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SOME ASPECTS OF COMMERCIAL BANK STRUCTURE IN BRAZIL SINCE 1955. *

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This paper presents some preliminary observations on the evoluing structure of commercial banking in Brazil in the period 1955-66. The growth of banking facilities and the salient features of banking legislation in relation to branching activity are considered initially. Evidence on concentration ratios is given in the subsequent section. The final part of the paper examines cost and earnings data and the effect of bank size on efficiency and profitability.

I. Regulation and Growth of Banking Facilities

Brazilian commercial banking is organized on the branch bank principle and the formation of branch networks is permitted in all states. The unit banks in existence accordingly are small, specialized firms, which usually are located in the major financial centres, particularly Rio de Janeiro and São Paulo. The system is regulated by the National Monetary Council and the Central Bank, which in 1965 assumed the supervisory powers previously exercised by the Superintendency of Money and Credit (SUMOC: Superintendencia da Moeda e Credito). These agencies formulate banking policy and control, *inter alia*, the entry of new firms, the formation and location of branch offices, bank capital requirements and adherence to recognized principles of sound banking practice. Since the authorities have chartered very few new private entrants into commercial banking, the following discussion concentrates on measures adopted to control branch expansion.

The basic legislation governing branching was formulated in 1944[1.]. Commercial banks were grouped into several categories, defined in terms of minimum capital requirements, which determined the geographical area in which branch offices could be established.

In 1944, for example, only banks in the highest category, with capital above Cr$.50 million, were permitted to open branches throughout the country. Branching by banks in the intermediate categories was restricted to a given region or state while the smallest banks, with capital below Cr$ 5 million, could not have branches outside the counties (municipios) in which their head-offices were located. New entrants to the industry or existing banks wishing to extend the geographical scope of their branching activities had to meet the capital requirements corresponding to the category in question. In addition to these general provisions, the location of branch offices also has determined the capital requirements of individual banks. Thus, higher requirements have been imposed on branches in Rio de Janeiro and São Paulo than in other centres since the 1940's.

These measures provided the basic framework for the physical growth of the banking system, which occurred in the 1950's and early 1960's. In attempting to control the pronounced branching activity of this period, the authorities have pursued several different objectives at various times. These may be summarized briefly as follows:-

(a) the prevention of excessive spatial concentration of banking services in the large urban centres.

(b) the extension of banking facilities to areas neglected or inadequately served by the banking system.

(c) the limitation of the absolute number of banking units.

(d) recently, controls over branching have been used to compel banks to observe certain interest rate ceilings.

The first two objectives dominated the policy of SUMOC towards <u>de novo</u> branching in the 1950's. Concern with the rapid growth and spatial concentration of banking units was expressed forcibly in SUMOC Instructions No.33 (August, 1950) and No.37 (June, 1951). These referred to the "...immoderate programmes of expansion of branch systems..." which had "... generated excess capacity..." in some centres and led to "...ill-advised competition for loans and deposits". In response to this situation, SUMOC stated that its evaluation of the capacity of each location to support additional bank offices would be the principal consideration in granting permission to open new branches. This concept of "absorptive capacity", although redefined in later measures, remained an important criterion of banking policy throughout this decade. In Instruction No. 37 of June, 1951, capacity was equated with the volume of deposits. Localities with less than Cr$ 100 million in total deposits were grouped into six classes, which determined the number of offices to be authorized.(2.) Centres with total deposits above this level were allowed one bank unit for each additional Cr$ 15 million in deposits. SUMOC also emphasized that it would adopt a favourable view towards petitions requesting approval of acquisitions and mergers. This is a recurring theme of policy statements in the 1950's but only passive encouragement was given to such trends. It may be argued that limitations on branching were too liberal to induce an intensive search for opportunities for expansion through acquisition and merger. This situation was transformed in 1965, however, with the imposition of severe quantitative restrictions on de novo branching.

A more vigorous approach to the geographical distribution of bank offices was embodied in SUMOC Instruction No.95 of July, 1954. This measure not only raised minimum capital requirements in all localities but also discriminated more strongly against bank offices in the larger urban centres. The capital requirement for each branch in the urban districts of Rio de Janeiro and São Paulo was set at Cr$ 3 million, whereas only Cr$ 500 thousand was required for offices in localities without other banking facilities. In addition, it was stated firmly that requests to open branches in the latter type of area would receive preference. Capital requirements for bank offices in Rio de Janeiro and São Paulo were raised again in July, 1956, to Cr$ 5 million but those in other categories remained unchanged[(3)]. This adjustment formed part of SUMOC Instruction No. 134 and it was reinforced by the adoption of explicit quantitative restrictions on branching. Authorizations for new branches were limited to ten for each bank in any twelve month period although, subject to existing regulations, banks were free to determine the location of these new offices. SUMOC Instruction No.188 (November, 1959) retained this limit but imposed the condition that no more than five could be established in centres with over two authorized banks. Furthermore, the examination of all requests to open branches in cities with ten or more banks was suspended until June, 1960.

However, the growing stringency of branching regulations was temporarily relaxed by SUMOC Instruction No. 209 (July, 1961) wich raised the quantitative limit on new branches to fifteen. At least ten of this total had to be installed in centres in the interior of the country where banking services did not exist of were inadequate. The previous limit of ten new branches was re-imposed by SUMOC Instruction No. 224 (May,1962) and the geographical distribution of this quota was defined more rigorously. That is, banks were allowed to establish only two new branches in either Rio de Janeiro or São Paulo, two in centres with five or more banks and a further two in towns with up to five authorized units. The remaining four branches had to be located in areas without banking facilities. These regulations continued in effect until December, 1965, when the absolute number of branches rather than their geographical distribution became the primary consideration in banking policy. More recent measures and their effects are examined below.

Some evidence on the physical growth of the banking system is presented in Table I. The main features are the doubling in the number of branches and the continuous fall in the number of independent firms. This decline is not pronounced, however, suggesting that branching rather than acquisitions and mergers offered a satisfactory means of network expansion in the period 1955-65. As observed previously, official preoccupation with the extension of banking facilities to inadequately served areas ensured that rather generous overall quantitative limits on branch formation prevailed in these years. In addition, banks retained considerable freedom to determine the location of new branches, which gave them continued access to the larger urban communities. The introduction of strict regulations on branching has sharply reversed this situation and there has been remarkable rise in the rate of acquisitions since 1965.

Changes in the absolute and percentage distribution of bank offices in the major regions and states are shown in Tables 2 and 3. It is clear that the concentration of banking facilities in the Central-East and Southern regions has not been modified very substantially by policy measures. Their combined share in total banking units has fallen from 91% to 87% between 1955 and 1966. Despite the negligible change in the inter-regional distribution of bank units, the growth in the number of banks in the North and North-Eastern regions is spectacular in absolute terms. The impact of official restrictions on branching in the major financial and industrial centres may partly account for this expansion. On the other hand it may be attributed also to the development of these areas and the rising degree of inter-regional integration. Both these factors would tend to accelerate entry *via* branching of banks located in the Centre-East and South, particularly those seeking to achieve a country-wide branch network. In this respect it is worth noting that the projection of a national "image" has been an important form of product competition among the larger banks.

It is appropriate at this point to consider the factors which induced the sustained rate of *de novo* branching observed in the period 1955-66. It may be regarded primarily as a response to the profits created by accelerating inflation and various institutional constaints described below. Interest payments on demand deposits were permitted throughout these years. Traditionally, Brazilian banking legislation has distinguished between two types of demand deposit for this purpose. That is, those whose value does not e exceed fixed, policy determined ceilings (*depósitos populares* and *depósitos limitados*) and demand deposits of unlimited size (depósitos à vista sem limite). In the early 1950's the latter received a maximum annual interest rate of 3% and the fixed-ceilling deposits earned between 3% and 5% per annum, depending on their size (4.). All interest rate limitations on demand deposits were removed in February, 1954, but were soon reinstituted by Instruction No.105 (October, 1954)in which SUMOC referred to the undesirable practices banks used to attract depositors (5). This measure established annual interest rate maxima of 3% on demand deposits *sem limite* and 5% on the other categories of demand deposits. These maxima remained in force with only minor changes until 1966 (6.). Interest payments on demand deposits of unlimited size were finally abolished in January, 1966 (7.) but fixed ceiling deposits continue to receive a maximum annual rate of 3%. With respect to time deposits, maximum interest rates have depended on the period of notice required to effect withdrawal. In the years 1950-66, interest rates for the various classes of time deposits have varied between 3% and 8% per annum. Since July, 1966 a monetary correction clause has been applied to time deposits with a minimum fixed term of six months.(8.)

Given the rates of inflation experienced in Brazil since 1950, depositors clearly have received negative real interest rates, which effectively conferred a subsidy on the operations of banks. As may be anticipated, time deposits have become an extremely unattractive form of holding wealth and their value in real terms declined substantially in this period (Table 4.). In the absence of adjustments in the nominal rate of return on time deposits to inflation, the public rationally rearranged their asset portfolios and reduced the real amount demanded of this asset. However, despite the negative real yield on demand deposits, transactions balances held in this form have maintained their value in real terms (Table 4.).

It may be observed also that the decline in the demand for real cash balances in relation to income has not been pronounced. The lack of close, inflation-proof substitutes seems to underlie the inelasticity of demand for demand deposits with respect to their negative real rate of return. Certain short-term, non-bank financial instruments dis emerge in the late 1950's but, for the public at large, these failed to offer an attractive alternative to money as a means of holding transactions balances. Of course, the banking system continued to provide security and convenience for such balances together with checking, remittance and other services. Moreover, evidently firms have found it easier to secure working capital financing if they maintained transactions balances with the banks. In sum, inflation and institutional limitations on interest rates payable on bank-deposits combined to benefit the commercial banks in their position as debtors.

The profitability of banking was enhanced by practices which circumvented the legal maximum loan interest rate of 12%, established by the Usury Law of 1933. The devices employed have included verbal agreements, charges and commissions for additional services and the imposition of minimum balance requirements. Unfortunately, no information is available on effective nominal interest rates on bank loans. However, commercial banks were operating in an environment in which implicit interest charges were common and it is unlikely that negative real interest rates were borne for prolonged periods. This view is suggested by the frequent complaints of short-term bank-credit shortages and the concomitant rise of non-bank credit markets. These included the acceptance market, utilizing bills of exchange (letras de câmbio), certified merchandise invoices (duplicatas) and promissory notes and the so-called "parallel" market organized by non-financial private lenders. Unofficial estimates indicate that positive real loan rates of interest prevailed in these markets in recent years. In this respect, therefore, the devices banks used to evade the usury law and protect their creditor position were a response to market demand pressures. The rise in the predominance of short-term assets, primarily discounts, in bank loan portfolios is a further aspect of their adaptation to inflation (Table). That is, the composition of banks' asset holdings shifted in favour of assets whose real yields were more responsive to variations in the rate of inflation.

However, the question of whether or not loan interest rates were positive in real terms is not critical from the standpoint of the profitability of bank operations. The main consideration is that nominal loan rates were flexible with respect to inflation. The rising asymmetry between these rates and the legal deposit rates generated increasing gross earnings in real terms, which led to vigorous competition among banks to expand their deposits, the principal constraint on their activities. Moreover, under these conditions, it was possible to absorb the rising operating costs incurred in the struggle for deposits.[9.] This process was characterised by intensive efforts to achieve product differentiation, given the legal limitations on price competition for deposits. Branch expansion held obvious attractions in this situation since it widened the catchment area for deposits and the associated property investment provided a lucrative hedge against inflation. Apart from such powerful stimuli, it maybe argued also that market inter-dependence, particularly between the larger regionally-and nationally based banks, gave added momentum to the extension of branch systems.[10.] That is, to the extent that the number and location of branch offices significantly determine a firm's share in banking markets, rapid branching by one firm is likely to elicit a similar response from competitors. The above comments on the institutional framework and the conditions which prevailed in the period 1955-66 provide a plausible explanation of the physical expansion of the Brazilian banking system.

Recent Banking Policy

Measures introduced since late 1965 reveal a sharp change in the orientation of banking policy. De novo branching has been more strictly controlled and incentives created which encourage banks to observe ceilings on loan rates of interest. The proximate cause of this new approach is the observed rigidity of nominal interest rates, which has inhibited implementation of the current monetary stabilization programme.[11] The previous rapid rates of branching frequently are cited to explain the high operating costs of commercial banks[12], which are regarded as imparting inflexibility to the structure of interest rates. Central Bank Circular No.18 of December, 1965, initiated the departure from past policy by limiting each bank to two new branches per year, only one of which could be opened in

Rio de Janeiro or Saq Paulo. In addition, minimum capital requirements for branches in all localities were raised substantially and the importance of differential requirements as an instrument to control branch location was firmly re-established. Seven categories, based on the number of authorized banks, were distinguished for this purpose, and banks applying to open new branches first had to satisfy the higher capital requirements imposed on their existing branche . These were set at NCr$ 400,000 for bank offices in Rio and São Paulo as compared with NCr$ 115,000 for branches in other cities with thirty or more banks, which illustrates the effect of location. Central Bank Circular No.67 of December, 1966, raised these requirements to NCr$ 500,000 and NCr$ 150,000, respectively, and retained the quota of two new branches per bank for the following year. Central Bank Resolution No. 43 of December, 1966, discriminated further against small banks by imposing the condition that banks requesting authorization to open new branches must observe a ratio of 1:10 between capital and total deposits rather than the customary ratio of 1:15. These measures have effectively eliminated branching as a feasible means of expansion for small banks located in the main financial centres. Correspondingly, the extension of branch networks via acquisitions has become more attractive to large banks. It may also be noted that easier access to the public capital market confers further advantages on large firms in these circumstances.

Central Bank Resolution No. 72 of November, 1967 added the observance of maximum loan rates of interest as a condition for branching. Effective interest rates may not exceed 2% per month, comprising an interest rate of 1% and additional comissions and charges amounting to a further 1%.

Later measures provided incentives for all banks which indicated their acceptance of this limit on loan rates of interest. First, such banks were permitted to hold a higher proportion of their compulsory reserves in the form of Government securities and approved types of rural loans. Secondly, marginal reserve requirements for these banks were reduced from 55% to 45% and the corresponding deposits received interest at the rate of 4% per year.[13.] Although the incentives arising from differential marginal reserve requirements were abolished recently[14.], the limitation of effective interest rates remains a major policy objective at the present time. Central Bank Resolution No.86 of January, 1968, defined this aim more clearly by indicating that the average effective interest rate on all loan operations must not exceed 2.2% per month.[15.] The ceiling remains at 2% per month on loans of less than sixty days term.

This body of measures undoubtedly offers a major explanation of the spectacular increase in acquisitions and mergers observed between January, 1966, and April, 1968. [16.] Several mergers between major banks and fifty-nine acquisitions occurred in this period, the majority of the latter involving banks with less than NCr$ 5 million in earning assets. Almost five hundred bank offices have been absorbed by means of acquisitions and, as may be anticipated, banks well-represented in large cities, particularly Rio de Janeiro and São Paulo, have proved attractive targets for take-overs. The influence of locational factors is indicated by the fact that thirty-nine of the acquired banks had ten or fewer branches and fourteen were unit banks is either Rio de Janeiro or São Paulo. In the case of several large banks, however, the achievement of wider national coverage seems to have been as important as greater representation in the larger cities.[17.] An examination of the branch systems of merging banks reveals a similar motivation to establish national branch networks.[18.] The large-scale recourse to acquisitions and mergers prompted by restrictions on de novo branching emphasizes the continuing importance of branch outlets as a dimension of product competition in Brazilian banking. In this respect the establishment of country-wide branch systems now being undertaken by banks previously with strong branch representation in only one region may be seen as an effort to maintain market-shares in the face of competition from nationally-based firms.

In conclusion, recent banking policy has initiated a radical reorganization of the commercial banking system, which appears destined to strengthen the position of large banks at the expense of the numerous small banks. It is possible to justify this approach on the general grounds that a reduction in the number of small, monopolistically competitive firms will exercises negligible influence on the market conduct of the larger firms. It is true that the latter, in terms of their share in total earning assets already dominate the system. However, the effect of the elimination of small firms via acquisitions on the structure of competition in local banking markets requires careful consideration. For example, the more rigorous and impersonal loan criteria enforced by large banks may limit the access of small borrowers to the banking system. Finally, it is not that the disappearance of small firms will result in appreciably lower costs of financial intermediation, which appears to be the assumption held by the authorities. First, it must be emphasized that small banks holding less than NCr$.5 millions in earning assets only account for 4% of total earning assets. Moreover, the current operating costs of banks holding between NCr$ 2 and NCr$ 10 million in earning assets are comparable with those of much larger banks, as shown in the final section of this paper. This preliminary evidence of the weakness of economies of scale suggests that additional measures will be required to achieve lower operating costs.

II. Changes in Concentration, 1955-66

This section presents evidence on concentration in commercial banking in terms of earning assets for the years 1955,1959 and 1966. However, although the degree of concentration is an important aspect of banking structure, the limitations of concentration ratios for this purpose must be recognized. One obvious objection is that these ratios aggregate various structural characteristics of banking markets into a single measure or index. Since banks are multi-product firms, it is clear that the results obtained may vary according to the choice of product and the delineation of markets. Moreover, differences in the product mix of banks are not resolved simply by examining concentration within broad product classes as these display considerable heterogeneity. In the case of total loans, for example, further decomposition would be required to take differences in the size and type of loan into account.

A second serious limitation is that concentration ratios commonly refer to the banking structure in a single geographical region, which is assumed to be the relevant market area. However, the region selected is unlikely to conform to banking markets defined by reference to the characteristics of different bank products. (1.) Differences in bank size and product mix indicate that banks are active in various product markets which embrace several geographically distinct areas. For example, the market for large business loans may be national in scope whereas numerous local markets are found for small personal loans. (2.) It follows that an analysis of banking structure in a given geographical area will neglect many possible spatial configurations of banking markets. Once differences between banking and market structure are acknowledged, it is clear that concentration ratios alone may not be taken as an indication of market conduct and performance. Of course, the use of these ratios for this purpose also is questionable on general theoretical grounds (3).

Unfortunately, with the data presently available in Brazil, it has been impossible to overcome these limitations arising from differences in product mix and transaction size. Consequently, the results reported below refer to the country as a whole and certain broad regions and the question of concentration in local banking markets and within individual product classes is neglected here. The concentration ratios presented in Table 6 and 7 reveal that several interesting changes in banking structure occurred in the period 1955-66. It is clear, for example, that there is definite trend towards a greater degree of absolute concentration in earning assets. The increasing share of the fifteen largest banks is particularly marked and by 1966 these banks controlled 55% of total earning assets. Increments in the participation of larger groups of banks have been small by comparison (Table 6). Closer examination indicates that the rising degree of concentration was due primarily to the spectacular increase in the percentage share of the first five banks, which was achieved at the expense of other sub-groups of relatively large banks (Table 7). A similar tendency towards greater absolute concentration also is evident <u>within</u> the group of the ten largest banks (Table 8). This information on concentration ratios also emphasizes the marked disparity in bank size which characterizes Brazilian commercial banking. A further illustration of this is given by the distribution of banks according to size, as measured by earning assets and total deposits, in 1966. (Tables 9 and 10). In that year, 137 small banks held 4.15% and 3.6% of total earning assets and total deposits, respectively.

The evidence above suggest that the Brazilian banking structure is composed of a moderately concentrated oligopolistic core with a large fringe of monopolistically competitive small firms. Various factors indicate that the larger banks recognize the existence of market interdependence. The rapid rate of <u>de novo</u> branching undertaken by such banks before 1966 is one obvious example of this behaviour, as argued previously. With more severe restrictions on branching, acquisitions and mergers have become the principal means of gaining wider regional and national coverage. Banks operating in these markets have made great efforts to differentiate their product in other ways. These have included the intensive use of mass media advertising, the introduction of travellers cheques and personalized cheques, the automation of operations and the installation of inter-branch communications systems, luxuriously appointed offices, the employment of attractive female clerks and the encouragement of childrens, accounts. Recently, several large banks have initiated credit card schemes. The innovating bank in each case has been imitated quickly by competitors, which supports the view of oligopolistic interdependence between the larger banks. Such patterns of behaviour also imply the belief that a firms share of the market is determined by product competition rather than by price competition. It is an open question whether resort to such cost-raising stratogems reflects price collusion or simply the fact that the great majority of borrowers are relatively insensitive to interest rate differences.

Some limited evidence on asset concentration at the regional level in 1966 is presented in Tables 11 and 12 . Banks were classified in a given region if 70% or more of their branches were located there Obviously, this involves the quite arbitrary assumption that the geographical boundaries of banking markets conform to the regions defined. With this important reservation, it is interesting to note that the Southern region has a markedly lower degree of asset concentration than either the Central-East or the North-East regions. The banking structure of th Central-East is distinguished by the dominant position held by one bank. In contrast although the five largest banks in the North-East also hold 70% of bank earning assets, these are more evenly distributed.

Finally, virtually nothing is known concerning the structure of local banking markets in Brazil due to the absence of balance-sheet data for individual branch offices. However, one interesting aspect of banking structure at this level is the prevalence of one-bank communities in many states (Table 13). It may be recalled that regulations on branching in the period 1950-65, whether in the form of quantitative controls or differential minimum capital requirements, favoured the establish ment of branches in small rural communities. It may be argued that another factor which also influenced the choice of such locations was the possibility of exploiting spatial monopoly situations. A comparis of loan/deposit ratios in multi-bank and one-bank towns provides a partial test of whether or not monopoly power is being exercised in the latter. Th is, it is reasonable to assume that local monopolists exploit their position by raising interest rates and restricting loans. The evidence given in Table No provides a preliminary indication that this is the case. In each state examined, average loan/deposit ratios in one-bank towns are lower than in communities with more than one local source of bank services. However, while these differences are suggestive, analysis of other performance characteristics is needed to reach a definitive conclusion on the question of local monopoly power and its exploitation.

III. Costs and Earnings in Relation to Size of Bank.

Similar conceptual difficulties are encountered in studies of the effect of bank size on costs and earnings.(1.) It is clear, for example, that selection of a single measure of output will obscure compositional differences between banks. That is, total output levels are compared despite variations in product mix. Moreover, even if each bank product or service is analyzed separately, the problem of allocating joint costs and revenues remains. These considerations suggest that a wighted index of output is appropriate. This approach also is indicated by the fact that the assumption of fixed proportions is unlikely to hold in the case of banks, given their facility to vary the composition of output. In practice, however, various factors have dictated the use of unweighted indexes of output in recent analyses of bank costs (2.). As this approach is followed here the results are open to the same criticism that differences in product mix are neglected. In the present case, this omission primarily relects the fact that the data only are available in a highly aggregative form. Although evidence on individual balance-sheet entries and current cost and revenue items does exist its usefulness for inter-bank comparisons is doubtful. No uniform pattern of presentation has been adopted (3.) and considerable discretion must be exercised to standardize these accounts. For example, even for single bank, the presentation and detail on individual items frequently vary from one semi-annual statement to the next. No information is available on such important product characteristics as the size of transactions or the term and sectoral allocation of loans for individual banks. Nevertheless, despite these difficulties, the failure to take product mix variations into account is acknowledged as a weakness of the present study.

A further point is that the choice between alternative concepts of bank output will depend on the objectives in view. For example, the literature on bank costs in the United States has concentrated on the comparative efficiency of individual branch banks and unit banks. This branch-unit controversy is directed towards an assessment of the social welfare implications of different banking structures. This focus accordingly has led to the adoption of output concepts, incorporating social valuations of various bank services, which are particularly appropriate to this rather specialized question. The more modest aim here is to consider the influence of bank size on operating costs and earnings. Since efficiency is defined in this restricted sense, a concept of bank output which weights bank services according to their social valuations is not required. [4.] In short, whether social welfare is better served by a system composed of large or small units is not the point at issue. Finally, it should be noted that the results given below are drawn from consolidated data for branch bank systems due to the absence of returns for individual branch units. Consequently, operating costs and earnings are measured in relation to the size of firm and not plant size.

All commercial banks[5.] which reported balance sheet information for 1966 initially were classified in terms of size, as measured by earning assets, for 1955, 1959 and 1966 [6.]. Differences in the number of banks used in these three years are due primarily to the elimination of banks which either failed to publish or gave incomplete returns in one of the periods analyzed. The simple average of earning assets reported at the end of June and December is taken to represent the average monthly level during the year. This output measure was related to annual current expenses and total receipts to derive operating costs and net current earnings, the latter being taken before tax. Operating cost and earnings ratios for 1955, 1959 and 1966 are shown in Tables and . As unit cost variations between different size groups are rather similar in 1955 and 1959, these two years may be considered jointly.

Several tentative conclusions may be drawn from the evidence of Table .

(a) Increases in bank size per se clearly confer no further advantage in terms of lower average operating costs once banks hold NC$ 200 thousand in earning assets. In both years, the relatively small banks within the size range of NC$ 25-200 thousand have appreciably lower unit costs than larger banks. These inter-group cost differences are more pronounced in 1959, however.

(b) If these two years are representative of the late 1950's, it is apparent that smaller banks were in a strong competitive position vis-à-vis the larger regional and nationally - based banks. At least in terms of operating costs, conditions favoured the survival of small banking units and the maintenance of the wide size dispersion which continues to characterize the Brazilian banking structure.

(c) The evidence on net current earnings ratios strengthens this conclusion. In fact, above the NC$ 200 - 500 thousand category, these ratios are inversely related to increases in bank size. Moreover, net operating earnings ratios of banks below this category compare very favourably with the performance of banks in the higher size ranges.

(d) In 1955, the above result reflects the lower costs of small banks as gross earnings ratios are approximately the same for all size classes. In contrast, in 1959, gross operating earnings ratios increase with bank size until the highest size group is reached. However, this trend is not shown in net current earnings ratios as it is offset by the relatively more rapid rise in operating costs.

The remarkable upward shift in operating costs in all size groups which occurred between 1959 and 1966 is clearly revealed in Table 16. The serious implications of the rigidity of interest rates associated with this high cost structure do not require great emphasis. Unless these costs can be reduced rapidly, the present price stabilization programme will impose successively higher real rates of interest and jeopardize current efforts to promote sustained economic recovery and growth. The evidence for 1966 also suggests that the relationship between unit costs and bank siz has changed markedly since the late 1950's. There is now an obvious tendency for operating cost ratios to fall over a considerable range of output, that is, until banks hold NC$ 50 million in earning assets. This result may be interpreted tentatively as an indication of economies of scale although these are not very pronounced beyond the first three size categories. This pattern is confirmed by an examination of wage and salary costs in relation to earning assets for 1966 (7.). (Table 17). It may be observed also that evidence of scale economies is much weaker when bank size is measured in terms of total deposits. (Table 18). A satisfactory resolution of the conceptual and empirical difficulties posed by inter-bank product mix variations is needed to reach a firmer conclusion on this point.

The net current earnings ratios present a rather mixed pattern in 1966 and bank size appears to exercise a limited influence on performance in this respect.

The effect on profitability of variations in capital/earning asset ratios by size of bank also may be considered. Table 19 reveals that capitalization ratios decline sharply with increases in bank size. It is apparent that the greater leverage of larger banks, particularly those with over NCr$ 150 million in earning assets, improves their profitability in relation to the smallest banks. With this modification, however, no strong association between rates of return on capital and bank size is discernible. Thus, banks in the NCr$ 4-25 million size groups, with relatively high capitalization ratios, achieved rates of return on capital similar to those of much larger banks. The advantage of the highly leveraged position of the latter was offset by their poorer cost and gross earnings performance.

Finally, the effect on unit cost ratios of differences in the number of branches owned by by banks was examined using the 1966 data. The findings obtained may be summarized as follows:-

(a) Cost ratios vary widely for banks with the same number of branches and in the same size group.

(b) Within given size classes, there is no indication that banks with fewer branches systematically have lower operating cost ratios.

The conclusions of this review of cross-section data on bank operating ratios are the following:-

(a) There is no indication of a strong, direct relationship between size of bank and the operating ratios examined above. In fact, in 1955 and 1959, cost and net current earnings ratios are inversely related to size over a wide range of bank output.

(b) This situation is reversed in 1966 as cost ratios show some tendency to fall with increases in bank size. Nevertheless, this decline does not extend over the full range of firm sizes, suggesting that diseconomies of scale are encountered by larger banks. In this respect, it may noted that minimum operating cost ratios are reached at relatively low levels of output in terms of earning assets in each of the three years.

(c) Rising net current earnings ratios are not associated with increases in bank size. However, there is no uniform pattern of operating costs and gross earnings underlying this result.

(d) Differences in capital/earning asset ratios, which are closely related to size, do not modify these findings substantially. In all the dimensions considered, including the rate of return on capital, the performance of small-to medium-sized banks is comparable to that of larger banks.

(e) This evidence of the weakness of size-cost and size profit relationships is consistent with the extreme diversity of firm size found in Brazilian commercial banking.

Main Conclusions

1. The rapid expansion in the number of bank offices in the 1950's and early 1960's may be attributed to two major factors. First, the weakness of official restrictions on branching arising from policies intended to achieve wider geographical dispersion of the banking system. Secondly, the increasing gap between fixed deposit interest rates and loan rates which provided the incentive and resources for rapid branching. Oligopolistic interdependence between large banks gave added momentum to this process.

2. The industry is moderately concentrated with the ten largest banks controlling roughly 50% of total earning assets. The degree of concentration has risen significantly in the period 1955-66. If present restrictions on branching and the more rigorous capital requirements are retained, the rising trend of acquisitions and mergers is likely to continue and will accentuate this situation.

3. In terms of operating costs, the optimum size of firm is small in relation to the range of firm size which exists at present. Operating cost ratios are lowest for banks holding NC$ 25 - 50 million in earning assets. Banks in this size class, on average, have fifty branches, which is a small network by Brazilian standards. However, the question of scale economies must be studied in much greater detail before any hypothesis on this subject can be accepted as the basis of public policy.

Suggestions for Further Research

Subject to the availability of data, the following topics merit attention.

1. The structure of competition in local banking markets in both rural and urban areas, distinguishing as far as possible between the different types of bank products. The influence of bank size and locational factors on such performance characteristics as effective interest rates, loan criteria, range of services provided, etc. could be examined under this heading.

2. An analysis of operating ratio data for branch offices in order to determine the effects of size on performance at this level of aggregation. Such information is required, for example, to consider the argument that branch expansion has been "excessive" and has generated the inefficiency or waste associated with monopolistic competition.

A questionaire now in preparation may provide the data necessary to examine these points.

3. Further study of these questions would furnish a more adequate basis for the formulation of policy in regard to _de novo_ branching and the desirability of acquisitions and mergers.

FOOTNOTES

I. Regulation and Growth of Banking Facilities

1. See Decree Law Nº 6419 (April, 1944) and the modifications introduced in Decree Law Nº 6541 (May, 1944).

2. See SUMOC Instruction Nº 37 (June, 1951), Article 17.

3. SUMOC Instruction Nº 134 (July 1956)

4. The details may be found in the following SUMOC Instructions: Nº 34 (August, 1950); Nº 56(May, 1953) and Nº 105 (October, 1954).

5. These included lotteries, prizes and bonuses

6. SUMOC Instruction Nº 191 of December, 1959, raised the maximum rate on fixed ceiling deposits to 6% per annum but only private individuals and certain non-profit organizations were permitted to hold such deposits.

7. See Central Bank Resolution Nº 15.

8. See Central Bank Resolution Nº 31

9. The high cost structure which emerged in this period is shown in the final section below. See Tables.

10. The question of interdependence is discussed in the next section.

11. Central Bank Circular Nº 14 of October, 1965, indicates an early awareness of this problem.

12. See, for example, M.H. Simonsen : "The Problem of Interest Rates in Brazil", Bank of London and South America Review, December, 1967, page 652.

13. Central Bank Resolution Nº 79 of December, 1967.

14. Central Bank Resolution Nº 89 of March, 1968.

15. Effective interest rates are described rather euphemistically as the "cost of money "

16. The number of acquisitions (incorporações) approved in the past three years is as follows : 1965 - two; 1966 - twelve; 1967: forty-five.

17. For example, the Banco da Bahia significantly strengthened its branch network in the Southern region as a result of acquisitions.

18. The mergers between Banco Moreira Salles and Banco Agrícola Mercantil and Banco Andrade Arnaud and Banco Ultramarino Brasileiro fall into this category.

II. Changes in Concentration, 1955-66

1. These issues are discussed at some length in D.A.Alhadeff : "Monopolistic Competition and Banking Markets" in R.E. Kuenne(editor) "Monopolistic Competition Theory" (John Wiley & Sons, Inc., New York, 1967) pages 357-378.

2. Size of borrower commonly is assumed to be an important factor in definining banking markets although there is little empirical information on this question. Ibid, page 367.

3. See J.S.Bain: "Industrial Organization" (John Wiley & Sons, Inc. New York, 1959) pages 295-298.

III. Costs and Earnings in Relation to Size of Bank

1. See, for example, S.J. Greenbaum: Competition and Efficiency in the Banking System - Empirical Research and its Policy Implications, The Journal of Political Economy, Supplement, August, 1967, pp 461-77. See also P.M. Horvitz: "Economies of Scale in Banking", Research Study One in "Private Financial Institutions" (Published for the Commission on Money and Credit by Prentice-Hall, Inc, N.J., 1963)

2. P.M. Horvitz, op.cit. Also D.A.Alhadeff: "Monopoly and Competition in Commercial Banking", (University of California Press, 1954); Lyle L.Gramley: "A Study of Scale Economies in Banking" (Federal Reserve Bank of Kansas City, Kansas City, 1962); I. Schweiger and J.S. McGee: "Chicago Banking", Journal of Business, July 1961, pp 203-366.

3. Since 1968 the Central Bank has obliged commercial banks to follow a uniform pattern in presenting asset and liability statements.

4. For discussion of this point see Lyle G.Gramley, op cit; also S. J. Greenbaum, op cit.

5. The Bank of Brazil, official development banks and other federal credit institutions are excluded.

6. Information was taken from June and December balance-sheet, income and expenditure statements published in the Revista Bancária Brasileira.

7. The possibilities of greater labour specialization associated with larger size are frequently cited as a probable source of scale economies in commercial banking.

8. Similar results are obtained using total assets or total deposits to measure bank size.

TABLE 1

CHANGES IN THE NUMBER OF BANK OFFICES IN BRASIL, 1955-66

YEAR	TOTAL	HEAD OFFICES	BRANCH OFFICES
1955	3 558	366	3 192
1956	4 257	360	3 897
1957	4 628	357	4 271
1958	4 857	345	4 512
1959	5 135	343	4 792
1960	5 348	338	5 010
1961	5 581	332	5 249
1962	6 109	332	5 777
1963	6 481	326	6 155
1964	6 878	328	6 550
1965	7 271	320	6 951
1966	7 568	297	7 271

SOURCE: IBGE and Serviço de Estatística Econômica e Financeira.

Table 2: Regional Distribution of Bank Offices in Selected Years

Region	1955			1959			1966		
	Total	H.O.	B.O.	Total	H.O.	B.O.	Total	H.O.	B.O.
North	61	10	51	91	10	81	191	12	179
North-East	266	56	210	420	54	366	764	51	713
Centre-East	1180	175	1005	1727	156	1571	2411	113	2298
South	2051	125	2909	2909	123	2786	4202	121	4091

Notes: H.O. : Head Offices; B.O. : Branch Offices.

Source: IBGE and SEEF.

Table 3: Distribution of Bank Offices by Regions and Selected States. (Percentages)

Área	1955			1959			1966		
	Total	H.O.	B.O.	Total	H.O.	B.O.	Total	H.O.	B.O.
North	1.71	2.73	1.60	1.77	2.91	1.69	2.52	4.04	2.46
North-East	7.48	15.30	6.58	8.16	15.74	7.62	10.09	17.17	9.81
Centre-East	33.16	47.81	31.48	33.55	45.48	32.70	31.86	38.05	31.60
South	57.64	34.15	60.34	56.52	35.86	57.99	55.52	40.74	56.13
(a) Minas Gerais	16.30	9.29	17.10	16.28	8.73	16.82	11.96	8.08	12.12
(b) Guanabara	9.67	33.33	6.95	9.44	31.19	7.89	9.63	23.23	9.08
(c) São Paulo	37.63	28.41	38.69	35.47	29.15	35.93	34.92	31.31	35.07
Total: a + b + c	63.60	71.03	62.74	61.19	69.07	60.64	56.51	62.62	56.27

Notes and Sources: See Table 2

Table 4: Holdings of Cash Balances, Demand Deposits and Time Deposits in Real Terms, 1952-65

Year	Cash Balances(1)	Demand Deposits (2)		Time Deposits (2)	
		Total	Private Sector	Total	Private Sector
1952	.266	43.2	40.5	12.1	10.9
1953	.285	43.1	42.3	10.7	9.8
1954	.253	42.6	40.7	10.2	9.4
1955	.244	44.0	41.8	8.5	7.7
1956	.242	43.4	40.0	7.2	6.4
1957	.222	53.9	49.7	7.4	6.6
1958	.238	57.0	52.8	6.8	6.0
1959	.197	66.2	60.7	6.3	5.0
1960	.213	71.9	66.8	7.8	4.7
1961	.200	74.3	69.5	6.7	3.9
1962	.206	84.6	78.4	4.6	3.6
1963	.209	80.9	75.4	4.2	3.4
1964	.246	76.4	69.0	3.7	3.1
1965	.227	91.9	85.4	3.8	3.3

Notes: (1) June cash balances and calendar year income were converted into real terms using the GDP deflator. (2) In billions of cruzeiros at 1949 prices.

Sources: Banco Central and F.G.V.

Table 5: Percentage Composition of Commercial Bank Loans to the Private Sector, 1952-65 (1)

Year	Current Account Loans	Discounts	Mortagage Loans
1952	32.5	64.5	3.0
1953	31.9	64.5	3.6
1954	31.7	65.0	3.3
1955	28.2	68.6	3.2
1956	25.4	72.1	2.5
1957	21.9	76.0	2.1
1958	21.1	77.1	1.8
1959	17.8	80.7	1.5
1960	14.8	84.0	1.2
1961	14.1	84.8	1.1
1962	12.0	87.2	0.8
1963	9.6	89.8	0.6
1964	8.6	90.8	0.6
1965	8.5	90.8	0.7

Notes : (1) Private Sector loans by the Bank of Brazil included.

Source: *Relatórios* of the Central Bank.

TABLE 6

ACCUMULATIVE DISTRIBUTION OF TOTAL EARNING ASSETS(1) (%)

NUMBER OF BANKS	1955	1959	1966
5	21.24	26.61	33.84
10	37.64	41.52	47.23
15	48.76	51.77	55.52
20	57.68	59.27	61.98
25	64.68	65.92	67.47
30	70.26	71.96	74.37
35	75.29	77.07	77.30
40	79.81	81.28	81.37
45	83.63	84.59	84.90
50	86.74	87.54	87.24
75	94.75	94.26	93.02
100	97.58	97.01	95.85

SOURCE: June and December balance - sheet data published in the Revista Bancária Brasileira.

(1) - The Bank of Brazil, the Bank of the North-East and federal credit institutions such as the National Housing Bank and the National Economic Development Bank have been excluded.

TABLE 7

PERCENTAGE SHARES OF INDIVIDUAL SIZE CLASSES IN TOTAL EARNING ASSETS

BANKS BY SIZE IN TERMS OF TOTAL EARNING ASSETS	1955	1959	1966
1 - 5	21.24	26.61	33.84
6 - 10	16.40	14.91	13.39
11 - 15	11.12	10.25	8.29
16 - 20	8.92	7.50	6.46
21 - 25	7.00	6.65	5.49
26 - 30	5.58	6.04	6.90
31 - 35	5.03	5.11	2.93
36 - 40	4.52	4.21	4.07
41 - 45	3.82	3.31	3.53
46 - 50	3.11	2.95	2.34
51 - 75	8.01	6.72	5.78
76 - 100	2.83	2.75	2.83

SOURCE: See Table 6 and note 1.

TABLE 8

INDIVIDUAL SHARE OF THE TEN LARGEST BANKS

IN TOTAL EARNING ASSETS (%)

1955	1959	1966
6.35	9.29	16.02
3.86	5.28	7.30
3.77	3.96	3.59
3.75	3.87	3.48
3.51	3.60	3.45
3.50	3.22	3.40
3.27	3.06	3.08
3.27	3.01	2.56
3.26	2.99	2.24
3.10	2.62	2.11

SOURCE: See Table 6 and note 1.

TABLE 9

DISTRIBUTION OF BANKS BY SIZE OF EARNING ASSETS IN 1966

EARNING ASSETS (NCr$ MILLIONS)	NUMBER OF BANKS IN CLASS	SHARE IN TOTAL EARNING ASSETS (%)
Less than 1.	56	0.49
1- 2	26	0.70
2- 4	37	1.92
4- 5	18	1.34
5- 10	27	3.30
10- 25	26	7.57
25- 50	12	8.36
50- 75	19	20.00
75-150	9	16.50
150 or more	7	39.82

SOURCE: See Table 6 and note 1.

TABLE 10

DISTRIBUTION OF BANKS BY SIZE OF TOTAL DEPOSITS IN 1966 (1)

TOTAL DEPOSITS (NCr$ MILLIONS)	NUMBER OF BANKS IN CLASS	SHARE IN TOTAL DEPOSITS (%)
Less than 5	139	3.6
5 - 20	78	11.2
20 - 100	46	43.9
100 - 200	8	16.3
200 or more	7	25.0

SOURCE: See Table 6 and Note 1.

(1) : Total deposits at end of year.

TABLE 11

ACCUMULATIVE DISTRIBUTION OF TOTAL EARNING ASSETS BY MAJOR REGIONS, 1966 (%)

NUMBER OF BANKS	SOUTH	CENTRAL-EAST	NORTH-EAST
Largest 5	39.28	71.19	71.14
" 10	55.40	85.50	-
" 20	77.10	93.38	-
" 30	89.94	-	-

SOURCE : See Table 6 and Note 1.

TABLE 12

INDIVIDUAL SHARE OF THE FIVE LARGEST BANKS IN TOTAL EARNING ASSETS BY MAJOR REGIONS, 1966

SOUTH	CENTRAL-EAST	NORTH EAST
16.11	44.54	26.03
7.93	9.61	15.58
5.65	8.56	11.87
4.94	4.55	11.55
4.65	3.93	6.11

SOURCE: See Table 6 and Note 1.

TABLE 13

PROPORTION OF ONE - AND TWO-BANK COMMUNITIES IN SEVERAL STATES, 1966

STATE	NUMBER OF COMMUNITIES WITH BANK OFFICES	ONE-BANK COMMUNITIES (%)	TWO-BANK COMMUNITIES (%)
Minas Gerais	309	39.2	21.7
São Paulo (1)	426	34.0	16.2
Santa Catarina	73	41.1	21.9
Rio Grande do Sul	181	27.6	17.7
Bahia	119	43.7	18.5
Paraná	193	32.1	23.3
Pernambuco	31	45.2	32.3
Rio de Janeiro	103	46.6	19.4

SOURCE: Banco Central, Gerência de Fiscalização Financeira: "Catálogo da Rêde Bancaria Nacional" (Rio de Janeiro, 1966).

(1) : Excluding the sub-urban areas (bairros) of the city of São Paulo.

TABLE 14

AVERAGE LOAN/TOTAL DEPOSIT RATIOS IN COMMUNITIES WITH DIFFERING NUMBERS OF BANK OFFICES, 1964

	MINAS GERAIS	PARANÁ	SÃO PAULO	BAHIA	RIO GRANDE DO SUL
One-Bank Communities	0.87	0.69	0.64	0.94	0.56
Two " "	1.25	0.83	0.72	1.36	0.79
Three " "	1.53	0.89	0.67	2.64	2.67
Four " "	1.86	1.17	1.76	2.18	3.28
Five " "	1.67	1.88	1.49	-	3.13
Six " "	1.26	2.13	1.69	-	2.23
Seven " "	1.35	1.46	1.94	-	2.28

SOURCE: IBGE, SEEF: "Movimento Bancário do Brasil, 1964" (Rio de Janeiro, 1965).

TABLE 15

EARNINGS AND COST RATIOS IN 1955 AND 1959

(RATIO TO TOTAL EARNING ASSETS, %)

BANK SIZE (NCr$ THOUSANDS)	1955				1959			
	Banks in Class	Operating Costs	Gross Earnings	Net Current Earnings	Banks in Class	Operating Costs	Gross Earnings	Net Current Earnings
Less than 25	17	10.26	12.64	2.38	10	12.79	16.09	3.30
25 - 50	23	9.48	13.65	4.17	17	10.31	13.33	3.02
50 - 75	19	9.65	12.06	2.41	11	10.25	13.05	2.80
75 - 100	9	9.73	12.51	2.78	14	10.01	13.55	3.54
100 - 200	25	9.33	13.14	3.81	30	10.99	14.72	3.83
200 - 500	16	10.67	14.61	3.94	25	11.66	15.68	4.02
500 - 1 000	20	10.50	13.11	2.61	16	11.70	14.18	2.48
1 000 - 2 000	18	11.42	13.66	2.24	11	12.83	16.71	3.88
2 000 - 5 000	14	10.58	12.77	2.19	24	14.78	17.31	2.53
More than 5 000	-	-	-	-	12	12.46	15.24	2.78

SOURCE: Revista Bancária Brasileira.

TABLE 16

EARNINGS AND COST RATIOS IN 1966

(Ratio to Total Earning Assets, %)

BANK SIZE (NCr$ MILLIONS)	BANKS IN CLASS	OPERATING COSTS	GROSS EARNINGS	NET CURRENT EARNINGS
Less than 1	56	28.16	32.33	4.17
1 - 2	26	25.36	30.58	5.22
2 - 4	37	23.25	28.60	5.35
4 - 5	18	21.96	27.71	5.75
5 - 10	27	20.94	29.73	8.79
10 - 25	26	20.78	24.93	4.15
25 - 50	12	20.20	25.15	4.95
50 - 75	19	23.50	29.33	5.83
75 - 150	9	23.10	26.96	3.86
More than 150	7	21.63	26.02	4.39

SOURCE: Revista Bancária Brasileira

TABLE 17

RATIO OF WAGE AND SALARY EXPENSES TO TOTAL EARNING ASSETS IN 1966 (%)

BANK SIZE (1) (NCr$ MILLIONS)	BANKS IN CLASS	WAGE AND SALARY EXPENSES
Less than 2	13	6.32
2 - 4	11	5.82
4 - 10	12	4.68
10 - 50	14	4.51
50 - 75	10	5.93
More than 75	9	4.94

SOURCE: Revista Bancária Brasileira

(1) - Several classes have been combined due to the small number of observations in some cases.

TABLE 18

RATIO OF OPERATING COSTS TO TOTAL EARNING ASSETS WITH BANK SIZE MEASURED BY TOTAL DEPOSITS

BANK SIZE (NCr$ MILLIONS)	BANKS IN CLASS	OPERATING COSTS/TOTAL EARNING ASSETS
Less than 1	37	25.75
1 - 3	45	24.53
3 - 5	23	20.85
5 - 10	40	25.75
10 - 20	25	21.02
20 - 50	14	19.16
50 - 100	28	23.21
More than 100	15	21.81

SOURCE: Revista Bancária Brasileira

TABLE 19

AVERAGE RATIOS OF CAPITAL TO TOTAL EARNING ASSETS

AND OF NET CURRENT EARNINGS TO CAPITAL (%)

BANK SIZE (1) (NCr$ MILLIONS)	CAPITAL/TOTAL EARNING ASSETS	NET CURRENT EARNINGS/CAPITAL
Less than 1	44.02	19.82
1 - 2	39.04	21.78
2 - 4	27.28	23.36
4 - 5	26.15	26.21
5 - 10	22.43	32.92
10 - 25	22.62	30.77
25 - 50	17.63	23.06
50 - 75	24.01	23.24
75 - 150	18.95	22.41
More than 150	13.84	32.36

SOURCE: Revista Bancária Brasileira

(1) - Size measured in terms of total earning assets