Internal Organization and Economic Performance: The Case of Large US Commercial Banks

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Abstract

This paper provides novel empirical evidence on the impact of bank internal organization structure characteristics on costs and productive efficiency. The specific internal organization characteristics examined include centralized versus decentralized 1) decision-making, 2) service delivery systems, and 3) back-office operations, e.g. accounting, computing, and advertising, among others. The analysis is conducted using average data drawn from a sample of 118 large US commercial banks for the years 1989 and 1990. The analysis reveals that centralized decision-making tends to increase costs. Likewise, centralized service delivery systems either increase or have an insignificant impact on costs. In no case was it found that centralized service delivery systems reduce costs as is often envisioned by proponents of centralization. Centralized back-office operations were found to reduce costs significantly and is consistent with the existence of scale economies in bank back-office operations.

I. Introduction

Organization theorists have long been aware of the productivity ramifications of firm organization structures and innovations. Indeed, it has been asserted that, if changes in business procedures and practices were patentable, the contributions of business change to the economic growth of the nation would be as widely recognized as the influence of mechanical inventions. More recently, economists have come to recognize that economic questions about production, marketing, strategy, and finance are bound up with social questions about organizational structure and change, culture, and management style and practice. In fact, it has been argued (see, for example, Coase (1937), Chamberlain (1962), Stigler (1966), and Hirshleifer (1980)) that it is precisely the costs of coordination that limit the size of the firm.

It is widely accepted among microeconomists that because of indivisibilities and opportunities for specialization there are economies of scale in physical production. And without some element of increasing costs, there would be no limit to the size of firms. The costs associated with organizing and managing the firm's production activities-coordination-costs, provide this limit. And as a result, organization structure variables are becoming commonplace in theoretical and econometric models of firm production and cost functions.[1] As is well known, the recent deregulation (and reregulation) of the US commercial banking industry has had a dramatic impact on the manner in which banks produce, price, and manage their financial services-from consolidation of operations through mergers, to the more recent unbundling of traditional packaged services, to the phenomena of loan sales. What is less well known, particularly among academic economists studying the industry, are the

dramatic parallel changes taking place in bank internal decision and organization structures. Changes in these areas will likely have a significant impact on how efficiently these banking organizations produce their financial services, how effective they are in interfacing with their customers, and how successful they are in competing in their product markets.

If the tenets of organization economics which relate internal organizational structure elements to firm productive efficiency are robust across industries, managerial (and public policy) prescriptions drawn from empirical studies of bank production and cost functions which take explicit account of these influences should be better informed than those which ignore these dimensions. This is because the former type of analysis is able to say something about the way banking organizations should be structured. Such knowledge takes on added importance given the current debate over whether universal banking as it is practiced in many European countries is the most appropriate organization structure for insuring the long term competitiveness of US banks.

In this paper we provide empirical evidence on the impact of internal organization characteristics on bank productive efficiency. Specifically we examine the impact of centralized versus decentralized 1) decision-making, 2) services delivery systems, and 3) back-office operations. Our analysis is conducted using average data drawn from a sample of 118 large US commercial banks for the years 1989 and 1990. The results are summarized as follows. First, centralized decision-making tend to increase costs. Second, centralized delivery systems either increase or have an insignificant impact on costs. In no case did centralized delivery systems reduce costs as envisioned by proponents of centralization. Third, centralized back-office operations significantly reduce costs. This result is consistent with the existence of scale economies in operations. These results provide new insights into the determinants of bank cost structures and efficiency characteristics and highlight the need to incorporate internal organizational variables in future studies.

The remaining sections of this paper are structured as follows. In section II we briefly review the scope of organization economics as it relates to factors affecting firm profitability and productive efficiency. These factors are related to the organization structures of large US commercial banks in section III. In section IV we describe the empirical model and the sources of the data used in our analysis. The results of the empirical analysis are discussed in section V along with their managerial and policy implications. A summary and conclusion follows in section VI.

II. Organization Structure and Firm Performance

Organization economics concerns itself with the study of organizations and organizational phenomena using concepts taken from contemporary organization theory, organization behavior, and microeconomics. The fundamental factor distinguishing organization economics from traditional microeconomic analysis of the firm is that the former views the firm as an organization which competes with the market as a mechanism for allocating resources as opposed to an abstract entity characterized by a production function and an objective of profit maximization. Under this view, firms and markets represent alternative mechanisms for providing the coordination, control,

and monitoring required for the efficient allocation of resources. For a given organization form to survive long-term, it must provide higher net returns than alternative institutional arrangements.

Among the possible structures of internal organization, the ones tending to predominate over time are naturally those which tend to minimize transactions costs. According to Chandler (1977) and Williamson (1967, 1975), the optimal structure form from this point of view is the multidivisional form (M-form) type organization structure.

In reviewing various organization structures, Chandler and Williamson contrast two more or less ideal organization structures.[2] The unitary form (U-form) corresponds to a centralized multifunctional organization structure where the major active units are functional divisions. That is, there is specialization by functions such as production, sales, finance, research and development etc. Although the U-form organization favors the realization of economies of scale and the internal specialization of labor, it nevertheless becomes problematical as the firm expands due to bounded rationality, opportunism, and subgoal pursuit, e.g. sales, finance or even the personal goals of managers. These problems create distortions with regard to the objective of global profit maximization. The U-form thus favors a less efficient pyramidal and bureaucratic hierarchy within which capital, labor, and information are allocated.

In contrast, Williamson (1975) suggests that it is the M- form which has survived the selective process favoring increased internal efficiency. Essentially, the M-form substitutes quasi-autonomous operating divisions for the functional divisions of the U-form structure. These operating divisions are organized mainly along product, brand, market, or geographic lines. Each of the divisions may subsequently be divided along functional lines to insure their autonomy. Under the M-form structure, strategic decision making occurs in the general or head office, while the operating decisions are assigned to the divisions. Thus, this structure affords the divisions a large degree of autonomy and allows them to take their own risks in much the same way that an independent firm would. Hence, each division constitutes a quasi-firm (profit center) managed to achieve a specific objective.

By combining the best features of centralization and decentralization, the M-form creates superior internal information and control techniques compared to the U-form and the external market. Williamson's M-form hypothesis states that, "...the organization and operation of the large enterprise along the lines of the M-form favors goal pursuit and least-cost behavior more nearly associated with the neoclassical profit maximization hypothesis than does the U-form organizational alternative."

Not surprisingly, the validity of the Williamson hypothesis has been subjected to numerous empirical tests. Studies by Armour and Teece (1978), Burton (1988), Cable and Dirrheimer (1983), Cable and Hirohiko (1985), Norton and Pittman (1988), Steer and Cable (1978), Riordan and Williamson (1985), Roberts and Viscione (1981), Teece (1981), and Thompson (1981) are only a few of the studies providing empirical support for the hypothesis. The empirical results favoring the M-form as the least cost organization structure have generally been shown to be robust not only

across firms operating in different industries but across firms in different countries as well.[3] With the exception of the paper by Roberts and Viscione examining captive finance companies, the empirical tests of the M-form hypothesis have been limited to non-financial firms.

III. The Internal Structure of Large US Banks

Prior to the early 1970s, large banks predominantly operated with function-oriented organization structures where functional units at the top of the organizational structure reported directly to the chief executive officer whose responsibilities included the reconciliation of functional subgoals and determining strategic directions. Since the early 1970's internal organization structure developments at large US commercial banks have to some extent paralleled the transition from U-form to M-form observed in nonfinancial firms during earlier years.[4]

Much like the U-form structure, the function-oriented structure performs best in a stable and predictable environment. And like the U-form, this structural form is highly centralized, specialized, and formalized. Given the stable and predictable economic and regulatory environments faced by US banks prior to the 1970s, it is understandable why the function-oriented structure was dominate among large banks.

Since the 1970s, changes in the economic and regulatory environments facing large US banks have eroded many of the advantages of the function-oriented structure. The natural response to the increased competition from nonbank firms and the geographic and product deregulation occurring during this period was for banks to develop explicit marketing functions as a way of transitioning towards the market-oriented structure we observe in many large banks today.

The principal characteristic of the market-oriented structure is the elevation of customer- and market-based departments to top organizational levels. Departments are organized around groups of customers rather than traditional banking functions, and these departments report to the chief executive officer. Under the market-oriented structure all products and functions necessary to serve a particular group of customers tend to be housed in one department. Examples of such departments include corporate or commercial banking, retail banking, and real estate banking departments or divisions. The strategy of the market-oriented bank is essentially to be in the right markets with the right products at the right time.

Unlike the function-oriented structure, the market-oriented form is less centralized, less specialized and somewhat less formalized.[5] Conflicts are resolved according to the objectives of the bank instead of those of the individual functions and managers have profit responsibilities. Thus, difficulties in coordination and control are corrected through a more effective incentive system and the elimination of the competition between functional units. These characteristics make the market-oriented form a more decentralized decision-making structure than is the function-oriented structure.

The market-oriented structure is similar in many respects to the multidivisional form (M-form). Key characteristics of the M-form include a separation of strategic decision-making from operating divisions decision-making (decentralization) and an

internal control and incentive structure eliminating the problems of opportunism, loss of control, and bounded rationality characterizing the U-form. Thus, the transformation occurring in the banking industry parallels that which occurred earlier in other industries.

IV. The Empirical Model, Hypotheses, and Data Sources

We employ the following empirical model to examine the impact of internal organizational structure characteristics on bank cost and productive efficiency. A bank's cost function, which can be represented as the dual of the production function, can be expressed as follows:

$$TC = f(\underline{Q},\underline{P},\underline{ORG}), \quad (1)$$

where $\underline{Q}$ is a vector of outputs, $\underline{P}$ is a vector of input prices and $\underline{ORG}$ is a vector of inputs which describes a bank's internal organizational structure.

Using a survey questionnaire and follow-up telephone interviews with the chief operations officers, data on internal organizational structure were collected for the top 145 largest US commercial bank holding companies for the period October 1990 through July 1991. The 145 bank holding companies were those included on the BANK COMPUSTAT tape. Of the 145 banks surveyed, complete data were collected for 118 banks, approximately an 81 percent response rate. The remaining 27 companies either provided incomplete organization data or were in the process of reorganizing their internal organizational structure.

Information on (1) whether the bank(s) within the holding company operated with internal structures organized around customer or market groups versus functional areas; (2) whether strategic decision-making, decisions regarding credit administration, and the pricing of fee-based services were centralized at the level of the holding company or lead bank headquarters office; (3) whether the delivery of services to customer or market groups was centralized within a single customer contact unit, e.g. account representative, or provided on a decentralized basis by each bank unit producing the service; and (4) whether back-office operations (e.g. accounting, computer facilities, advertising, etc.) were centralized or decentralized was obtained for each company in the sample.

The results of the survey are summarized in Table 1. The results reveal that all respondents were organized around either customers or markets and that strategic decision-making was centralized at the lead bank or holding company level. Hence, the survey suggests that all sample companys exhibit some characteristics of the M-form organization. The survey results also reveal that decisions regarding credit administration and the pricing of fee-based services were centralized in approximately 50 percent of the banks. That is, these decisions were made at the holding company or lead bank headquarters as opposed to the division or non-lead bank level.

The results show that centralized delivery of services systems were employed at 64 percent of the banks. In the centralized delivery system, an agent, i.e. an account representative, handles all of the needs of the customer. That is, the account representative acts as an intermediary between the customer and members of the bank's

functional areas producing such services as lending, cash management, and trust, among others. Conversely, in a decentralized delivery system, employees from each functional area interact (e.g. call on and service) the customer directly.

During the 1980s, many banks switched from decentralized to more centralized delivery systems. The switch to centralized delivery systems was motivated by several factors. First, under decentralized systems, banks often times did not know overall customer profitability since there was generally limited communication and coordination between functional areas. Second, it was believed that the switch to a centralized delivery system would increase customer perceptions of service quality since in centralized delivery systems service problems are handled by one individual as opposed to several functional area specialists. Finally, centralized delivery systems were thought to be a more cost effective way to service customers.

The data in Table 1 show that back-office type activities were centralized at 86 percent of the banks in the sample with the remaining 14 percent operating under a decentralized mode. The dominance of centralized back-office operations is consistent with the notion that there exist significant scale economies in these type activities.

Three organizational variables DEC, DEL, and OPER (the elements in ORG in equation (1)) were constructed for each sample firm based on the results of the survey. The variable DEC is assigned a value of 1 if centralized decision-making regarding credit administration and the pricing of fee-based services was employed, and 0 if these decisions were decentralized. The variable, DEL was assigned a value of 1 if the delivery system within a customer or market group was centralized, i.e. provided through an intermediary agent, and 0 if it was decentralized, i.e. provided by agents from functional areas. Finally, the variable OPER is assigned a value of 1 if back-office operations were centralized and 0 if they were decentralized.

The Econometric Model

To estimate the cost function in equation (1), the following second-order translog approximation to a multiproduct bank cost function was applied:

$$\ln TC = \alpha_0 + \sum_m \alpha_m \ln P_m + \tfrac{1}{2}\sum_m \sum_n \alpha_{m,n} \ln P_m \ln P_n + \sum_j \beta_j \ln Q_j$$

$$+ \tfrac{1}{2} \sum_j \sum_k \beta_{j,k} \ln Q_j \ln Q_k + \sum_j \sum_m \Phi_{j,m} \ln Q_j \ln P_m$$

$$+ \delta_{DEC} DEC + \sum_j \delta_{DEC_j} \ln Q_j DEC + \sum_m \delta_{DEC,m} \ln P_m DEC$$

$$+ \delta_{DEL} DEL + \sum_j \delta_{DEL,j} \ln Q_j DEL + \sum_m \delta_{DEL,m} \ln P_m DEL$$

$$+ \delta_{OPER}\,OPER + \sum_j \delta_{OPER,j}\,\ln Q_j\,OPER + \sum_m \delta_{OPER,m}\,\ln P_m\,OPER$$

$$+ \delta_{DEC,DEL}\,DEC \cdot DEL + \delta_{DEC,OPER} DEC \cdot OPER$$

$$+ \delta_{DEL,OPER}\,DEL \cdot OPER + \varepsilon,$$

$$\text{for} \quad m,n = \text{Labor, Capital, Interest}$$
$$j, k = \text{C\&I, Consumer, R/E, and Other.} \qquad (2)$$

In equation (2),

TC	= total costs (non-interest costs plus interest expense allocated to loans),
$Q_{C\&I}$	= dollar volume of commercial and industrial loans,
$Q_{Consumer}$	= dollar volume of consumer loans,
$Q_{R/E}$	= dollar volume of real estate loans,
Q_{Other}	= other bank output,
P_{Labor}	= price of labor,
$P_{Capital}$	= price of capital,
$P_{Interest}$	= interest rate on deposits,
DEC	= decision-making dummy variable which equals 1 if centralized and zero otherwise,
DEL	= system of service delivery dummy variable which equals 1 if centralized and zero otherwise,
OPER	= back-office operations dummy variable which equals 1 if centralized and zero otherwise, and
ε	= an error term.

In estimating the model in equation (2), the usual symmetry ($\alpha_{m,n} = \alpha_{n,m}$ and $\beta_{j,k} = \beta_{k,j}$) and adding-up and homogeneity conditions were imposed.

$$\left(\sum_m \alpha_m = 1 \text{ and} \sum_m \Phi_{j,m} = \sum_m \alpha_{m,n} = \sum_m \delta_{DEC,m} = \sum_m \delta_{DEL,m} = \sum_m \delta_{OPER,m} = 0\right)$$

Definition of Outputs

Difficulties associated with the definition of output, the appropriate level of aggregation of output, and the definition of costs are encountered in all bank cost studies. It is beyond the scope of this paper to resolve the issue regarding the treatment of various categories of deposits as outputs or inputs.[6] In this paper, we treat the dollar volume of all deposits as inputs. In addition, using a proxy variable, clearing and other deposit-related activities are treated as outputs.

Regarding the specific definition of the outputs in equation (2), we use the criterion of value added employed by Berger, Hanweck and Humphrey (1991) to determine the composition of the various output categories. Wholesale loans, $Q_{C\&I}$, is the dollar volume of all commercial and industrial and security loans. Consumer loans, $Q_{Consumer}$, is comprised of the dollar volume of credit cards and other personal loans excluding loans secured by residential real estate. Real estate loans, $Q_{R/E}$, are all loans secured by real estate. Other bank output, Q_{Other}, is included in an attempt to capture off-balance sheet activities such as loan sales, letters of credit, securitization, swaps and clearing activities which are becoming increasingly important at US commercial banks. The proxy, Q_{Other}, equals annual non-interest income including service charges received on transaction and nontransaction deposit accounts. Finally, securities are excluded from the definition of output since in markets exhibiting low information costs, banks add only negligible, if any, value to these assets. Our choice of these four output measures is tempered by our objective which is to examine multiproduct cost attributes within an econometrically tractable model of the banking firm. Hence, it is a maintained hypothesis that for a given output category, a single cost function adequately characterizes the production of each of the activities aggregated within that category.

Input Prices

The price of labor, P_{Labor}, equals salaries plus benefits divided by number of employees. The price of capital, $P_{Capital}$, is defined as the ratio of occupancy and fixed asset expense to net bank premises. The interest rate on deposits, $P_{Interest}$, is calculated as the interest rate paid on all deposits divided by the sum of all interest-bearing deposits outstanding.

Total Costs

Total costs, TC, in equation (2) are defined as total non-interest costs plus allocated interest expense. Interest expenses are included since data limitations require that the output metric be defined in terms of dollars of loans and deposits instead of the number of accounts. Allocated interest equals the product of the ratio of total loans to earning assets times total interest expense. The allocation of interest is necessary since securities are not specified as outputs and, for many banks, a substantial proportion of interest costs are incurred to finance their securities portfolio. The output/cost specification used in this study is consistent with the intermediation approach to examining bank costs and is preferable when the issues being examined concern bank economic viability.

Hypotheses Regarding Organization Form

The variables DEC, DEL and OPER are used to test several hypotheses regarding the impact of organizational forms on costs (efficiency).

The first hypothesis tested, (H:1), examines the significance of the organizational variables in explaining bank cost structure in equation (2). The hypothesis states that for each of the organizational variables i and h, (i = DEC, DEL and OPER):

$$(H:1) \qquad \delta_i = \delta_{i,j} = \delta_{i,m} = \delta_{i,h} = 0 \tag{3}$$

The second hypothesis, (H:2), tests for the effect of centralization on costs. Using the parameter estimates from equation (2), the hypothesis is stated as

$$(H:2) \quad \partial \ln TC / \partial ORG_j = \delta_i + \sum_j \delta_{i,j} \ln Q + \sum_m \delta_{i,m} \ln P_m + \sum_m \delta_{i,h} \cdot ORG_h = 0. \tag{4}$$

Equation (4) measures the percentage increase in total costs, TC, resulting from centralization of the ith organizational form variable holding outputs, prices, and other organizational form variables constant.

For the multiproduct firm, scale economies are measured by,

$$SCE = \sum_i \partial \ln TC(Q) / \partial \ln Q_i, \tag{5}$$

where TC(•) is the cost function, the Q_i represent the outputs specified in equation (2), and Q is the vector of outputs. If SCE equals 1.0, production of Q exhibits constant returns to scale, whereas RSCE less than (greater than) 1.0, indicates increasing (decreasing) returns to scale. The third hypothesis, (H:3), examines the impact of centralization on scale economies. The hypothesis is stated as

$$(H:3) \quad \partial SCE / \partial ORG_i = \sum_j \delta_{i,j} = 0 \tag{6}$$

Equation (6) measures the impact of centralization of the ith organizational form variable on scale economies holding outputs, prices, and other organizational form variables constant.

The Data

The data needed to estimate the cost function in equation (2) was obtained from the BANK COMPUSTAT Tapes. Data for the fiscal years 1989 and 1990 were used to estimate the model in equation (2) for the 118 banks with complete organizational form data.

Table 2 presents selected summary statistics (overall and stratified by the organizational form variables). The average sample bank had approximately $16.0 billion in total assets and $1.6 billion in total costs. Stratified by the organizational form variables, the subgroup with the largest number of banks, 35, had centralized decision-making, service delivery systems, and back-office operations. This subgroup had approximately $11.6 billion in average assets and $0.96 billion in total costs. The second largest subgroup with 26 banks is characterized by decentralized decision-making and centralized delivery systems and operations, and had approximately $22 billion in average total assets and $2.2 billion in total costs. The third largest subgroup of 24 banks had centralized decision-making and operations, decentralized delivery systems, and had average assets equaling $10.5 billion and $0.8

billion in total costs. This group is similar in size to the largest subgroup but differs organizationally by the use of a decentralized system for delivering services. The next subgroup consisting of 17 banks had decentralized decision-making and delivery systems with centralized operations. The last subgroup with an appreciable number of members consists of 12 banks which had decentralized decision-making and operations with centralized delivery systems. This group has the highest average total assets of $24 billion and total costs of $2 billion.

The data in Table 2 show that three of the subgroups have three or fewer members. Data for these banks are used in the estimation of the cost function in equation (2), but tests of the hypotheses (H:2) and (H:3) are not performed for these subgroups.

V. Empirical Results and Implications

Full information maximum likelihood (FIML) is used to jointly estimate the model in equation (2) with factor input share equations. Using Shepard's lemma, the share equations are given by $\frac{\delta \ln TC}{\delta \ln P_m} = S_m$, for m = Labor, Capital, and Interest where S_m is the mth input's share of total cost. Since the coefficients in the share equations are a subset of those in the cost function in equation (2), joint estimation should result in more efficient estimates. However, since $\Sigma_m S_m = 1$, the capital share is dropped from the joint estimation to avoid singularity.[7,8]

Test of Hypothesis 1 - The Joint Significance of the Organizational Form Variables

Likelihood ratio tests were conducted to test the hypothesis (H:1) in equations (3) regarding the significance of the organizational form variables in explaining total costs. The chi-square statistics for DEC, DEL and OPER are 28.41, 46.42 and 32.54 respectively. All test statistics are significant at the .01 level. These results suggest that the organizational form variables are significant in explaining the structure of bank costs as specified in equation (2).

Test of Hypothesis 2 - Impact of Centralization on Costs

Table 3 reports the tests of the hypothesis (H:2) in equation (4). For each test, the impact of centralization for a given organizational form variable was evaluated holding constant quantities, prices, and other organizational form variables. In carrying out this test, quantities and prices were set equal to the geometric means for the overall sample. In this way, variations in costs can be attributed to differences in organizational forms. For each test, the organizational forms associated with the null and alternative hypotheses are given. Due to the lack of sufficient membership for some groups as discussed earlier, two out of four tests were conducted for centralized decision-making, two out of four for centralized delivery systems, and one out of four for centralized back-office operations.

Centralized Decision-Making

The results in Table 3, Panel A suggest that centralized decision-making significantly increases costs relative to decentralized decision making for two cases examined. For a bank with centralized delivery systems and operations, a change to centralized decision-making increases costs by 3.68 percent. This result is significant at the .05 level. If a bank with decentralized delivery systems and centralized operations changes to centralized decision-making, costs increase by 9.57 percent. This result is significant at the .01 level. Both the 3.68 percent and 9.57 percent cost increases appear to be economically significant considering that the average bank's costs equals $1.4 billion and total assets equal $16 billion. For the average sample bank, a 3.68 (9.57) percent increase in total costs is associated with a reduction in return on assets of 21 (55) basis points using a marginal tax rate of 34 percent. In 1989 and 1990 the average sample bank's return on assets was approximately 60 basis points.

Centralized Deivery of Services

The results in Table 3, Panel B indicate that for banks with centralized decision-making and operations, a change to a centralized service delivery system has no significant impact on costs. For banks with decentralized decision-making and centralized operations, the centralization of the service delivery system increases costs by approximately 6.53 percent. This result is significant at the .01 level. In either case, the results do not suggest a reduction in costs. This is in contrast to the notion discussed above that movement to a centralized service delivery system will produce cost savings. However, these results should be interpreted with caution since other motivations for adopting a centralized delivery system-improvements in the analysis of customer profitability and quality of service-may be at work. Since equation (2) only examines costs, the effectiveness of centralized delivery systems in improving customer profitability analysis and quality can not be evaluated.

Centralization of Back-Office Operation

The results in Panel C in Table 3 suggest that centralizing back-office operations reduces costs by approximately 4 percent for a bank with decentralized decision-making and centralized service delivery systems. The test result is significant at the .05 level. This finding is consistent with previous research which reports fairly large scale economies for back-office operations (see Hunter and Timme [1986] for example). Hence, one would expect banks to centralize back-office operations in order to capture these scale economies.

Tests of Hypothesis 3 - Impact of Centralization on Scale Economies

Using the parameter estimates from equation (2), the estimated scale economies for a bank with decentralized decision-making, delivery systems, and back-office operations equals 0.945 and is significant at the .05 level. This indicates increasing returns-to-scale, on average, for this class bank. This result is consistent with those reported by Hunter and Timme (1986) and Hunter, Timme and Yang (1990). These studies

examined scale economies for large US banks but did not include organizational form variables of the type included in this study.

Table 4 reports tests of the impact of centralization on scale economies, hypothesis (H:3) given by equation (6). The test statistics for a bank with centralized decision-making, delivery systems, and operations are -0.0040, 0.0260 and -0.0023, respectively. None of the test statistics are significant at standard confidence levels. These results suggest that centralization does not have a significant impact on scale economies, although it does have a significant impact on bank costs. These results suggest that costs inefficiencies dominate the effects of scale economies in explaining variations in banks costs.

VI. Conclusions

In this paper we provide empirical evidence on the impact of internal organization structure on bank cost characteristics. Specifically, we examine the impact of centralized versus decentralized 1) decision-making, 2) service delivery systems, and 3) back-office operations on bank costs and productive efficiency. Our analysis is conducted using average data drawn from a sample of 118 large US commercial banks for the years 1989 and 1990. The results are summarized as follows. First, centralized decision-making tends to increase costs. Second, centralized service delivery systems either increase or have an insignificant impact on costs. In no case was it found that centralized service delivery systems reduce costs as envisioned by proponents of centralization. Third, centralization back-office operations significantly reduce costs. This result is consistent with the existence of scale economies in bank back-office operations, e.g. accounting, computing, advertising, etc.

The results of this analysis provide new insights into the determinants of bank cost and efficiency characteristics and highlight the importance of organizational variables in financial firm production and the need to incorporate these variables into future bank efficiency studies. The results, however, leave unanswered numerous questions concerning why a bank would adopt an organizational form which (according to the evidence) increases costs. Several approaches would appear promising in answering this question. First, it would appear to be useful to examine the impact of organizational structure on costs as well as other measures of performance (e.g. return on assets, risk-adjusted holding period returns, etc.) and bank risk. Second, insight can be obtained from examining the effects of organizational forms in a dynamic framework. Since this paper only examines data from two years, it is not known if the results characterize banks in a state of transition, where the full benefits of the selected organization forms would not be fully recognized, or banks operating in steady-state.

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