A Comment on the Formation of Bank Stock Prices

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1. Overview

To understand bank stock prices is to understand the economics of banking. We are not close to understanding the formation of bank stock prices in an empirically convincing way. Thus, the following should be construed as a story about which hypotheses we should be willing to entertain, and why.

2. The problem and the opportunity

Evolutionarily, banks are accidental accretions of history. They have become an unwieldy combination of investment and commercial banking services, trading activities, and portfolio management. Both nurtured and neutered by regulation, banks comprise heterogeneous constituencies with conflicting objectives. With deregulation and widespread competitive encroachment, bankers are, today, increasingly engaged in discovering their economics and rationalizing anew the functions they perform. For example, witness how many bankers have "RAROCs" on their minds these days. (By which we mean, of course, "risk adjusted return on economic capital", an acronym that today rarely needs to be defined. Although, there is little concordance on the exact economic calculus it requires, or how it is to be used once correctly calculated!)

Observed bank stock price behavior is confusing. Viewed from the outside, a major part of the confusion results from opacity; in particular, the limited distribution of information on the riskiness of bank assets. As a result, current earnings are a poor guide to future results. Reported earnings can rise due to successful business expansion, or to an increase in the riskiness of assets (before the losses inherent in greater spreads come home to roost). Accordingly, it is very difficult for investors to get their value estimates right.

Part of the confusion also arises because bank objectives are usually specified in accounting terms. Book values, book income, and book returns are a misleading frame of reference. Book accounting values represent a history of subtractions and additions. They tell us little about current risks. Yet current risks, and attendant return prospects, are the primary determinants of future performance. Book values cannot be analytically transformed into meaningful economic quantities. Bank management teams who base their judgments on book values can exercise little control over the value of their enterprises, especially risk management.

The misconceptions resulting from the focus on book values serve to create a divergence between many bankers' plans and the subsequent results delivered to shareholders. Further, when a bank designs its internal compensation schemes around accounting measures, it builds this divergence into a conflict of interest, benign in its intent, but destructive in its effect on shareholders' value. For instance, since accounting measures exclude risk measurements, performance measurement schemes based upon them usually end up being driven by volume of activity rather than by the value created.

In short, equity investors must make inferences about a bank's risks, where the risks are often not well understood by management itself, and, where understood, not disclosed.

Finally, risk in a bank's portfolio is ultimately evidenced by large, unexpected losses. There are no offsetting large, unexpected gains in good years. Even the best performing bank has a formidable task in winning the confidence of the market that in the next down turn of the economy, it will not be laid low by large losses. Witness the unfortunate situation of the Swiss banks at this moment, and contemplate that at some time in the last two decades, "Swiss" could have been replaced by your nation of choice. It is not surprising that banks' shares trade at comparatively low multiples.

3. Bank stock value

In principle, what *should* a bank's stock price reflect? The market value of a bank's shares should equal the market value of its assets minus the market value of its debt obligations. To understand share prices is to understand the value of the bank's assets and the value of its liabilities.

The market value of the assets should reflect the expected future cash flows to the assets discounted to the present according to their risk and their timing. Bank obligations are valued similarly. In contrast to book values, that are backward looking, market values are forward looking. Not surprisingly, book and market values have no inherent or necessary resemblance to each other because past transactions are not likely to recur in similar patterns.

The bank's economic assets include its portfolio of risk assets, in addition to the tangible and intangible aspects of its operating franchises. The bank's upside potential resides primarily in its franchises; the bank's risk asset portfolio contains most of its downside risk and no growth potential. Credit problems have been the major source of drag on bank performance over the last two decades.

Long term growth in operating cash flow is unlikely to result from shifts in portfolio risk-taking. Growth is more likely to result from efficiency gains in the operating franchises. However, the composition of the asset portfolio is by no means unimportant. While taking risk is unavoidable, the efficiency with which risk is taken is controllable. This efficiency is measured not by the absolute level of risk, but by the ratio of return to risk in the portfolio.

Results at the business level (assets) are transformed into shareholder returns through the magnifying lens of leverage. Although leverage may have some ability to improve returns through the reduction of tax expense, leverage does not influence the return to risk tradeoff inherent in the bank's risk asset portfolio. Accordingly, the return/risk relationship embedded in the bank's assets is conveyed to the bank's equity. Leverage amplifies both risk and expected return for shareholders at the same time. Hence, the ratio of risk to expected return of equity remains that of the bank's assets, unaltered by the extent of leverage.

To a first approximation, the return to risk tradeoff imbedded in the equity determines its market value. If the bank's stock conveys more risk than return relative to alternative equity investments, then its price should fall. And conversely, if it conveys less risk, its price will rise, until the equity's return to risk ratio matches that of comparable investments.

The only reliable way to increase the return to risk ratio of the bank's portfolio of assets is through diversification. Diversification reduces risk without reducing return. Diversification is an important determinant of bank stock prices because it is the means by which risk-taking efficiency can be increased. Higher return to risk is linked to higher stock prices in several different ways. Some of these are direct: higher risk-taking efficiency means less risk in the bank's equity but the same return expectation. This will be reflected in less volatility, a lower "beta", a lower return demanded by the market, a larger multiple of earnings, and accordingly, a higher share price.

Other linkages are less direct, but no less important in contributing to higher equity value. Managing portfolio diversification requires knowing the return and risk effect of individual transactions. This information can be used to create correct incentives within the bank for taking risk, and thus make possible greater alignment between shareholder and management interests. This, in turn, promotes effective decentralization of bank activities, for example, letting loan officers base origination decisions on a RAROC computation. Decentralization and specialization, in turn, produce greater operating efficiencies.

Finally, bank stocks are penalized by the market for the perception that they are vulnerable to unexpectedly large losses - the "blind pool of risk" image. Using diversification to manage losses within disclosed parameters makes the bank substantially more transparent to investors. This will raise the equity price and afford the bank better terms in its own capital markets.

4. Earnings and growth prospects

Does bank growth cause bank value to increase? And where does that growth come from? When a bank permanently reduces its non-interest expense, it increases its earnings for a given amount of revenue, and its share price should rise proportionately. This opportunity has been expertly, and notoriously, exploited by Wells Fargo over the last 15 years, and has set its share price performance at an inspiring distance from its domestic peers.

However, a bank cannot perpetually increase earnings from reductions in non-interest expense. It would be very difficult to permanently reduce non-interest expense by 25%. Reduction in non-interest expense will cause a one-time adjustment in share price, but it is not a source of growth by itself.

In general, banks cannot be growth stocks in the same sense that technology stocks can. Bank risk asset returns are strictly limited on the upside, an inherent constraint of all "fixed income" investments. Only by changing the process of intermediation and exploiting the resulting franchise operating efficiencies to undercut rivals and expand market share, could a bank

become a growth stock. There are large growth opportunities indigenous to financial services, but not in traditional banking.

Banks have "grown" in size considerably in recent years through acquisition and merger. However, growth in size is not inherently growth in shareholder value. The value creating benefits appear to largely derive from the scale economies of in-market mergers. A substantial portion of the economic value created by such bank consolidations has been paid to the acquired banks' shareholders, in order to get the transaction done.

Many banks have tried to induce their earnings growth by lending "down market", i.e. moving into sub-investment grade lending where gross spreads are larger on average. Higher spreads suggest higher earnings, but do they mean greater value? The primary expectation from larger spreads should be greater risks. To create more value, the earnings increase would have to exceed the increase in required return due to the increase in risk.

When investors buy and sell shares of a stock, prices are nudged up and down respectively. Trading imbeds the investors' expectations into share prices. Investors push prices such that return expectations are aligned with risks. A stock whose return expectation is seen to be generous for its risk gets its price bid up until its return expectation is no longer generous. The relationship between return expectations and risk is basic to the formation of stock prices, and bank stock prices are no exception.

The immediate response to booking higher spreads is for accounting earnings to rise; however, risk is also increasing. To expect otherwise would be to deny or ignore the inherent relationship between risk and spreads. Losses typically show up later, and unexpectedly. An observed increase in earnings is one signal of increased risk-taking.

5. Efficient risk-taking

Banks are, by their nature, "risk" stocks, not growth stocks. Their value depends significantly upon taking risk efficiently.

Banks combine many functions, but one of the most important, and least exercised, is portfolio management. Diversification does not naturally occur from the flow of originations. Diversification results from secondarily buying and selling the appropriate exposures, so as to maximize the expected return per unit of risk (the criterion function first advanced by Nobel laureate Bill Sharpe that now bears his name: the Sharpe ratio).

Bankers know that diversification is important but their ability to create it in practice has been lacking. Few banks specifically undertake adjusting or balancing transactions to improve portfolio diversification. Origination incentives are often counter to good portfolio diversification - they give rise to concentrations. Those responsible for origination typically do not "own" the resulting losses, never mind the overall risk-efficiency of the portfolio. The usual consequence of bad performance has been the ritualistic sacrifice of top credit officers. Meanwhile, the basic underlying behavior continues with little alteration.

The overall result is that banks fall into states of high distress with regularity, due to the combination of undiversified default risk and excessive leverage. This prospect has not escaped shareholder notice. Accordingly, share prices of most banks seem to command what we term a failure discount. This is the "extra" risk premium attaching to the unknown prospect that the bank will be restructured, at the expense of shareholders.

In contrast with banks, advisors to mutual funds see themselves in the diversification business. Indeed, both mutual fund managers and their shareholders exhibit increasing affinity for greater diversification and no interest in leverage. Even those mutual funds that gamble their shareholders' wealth on "beating the market" by consciously selecting concentrations do not entirely ignore diversification. Shareholders, in fact, must be paying the management of mutual funds primarily for their skills at creating diversification, for there exists ample evidence that mutual funds do not "beat the market" with convincing regularity.

Risk-taking efficiency in banks and mutual funds at the asset level can be controlled by, and only by, diversification. KMV's experience from a large number of actual bank corporate portfolios suggests that overall risk could be reduced by 20% to 35% through better diversification, without giving up any return. To put it mildly, there is a substantial opportunity to improve portfolio performance, and with it, bank stock prices.

This conclusion applies to both banks and mutual funds; however, banks are in a less favorable position. First, banks still rely largely upon their own originations, not active portfolio management, for performance. Second, banks use high leverage, amplifying the risk and the possibility of distress. Third, banks pay taxes at the corporate level whereas mutual funds do not.

6. Leverage and taxes

Unlike mutual funds invested in debt, banks are levered and pay income taxes. Unless banks borrow at sub-market rates, leverage cannot offset the degradation in shareholder returns caused by corporate taxes. Banks cannot be financed 100% by borrowings. They must have equity. Consequently, the bank's shareholders pay two layers of taxes, at least in the US and other sovereigns that impose "double" taxation (since the equity returns are taxed again at the individual shareholder level).

Mutual funds, by contrast, are pass-throughs, and pay no taxes at the entity level. Taxes at the investor level are the same for payouts from either type of entity. So, corporate level taxes create a material disadvantage to holding assets in a tax-paying bank.

Could leverage per se create value? There is a hoary old argument, based on accounting, that leverage is desirable because the "required" return on debt is less than that of equity. By this myth, a firm that deploys more debt will reduce its overall cost of capital.

It is not difficult to fathom the fallacy. The required return on a firm's debt and equity depend upon the extent of leverage. Taking on additional leverage changes the required returns on the

debt and equity but leaves unchanged the *firm's* required return. Why? Because the debt and equity return combined must still equal the firm's return, regardless of the level of leverage. There is no free "leverage" lunch.

There are mutual funds invested in literally every asset risk class, from Treasury bills to emerging market equities. Though mutual funds could use leverage (though not as much as banks), almost none do. If leverage per se conveyed value, why would not all mutual funds be levered to their legal limit? The reason is that leverage, as such, does not convey value.

Taken together the debt and equity must own exactly all the risk and all the return of the underlying assets. Therefore, adding leverage does not change the risk-return economics of the underlying assets. The debt plus the equity equal the bank's asset value. This is a market value relationship, not an accounting tautology.

Changing leverage changes the allocation of risks between the bank's debt and equity holders. The greater the leverage, the greater the expected return and the risk of the equity. In fact, equity return and risk do not increase exactly in a lock-step fashion with leverage. Equity return goes up faster than risk; debt return goes up slower than risk - a fact that the options pricing theory of Black, Scholes and Merton has explained. Adding leverage can cause a transfer of value between debt and equity. However, this transference cannot be a gold mine for stockholders. Extracting wealth involuntarily from its debt holders cannot be for long a value source for equity holders.

Both the debt and equity increase in risk with the addition of leverage. However, the absolute level of risk of the debt is considerably less than the absolute risk of the equity. As the fraction of debt increases, and the complementary fraction of equity decreases, the total weighted sum of the risk remains unchanged and exactly equal to the asset riskiness. Thus, leverage neither adds to nor subtracts from the total risk or the total value of assets. Changes in leverage merely re-apportions asset value among debt and equity holders.

This point can be restated in the following way: maximizing the return on equity is not the same as maximizing shareholder value. To maximize shareholder value one should maximize the return to risk ratio of the firm's assets. Although this can be recast in terms of the equity's return to risk ratio, it is not necessary. In fact, targeting a given equity return can be misleading, since any equity return target can be met via increased leverage or via riskier lending *without producing shareholder value en route*.

The real world is more complicated than just indicated. However, the complicating factors do not invalidate this underlying, basic, reasoning. The principal complications are taxes, mispriced debt (market inefficiency), and risk of failure.

Because interest expense is tax deductible, leverage reduces a bank's tax bite per dollar of assets at the entity level. Empirical estimates, however, suggest only a small value shift toward equity can be attributed to leverage. We suspect this result is due to several factors. First, equity taxation at the corporate level is partially offset by the deferred taxation of equity capital gains at the individual investor level. Second, the tax-induced demand for debt financing raises

borrowing rates, partially offsetting the advantage of debt. Third, alternative means of reducing corporate taxes (like leasing) obviate some of the need to use debt.

If banks could perpetually borrow at sub-market rates, then leverage, in principle, might increase the value of the bank's equity. Deposits, by virtue of regulation, could be a cheap source of funds. These days, there is a heady dispute about the net cost of deposit funds in the capital structure of banks. Even the most optimistic estimates do not result in a strong incentive to use deposit financing...that earlier opportunity has been arbitraged and deregulated away. Pessimistic estimates find that deposit funds actually cost more than wholesale funds, once all expenses and risks are considered. One residual argument for deposits in this scenario is that they are a stable source of funds in the event of distress. This justification does not hold water, however, when one considers that simply using less debt would also make the bank safer.

But, we should ask, can leverage actually impair stockholder value? Asset risk alone does not cause a bank's financial distress, any more than it would induce high distress in an unlevered mutual fund. It takes asset risk coupled with leverage to produce the possibility of high distress and failure: leverage is the dynamite on banks' balance sheets.

As the premier financial counterparties in the world economy, banks should be, like Caesar's wife, above reproach. Anyone interested in contracting for future payments is willing to pay up for greater certainty of future payout. Reducing leverage will reduce the failure premium in bank stock prices.

By our reckoning, 22 of the largest 25 banks in the US in 1980 have either failed or experienced serious distress since that date...clear evidence that diversification is too low and leverage is too high.

7. Information and incentives

Typically, a bank is a composite of financial services businesses. These include accepting deposits, advancing and collecting credit, making markets, acting as an investment advisor, etc. Many of these activities give rise to a sizable assemblage of risk assets. This jumble of commingled activities makes it difficult for either internal management or external investors to measure and monitor bank risk-taking activity. Due to the paucity of pertinent measurement and credible disclosures, banks are risk "opaque" to investors.

This informational problem is confounded by the historical emphasis on regulatory and GAAP accounting as a basis for decision-making. Informed observers realize that traditional accounting is nearly useless as a guide to action. Perhaps its worst deficiency, accounting provides no means to measure risk. It is risk, above all else, that the bank must control.

When risk cannot be assessed, managerial behavior cannot be properly incented. Management cannot create the right rewards for decentralizing decision-making. The bank's board of directors, in turn, cannot create the right rewards for bank senior management.

Most decisions are conflicted by the disparate interests banks purport to serve: community, customers, employees, regulators, shareholders, and personal ambitions. A consequence is too many committees - too many people need to touch an issue before it can be decided. Thus, we should expect to find, and we do, an array of attitudes and initiatives that conflict with creation of shareholder value.

Conflicting goals, insufficient information flow, and inappropriate translation of incentives downward into the organization detract from shareholder value. When economic values cannot be measured, tradeoffs are achieved on political rather than economic grounds. Such behavior distorts outcomes towards reduced shareholder return, excessive risk-taking, and ultimately economic distress. After all, portfolio management and diversification do not occur by chance.

8. The nature of bank risk assets and the role of diversification

Banks are investors in risky assets, both real (plant, equipment, and other franchise equipage) and financial (loans). Financial risk assets arise from the bank's fundamental businesses. Financial risk assets can change in market value for two reasons. First, shifts in the market rate of interest induce changes in value ("market" risk). Second, assets change in value due to changes in their respective probabilities of default ("credit" risk). An advance to a borrower bears credit risk if the borrower could fail to meet the contracted payment schedule. The most extreme manifestation of credit risk is when the probability of default becomes 1, i.e. default occurs.

The function of portfolio management is to control risk in the aggregate. That, in turn, depends upon how well the risks of all the individual transactions fit together. In other words, it depends on the correlations between individual assets' sensitivity to interest rate changes and borrower default prospects, and the weights, or fractions, of the portfolio invested to the individual exposures.

If the correlations between borrowers' prospects of default were zero, diversification would, in the limit, completely eliminate default risk in the aggregate portfolio. In this circumstance, a bank's "risk" assets would have no aggregate default risk at all. However, through their mutual dependence on aggregate economic activity, correlations among borrowers are virtually always positive, and diversification cannot completely eliminate default risk. This residual, irreducible, risk must bear compensation to incent investors to hold it. Hence, the default risk premium.

Contrary to fact, if correlations were large, then default risk could be managed in part by hedging. Under such a condition, the bank's loan default risk could be reduced by "short" positions (cash or derivative). However, default correlations, while positive, are small. Indeed, they are considerably smaller (by more than a factor of 10) than the correlations between equities of the same firms.

It is because interest rate risks are highly correlated that they can be readily managed by hedging through use of synthetics (futures and/or options). The small size of default correlations means that default risk in large corporates cannot be hedged, as the "basis" risk is simply too large. In large corporates, aggregate default risk can only be controlled through diversification.

The small size of correlations explains why corporate debt behaves fundamentally differently from a portfolio of equities. The second crucial difference is that corporate debt lacks the upside potential of equity. These two factors afford a much greater payoff to diversification in debt portfolios than in equities.

In the world of equity management there are two contrasting strategies: active management, that tries to pick the best stocks, and indexation, that takes all stocks in an index (or even the whole referenced market). It would seem intuitive that picking the "best" stocks should yield a better performing portfolio than making no attempt to pick the best stocks. However, it has been well established for the last 25 years that equity index funds deliver superior performance to non-indexed funds, never mind that "active" equity managers have not heeded the message.

The reason is that it is very difficult to determine the best stocks *ex ante*, while any attempt to concentrate the portfolio, even in the "best" stocks, necessarily diminishes diversification. The index strategies have much less risk and equivalent returns, i.e. much better performance. It follows immediately that with no upside potential and an order of magnitude lower correlations, there is no case to be made for concentrations in debt portfolios.

In other words, if there is no payoff to picking stocks, there surely can be no payoff to picking debt, since there is no upside reward for being correct. A good stock pick might appreciate by a factor of ten; a good debt pick returns principle and interest.

On the other hand, because debt correlations are so low, there is much more potential for diversification. Thus, there is a much higher opportunity cost of being underdiversified. Debt or loan portfolio management should be focused primarily on diversification, regardless of whether it is housed in a bank or a mutual fund, levered or unlevered.

A portfolio of consumer loans performs well due to the diversification that naturally arises out of origination. First, individual consumer loans are comparatively small in dollar size. Second, the correlations among consumers are even lower than among corporate issuers. Third, consumer portfolios contain vastly more numerous obligors. The consequence: the portfolio weights on individual consumer loans are very small. Effectively, consumer debt portfolios are highly "indexed" to the economy.

However, when it comes to large corporate exposures, active diversification management, and only diversification management, is capable of taming unexpected losses to levels where the available returns compensate for the risk. Why? Because corporate debt exposures are naturally very disparate in size and there are relatively few of them.

Corporate loans originated and retained by any one bank are naturally concentrated. No bank has sufficient origination capacity across enough borrowers in enough different industries and

geographies to create "naturally", from its originations alone, an unconcentrated portfolio of default risk. Only buying and selling in secondary markets, in one form or another, can produce an economically efficient level of diversification.

We can be more specific about the condition of the typical major bank's existing corporate debt exposures. When a bank's corporate portfolio's individual exposures are sorted from largest dollar commitment to smallest, a clear, and troublesome, picture always emerges. In a bank with, for example, a total of 20,000 exposures to corporations, the largest 1,000 will typically exceed 50% of the total dollars in the corporate portfolio. And, this is not the worst part of the story. We can measure the correlations among corporate borrowers, as well as the stand-alone default probability of each borrower. With further information on the size and the prospective loss in the event of default of each obligation, we can estimate the extent of the bank's equity required to undergird each and every exposure. Often, we find that more than 40% of the equity under the largest 1,000 corporates is required to support just the 20 most concentrated names! These concentrations arise from the large size of individual exposures, above average default correlations, and relatively large "stand-alone" unexpected losses.

We find, moreover, that the risk to shareholders of a bank with 25% of its risk assets in corporates is highly influenced by a relatively small number of corporate obligors. As the fortunes of these borrowers wax and wane, so do the fortunes of the bank's shareholders. The conclusion is straightforward: a substantial portion of the risk in banking is traceable to concentrated corporate exposures.

9. Comparative advantage in diversification

Capital markets theory suggests that individual firms need not worry about their state of diversification. It is presumed that firms' shareholders are able to produce their own portfolio diversification. To diversify, goes this argument, shareholders can buy and sell shares more cheaply than operating firms can buy and sell businesses. While this theory surely does apply to non-financial firms, it equally surely does not apply to banks or mutual funds, who hold financial assets.

First, bank management discloses far too little information to shareholders to make it feasible for even the best equipped shareholders to understand the bank's composition of risk assets from the perspective of diversification management.

Second, banks, as managers of portfolios, have a cost advantage over their shareholders in directly diversifying their natural collection of risk assets. Diversification management requires technology, market access, and know-how that would be expensive and duplicative for individual shareholders to obtain and use. Moreover, banks are wholesale rather than retail market participants, which means banks can minimize transactions costs far better than individual shareholders. These economics have been amply demonstrated in equities by the success of mutual funds in general, and index equity funds in particular.

Third, the restructuring of banks in distress always costs shareholders, frequently their entire investment. Diversification by shareholders cannot control asset portfolio risk, only the bank's management can accomplish that. The bank's chairman cannot excuse the cost of failure by arguing that the risk was diversifiable by the bank's shareholders individually!

In sum, bank management is vastly better equipped to create diversification than individual shareholders can possibly manufacture at "home."

10. Too much capital?

It's probably clear from the previous discussion that we are much more concerned with too little capital than too much capital. How can a bank have too much capital? To the extent that there is a sizable tax advantage to using debt, then conceivably a bank could have too much equity. However, it would seem preferable to avoid taxes without adding leverage, by, for instance, increasing lessor exposures and taking the depreciation.

The usual arguments advanced for less capital are: (1) too much capital reduces the return on equity and thus lowers the share price and (2) the market penalizes a bank with excess capital because it is afraid that the bank will fritter the capital away.

The first argument is fallacious; it is simply the old accounting construct that "leverage adds value" that was, we hope, refuted above. As the bank has more capital, and thus uses less leverage, the risk of the equity goes down along with the return, and there should be no effect on the value of the equity. Equity value is determined by both risk and expected return, not the latter alone.

The second argument is more subtle. Its premise is that the bank will take bad risks if it has any "slack", i.e. excess capacity in its capital structure to absorb loss. Only by being highly leveraged, and thus subject to failure if it makes a misstep, will the bank's management be appropriately incented to avoid bad risks.

The problem from the perspective of shareholders is that incorrect incentives are coupled with insufficient transparency, not that bankers are consciously perverse. If shareholders could monitor risk easily, they could create appropriate risk-taking incentives (as could management). Since they cannot, then there may be some truth in this "feet to the fire" scheme. However, running an increased risk of failure must surely be a ham-fisted solution to the problem of risk management.

The right solution must lie in fixing both the incentives and improving the transparency, while reducing the risk of failure through diversification. This is precisely the objective of portfolio management.

It is interesting to note that banks with low asset risk have often had the most capital.

This is consistent with the premise that the market is comfortable with larger amounts of equity when risks are better understood. Again, mutual funds provide a perfect example. It also contradicts the notion of the market having a target return on equity independent of the risk of the equity. A money fund invested in Treasuries has a low return on equity, but its value is nonetheless high, because its risks are correspondingly low and transparent. In other words, a well-run bank really cannot have too much equity.

11. Relationship management vs. portfolio management?

Some bankers perceive a conflict between relationship management and the management of portfolio diversification. If producing diversification involves reducing certain exposures, or selling assets, doesn't that undercut the bank's ability to cross-sell other products or otherwise service the customer? If relationships are the source of bank profits, then portfolio management could reduce, rather than raise, stock value. What's wrong with this argument?

In reality, portfolio management is a positive complement to relationship management. The bank should be intent on meeting the clients' financing needs, at applicable market prices, but without hindrance from the bank's internal risk constraints. Currently, banks are locked into the cycle of stepping up or reducing originations to manage the balance sheet, usually at the wrong time for either the bank or the customer.

The customer is best served when origination and portfolio management are run independently of each other. When the portfolio manager is able to increase or reduce exposure (directly or derivatively), this gives vastly more freedom to the origination function. In other words, the customer gets the capital and liquidity that they need, when they need it, and at the appropriate market price.

Put differently, portfolio management is absolutely necessary if the fruit of relationship management is to be harvested. Origination and relationship management naturally tends towards concentration; portfolio management is about managing those concentrations, so that the return from the relationship can be enjoyed without the overweening risk consequences. Thus portfolio management is about reducing constraints, rather than imposing new constraints on relationship management.

There is no real economic conflict between portfolio management and relationship management. We suspect that whatever controversy exists is due to managers who reap the benefits of origination without owning the risks, thus those who do no want to measure the attendant costs.

12. Future directions

There are some clear directions that emerge from the preceding arguments. There are two central problems, and they are related to each other. The first is organizational: loan originators are not paid for how well they originate loans, but rather based upon the total stock of loans they have originated. Second: bank portfolios are underdiversified (and banks are undercapitalized relative to the resultant portfolio risks).

One organizational model of the bank is that of the investment bank. One group originates the loan, and then it is sold off, either externally through syndication, or internally to the portfolio management function. Even small business or consumer loans can be made to fit this model by substituting the distribution of structured financial products in place of syndication.

Although this model has some flaws discussed below, it has one powerful characteristic: it separates the origination decision from the investment decision. The origination group does not need to make a credit decision; it only needs to determine at what price it can sell the desired quantity of origination. The credit decision lies with the portfolio manager, or external investor. The decision is not a pure credit decision, but rather a portfolio decision that balances the return on the deal with its *risk in their portfolio*. This latter quantity is crucially dependent on the quantity taken of the deal.

This model highlights the existing problem in the bank: the originator has an incentive for volume or assets or income that is in conflict with the portfolio management decision. Unfortunately, the problem usually gets resolved on the side of origination, because, as one banker put it: "Hard drives out soft"; risk measurement has been subjective and mushy, while spread income is concrete and tangible. Only after the shock of large losses does the balance swing temporarily in favor of risk.

The flaw in this model is it treats loans as securities. Loans are distinguished by loan agreements that require monitoring of the borrower. Loan agreements represent options, retained by the originator, to take actions that primarily affect what the bank will recover should default occur.

The structuring, monitoring and collection role played by banks makes it costly and difficult to distribute whole loans, either singly or in pools. The issues revolve around the information and the incentives of the bank as agent, and the complexity of the structure and its subsequent transparency to investors. The separation of origination and portfolio management gets somewhat clouded and requires a closer look.

However, there is a cousin of the investment banking model that still applies: the "transfer pricing" model. In this model, the origination group does not sell the loan; rather, *it sells the default risk*. This makes sense because it cannot control the default risk, whereas it does have some control over the losses should default occur. The result is something akin to the transfer pricing of funding risk, except that now it is extended to include default risk as well. The

origination group takes the price of the default risk, just as it takes the price of funds, as a given, and builds it into the price for the deal.

It is worth a digression to imagine how this might work. Consider that the portfolio manager determines that it can sell the default risk of a borrower for 0.35 % per annum per dollar at risk. It is willing to take some of the risk at that price, and sell the rest into the market. The origination group, on the other hand, has several choices as to how to structure the loan. These might include taking collateral of different types, choosing between different levels of seniority, setting amortization schedules, defining technical defaults and consequent actions. *Each of these choices implies a different average recovery, otherwise there would be no purpose to the action*. It follows that there should be a different loan spread for each one. For instance, assume a choice between a senior unsecured loan for $50 million versus a loan collateralized by receivables. The "loss given default" for the first might be 50% and for the second 25%. This means that the first loan has $25 million at risk *on average* (50*.5) versus $12.5 million for the second loan (50*.25). For the first loan it is necessary to get a spread of 17.5bp (35bp*25/50) in order to cover the credit risk, and a spread of 8.75bp (35bp*12.5/50) for the second loan.

The lending group plays two roles in this model; origination and monitoring/collection. Obviously there is further specialization possible, but this division of activity shows up the client management aspect of the lending group. The critical point is that the group does not take, and does not get paid for taking, the default risk of the borrower. On the other hand, they have to be confident that their structure will deliver the average results they expect. These points are reinforced by an appropriate incentive structure. In essence, this group's income should be the difference between the spreads at which they can originate loans (including fees) and the cost of selling the resulting default risk, plus the difference between the subsequent recoveries on defaulted loans and the actual recoveries. These two amounts are linked. By setting a more conservative expected recovery rate on a loan, the group has to pay a higher spread to cover the risk, but it is more likely to come out ahead if the loan defaults.

In this model, the portfolio manager manages the default risks, and the origination group manages the origination/collection risk. The lending group does not make a decision about the price of default risk; it makes a decision about appropriate structure and gets paid accordingly. The portfolio manager, on the other hand, cares nothing for the structure issues, and gets paid to take appropriately diversified default risk.

It is worth noting in this context how neatly the recent developments in the credit derivatives play into this model. The transfer of default risk between the portfolio manager and the lending group is, in essence, via a credit derivative. The development of a credit derivative market is akin to the development of the forward markets in funds, a development that liberated the asset/liability management business.

Why should any bank be interested in these thoughts? Because the problems of portfolio management in banking trace to inefficient organizational structures and inappropriate incentives, these problems rest in turn on the availability of relevant information. It has been difficult to separate portfolio management from origination, because of the nature of the loan

product/loan agreement. The development of data and tools to generate information on credit risk in portfolios has the concomitant effect of creating new ways to organize banking activities.

Ultimately, the only way to realize the value of any technology is via a new way of doing business. That new way almost invariably involves greater specialization and decentralization of decision making.

Banks are moving in this direction through the use of RAROC models. Although there is much confusion about the exact calculations and applicability of such models, the motivation is to begin to measure the economic value added at the point of origination. As portfolio management develops as a distinct profit center within the bank, the separation between origination and portfolio management activities will increase. This result can only be applauded, since it will ultimately lead to more appropriate incentives and more profitable banks.

13. Conclusion

Banking, in its most stripped down form, is a set of activities that serves two functions. The first is to provide liquidity and financial capital to businesses and individuals ("origination"), and the second is to provide understandable and acceptable risk and return performance to investors ("portfolio management"). In principle, these functions can be performed in separate businesses (e.g. underwriters and money managers) or combined.

Commercial banks combine origination and portfolio management, but, historically, at the expense of the portfolio management function. Bank portfolios have a history of generating large, unexpected losses. On the other hand, the origination function within banks has often been very productive, but in a range of activities increasingly circumscribed by specialized non-bank competitors who sell their originations into the marketplace.

Banks use considerable leverage. Leverage is the flip side of capital. If banks used less leverage and more capital, their portfolio risks could not cause distress or failure. Why do banks use so much leverage? By itself, leverage does not add value. Increasing leverage increases the return on equity, but it also increases the risk of equity *in the same proportion*. The result is no increase in value, even though ROE goes up. Banks that target pretax ROE are not setting a return target as much as they are setting a *risk* target.

Leverage may convey certain tax advantages. However, tax advantages do not seem to be a satisfactory incentive to use so much leverage. Could leverage play a role as a means to discipline management risk-taking? In this view, banks are notorious for taking bad risks, and allowing a bank only a little capital is a means to rein in its risk appetite. Although this explanation is currently in fashion (witness the wave of stock buybacks), it takes as a given that there is internal confusion of objectives and a lack of risk measurement.

In fact, there is plethora of techniques emerging for bank risk management, and more importantly, for the balancing of return and risk. The best example is the RAROC models now

in place or under development at virtually all major banks. These techniques provide a means by which the bank can measure the risk and return of its business and portfolio activities, and incent its managers.

The direction of these techniques is towards real portfolio management of the asset portfolio. Portfolio management is focused on performance, measured as return relative to risk. Any such management will involve buying and selling of credit exposures in the secondary market, either directly or indirectly via derivatives. In particular it will target diversification, because there is much greater opportunity to reduce risk than to raise return.

Contrary to some arguments, secondary market activity does not undermine relationship management, but, on the contrary, reduces constraints on relationship managers so that they can better serve client needs. Major investment banks do not seem to be disadvantaged by secondary market activity and zero hold levels.

It is our view that the stock market puts a relatively low valuation on banks largely because their portfolio risks are hard to predict, and because those risks, combined with their leverage, make banks vulnerable to financial distress and failure. This vulnerability is particularly important because the value of the bank's overall franchise is dependent upon the reliability of the bank as a financial counterparty.

As banks demonstrate the ability to measure and manage credit risks, there will be direct benefits in terms of the performance of the portfolio. However, the indirect benefits may be even more important. Banks will produce more internal coherence between origination and portfolio management due to consistent valuation of risk and return. Greater transparency, not just in portfolio performance, but also in the separation between portfolio and non-portfolio activities, will make the market more willing to accept higher levels of capitalization in banks. In our view, all of these factors should lead to higher stock prices.