

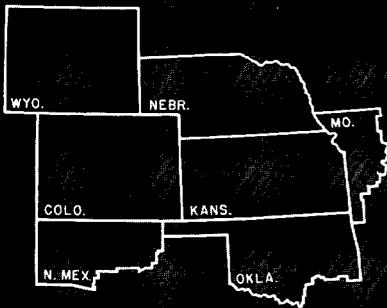


# *monthly review*

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FEDERAL RESERVE BANK OF KANSAS CITY

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# *Recent Developments in The Theory of Unemployment*

By *Steven P. Zell*

Over the 40 years since the Great Depression, economists have developed a variety of theories to explain the phenomenon of unemployment. Many of these explanations are products of their time, emerging as the result of major social and economic developments. Yet, all such models have at least one thing in common. They represent attempts by their proponents to provide a theoretical framework within which policy prescriptions can be developed.

This article examines four recent theoretical explanations for the problem of unemployment: the theory of structural unemployment, the job-search, labor-turnover theory, the theory of human capital, and the dual labor market hypothesis. These alternative approaches are examined with particular emphasis on their respective views of the structure and behavior of the labor market, and especially, on the policy prescriptions which follow from these different views.

## **INADEQUATE DEMAND OR STRUCTURAL UNEMPLOYMENT?**

Given the experience of the Great Depression, there has understandably been much interest in diagnosing the causes of unemployment. From a policy standpoint, however, the more important question is why workers who

lose their jobs are not quickly reemployed, and why many new entrants or reentrants to the labor force remain without jobs. As noted by Gilpatrick, if reemployment is assured, the reasons for the original unemployment are of little interest. Thus, "the causes blocking reemployment are the proper targets for policy."<sup>1</sup>

One long-standing controversy over the persistence of unemployment developed in the late 1950's and early 1960's between the advocates of inadequate aggregate demand theory and the proponents of the school of structural unemployment. This controversy arose at a time when the national unemployment rate seemed to lose its resiliency. From 1951 through 1957, the unemployment rate exceeded 5 per cent of the labor force only in one year, 1954. Then, after reaching its recession high of 6.8 per cent in 1958, the unemployment rate did not fall below 5 per cent for 7 years.

In 1961, the Joint Economic Committee conducted a series of hearings<sup>2</sup> to try to determine whether structural factors or inadequate

<sup>1</sup>Eleanor G. Gilpatrick, *Structural Unemployment and Aggregate Demand* (Baltimore: Johns Hopkins Press, 1966), p. 2.

<sup>2</sup>U. S. Congress, Joint Economic Committee, Subcommittee on Economic Statistics, *Higher Unemployment Rates, 1957-60: Structural Transformation or Inadequate Demand, 87th Congress, 1st Session* (Washington: U. S. Government Printing Office, 1961).

demand were responsible for the high unemployment the country had been experiencing since the closing months of 1957. The distinction between these two explanations for the persistence of unemployment appeared crucial from the viewpoint of policy. The advocates of the inadequate demand theory, most notably Walter Heller, then chairman of the Council of Economic Advisors, tended to dismiss the significance of structural unemployment. They argued instead that the persistently high unemployment was due to the incomplete recovery from the 1957-58 recession. The solution therefore lay in more expansionary fiscal policies such as lower taxes and greater government spending.

The structuralists, on the other hand, viewed the unemployment as arising from a change in the composition of labor skill requirements relative to labor skill availability. They argued that this structural mismatch could arise in several ways, regardless of the level of aggregate demand. For example, technology may change, the demand for certain products may disappear, raw materials may be used up in a given geographic area, a factory or industry may change its location, or the proportion of different skill groups in the population may change over time.

As long as the labor force is able to adapt to these changes, said the structuralists, no problem exists. But if people are unwilling or unable to move to a different geographic area where workers with their qualifications are in demand, if their skills have become obsolete, or if their skills are of limited transferability and their numbers in the labor force increase without a concomitant increase in the demand for their services, structural unemployment is the result.<sup>3</sup>

Arguing that a combination of these developments was at the root of the persistently high unemployment, the structuralists claimed that a policy of adapting the unemployed to available job openings would substantially re-

duce the unemployment rate at the *current* level of national income. Because they believed the problem to be structural in nature, they further claimed that an attempt to reduce the unemployment through increasing aggregate demand would succeed only at the cost of substantial inflation as bottlenecks appeared.<sup>4</sup>

Following extensive debate, the inadequate demand view prevailed in Washington, and the 1964 income tax cut was passed in an attempt to stimulate demand. This provided a test of these two alternative theories which seemed to substantiate the inadequate demand position. In 1965, the unemployment rate fell below 5 per cent and then remained below 4 per cent from 1966 to 1969.<sup>5</sup> Nevertheless, a great deal of interesting work has been done on the concept of structural unemployment, and it remains a potentially useful tool for explaining certain occurrences of unemployment, especially when the economy is functioning much closer to full employment than was the case in the late 1950's and early 1960's.<sup>6</sup>

### SOME NEW THEORIES OF UNEMPLOYMENT

Since the structuralist-inadequate demand controversy of the early 1960's, economists

3/Gilpatrick, pp. 4-5. Also Barbara R. Bergmann and David E. Kaun, *Structural Unemployment in the United States*. U. S. Department of Commerce (Washington: U. S. Government Printing Office, 1966), pp. 4-5.

The classic example of workers' unwillingness to move to another geographic area is the case of unemployed coal miners in Appalachia in the 1950's and 1960's. Similarly, railroad firemen represent persons whose skills have become obsolete, while minority teenagers, with skills of limited transferability, have increased their labor supply in excess of the increase in the demand for their services.

4/Richard Perlman, *Labor Theory* (New York: John Wiley and Sons, 1969), p. 167.

5/Besides the tax cut, spending for the Vietnam war greatly stimulated the economy during these years. While the resulting fall in unemployment supports the view that demand had been inadequate, the accompanying climb in the rate of inflation, to a level consistently above 3 per cent since 1966, points to the existence of inflationary bottlenecks which arise when the economy is subjected to too rapid a rate of expansion.

6/Gilpatrick, *Structural Unemployment and Aggregate Demand*, and especially Perlman, *Labor Theory*, ch. 7, present strong evidence of the existence of structural unemployment and argue convincingly that "much of the confusion in evaluating the impact of structural aspects has resulted from illogical or loose definitions of the term...".

have generally agreed about the cause of the increase in unemployment and its persistence during and following a recession. The recessionary falloff in the demand for goods and services leads to a rise in the unemployment rate, while the uncertainty of a recovery, the increased productivity of those already employed, and the knowledge of the availability of a pool of unemployed workers delays rehiring once the economy begins to turn around. Yet even when the economy was functioning near the limits of its capacity, as in the late 1960's, the overall unemployment rate still hovered just below 4 per cent of the labor force, while for some population groups, it was considerably higher.

Observing this phenomenon, several economists attempted to answer what has become a central question in current unemployment theory: "Why is the unemployment rate so high at full employment?"<sup>7</sup> Three important theories which deal directly with this question are, respectively, the job-search, labor-turnover theory; the theory of human capital; and the dual labor market hypothesis.

The notion of the level of "full employment unemployment" is not unambiguous. One approach suggests that the level of "full employment unemployment" in the United States is a rate of unemployment (say, 4 to 5 per cent) which, if maintained permanently, is compatible with some steady rate of inflation (say, 3 to 4 per cent per year).<sup>8</sup> When the economy is operating at full employment (as defined in this way), an increase in aggregate demand can lower the unemployment rate further, but only at the expense of higher and higher rates of inflation. The question that the various theories of unemployment must deal

with is why the full employment level of unemployment (resulting in a steady and relatively low rate of inflation) is reached at so high a rate of unemployment.

### The Job-Search, Labor-Turnover Theory

Of the three theories of unemployment noted, the formal search-turnover model most directly draws a functional relationship between unemployment and inflation.<sup>9</sup> Characterized as "a rigorous theoretical development of the traditional notions of frictional unemployment,"<sup>10</sup> the search-turnover theory views unemployment as the result of a search process, where both employers and workers have limited information about the opportunities in the labor market. According to this explanation, when a worker begins looking for a job, either from a state of nonparticipation or previous employment, it is generally not in his economic interest to take the first available position. Lacking basic information on the opportunities in the labor market, the worker instead searches for information on the types of jobs, level of wages, and working conditions available to a person of his qualifications. He therefore spends time unemployed while learning about jobs and waiting for better job offers.

Thus, according to the search-turnover theory, unemployment represents a type of investment by workers in obtaining information about the labor market. Unemployment persists because the labor market is inefficient in providing this information and thus fails to quickly match workers and job vacancies. Taking the existing patterns of labor supply and demand as given, the proponents of this theory suggest that unemployment can be substan-

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7/This is the title of a study by Robert E. Hall, "Why Is The Unemployment Rate So High At Full Employment?" *Brookings Papers on Economic Activity* (No. 3: 1970), pp. 369-402.  
8/Hall, "Why . . .", p. 370. It has been suggested that because of a changing age-sex composition of the labor force, the trade-off between the rates of unemployment and inflation may actually be worsening over time. See George L. Perry, "Changing Labor Markets and Inflation." *Brookings Papers on Economic Activity* (No. 3: 1970), pp. 411-41.

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9/See, for example, Charles Holt and Associates, "Manpower Proposals for Phase III," *Brookings Papers on Economic Activity* (No. 3: 1971), pp. 703-22.

10/Robert E. Hall, "Prospects for Shifting the Phillips Curve Through Manpower Policies," *Brookings Papers on Economic Activity* (No. 3: 1971), p. 660. Frictional unemployment is temporary unemployment which arises due to the time required for finding or changing jobs.

tially reduced through a comprehensive program of manpower policies. In particular, this would include a several-fold expansion in the Federal-State Employment Service to improve the quality and speed of worker-job matches and to reduce turnover; improved vocational counseling and expanded job opportunities for youth to reduce their high turnover and to increase their future productivity; training and job restructuring to reduce skill shortages in certain occupations; support of geographic mobility to reduce pockets of high unemployment while good jobs remain unfilled elsewhere; and elimination of institutional barriers, such as union restrictions on entry and occupational licensing, which increase unemployment by reducing the efficiency of search. All of these policies are based on the belief that an improvement in the inflation-unemployment trade-off can only be achieved by reducing the "frictions" within the labor market and thereby improving its efficiency.<sup>11</sup>

There is much to be said for this view of the labor market with its emphasis on turnover as the principal element in unemployment. Data on the duration of unemployment in the United States indicate clearly that the Keynesian view—that high unemployment is caused by the long-term inability of some fraction of the labor force to find jobs—is invalid in the modern U.S. economy when it is functioning near "full-employment." Instead, the high unemployment rates are the result of frequent, generally short spells of **unemployment**.<sup>12</sup>

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11/Holt, "Manpower Proposals . . .", pp. 712-16. Along the lines of the first of these proposals, the U. S. Manpower Administration has recently initiated a 15-state, Federally funded pilot program designed to encourage both employers and employees to register their manpower needs and skills with their state office of employment security. Missouri is one of the participants in this project. Dale Leibach, "Program To Match Jobs To People," *Kansas City Times*, July 11, 1975.

12/Hall, "Prospects . . .", p. 660. Also see Hall, "Turnover in the Labor Force," *Brookings Papers on Economic Activity* (No. 3: 1972), pp. 709-56 and Steven P. Zell, *A Comparative Study of the Labor Market Characteristics of Return Migrants and Non-Migrants in Puerto Rico* (Commonwealth of Puerto Rico, Puerto Rico Planning Board, Bureau of Social Analysis, 1974), chs. 6 and 8.

Nevertheless, Hall and other economists find fault with the implicit premise of the search theorists that "every person who finds himself out of work is spending a few weeks between jobs in the normal advancement of his **career**."<sup>13</sup> This, they feel, incorrectly represents the labor market situation of teenagers, of women, and, in particular, of the unskilled and uneducated segments of the labor force.

**The central problem seems to be that some groups in the labor force have rates of unemployment that are far in excess of the rates that would accord with the hypothesis that the unemployed are making a normal transition from one job to another. Some groups exhibit what seems to be a pathological instability in holding jobs.**<sup>14</sup>

Both the theory of human capital and the dual labor market hypothesis represent attempts to explain this seemingly pathological job instability. Yet, because they represent very different viewpoints as to the nature of the problem, their respective analyses and policy prescriptions differ greatly.

### **The Theory of Human Capital**

In many respects, the theory of human capital is simply a logical extension of the underlying assumptions about human behavior on which most of modern economic theory is based. According to these assumptions, economic man is rational man, and all of his decisions are based on deliberate economic calculations.

The theory of human capital extends this **concept to the determination of the distribution of income and unemployment. Emphasizing individual choice, this theory concludes that the existing distribution of income and unemployment reflects differences in the levels of education and training, which, in turn, are the direct result of decisions by individuals**

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13/Hall, "Why . . .", p. 389.

14/*Ibid.*

whether or not to invest in **themselves**.<sup>15</sup> From this premise it follows that the unemployment problem of disadvantaged workers is a problem on the supply side rather than on the demand side of the labor market. That is, because these workers lack the basic skills necessary to make it worthwhile for employers to hire them at the prevailing level of wages, the amount of labor they are willing to supply at this wage level exceeds the **demand** for their services by employers, and unemployment results. Thus, the inability of these workers to find and hold stable employment is due to insufficient investment in their own human capital. This theory suggests, then, that the appropriate policy to reduce the unemployment of disadvantaged workers consists of extensive manpower training and skill upgrading.

In many respects, this policy prescription is very similar to that of the structuralists, and both of these schools strongly influenced the format of the great majority of modern Federal manpower programs. These programs began in 1961 with an emphasis on training unemployed workers in **regions** with high unemployment, but gradually shifted their focus from regional unemployment to unemployment of specific groups of disadvantaged workers.

The theoretical foundation for the earliest of these programs was provided by the theory of structural unemployment. Holding that structural factors and wage rigidities prevented employers from hiring poorly or inappropriately trained workers, this theory suggested that training would raise the productivity of these workers to a level where they could obtain employment. Thus, though the structuralists viewed the unemployment as arising from a structural disequilibrium in the labor market, while the human capital school saw the problem as one of inadequate personal in-

vestment by individuals, both agreed the solution lay in expanded training for unemployed disadvantaged **workers**.<sup>16</sup>

In the late 1960's, however, it was observed that despite substantial labor market tightening and numerous low-paying job vacancies, disadvantaged workers continued to experience high rates of unemployment. As correctly noted by the search theorists, the problem was clearly not one of a chronic job shortage for disadvantaged workers, but rather a situation of excessively high labor turnover. Nevertheless, the human capital approach still appeared to be relevant if its emphasis was changed from merely qualifying these workers for any job, to qualifying them for good high-paying jobs at which they might stay.<sup>17</sup>

#### **The Dual Labor Market Hypothesis**

To another group of economists, however, both the human capital and search-turnover approaches seemed seriously flawed. While these two theories differ in many respects, they share the belief that labor markets are shaped by economic motivation within an essentially competitive framework. "Relative wages are assumed to be flexible, employers are believed willing and able to adjust their employment in **response** to changes in wages and productivity, and workers are assumed to make training and information investments easily in response to changes in relative **wages**."<sup>18</sup>

Claiming that these premises were unrealistic and misleading, these economists **devel-**

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16/While one policy prescription of the search-turnover approach also stresses job training, this is done as part of a multifaceted program operating on both the demand and supply sides. Thus, in addition to providing job training for workers, it is also proposed that employers be aided in restructuring their jobs to better fit available manpower. The emphasis is not one of upgrading the skills of the disadvantaged, *per se*, but rather one that concentrates on eliminating skill mismatches in sectors of the economy which contribute excessively to inflation. "The unskilled and disadvantaged . . . will benefit disproportionately from the vacuum effects of general upgrading and the overall reduction of unemployment that can occur." Holt, pp. 720-21.

17/Hall, "Prospects. . .", pp. 661, 674-81.

18/Doeringer and Piore, "Unemployment . . .", p. 71.

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15/Peter B. Doeringer and Michael J. Piore, "Unemployment and the 'Dual Labor Market'," *The Public Interest*. No. 38, Winter 1975, pp. 69-70.

oped an alternative view of labor market behavior which has come to be known as the dual labor market hypothesis. An outgrowth of both the civil rights and anti-poverty experience of the 1960's, this school views unemployment as "rooted less in individual behavior than in the character of institutions and the social patterns that derive from them."<sup>19</sup> Much more of a "sociological" and "institutional" approach rather than a purely economic approach to the labor market, it deals specifically with trying to explain the seemingly excessive job turnover in what its proponents call "the secondary sector."

As advanced by Peter B. Doeringer, Michael J. Piore, and others,<sup>20</sup> the hypothesis views the economy as being conceptually divisible into a primary and a secondary sector. The **primary sector** is characterized by good jobs, high wages, satisfactory working conditions, employment stability, and prospects for promotion. The **secondary sector**, its antithesis, is characterized by bad jobs, low wages, poor working conditions, layoffs, little chance for advancement, and high turnover. When a primary-sector worker becomes unemployed, he is unemployed in the involuntary, Keynesian sense. He is out of his accustomed place in life, and though he may temporarily accept other, less attractive work, he is essentially waiting to regain his lost position. Unemployment in the secondary sector, however, is not at all like this. Rather than consisting of people waiting to regain a lost position, it is more a process of shuttling from one low-paying position to another.<sup>21</sup>

According to this theory, while white adult males are usually employed in the primary sector, women, teenagers and, in particular, minority groups are generally confined to the

secondary sector. But because secondary firms provide little specific on-the-job training, because there is only a limited chance for advancement, and because a worker's current wage is unlikely to differ widely from that available in a great number of other similar jobs, a worker finds little incentive to either stay on the job or to perform particularly well at it. Hence, once a worker is in the secondary sector, the unstable work environment encourages the adoption of certain poor work habits: "casual devotion to job, reporting for work late or not at all on some days, and quitting without good reason often within months of taking the job."<sup>22</sup> It is these habits which most clearly distinguish the primary and secondary sectors and which make movement into the primary sector so much more difficult. In addition, this vicious circle is reinforced as secondary-sector employers are unwilling to invest heavily in the training of a work force which is prone to high turnover, and simultaneously, are less reluctant to fire a worker in whom they have little invested.<sup>23</sup> These factors thus tend to result in entrapment in the secondary sector.

Above and beyond this entrapment, which helps to perpetuate the low productivity of secondary workers, the dualists identify two principal explanations for the continued duality in the face of market forces which would tend to eliminate the wage disparity between the two sectors.

The first of these explanations, restrictive practices, generally represents legalized barriers to the occupational mobility of workers. The prime example of this is occupational licensing by the state, where access to the skilled trades is often controlled by license boards composed of licensed members of the supervised occupations. These persons have strong economic incentive to keep the number

<sup>19</sup>/*Ibid.*, p. 72.

<sup>20</sup>/Peter B. Doeringer and Michael J. Piore, *Internal Labor Markets and Manpower Analysis* (New York: Heath, 1971) and Michael J. Piore, "Jobs and Training," in Samuel H. Beer and Richard Barringers (eds.), *The State and the Poor* (Winthrop, 1970).

<sup>21</sup>/Doeringer and Piore, "Unemployment . . .", pp. 70-71.

<sup>22</sup>/Hall, "Prospects . . .", p. 683.

<sup>23</sup>/Doeringer and Piore, *Internal Labor Markets*, pp. 165-72. Also, Michael L. Wachter, "Primary and Secondary Labor Markets: A Critique of the Dual Approach," *Brookings Papers on Economic Activity* (No. 3: 1974), p. 651.

of workers permitted to practice their trade at an artificially low level in order to raise the wages of those already licensed. A similar restrictive practice is followed by unions who can maintain an artificial scarcity of good jobs either through a close control of the number of apprentices (as in the craft unions) or through negotiating so high a wage that employers decide to hire fewer workers than are willing to work at that high a wage level.<sup>24</sup>

The second explanation for the continued duality, discrimination, is viewed as operating in two ways, through statistical discrimination, and discrimination pure and simple. Statistical discrimination represents an attempt to simplify the hiring procedure by assuming that certain poor work habits are closely related to personal characteristics such as race, age, or sex. Under this procedure, a number of job candidates may be wrongly rejected even though they are actually qualified. This kind of discrimination, in conjunction with outright discrimination, enlarges the secondary work force while reducing the supply of labor to the primary sector. It thereby gains the economic support both of secondary employers, who now pay a lower wage, and of primary employees, who now receive a higher wage. Furthermore, although primary employers receive no economic gain from outright discrimination, the higher wages they must pay are compensated by the reduced costs of screening job candidates through the use of statistical discrimination.<sup>25</sup>

If this dual labor market schema is correct, then the potential effectiveness of the skill training programs proposed by the human capital school is open to serious question. The dualists have noted that a great part of the training necessary for workers to satisfactorily perform in the primary sector cannot be purchased in schools or elsewhere. Rather, it is only available on the job, and, in order to ac-

quire this training, the worker first must be hired, and then must be accepted by the established group of workers who must teach him what they are doing. In other words, "social acceptability," which is directly related to such characteristics as race, sex, and shared social beliefs, is a key factor in obtaining "primary-sector" skills and a job in the primary sector, and this "social acceptability" cannot be purchased in the usual sense.<sup>26</sup>

Within this framework, the proponents of the dual labor market hypothesis develop a number of policy options which focus on the *institutional* forces they feel underlie the structure and behavior of the labor market. In particular, they propose policies to eliminate discrimination and restrictive practices which have kept people out of the primary sector, and policies to shift the demand for labor, and thus jobs, out of the secondary and into the primary sector.

While their anti-discrimination policy calls for an intensive, but straightforward, use of instruments like civil rights legislation and Federal contract compliance programs, the dualists' proposals for shifting jobs from the secondary to the primary sector are more complicated. Basically, the dualists suggest a two-pronged attack: (1) having the government impose the characteristics of the primary sector on the secondary sector through expanded coverage of (and higher) minimum wages, encouraging unionization, and expanded coverage of social legislation; and (2) adopting a long-run, stable, full-employment policy.

The first set of programs is designed primarily to convert secondary sector jobs into jobs with primary-type characteristics. Some examples of occupations which, to some extent, have already undergone this type of conversion are longshoring, unskilled construction labor, and office cleaning. It is assumed that these policies, which, in effect, are designed to legislate higher wages, would also

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24/Hall, "Prospects...", p. 684.

25/Piore, "Jobs and Training," p. 56.

26/Doeringer and Piore, "Unemployment...", p. 72.

tend to stabilize employment and develop promotional ladders as the alternative, secondary job structure becomes more costly for employers. Hospital and hotel jobs, for example, might be particularly susceptible to this kind of **conversion**.<sup>27</sup>

The second type of program, adopting a long-run, stable, full-employment policy, is directed at significantly expanding the primary sector. While acknowledging that the full-employment policy which has been followed in this country has not accomplished this goal, the dualists claim that this has been due to its stop-and-go nature. Employers who believe an expansion to be temporary, say the dualists, are reluctant to admit workers to the primary labor market. Rather than incur the costs of training and providing career benefits, and the problems which might arise from the structural changes involved in this expansion, employers would rather rely on subcontracting and temporary employment from the secondary sector. If, however, employers can be convinced of a strong public commitment to stable full-employment, corresponding to an unemployment rate of between 3 and 4 per cent, they would then be much more likely, claim the dualists, to significantly expand the number of jobs in the primary sector.<sup>28</sup>

### **CONCLUSION**

The dual labor market approach, with its emphasis on the interrelationship between economic, sociological, and institutional var-

iables, has attracted considerable attention in recent years both within and outside the economic profession.<sup>29</sup> Nevertheless, neither it alone nor the alternative theories of human capital and search-turnover, present a complete picture of the problem of unemployment. Due to the complexity of the labor market, all three theories fail to consider important aspects of the problem, and all three necessarily incorporate simplifying assumptions about the structure and behavior of the labor market.

Thus, for example, the dualists, in their policy prescriptions, implicitly assume that secondary workers have all of the necessary human capital needed to succeed in primary-type employment. To the extent that this assumption is incorrect, their proposals to legislate higher wages in the secondary sector and to expand the primary sector could lead to both higher unemployment and inflation unless also coupled with programs to encourage formation of physical and human capital, improve job matches, and discourage turnover. Therefore, rather than choosing between the alternative theories, it is more instructive to view them as an important set of complementary perspectives on the nature of unemployment, which, when taken together, correctly portray the problem of unemployment as a complex interrelationship of supply, demand, informational, and institutional factors.

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27/Doeringer and Piore, "Internal . . .", pp. 181-82, and Wachter, pp. 672-73.

28/Doeringer and Piore, "Unemployment . . .", pp. 78-79.

29/See Wachter, p. 638, and Hall, "Prospects . . .", p. 682.

# Customer Profitability Analysis

## Part II: Analysis Methods at Major Banks

By **Robert E. Knight**

In recent years larger banks have become increasingly interested in measuring the profitability of corporate customer relationships. One of the first approaches was account analysis.<sup>1</sup> In performing a standard account analysis, a bank determines the revenue from a customer's account by multiplying the average collected demand deposit 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.

While account analysis is an important step in determining the profitability of a customer relationship, it does not measure total profitability. Account analysis generally focuses on the activity operations for which compensating balances are maintained—account maintenance, items deposited, ledger entries, wire transfers, etc.—but rarely allows for other services such as loans, investment counseling, trust services, etc. It is primarily of use, therefore, in analyzing the accounts of non-borrowers with heavy activity charges. For

other customers the omission of loan relationships has at times allowed the double or even triple use of compensating balances. Since crosschecking is frequently not automatic, a compensating balance 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.

Profitability analysis seeks to overcome some of the shortcomings of account analysis by preparing considerably more detailed income and expense statements for major customer. Multiple accounts for a single corporate relationship are often consolidated, including those of subsidiaries and perhaps even major officers. Losses on one account, consequently, can be offset with profits on others. The earnings and expenses associated with loans and other fee services 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 commercial lending and is of the greatest use in determining the profitability of net borrowers.

Specific methods of measuring customer

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<sup>1</sup>A detailed description of account analysis procedures used in correspondent banking can be found in the article "Account Analysis" in the December 1971 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).

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<sup>2</sup>A general theoretical description of the approaches commonly used to measure customer profitability is contained in the first article in this series, "Alternative Approaches Toward Customer Profitability," in the April 1975 Monthly Review. A more detailed discussion of a variety of approaches to customer profitability analysis is contained in a booklet by Kenneth E. Reich and Dennis C. Neff, Customer Profitability Analysis: A Tool for Improving Bank Profits (Bank Administration Institute and the Robert Morris Associates), 1972.

## Customer Profitability Analysis

profitability differ significantly among banks, but the general format tends to be similar. Bank income on a relationship is often computed by adding the interest received on loans, the interest earned by the bank on the customer's deposit funds, and various fees paid the bank. Expenses include charges for such items as activity services, the interest cost of funds loaned, loan handling expenses, and the cost to the bank of fee services. The difference between income and expenses, net profit, is then related to some base representing the size of the relationship—net funds borrowed, allocated capital, gross loans, total revenue, etc.—to obtain an index number for comparing relative customer profitability. Since estimated profitability tends to be strongly influenced by loan terms such as compensating balances, interest rates, and associated fees, the analysis has often been proposed as a means to determine the loan terms necessary to meet a minimum 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.

The general principles involved in computing customer profitability are illustrated in Table 1 which contains a sample profitability statement. While most of the concepts underlying the individual entries are self-explanatory, banks exhibit little similarity in approaching the items. Variations arise from differences in the types of services emphasized, the methods of costing those services, the interest charges assigned, and the base to which profits are related. The major focus of this article is on the comparative methods used by banks to determine customer profitability.

### PWE SURVEY RESULTS

To broaden the information available on profitability analysis procedures and to obtain data on figures actually used to compute customer profitability, the Federal Reserve Bank of Kansas City recently conducted a survey

<b>Table 1</b>	
<b>FIRST NATIONAL BANK</b>	
<b>Customer Profitability Analysis</b>	
Account: <u>XYZ Manufacturing</u>	Date: <u>July 20, 1975</u>
Affiliated Accounts?	Period: <u>12/31 - 6/30</u>
<b>SOURCES AND USES OF FUNDS</b>	
1. Average Loan Balance:	\$ _____
2. Average Collected Demand 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):	\$ _____
<b>INCOME</b>	
6. Gross Interest Income on loans:	\$ _____
7. Earnings on Deposits (xxx% of 4):	\$ _____
<b>8. Fees Paid:</b>	
a. Service Charge Fees:	\$ _____
b. Loan Commitments:	\$ _____
c. Data Processing:	\$ _____
d. Total (8a + Bb + Bc):	\$ _____
9. Total Income (6 + 7 + 8):	\$ _____
<b>EXPENSES</b>	
10. Activity Costs from Account Analysis:	\$ _____
11. Interest Accrued on Time Deposits:	\$ _____
<b>12. Charge for Bank Funds Used:</b>	
a. Allocated Capital (20% of 5a):	\$ _____
b. Other Funds (xxx% of (1 - 5a)):	\$ _____
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):	\$ _____
<b>NET INCOME</b>	
17. Net Income Before Taxes (9 - 16):	\$ _____
<b>PROFITABILITY MEASURES</b>	
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]:	_____%

of account and profitability analysis techniques at major correspondent banks throughout the country. Questionnaires were sent to 138 banks in the late fall of 1974. Among the 107 banks responding to the survey, all provided figures on both corporate and correspondent account analysis and 57 supplied information on methods of analyzing cus-

tomer profitability. The remaining 50 banks indicated that a formal profitability analysis had not been developed or that it was only in the formative stage.

The survey showed that both the frequency and function of profitability analysis vary widely among banks. The analysis is primarily used to analyze corporate customer relationships, with emphasis normally on net borrowers. A few banks consider only a specified number of relationships, but most begin the analysis whenever total borrowing exceeds some predetermined limit, the most common amount being \$100,000. The minimum level, however, ranged from a low of \$25,000 to a high of \$750,000. Almost two-thirds of the banks noted that the profitability of correspondent relationships would be analyzed if sizable participation loans were involved. About 40 per cent of the survey banks perform the analysis on a regular monthly basis, while another 20 per cent examine relationships quarterly. Other banks typically conduct the analysis either annually or irregularly, as when a customer has applied for a new loan or commitments are under negotiation. Although banks that perform an analysis frequently are interested in seeing if a relationship has been profitable since the previous analysis, most give primary emphasis to profitability over longer periods such as a year.<sup>3</sup>

#### SOURCES AND USES OF FUNDS

The first step in computing customer profitability is to determine the total funds used and supplied by the customer relationship. These figures are subsequently used to derive the imputed value of funds borrowed or sup-

<sup>3</sup>/As previously noted, the specific approaches used by banks to measure customer profitability often vary significantly. Some banks even have different formulas for judging the profitability of alternative types of customers. Considerable latitude, consequently, has been required to cast the survey responses into a general framework. Relatively few distortions occur in this process, but at times the order in which calculations are made or the procedures used for handling certain components of the analysis could affect estimated profits. For this reason the tabulations are not a precise guide and are only representative of the usual approach. In any event, only those figures used to analyze the profitability of normal corporate relationships have been tabulated.

**Table 2**  
**ANALYSIS OF SOURCES AND USES OF FUNDS**

Fund Source or Use	Per Cent of Banks Including Item in Analysis
<b>FUNDS SUPPLIED TO BANK</b>	
1a. Investible Demand Deposit Funds	89.5%
b. Collected Demand Deposit Funds	7.0
c. Gross Demand Deposits	1.8
d. Other Demand Deposit Measures	1.8
2a. Interest Bearing Time Deposits	47.4
b. Noninterest Bearing Time Deposits	73.7
3. Treasury Tax and Loan Deposits	61.4
4. Commercial Paper Sold Customer	1.8
5. Participation Loans Sold Respondent Banks	17.5
<b>FUNDS USED BY CUSTOMERS</b>	
6a. Regular Commercial Loans	98.2
b. Term Loans	96.5
c. Revolving Credit Loans	94.7
7. Fraction of Unused Line of Credit	17.5
8a. Acceptances Held in Bank's Portfolio	35.1
b. Acceptances Not Held in Bank's Portfolio	5.3
9. Participation Loans Originated by Respondent Banks	64.9
10. Bank Stock Loans	42.1
11. Other Loans Designated by Loan Officers	57.9

plied. They may also serve as a measure of the size of a relationship in computing an index of comparative customer profitability.

Table 2 shows the percentage of survey banks considering alternative types of fund transactions in the sources and uses portion of the analysis. The table indicates that all survey banks treat demand deposits as a source of funds, with nearly 90 per cent basing the contribution on net investible funds, the balance remaining after cash items in process of collection and an allowance for reserve requirements have been deducted.<sup>4</sup> The remaining

<sup>4</sup>/In addition to the possible deductions shown in the table, six banks indicated that they also made a deduction for the balances required to support activity services. This approach would not affect the estimated profit on a customer relationship as long as a bank's earnings allowance on deposit balances was equal to the figure used for the bank's cost of funds. However, since the deduction would act to increase net funds borrowed, a profitability index based on net funds borrowed would be reduced.

## Customer Profitability Analysis

banks generally count either gross or collected demand deposits.<sup>5</sup>

Among the banks making a deduction for reserve requirements, 78.8 per cent use the same deduction as in the account analysis. Of these, 40.0 per cent base the deduction on the highest marginal reserve requirement for demand deposits to which the bank is subject, 47.5 per cent on the average reserve requirement for demand deposits, and 12.5 per cent on an administratively set deduction bearing no direct relationship to actual requirements but often tending to be slightly higher. Eleven banks, however, have different percentage deductions in the two analyses. Seven of these have no deduction for reserve requirements in the account analysis but do make allowance for reserves in the profitability analysis. The other four banks were evenly split between those having higher deductions in the profitability analysis and those having lower.

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<sup>5</sup>The six banks not including investable demand deposit funds in the analysis exhibited a variety of possibilities. One nonmember bank specializing in international finance includes gross demand deposits. Another nonmember bank which is permitted to count uncollected funds toward meeting state reserve requirements makes a deduction only for reserves. A third bank includes collected funds in the analysis but reduces the earnings allowance granted on these funds by the reserve requirement percentage. This approach would not affect the imputed earnings represented by the relationship, but it would lower the estimate of net bank funds used by the customer.

The other three banks also credit the customer with collected demand deposits, but they do not reduce the earnings allowance for reserve requirements. Instead they seek to give the customer a competitive return on all funds deposited. Since this approach results in crediting the customer with interest on balances the bank must hold as reserves, the cost of the imputed interest on reserves is then passed on to borrowers in the form of a higher cost of funds rate. This treatment of reserve requirements would not affect the estimated profitability of borrowers with average percentage compensating balances. The imputed interest on nonloanable funds would be offset by the additional charge for funds borrowed. Borrowers with above average compensating balances would tend to show relatively greater profitability, while those with below average balances, lower profitability.

If the earnings allowance granted by a bank on deposit funds is a market rate of interest not directly tied to the bank's average cost of funds, charging borrowers for any imputed interest on nonloanable funds would not be necessary. In this case the sum of the profits derived from the profitability analysis for all customers would not necessarily be equal to the actual profits earned by the bank. However, if the profitability analysis is to be a measure of actual profits, consistency requires that any interest imputed on noninvestable funds be offset with a charge elsewhere. The usual solution is to include this charge in the cost of funds, thus allocating the cost of reserve requirements to borrowers. For a more detailed discussion of these issues, see John F. Falkenberg, *Profitability Analysis: A Bank Marketing Tool* (unpublished thesis, Stonier Graduate School of Banking, Rutgers University, 1969), pp. 61, 72, 77.

The remaining sources of funds are relatively straightforward. Nearly three-fourths of the banks include noninterest bearing CD's, frequently after a deduction for reserve requirements. In recent years these accounts have become more widespread as customers have sought to minimize the funds placed in compensating balances. Since reserve requirements on time deposits are lower than on demand deposits, both the bank and the customer can benefit from splitting the reserve savings involved with a time deposit. The customer's required compensating balance is reduced and the bank obtains additional loanable funds. The fact that not all banks count such time deposits as a source of funds is somewhat surprising, but perhaps some do not encourage the issuance of these accounts.

A much lower fraction, 47.4 per cent of the banks, include investable funds from interest bearing time and savings deposits in the analysis. Many of these banks incorporate these accounts only if the rate of interest paid is substantially below current market rates. Interest bearing CD's are often excluded from the analysis on the grounds that they are likely to be viewed as investments by corporate treasurers and the funds are not likely to be bound to a bank by a customer relationship. Similarly, 61.4 per cent of the banks make allowance for funds deposited by customers in Treasury tax and loan accounts. While the official position of most banks is that funds in tax and loan accounts cannot serve as compensating balances, competitive pressures have forced many to recognize that bank profits are increased by the existence of these accounts. Relatively few banks consider commercial paper sold to customers or funds generated by loan participations sold respondent banks as a source of funds in the analysis. Finally, although not listed explicitly on the questionnaire, several banks also indicated they considered deposits at foreign branches and fiduciary balances among fund sources.

Loans represent the major use of bank

funds. Virtually all banks list standard commercial and industrial loans in the profitability analysis, with 57.9 per cent also counting any other loans designated by officers as being related. The treatment of bankers acceptances varied. The majority of banks do not include acceptances created for customers, but 35.1 per cent indicated that acceptances would be entered if held in the bank's own portfolio and 5.3 per cent stated they would be counted even if sold. Interestingly, 17.5 per cent of the banks noted they considered a portion of an unused line of credit as a fund use. This procedure was justified on the grounds that such lines require the bank to maintain additional liquidity. The percentage inclusion ranged from 10 per cent to 100 per cent, with 10 per cent being by far the most common amount.<sup>6</sup>

In the case of correspondent accounts, about two-fifths of the banks include bank stock loans and 64.9 per cent count participations in loans originated by respondents. In contrast, only 17.5 per cent of the banks stated that they give correspondent customers credit for funds supplied when respondent banks buy loan participations. This differential treatment could be the result of the equivocal attitude correspondent banks frequently have toward up- and downstream participations. It could also reflect that the survey was conducted shortly after a period of credit restraint when most smaller banks would have found Federal fund sales a more profitable outlet for excess funds than purchases of loan participations. In addition to the standard types of commercial loans, a few banks listed a variety of special loans that they include in the analysis. Among those listed were accounts receivable financing, lease financing, purchased instalment paper, Eurodollar and foreign branch

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<sup>6</sup>In the survey the question dealing with unused lines of credit proved to be a source of some confusion. Several banks stated that they treated a commitment as though a certain percentage had been loaned, but that they did not count less formal lines of credit as a use of funds. Unfortunately the percentage of banks which differentiate between commitments and loan lines in profitability analysis is not clear and no figures were obtained on the percentage of commitments included in funds used by customers.

loans, credit card loans generated by retailers, and overdrafts.

After the sources and uses of funds have been tabulated, the next step in a profitability analysis is usually determining the net bank funds used by the customer and perhaps assigning a certain amount of the bank's capital to the relationship. These figures, as seen from Table 1, are required for calculating the profitability ratios and for computing the expense entries for bank funds loaned. Derivation of these figures will be discussed later.

### INCOME

The second major portion of the profitability statement measures the income or revenue obtained by the bank from the customer relationship. While numerous sources of income can be listed, the major entries are typically interest received on loans and the interest imputed on the deposit funds included in the sources section of the analysis.<sup>7</sup> In the case of loans, the actual interest accruing during the period covered by the analysis would be shown. Several approaches, however, can be used to impute interest on deposit funds. One possibility is to give the customer a return equal to what the bank can earn on the funds. Banks choosing this avenue might tie the interest rate to the average return on investable funds, the prime loan rate, or perhaps the customer's average loan rate. Another option is to select an interest rate representing the cost to the bank of obtaining funds from alternative

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<sup>7</sup>As a practical matter, many banks do not follow the approach shown in Table 1 of crediting borrowers with interest on compensating balances and charging the cost of money on the full amount borrowed. Instead they take the difference between average loans and the average investable deposit funds supplied by the customer and assess a charge only for the cost of money, however measured, on net funds borrowed. In effect, this alternative approach is equivalent to giving the customer an earnings allowance on investable funds equal to the cost of money and charging the cost of money on all funds borrowed. Throughout the tabulations, banks including a charge only for net funds borrowed have been entered as though both interest calculations are made independently.

One survey bank does not impute an earnings allowance on demand deposits. To measure customer profitability, this bank computes the ratio of accrued interest on loans to net funds borrowed. This approach is tantamount to giving an earnings allowance on deposits equal to the average interest rate on the customer's loans. The bank, consequently, has been entered in the tabulations as though an explicit interest allowance were given.

## Customer Profitability Analysis

sources. In this instance the bank might base the return on such money market rates as the Federal funds rate, the discount rate, the rate on large denomination CD's, the average or marginal cost of borrowed money, or some combination of these rates. Finally, the return could represent what the customer could earn if the funds had been invested directly in the money market. Banks exercising this alternative would consider market rates like the Treasury bill rate or perhaps the rate on CD's.

Among the 57 survey banks, 20 different rates or combinations of rates were specified for imputing interest on deposit funds. Further variance was created as some banks use monthly, quarterly, or annual averages of rates and others use future projections of rates. Regardless, at the time of the survey the interest rates on deposit funds ranged from 8.0 per cent to 12.17 per cent, with the average and median rates being 9.41 per cent and 9.5 per cent, respectively. By comparison, the average 3-month Treasury bill rate during the third quarter was 8.19 per cent, the average Federal funds rate, 12.09 per cent, and the prime rate, 12.0 per cent. Among the market rates selected, the most common was the 3-month Treasury bill rate which was used by 14.0 per cent of the banks. However, 44.9 per cent based the credit on the cost of marginal or purchased funds, generally using various combinations of the rates listed above. Nearly all other banks tied the earnings allowance to the average cost of loanable funds, the commercial paper rate, or to interest rates charged on loans. A small group had administratively set earnings allowances not linked directly to any market rate.

Most banks also give customers income credit for direct payments made to cover service charges and loan commitments. Service charge income generally represents any amount paid to the bank for activity costs or any charge associated with obtaining loans, such as points. In the case of commitment fees, an entry would be made only if a customer paid an outright fee for a commitment or a

**Table 3**  
**ANALYSIS OF BANK REVENUE AND EXPENSES**

Source of Revenue or Expense	Per Cent of Banks Including Item in Analysis
<b>INCOME</b>	
1. Interest Received on Loans	100.0%
2. Service Charge Fees	71.9
3. Imputed Interest on Customer Deposits	100.0
4. Fees Received from Computer Services	42.1
5. Fees Received for International Services	38.6
6. Fees Received for Trust Services	31.6
7. Fees Received for Money Market Services	40.4
8. Loan Commitment Fees	75.4
<b>EXPENSES</b>	
1. Activity Services Expense	98.2%
2. Loan Handling Expense	45.6
3. Direct Charge for Loan Risk	33.3
4. Interest Paid Customer on Time and Savings Deposits	47.4
5. Cost of Issuing Lines of Credit	14.0
6. Computer Services Expense	42.1
7. International Services Expense	38.6
8. Trust Services Expense	31.6
9. Money Market Services Expense	40.4
10. Cost of Money	70.2
11. Desired Return on Capital	35.1

line of credit. If a compensating balance had been maintained instead, these funds would be reflected in the sources and uses section of the analysis, and earnings accordingly imputed. Among the banks participating in the survey, 20.0 per cent indicated they strongly preferred to receive fees as compensation for commitments, 37.1 per cent desired balances, and 42.9 per cent stated either method of compensation was satisfactory. While many banks noted the commitment fee could vary with circumstances or the type of loan, the standard charge at most banks was 0.5 per cent of the commitment amount. The range of fees, however, varied from 0.25 per cent to 1.0 per cent. If balances were required, customers were generally expected to keep the standard 10 per cent of an unused commitment and 20 per cent for any borrowing.

Additional sources of income considered by banks vary greatly. As Table 3 shows, about

one-third of the banks include the income received from data processing services, international services, trust services, and such money market services as the purchase of securities and wire transfers. The inclusion of income from these nonloan services is rather controversial. Some banks feel income should be included in a profitability analysis only if it is derived from regular bank services or loans. Under this view, specialized services are treated independently of normal bank operations. These functions serve as separate profit centers and any profit they make is not allowed to influence the estimated profitability on customer loans. Others, however, believe that an accurate picture of the profitability of a customer relationship can be obtained only if all income and expenses are included. Banks in this latter group often maintain that customers are not likely to differentiate among profit centers in considering the compensation for a bundle of bank services. Regardless, if a bank includes the funds received for a specialized service in the income portion of the statement, the cost of providing that service should also be listed under expenses.

The preceding types of income were all covered in the survey questionnaire and the responses imply the list is relatively complete. Among the 57 banks, only seven listed any additional sources of income as being included. Three of the banks stated that any fee income received would be counted and two noted the inclusion of fees associated with credit card plans. Two also count fees for security safekeeping and cash management services. Whether other banks may have omitted some additional but relatively unimportant sources of income cannot be determined.

#### **EXPENSES**

The third major section of the profitability statement derives the bank's expenses for servicing the customer relationship. In many respects this portion of the analysis is the most complicated and controversial. The difficulties

arise from the numerous possible ways of deriving and allocating the costs of services and funds. These estimated costs will often vary significantly with the number of services costed, the types of cost utilized, and the base to which costs are related. A complete description of costing methods would be beyond the scope of this article, but the nature of some of the choices can be made clear.

In a complete study, all costs must be allocated. Banks pricing fewer services, consequently, would tend to have a higher price for those services. In the past, most banks have recognized that allocating costs in a multiproduct firm is always somewhat arbitrary and they have practiced a policy of pricing bundled services. Under this approach the costs of all services are spread among a relatively small number of activities. Customers are implicitly charged for noncosted services whenever they use one for which charges have been established. Those using uncosted services with above average frequency would tend to benefit from this approach, while those with below average frequency would tend to lose.

The types of costs estimated can affect profitability calculations. In pricing activity services, banks could use marginal, variable, or total costs. Any of these could be figured using historical costs, standard costs, or projected costs. Similar considerations apply in determining the charge that should be made for the cost of money. Two methods are commonly used. The first is to base the cost of money on the bank's average cost of funds and the second is to use a rate representing the marginal cost of funds purchased by the bank. Neither is wholly satisfactory. Basing the charge on the average cost is likely to result in understating the cost of acquiring loanable funds in periods of tight money, and perhaps overstating the cost in times of easy money. When interest rates are rising and additional loanable funds must often be purchased, the marginal cost of funds increases much more rapidly than the average cost. Unless the interest rate on loans

## Customer Profitability Analysis

made at such times exceeds the marginal cost of funds, losses will be incurred. However, the use of a marginal cost of funds rate during such periods would result in overstating total fund costs. Moreover, it would ignore the profits which arise from the ability of banks to lock in rate differentials on some assets and liabilities. Many banks seek to keep a sufficient amount of cheap core money (demand deposits and consumer time and savings deposits) to finance long-term fixed rate assets like mortgages and bonds. Even if rates rise, a bank is still assured of a positive earnings spread on this portion of its portfolio.

The base on which charges are computed can often influence estimated profitability. Loan handling expenses provide an example. Once the costs of the loan department have been determined, a variety of methods could be used to allocate costs to borrowers. One possibility would be to determine the average cost per note or renewal. This approach, however, could place an unduly heavy charge against the small borrower whose loan application is relatively simple to process. Costs could be allocated in proportion to the number of dollars borrowed, but this method could overstate the cost associated with large loans, since processing time normally does not increase directly with the size of a loan. Another approach would be to express costs as a function of available manhours. If officers were to maintain an accurate record of the time spent on each note, the hourly charge could then be allocated to the customer. Unfortunately, this method could result in higher charges for customers assigned to less efficient loan officers. None of the alternatives is wholly satisfactory, and as a result, some banks use combinations of each. On balance, many somewhat arbitrary decisions must be made in allocating costs and these decisions will often have a significant impact on the estimated cost of servicing a customer relationship.

The percentage of survey banks including selected types of expenses in the customer

profitability analysis is shown in Table 3. As can be seen, nearly all banks made an entry for activity services. Among these banks, over half stated the charges were based on prices of services as specified in the account analysis and slightly less than one-third indicated they were based on actual costs. The remaining banks did not specify how the charge was derived. The method of charging seems to depend largely on the degree of confidence a bank has in its cost figures and on whether it wishes to assign profits from activity services to general profits associated with loans. If a bank has not fully costed all activity services or the accuracy of its cost estimates is uncertain, use of the price figures tends to build in a margin for unlisted services and for potential underestimates of cost. In addition, some banks feel that it is inappropriate to allocate all profit 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. If prices are used, an allowance for profit can be built in and that allowance can even vary among services. Nevertheless, if price rather than cost figures are used, caution must be exercised in interpreting the profit estimated by the analysis since it could be an understatement.

The survey did not request information on the estimated costs to banks of performing services. Consequently, direct comparisons of the charges for activity services as computed in the profitability analysis are not possible. However, data were obtained on the charges made by banks in the account analysis. These charges and the corresponding collected balance requirements for a variety of corporate banking services are shown in Table 4.<sup>8</sup> As can

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<sup>8</sup>The tabulations in Table 4 are based on the 106 banks providing information on their account analysis procedures for corporate customers. While these types of figures could be used to determine the profitability of nonborrowing customers with heavy activity usage, they are not fully comparable to those used in the profitability analysis. The number of banks included in Table 4 is nearly double that of the profitability analysis figures reported elsewhere in this article. Moreover, at some banks the charges for activity services in the profitability analysis are based on the cost of providing the service, while the charge in the account analysis in-

be seen, most banks make explicit charges for account maintenance, ledger entry credits and debits, items deposited and returned, wire transfers, currency and coin furnished, payable through drafts, and domestic collections. A smaller proportion charge for securities drafts, currency and coin deposited, bond coupons collected, and stop payments.<sup>9</sup>

The most outstanding feature of the table is the very wide range that exists among banks in the prices and collected balance requirements for these standard banking services. For example, the charge for encoded items deposited at one bank is 0.5¢ and at another bank

includes a markup for profit. Also, the earnings allowance and deduction for reserve requirements at times differ between the profitability and account analyses at the same bank. The degree to which these types of factors could bias the figures in Table 4 from being representative of those used in the profitability analysis cannot be known but definite tendencies are present.

The collected balance requirements in Table 4 refer to balances a customer must hold for a given service, not what remains after a deduction for reserve requirements has been made. Specifically, if P is the price of a transaction or service, i is the imputed earnings allowance at an annual rate and expressed as a decimal, and r is the fraction of collected balances deducted to meet reserve requirements, the annual collected balance required for a given service can be derived from the following formula:

$$B = P/[i(1.00 - r)].$$

If the complications associated with compounding interest are ignored, the collected balance required to generate sufficient income over one month to pay for a service would be twelve times the amount indicated by B.

The survey also obtained data on the procedures used to analyze the accounts of respondent banks. While the prices and earnings allowances at many banks were identical for both corporate and respondent customers, at others they differed. In general, corporations tend to have higher charges for checks deposited, returned items, and wire transfers. Correspondent customers tend to be charged higher prices for account maintenance and some currency and coin transactions. For other services the charges are generally quite similar. Copies of the account analysis tabulations applicable to respondent banks are available from the author.

9/A few comments on Table 4 are in order. Banks not shown as charging in the account analysis may in some instances require customers to pay direct fees for the services. Previous surveys, however, have generally suggested that such practices are relatively uncommon for standard activity services involving no out-of-pocket expenses to the bank. If expenses are incurred, such as an exchange charge for collecting a nonpar check, these costs are normally passed on directly.

In reducing the account analysis charges to the common denominator of required collected balances, a number of difficulties arose. One bank has a sliding earnings credit which falls with the size of the account. Since the range in the earnings allowance is small, the maximum rate has arbitrarily been used to determine required collected balances. Similarly, most banks list explicit account maintenance fees in their analysis, but a number have only indirect maintenance fees. Such maintenance fees could arise if a bank has a charge for a monthly statement or has varying charges for the number of items deposited. The bank, for example, might charge 2.25¢ for the first 1,000 items deposited and 2¢ for all additional items. In effect, customers depositing over 1,000 checks are charged a maintenance fee of \$2.50 and a rate per check of 2¢. In tabulating the results, any charge for a regular monthly statement has automatically been considered to be an account maintenance fee; but a similar adjustment cannot be made for banks which have marginal charges for the number of

the charge is 6¢. Similarly, the minimum charge of 3¢ for ledger entry credits is about one-thirtieth the maximum of 87¢. While the price figures form the basis of the charges in both the account and profitability analyses, the collected balance figures are a better measure of the actual cost to customers of activity services. A bank with a higher price may actually have a lower effective price if it is more generous with the earnings allowance or makes a smaller deduction for reserves. For comparative purposes the median collected balance requirement is probably more meaningful than the average. A tendency exists for many banks to have slightly below average prices while a

few have prices substantially above average.

The group of services in Table 4 are those for which relatively fixed account analysis fees have commonly been established. Many banks also charge for a variety of miscellaneous transactions but these vary from bank to bank. Examples of services for which comparatively few banks charge are cashing payroll checks, issuance of duplicate statements or cashiers checks, credit investigations, phone calls, investment advice, negative collected balances, and FDIC insurance. In addition, most banks charge for such services as security safekeeping, account reconciliation, lockbox opera-

items deposited. In a few instances the number of items required to secure the minimum charge is so high that comparatively few customers would be able to qualify. Although it makes little difference in the averages reported in the table whether the minimum or maximum per item charges are used, the average of the two has been used wherever reasonable.

A more basic shortcoming of several of the entries in the table is that they do not fully show the diversity that exists in the pricing structure of individual banks. Most banks, for example, have a standard charge for all domestic collection items, but some charge a given percentage of the amount of the collection, and others differentiate between cash and noncash collections or among documentary and clean collections, city and country collections, etc. Where alternative types of collections are designated, the prices often vary significantly. To enter these banks in the tabulations, the minimum charge for noncash documentary collections was used whenever available. Some banks, however, may have charges for such collections which were not reported on the questionnaire. The charges shown for collection items, consequently, are at best indicative of the general range of charges and could be significantly biased. Similarly, the charge for wire transfers at some banks depends on whether the transfer is processed by the Federal Reserve. In these cases, the charge for Federal Reserve transfers was entered. While the figures must be interpreted in light of these limitations, such tabulating problems occur relatively infrequently among the list of standard services shown in the table. Moreover, any special charges would have only a minor or insignificant effect on the reported average and median figures.

**Table 4**  
**ACCOUNT ANALYSIS CHARGES FOR SELECTED CORPORATE BANKING SERVICES**  
**October-November 1974**  
**(106 banks)**

Transaction	Charge Per Transaction (Amounts in Dollars)		Annual Collected Balance Required Per Transaction in the Account Analysis (Amounts in Dollars)			Per Cent of Banks Charging in Account Analysis	Per Cent Nonresponse
	Mode	Range	Average	Range	Median		
1. Annual Account Maintenance	12.00	7.80-240.00	752.07	135.84-12,394.20	353.70	92.45%	0.94%
2. Ledger Entries							
Credits	.07	.03-.868	2.35	.40-13.95	1.47	81.13%	—
Debits	.06	.02-.30	1.29	.25-5.76	1.13	96.22%	—
3. Items Deposited							
Not Encoded	.03	.01-.06	.48	.15-1.08	.44	97.16%	0.94%
Encoded	.02	.005-.06	.35	.06-1.08	.30	98.11%	0.94%
4. Returned Items	.50 & 1.00	.119-5.00	11.60	1.62-77.16	6.94	74.52%	0.94%
5. Wire Transfers							
Outgoing	2.00	1.00-10.00	34.70	6.42-181.82	28.90	95.28%	0.94%
Incoming	1.50 & 2.00	.50-3.00	29.40	7.17-67.61	28.30	49.05%	1.88%
6. Securities Drafts	2.00	.03-10.00 (Alternative Methods)	49.63	.44-188.29	41.05	42.45% 4.71%	{ 3.77% }
7. Payable Through Drafts	{ .03, .04, .07 & .08 }	.015-3.00 (Alternative Methods)	3.98	.25-81.80	1.01	71.69% 6.60%	{ 0.94% }
8. Currency Furnished							
Per \$1,000	.20 & .30	.043-1.50	5.68	.33-21.80	4.02	33.96%	{ 0.94% }
Per Hour	5.00	3.70-15.00	168.76	53.16-597.56	121.70	9.43%	
Per Order	—	1.00-6.10	46.94	14.19-86.67	43.46	3.77%	
Per Package	—	.02-1.00	3.05	.23-15.33	1.61	11.32%	
Per 1,000 Notes	—	.076-2.00 (Alternative Methods)	17.49	1.37-29.20	16.80	4.71% 2.83%	
9. Currency Deposited							
Per \$1,000	.30	.02-1.80	8.66	.33-27.05	5.11	24.52%	{ — }
Per Hour	5.00	3.70-16.10	138.48	53.16-426.84	106.63	16.98%	
Per Package	—	.03-.40 (Alternative Methods)	2.70	1.14-5.81	1.15	2.83% 2.83%	
10. Coin Furnished							
Per Roll	.02	.01-181	.55	.13-3.27	.33	67.92%	{ 0.94% }
Per Hour	5.00	3.70-15.00	107.68	53.16-236.64	70.46	3.77%	
Per Bag	.50	.25-1.00 (Alternative Methods)	9.53	2.94-14.23	10.47	3.77% 8.49%	
11. Coin Deposited							
Per \$1,000	{ .20, .40, & 1.50 }	.10-1.80	10.93	.77-27.05	9.12	15.09%	{ — }
Per Hour	{ 5.00, & 10.00 }	3.70-16.10	133.94	53.16-251.30	124.93	15.09%	
Per Roll	.02	.01-.05	.32	.16-.59	.27	7.54%	
Per Bag	—	.11-1.35 (Alternative Methods)	11.63	1.58-23.31	11.38	6.60% 2.83%	
12. Domestic Collection Items							
Per Item	1.50	.08-7.65	31.90	1.26-180.09	23.88	62.26%	{ 1.88% }
By Dollar Amount	0.1%	0.05%-1.0% (Alternative Methods)	—	—	—	8.49% 9.43%	
13. Food Coupons							
Per Item	.01	.001-.50 (Alternative Methods)	1.07	.01-13.06	.21	23.58% 8.49%	{ 2.83% }
14. Bond Coupons							
Per Envelope	1.00	.0175-2.50	14.40	.21-41.05	12.20	41.50%	{ 4.71% }
Per \$1,000	1.00	.20-1.00	10.17	2.57-18.18	11.64	5.66%	
15. Stop Payments	3.00	.50-5.00 (Alternative Methods)	41.09	7.20-81.30	41.94	24.53% 2.83%	{ — }

tions, and cash management services, but the prices imposed are often negotiated and vary with volume and the precise services performed. As a result, simple tabulations of these prices are not possible. Their omission should not be interpreted as suggesting that these fees are unimportant; for some customers they could represent the major expense in the account analysis.

The charges for nonactivity services demonstrate similar diversity. Among the survey banks with a customer profitability analysis, 45.6 per cent include a charge for loan handling costs. This entry is usually intended to cover the operation and maintenance of the loan department, salaries of loan officers, and any nonbillable expenses the bank incurs in making loans, such as legal fees. Unfortunately, relatively few banks provided detailed information on the precise magnitude of the charges levied. Among those that did, slightly over half indicated that the charge was directly proportional to the dollar amount borrowed, with the fee ranging from .35 per cent to .6 per cent of the loan at different banks. About a fourth of the banks use a flat charge per loan, occasionally varying with the type of loan. Remaining banks demonstrated a variety of possibilities including charges for the number of hours of loan officer time, standard costs per payment or transaction, and a handling charge based on loan risk. By comparison, several banks not making charges for loan handling expenses commented that these expenses were treated as fixed costs since the bank was required to maintain staff and overhead regardless of whether a particular loan was made.

One-third of the survey banks also included an expense entry for loan risk. The function of this entry is to prevent loans with the highest yield and risk from automatically appearing to be the most profitable. Most banks base the charge on their historical loan loss experience. While several attempt to classify loans by risk categories and charge accordingly, others simply use the same figure for all loans. Among

a limited sample of banks which provided complete information, the charge for risk ranged from .06 per cent to 2.4 per cent of the loan amount, with the average charge being about .25 per cent. This figure is generally comparable to the loan loss experience of Federal Reserve member banks which averaged .24 per cent in 1972, .26 per cent in 1973, and .39 per cent in 1974. Although an expense entry is one method of accounting for risk, most banks prefer other options. These include such possibilities as assigning more capital to riskier loans or increasing the desired net return (or profit rate) on riskier loans.

A charge for the cost of money loaned is included in the profitability analysis by 70.2 per cent of the survey banks. In general, banks listing such charges tend to emphasize net profit or allocated capital ratios while other banks usually calculate gross profit ratios. Examples of each are shown in Table 1. At the time of the survey, the interest rates used for the cost of funds ranged among banks from 7.2 per cent to 12.09 per cent, with the average and median figures being 9.79 per cent and 10.0 per cent, respectively. These comparatively high rates reflect the timing of the survey, which occurred shortly after interest rates began declining from historic peaks. The marginal cost of funds at this time was well above the average for most banks. About three-fourths of the banks, as a result, based the cost of funds charge on various short-term money market interest rates representing the cost of purchased funds. The most common rates selected were those on Federal funds and 3-month CD's, but a noteworthy group of banks also used the rates on commercial paper, Treasury bills, and borrowings at the discount window. Often an average of several of these rates was taken. The remaining one-fourth of the banks generally employed their average cost of funds. Among all banks including a charge for the cost of money, approximately five-sixths had exactly the same rate for the cost of funds as was used to impute interest on the deposit

## Customer Profitability Analysis

funds supplied by the customer. No consistent relationship, however, was evident among the small group using different interest rates for the two variables. These banks were equally divided between those which had higher and lower charges for the cost of funds.

Slightly over one-third of the banks included a charge to cover the desired return on capital allocated to the customer relationship. On average, these banks sought a pretax return on capital of about 25 per cent, but the figure at individual banks varied from 10 to 50 per cent. The most common amount, however, was 20 per cent, which was applied by nearly half the banks. The methods of allocating capital among customer relationships will be discussed subsequently, but for the time being it should be noted that banks wishing to build in a desired return on capital have at least three options. First, the bank's capital can be allocated among customers, the desired return specified, and an explicit entry made under expenses for the desired return on capital. This approach is demonstrated in Table 1. For this method to be consistent with actual profits earned by the bank, the capital allocated should be equal to the total capital of the bank and the charge for noncapital loanable funds should be based on the actual cost of those funds.

The second option would be for a bank to set a desired return on capital and to include capital in the bank's general pool of loanable funds. Banks using this approach would tend to find that the average cost of pool funds was greater than in the previous instance because the desired pretax return on capital is usually substantially higher than the bank's cost of other loanable funds. A third possibility is for a bank to assume again that all loanable funds are derived from a general pool, of which capital represents one component. Rather than including a target return on capital in the cost of funds, however, the bank could temporarily consider capital to be costless. The desired return on capital could be attained by specifying

the minimum levels of the various profitability ratios necessary to realize that return. Variants of this approach are frequently used by banks not allocating capital to customer relationships or not including any allowance for the desired return on capital under the expense category of the analysis.

Despite these considerations, alternative methods of handling the desired return on capital had little effect on the average cost of funds. With only two exceptions, each of the 20 banks that included an expense entry for the desired return on capital based the cost of funds on money market rates rather than the bank's average cost of funds. In fact, the average cost of funds rate of 9.94 per cent for banks expressly including a charge for capital was less than the average rate of 10.06 per cent for banks not building in such a charge. On balance, these considerations suggest that most banks use the profitability analysis to show the effect on profits if the customer relationship were to be lost, but do not attempt to make the sum of the profits estimated by the analysis equivalent to actual bank profits.

The remaining entries shown under expenses in Table 3 are largely self-explanatory. Banks including interest bearing time and savings deposits in the analysis of funds supplied by the customer must make a deduction under expenses for the interest accrued on those deposits. To the extent that the interest actually paid differs from the interest imputed on those funds, the profitability of the customer relationship would be raised or lowered. Likewise, banks which include the income from various fee services like data processing or money market transactions in the income portion of the statement are required to make a deduction under expenses for the costs of these services. Finally, a small group of banks listed several miscellaneous charges that were likely to be included with expenses. Among these items were demand deposit administration and overhead charges, the expense of granting lines of credit, loan entry and maintenance

costs, an allowance for the cost of servicing Treasury tax and loan accounts, and the costs associated with leasing operations, security safekeeping, credit card plans, and cash management services.<sup>10</sup>

### THE PROFITABILITY RATIOS

After the total income and expenses associated with the customer relationship have been estimated, the next step is to determine the difference between the two. At banks which do not build in an allowance for the cost of funds under expenses, this difference would measure the estimated "gross profit" on the relationship. However, if the cost of funds has previously been included, it would show "net profit." Although a profit figure contains valuable information, most banks place primary emphasis on a variety of profitability ratios designed to adjust the profit figure for differences in the size of customer relationships. Numerous profitability ratios could be computed, but at most banks profitability is judged on the basis of a handful of standard indicators. These include the ratios 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."

For individual banks, the particular ratio or ratios selected largely appear to have been a management decision. Factors such as the size of a bank, its location, or the sophistication of its analysis procedures do not explain the differences. In part, the variance may arise from the fact that no single profitability measure is necessarily superior. Regardless, one point must be emphasized. While only one of the

commonly used indexes makes any explicit reference to bank capital, many banks using other profitability measures have established target returns on capital. In general, these alternative ratios can be related in a fairly direct way to the earnings on capital and the desired return on capital can set minimum acceptable values for the noncapital ratios.

Twelve of the survey banks compute the ratio of gross profits to net funds used. If a customer is a net borrower, the value of this index can be compared directly to the bank's cost of funds or to money market rates. As long as the ratio exceeds the bank's cost of funds, the relationship would be profitable. To ensure that a target return on capital is realized, however, the index must exceed the bank's cost of funds by a sufficient margin. The survey did not explore the issue fully, but several banks commented that an interest differential of 2 to 3 per cent was generally adequate to meet profit objectives.

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. Among the survey banks, 12 compute the ratio of net profits to net funds loaned. This profitability ratio differs from the gross profits/net funds used measure only in that the cost of funds (expressed as a percentage) 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 for net borrowers implies the relationship is profitable. Another customer profitability measure used by 13 of the banks was the ratio of net profits to gross amount borrowed. A zero value for this ratio would imply a break-even situation. Banks utilizing this formula, though, generally seek a minimum return on gross loans of 1.5 to 2.5 per cent to realize a desired return on capital.

The fourth profitability measure, the ratio

<sup>10</sup>Only eight banks indicated that they charged for setting up lines of credit. Where figures were provided, this expense entry was generally the same as the amount listed under income for lines of credit. It is not clear if banks using this approach estimated that the cost was actually equal to the fee charged customers or if they were just removing any profit associated with this item.

<sup>11</sup>A detailed analysis of the applicability and behavior of these profitability indicators under varying situations was presented in the preceding article in this series. As a result, the discussion in this article is largely limited to the direct results of the survey. Also, since many banks compute more than one profitability ratio, the tabulations include some banks more than once.

of net profits to allocated capital, was reported by 12 banks. 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, both borrowers and nonborrowers, can be analyzed. Of the 20 banks in the survey explicitly allocating capital to customer relationships, 19 provided information on the general methods of allocating capital. Nine of the banks assign capital as a flat percentage of loans, with the same fraction being used for all customers. Among these banks, the percentages ranged from 5 to 10 per cent, with nearly half using 8 per cent. Four banks assign capital to both deposits and loans, with two of these using unvarying percentages. Only two banks volunteered that capital was assigned in relation to risk ratings on loans. The remaining four banks all allocate capital to loans only but did not specify the allocation methods.

Four-fifths of the banks responding to the survey utilize one or more of the four basic ratios just discussed in analyzing customer profitability. The remaining banks have all developed alternative measures. These include such ratios as gross profits/total loans, net profits/total revenue, total income/net funds borrowed, actual income/target income, and total revenue/total expenses. Three banks compute net or gross profits, but do not relate the figure to any specific indicator of the size of a customer relationship. Several banks also calculate separate ratios for the profitability of activity services. Unfortunately, space considerations do not permit a detailed examination of these alternative approaches.

Regardless of the ratios computed, great care must be exercised in their interpretation since several biases could influence the results. The profitability figures on fixed rate loans, for example, may be severely depressed if money market rates rise sharply or if compensating balances are temporarily reduced. Similarly,

when interest rates are rising, banks basing a profitability analysis on the average cost of funds could understate the value of compensating balances and the cost of acquiring additional loanable funds. For these reasons most banks do not place great emphasis on short-run changes in profitability, preferring instead to examine profitability over a period of 1 to 3 years. To minimize distortions some banks also calculate ratios using both the average and marginal costs of funds.

### **CONCLUDING OBSERVATIONS**

In the future, bank profitability is likely to depend increasingly on the differential between loan rates and the cost of funds. Since customer profitability analysis tends to focus on this spread, it represents an innovative management tool for commercial banks. By combining numerous aspects of a customer relationship into a single analysis, it affords a more accurate picture of customer profitability and overcomes some of the limitations of account analysis. Moreover, it can also be a valuable guide in the pricing of services and loans to a customer or for measuring the trade-off between fees and balances. For the present, effective use of customer profitability analysis is probably limited to fewer than 75 banks, but an expansion could come quickly.

While the profitability analysis provides banks with a structural framework for analyzing a total relationship, the analysis is always a direct reflection of the goals and priorities of management. As the survey has indicated, no single method of valuing services and fund flows is necessarily correct. Each stage of the analysis involves a number of difficult choices, and the specific options selected will often have a significant influence on estimated customer profitability. Customer profitability analysis, therefore, can be a valuable tool, but it can never be a substitute for sound management judgement.