

BANK ACCOUNTING & FINANCE



Volume 7, Number 1

Fall 1993

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Should capital allocated to business units reconcile to the bank's actual capital? In this article, Ralph C. Kimball discusses this and other questions about allocating capital to individual lines of business.

Calculating and Using Risk-adjusted ROE for Lines of Business

Ralph C. Kimball

A decade ago the most common measure of performance, both for individual lines of business and across different banks, was return on assets (ROA). Really a measure of profit margins, ROA provided a benchmark for comparison across banks that differed substantially in their equity leverage and, among individual lines of business, where equity had not been allocated or had been allocated on an undifferentiated basis according to the amount of assets employed.

Recently, however, return on equity (ROE) has become the preferred performance measure, both across banks and for individual lines of business. The increased prominence of ROE as the primary measure of performance is due to four developments:

- ☐ The risk-based capital requirements have heightened awareness that banks and different lines of business within banks differ in their inherent risk and, thus, in the amount of capital used and in the hurdle rate that indicates acceptable performance.
- ☐ Many large and some smaller banks have found that they are capital deficient under the new rules. Therefore, banks now must allocate capital, a scarce resource, carefully to businesses that offer the highest risk-adjusted returns. ROE is the best

measure of profitability relative to the capital employed.

- ☐ The possibility of hostile takeovers, however unlikely, has pressured managers to manage with greater emphasis on shareholder value, a common euphemism for stock price. Return on equity earned by the bank relative to the ROE demanded by the market on investments with comparable risk is a major determinant of stock price. Therefore, ROE is a key variable in managing the bank's stock price and the front line of defense against undesired takeovers.
- ☐ During the 1980s, many banks moved to a decentralized management structure, with different lines of business measured on a stand-alone basis. While most banks quickly developed systems to measure the profit contribution of each line of business, such systems did not measure profitability relative to the resources employed. The allocation of capital and assignment of disparate hurdle rates is a logical progression in a system where each business is expected to operate on a stand-alone basis, and where managers are held accountable for their own, and only their own, results.

Although ROE is increasingly the measure of choice for strategic planning and performance measurement, implementing an ROE-based system for individual lines of busi-

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Exhibit 1
Balance Sheet and Income Statement by Line of Business
(millions of dollars)

	Consumer Deposits	Consumer Lending	Mortgage Banking	Servicing	Commercial Real Estate	Treasury	Total Bank
Assets	3	794	2,182	28	1,357	2,764	7,128
Deposits	6,325	—	3	—	—	800	7,128
Gross interest income	120.2	23.5	—	—	16.1	18.9	178.7
Provision for losses	—	8.0	—	—	7.0	3.2	18.2
Net-interest income	120.2	15.5	—	—	9.1	15.7	160.5
Fees	3.0	3.0	60.1	58	5.2	—	129.5
Total revenue	123.2	18.5	60.1	58	14.3	15.7	289.8
Noninterest expense	97.0	4.9	48.5	55	4.3	1.8	211.5
Net income	26.2	13.6	11.6	3	10.0	13.9	78.3
Taxes	10.5	5.4	4.6	1.2	4.0	5.6	31.3
Net income after tax	15.7	8.2	7.0	1.8	6.0	8.3	47.0

Note: Taxes are assumed to be 40% of net income.

ness presents both methodological and management issues, including the following:

- ☐ How should banks allocate capital to individual lines of business that differ fundamentally in their profit models and risks involved?
- ☐ How should banks that allocate capital to individual businesses adjust funds-transfer-pricing mechanisms to recognize allocated capital as a source of funds to these businesses?
- ☐ How should banks calculate the hurdle rate that indicates acceptable performance, given the riskiness of the businesses and the amount of capital employed? Calculating a specific risk-adjusted hurdle rate for each business involves many of the issues associated with allocating capital.
- ☐ How should banks incorporate measures of business-line ROE into performance measures for individual managers?

This article describes the methodological and managerial issues associated with calculating and using risk-adjusted ROE as a performance measure.

Allocating Capital to Individual Businesses

Until recently, most banks either did not allocate capital or allocated it on an undifferentiated basis according to the amount of assets

employed. But because individual lines of business differ in their riskiness and businesses with few assets, such as transactions-processing businesses, can be significant users of capital, capital should be allocated according to the risks of each individual business. The methods used to allocate capital to lines of business include following regulatory models, using comparisons to publicly traded peers, and basing the allocations on the business's historical performance.

To illustrate the various methods, *Exhibit 1* shows a condensed balance sheet and income statement for the six major lines of business of a fictional thrift institution with \$7.2 billion in assets.¹ All six business units earn a positive net income after tax. However, top management wants to know whether net income is sufficient on a risk-adjusted basis. In other words, which of the business units are creating value for the shareholders, and which are not?

Allocate capital based on regulatory requirements. It is natural to consider regulatory requirements like the risk-based capital rules as a convenient way to allocate capital to individual businesses. However, the risk-based requirements emerged from negotiations designed to create competitive equity among large international banks; they reflect political compromise as much as rational economic analysis. Moreover, the regulatory guidelines aim to measure default or counterparty risk and neglect other

types of risk, including interest-rate, market, prepayment, or payments-systems risks.

The regulatory guidelines are deficient in two important ways. *First*, because they are driven by asset category, the guidelines implicitly assume that lines of business that are not asset intensive do not use capital. Under the risk-based capital rules, the bank would allocate no capital to transactions-processing or fee-generating businesses such as trust, custody, mortgage origination and servicing, mutual fund servicing, and payments services. While these businesses generate little credit risk in the normal course of business, they do experience other forms of risk, such as market, operations, prepayment, and general business risk. If operated as independent entities, they would require equity to shield debt holders from these risks. Conceptually, to conceive of operating these businesses without capital is to make them infinitely attractive so long as they at least break even on an operating basis. If profitable, these businesses would appear to offer an infinite return on equity. Similarly, liability-intensive businesses, such as retail branch banking, would have little or no capital allocated and would earn an inordinately high return on equity.

Because they are driven by asset category, the regulatory guidelines implicitly assume that lines of business that are not asset intensive do not use capital.

Second, while directionally correct, the regulatory guidelines may not reflect accurately the capital the market would require for an investment of similar risk. For example, the regulatory guidelines assign an 8% Tier 1 capital requirement to credit card assets, but based on the premiums paid in the brisk market for credit card portfolios, the market-based capital for credit card portfolios is closer to 11% than to 8%.

Match capital allocations to those of peer businesses. Given the shortcomings of the regulatory guidelines, banks could base capital allocations on the capital structure of independent, stand-alone peers. A bank would construct a peer group for each line of business and allocate capital according to the capital ratios of the peer group. For example, the commercial real estate business would be assigned equity as though it were an independent, publicly traded real estate investment trust investing in commercial mortgages (*Exhibit 2*). In some cases, publicly traded

Exhibit 2
Calculation of Equity Ratios Using Peer Groups

Line of Business	Measure	Peers	Equity as Percentage of Measure
Consumer deposits	Assets under management	Legg Mason	1.70%
		Dreyfus	1.58%
		Franklin Resources	0.57%
		Average	1.28%
Consumer lending	Loans	Household	
		International	4.56%
		Beneficial	9.38%
		Green Tree	10.73%
Mortgage banking	Assets	Average	8.22%
		Countrywide	11.8%
		Margaretten	14.2%
		Average	13.0%
Servicing	Assets	National Data	43.9%
		General Motors E	47.8%
		Flserv	22.6%
		Policy Management	
		Systems	83.9%
Commercial real estate	Assets	Average	49.6%
		Income	
		Opportunity Trust	34.1%
		Lomas & Nettleton	
		Mortgage Investor	31.3%
		CV REIT	33.6%
		Mortgage & Realty Trust	25.8%
Treasury	Assets	Average	31.2%
		First Boston	2.69%
		Morgan Stanley	3.56%
		Salomon Brothers	3.29%
		Average	3.18%

Source: Standard & Poor's.

peers may not exist, but it may be possible to estimate capital allocations based on purchases and sales of the underlying assets. For example, active markets exist for the sale of retail branches, credit card portfolios, and mortgage servicing. The premiums paid for such assets can be a proxy for market-based capital allocations.

While market-based proxies are preferable to regulatory guidelines, they present some problems. The number of independent, publicly traded peers may be small, and these peers may differ in important respects from the business being analyzed. In particular, capital ratios of the peers may differ significantly from one to

another, so that management must choose among a possible range of capital allocations rather than some ideal amount. In *Exhibit 2*, for example, the equity-to-assets ratio for the peer group of data processing peers ranges from 22.6% to 83.9%.

Use historical analysis to estimate required capital. Another approach to allocating capital uses historical data about credit losses to derive estimates of the required capital. This approach views capital as a cushion against unexpected variations in losses. The bank would calculate the ratio of write-offs to assets over some period, along with its mean and standard deviation. The mean ratio of losses is a proxy for expected losses and determines the annual provision for credit losses. The standard deviation around the mean measures unexpected losses and determines the capital required to protect the bank against unexpected variations in losses. The required capital ratio would be a multiple (usually one or two times) of the standard deviation of the loss ratio.

While this approach is common when market-based data is unavailable, it has significant drawbacks. *First*, historical data needed to calculate ratios consistently may not be available due to mergers, reorganizations, or changes in accounting procedures. *Second*, the riskiness of the underlying portfolio may change over time so that loss ratios from early years may not be comparable to those of later years. *Third*, this technique works well for lines of business that experience credit risk but is less successful for lines of business that encounter other types of risk, such as interest-rate risk, prepayment risk, or payments-system risk.

A combination of these methods may be best

Since none of these methods is above criticism, the best method may differ from business to business. Sometimes, the method may be a compromise among the alternatives. At first, management may need to try all the alternatives and adopt the method that appears to give the most reasonable answer. The method used to allocate capital not only must be analytically valid but also managers must perceive it to be fair.

Reconciling Actual to Required Capital

No matter what method or combination of methods a bank uses to allocate capital to lines of business, in almost all cases, the sum of those allocations will not equal the bank's total equity capital. The sum of

Exhibit 3

Allocation of Stand-alone, Market-based Equity to Lines of Business

Line of Business	Equity Ratio*	Allocated Equity	Stand-alone Return on Equity
Consumer deposits	1.28% of deposits	\$ 81.0	19.4%
Consumer lending	8.22% of loans	65.3	12.5%
Mortgage banking	13.0% of assets	283.7	2.5%
Servicing	49.6% of assets	13.9	12.9%
Commercial real estate	31.2% of assets	423.4	1.4%
Treasury	3.18% of assets	87.9	9.4%
Total bank		\$955.2	4.9%

*from *Exhibit 2*.

the allocated capital will either be greater or less than the actual capital of the bank.

In most cases, the sum of the market-based allocations to the individual lines of business substantially exceeds the actual capital of the bank. This discrepancy does not necessarily mean that the bank has a capital deficiency. Rather, the capital markets may recognize that a diversified portfolio of businesses requires less capital than the sum of those businesses operating on a stand-alone basis. In most cases, the risks of different businesses tend to offset one another, at least partially. The lower capital requirements for the bank as a whole may also reflect the value to the market of regulatory scrutiny and deposit insurance in reducing risk. In *Exhibit 3*, for example, the sum of stand-alone equity allocations for the six business units came to \$955 million, roughly twice the thrift's actual equity.

In most cases, the sum of the market-based allocations to the individual lines of business substantially exceeds the actual capital of the bank.

While a discrepancy between the sum of the market-based capital allocations and actual capital may have no implications for the bank's financial policy, it creates obstacles to evaluating

businesses and their managers. Ultimately, the larger the capital allocation, the more difficult it is for a line of business to earn sufficient profits to meet its required hurdle rate for ROE. If capital allocations to individual businesses exceed the actual capital of the bank, then managers may believe that this unfairly biases downward reported ROEs. The excess allocated capital can also create strategic issues, since it would be theoretically possible for each line of business to fail to earn its required hurdle ROE but for the bank to surpass its required hurdle ROE based on actual capital. In extreme cases, a bank might choose to exit a business based on an insufficient ROE earned on allocated capital, when the ROE on actual capital would be quite satisfactory.

The simplest way to address this problem is to allocate capital to each business using a stand-alone, market-based method and then adjust the allocations to reflect the actual capital of the bank. For example, if the sum of the capital allocations to each line of business should total \$2 billion, while the actual capital of the bank equals \$1.5 billion, the allocation to each line of business would be reduced by 25% to bring the sum of the allocations into line with actual capital. Such adjustments recognize the benefits that accrue to each business from its status as part of the bank and can be a positive offset to the corporate overhead that is allocated to individual businesses.

Exhibit 4 uses this approach to adjust the equity allocations calculated in *Exhibit 3*. The result is a substantial reduction in the equity allocated to each business unit.

While most banks find that the sum of the market-based allocations exceeds their actual capital, in a few banks the reverse is true, that is, actual capital exceeds the market-based allocations. If all the actual capital is allocated out to the businesses, it may be impossible for the businesses to match or exceed their required hurdle rates because of the drag of the excess capital. One solution would be to allocate to each line of business only the capital dictated by the most appropriate allocation method and to allocate the excess actual capital to a central corporate account for unemployed capital. This way, the choice to hold excess capital for such purposes as acquisitions is a corporate decision. The cost of excess capital is recognized as a strategic expense at the corporate level—not the responsibility of the individual businesses. Many banks use a similar approach for asset/liability management, where

Exhibit 4

Adjustments to Equity Allocations to Reconcile to Actual Bank Equity

Line of Business	Stand-alone Equity*	Percentage of Total Allocated Equity	Actual Total Bank Equity	Adjusted Market Equity
Consumer deposits	\$ 81.0	8.48%	\$445	\$ 37.7
Consumer lending	65.3	6.84%	445	30.4
Mortgage banking	283.7	29.70%	445	132.2
Servicing	13.9	1.45%	445	6.4
Commercial real estate	423.4	44.33%	445	196.8
Treasury	87.9	9.20%	445	40.9
Total bank	\$955.2	100.00%	\$445	\$444.4

*from *Exhibit 3*.

they report gapping profits in a separate account and do not allocate them to individual lines of business.

While this approach is preferable to allocating excess capital to individual lines of business, it still does not recognize the reduction in required capital for the bank as a whole due to diversification, deposit insurance, and regulatory oversight. Management needs an independent, market-based estimate of required capital for the bank as a whole. Then, management can use this estimate to adjust the allocations to individual lines of business, as follows:

- ☐ Allocate capital to each line of business using the most appropriate method, whether regulatory, market based, or risk driven.
- ☐ Compute required capital for the bank as a whole on an independent basis, based on the covariances between the returns earned by individual businesses. Such calculations are not simple ones, primarily due to data availability, but some banks have made significant progress in this area.
- ☐ Adjust downward the allocation for each line of business to reflect the excess of the sum of the individual allocations over the required capital for the bank as a whole.

- ☐ Hold at the corporate level the excess or the deficiency of the actual capital compared to required capital for the bank as a whole. Do not allocate this excess or deficiency to the individual businesses.

This procedure recognizes differences in the riskiness of individual lines of business. It also takes into account the lower capital required because each line of business is part of a diversified portfolio subject to regulatory examination and deposit insurance. Assigning capital based on required bankwide capital rather than actual capital makes it possible to evaluate each business independently of the particular capital structure of the bank.

The problem of reconciling actual capital to the sum of required capital for individual businesses is complex. While it is possible to address this problem, the challenge for senior managers is to choose an approach that is analytically valid and makes sense to the business managers affected.

Capital as a Source of Funds

To regulators, capital is a cushion against losses. To shareholders, it is a scarce resource that can be employed within or outside the bank. To business managers, capital is a source of funding for their businesses, similar to CDs or purchased funds. Banks must recognize the role of capital as a source of funds and integrate capital into the funds-transfer-pricing system to measure accurately the profitability of a particular business, product, or customer relationship.

Increasingly, banks use sophisticated funds-transfer-pricing systems to compute net-interest income for a business unit or product. In these systems, businesses generating deposits sell the deposits to a pool manager, accruing the difference between the rate paid on the deposits and the pool rate as net-interest income. Some larger banks have even moved to individual matched funding for large commercial credits. In these systems, the assigned funding rate is unique and reflects the actual cost of funding the credit, rather than an estimate of marginal cost, which results when funds are purchased from a pool. Business units that generate assets purchase funds from the pool, receiving the difference between the rate received on the asset and the pool rate as net-interest income. The pool rate is the rate at which the bank could raise or employ funds in the money markets;

thus, it is a measure of opportunity cost to the bank. This rate divides the net-interest margin of the bank between the business unit generating the liability and the business unit generating the corresponding asset.

This simple approach to funds-transfer pricing is complicated somewhat because rates received on assets and paid on liabilities usually differ by maturity depending on the slope of the yield curve at the time the asset or liability is added to the balance sheet. Most banks allow for this effect by creating multiple pools, or buckets, by maturity class. Thus, a business unit generating automobile paper purchases funds from the two-year bucket and is hedged against interest-rate risk for the life of the asset.

Most funds-transfer systems do not recognize capital as a source of funds.

While most funds-transfer systems greatly improve calculations of profitability by organization unit, product, or customer, they do create an inconsistency when profitability calculations are carried past ROA to include ROE. This inconsistency results because most funds-transfer-pricing systems assume assets are funded completely from the appropriate maturity bucket. Thus, most funds-transfer systems do not recognize capital as a source of funds. This inconsistency biases downward the profitability of businesses, customers, and products because each business unit is assumed to purchase funds equal to 100% of assets from the pool; in fact, due to the existence of capital, the business unit needs to purchase only a portion of its assets from the pool. For example, a mortgage unit supported by 11% capital would require funding for only 89% of its assets.

To correct this inconsistency, banks should give lines of business a credit that recognizes equity as a source of funds. This can be most easily accomplished by first calculating net-interest income for each business in the usual way, as though it were funded completely with funds purchased from the transfer pools. To allow for equity's role as a source of funds, then each business would receive an equity credit equivalent to the assigned equity times the transfer rate in the longest maturity bucket. This equity credit recognizes that each dollar of assigned equity reduces the funds the business unit must purchase from the longest maturity bucket. The transfer rate on the longest maturity

Exhibit 5 Calculation of Equity Credits

Line of Business	Net Income Before Tax	Adjusted Market Equity*	Equity Credit	Adjusted Net Income†	Adjusted Net Income After Tax	Adjusted Return on Equity
Consumer deposits	\$26.2	\$37.7	\$ 2.9	\$ 29.1	\$ 17.5	46.5%
Consumer lending	13.6	30.4	2.3	15.9	9.5	31.2%
Mortgage banking	11.6	132.2	10.0	21.6	13.0	9.8%
Servicing	3	6.4	0.5	3.5	2.1	32.8%
Commercial real estate	10.0	196.8	15.0	25.0	15.0	7.6%
Treasury	13.9	40.9	3.1	17.0	10.2	24.9%
Total bank	\$78.3	\$444.4	\$33.8		\$ 67.3	15.1%

*from Exhibit 4.

†net income plus equity credit.

bucket is the appropriate measure of the value of this equity, since equity is an infinite-lived liability with no maturity or repricing date.

Although they do not use capital to fund the creation of assets, lines of business that generate only liabilities or fees should also receive appropriate equity credits. On a pro forma, stand-alone balance sheet for such a business, liabilities would consist of deposits or purchased funds and the allocated capital. Assets would consist of sales to the matching maturity buckets, with capital being sold to the longest maturity bucket. Thus, the income statement of such a business should show an equity credit equal to allocated capital times the longest maturity pool rate.

Equity credits have the greatest impact on lines of business with greater amounts of assigned equity. These, of course, will be those with the greatest risk. Exhibit 5 shows how equity credits are calculated for our fictional thrift institution.

While equity credits result in a more accurate measurement of return on equity, they also require management to set the minimum acceptable ROE more stringently. For example, after receiving equity credits, a business that is just breaking even on a cash-flow basis will show a return on equity equivalent to the after-tax transfer rate on the longest maturity bucket.

While most funds-transfer-pricing systems use the concept of a separate balance sheet to calculate profitability, most systems fail to include capital in the construction of such balance sheets and, therefore, miscalculate profitability. Including an equity credit corrects for this omission.

Assigning Hurdle Rates

Five years ago most banks used a single bankwide rate as the appropriate hurdle against which to measure business return on equity. Often this bankwide hurdle rate equaled management's objective for return on equity for the bank as a whole. However, the recognition that businesses differ in their riskiness, and thus in the proportion of capital allocated to them, carried with it the implication that acceptable hurdle rates should also reflect differences in business risk. Increasingly, banks are moving away from a single bankwide hurdle rate to assigning different hurdle rates to individual businesses based on their perceived riskiness. Put simply, if a business involves additional risk, shareholders demand a higher return to bear this risk.

Some banks have resisted using differentiated hurdle rates, arguing that allocating different amounts of capital adequately addresses differences in risk. This argument fails to distinguish between the different roles of capital for creditors and investors. To creditors, capital is a shield that protects them against losses. As the risk of loss increases, creditors will demand the injection of more capital to protect themselves. The capital allocation process addresses this need for additional capital to offset differences in perceived risk. Investors, on the other hand, view equity capital as a scarce resource to be invested where the risk-adjusted returns are highest. Investors in riskier businesses require higher returns because of greater uncertainty about the expected returns. Thus, allocating

capital on a differentiated basis addresses the concerns of depositors, debt holders, and regulators, and using different hurdle rates addresses the need of shareholders to be compensated adequately for the risks they bear.

In a bank that uses risk-adjusted hurdle rates, bankwide return on equity is a weighted average of the risk-adjusted hurdle rates for each of the individual businesses, where the weights are the dollar amounts of capital assigned to each business. Thus, the hurdle rate of a low-risk business will be substantially below that of the bank's overall ROE target; a high-risk business may have a hurdle rate substantially above the overall target.

Risk-based hurdle rates tend to tilt the bank's strategic decisions away from higher-risk businesses and toward lower-risk ones.

Risk-based hurdle rates tend to tilt the bank's strategic decisions away from higher-risk businesses and toward lower-risk ones. In effect, this method hits the higher-risk businesses with a double whammy: both higher allocations of capital and higher hurdle rates on the assigned equity. While some managers may decry this tilt toward low-risk businesses, I interpret the recent performance of many banks as evidence that the tilt is overdue.

The most common method of calculating risk-based hurdle rates is based on the capital asset pricing model and incorporates three factors: the current risk-free rate, the expected return on equity compared to the risk-free rate, and a measure of the riskiness of the individual business relative to the equity market. The measure of the riskiness of the individual business, or "beta," is calculated as the volatility of returns on the individual business relative to the volatility of returns on all equity.² The risk premium for the individual business is "beta" times the historical average difference between the return on equity and the risk-free rate. The hurdle rate is the sum of the risk premium and the risk-free rate.

With this method, choosing the beta assigned to each business is crucial. Two methods have emerged. With the first, the bank would identify a group of publicly traded peers engaged solely or principally in the same business, obtain the betas of these peers from public sources, and calculate an average beta. Then,

Exhibit 6 Calculation of Hurdle Rates Using the Capital Asset Pricing Model

Line of Business	Peers	Betas	Market Hurdle Rate
Consumer deposits	Legg Mason	1.16	15.6%
	Dreyfus	1.40	
	Franklin Resources	1.43	
	Average	1.33	
Consumer lending	Household International	1.64	16.0%
	Beneficial	1.20	
	Greentree	1.30	
	Average	1.38	
Mortgage banking	Countrywide	1.65	18.2%
	Margaretten	NA	
	Average	1.65	
Servicing	National Data	0.94	13.6%
	General Motors E	1.02	
	Flserv	1.24	
	Policy Management Systems	1.05	
	Average	1.07	
Commercial real estate	Income Opportunity Trust	0.95	10.8%
	Lomas & Nettleton		
	Mortgage Investors	0.40	
	CV REIT	0.21	
	Mortgage & Realty Trust	0.63	
	Average	0.73	
Treasury	First Boston	NA	16.8%
	Morgan Stanley	1.48	
	Salomon Brothers	1.48	
	Average	1.48	

Betas from Standard & Poor's.

The market hurdle rate is the risk-free rate (5%) plus beta multiplied by the long-term market premium (in this example, 8%).

the bank would use this average to calculate the hurdle rate (*Exhibit 6*).

The strengths and weaknesses of this approach are similar to those associated with allocating capital based on peers. This method works best when many comparable peers are publicly traded. Unfortunately, in many cases few peers are publicly traded, and often the betas of those that are diverge widely, even after adjustments are made for differences in leverage.³

The second approach would be to create betas for each business using historical time series on returns for the business and the equity

Exhibit 7

Relative Risk Components by Line of Business with Increase in Market Hurdle Rate Based on Risk

Line of Business	Credit Risk	Market Risk	Earnings Risk	Liquidity Risk	Prepayment Risk	Hurdle Rate
Consumer deposits	-	-	M	-	-	
	-	-	2%	-	-	7%
Consumer lending	H	-	M	H	L	
	4%	-	2%	3%	1%	15%
Mortgage banking	L	M	M	-	L	
	1%	2%	2%	-	1%	11%
Servicing	L	-	-	-	M	
	1%	-	-	-	2%	8%
Commercial real estate	H	H	H	H	-	
	4%	4%	3%	3%	-	19%
Treasury	-	H	M	-	H	
	-	4%	2%	-	4%	15%

The hurdle rate is the sum of the risk premiums plus an assumed risk-free rate of 5%.

This list of risks is not meant to be exhaustive. Individual banks may define the nature of risks differently or may add additional types of risk (such as operating risk, translation risk, or payments system risk) where appropriate. Also, the assignment of "high," "medium," and "low" is subjective.

market. While the bank would not have to search for publicly traded peers, it still could encounter problems related to the comparability of accounting-based data and market-based data. To accurately compute beta requires a great deal of historical data about returns. In many banks, such historical information is not available due to mergers or reorganizations.

Even if historical information is available, this method is likely to understate required hurdle rates. Returns in the market are calculated on a total return basis (dividends and capital gains or losses). Returns for the individual businesses are based on accounting data and, except for a few trading businesses, are based on book values. Because book values fluctuate much less than market values, the returns for the individual businesses based on book values will be considerably less volatile than returns computed on a mark-to-market basis. Since beta measures the volatility of returns in the individual businesses compared to the equity market as a whole, betas based on book values will be biased downward. This downward bias in betas will in turn bias downward the required hurdle rates.

A third approach would be to evaluate each business on the degree of relative risk for the various types of risks encountered and then

subjectively assign a risk premium for each type of risk (*Exhibit 7*). The hurdle rate for each business would be the sum of the risk-free rate and the risk premiums associated with each risk category.

The subjectivity of this approach is both its strength and its weakness. The discussions and debates to reach a consensus about hurdle rates can help to determine the strategic course of the bank. But unfortunately, the hurdle rates may not be the same as those the market would assign. For example, *Exhibits 6 and 7* show significant differences in the hurdle rates for consumer banking, mortgage banking, servicing, and commercial real estate. Discrepancies between the subjectively derived hurdle rates and market-based hurdle rates could cause management to take actions that will not optimize shareholder value.

Since any approach to determine hurdle rates involves substantial subjectivity, the bank should use all these approaches to determine a consensus rate. If the three approaches yield significantly different rates, the bank must do further work to determine the most appropriate hurdle rate. Such further work would involve a careful investigation to understand exactly why the approaches differ in their outcome. Such an

investigation often will lay bare important implicit assumptions that can be tested for validity.

Evaluating Businesses and Business Managers

While top management is placing increased emphasis on ROE in evaluating the performance of each business, the managers of these businesses often resist the use of ROE to measure their own performance. This resistance is often justified, because managers cannot control some elements of business performance. While managers can control variables such as pricing, market share, and expenses, they cannot control economic and political developments, regulatory initiatives, and the way the market evaluates the risk/return characteristics of the specific business.

Since managers influence but do not control business performance as measured by ROE, they often are uncomfortable with personal evaluations based on ROE. Managers usually prefer to be evaluated based on factors they can control, such as market penetration, volume, and pricing.

So the bank must develop three different performance measures:

- ☐ Economic measures, such as ROE and ROA, to evaluate long-term strategic decisions such as entry/exit decisions and requests for additional investment.
- ☐ Periodic profit measures, such as quarterly earnings, to manage the business on an ongoing basis and identify emerging problems and opportunities.
- ☐ Operating statistics to measure managers or specific business initiatives, such as marketing or productivity improvement programs.

ROE is most appropriate for long-term strategic decision making. While it is extremely useful when evaluating businesses, ROE must be used carefully and in conjunction with other measures to evaluate business managers.

Even Rough Estimates of ROE Lead to Better Decisions

Our fictional thrift shows the importance of calculating ROE and risk-based hurdle rates by business unit. The thrift is earning an overall ROE of 15.1% (in excess of its weighted risk-adjusted hurdle rate of 14.35%). However, two

Exhibit 8 Comparison of Actual and Hurdle ROEs

Line of Business	Hurdle ROE*	Actual ROE†	Excess ROE	Earnings Shortfall
Consumer deposits	15.6%	46.5%	30.9%	—
Consumer lending	16.0%	31.2%	15.2%	—
Mortgage banking	18.2%	9.8%	(8.4%)	\$11.1
Servicing	13.6%	32.8%	19.2%	—
Commercial real estate	10.8%	7.6%	(3.2%)	\$ 6.3
Treasury	16.8%	24.9%	8.1%	—
Total bank	14.3%	15.1%	NA	—

*from Exhibit 6.

†from Exhibit 5.

Earnings shortfall is the increase in after-tax net income necessary to reach the hurdle ROE.

business units—mortgage banking and commercial real estate, which between them account for 74% of allocated equity—are not earning an ROE equal to their assigned hurdle rates. *Exhibit 8* shows that the thrift as a whole is surpassing its hurdle rate only because of high ROEs earned by smaller businesses.

A complete analysis must take into account cyclical, regional, and competitive factors, but *Exhibit 8* suggests that the thrift could improve performance by reducing the resources devoted to mortgage banking and commercial real estate and reallocating them to businesses where risk-adjusted returns are substantially higher.⁴

If the thrift cannot change its business mix, it should estimate the earnings shortfall of each underperforming business, that is, the dollar increase in after-tax net income required to bring each business up to its hurdle ROE (*Exhibit 8*). Then, it can estimate the expense reductions or revenue enhancements necessary to attain its hurdle ROE. For example, for our hypothetical mortgage banking business to reach its assigned hurdle rate, after-tax net income must increase by \$11.1 million (*Exhibit 8*).⁵ This could be accomplished by reducing noninterest expense by \$18.5 million, by increasing net revenue by the same amount, or by some combination of expense reduction and revenue enhancement totaling \$18.5 million.

While a system to calculate return on equity for individual lines of business is complex and imperfect, even rough estimates encourage more disciplined decisions. Market-based judgments about required returns and the relative riskiness of individual businesses can help to eliminate subjective biases and inefficient resource allocation.

Notes

¹In the interests of brevity, the many complex problems associated with allocations of revenue and expense among different lines of business are not treated here.

²While the capital asset pricing model is emphasized here as the method to calculate hurdle rates, other methods also are used. One, based on discounted cash flows, calculates the required return on equity as equal to the sum of the current dividend yield and the expected future growth rate of earnings. Another calculates the required return on equity as equal to the sum of the pretax cost of debt and the historical average differential in total returns between the company's equity and its debt.

Both of these methods require considerable subjective assumptions.

³For a treatment of the effect of leverage on betas, see any textbook on corporate finance. For example, see Brigham and Gapenske, *Intermediate Financial Management*, 4th ed. (New York: The Dryden Press, 1993): 324-325.

⁴Before drawing this conclusion, the hypothetical thrift must of course have confidence that revenues and expenses are fairly allocated to individual businesses and that it has identified and taken into account strategic linkages. For example, the thrift may need to be in the mortgage business in order to generate volume for the high-ROE servicing business.

⁵Another approach would be to try to reduce the hurdle rates for individual businesses through risk-reduction techniques such as hedging or combining businesses with inversely correlated business risks. Simply varying the business mix of the thrift will change the thriftwide hurdle rate, as this is simply a weighted average of individual hurdle rates. But changes in business mix will not alter the hurdle rates of the individual lines of business, and performance problems exist at this level. At the business level, hurdle rates can be altered only by changes in business practice that substantially reduce risk exposure.

Seminars and Conferences

American Bankers Association (202) 663-5107

Annual Convention and Banking Industry Forum, November 6-9, San Diego.

American Institute of Certified Public Accountants (800) 862-4272

Banking Conference, November 4-5, Washington, D.C.

Bank Administration Institute Foundation (800) 323-8552

Eleventh Annual Asset/Liability and Treasury Management Conference, October 25-27, New York.

Implementing Interest Rate Risk Measurement—Required by FDICIA Section 305, November 1, Chicago; November 8, New York; November 15, San Francisco; December 1, Dallas.

FASB/SEC Critical Accounting Issues, November 2, Chicago; November 9, New York; November 16, San Francisco; December 2, Dallas.

Derivative Products—From A to Z, December 6-7, Chicago; December 9-10, New York.

Annual Float Issues Conference, February 2-4, Orlando, Florida.

Financial Managers Society (312) 578-1300

Balance Sheet Strategies in a Market Value World, October 12-13, Orlando, Florida; October 14-15, Philadelphia; November 9-10, Los Angeles; November 11-12, Chicago.

Financial Markets Association (703) 836-9378

1993 Treasury and Capital Markets Legal Issues Conference, October 28-29, Washington, D.C.

Investment Portfolio and FDICIA Workshop, November 29, Arlington, Virginia.

National Association for Bank Cost & Management Accounting (708) 272-4233

Quality as a Profit Strategy, October 28-29, Cleveland.

Effective Management Reporting, November 18-19, Tampa, Florida.