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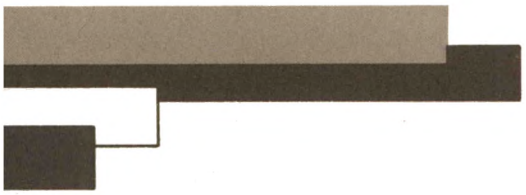

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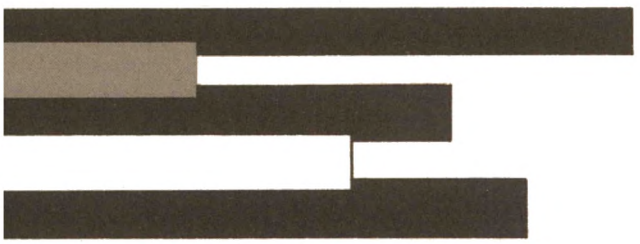

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Perspectives On: Banking Concentration

This issue of Economic Perspectives *presents what is planned to be the first in a series of collections of related articles that will be presented under the general heading: "Perspectives On." The current edition contains a collection of articles entitled: "Perspectives On: Banking Concentration."*

The "Perspectives On" series is intended to provide our readership with a more in-depth discussion and analysis of a selected topic. The more detailed analysis is intended to give readers the opportunity to gain added understanding of a particular subject. It is our hope that this format will be of interest and use to our readership.

In this issue the focus of "Perspectives On" is the problem of concentration of economic resources, with special emphasis on concentration in banking markets. Because of the importance of banks as suppliers of credit, their key role in administering the national payments mechanism, and the fact that entry into banking is limited by law and regulation, concentration in banking has often been viewed with even greater concern than concentration in other industries. The purpose of the articles is to give readers a clear statement of why concentration is a matter of concern, an indication of the problems of measuring and interpreting concentration, and a detailed and up-to-date picture of recent developments in the structure of banking markets in Seventh District states.

The first article discusses certain conceptual problems related to the theory and measurement of concentration. The second describes developments over the past decade and a half with respect to concentration and the number of competing banking organizations in local areas within the Seventh District states. The third and final article analyzes in more detailed fashion the nature and causes of structural changes in a number of urban banking centers in Wisconsin.

The significance and measurement of concentration

David R. Allardice and Eleanor Erdevig

The concentration of financial and economic resources in a few hands has been a major concern throughout American economic history. Business consolidations after the Civil War led to public concern over the growth of "trusts" and "monopolies," culminating in the passage of the Sherman Anti-Trust Act of 1890. More recently, concern with corporate control of financial resources led to the passage of the Bank Holding Company Act of 1956 and the Bank Merger Act of 1960.

Two objections have been raised to the concentration of financial and economic power.[1] First, resource concentration is incon-

[1]Joe S. Bain, *Industrial Organization* (John Wiley and Sons, 1959), pp. 98-101.

sistent with our democratic principles of a wide dispersion of economic power among a broad spectrum of the population. Such a concentration of economic power, if translated into political power, would be inimical to the best interests of a democratic society. Second, concentration of economic resources within a particular market implies a reduction in the degree of competitive interaction between firms. Reduced competition gives firms the power to restrain output and raise prices. This leads to a less than optimal allocation of resources and distorts the distribution of income in what is generally considered to be a socially undesirable manner.

Economic theory suggests that, other things being equal, firms having significant market positions in highly concentrated markets will tend to restrain output, charge higher prices, earn higher rates of return, and use their entrenched positions to retard the competitive efforts of other firms. In general, significant resource concentration and large firm size are believed to confer market power on firms, which protects them from all but the most extraordinary competitive advances.

Measures of resource concentration

Market concentration measures generally indicate the number and relative size distribution of buyers and sellers in a market. Markets that consist of numerous firms that control approximately equal market shares are less concentrated than markets which have few sellers controlling a disproportionately large share of total industry or market output.

No single measure adequately describes market concentration. Concentration is frequently measured by the *n*-firm concentration ratio—the combined market share held by the largest, two largest, three largest, four largest, or ten largest firms in the industry or market, with the choice depending partly on the number of firms in the market and partly on the comparisons to be made. One of the drawbacks to these concentration ratios is that they do not adequately account for the total number of firms in the market or the distribution of output among them.[2]

Similar to the *n*-firm concentration ratio is the number of firms required to account for *y* percent (frequently 80 percent) of a market. Its advantage relative to the *n*-firm concentration ratio is that it allows one to distinguish between concentration in markets with *n* or more firms and those with fewer than *n* firms.

One summary measure of concentration that takes into account the total number of firms in a market *and* their market shares is the Herfindahl index. This index is constructed by simply summing the squares of the market shares of all firms in the market. That is:

$$\text{Herfindahl index} = \sum_{i=1}^{N} \left(\frac{x_i}{s}\right)^2$$

where: N = the number of firms;

x_i = the absolute size of each of the firms; and

s = the total size of the market.

For example, suppose that the total dollar amount of deposits held by all commercial banks in a given banking market is $100 million and that three banks compete in the market and hold deposits of $50 million, $30 million, and $20 million, respectively. The Herfindahl index for this market would be 0.38, or the sum of $(.5)^2$ plus $(.3)^2$ plus $(.2)^2$.

Like the *n*-firm concentration ratio, the Herfindahl index varies between zero and 1. When a large number of firms of equal size exist in a market, the index approaches zero; in a monopoly market where only one firm competes, the index would be 1. When there are several firms in a market all of which are of

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[2]As one author notes, "Although the limitations of the simple concentration ratio are well known, it is one of the few general measures of structure available to the economist. . . . For all its many shortcomings, the homely concentration ratio is a direct and fairly clear indicator of industry structure." George G. Kaufman, "Bank Market Structure and Performance: The Evidence from Iowa," *Southern Economic Journal*, vol. 32 (April 1966), pp. 429-39.

equal size, the index will be equal to the ratio (1/N), where N is the number of firms in the market. One of the limitations to using the Herfindahl index in the industrial sector is the frequent lack of information on market shares of individual firms. However, the greater availability of banking data makes the Herfindahl index a useful tool in examining concentration in banking markets.

Changes in the static measures of concentration are frequently used to indicate trends in concentration. Thus, changes in the number of firms in a market or changes in the *n*-firm concentration ratio during a given period may be used. Another common measure is the change in the Herfindahl index, sometimes called the dynamic Herfindahl index, which is simply the difference between the final Herfindahl index and the initial Herfindahl index for a market.

District trends in banking concentration

Eleanor Erdevig

It is widely assumed that banking markets have become progressively more concentrated over time. Statements to that effect appear frequently in the financial press and in testimony regarding prospective changes in banking laws. For states in the Seventh District, however, the evidence does not appear to support such an assertion. In part, this reflects the fact that the federal bank regulatory agencies, acting under the Bank Holding Company Act of 1956 and the Bank Merger Act of 1960, have refused to approve acquisitions that would result in substantial increases in concentration. Since the revisions of these acts in 1966, the competitive standards have essentially been those of sections 1 and 2 of the Sherman Antitrust Act and section 7 of the Clayton Antitrust Act. This article reviews the changes in banking concentration in Standard Metropolitan Statistical Areas (SMSAs) and non-SMSA counties in Seventh District states during the period 1965-79.

Banking concentration in SMSAs

Measures of concentration for banking indicate that most of the SMSAs in Seventh District states became more competitively structured from the end of 1965 to the end of 1979. That is to say, to the extent that an SMSA serves as a legitimate proxy for a local metropolitan or urban banking market, such markets in the Seventh District appear to have become more competitive since 1965. Thus, as shown in table 1, the number of banking organizations increased in 24 SMSAs, remained constant in 12, and decreased in 18. Furthermore, of the 30 SMSAs experiencing no change or a decrease in the number of banking organizations, 23 SMSAs showed a decline in the three-firm concentration ratio and 22 SMSAs showed a decrease in the Herfindahl index. Thus, even where the number of banking organizations did not increase, market shares of the firms became more equal and dominance by larger firms declined.

Over the 14-year period, a review of the measures of concentration at five-year intervals indicates that improvements in competitive structure were generally greater between 1970 and 1975 than in the earlier or later periods. Thus, 25 of the 54 SMSAs experienced increases in the number of banking organizations during this middle period compared with 17 in the prior five years and 15 in the subsequent four-year period. Similarly, both the three-firm concentration ratio and the Herfindahl index declined in more SMSAs in the middle period than in the other two periods.

Not only were procompetitive changes in market structure widespread among the SMSAs during this period, but the magnitudes of the changes in the measures of concentration were significant. For the average SMSA the three-firm concentration ratio declined .044 (or 6.7 percent) and the Herfindahl index was down .033 (or 14.1 percent) as shown in table 2.

Trends in non-SMSA counties

Fewer changes towards a more competitive structure occurred in non-SMSA counties in Seventh District states than in SMSAs between 1965 and 1979. As indicated in table 3, only 21 percent of the 334 non-SMSA counties showed an increase in the number of banking organizations compared with 44 percent of the SMSAs. There were no changes in

Table 1

Number of SMSAs in District states, by changes in concentration and number of banking organizations, 1965-79[a]

		Three-firm concentration ratio		Herfindahl index	
	Total	Increase	Decrease	Increase	Decrease
Area					
Change in number of banking organizations					
Seventh District states					
Increase	24	2	22	0	24
No change	12	1	10[b]	3	9
Decrease	18	5	13	5	13
Illinois					
Increase	9	—	9	—	9
No change	—	—	—	—	—
Decrease	—	—	—	—	—
Indiana					
Increase	4	1	3	—	4
No change	4	1	3	1	3
Decrease	6	2	4	2	4
Iowa					
Increase	3	—	3	—	3
No change	4	—	4	1	3
Decrease	1	—	1	—	1
Michigan					
Increase	2	—	2	—	2
No change	3	—	2[b]	1	2
Decrease	7	1	6	—	7
Wisconsin					
Increase	6	1	5	—	6
No change	1	—	1	—	1
Decrease	4	2	2	3	1
TOTAL SMSAs	**54**	**8**	**45[b]**	**8**	**46**

[a]Davenport-Rock Island-Moline SMSA is included in Iowa results; only the portion of the SMSA in a Seventh District state is included; SMSAs defined as of December 31, 1979.

[b]The three-firm concentration ratio for an SMSA with three banking organizations remained at 1.000.

Table 2

Average concentration changes in SMSAs in District states, 1965-79

Area	Three-firm concentration ratio			Herfindahl index		
	1965	1979	Change	1965	1979	Change
Seventh District states						
Average	.718	.674	- .044	.241	.208	- .033
Percent[a]			- 6.7			-14.1
Illinois						
Average	.582	.491	- .091	.150	.109	- .041
Percent[a]			-16.5			-27.4
Indiana						
Average	.746	.724	- .022	.242	.225	- .017
Percent[a]			- 3.3			- 9.9
Iowa						
Average	.703	.655	- .048	.208	.184	- .024
Percent[a]			- 7.2			-11.8
Michigan						
Average	.864	.818	- .046	.381	.315	- .066
Percent[a]			- 5.7			-18.0
Wisconsin						
Average	.644	.614	- .030	.185	.169	- .016
Percent[a]			- 3.9			- 5.9

[a]Average of percent changes for individual SMSAs.

the number of banking organizations in the majority of counties and there were declines in one-sixth.

Furthermore, there was less tendency for the market shares of banking organizations to become more equal in the non-SMSA counties than in the SMSAs. Generally, an increase in the number of banking organizations was associated with a decrease in the three-firm concentration ratio and Herfindahl index in both groups of local areas. However, 77 percent of the SMSAs experiencing no change or a decrease in the number of banking organizations showed declines in the three-firm concentration ratio and 73 percent showed declines in the Herfindahl index. These figures compare with only 28 and 46 percent, respectively, of the 263 non-SMSA counties experiencing no change or a decrease in the number of banking organizations.

Initial level of concentration

While banking concentration declined in the majority of the local areas in the Seventh District between 1965 and 1979, declines generally occurred more frequently in those areas with a higher initial level of concentration in 1965. Furthermore, the declines show up more consistently in the Herfindahl index than in the three-firm concentration ratio, an indication of the importance of taking into

Table 3

Non-SMSA counties in District states, by changes in concentration and number of banking organizations, 1965-79[a]

		Three-firm concentration ratio			Herfindahl index		
	Total	Increase	No change[b]	Decrease	Increase	No change[c]	Decrease
Area							
Change in number of banking organizations							
Seventh District states							
Increase	71	8	13	50	5	2	64
No change	209	60	84	65	83	13	113
Decrease	54	42	4	8	46	—	8
Illinois							
Increase	27	4	1	22	2	1	24
No change	49	17	17	15	22	1	26
Decrease	3	1	—	2	1	—	2
Indiana							
Increase	7	—	2	5	—	—	7
No change	38	6	18	14	11	3	24
Decrease	13	8	2	3	11	—	2
Iowa							
Increase	16	2	3	11	1	1	14
No change	55	25	10	20	28	—	27
Decrease	19	18	—	1	16	—	3
Michigan							
Increase	8	1	3	4	1	—	7
No change	33	1	24	8	8	6	19
Decrease	12	10	2	—	12	—	—
Wisconsin							
Increase	13	1	4	8	1	—	12
No change	34	11	15	8	14	3	17
Decrease	7	5	—	2	6	—	1
TOTAL COUNTIES	**334**	**110**	**101**	**123**	**134**	**15**	**185**

[a]SMSAs defined as of December 31, 1979.

[b]Non-SMSA counties with three or fewer banking organizations in 1965 and 1979.

[c]Non-SMSA counties with one banking organization or no change.

account the market shares of all banking organizations.

As shown in table 4, between 1965 and 1979 the Herfindahl index declined in 92 percent of the SMSAs with an initial Herfindahl index of .30 or more in 1965 but in only 75 percent of the SMSAs with an initial Herfindahl index of under .10. Even among the non-SMSA counties where the trend toward lower levels of concentration was less pronounced than in the SMSAs, counties with higher initial levels of concentration were more apt to experience a decrease in concentration between 1965 and 1979. By 1979 the Herfindahl index had declined in 68 percent of the non-SMSA counties with an index of .40 or more in 1965, compared with 49 percent of the counties with an index of under .20.

Table 4

Number of SMSAs and non-SMSA counties in District states, by initial level of concentration and change in concentration, 1965-79

Three-firm concentration ratio in 1965 (percent)	SMSAs			
	With increase		With decrease	
	Number	Percent	Number	Percent
Over 80	3	20	12	80
60 to 80	2	8	23	92
Under 60	3	23	10	77
Total[a]	**8**	**15**	**45**	**85**
Herfindahl index in 1965 (index)				
Over .30	1	8	12	92
.10 to .30	6	16	31	84
Under .10	1	25	3	75
Total	**8**	**15**	**46**	**85**

Three-firm concentration ratio in 1965 (percent)	Non-SMSA counties			
	With increase		With decrease	
	Number	Percent	Number	Percent
Over 90	13	38	21	62
70 to 90	43	43	57	57
50 to 70	45	55	37	45
Under 50	9	53	8	47
Total[b]	**110**	**47**	**123**	**53**
Herfindahl index in 1965 (index)				
Over .40	22	32	46	68
.20 to .40	66	41	95	59
Under .20	46	51	44	49
Total[c]	**134**	**42**	**185**	**58**

[a] An SMSA with three banks had no change.

[b] Excludes 101 non-SMSA counties with three or fewer banking organizations in 1965 and 1979.

[c] Excludes 14 non-SMSA counties with one banking organization and no change between 1965 and 1979 and one with no change.

Multibank holding company activity

A multibank holding company is a corporation controlling two or more banks. The formation or expansion of multibank holding companies in the three Seventh District states that permit them—Iowa, Michigan, and Wisconsin—appears to have had only a limited effect on trends in concentration in local areas. By the end of 1979, multibank holding companies owned two or more banks in 13 of the 31 SMSAs and 11 of the 197 non-SMSA counties with banks in these three states. Over the 14-year period, the Herfindahl index increased in only two of the 13 SMSAs and five of the 11 non-SMSA counties.

The fact that the multibank holding company activity has not led to increased concentration in most local areas is probably the result of Federal Reserve regulation of such activity. Proposals for acquisitions that involve the elimination of substantial existing competition in a local banking market are generally denied by the Federal Reserve Board in conformity with the Bank Holding Company Act. Not only actual denials, but the high probability that anticompetitive proposals will be denied, have served to limit expansion of multibank holding companies in those local areas where they are already present.

The measures of concentration reported above did not consider chain banking relationships, which are usually defined as the control of two or more commercial banks by the same individual or group of individuals. The complete extent of the chain effect is difficult to measure. Previous research has shown that, among the Seventh District states, chain banking is most pervasive in Illinois and appears to be a direct substitute for multibank holding companies and branching.[1] Until recently, such chain banking arrangements were largely unregulated and, as a consequence, tended to increase concentration in local areas. The Change in Bank Control Act of 1978 requires that the competitive effects of all proposed acquisitions of control of insured banks be evaluated by the appropriate federal banking agency. It is expected that this prior approval requirement will restrain growth of chain banking arrangements within local areas where they already exist.

[1]See Joseph T. Keating, "Chain banking in the District," *Economic Perspectives*, Federal Reserve Bank of Chicago (September/October 1977), pp. 15-20.

Effects of branching

A comparison of levels and trends in concentration indicates that differences in branching laws have probably been the most important determinant of local area banking structure in Seventh District states. Commercial banks in Illinois are not permitted to branch although, since August 16, 1976, they have been permitted to establish at most two limited-service facilities, the most distant of which must be within 3,500 yards of the main office. As shown in table 2, average concentration in SMSAs, as measured by both the three-firm concentration ratio and the Herfindahl index, was lower in Illinois than in any of the other Seventh District states in 1965. By contrast, in SMSAs in Michigan, which permits branching within the same county or within 25 miles of the home office, both the average three-firm concentration ratio and the average Herfindahl index were higher in 1965 than in any other Seventh District state. The other states—Indiana, Iowa, and Wisconsin—whose branching laws are more restrictive than those of Michigan but less restrictive than those of Illinois, had average SMSA concentration levels between these two extremes.[2]

Between 1965 and 1979 the average concentration measures for SMSAs in all five states declined, and the ranks of the states by average level of concentration remained the

[2]Deposit totals for each SMSA and county are based on each institution's total deposits according to the location of the home office. This methodology may tend to bias the measures of concentration upward in those Seventh District states (Iowa, Michigan, and Wisconsin) that permit offices to be established in more than one county. However, distance limits, branching restrictions, and home office protection laws reduce the extent of this bias.

same. Despite the general tendency for measures of concentration in local areas to decline more when the initial level of concentration is high, the decline in Illinois relative to the other states exceeded expectations. On the other hand, the decline in Michigan appears to have been less than would have been expected.

In both states, differences in branching laws appear to have affected the declines in concentration. In Illinois, because of the restrictions on branches, opening new banks was the only way to provide new banking offices, and mergers were rare because the office of the merged bank generally could not be retained as a facility of the consolidated bank.[3] In Michigan, the opposite was generally true. Between 1965 and 1979, 252 banks were established de novo in Illinois compared with 65 in Michigan. During the same period only 17 mergers occurred in Illinois compared with 46 in Michigan.[4]

[3]Bank mergers do occur in Illinois. However, mergers where the office of one bank might be operated as a facility of the consolidated bank frequently cannot gain regulatory approval because, in most local markets, banks located within 3,500 yards of one another would be considered direct competitors.

Summary

Local area concentration in Seventh District states, based on an analysis of SMSAs and non-SMSA counties, generally declined between 1965 and 1979. The decline was more pronounced in SMSAs than in non-SMSA counties. Decreases in concentration generally occurred more frequently in those areas with a higher initial level of concentration. Multibank holding company activity has had little effect on concentration in local areas, probably because the requirement for prior regulatory approval has inhibited the acquisition of competitors in local markets.

Differences in branching laws between Seventh District states appear to have been the major factor in creating variations in local area concentration. Illinois, with the most restrictive branching law among the five states, has the lowest levels of local area concentration. Michigan, with the most lenient branching laws in the Seventh District, but with branches still limited to a maximum distance from the home office, has the highest levels of concentration.

[4]*Changes Among Operating Banks and Branches*, FDIC, various years.

Structural change in Wisconsin in the 1970s

David R. Allardice

This article examines the relative importance of de novo entry, population migration, and multibank holding company activity in explaining concentration changes in Wisconsin during the 1970s. Perhaps better than any other state in the Seventh District, Wisconsin offers a glimpse of future structural developments in banking. First, the state has a mature bank holding company movement dating back to the turn of the century and is more likely to exhibit the long-run effects of that movement than a state like Michigan, which has permitted multibank holding companies only since 1971. With legislative proposals to permit multibank holding companies being introduced each year in Illinois and Indiana, this experience could be extremely useful in judging the effects of those proposals. Second, because Wisconsin has allowed limited branching since 1968 (after prohibiting the establishment of new branches between 1947 and 1968), its banking structure should also reflect the effects of branching on concentration.

A multibank holding company is a corporation controlling two or more banks. As of June 30, 1970, 15 multibank holding companies controlled 40.3 percent of the total deposits held by all of Wisconsin's 606 commercial banks. By midyear 1979 the same number of multibank holding companies controlled 44.8 percent of total commercial bank deposits in Wisconsin. This apparent trend towards an increase in the concentration of banking resources in the state might suggest that there is less competition in Wisconsin banking today than in the early 1970s. Because the state is not the relevant geographic area for purposes of competitive analysis, this inference is probably incorrect.[1] To the extent that competition is influenced by concentration, it is the level of concentration within an individual (local) banking market that seems to matter.

Urban banking centers

To examine the trends in concentration in urban banking centers in Wisconsin, a study was made of 14 Ranally Metro Areas (RMAs) in the state.[2] Defined and prepared by Rand McNally and Company, these areas envelop the major urban areas within the state.[3] Basically, an RMA consists of the following components: (1) a central city with a population of approximately 50,000 or greater, (2) built-up areas adjacent to the central city, and (3) areas not contiguous to the central city, but whose population is largely supported by commuters to central cities. In general, if eight percent of an area's population or 20 percent of its work force commutes to the central city or its adjacent areas, it is likely to be included in the RMA definition. As another general rule, townships and minor civil divisions are not included in an RMA definition unless they have at least

[1]While the issues surrounding the proper definition of a geographic banking market are far from settled, the Supreme Court has concluded that the state is not an appropriate section of the country for analyzing competitive effects under Section 7 of the Clayton Act. See: *U.S. v. Connecticut National Bank*, 418 U.S. 656 (1973).

[2]The term "banking market" has precise legal and economic meaning. While some "banking markets" are approximated by RMAs, not all RMAs are banking markets. To avoid confusion, the RMAs analyzed in this study will be referred to as "urban banking centers."

[3]The boundaries used in this study have been taken from the *1980 Commercial Atlas and Marketing Guide*, 111th ed. (Rand McNally and Co.), pp. 564-65.

60 persons per square mile or are rapidly growing areas.

The RMAs were chosen as the geographic area of study because they are often utilized by the Federal Reserve Board (the Board) as approximations of banking markets. For example, the Board has recently considered the Madison RMA to be a reasonable approximation of the Madison banking market.[4] Moreover, the criteria used to define an RMA—a compact area of relatively high population density linked by commuting and retail and wholesale trade—coincide in large measure with those deemed important in defining banking markets. A further advantage of RMAs as approximations of banking markets is that they are constructed from data on townships and are therefore more highly refined than SMSAs, which generally consist of whole counties.

At present, 18 RMAs have been defined to lie wholly or in part within Wisconsin. The focus of this article, however, is upon the 14 RMAs whose central cities are located within Wisconsin. Each of the four other RMAs—Chicago, Dubuque, Duluth-Superior, and Minneapolis-St. Paul—has its central city located outside of Wisconsin. The approximate geographic boundaries of the 14 RMAs analyzed in this study are depicted on the accompanying map.

Examination of the population characteristics of the 14 Wisconsin RMAs under study yields several interesting facts (see table 1). First, over half of the total population of the state of Wisconsin resides within these 14 RMAs. In population terms the largest RMA is Milwaukee with a total population of 1.38 million (based on January 1, 1980, population estimates), or almost 30 percent of the state's total population. Second, between 1970 and 1980 five RMAs—Eau Claire, Green Bay, Janesville, La Crosse, and Wausau—experienced population growth in excess of 10 percent. While some RMAs showed minimal growth over the ten years, only one—Oshkosh—had a net population decline, which amounted to just under 3 percent.

[4]See Board Order approving Marshall & Ilsley Corporation's acquisition of Affiliated Bank Corporation, Madison, Wisconsin (66 *Federal Reserve Bulletin* 978 (1980)).

Major shifts in population

An analysis of population trends in the central city and suburban areas of the 14 RMAs reveals that many of the state's central cities were affected by the "flight to the suburbs." Eight of the metropolitan areas' central cities declined in population during the 1970s, with Milwaukee suffering the worst—14.1 percent. In contrast, all of the suburban areas within the 14 RMAs showed an increase in population, ranging from a low of 5.7 percent in Fond du Lac to a high of 44.4 percent in La Crosse. As will be discussed later, this population migration is believed to have had an important impact upon the structure of banking in certain of Wisconsin's RMAs.

Deposit concentration in urban banking centers

Data presented in table 2 reveal some significant features about the levels and trends of concentration within the 14 RMAs. First, in only four RMAs were there increases in the Herfindahl index of concentration.[5] The most significant increases occurred in Sheboygan and Janesville,[6] with less significant increases in Appleton and Beloit. Ten RMAs showed

[5]It should be noted that the measures of concentration in this study are calculated on the basis of holding company and not individual bank control of deposits. For example, if one holding company controls three banks in the same RMA, the deposits are aggregated to represent one organization.

[6]The increase in concentration in Janesville may be more apparent than real due to the fact that during the period of analysis two pairs of previously affiliated banks formed multibank holding companies. Had they been viewed as two organizations rather than as four organizations in 1970, deposit concentration in the Janesville RMA, as measured by the Herfindahl index, would have declined from .259 to .256 over the period of analysis. Throughout this study no attempt has been made to adjust for this type of prior affiliation; however, it is evident that such affiliations cause the conventional ratios to understate effective concentration.

SOURCE: *1980 Commercial Atlas and Marketing Guide*, 111 ed. (Rand McNally and Co.).

Table 1

Population characteristics of Wisconsin urban centers

Urban banking center	RMA Population (1-1-80 est.)	RMA Change (1970-80) (percent)	Central city Population (1-1-80 est.)	Central city Change (1970-80) (percent)	Suburban areas Population (1-1-80 est.)	Suburban areas Change (1970-80) (percent)
Appleton	167,900	9.0	62,300	10.5	105,600	8.2
Beloit	60,500	0.3	33,200	- 7.0	27,300	11.0
Eau Claire	88,400	13.2	50,300	12.8	38,100	13.7
Fond du Lac	51,300	3.6	36,500	2.8	14,800	5.7
Green Bay	166,400	15.1	91,900	4.7	74,500	31.2
Janesville	72,700	10.5	50,900	9.7	21,800	12.4
La Crosse	89,200	14.1	48,900	- 2.8	40,300	44.4
Madison	278,900	7.4	169,500	- 1.3	109,400	24.6
Manitowoc	62,400	2.1	46,300	- 1.7	16,100	15.0
Milwaukee	1,382,700	0.5	616,300	-14.1	766,400	16.5
Oshkosh	69,300	- 2.8	49,400	- 7.0	19,900	9.3
Racine	147,900	2.8	92,600	- 2.7	55,300	13.6
Sheboygan	76,200	3.7	49,200	1.4	27,000	8.0
Wausau	70,200	11.4	32,600	- 0.6	37,600	24.5

SOURCE: *1980 Commercial Atlas and Marketing Guide*, 111 ed. (Rand McNally and Co.).

decreases in overall concentration levels between 1970 and 1979. The most significant instance of deconcentration occurred in the Racine RMA where the Herfindahl index declined by over 35 percent. If we accept the proposition that a reduction in deposit concentration is indicative of increased competition—and there exists a large body of evidence to support this premise[7]—then we can conclude that the public should have benefited in ten of Wisconsin's RMAs by receiving better banking services and/or lower prices due to the deconcentration.

As shown in table 2, only in three RMAs (Beloit, Janesville,[8] and Sheboygan) was the largest banking organization able to increase its share of RMA deposits between 1970 and 1979. In the remaining 11 RMAs, the largest banking organization was unable to maintain the share of RMA deposits it held in 1970. The deposit decline ranged from a minimal loss of slightly less than a percentage point in the

[7]See Stephen A. Rhoades, *Structure-Performance Studies in Banking: A Summary and Evaluation*, Staff Economic Studies 92 (Board of Governors of the Federal Reserve System, 1977).

[8]As discussed previously, if consideration is given to affiliate bank relationships, the largest banking organization in the Janesville urban area increased its market share by one-tenth of a percentage point.

Table 2

Changes in concentration in Wisconsin urban banking centers, 1970-79

Urban banking center (RMA)	Herfindahl index: Level of index (6-30-79)	Herfindahl index: Absolute change (1970-79)	Herfindahl index: Relative change (1970-79) (percent)	Share held by: Largest organization 6/70 (percent)	Share held by: Largest organization 6/79 (percent)	Share held by: Three largest organizations 6/70 (percent)	Share held by: Three largest organizations 6/79 (percent)	Change in share held by 2nd & 3rd largest organizations (1970-79) (percentage points)
Appleton	.159	+.011	+ 7.4	26.9	26.0	59.0	61.6	+ 3.5
Beloit	.449	+.015	+ 3.5	53.4	54.0	95.7	100.0	+ 3.7
Eau Claire	.244	-.037	-13.2	37.1	35.7	82.8	77.0	- 4.4
Fond du Lac	.409	-.054	-11.7	56.6	47.3	99.7	99.3	+ 8.9
Green Bay	.179	-.025	-12.4	36.6	29.2	68.3	68.1	+ 7.2
Janesville	.256	+.050	+24.3	29.9	38.0	75.4	83.6	+ 0.1
La Crosse	.208	-.016	- 7.1	36.8	33.3	74.3	73.2	+ 2.4
Madison	.133	-.025	-15.8	33.1	25.7	58.6	56.8	+ 5.6
Manitowoc	.199	-.015	- 7.0	36.6	30.9	67.9	68.2	+ 6.0
Milwaukee	.135	-.026	-16.1	33.5	28.5	62.7	58.1	+ 0.4
Oshkosh	.259	-.043	-14.2	47.2	41.1	82.5	75.5	- 0.9
Racine	.121	-.067	-35.6	34.5	22.7	63.6	48.7	- 2.8
Sheboygan	.395	+.037	+10.3	43.2	47.1	89.9	92.0	- 1.8
Wausau	.296	-.082	-21.7	58.7	50.5	80.0	72.7	+ 0.9

NOTE: Concentration data in this table have been calculated on the basis of deposits held by banking organizations within the RMAs, and not on the basis of individual commercial banks. Deposit data are from FDIC *Summary of Deposits*, June 30, 1970, and June 30, 1979.

case of the largest organization in the Appleton RMA to a loss of almost 12 percentage points in the case of the largest competitor in the Racine RMA.

The last column in table 2 indicates that the second and third largest banking organizations captured some of the market share lost by the largest organization in the 11 RMAs where the leading organization experienced a decline in market share (as measured by deposits). In eight of these 11 RMAs, the combined share held by the second and third largest banking organizations increased between 1970 and 1979. Only in the Eau Claire, Oshkosh, and Racine RMAs did both the largest organization and the second and third largest organizations (combined) lose market share during this same time period.

Reasons for deconcentration

There are several possible explanations for the observed deconcentration in Wisconsin's urban banking centers. These explanations include:

- de novo (new) bank formations,
- deposit migration from central city banks to suburban banks, and
- multibank holding company entry into the urban center de novo or via the acquisition of a small-sized bank.

While these possibilities are set forth as independent explanations, it is obvious that the three may be interrelated. For example, we might observe a shift in deposits from central city banks to de novo banks in subur-

ban areas that were formed by multibank holding companies. In this case, all three of the proposed explanations might be responsible for the structural change.

De novo bank formations

One factor which would be likely to lead to market deconcentration is the formation of independently owned de novo banks within the urban banking center, either in the central city or in suburban areas. When a new bank is formed, it usually attracts some of the existing business of incumbent banks, thus promoting deconcentration of banking resources. Obviously, the deconcentration effect will be most noticeable if the new bank's deposits are derived from one or more of the market's three largest competitors.[9]

According to table 3, de novo banks were established in one-half of the urban banking centers under study between 1970 and 1979. In all, a total of 33 de novo banks were formed in seven RMAs during the period under study. As might be expected in light of the population trends cited earlier, almost two-thirds of the new banks formed were situated in the suburban areas of the urban banking centers.

In five of the seven urban banking centers (Eau Claire, Green Bay, Madison, Milwaukee, and Racine) where de novo entry occurred, the Herfindahl index declined, indicating deconcentration. In two urban banking centers (Appleton and Sheboygan), the Herfindahl index rose in spite of de novo formations.

In the five urban centers where deconcentration occurred, banks formed between 1970 and 1979 currently control anywhere from 1.7 percent of deposits (in Eau Claire) to 17.9 percent of the deposits (in Racine). In the case of Green Bay, where both de novo entry and deconcentration were observed, it cannot be concluded that de novo entry was instrumental in promoting the deconcentration due to the fact that all three of the de novo banks formed during the period of analysis are owned by organizations which were already located within Green Bay. In Racine, however, the significant share of deposits achieved by the de novo banks (17.9 percent) is considered to have been a major factor in bringing about the significant deconcentration that was observed.

The situation in Sheboygan makes clear that new bank formations need not necessarily produce deconcentration. In this case, de novo banks appear to have had no favorable impact on concentration levels.

The following observations may be made regarding de novo entry. First, de novo entry by independent banks can be a powerful force in promoting market deconcentration. Second, to the extent that deconcentration produces more competition, de novo entry should be encouraged by state and federal regulatory authorities as a means of promoting more competitive markets. Third, not all market deconcentration can be attributed to de novo bank formations, since seven of our urban banking centers experienced no de novo entry and five of these experienced decreases in concentration. Thus, we must look elsewhere for possible explanations for the observed deconcentration.

Deposit migration from central cities to suburban areas

As the population migrates from the central city to the suburbs, some people transfer their banking relationships to institutions located close to where they reside, due to the locational convenience.[10] In an attempt to retain or expand their market share, central city banks may desire to establish branch offi-

[9]For this explanation to be valid, the new bank must not be owned or controlled by one of the institutions already competing in the urban banking center. If ownership or control by an incumbent bank existed, then the new bank would be in a position to promote an increase rather than a decrease in concentration.

[10]See B. Benson, "Spatial Microeconomics: Implications for the Relationship Between Concentration of Ownership and Bank Performance." In Federal Reserve Bank of Chicago, *Proceedings of a Conference on Bank Structure and Competition* (1980).

Table 3

De novo banks formed in Wisconsin urban banking centers, 1970-79

Urban banking center (RMA)	Total number of de novo banks (1970-79)	Number of de novo banks located in central city	Number of de novo banks controlled by firms already in RMA	Share of RMA deposits held by de novo banks (June 1979) (percent)
Appleton	1	1	1	0.5
Beloit	0	—	—	n.a.
Eau Claire	1	1	0	1.7
Fond du Lac	0	—	—	n.a.
Green Bay	3	2	3	4.3
Janesville	0	—	—	n.a.
La Crosse	0	—	—	n.a.
Madison	6	1	3	5.1
Manitowoc	0	—	—	n.a.
Milwaukee	18	7	3	4.2
Oshkosh	0	—	—	n.a.
Racine	3	0	1	17.9
Sheboygan	1	0	0	2.2
Wausau	0	—	—	n.a.

n.a. Not applicable.

SOURCE: *Changes among Operating Banks and Branches*, FDIC, various years.

ces in suburban locations. However, in a state like Wisconsin where the state banking law constrains the ability of banks to branch,[11] banks are frequently unable to follow their former customers to their new suburban locations. As a result, central city banks, which frequently include the largest banks in the urban banking area, lose deposits and suburban banks gain deposits. This results in market deconcentration.

This migration-deconcentration effect seems to have occurred in several Wisconsin banking centers. In eight of the ten RMAs where deconcentration was observed, central city banks lost a share of their deposits to suburban banks. Of course, some of this shift in market shares results not from actual migration but simply from differences in population growth rates in the central city and suburbs. But migration is clearly important in some RMAs. The most extensive migration of deposits appears to have occurred in Racine, Milwaukee, and Madison where the central city banks' share of total RMA deposits declined by 18.0, 14.0, and 12.3 percentage points, respectively.

The following observations may be made concerning population migration based on our findings. In those instances where the population is migrating from central cities to outlying suburban areas and branching is limited by state law, then, other things being equal, deconcentration can be expected to occur. This finding has implications with respect to possible limits placed on branch banking.

It should also be recognized that limits placed on branching to achieve benefits in the form of market deconcentration may have an adverse effect on customer conven-

[11] In Wisconsin banks can branch within the same county where their home office is located or in a contiguous county if not more than 25 miles from the home office. However, there is also a three-mile home office protection clause that greatly restricts possible branch sites, especially in urban areas. See Wisconsin Statutes, Chapter 221.

ience and on the financial soundness of some institutions. Studies have shown that branching results in greater convenience to bank customers, as measured by the number of banking offices. Also, to the extent that geographical diversification results in risk reduction, the limiting of branching may increase risks, potentially reducing bank soundness.[12]

One option which might be considered in an attempt to achieve market deconcentration, while at the same time not sacrificing financial soundness, would be to allow banks to branch, but primarily *outside* their traditional urban banking area. That is, branching limits could be set in terms of mileage minimums, not maximums as they frequently are set now. For example, state law might allow branching while prohibiting, or severely restricting, branches within the urban banking area or within 15 to 20 miles of the home office. The encouragement of branching into other markets should have beneficial competitive effects on the markets entered, and the resulting geographic dispersion of the branching institution's business should reduce risk.

Deconcentration due to holding company entry

A third possible explanation for the observed deconcentration of banking in many of Wisconsin's urban banking centers might be entry by large multibank holding companies, either de novo or by acquisition of a small bank. Proponents of the multibank holding company movement have alleged that the unique combination of financial and managerial resources possessed by such companies enables them to offer a wide range of services and expertise and to compete away market shares from other institutions. If this hypothesis were true, we would expect to observe that de novo and small banks acquired by multibank holding companies would exhibit faster growth than other banks in the market and would gain market share at the expense of other (particularly incumbent) banks.

In an effort to substantiate this hypothesis, the ten RMAs that experienced deconcentration were examined to discern the role that the state's three largest multibank holding companies might have played in those areas. This analysis suggests that the three largest multibank holding companies have had an insignificant impact with respect to the deconcentration of the ten urban banking centers. In two of the ten RMAs (La Crosse and Manitowoc), the state's three largest multibank holding companies are not represented; consequently, they could not have promoted deconcentration.

In three urban banking centers (Oshkosh, Racine, and Wausau) one or more of the state's three largest multibank holding companies made an initial entry during the period under study. In both Racine and Wausau, one of the banks acquired ranked among the banking centers' three largest organizations and each has experienced a decline in deposit share. While the loss in market share by each of the acquired banks may have been a factor contributing to the deconcentration, it provides no support for the traditional argument that large multibank holding companies can contribute to deconcentration by acquiring small banks and enabling them to increase their market shares. In Oshkosh the acquired bank increased its share of deposits to the point where it has become the third largest organization in the RMA. While the acquired bank has increased its share of deposits, this increase has been less than the loss in combined deposit share of the two largest organizations in the Oshkosh RMA. As a result, overall concentration, as measured by both the Herfindahl index and the three-firm concentration ratio, has declined.

In each of the five remaining RMAs (Eau Claire, Fond du Lac, Green Bay, Madison, and Milwaukee) that experienced declines in concentration, one or more of the state's three largest multibank holding companies were present prior to 1970. No new entry by any of these organizations took place during the

[12]Larry R. Mote, "The perennial issue: branch banking," *Business Conditions*, Federal Reserve Bank of Chicago (February 1974).

period under study. In three of the five urban banking centers (Eau Claire, Fond du Lac, and Madison) all of the three largest bank holding companies that were present in 1970 lost deposit shares. These losses ranged from a minimal 1.4 percentage points in Eau Claire to 9.8 percentage points in Madison. In the Milwaukee RMA—where all of the state's three largest multibank holding companies were represented in 1970—the two largest multibank holding companies lost a combined 5.7 percentage points, while the third largest multibank holding company gained a slim 1.1 percentage point.

The Green Bay RMA was the only RMA out of the ten experiencing deconcentration in which the market shares of as many as two of the state's three largest multibank holding companies showed increases. These two multibank holding companies controlled the second and third largest banking organizations in the Green Bay RMA and their combined share of deposits increased by only about 2.0 percentage points. During the same period, the banking organization with the largest share of deposits in the Green Bay RMA—which is not one of the state's three largest multibank holding companies—lost 7.3 percentage points. Thus, the deconcentration that was observed is attributable primarily to the decline in the market share of the largest organization.

The findings indicate that multibank holding companies made little or no contribution to the deconcentration of banking in Wisconsin's urban banking centers during the 1970s. Assertions that entry by large multibank holding companies will produce public benefits in the form of market deconcentration and increased competition should be carefully examined.

Conclusions

During the 1970s banking concentration declined in 14 Wisconsin urban banking centers. In 11 of the 14 centers, the largest banking organization lost part of its share of deposits to other firms in the area.

Three possible explanations for the observed deconcentration were examined—de novo entry, deposit migration, and multibank holding company effects. Both de novo entry and deposit migration appeared to be important factors with respect to urban banking center deconcentration. A third factor, entry by multibank holding companies, was not found to be of major significance.

Several policy implications can be drawn from the findings. First, de novo entry by independent banks into an urban banking area can have a significant impact on market deconcentration. Such entry should be encouraged and fostered by state and federal regulatory agencies.[13]

Second, population migration from central cities to suburban areas coupled with limitations on branching can produce deconcentration. However, these limitations on branching can also have adverse effects on customer convenience and on the financial condition of some institutions. In an attempt to minimize these adverse effects, it was suggested that consideration be given to revision of geographical restrictions on branching.

Finally, the effect of large multibank holding companies on concentration in Wisconsin's urban centers appears to have been insignificant. Assertions that large holding companies have promoted market deconcentration should be carefully examined.

The obvious disclaimer to this study is that it has examined only one state, Wisconsin, and a limited number of urban banking centers. No claim is made that the policy conclusions suggested would be applicable in other states with different banking laws and banking structures. To reach conclusions for other states would require structural analyses along the lines undertaken in this study.

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[13]A recent Presidential report notes that interstate expansion via the formation of de novo banks, rather than through merger, may produce extensive nationwide competitive advantages. In part, the report calls upon the Congress to enact, over the short term, a phased liberalization of current prohibitions against interstate acquisitions by bank holding companies. See: *Geographic Restrictions on Commercial Banking in the United States: The Report of the President*, Department of the Treasury, January 1981.

Benjamin Franklin and monetary policy in colonial Pennsylvania

John H. Wood

The running argument between those who advocate expansionary monetary policies and rising prices, on the one hand, and those who favor stable or falling prices, on the other hand, is very old. American debate on this subject traces its origins to the 17th century. Deflation, accompanied by complaints of a scarcity of money, was present in both England and her colonies in America. British government policies prohibited exporting gold and silver to the colonies. The precious metals earned by Americans in trade with the Spanish colonies were sent to Britain in payment for British goods. In 1722 the Governor of Pennsylvania wrote to his superiors, the absentee Penn family, in England:

> I am to acquaint your Lordships that the people of this place are just now in a very great Ferment on Account that for some time past their usual Trade has stagnated for want of a sufficient currency of cash amongst themselves whereby to Exchange the produce of their Labour according to their accustomed Maner of Bussiness;
>
> The Farmer brings his provision to Market but there is no Money to give for it, The ship Builder & Carpenter starve for want of Employment, and we sensibly feel that our usual Export decreases Apace, The Interest on Money is high, and the usurer grinds the Face of The poor so that Law suits multiply, our Gaols are full, and we are justly apprehensive of falling into debt, which we have Happily avoided Hitherto.
>
> Under these Circumstances, The clamor is universall for Paper Money. . . .
>
> The Example of our Neighboring Province New York, demonstrates, That paper creates a more Current and reddy sale of their product which is the very same with ours. . . .
>
> I observe that the Lawyers and a few Rich Usurors here are violent Bent on opposeing the peoples Inclinations to paper Money, But both Merchant and Farmer cry out Incessantly for such a Quantity at least as will serve to Transact the necessary Bussiness between them. . . .[1]

Public opinion was sufficiently strong that in 1723 the Pennsylvania Assembly provided for paper money issues totaling £45,000. The money was to be loaned at 5 percent interest secured by mortgages on land and houses and to be repaid in eight annual instalments. This paper money, which was made legal tender for all debts, was to be destroyed as the loans were repaid. Counterfeiters "were to be punished by having both ears cut off, whipped on the bare back with thirty-one lashes well laid on and fined or sold into servitude."[2]

A brief period of prosperity and rising prices followed the currency issue. "It is inconceivable to think what a prodigious good Effect immediately ensued on all the Affairs of that Province," wrote the Governor several years later. Adam Smith held a somewhat different view of Pennsylvania's paper

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[1]Richard A. Lester, *Monetary Experiments* (Princeton University Press, 1939) (reprinted by Augustus M. Kelley in 1970).

[2]Ibid., pp. 71-72.

money: "It bears the evident marks of . . . a scheme of fraudulent debtors to cheat their creditors" and had the effect "that the price of all goods from the mother country rose exactly in proportion as they raised the denomination of their coin, so that their gold and silver were exported as fast as ever."[3]

Whatever the motives and effects of the expanded currency, the colonists found themselves in another period of falling prices and depressed trade in the latter part of the decade. Benjamin Franklin later told how these conditions induced a renewed

> cry among the people for more paper money, only fifteen thousand pounds being extant in the province, and that soon to be sunk. The wealthy inhabitants oppos'd any addition, being against all paper currency, from apprehension that it would depreciate, as it had done in New England, to the prejudice of all creditors.[4]

The controversy surrounding paper money proposals, always great, was joined this time by Franklin, who supported those proposals in a pamphlet entitled *A Modest Inquiry into the Nature and Necessity of a Paper Currency*. He argued that "a plentiful currency will occasion interest to be low," which "will tend to enliven trade exceedingly."[5] Next to usurious creditors, the principal opponents of paper money, according to Franklin, were "Lawyers, and others concerned in court business," who "will probably many of them be against a plentiful currency; because people in that case will have less occasion to run in debt, and consequently less occasion to go to law and sue one another for their debts."[6]

Franklin's party prevailed and in 1729 the Assembly authorized an issue of £30,000. More paper money was issued in 1739, 1745, and 1759 with, according to Franklin, highly beneficial effects.

> Between the years 1740 and 1765, while abundance reigned in Pennsylvania and there was peace in all her borders, a more happy and prosperous population could not perhaps be found on this globe. In every home there was comfort. The people were highly moral and knowledge was extensively diffused.[7]

Such are the benefits of a monetary expansion. Afterwards, however, in that most candid of autobiographies, Franklin suggested that his motives might not have been altogether altruistic.

> My Friends [in the Assembly], who conceiv'd I had been of some service, thought fit to reward me by employing me in printing the money; a very profitable jobb and a great help to me.[8]

This monopoly, which Franklin retained until 1764, must certainly have been "a great help" to the struggling young printer. He was also heavily in debt, another reason to favor a monetary expansion. Forty years later, however, Franklin, grown prosperous and now a creditor, observed that, "I now think there are limits beyond which the quantity [of currency] may be hurtful."[9]

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[3]Adam Smith, *An Inquiry into the Nature and Causes of the Wealth of Nations*, ed. Edwin Cannan (Modern Library, 1937), pp. 310, 312.

[4]Benjamin Franklin, *Autobiography* (1771) (Modern Library, 1944), pp. 74-75.

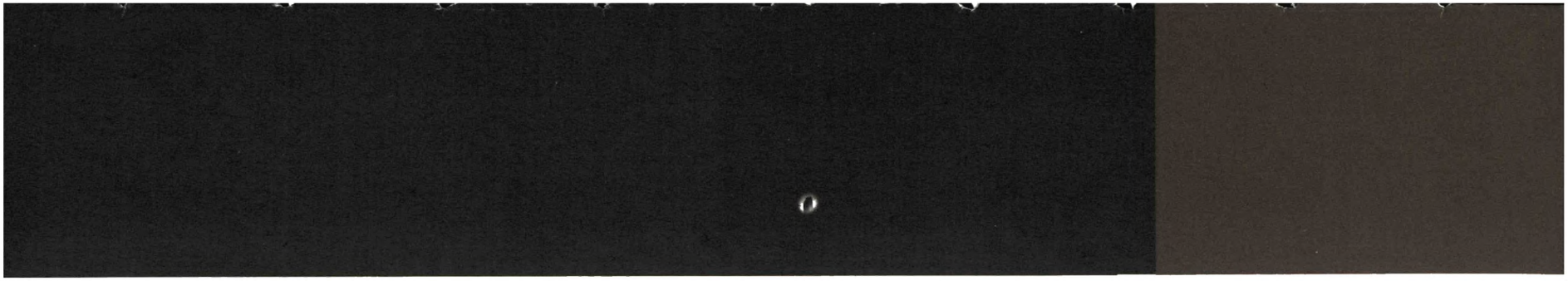
[5]Benjamin Franklin, *A Modest Inquiry into the Nature and Necessity of a Paper Currency* (1729), in *The Works of Benjamin Franklin*, ed. Jared Sparks (Boston, Hilliard, Gray, and Co., 1836) (reprinted by Augustus M. Kelley in 1971), p. 256.

[6]Ibid., pp. 261-62.

[7]C.W. Macfarlane, "Pennsylvania paper Currency." *Annals of the American Academy of Political and Social Science* (July 1896), p. 70.

[8]Franklin, *Autobiography*, p. 75.

[9]Ibid.



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