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Author(s): Howard Bodenhorn

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ENTRY, RIVALRY AND FREE BANKING IN ANTEBELLUM AMERICA

Howard Bodenhorn*

Abstract—Earlier studies have argued that measures of rivalry among leading firms are good indicators of competitive conduct. A refinement of earlier measures is made. This mobility measure is then used in regression analysis to determine the effects of entry and passage of free banking laws on competitive conduct. Both entry and free banking are found to increase competitive behavior among antebellum banks. The study has implications for the traditional structure–conduct-performance (SCP) paradigm as market concentration is also found to significantly influence interfirm rivalry.

Most applications of the traditional structure–conduct–performance paradigm to the empirical study of banking markets neglect the conduct component. The typical study regresses some measure of performance such as prices or profits on a measure of structure; the three firm concentration ratio being the most popular. Following the lead of Heggestad and Rhoades (1976), this paper develops a measure of conduct and investigates how interfirm rivalry is influenced by market structure.

I. Previous Studies

Three earlier studies, Heggestad and Rhoades (1976), Rhoades (1980) and Rhoades and Rutz (1981), argue that the mobility of firms in a market is a good measure of interfirm conduct within that market. In terms of the traditional industrial organization paradigm of structure–conduct–performance, previous writers argue that firm rank stability measures are complementary to widely accepted measures of concentration as indicators of structure.[1] Heggestad and Rhoades believe, however, that mobility measures are indicative of conduct and should, therefore, be influenced by market structure. They argue that "...a competitive market structure should force a kind of conduct or rivalry among member firms that would be reflected in a

relatively large amount of mobility and turnover."[2] Their findings, as well as the findings of Rhoades (1980) and Rhoades and Rutz (1981), generally support this hypothesis.

Rhoades' study, however, is dissatisfying in that it fails to prove its express purpose. Rhoades argues that entry increases interfirm rivalry. Entry is a stimulus to competition because it increases the number of firms and reduces market concentration. "In addition," he says, "new entry will tend to increase uncertainty among firms in a market with respect to their views of the actions and reactions of their rivals as well as to their views of the action of the new entrant."[3] With the increasing uncertainty about the behavior of one's rivals, market rivalry should increase markedly. His empirical results, however, fail to bear out his thesis. Entry fails to significantly explain the degree of rivalry. Rhoades believes that the relatively short period covered in his study limits the explanatory importance of entry. Banks enter on a small scale, and it may take some time before their entry effectively influences market rivalry.

In view of the importance of entry in affecting market relationships, and the unsatisfactory results of Rhoades' study, this paper looks at the question with a longer time series. The hypothesis that actual entry and the relaxation of entry restrictions increases market rivalry is tested using data from antebellum American banking markets. This period lends itself well to the study of interfirm rivalry because (a) markets are easily defined, (b) banks were engaged primarily in the business of banking—accepting deposits, issuing notes, and discounting commercial paper, and (c) significant regulatory changes affected the ability of new firms to enter—the so-called Free Banking Laws.

II. Free Banking

In the period between the closing of the Second Bank of the United States in 1836 and passage of the National Banking Act in 1862, the individual states were left, largely free of federal intervention, to devise the regulatory schemes under which their banks operated. White (1990) shows that there was considerable state-to-state regulatory variation, but the different schemes can be broadly separated into two types: traditional chartered banking and free banking. Under

[1] For a review of the early work see Hymer and Pashigan (1962).

[2] Heggestad and Rhoades (1976), p. 443.

[3] Rhoades (1980), p. 143.

charter banking, an aspiring banker lobbied the legislature for a special incorporation act which granted the stockholders banking privileges. Critics believed that only those with political clout were successful in obtaining charters; and Schwartz (1947) found that legislative extortion was an integral part of the process. To many contemporary observers, banking was a business of monopoly and special privilege.

In the twenty years preceding the Civil War several states responded by passing free banking laws. Free banking was characterized by relatively free entry and a system a bond-secured note issue. Subject to some minimum capital requirement, any aspiring banker could enter. Under bond-secured note issue, the bank purchased state or federal bonds and lodged these with the proper state authority. The banker then received banknotes (small denomination promissory notes that circulated as money) in some percentage of the value of the bonds. The bonds constituted a type of self-insurance fund. If the bank failed, the banking authorities sold the bonds and reimbursed the note holders out of the proceeds.

Earlier generations of banking historians saw little of redeeming value in free banking. Hammond (1957) and Redlich (1968) identified it with overbanking and widespread failure during financial crises; or, in the worst cases, to outright fraud. Recent work has strived to overturn this simplistic view of free banking. They have been largely successful, but most studies have been concerned with "the pathology of money creation,"[4] bank panics,[5] the causes of bank failures,[6] the necessity of central banks,[7] and other characteristically macroeconomic questions. Only a handful of studies have considered the microeconomics of antebellum banking.[8] The pro-competitive effects of free banking are largely assumed and unproven. This paper fills some of that void.

III. The Data and Methodology

The six antebellum banking markets for which sufficient data were found are Baltimore, Boston, New Orleans, New York, Philadelphia and Providence, Rhode Island. The data were pieced together from state and federal reports published during the period. Most state legislatures required that banks submit regular statements of condition to some oversight agency. The statements were then printed in the state's legislative documents. After 1834 the United States Secretary of the Treasury collected the data, and printed it in the House of Representatives' Executive Documents. For all cities, data are available for 1834–1860. For Providence the data begin in 1824; Philadelphia in 1828; and Boston in 1819, with some missing observations in the 1820s and 1840s.[9]

Mobility is the primary dependent variable. Banks are ranked by deposits[10] from largest to smallest in each market for each year, then summing the rank changes among the five largest banks in each year. Mathematically it can be stated as

$$Mobility = \sum_{[i:\, R_i(t) \leq 5]} |R_i(t) - R_i(t-1)|$$

where $R_i(t)$ is the rank of bank i at time t. That is, if a firm is one of the top five banks at time t, its change in rank is calculated by subtracting its rank at time t from its rank at time $t-1$, taking the absolute value, and then summing for all banks currently among the top five. For example, if banks ranked 1 and 2 at time t had switched rank from the previous period while firms 3 through 5 maintained their positions, mobility equals two.

This measure is a slight modification of the measure proposed by Heggestad and Rhoades. Their mobility measure includes only rank changes among those banks included in the top five in both periods t and $t-1$. That is, if firms 5 and 6 changed place while firms 1 through 4 maintained their position, the Heggestad and Rhoades mobility measure takes a value of zero, despite the change in ranks among the leading firms. (The new measure would equal one.) The measure offered to correct the bias, *Turnover*, captures the movement into the top five by banks formerly outside that group. But by excluding the changes in banks' positions of that group outside the top five, the amount of "churning about" in the market is understated. Heggestad and Rhoades argue that the turnover measure captures the effect of aggressive policies by those banks in the second echelon of firms, but their measure is distinctly biased downward. The *Turnover* measure takes a value of one whether a bank moves from rank 6 to rank 5 or from rank 16 to rank 5. If firms are able to make the latter jump, it may indicate that larger banks cannot effectively police price or quantity agreements; or, further, that such agreements are not pursuable in any case. Large market share capturing abilities by the

[4] Sylla (1971), p. 210.

[5] Gorton (1985b).

[6] See Rockoff (1974); Rolnick and Weber (1983), (1984); and Economopoulos (1988).

[7] Gorton (1985a) and Gorton and Mullineaux (1987).

[8] Hinterliter and Rockoff (1973), Rockoff (1974), and Bodenhorn (1989).

[9] A complete bibliography fills several pages, and for the sake of space it is omitted. Anyone interested in obtaining it can contact the author.

[10] The focus of free banking was, and is, primarily on banknotes. But city banks found it difficult to keep notes in circulation long enough to profit from them, and so turned their attention to deposits. Gorton (1985b), p. 273.

smaller banks require aggressive competitive actions; and such actions among the second echelon firms may be indicative of similar behavior among the larger firms. Heggestad and Rhoades' regressions demonstrate the best results when their mobility and turnover measures are combined. The new mobility measure captures both in a single measure without the downward bias.

The estimated model is

$$MOBILITY = b_0 + b_1 ENTRY + b_2 FREE$$
$$+ b_3 AVG + b_4 MKTGR + b_5 CONC.$$

Given the poor results in Rhoades (1980), the ENTRY variable is of particular interest. Entry plays a critical role in microeconomic models of market behavior because it increases the number of competitors, reduces market concentration and alters the competitive stance of existing firms toward their rivals. Rhoades' (1980) study covered a relatively short period of three years, and lagged entry was not found to have a significant impact on firm mobility. Lags of 3 through 6 years were run in preliminary regressions. Like Rhoades' finding, three year lags proved insignificant. The model proves to be robust with lag lengths of four through six years; all yielding approximately equivalent results. For brevity only the regressions using five year ENTRY lag are reported.

FREE is a dummy variable equalling one in years when free banking prevailed and zero otherwise.[11] Ng (1988) argues that free banking laws induced little new entry. He concludes that free banking laws were either ineffective or banking markets were already competitive and free banking superfluous. But passage of free banking laws may have increased competitive behavior by increasing the number of potential entrants and the probability of entry. Therefore, FREE banking should positively influence interfirm mobility.

The three remaining variables are included to account for other market factors expected to influence firm rivalry. AVG is the average size of the five largest banks and is introduced to capture the possibility that large firms are perceived as intimidating to existing rivals or potentials entrants (Heggestad and Rhoades, 1976, p. 447). Size may also have had an important reputation component in the antebellum period. In a world without deposit insurance,[12] reputation may have

been a contributing factor in the ability to attract new deposits; and size may have been a key ingredient to reputation.[13] Under either hypothesis, AVG should negatively effect mobility. Market growth (MKTGR) should positively influence interfirm rivalry. As markets grow they become more attractive for new or potential entrants, and this could have a disequilibrating effect on overt or tacit agreements among market participants. Finally, concentration measures (CONC) based on deposits are introduced. Highly concentrated markets are more likely to be characterized by collusive behavior, and less mobility among the member firms. Three-firm, four-firm, and Herfindahl concentration measures are alternatively specified, and the model is robust with respect to concentration specification.

IV. Empirical Results

The model was estimated by Tobit regression on the pooled cross section–time series data set. Table 1 presents the regression results using the new mobility measure as the dependent variable. The coefficients on the independent variables take the expected sign and all are significant at the 5% level. Lagged ENTRY and FREE banking have the expected positive effect on mobility. The result substantiates Rhoades' proposition that entry positively affects rivalry and mobility, but, as he believed, only after a sizable lag. That free banking increased interfirm mobility casts into doubt Ng's conclusion that they did little to increase competition. The effect of relaxed entry regulations cannot be captured by simply counting the number or size of entrants. Lowering or removing entry barriers increases the number of potential entrants, who can have as great a pro-competitive influence as actual entrants.

Table 2 presents the regression results using the Heggestad and Rhoades measures of rivalry.[14] Rhoades (1980) blames the poor results of the ENTRY variable on the relatively short lags his data allowed. The results in table 2 demonstrate that it was his choice of measure as well as the short lags that account for his findings. The coefficients have the expected signs, but only the MKTGR and HERFINDAHL variables are significant. These results are largely consistent with the estimates found in Rhoades, et al. who use banking

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[11] Of the six cities in this study, three operated under a system of free banking for some of the period. New York passed a free banking law in 1838, Massachusetts in 1851, Louisiana in 1853. Pennsylvania enacted free banking late in 1860 so it plays no part in this study. See Rockoff (1974) for a complete list of states enacting free banking statutes.

[12] Six states enacted various types of bank insurance schemes during the antebellum era, but most were failures, either in protecting depositors or noteholders or attracting and keeping low-risk members. Calomiris (1989).

[13] Looking at the data from the period, there is, generally, a positive correlation between bank size and time in business. It is not conclusive evidence, but it may indicate that reputation played a role in attracting deposits and reputation is built up only through time.

[14] Like the earlier regression, this model was alternatively specified with ENTRY lags of 3 through 6 years. The 5 year lag was only marginally better than 4 or 6 year lags and is reported here. The model was also robust with respect to concentration measure, and to save space only the Herfindahl measure equation is reported.

TABLE 1.—THE EFFECT OF ENTRY AND FREE BANKING ON THE NEW MEASURE
OF FIRM MOBILITY
(*t*-VALUES IN PARENTHESES)
166 OBSERVATIONS

Independent	Dependent Variable = New Mobility Measure		
Variables	(1)	(2)	(3)
ENTRY (−5)	1.52	1.50	1.52
	(4.95)[a]	(4.90)[a]	(4.95)[a]
FREE	3.76	3.52	4.00
	(2.01)[b]	(1.86)[b]	(2.10)[b]
AVG	−0.3 E-5	−0.3 E-5	−0.3 E-5
	(−2.49)[a]	(−2.50)[a]	(−2.44)[a]
MKTGR	0.04	0.04	0.04
	(2.29)[b]	(2.30)[b]	(2.20)[b]
CR-3	−0.14		
	(−2.60)[a]		
CR-4		−0.13	
		(−2.73)[a]	
HERFINDAHL			−0.003
			(−2.40)[a]
CONSTANT	14.23	14.96	11.95
	(6.23)[a]	(6.24)[a]	(7.23)[a]

[a] 1% significance—one tail test.
[b] 5% significance—one tail test.

TABLE 2.—THE EFFECT OF ENTRY AND FREE BANKING
ON THE HEGGESTAD AND RHOADES MEASURES
OF FIRM MOBILITY
(*t*-VALUES IN PARENTHESES)
166 OBSERVATIONS

	Dependent Variables	
Independent	(1)	(2)
Variables	H-R Mobility	Mobility + Turnover
ENTRY(−5)	0.15	0.18
	(1.07)	(1.47)
FREE	0.46	0.56
	(0.68)	(0.90)
AVG	−0.3 E-7	−0.2 E-6
	(−0.10)	(−0.77)
MKTGR	0.01	0.01
	(1.46)[c]	(1.89)[b]
HERFINDAHL	−0.68 E-3	−0.96 E-3
	(−2.06)[b]	(−3.26)[a]
CONSTANT	3.36	4.92
	(7.20)[a]	(12.00)[a]

[a] 1% significance—one tail test.
[b] 5% significance—one tail test.
[c] 10% significance—one tail test.

data from the 1960s. This indicates that measures of interfirm mobility are good representations of competitive conduct, and may be applicable to the study of other types of markets.

V. Concluding Remarks

This paper has proposed a new measure of interfirm rivalry. The new mobility measure is designed to be more sensitive to firm rank changes, and from the regression results appears to better capture the effects of these changes. The ability of firms to move up quickly through the ranks may indicate the degree of competition in the market, and the new measure more fully captures this ability.

Unlike Rhoades' study, entry is found to have a positive impact on market rivalry, but only after a significant lag. The results also cast doubt on Ng's thesis. Free banking did have a positive effect on competitive behavior. Lowered entry barriers need not necessarily induce entry to be effective. Increasing the possibility of entry and the number of potential entrants changed the competitive posture of the existing firms.

The significance of the findings in this paper, however, go beyond the question of whether free banking did or did not dissipate special privilege in antebellum banking. The SCP paradigm has come under increasing attack due to the failure of many studies to find the posited relationship between profits and concentration.[15] These studies, however, have overlooked the conduct element of the argument. This paper has shown that structure does impact on conduct. The agenda for future research should include investigating the relationship between conduct and performance.

[15] See Evanoff and Fortier (1988) and Smirlock (1985) for the anti-SCP view. On the pro-SCP side Berger and Hannan (1989) find the relationship using prices rather than profits as the performance measure.

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DO STATE AND LOCAL TAXES AFFECT ECONOMIC GROWTH?

Alaeddin Mofidi and Joe A. Stone*

Abstract—This paper tests if variations in the treatment of expenditures by state and local governments are an explanation for the inconsistent results of previous tax studies. Estimates for net investment and employment in manufacturing for 1962–82 support this conjecture, indicating that state and local taxes have a negative effect when the revenues are devoted to transfer-payment programs and that (with taxes held constant) increases in expenditures on health, education, and public infrastructure have a positive effect. Results are consistent with the "vicious circle" phenomenon, do not appear simply to reflect common cyclical movements, and provide evidence of structural linkages implicit in previous results for growth in state personal income.

I. Introduction

Much of the interest in state and local tax policies arises from the widespread belief that high state taxes tend to lower economic growth by retarding the creation and expansion of firms and by discouraging the net inmigration of new firms, workers, and investment. However, tax revenues finance government expenditures, and areas with relatively high taxes may, in fact, be preferred to low-tax areas because of superior public services. The expenditure side of state and local tax policy, as it affects economic activity, has not received nearly as much attention as the revenue side. Standard theoretical models of regional taxation (such as the Harberger (1962) model) examine the distortionary effects of taxation on economic performance while hold-