the Michigan survey are given in the tables which follow. Data developed from the Michigan sample are presented together with data from the Ozarks and California studies. As shown in Table 2, the Michigan banks indicated a lower propensity than either control group to loan to NTBF. The proportional difference in the approval rates (66 percent versus 60 percent) suggest that Michigan bankers were slightly more conservative in granting credit to NTBF. But the approval rate is quite high, and there appears little evidence that the Michigan banks have any systematic aversion to granting credits to this type of firm.

Regarding collateral requirements, the Michigan banks compared more closely to the Ozarks group than to the California group in terms of willingness to extend unsecured credit. The proportional difference with respect to the California group is substantial (Michigan 31 percent, California 44 percent), (Table 3). In all three groups willingness to take current assets as collateral was evident. The use of current-asset collateral as opposed to fixed assets or other types of collateral was much more common in loans granted to technical companies than in those to nontechnical firms.
Table 2

Percentage of Positive Responses to Loan Requests

<table>
<thead>
<tr>
<th>Area Where Banks Are Located</th>
<th>All Nine Companies</th>
<th>Six Technical Companies</th>
<th>Three Non-Technical Companies</th>
</tr>
</thead>
<tbody>
<tr>
<td>Michigan</td>
<td>61%</td>
<td>60%</td>
<td>64%</td>
</tr>
<tr>
<td>Ozarks Area</td>
<td>65%</td>
<td>66%</td>
<td>61%</td>
</tr>
<tr>
<td>San Francisco - Los Angeles</td>
<td>60%</td>
<td>66%</td>
<td>50%</td>
</tr>
</tbody>
</table>
Table 3

Types of Collateral Required in Approved Loan Cases by Selected Cities and Areas

<table>
<thead>
<tr>
<th>Area Where Banks are Located</th>
<th>Unsecured Loan</th>
<th>Current Assets</th>
<th>Fixed Assets</th>
<th>Other</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>All Companies</td>
<td>Technical</td>
<td>Non-Technical</td>
<td></td>
</tr>
<tr>
<td>Michigan</td>
<td>23 31 8</td>
<td>55 55 53</td>
<td>16 7 37</td>
<td>4 5 2</td>
</tr>
</tbody>
</table>

Comparative Data:

<table>
<thead>
<tr>
<th></th>
<th>All Companies</th>
<th>Technical</th>
<th>Non-Technical</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Ozarks Area</td>
<td>24 29 9</td>
<td>55 54 56</td>
<td>22 15 36</td>
<td>14 15 12</td>
</tr>
<tr>
<td>San Francisco-Los Angeles</td>
<td>36 44 16</td>
<td>45 42 52</td>
<td>19 13 35</td>
<td>6 8 1</td>
</tr>
</tbody>
</table>
In terms of restrictive covenants, Michigan banks approved a comparatively high percentage of loans with no explicit conditional requirements (Table 4). The Michigan banks included accounting and control constraints slightly more frequently than either the California or Ozarks banks and imposed fewer constraints on general and financial management of the firm than did the other groups. The most common constraints imposed by Michigan bankers were aimed at protecting the bank in the event of the borrower's failure. Typically, steps were taken to protect the priority of the bank's claim to assets and to remove or subordinate other creditors. For example, asset appraisal and credit and control procedures were commonly required; also used were acceleration clauses, which made the bank's loan due and payable if operating results failed to meet bank standards and bank-approved projections.

Michigan bankers showed slightly more concern for the financial condition of the firm when approving a loan than did the California bankers and somewhat less concern with the firm's management quality (Table 5). These two factors, however, were dominant considerations among all the groups. The Michigan bankers identified those financial managerial factors which most seriously affected their loan decisions (Tables 6 and 7). Among the financial factors they cited, the most important were the current working capital position of the borrower, the firm's debt capacity, and its profit potential. Little critical weight was given to the firm's age, the available collateral, the reliability of its projections, or its need for the loan. When loans were disapproved, debt capacity was the most significant factor.
Table 4

Restrictive Covenants Imposed on Approved Loans By Selected Cities and Areas
(Percentage of Cases Having Each Type of Covenant)

<table>
<thead>
<tr>
<th>Area Where Banks are Located</th>
<th>None</th>
<th>Management Restrictions on Retention of Capital Constraints</th>
<th>Accounting or Control Constraints</th>
<th>Limits on Financial Management or Use of Loan</th>
<th>Other</th>
</tr>
</thead>
<tbody>
<tr>
<td>Michigan</td>
<td>76</td>
<td>76</td>
<td>7 9 4</td>
<td>16 14 20</td>
<td>6 6 6</td>
</tr>
<tr>
<td></td>
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<td>Non-Technical</td>
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<tr>
<td></td>
<td>76</td>
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<td>Non-Technical</td>
<td></td>
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<tr>
<td></td>
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<td>Non-Technical</td>
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<td></td>
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<td>All Companies</td>
<td>Technical</td>
<td>Non-Technical</td>
<td></td>
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<td></td>
<td>4</td>
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<td>Non-Technical</td>
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<td></td>
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<td>Non-Technical</td>
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<tr>
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<td>Limits on Financial Management or Use of Loan</td>
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<td>Non-Technical</td>
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</tr>
<tr>
<td></td>
<td>6</td>
<td>Limits on Financial Management or Use of Loan</td>
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<td>Non-Technical</td>
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<td>Limits on Financial Management or Use of Loan</td>
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<td>Non-Technical</td>
<td></td>
</tr>
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<td>Limits on Financial Management or Use of Loan</td>
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<td>Non-Technical</td>
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<td>Non-Technical</td>
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<td>Limits on Financial Management or Use of Loan</td>
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<td>Non-Technical</td>
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<tr>
<td>Comparative Data:</td>
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<td>64</td>
<td>63</td>
<td>64</td>
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<td>Non-Technical</td>
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<td>Non-Technical</td>
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<td>Non-Technical</td>
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<td>Non-Technical</td>
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<td>Non-Technical</td>
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<td>Limits on Financial Management or Use of Loan</td>
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<td>Non-Technical</td>
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<tr>
<td></td>
<td>11</td>
<td>Limits on Financial Management or Use of Loan</td>
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<td>Non-Technical</td>
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<tr>
<td>San Francisco-Los Angeles</td>
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<td>33</td>
<td>37</td>
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<td>Non-Technical</td>
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<td>Non-Technical</td>
<td></td>
</tr>
<tr>
<td></td>
<td>13</td>
<td>Accounting or Control Constraints</td>
<td>Technical</td>
<td>Non-Technical</td>
<td></td>
</tr>
<tr>
<td></td>
<td>14</td>
<td>Accounting or Control Constraints</td>
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</tr>
<tr>
<td></td>
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<td>Non-Technical</td>
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<td>Limits on Financial Management or Use of Loan</td>
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<td>Non-Technical</td>
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<td>Non-Technical</td>
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<td></td>
<td>29</td>
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<td>Non-Technical</td>
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</tr>
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<td></td>
<td>26</td>
<td>Limits on Financial Management or Use of Loan</td>
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<td>Non-Technical</td>
<td></td>
</tr>
<tr>
<td></td>
<td>36</td>
<td>Limits on Financial Management or Use of Loan</td>
<td>Technical</td>
<td>Non-Technical</td>
<td></td>
</tr>
</tbody>
</table>
Table 5

Most Critical Factor In The Loan Decision

<table>
<thead>
<tr>
<th>Area In Which Bank Is Located</th>
<th>Firm's Financial Condition</th>
<th>Firm's Management</th>
<th>Industry Growth Potential</th>
<th>Firm's Impact On Community</th>
<th>Bank's Loan Policy</th>
</tr>
</thead>
<tbody>
<tr>
<td>Michigan</td>
<td>62</td>
<td>25</td>
<td>7</td>
<td>2</td>
<td>4</td>
</tr>
<tr>
<td>Ozarks Area</td>
<td>60</td>
<td>23</td>
<td>11</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>San Francisco-Los Angeles</td>
<td>57</td>
<td>33</td>
<td>7</td>
<td>1</td>
<td>4</td>
</tr>
</tbody>
</table>

I. Approved Loan Decision

II. Denied Loan Applications

<table>
<thead>
<tr>
<th>Area In Which Bank Is Located</th>
<th>Firm's Financial Condition</th>
<th>Firm's Management</th>
<th>Industry Growth Potential</th>
<th>Firm's Impact On Community</th>
<th>Bank's Loan Policy</th>
</tr>
</thead>
<tbody>
<tr>
<td>Michigan</td>
<td>62</td>
<td>15</td>
<td>6</td>
<td>1</td>
<td>16</td>
</tr>
<tr>
<td>Ozarks Area</td>
<td>59</td>
<td>15</td>
<td>2</td>
<td>2</td>
<td>21</td>
</tr>
<tr>
<td>San Francisco-Los Angeles</td>
<td>74</td>
<td>12</td>
<td>6</td>
<td>1</td>
<td>7</td>
</tr>
</tbody>
</table>
Table 6

Financial Factors Most Critical in Loan Decisions by Michigan Banks

<table>
<thead>
<tr>
<th>Factors</th>
<th>Approved Loans</th>
<th></th>
<th>Disapproved Loans</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>All Loans</td>
<td>Technical Firms</td>
<td>Non-Technical Firms</td>
<td>All Loans</td>
</tr>
<tr>
<td>Current Working Capital Position</td>
<td>33</td>
<td>37</td>
<td>24</td>
<td>21</td>
</tr>
<tr>
<td>Profitability to Date</td>
<td>21</td>
<td>19</td>
<td>26</td>
<td>7</td>
</tr>
<tr>
<td>Debt Capacity</td>
<td>33</td>
<td>36</td>
<td>28</td>
<td>40</td>
</tr>
<tr>
<td>Age of Firm</td>
<td>*</td>
<td>*</td>
<td>*</td>
<td>2</td>
</tr>
<tr>
<td>Collateral Available</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>3</td>
</tr>
<tr>
<td>Reliability of Projections</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td>11</td>
</tr>
<tr>
<td>Need for the Loan</td>
<td>2</td>
<td>2</td>
<td>3</td>
<td>7</td>
</tr>
<tr>
<td>No Response</td>
<td>9</td>
<td>5</td>
<td>16</td>
<td>10</td>
</tr>
</tbody>
</table>

*Under 1%

Totals may not add to 100% due to rounding.
Table 7

Managerial Factors Most Critical in Loan Decisions by Michigan Banks

<table>
<thead>
<tr>
<th>Factors</th>
<th>Approved Loans</th>
<th></th>
<th>Disapproved Loans</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Technical Firms</td>
<td>Non-Technical Firms</td>
<td>All Firms</td>
<td>Technical Firms</td>
</tr>
<tr>
<td>Proven Relevant Experience</td>
<td>17</td>
<td>19</td>
<td>16</td>
<td>27</td>
</tr>
<tr>
<td>Balanced Management Team</td>
<td>56</td>
<td>60</td>
<td>48</td>
<td>30</td>
</tr>
<tr>
<td>Firms Performance to Date</td>
<td>10</td>
<td>11</td>
<td>8</td>
<td>4</td>
</tr>
<tr>
<td>Equity Position of Management</td>
<td>*</td>
<td>*</td>
<td>*</td>
<td>0</td>
</tr>
<tr>
<td>Education Background</td>
<td>*</td>
<td>0</td>
<td>*</td>
<td>0</td>
</tr>
<tr>
<td>Age of Principal</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>*</td>
</tr>
<tr>
<td>No Response</td>
<td>14</td>
<td>9</td>
<td>24</td>
<td>39</td>
</tr>
<tr>
<td></td>
<td>100%</td>
<td>100%</td>
<td>100%</td>
<td>100%</td>
</tr>
</tbody>
</table>
Of the management considerations cited by the Michigan bankers the existence of a balanced management team was the most important. The most commonly cited characteristic was the need for financial, marketing, and management skills to complement the technical skills of the management group. The next most important factor was proven experience relevant to the business being developed. This factor tended to be more important in refusing a loan than in approving one. Neither education, age, nor equity position of the principals was judged the critical issue—suggesting that the bankers looked for direct, referable evidence of functional business-performance capability as the primary criterion by which to measure the borrowing firm’s management.

Information was also developed on the maturity and repayment terms offered by Michigan banks on their approved loans. These data are presented in Table 8.

Nearly 39 percent of the loans made carried a maturity over one year and 12 percent over two years. The willingness to loan for longer terms was stronger with respect to nontechnical firms and this is judged to reflect the greater use of fixed asset collateral and the lower perceived risk associated with nontechnical ventures by the Michigan bankers.

The requirement of short maturities and rapid amortization at frequent payment intervals is obviously a device which will protect the bank. This is especially true when combined with acceleration clauses keyed to performance.
## Table 8

Loan Maturity and Repayment Terms  
Of Approved Loans Made by Michigan Banks

### Loan Maturity

<table>
<thead>
<tr>
<th></th>
<th>All</th>
<th>Technical</th>
<th>Non-Technical</th>
</tr>
</thead>
<tbody>
<tr>
<td>Demand</td>
<td>25.3</td>
<td>26.2</td>
<td>23.0</td>
</tr>
<tr>
<td>1-3 months</td>
<td>13.3</td>
<td>15.1</td>
<td>9.5</td>
</tr>
<tr>
<td>3-5 months</td>
<td>4.5</td>
<td>5.6</td>
<td>3.6</td>
</tr>
<tr>
<td>5 months-1 year</td>
<td>17.3</td>
<td>19.3</td>
<td>13.1</td>
</tr>
<tr>
<td>1-2 years</td>
<td>26.0</td>
<td>27.4</td>
<td>23.8</td>
</tr>
<tr>
<td>2-5 years</td>
<td>10.6</td>
<td>5.0</td>
<td>22.6</td>
</tr>
<tr>
<td>Over 5 years</td>
<td>2.7</td>
<td>1.4</td>
<td>4.4</td>
</tr>
<tr>
<td></td>
<td>100.0</td>
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</table>

### Repayment Terms

<table>
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<tbody>
<tr>
<td>Monthly</td>
<td>17.4</td>
<td>13.4</td>
<td>25.6</td>
</tr>
<tr>
<td>Quarterly</td>
<td>32.6</td>
<td>32.1</td>
<td>33.3</td>
</tr>
<tr>
<td>Semi-Annual</td>
<td>10.5</td>
<td>11.2</td>
<td>8.9</td>
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<tr>
<td>Annual</td>
<td>10.5</td>
<td>12.3</td>
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</tr>
<tr>
<td>Demand</td>
<td>25.0</td>
<td>31.0</td>
<td>25.6</td>
</tr>
<tr>
<td></td>
<td>100.0</td>
<td>100.0</td>
<td>100.0</td>
</tr>
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</table>
It should be noted, however, that these terms are applied evenly to both technical and nontechnical firms, suggesting that they are not unduly harsh with respect to new, technology-based firms. Furthermore, it must be recognized that these are, in fact, very risky firms from the bank's viewpoint. The frequency of repayment dates demands that the bank and the firm maintain close, frequent contact with each other so that a potential exists for cooperation in the on-going financial affairs of the borrowing company.

Michigan bankers turned down the original loan in 37 percent of the cases but after changing some of the terms, approved a modified loan. The most common modification involved addition of greater security through collateral requirements and reduction of the maturity. This modification would be interpreted as a conservative and possibly nonsupportive attitude on the part of Michigan's banks. It may also be interpreted as a constructive posture. If a systematic bias does exist against NTBF, bankers might be expected to reject loans which did not suit their standards. But these bankers modified the loan applications to make the credit bankable. They, therefore, made a positive contribution toward helping the applicant firm.

On the basis of the hypothetical loan applications, Michigan bank lending officers do not differ importantly from the control group in their propensity to loan to NTBF. In their approach to NTBF lending the Michigan bankers fall somewhere between the "developmental" and "judgmental" extremes. They reacted in a way that suggests a
willingness to lend but a lack of familiarity with the nature of NTBF financing.

This study demonstrates the major concerns which bankers have when considering loans to new and small firms. It is clear that those concerns tend to be remedied with essentially the same set of restrictive covenants, regardless of the type of small firm involved (i.e., technology-based or nontechnology-based).

The perceived distinction between the "judgmental" and "developmental" approach is a subtle but useful one. It seems likely that the trade-off of covenants for EPA would be more frequent among the "developmental" category of banker.

Realization of Capital Gains from EPA

Viewed as perhaps the most serious obstacle to the use of the EPA in loans to small firms is the fact that such firms reside in the part of the financial market where efficiency can be counted upon the least. In the absence of a resilient market for the borrowers' stock, the ability to value and to exercise the warrant is severely constrained. As with the other arguments against the use of EPA, this one also has some plausible defenses. Several "exit routes" will be discussed in this section.

Public issue of common stock. The most straight-forward answer to the question raised is the development of the borrowing firm to the point at which it can "go public" and have a market made in its shares. At that point the EPA could be exercised.
It may be argued that the firm with the potential to "go public" is the type of firm with which EPA should be used. While this should not be exclusively so, certainly this type of firm should be considered among the most attractive. However, the "go public" route may not be totally attractive.

First of all, the market for new issues of newer companies has been erratic at best over the past 15 years. The timing of an issue has been a critical variable with "windows" opening to the market at virtually unpredictable times. Also, costs of issue are quite high and, when combined with the risk of a failed issue, give pause to any interested party. Furthermore, the surveillance cost involved is felt to be excessive by many firms and has led to a movement toward "going private" through repurchase of outstanding shares. Thus, there may be reluctance by both parties to use this exit mechanism.

**Acquisition by another firm.** To an increasing extent, equity holders have been realizing capital gains through the sale of their companies to other firms. The tax implications of a stock-for-stock transaction are favorable and, in the almost total absence of a public "new issues" market, the advantages of a private sale have appeared great.

While anti-trust concerns may be a factor, the probability of such a barrier emerging is generally felt to be remote. In particular, if the acquired firm is still relatively small, no problem is likely to arise.
Unlike the public market alternative, the merger alternative involves negotiated pricing. Nonetheless, with a variety of potential suitors available the firm should be able to obtain a "fair" price. The EPA interest of the bank would, of course, be part of the exchange.

The "shadow" warrant. As mentioned earlier the "shadow" warrant is a feasible device for an EPA. It involves a mutually satisfactory valuation of the firm's assets as a basis for the EPA. The payment to the bank lender might then take the form of cash, notes or some other consideration.

While expert witnesses may be useful in this respect, many banks and firms find that objective values may be obtained for certain of the firm's assets (e.g., oil or coal reserves, inventories of raw materials). Where mutually agreeable, the EPA can be tied to a suitable index of these values.

A "put" agreement. A "put" is the opposite of a "call" option—it is the right to have an asset purchased by another party at a certain price over a certain time period. In connection with the EPA, the writer of the "put" may be the firm itself, a related entity (parent company, subsidiary, or employee trust fund) or an unrelated entity (some interested third party). Indeed the bank's trust department may purchase the warrant.

There are no apparent problems (beyond willingness!) with any of these purchasers except for those with a fiduciary responsibility, i.e., the employee trust fund and the bank trust department. Where
fiduciaries are involved the investment would have to meet rather strict standards of valuation. With recent rulings regarding ERISA, the likelihood of fiduciary interest in such a "put" agreement is probably limited. Of course, more liberal interpretation of ERISA would make fiduciaries a very substantial potential buyer of these instruments.

There are many potential exit vehicles for the EPA when used with commercial bank loans to small firms which have prospects for growth. While certain major characteristics of these alternative exits have been touched upon here, a more detailed analysis of each is required by the prospective user. Such analysis is felt to be beyond the scope of this paper.

VII. Policy Considerations for Bank Management and Regulatory Agencies

The use of EPA has raised a number of questions regarding their impact on the activities of individual banks and the banking system as a whole.

A. Will EPA's transform banks into risk-seeking institutions which place the interest of the bank stockholder ahead of the depositor, thus becoming venturesome, "go-go" institutions?

B. Will EPA's give the bank such a vested interest in the borrower that the bank's credit standards would be relaxed toward any borrowers in which attractive equity opportunities are available? Would this also lead to acquisition of voting control by banks over small and medium companies and substantial influence in large companies?

C. Does equity participation represent an opportunity for banks and their customers to circumvent restrictive credit policies imposed by monetary authorities?
D. Based upon the evidence visible to date, what appears to be the future role and significance of EPA's as a pricing device in banking?

Risk Acceptance

The nature of banking regulation in the U.S. since 1933 has been aimed primarily toward the protection of depositor's funds, basically because bank deposits constitute a large part of the money supply, however defined. The operating philosophy of most U.S. banks has been similarly directed so that regulatory policy and operating policy have been relatively consistent over this period.

This policy orientation has resulted in a number of structural safeguards being built into the banking system over time, such as deposit insurance, increasingly consistent regulation of state and national banks, central bank intervention in money and capital markets, secondary market mechanisms for long-term assets, and free markets for short-term funds.

Nonetheless, these structural safeguards have been sorely tested during the year 1965-1980. This period has seen the full flowering of the sharp and recurrent financial cycle. When superimposed upon an economic condition characterized by trends toward high inflation and low real growth, the cumulative impact of this cycle on financial markets has been severe.

The major impacts on commercial banks have been in disintermediation and the erosion of real capital. Large corporate borrowers have shifted to direct borrowing via commercial paper and, at the same time, have
placed their liquid balances in the same market. Money market funds have systematized this process and extended its availability to non-corporate customers. Many of the firms which offer intermediation facilities and other financial services are investment dealers and brokerage firms. Curiously, they are entering "banking" areas quite freely at the same time that their "turf" (i.e., securities underwriting, dealing, and brokering) is protected against bank competition by the Glass-Steagall Act.

A major casualty of this 15-year period of change has been the fixed-rate bond market. While reports of its total demise are probably premature, the likelihood of a long-term, fixed-rate bond being an attractive investment is open to question.

In this scenario, the future role of commercial banking faces a wide range of possibilities. In a recent issue of Business Week the following prospects from the corporate debt market were put forth:

- Borrowing for 20 to 30 years at fixed rates will largely be a thing of the past. Typical maturities will range from 10 to 15 years as they do now in the Eurodollar market.

- Even in the worst of times, the most creditworthy corporations and municipalities will be able to obtain credit relatively easily, while lesser credits will have severe difficulty.

- Securities convertible into equity will become commonplace, and prices and dividends of some securities will be tied to underlying assets.

- Bank loans will become far more prominent at the expense of publicly traded issues, which will shrink in importance.
• Banks will attempt to demand strong guarantees of equity kickers from borrowers, thus giving them a greater say in corporate decisions. [25]

If the commercial banking industry is to increase the scope and market share of its credit activity, it must come to grips with two major problems: purchased funds now equal about 2.25 times core deposits; and bank equity equals less than 4 percent of bank assets. The combination of pressures will require an imaginative response from the banking industry.

As a result, the role of analysis and judgment has become critically important in the credit function. In developing the customers required for continued growth, banks will need to accommodate the needs of firms in various states of development, including less mature firms. In many cases banks will be required to extend the equivalent of risk capital: unsecured, long-term funds, the repayment of which is dependent on future earnings. This will demand an analytical approach more closely resembling that of the common stock analyst than that historically associated with the bank credit analyst.

For years, high risk commercial loans have been handled through installment loan financing where add-on interest, strict amortization, and the chattel mortgage made such loans bankable. More recently, banks have chartered small business investment companies (SBIC) to provide long-term financing to small companies with high growth potential. Equity participation is virtually a standard feature of SBIC operations and the volume of equity realizable by the bank's SBIC (in terms of
value at time of closing) will represent a large voting interest in the borrowing firm.

The use of EPA's as supplemental compensation on non-SBIC business loans differs distinctly from their use in SBIC operations. The bank cannot realize voting power or dividends from this method of pricing commercial loans because it cannot effectively hold the stock. The volume of warrants a bank may take without fearing SEC insider implications is relatively small, thus limiting the profit potential open to banks. From a risk acceptance viewpoint, equity as a pricing supplement is an attractive alternative in those commercial loans which justify a relatively high yield but which do not meet the installment loan or SBIC criteria.

It is entirely possible that a banker might accept a credit which is fundamentally unsound when warrants are involved. The question is whether the lender officer is more likely to do this than if the reward were specified in other terms, such as a high interest rate, balances, fees, or the promise of subsequent or peripheral business. The answer reduces to a consideration of the quality of credit analysis, judgment and management in the particular bank and the effectiveness of regulatory examination, rather than to the intrinsic characteristics of the equity participation concept.

Certainly, the general practice of banks lending solely on the basis of equity participation seems inconsistent with the public policy goal of a stable payments system. It is also inconsistent with the bank's
profit goals due to the added variability it would introduce into earnings. In practice, equity participation is most likely to be used as incremental and supplementary compensation in cases where the lender combines it with a contractual interest rate, compensating balances, and fees. The likelihood of banks becoming "go-go" institutions because of the use of such equity participations as currently exist seems remote at this time.

**Vested Interest in the Borrower**

One of the points of issue concerning EPA's is the fear that their use will create a bond of common interest between lender and borrower. This possibility does exist and the implications are serious for depositors, other borrowers and the public interest. Before discussing the ramifications of this type of linkage, it is well to review some of the ways in which banks and their credit customers are already linked.

Despite the historic prohibition of holding corporate stock, banks are often in position to control the voting of certain shares. Banks may directly hold shares pledged as collateral on a defaulted loan. Through their SBIC or Edge Act activities they gain an even more direct and significant type of control over shares. Furthermore, the fact that bank trust departments are free to choose the investment distribution of trust funds and have the power to vote the shares confers upon the bank a certain degree of potential voting control and influence over the affairs of corporations.
In the orthodox bank relationship the corporate borrower is subject to certain controls in the form of restrictive covenants. Occasionally, a representative of the bank sits on the corporate board. Periodic operating reports and plans are usually required in this relationship. In effect, the bank is quite often an insider and in some cases a policy-maker by the nature of its normal relationship with the borrower.

How does the introduction of an EPA alter this relationship? As an analogy, consider the effect of equity kickers on investment bankers. Typically, an underwriter will support the price of a stock on which he holds warrants, since the favorable exercise of the warrants represents his greatest source of potential profit. The latitude available to the investment banker is significant but the key factor is that most of his decisions regarding the stock are based on the perceived impact on his warrants. There is the danger that a bank might be similarly motivated.

There are, of course, opportunities for a bank to "tout" the stock of borrowing companies. Indeed, the announcement effect of a term loan might raise the stock price, thus enhancing the warrant value. Also, a large unrealized capital gain could be protected by extension of generous credit terms during periods of temporary stress. Furthermore, bank pressure on management might be stronger if the equity stakes for the bank are higher.

The conditional equity position could certainly influence the bank's judgment and behavior in particular cases. However, there has always been ample opportunity for bank management to abuse its trust through
self-dealing. The regulatory agencies, through scrutiny of operations and personnel, have actively sought to control the incidence of such abuse. The general opinion of those interviewed for this research is that equity participation loans will likely draw particular attention from bank examiners.

In this case the familiar regulatory question again arises: should potential abuse of equity kickers be controlled through prohibition or the examination procedure? It appears, at this point, that the latter method is being used, and is sufficient.

**Effect on Monetary and Credit Policy**

Traditionally, the major impact of restrictive monetary policy on the banking industry has been transmitted through a reduced rate of deposit expansion and depressed market values of long-term assets through interest rate increases. In the periods of tight money since 1966, banks have experienced the above phenomena and, among other things, have rationed credit, reducing or eliminating the volume of loans made for purposes felt to be non-productive, speculative, or inflationary. In part, this rationing was voluntary, but in part it also represented an aspect of the moral suasion exercised by monetary authorities.

The use of equity participation may enhance the expected profitability of loans in periods of tight money and inflation and may enable banks to maintain earnings growth despite a diminished growth rate in deposits. This may help offset the income effect of tight money
on banks and, to some extent, may offset the intentions of monetary policy.

Equity participation may be particularly effective in attracting loan funds to borrowers or sectors of the financial markets which, due to credit rationing or interest rate ceilings would not normally be able to attract funds. This could partly offset the intention and effect of monetary policy. If, for example, interest rate ceilings and lending limits on mortgage and real estate development credit were being imposed well below market levels in order to hinder an inflationary expansion in housing, the incentive of equity participation might be strong enough to lure funds to the housing sector. Also, the opportunity to finance corporate acquisitions or to provide interim financing prior to a public securities issue, both of which are types of loans usually restricted by credit rationing, might be made attractive by an equity incentive.

There are other specific instances in which equity participation might complicate bank regulation and monetary policy. This suggests that even more pressure will be brought upon the structure, methods, and resources of the agencies responsible for banking regulation and monetary policy.

Future Uses of Equity Participation in Bank Lending

Business firms in the U.S. have become increasingly aware of the implications of using conditional equity participation agreements as a means of paying for credit. There has been a certain cultural shock associated with the introduction of the concept into bank lending, but
indications are that this is receding and borrowers are investigating the positive aspects of this type of compensation.

In the past, warrants and conditional interest rate agreements have been associated with speculative high risk ventures or poor credit ratings. The original use of these devices by banks was, in fact, in situations where the bank had to work out recovery on deteriorating loans. It is now apparent that equity participations can be used by a borrower to obtain specially tailored financing services from banks and other investors which might not have been available without the equity incentive. Both warrants and cash over-rides can ease the cash flow pressure for borrowers and improve the terms of the bank debt. The fact that the bank loan is made available at desirable terms may improve the borrower's long-run implicit cost of capital, depending on the earnings dilution resulting from the warrants or cash over-ride.

Banks which extend credit for unusual or risky purposes now seek to earn a commensurate profit for the extra analytical, managerial and judgmental effort involved. Thus, when banks are urged to finance local development, small or minority business, mergers, research and development, or other such programs, bank management should require and public policy should perhaps permit the bank to share directly in the benefits of the credit extended.

As banks become accustomed to the legal and financial details involved in equity participations, a greater variety of uses will be found for this device as a supplementary form of compensation. A
ratchet effect will likely occur as this tight-money innovation becomes a part of bank pricing policy. Borrowers are already conditioned to the notion of giving up equity for credit and it remains for the banks to determine exactly how they wish to ask for it.

III. Conclusion

This research has produced evidence which demonstrates the commercial banks do indeed use equity participation agreements (EPA) in connection with loans to business firms. The scant data which exist indicate, however, that the reported volume of use is a very low percentage (less than 1 percent) of bank credit to business.

The research also determined that a major obstacle to the use of EPA has been uncertainty among banks as to the legal and regulatory propriety of EPA. As a result, banks have chosen a path of least resistance and have chosen not to use EPA beyond an occasional experimental level. One is impressed by the uncertainty and "nervousness" which exists among regulatory agencies. The chief issue is definition of the Glass-Steagall Act boundary and the division between "banking" and "commerce." As a result, regulatory agencies virtually promise that EPA loans will attract the special attention of bank examiners. This is enough to scare off all but the most truculent of bankers!

The paper presents evidence which argues strongly that EPA fall well within the legal and regulatory limits facing banks. This conclusion is
reached after both a search and analysis of statutes and rulings, and
after conferring with counsel at national and state level bank
regulatory agencies and reading opinion letters sent to banks from those
agencies. There is no apparent reason why banks cannot use EPA.

To determine whether EPA loans make sense from the viewpoint of
banker and borrower, a theoretical framework of analysis was
constructed. The EPA was shown to be useful in two major ways. First,
it is a potential protective device for the bank against the possibility
that the borrower will adopt higher-variance (i.e., high risk, higher
return on equity) projects; for the borrower, the EPA can be an
economical alternative to a comprehensive set of protective covenants
usually imposed by the bank to achieve the same result. Second, it
offers a reward to the bank for credit or special services offered to a
borrower (e.g., a "bail-out," a commitment for continued availability of
funds through difficult times). From the borrower's viewpoint, the EPA
can be a fair and relatively painless way of paying for useful services
on a conditional basis; this may be especially important for non-prime
borrowers whose market power and price elasticity are low or
non-existent (i.e., in particular, small businesses).

Arguments were also advanced regarding economic and financial
structure barriers to the use of EPA. For example, when a borrower has
taxable income, the cost of debt is usually well below the cost of
equity on an after-tax basis; the EPA then becomes an expensive
financing vehicle. Where no taxable income exists, the cost of debt and
cost of equity are more nearly equal after tax, and the cost differential argument is reduced in importance. Also, it is well known that the stock market as an "exit route" for EPA vehicles has been very uncertain in recent years. In the paper a variety of internal and private placement alternatives were demonstrated which made the EPA feasible, even with small-firm borrowers.

Finally, certain public policy questions were addressed and arguments advanced concerning the prospective impact such pricing would have on banking and its relation to the economy. The conclusion of this paper is that demand for this type of financing will grow and that it should be governed through regulation and not through prohibition.
REFERENCES


[9] Ibid., p. 11.


REFERENCES - contd.


[16] Ibid., p. 308.


[18] This is an old and enduring problem with bank data: it cannot be assumed that all small sized loans were made to small firms.


