

Customer Profitability Analysis

Part I: Alternative Approaches Toward Customer Profitability

By Robert E. Knight

In recent years banks have become increasingly aware of the need to measure the profitability of corporate customer relationships. Past emphasis on deposit size as a measure of rank has gradually given way to the realization that large banks are not necessarily the most profitable and that loans, not deposits, generate most bank earnings. At many larger banks, profitability analysis, essentially a sophisticated version of standard account analysis,¹ has been introduced to assist in measuring individual customer profitability. This article describes the objectives of profitability analysis, discusses some of the general principles involved in constructing an analysis, and considers the alternative types of profitability measures commonly utilized. A sample profitability analysis statement is presented to illustrate the interrelationships among vari-

ables. A second article in this series will describe the results of a recent survey of profitability analysis techniques at major correspondent banks.

ACCOUNT ANALYSIS

The application of standard account analysis to both corporate and correspondent accounts became widespread in the mid-1960's when banks feared they might be caught in a profit squeeze. During that period the costs of providing bank services escalated rapidly as inflation became more pronounced and as the variety of bank services increased greatly. Corporate treasurers, while asking for larger loans and for highly specialized services, were simultaneously reducing noninterest bearing balances to invest the funds directly in the securities market. As interest rates rose, smaller banks began to sell large amounts of Federal funds, occasionally producing negative collected balances at correspondents. Meanwhile, bank liquidity was declining and liability management techniques were not proving fully satisfactory in meeting the demands for loanable funds when Regulation Q interest rate ceilings were binding. Under these circumstances larger banks initially developed

¹/ A detailed description of account analysis procedures used in correspondent banking can be found in the article, "Account Analysis" in the December 1971 issue of the *Monthly Review* of the Federal Reserve Bank of Kansas City. Since 1971, the Kansas City Reserve Bank has collected figures annually on the account analysis practices of major correspondents. The 1973 survey results were reported in "How Correspondents Analyze Accounts for Profitability," *Banking*, Journal of the American Bankers Association. Vol. 66, No. 10 (April 1974). The tabulations for the 1974 survey will be reported subsequently in this series of articles.

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account analysis techniques to ensure not only that adequate compensating balances would be maintained, but also that the needs of the most profitable customers could be given priority.

In performing a standard account analysis, a bank determines the revenue from a customer's account by multiplying the average collected balance, generally adjusted for reserve requirements, by an earnings credit or allowance. The expenses of servicing the account are computed by multiplying the number of times a given service is utilized by the cost (generally including an allowance for profit) of providing the service. A typical account analysis schedule is shown in Table 1.

While the account analysis represents an important step in determining the profitability of a customer relationship, it is not a measure of total profitability. For example, the analysis tends to focus on activity charges for which compensating balances are maintained—account maintenance, items deposited, ledger entries, wire transfers, etc.—but rarely makes allowance for other types of services such as loans, investment counseling, Federal funds transactions, trust services, or data processing. Its value, therefore, is primarily in analyzing the accounts of nonborrowers with heavy activity charges, such as respondent banks. For other customers, the omission of loan relationships has at times allowed the double or even triple use of compensating balances. Since cross-checking is frequently not automatic, a compensating balance required for a loan might at times be used to compensate for activity charges and also serve as a justification for a future call on credit.²

The primary objectives of account analysis are to measure the adequacy of compensating balances and to obtain an indication of the profits generated by an account relationship. The meaning of the profit figure obtained, however, is generally uncertain and can rarely be related directly to the profits of the bank. Since the price of a service often includes a markup, a high volume customer is likely to be more profitable than a low volume relationship, even though the computed profits are identical. Moreover, some banks build in an additional profit margin by granting an earnings allow-

Table 1
FIRST NATIONAL BANK

Account Analysis for:
Month of:

EARNINGS ALLOWANCE		
Average Ledger Balance		\$ _____
Less Average Uncollected Funds		\$ _____
Average Collected Balance		\$ _____
Less Legal Reserve of (17%)		\$ _____
Average Balance Available for Investment		\$ _____
Earnings Allowance (_____ %)		\$ _____
INVESTMENT VALUE		\$ _____
EXPENSES		
Account Maintenance	\$2.00	\$ _____
Credits	7¢ each	\$ _____
Debits	7¢ each	\$ _____
Deposited Items		
Not Encoded	3¢ each	\$ _____
Encoded	2¢ each	\$ _____
Returned Items	25¢ each	\$ _____
Stop Payments	\$2.00 each	\$ _____
Wire Transfers	\$1.50 each	\$ _____
Coupon Envelopes		\$ _____
Currency Transactions		\$ _____
Coin Shipped		\$ _____
Account Reconciliation%		\$ _____
Lockbox Services		\$ _____
Float Overdrafts		\$ _____
<hr/>		
TOTAL EXPENSES:		\$ _____
NET PROFIT (OR LOSS)		\$ _____

2/ Increasingly, banks have sought to correct the double use of balances by deducting both the compensating balance for a loan and required reserves from the collected balances shown in an account analysis. While this approach represents a step in the right direction, it does not allow for an analysis of the profitability of the loan. Possible tradeoffs between interest rates on loans and compensating balances are not shown. Moreover, the costs of making loans, variations in risk, necessary return on capital, etc., cannot readily be handled in this framework. By comparison, profitability analysis seeks to determine the total relative profitability of a customer relationship.

ance on investable funds below the actual earnings value of those funds or by making a deduction for reserves which exceeds actual requirements. In either case, the computed profits would tend to be understated. However, some bank services, such as consulting, credit checks on accounts receivable, loan participations, and security safekeeping, are often not included in the analysis, with the result that the estimated profits could be biased upward. For these reasons, many banks avoid a listing for profits at the bottom of an analysis statement, preferring instead to show net revenue as the amount available to compensate for other nonlisted services.

A SAMPLE PROFITABILITY STATEMENT

Profitability analysis seeks to overcome some of the shortcomings of regular account analysis by presenting considerably more detailed income statements for major customers. Multiple accounts for a single corporate relationship are consolidated, including those of subsidiaries and perhaps even major officers. Losses on one account, therefore, can be offset with profits on others. The earnings and expenses associated with loans and various fee services, such as the purchase and sale of securities, not typically considered in an account analysis are likely to be included in a profitability statement. Rather than emphasizing activity charges, however, profitability analysis focuses on the commercial lending function of banks and is of the greatest use in determining the profitability of net borrowers.

In the profitability analysis, the net amount of funds borrowed is computed and the estimated profit or loss from the income statement is generally assumed to raise or lower the return on funds loaned. Since estimated profitability tends to be strongly influenced by the terms on loans—compensating balances, interest rates, and associated fees—the analysis has often been proposed as a means of determining the loan terms necessary to meet a mini-

mum profit goal for a bank. It can also be a helpful guide in allocating bank resources since the analysis tends to highlight the most profitable types of customers and loans. In some banks the analysis is also used to evaluate the performance of lending officers.

As might be expected for a relatively new technique, the methods of computing customer profitability vary significantly among banks. In part these variations arise from differences in management philosophy about the types of services deserving emphasis and the appropriate base to which profits should be related. Other factors include the amount of effort a bank may wish to devote to a partially non-automated process, the degree of precision the bank expects from the figures, and differences in concepts, judgment, and sophistication in the measurement of certain variables. The more common methods of measuring profitability will be discussed in a forthcoming article, but one possible approach which demonstrates the general principles involved is shown in Table 2.

Sources and Uses of Funds

The first section of the profitability statement contains an analysis of the sources and uses of bank funds. Multiple loans to a customer are first consolidated to obtain average total loans outstanding (line 1).³ As in the account analysis, average investable or loanable funds provided to the bank by the customer (line 4) are obtained by deducting cash

3/ In computing average loans and deposits, allowance must generally be made for the time period under consideration. For example, suppose a bank is conducting an annual profitability analysis on a customer relationship. During the year the customer borrowed \$1 million for 9 months at an 8 per cent rate of interest. On an annual basis, this loan could be represented as \$750,000 at 8 per cent or alternatively \$1 million at 6 per cent. In most instances, the specific approach used would have no direct effect on the relative profitability ranking of individual customers but could affect comparisons of the computed profitability index with such external indicators as the prime loan rate. Consequently, the method of adjustment should be selected with a view to the ultimate objectives for which the profitability analysis is being conducted. Of course, if the analysis is being conducted on a more frequent basis (e.g., monthly or quarterly), adjustment of both the average balances and interest rates is likely to be necessary.

Table 2 FIRST NATIONAL BANK Customer Profitability Analysis		
Account: <u>XYZ Manufacturing</u>	Date: <u>July 20, 1975</u>	
Affiliated Accounts: _____	Period: <u>12/31 - 6/30</u>	
_____	Type of Loan: _____	
	CURRENT PERIOD	LAST 12 MONTHS
SOURCES AND USES OF FUNDS		
1. Average Loan-Balance:	\$ _____	\$ _____
2. Average Collected Balance:	\$ _____	\$ _____
a. Investable Balance (17.5% reserve):	\$ _____	\$ _____
3. Average Time Balance:	\$ _____	\$ _____
a. Investable Balance (3% reserve):	\$ _____	\$ _____
4. Total Loanable Funds (2a + 3a):	\$ _____	\$ _____
5. Bank Funds Used by Customer (1 - 4):	\$ _____	\$ _____
a. Allocated Capital (8% of 1):	\$ _____	\$ _____
b. Funds Transferred from Pool (5 - 5a):	\$ _____	\$ _____
INCOME		
6. Gross Interest Income on Loans:	\$ _____	\$ _____
7. Earnings on Deposits (<u>xxx%</u> of 4):	\$ _____	\$ _____
8. Fees Paid:		
a. Service Charge Fees:	\$ _____	\$ _____
b. Loan Commitments:	\$ _____	\$ _____
c. Data Processing:	\$ _____	\$ _____
d. Total (8a + 8b + 8c):	\$ _____	\$ _____
9. Total Income (6 + 7 + 8):	\$ _____	\$ _____
EXPENSES		
10. Activity Costs from Account Analysis:	\$ _____	\$ _____
11. Interest Accrued on Time Deposits:	\$ _____	\$ _____
12. Charge for Bank Funds Used:		
a. Allocated Capital (20% of 5a):	\$ _____	\$ _____
b. Pool Funds (<u>xxx%</u> of 5b):	\$ _____	\$ _____
c. Total (12a + 12b):	\$ _____	\$ _____
13. Loan Handling Expenses:	\$ _____	\$ _____
14. Cost of Fee Services:	\$ _____	\$ _____
15. Data Processing:	\$ _____	\$ _____
16. Total Expenses (10 + 11 + 12 + 13 + 14 + 15):	\$ _____	\$ _____
NET INCOME		
17. Net Income Before Taxes (9 - 16):	\$ _____	\$ _____
PROFITABILITY MEASURES		
18. Allocated Capital Index (17 ÷ 5a):	_____ %	_____ %
19. Net Profits/Net Funds Used (17 ÷ 5):	_____ %	_____ %
20. Net Profits/Gross Amount Borrowed (17 ÷ 1):	_____ %	_____ %
21. Gross Profits/Net Funds Used [(17 + 12c) ÷ 5]:	_____ %	_____ %

items in process of collection and an allowance for reserve requirements from gross ledger balances. Some banks also make deductions for the compensating balances required to cover the activity charges in the account analysis. Regardless, the deposit figure remaining after the various deductions have been sub-

tracted is then netted against average loans outstanding to obtain the average net bank funds used by the customer (line 5). The customer, in other words, is assumed to borrow his own funds first.

For many banks the previous step completes the analysis of bank funds advanced to

a customer. If the bank, however, wishes to relate the profit on the relationship to the return on bank capital, as is the case in the example, the net funds loaned to the customer must be subdivided into at least two categories. The first is the proportion of funds supplied from the bank's capital account. Allocated capital (line 5a) is frequently a flat percentage of gross loans. Some banks, though, assign capital in proportion to the estimated risk on loans, while others assume capital is also required to support the customer's deposits. Since profits will ultimately be related to the assigned capital, variations in its allocation can have a significant impact on the estimated profitability of a relationship. All other things being equal, a higher capital allocation tends to reduce the profit rate. In any event, if the return on capital is to be a measure of actual profitability, the capital assigned to a customer relationship should be selected in such a way that for the bank as a whole the total assigned capital is equal to the bank's actual capital.

The remaining category of bank funds supplied (line 5b) is a residual and represents funds obtained from sources other than the capital accounts. If the bank chooses to differentiate further among alternative sources of funds, such as purchased funds and deposit funds, this entry could be subdivided. The use of multiple pools of funds, however, is relatively uncommon.

Income

The second section of the profitability statement lists the major sources of income derived by the bank from the customer relationship. Most of the entries shown are self-explanatory. Gross interest income (line 6) includes the interest accruing on loans during the analysis period. Interest earnings on deposits (line 7) are imputed on the loanable funds supplied by the customer. This entry is required to give the customer income credit for compensating balances maintained. Service charges (line

8a) represent any fees paid to the bank to cover deposit activity costs or any charges associated with obtaining loans, such as points. Since these charges are most likely to arise when compensating balances are inadequate, provision must be made for their inclusion. Under the loan commitment entry (line 8b), a figure would be entered only if the customer had paid an outright fee for a commitment or a line of credit. If a compensating balance had been maintained instead, these funds would be reflected in the sources and uses section of the table and earnings accordingly imputed. In addition, net bank funds used by the customer would be reduced, resulting in a lower charge for bank funds loaned in the expense section of the analysis. If the analysis and the charges were internally consistent, either approach would have the same effect on estimated profits.

The inclusion of income from data processing services (line 8c) is somewhat controversial. Some banks feel income should be included only to the extent it is related to regular bank services or loans. Under this view, specialized services, such as EDP or trust departments, are treated independently of normal bank operations. These functions serve as separate profit centers but any income and expenses are not included in a profitability analysis related to loans. Others, however, feel that an accurate picture of the profitability of a customer relationship can be obtained only if all income and expenses from services are included. Banks in this latter group often believe that customers are not likely to differentiate among different profit centers in considering the compensation for a bundle of bank services. On balance, neither approach is wholly satisfactory and practices vary among banks. Nevertheless, if a bank includes the funds received for a specialized service in the income portion of the profitability statement, the charge for providing that service should also be listed under expenses.

Expenses

The third major section of the profitability table derives the bank's total expenses associated with servicing the customer relationship. The first entry, charge for activity services (line 10), could be approached two ways. The bank in the example has implicitly opted to assign any profit from activity services to general profits associated with loans. Thus, it has based the entry on the actual costs of providing services, ideally making sure that the charge includes the expenses of all services provided for compensating balances. To the extent a customer maintains compensating balances based on the price of services rather than the cost, the earnings on the compensating balances would exceed the bank's cost of services. Other banks, however, often feel that it is inappropriate to allocate all profits to loans. According to these banks, the users of services requiring much labor and equipment should be expected to contribute to the profitability of those services. The charges for the activity services performed by the latter group of banks are usually based on the prices used in the account analysis. The price approach, moreover, allows banks to vary the profit margin on different services.

Either option could be justified. Banks relatively confident that they have developed accurate cost figures for all important services would perhaps find the cost approach superior since the total profits on the relationship are made more explicit. On the other hand, if a bank has not fully costed all services or if the accuracy of the cost figures is uncertain, the latter approach may be preferable. The use of prices would tend to build in a margin for services not included in the account analysis. In recognition of these difficulties, some banks compute profitability using both costs and prices. Regardless, either method is capable of suffering from the same types of biases previously discussed in conjunction with the account analysis.

In a similar vein, the charge for bank funds used (line 12) can be handled in a variety of ways. The example assumes the bank has established a specific pretax profit goal on capital. This target is simply built in as an expense. The target, however, must be realistic given projected interest rates and earnings. Alternatively, some banks do not establish a formal goal for return on capital. In these instances, the total of net bank funds supplied to the customer is usually assumed to come from the general fund pool. Under this approach, the computed profits are ultimately related to allocated capital, but the expected return on capital is not built in as an expense. Variations can also arise among banks in the interest charge for pool funds (line 12b). Some prefer to use an estimate of the bank's average cost of loanable funds, while others choose to use a measure of the cost of purchased funds.

The remaining items in the expense section are largely self-explanatory. Interest accrued on time deposits (line 11) includes interest earned by the customer on any time and savings deposits listed in the sources and uses section of the table. Many banks include time deposits in the profitability analysis only if they are noninterest earning or carry interest rates well below market levels. Large denomination CD's bearing competitive rates are often excluded from the analysis since these deposits are generally viewed as investments by corporate treasurers and are not likely to be bound to a bank by a customer relationship. Credit and loan handling expenses (line 13) are designed to cover the costs of making loans. Charges would be based on the operation and maintenance of the loan department, salaries of loan analysts, an allowance for bank overhead, and any outright expenses the bank has incurred in making the loan, such as legal fees. The entry for fee services (line 14) should make allowance for the cost of any services included in the income portion of the statement which have not been classified elsewhere

under expenses. Possible examples might be charges for account reconciliation, lockboxes, payroll preparation, and night depository services. Finally, the inclusion of data processing expenses (line 15) is required, as discussed earlier, to ensure consistency in the treatment of income and expenses.

Net Income and Profitability

The last lines of the profitability statement are used to derive different indicators of the profitability of the customer relationship. Total profits or net income is shown in line 17. In line 18, the allocated capital index is computed by dividing profit by allocated capital. If greater than zero, this index indicates that the bank is actually realizing a higher profit rate on customer relationships than the goal previously established by the bank. A negative figure would suggest that profits were not sufficient to meet the target, while a zero figure would imply the goal had just been met.

The return on capital is by necessity an important criterion in judging the profitability of a customer relationship, but it is not the sole concern. For example, it provides no indication of the size of the relationship. The index could be high, but profits low. The amount of capital allocated to a relationship is also somewhat arbitrary, possibly leading to distortions in the index number. These types of considerations have caused many banks to compute more than one profitability ratio. One possibility is to determine profits as a percentage of net bank funds borrowed by the customer (line 19).

While the specific methods of computing customer profitability differ greatly among banks, the general objectives are often quite similar. Not only does the analysis provide a guide to whether a customer is adequately contributing to the profits of an institution, but it also formalizes the **tradeoff** between the terms on loans. For example, if the interest rate on a loan were to increase, income, net profits, and the profitability indexes would all

rise accordingly. Similarly, if larger compensating balances were to be maintained, profitability would also rise as the imputed interest on deposits increased and as the charge for net bank funds borrowed declined. Some profitability statements even contain a series of entries at the conclusion of the analysis specifying what interest rates on loans would be necessary to meet bank profit objectives given differing compensating balance requirements. Regardless, the applicability of profitability analysis tends to be limited largely to customers which borrow. If the customer in the example were a nonborrower, the profitability indexes would be meaningless, although capital could perhaps be allocated on some basis other than gross loans.

Some caution must be exercised in analyzing the sample profitability statement. While the sample illustrates the general principles involved in computing customer profitability, the specific entries and the precise approach cannot be taken as representative of the analysis methods at all banks. There are wide differences among banks, not only in the approaches used to measure customer profitability, but also in the items included in the analysis. Many banks exclude some deposits or some loans in measuring the sources and uses of funds. The range of services for which income and expenses are listed can also vary greatly.

Differences in the structure of an analysis can have a significant impact on estimated profits. Most banks, for example, determine only the total of investable funds represented by deposits, implicitly allowing those balances to serve as compensation for either loans or activity services, but some also make an explicit deduction from collected funds for the compensating balances required for activity services. The effect of this latter approach is to increase net funds borrowed, thus lowering the estimated profitability of a given customer at those banks using a net funds borrowed ratio.

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Some banks allocate capital to borrowings while others assign an explicit expense charge for risk and loss.

Similarly, some banks charge customers the cost of money on the gross amount borrowed and give an interest credit on gross investable funds. By comparison, others charge only for net funds borrowed. For these two methods to yield identical results, the interest rates used for funds borrowed and supplied must be identical, yet such is not always the case. Some banks compute the profitability of loan and investment services separately to avoid having to allocate all profits to loans and some use slightly different formulas for calculating the profitability of different types of customers. Additional examples could be cited, but these demonstrate a few of the differences that exist among banks in the techniques of computing customer profitability.

INDEXES OF CUSTOMER PROFITABILITY

Just as a bank has numerous options in designing a profitability analysis, a wide variety of profitability measures could be computed. Nevertheless, at most banks, profitability is generally judged on the basis of a handful of standard indicators. These include the ratio of gross profits to net funds used, net profits to net funds used, net profits to gross amount borrowed, and net profits to allocated capital.⁴ While only one of these commonly used indexes makes any explicit reference to bank capital, the alternative ratios can often be related in a fairly direct way to earnings on capital. As a result, the desired return on capital can set minimum acceptable values to the noncapital ratios.

Gross Profits/Net Funds Used

One of the profitability measures least likely to be subject to sizable distortion, and there-

4/ A detailed discussion of alternative types of profitability measures is presented by Kenneth E. Reich and Dennis C. Neff in *Customer Profitability Analysis: A Tool for Improving Bank Profits*, a booklet published by the Bank Administration Institute and the Robert Morris Associates (1972).

fore one of the most credible, is the ratio of gross profits to net funds loaned. Gross profits are equal to total profits when the cost of money is not included in expenses. Under this approach, customers are assumed to borrow their own funds first and funds supplied by a customer are implicitly granted an earnings allowance equal to the average rate on the customer's loans. In mathematical terms the standard formula is:

$$\frac{\text{Gross Profits}}{\text{Net Funds Used}} = \frac{Y - E}{L - D},$$

where Y equals gross income derived from the customer relationship; E equals all costs of servicing the relationship other than the cost of funds; L equals average loans attributable to the relationship; and D equals average loanable or investable funds provided by the customer.⁵

The behavior of this ratio under varying circumstances can be readily seen. By eliminating the cost of funds from the analysis, a bank can avoid a situation in which the profitability index for customers with fixed rate loans and compensating balances varies inversely as money market interest rates rise and fall. The index, though, would be sensitive to changes in loan terms. Since the interest paid on loans is reflected in Y and the compensating balances maintained are included in D, the index would rise if either of these variables increased. If net funds borrowed declines, the ratio—other things equal—will approach infinity. This tendency implies that large borrowers unable to keep sizable compensating balances may have a comparatively low profitability ratio and that smaller borrowers are likely to rank higher. If the customer is a net borrower, the value of the index can be compared directly to the bank's cost of funds or money market rates. As long as the ratio exceeds the bank's cost of funds, the relationship would

5/ In terms of Table 2, this measure corresponds to line 21.

be profitable. To ensure that a target return on capital is realized, however, the value of the index must exceed the bank's cost of funds by a sufficient **margin**.⁶

The gross **profits/net** funds used ratio has two important limitations. First, it is of little use in analyzing the profitability of a net depositor. Since the denominator would be negative, the ratio would imply that a bank was losing money on net depositors, which, of course, is incorrect. Second, the index makes no allowance for the size of the customer relationship. Among customers with identical rates of return on net funds used, those using relatively more funds are likely to be more important to the total profitability of the bank. While these qualifications are hardly unique to this particular measure, they do demonstrate the need for examining the figures underlying the computation of an index number before drawing any conclusions. Not only is the value of the index itself of importance, but also the relative weight or significance that should be attached to it.

Net Profits/Net Funds Used

Despite the relative ease in computing gross profits, most banks prefer to base an analysis of customer profitability on net profits. Net profits are gross profits minus an allowance for the cost of funds loaned.⁷ The basic formula for this profitability index is:

$$\frac{\text{Net Profits}}{\text{Net Funds Used}} = \frac{Y-E-C}{L-D} = \frac{Y-E}{L-D} - \frac{C}{L-D},$$

where C equals the cost of net funds used. This profitability indicator differs from the gross **profits/net** funds used measure only in

6/ An interesting analysis of the philosophy underlying the development and usage of the gross profits/net funds used indicator at the First National Bank of Boston is contained in a thesis by Peter W. Stanton, "A Management Information System for the Commercial Lending Function" (unpublished thesis, Stonier Graduate School of Banking, Rutgers University, 1974).

7/ In terms of Table 2, this measure corresponds to line 19.

that the cost of funds (expressed as a percentage of net funds used) is subtracted from the gross profit yield. If the gross profit index, for example, were 10 per cent, and the cost of funds were 6 per cent, net **profits/net** funds used would be 4 per cent. Obviously, a positive ratio implies the relationship is profitable. A zero ratio would suggest a break-even situation, and a negative one, losses. As a result of the parallelism between these two profitability measures, both have the same limitations and behave in a generally similar fashion.

Net Profits/Gross Amount Borrowed

A slightly different measure of customer profitability is the ratio of net profits to gross amount borrowed. Since this approach combines methods previously discussed, little further explanation is **necessary**.⁸ The basic formula is:

$$\frac{\text{Net Profits}}{\text{Gross Amount Borrowed}} = \frac{Y-E-C}{L}$$

This profitability index is applicable only to borrowers, but unlike the previous measures does not require the borrower to be a net user of funds. While comparisons between the index value and money market interest rates are not meaningful, the index varies directly with the average interest rate on loans. If the average loan rate rises 1 per cent, so would the profitability index. This measure, therefore, has the advantage of showing directly any change in loan interest rates necessary to meet minimum profit objectives. In general, a zero value for the ratio would imply a break-even situation. Banks utilizing this formula, though, generally seek a minimum return on gross loans of 1½ to 2½ per cent to realize a desired return on capital.

Net Profits/Allocated Capital

The final commonly used profitability **measure** is the ratio of net profits to allocated

8/ In terms of Table 2, this measure corresponds to line 20

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capital. Since the example at the beginning of this article used the capital allocation approach, little need be added about the general description of the **method**.⁹ Mathematically, the formula is:

$$\frac{\text{Net Profits}}{\text{Allocated Capital}} = \frac{Y-E-C}{K},$$

where K represents capital allocated to a customer relationship. If capital is allocated to both earning assets and deposits, this index is perhaps the most versatile of those widely used. The profitability of all customers, whether or not they are borrowers, could be analyzed.¹⁰

Other Measures of Profitability

In addition to the four basic ratios, many banks have adopted additional indexes of customer profitability. These include such ratios as net or gross **profits/total** revenue, net **profits/total** expenses, total **income/net** funds borrowed, gross **profits/total** loans, actual **income/target** income, and total **revenue/total** expenses. Some banks simply compute net or gross profits but do not relate the figure to any specific indicator of the size of a customer relationship. Although each indicator has unique properties and should be selected to

^{9/} In terms of Table 2, this measure corresponds to line 18.

^{10/} The pioneering work in the capital allocation method of measuring customer profitability was performed by Philadelphia National Bank. A detailed description of the analysis methods used at Philadelphia National is contained in a publication the bank has prepared entitled "Profitability Analysis of Commercial Customers."

reflect management objectives, the choice of a particular indicator is not likely to be a crucial matter. Under normal circumstances, most indicators produce roughly the same ranking of customers.

CONCLUDING REMARK

In the future, bank profitability is likely to depend increasingly on the differential between loan rates and the cost of funds. Since profitability analysis tends to focus on this spread, it represents an important innovation for commercial banks. By combining numerous aspects of a customer relationship into a single analysis, it allows for a more accurate measure of customer profitability and overcomes some of the limitations of an account analysis. While the mathematics of customer profitability analysis are relatively simple, the emphasis on one or two index numbers tends to mask the numerous choices which must be made in constructing a profitability formula. On the first level, there is the question of what to include in a measure of a customer relationship, and on the secondary level, the issue of how to measure those items that are included. A balance between theoretical precision and practicality is always necessary. As a result, each portion of a profitability analysis has some controversial features. The second article in this series will describe the individual elements commonly used by banks to measure a customer relationship and will discuss some of the conflicts which can arise.