Merger Activity as a Determinant of De Novo Entry into Urban Banking Markets

Working Paper 2003-01

REVISED April 2003

Steven A. Seelig
International Monetary Fund

Tim Critchfield
Federal Deposit Insurance Corporation
Washington, D.C. 20429
Phone: 202-898-8557
Fax: 202-898-7222
E-mail: TCritchfield@fdic.gov

Merger Activity as a Determinant of De Novo Entry into Urban Banking Markets

Steven A. Seelig and Tim Critchfield

Correction to 1999 Draft
This paper reflects revisions made for a programming error and to reflect articles published subsequent to the original draft in early 1999. A programming error reversed the signs on all the variables used in our original logit analysis. As a result the 1999 draft of this paper concluded that in-market acquisitions discouraged de novo entry, while this revision concludes just the opposite: in-market acquisitions encourage de novo entry. However, the original draft conclusion that out-of-market acquisition activity does not significantly encourage de novo entry still holds after correcting the programming error. The complex economic variables used in the draft from 1999 were simplified in this version and data for 1998 were added.

Abstract
The increase in both the number of bank (and thrift) mergers and the number of de novo entries has led the press to speculate that these trends are interrelated. Specifically, the media have suggested that out-of-market acquisitions encourage de novo entry. This paper examines the determinants of de novo entry at the individual market level and specifically tests the hypothesis that "out-of-market acquisitions lead to de novo entry into that market." This study differs from the earlier literature on the determinants of de novo entry in several respects: (1) Banks and thrifts are treated as full competitors and included in the empirical work. (2) The time frame examined is 1995-1998, a period of record earnings for banks and thrifts. (3) The data for new charters have been scrubbed so that only "true" de novo entrants are included in the empirical work. A theoretical framework for de novo entry is developed, and logit analysis is applied to all MSAs for the four-year period.

I. Introduction

During the 1980s and early 1990s the financial services industry underwent a major restructuring. With the steady rise in bank and thrift failures, the annual number of new bank and thrift charters declined steadily, going from a peak of 415 in 1984 to a low of 40 in 1992. During the past several years, however, new charters for banks and thrifts have risen significantly; 664 banks and thrifts, with initial quarter-end assets of $37.8 billion, were chartered from 1995 through 1998. This dramatic increase in new charters has occurred during a period when there has been considerable consolidation in the banking industry. With the enactment in 1994 of the Riegle-Neal Interstate Banking and Branching Efficiency Act, the barriers to interstate banking all but disappeared. This has given rise to a spate of acquisitions by large regional banking organizations of banks in states other than those where the acquirers were based.

The confluence of the increase in the aggregate number of de novo banks and the merger wave sweeping the financial services sector has given rise to speculation in the popular press that the two trends are related. Some commentators have speculated that borrower hostility toward large out-of-market acquirers has led to the creation of new banks, while others have attributed the trend to a surplus of executives who have been displaced by cost cutting resulting from merger transactions. (Examples of the latter type of press are Zellner [1998], Murray [1998], and Gillan [1998].) While these arguments may be intuitively appealing, they are not based on rigorous analysis, nor are they market specific. A more fully-specified model of entry must be developed to test for the effect of merger activity on entry behavior.

Prior studies have looked at de novo banks from various perspectives. In the early 1970s, several empirical studies examined de novo entry from the perspective of the

issues surrounding merger analysis and bank holding company expansion (and specifically looked at the likelihood of potential competition).[1] Other studies, such as those by DeYoung and Hasan (1997, 1998), Hunter and Srinivasan (1990), McCall and Peterson (1977), and Rose and Savage (1983), have focused on the performance of de novo banks.[2] Recently researchers have looked at specific credit allocation issues (e.g., small business lending) as they relate to de novo banks.[3] The most contemporaneous study is one by Berger, Bonime, Goldberg, and White (1999) which examines the impact of merger and acquisition activity on de novo entry and on small business lending.

This study of the determinants of de novo entry differs from previous ones in several key respects. First, since the competitive overlap between commercial banks and thrift institutions has grown to the point that they are effective competitors in local markets for depositors and retail customers, entry by both banks and savings and loan associations is included. Second, the period from 1995 through 1998 is selected for study since it covers a time frame after the bank and thrift crises   a period in which banks and thrifts enjoyed record earnings. Third, while other researchers have used the number of newly chartered banks as a measure of the number of de novo institutions, a close examination of the data indicates this is not appropriate. A number of newly chartered institutions are special-purpose affiliates of existing institutions. Specifically, a large number are credit-card banks or finance company operations. In addition, some of the newly chartered institutions were created by existing institutions to purchase branches of failed savings and loans from the Resolution Trust Corporation or from other banking

---

[1] See, for example, Gilbert (1974) and Hanweck (1971).
[2] Similar studies of the performance of de novo savings and loans were done by Hunter, Verbrugge, and Whidbee (1996) and Lindley, Verbrugge, McNulty, and Gup (1992).
[3] Examples of this literature are Goldberg and White (1997) and DeYoung, Goldberg, and White (1999).

organizations. Hence, the de novo entry data used in this analysis separate data on true de novo entry from other structure data. Last, this study specifically tests the hypothesis that merger activity encourages de novo entry by newly formed financial institutions.

The following section examines recent trends in de novo expansion. The third section reviews the prior literature on the determinants of de novo entry in banking. The fourth and fifth sections present (1) the basic model that serves as the framework for the empirical work and (2) the results and the empirical techniques used. We present conclusions in the last section.

II. Recent Trends in Bank and Thrift De Novo Expansion

In the early 1980s, new entrants into the bank and thrift industries encountered markets undergoing rapid change. As the conditions of the industries weakened in the mid-1980s, the number of newly chartered institutions peaked at 415 in 1984 (see table 1), primarily because of the conversion of uninsured state-chartered institutions to federally insured thrifts. While aggregate data portrayed an industry with a return on equity in excess of 10 percent, there were signs of trouble. Several large banks either failed or received federal assistance, and some thrifts were just beginning to recover from the effects of high interest rates earlier in the decade. As the banking and thrift crises deepened later in the 1980s and early 1990s, both the number of newly chartered entrants

Table 1
FDIC-Insured Institution New Charters and Mergers
1980-2001

Year	Count of All De Novo Institutions: True & Remaining	All New Charters		Other New Charters	Unassisted Mergers	
		All De Novo Institutions			Unassisted Bank Holding Company Consolidations	Unassisted Acquisitions
		True De Novo Institutions	Remaining De Novo Institutions			
1980	259	NA	259	6	NA	222
1981	235	NA	235	32	NA	446
1982	325	NA	325	32	NA	674
1983	368	NA	368	40	NA	485
1984	415	NA	415	83	NA	396
1985	386	NA	386	208	118	272
1986	267	NA	267	162	130	253
1987	220	NA	220	95	265	370
1988	210	NA	210	107	284	389
1989	176	NA	176	41	220	240
1990	143	NA	143	55	244	209
1991	77	NA	77	45	276	239
1992	40	NA	40	41	218	290
1993	52	NA	52	16	181	431
1994	53	NA	53	16	190	468
1995	106	93	13	6	302	420
1996	150	139	11	10	243	417
1997	193	186	7	10	276	449
1998	215	201	14	11	194	477
1999	262	NA	262	12	132	365
2000	218	NA	218	15	223	312
2001	140	NA	140	7	157	264

Note: NA means that a measure of true de novo institutions was not available, and all were included in remaining de novo institutions. Holding company data were not available before 1985. Holding company consolidations were defined as mergers when the two individual depository institutions had had the same bank holding company for one year or more. Unassisted acquisitions for 1984 and earlier include bank holding company consolidations. Other new charters include institutions that acquired FDIC insurance or when a charter was issued to absorb another charter(s).

and the number of unassisted mergers declined. In 1992, after the failure of Bank of New England and the collapse of real estate markets in New England, only 40 new institutions started operations. This was the lowest number in over a decade.

In the early stages of the financial institution crises, a number of institutions attempted to improve their performance by cutting costs or growing rapidly through mergers. This manifested itself in a significant rise in unassisted mergers in 1987 and 1988. With the recognition of the depth of the crises, and the creation and funding of the Resolution Trust Corporation in 1989, came a dramatic decline in the number of unassisted mergers to 460 (240 acquisitions and 220 bank holding company consolidations). As the resolution of the bank and thrift crises began to wind down in 1993 (failures had declined to 50), mergers and de novo entry began to rise. The addition of more liberalized regulations regarding both intra- and interstate banking gave the consolidation movement extra impetus. From 1995 through 1998, both industry consolidation and new charters gained momentum, with unassisted mergers at around 700 each year and the rate of de novo entry growing by about 50 institutions each year. By 1999 new charters peaked at 262 and unassisted mergers declined to less than 500 mergers.

III. Review of the Literature

Some of the early studies looked at entry in banking from a capital investment perspective and within this framework tested for the effect of regulatory barriers (see, for example, Peltzman [1965]). However, these studies used data aggregated over a large number of local banking markets instead of analyzing individual markets. One of the limitations of this approach is that it does not allow for the examination of the effect of

local market structure on the entry decision. Moreover, the demographic and potential profitability characteristics of specific markets are excluded from the analysis.

In 1971 Gilbert and Hanweck each presented a study of de novo entry at the Federal Reserve Bank of Chicago's Conference on Bank Structure and Competition. Both papers were concerned with the issue of potential competition and with developing an empirical approach to assess the likelihood of entry by firms seeking to enter a market by merger. Both authors used cross-section data in their analyses.

Hanweck (1971), using a multiple regression model on a cross-section of 230 SMSAs for the years 1968 and 1969, attempted to explain the number of new bank formations (the dependent variable). He found that the more highly concentrated a market, the less likely there would be subsequent entry. He also found the expected profitability of the market (as measured by proxies for the expected growth in personal income or deposits) to be a significant factor in determining de novo entry. As a proxy for product differentiation barriers to entry, he included the population-to-banking office ratio and dummies for branching laws as independent variables. The insignificance of these variables led him to the conclusion that "these are not important sources of barriers to entry in local commercial banking markets."[4]

Gilbert (1974), in a subsequent article expanding on his conference paper, sought "to establish objective operational guidelines for predicting de novo expansion in bank merger cases."[5] He developed a multivariate discriminant model to distinguish between decisions of banks to open or not to open de novo branch offices in the markets in which a federal regulatory agency had denied them entry via merger. His sample was composed of 55 merger cases decided between 1960 and 1967. He tested for the significance of variables that reflected the following: the expansion capacity of an applicant bank, the

---

[4] Hanweck (1971), 168.
[5] Gilbert (1974), 151.

expansion history of the applicant bank, the economic and demographic characteristics of the market, the growth prospects of the market (expected profits), regulations on bank expansion, and the competitive structure of the market. He found variables that represent the economic characteristics of a market, its growth prospects for bank services, and its banking structure to be statistically significant. He also concluded: "No single factor is particularly noteworthy in explaining bank expansion behavior. However, as a category, bank market structure indicators appear to weigh most heavily in eventual decisions to branch de novo."[6] Like Hanweck, Gilbert found no significance to variables representing statutory limitations on branching.

A third study, by Rose (1977), examined the attractiveness of individual markets for de novo entry. Rose developed a model where entry is explained by market profitability, market size, market growth, per capita personal income, market concentration, and acquisitions of banks within the market. He tested his model using a sample of 20 Texas secondary SMSA banking markets over the time period 1962–73.[7] He subdivided his data into three four-year subperiods and used Tobit analysis. He found that before 1970, intermarket variations in new bank formations were difficult to explain. For the period 1970–73, he found a significant positive relationship between de novo entry and market profitability and size, and a weak negative relationship to market concentration. Because of the limited geographic scope of the sample,[8] it is difficult to generalize from the empirical results to the nation as a whole.

Berger, Bonime, Goldberg, and White (1999) find a positive relationship between merger and acquisition activity and de novo entry. However, their study does not

---

[6] Ibid., 159.
[7] To arrive at his definition of secondary market, he excludes Dallas, Fort Worth, Houston, and San Antonio. The Midland and Odessa SMSAs are also treated as one banking market.
[8] Since Texas was a unit banking state, it is uncertain as to how much the inability of banks to merge, outside of holding company acquisitions, biased the sample used.

distinguish between markets containing targets and acquirers and included bank holding company purchases as merger activity when no charter was lost. Hence, they examined a different hypothesis than the one examined here. Moreover, they used state level data as compared to market specific data to reflect economic conditions in each banking market.

IV. Theoretical Framework

Economic theory has traditionally recognized that free entry into a market is a critical component of the competitive process. Amel and Liang (1997) examined "whether a competitive process limits the persistence of above-normal profits in local geographic banking markets" and whether entry into a local banking market is dependent on the profits of existing firms and on other market characteristics. While their study did not focus specifically on de novo entry, it provides a basic framework for examining de novo entry.

The decision to enter a market de novo is in some ways no different from the decision to enter by acquisition or by branching. Specifically, entry decisions are based on the expectations of the profits to be earned from entry into a market. In the case of de novo entry, investors must factor in the costs of obtaining a charter and the market's receptivity to a new institution. Following Amel and Liang (1997), we assume entry is a positive function of the difference between the bank's expected profits, $\mathbf{p}^e$, and entry-forestalling profits, $\mathbf{p}^f$. Entry-forestalling profits are the level of economic profits below which no firm will enter a market and are a function of entry barriers and market characteristics. In the absence of barriers to entry or changes in market characteristics, entry-forestalling profits are equal to the institution's cost of capital. Higher entry barriers raise the cost of entry and thus raise $\mathbf{p}^f$. These barriers can take legal form, such as restrictions on branching or policies by chartering bodies. Market characteristics can

also affect $\mathbf{p}^f$. For example, if the market is growing so rapidly that the existing market participants cannot meet market demand, then the benefit of increasing demand for banking services accrues to new entrants, and $\mathbf{p}^f$ falls.

The entry decision is expressed as

$$\mathbf{E}^* = \mathbf{0} \qquad \text{when} \, \mathbf{p}^e < \mathbf{p}^f$$

or

$$\mathbf{E}^* = \mathbf{f}(\mathbf{p}^e - \mathbf{p}^f) \quad \text{when} \, \mathbf{p}^e \, \mathbf{\geq} \, \mathbf{p}^f$$

where

$$\mathbf{p}^e = f_1(\mathbf{B}, \mathbf{X}, \mathbf{H}, \mathbf{p}, \mathbf{A})$$

$$\mathbf{p}^f = f_2(\mathbf{B}, \mathbf{X}).$$

$\mathbf{E}^*$ is expected de novo entry, $\mathbf{p}^e$ are the profits that an institution expects to earn after entry and should be negatively related to observed entry, and $\mathbf{p}^f$ are entry-forestalling profits. $\mathbf{B}$ represents legal barriers to entry and should be negatively related to observed entry; $\mathbf{X}$ are exogenous market characteristics (these may be either positively or negatively related to entry). $\mathbf{H}$ is the expected future market concentration; since concentration serves as a barrier to entry, where current concentration is a proxy for future concentration one would expect a negative sign. $\mathbf{p}$ are pre-entry profits (higher economic profits should induce entry and expectations of higher future profits). $\mathbf{A}$ represents the opportunities for future profits resulting from customer attitudes toward out-of-territory acquirers and from merger activity within a market.

V. Empirical Work

We estimated the determinants of de novo entry for bank and thrift entry into urban markets during calendar years 1995 through 1998. We used logit analysis to examine Metropolitan Statistical Areas to identify those factors that determine de

novo entry occurs in some markets but not in others.[9] Besides focusing the analysis

specifically on de novo entry, we also tested the hypothesis that out-of-territory

acquisitions encourage de novo entry. A general form of the model tested is

$$\mathbf{E}^{*}_{it} = \mathbf{f}(\mathbf{B}_{i,t}, \mathbf{X}_{i,t-1}, \mathbf{H}_{i,t-1}, \mathbf{p}_{i,t-1}, \mathbf{A}_{i,t-1})$$

where $\mathbf{E}^{*}_{it}$ is de novo entry into market i in year t when $\mathbf{p}^{e} \, \mathbf{3} \, \mathbf{p}^{f}$.

To examine the determinants of de novo entry, we specified the dependent

variable as a dummy variable to indicate whether de novo entry into a market has

occurred. Markets are defined as metropolitan statistical areas (MSAs). A measure for

expected profitability is the past profitability of banks headquartered in the market

($\eth_{i,t-1}$).[10] As with other measures, a prospective entrant typically has access only to data

that are lagged relative to the final entry decision. Hence, the proxy for expected

profitability was the median return on assets for banks and thrifts for each market one

year before the year of entry. A serious limitation to this approach is the assumption that

the sole determinant of profit expectations of potential de novo entrants is the past

profitability of firms already in the market. Moreover, it assumes that one can measure

past profitability of firms competing in the market. However, published data are

available only by institution and thus profits cannot be attributed to specific markets. An

alternative is to examine profit potential by seeing whether a market is over- or under-

banked and the economic characteristics of a market as revealed by income and

population measures. Variables that capture this measure of profit potential are discussed

below.

---

[9] Some MSAs were excluded from the study because they did not contain the headquarters of any bank or
thrift, and others were excluded because data for certain variables were unavailable.

[10] Since economic profits are not readily available, accounting profits are used as a proxy. The use of
accounting profits may bias the results because they will understate economic profits, since accounting
profits are short-run measures and are managed so as to minimize tax liabilities.

Similarly, we measured merger activity ($A_{i,t-1}$) as the number of merger targets acquired in an MSA over a two-year period ending one year before the year of de novo entry. Merger activity was separated into "in-market" mergers, those between institutions in the same market, and "out-of-market" mergers, the acquisition by a bank or thrift not already represented in the market. Because a subset of in-market and out-of-market activity resulted from bank holding companies consolidating their banks, these mergers are captured separately from mergers between unaffiliated banks.

As a proxy for barriers to entry caused by market concentration ($H_{i,t-1}$), we calculated a Herfindahl-Hirschman Index (HHI) for each MSA, using branch office deposit data for all banks and thrifts operating in the MSA. Following standard practice, branch data were aggregated by organizational owner, with the owner being the topmost institution in a chain (a bank, a thrift, or a bank holding company). Legal restrictions on branching ($B_{i,t}$) apply to an entire state. A dummy variable, to reflect restrictions on branching for each market, was created from data provided by the Conference of State Bank Supervisors. For those MSAs that are located in more than one state, the state where the majority of banking offices are located was viewed as the one determining whether branching restrictions applied to the market.

The size of the market as measured by its population may serve as a proxy for its potential demand for the services of a new bank. Another measure of potential demand for banking services that also reflects the economic condition of the market is the relative wealth of the population, as measured by income per capita. Other measures of the relative attractiveness of a market may be captured by economic variables such as the unemployment rate and the growth in population. One would expect that a market whose economy is both strengthening and growing in size would be more attractive to entrants

than one that is stagnating. All or some of these exogenous factors ($\mathbf{X}_{i,t-1}$) may influence a firm's decision to enter a market de novo.

To test the hypothesis that acquisitions encourage de novo entry, as well as the importance of other factors in determining de novo entry into specific geographic markets, we estimated a bivariate logit model for a pooled time-series cross-section data set. To capture any time effects over the four years studied, we included dummy variables for 1996, 1997, and 1998. Data on 322 MSAs for the four years 1995–98 were used, yielding a sample of 1,276 observations. Since entry decisions are typically made at least a year before a charter is granted, most of the independent variables were lagged at least a year. Table 2 describes each of the variables included in the various scenarios. The dependent variable is a dummy that equals one if the MSA had any de novo entrants during each of the years from 1995 through 1998. It should be noted that of the 664 de novo institutions reported in the first two columns of table 1, we excluded from the study 45 that were affiliates of larger organizations and 128 that were de novo entrants into rural (non-MSA) markets. To better test the hypothesis regarding merger activity and de novo entry, three equations were estimated, each containing a different measure of merger activity along with other independent variables, and maximum likelihood estimates of the coefficients were obtained.

The 1999 draft of this paper concluded that in-market acquisitions discouraged de novo entry. A programming error reversed the signs on all the variables used in our original logit analysis. For this 2002 draft, we corrected the programming error and to reflect articles published subsequent to the original draft in early 1999. Thus, this revision concludes just the opposite of our 1999 draft: in-market acquisitions encourage de novo entry. However, the original draft conclusion that out-of-market acquisition activity does not significantly encourage de novo entry still holds after correcting the

programming error. The complex economic variables used in the draft from 1999 were simplified in this version and data for 1998 were added.

The results of the first equation are shown in column (a) of table 3. In this specification, per capita income (YPP), population (POPPERM), and population growth (POPGROW) were statistically significant and positively correlated with de novo entry; as one would expect the unemployment rate (UNEMPLR) had a significant negative coefficient and market concentration (SQSHARE) had a weak negative coefficient. In this specification the variables used to represent prior merger activity were the number of in-market mergers and holding company consolidations (LAGINA and LAGINC, respectively), and the number of out-of-market mergers and consolidations (LAGOUTA and LAGOUTC, respectively), that occurred two years before the year before de novo entry. For example, we hypothesize that entry into a market in 1997 was influenced by merger counts for 1994 and 1995. In all instances, consolidation activity resulted in a loss of a charter and the number of mergers includes mergers of any FDIC insured institution (both banks and thrifts) but not parent holding companies. Only the variable representing in-market merger activity (LAGINA) was statistically significant with a positive sign, indicating that the greater the merger activity in a local market the more likely there will be de novo entry, all other things being equal. Variables representing branching restrictions (BRANCHES) and average earnings (ROAAVG) were insignificant.[11] The finding that economic variables related to potential profitability are significant is consistent with earlier studies that found market profitability to be positively related to de novo entry. The change in the significance of branching restrictions found in this study as compared to earlier ones probably reflect changes in banking laws during the past 20 years.

---

[11] As an alternative to ROA we also tested lagged return on equity (ROE) for all specifications and found the variable to be insignificant.

Table 2

Name of Variable	Description	Mean	Standard Deviation
NEWANY	De novo entry dummy variable for any bank or thrift	0.23	0.42
YPP	Per capita personal income	22,202.3	4313.7
POPPERM	Population in millions	0.66221	1.08829
BRANCHES	Branching restriction dummy variable	0.18	0.38
LAGINA	Two-year total of in-MSA acquisitions through prior year	3.31	5.13
LAGINC	Two-year total of in-MSA consolidations through prior year	2.94	6.52
LAGOUTA	Two-year total of out-of-MSA acquisitions through prior year	4.03	6.74
LAGOUTC	Two-year total of out-of-MSA consolidations through prior year	6.23	12.36
LAGINOUT	In-MSA or out-of-MSA merger dummy variable	0.88	0.32
LAGINAD	In-MSA acquisitions dummy variable	0.58	0.49
LAGINCD	In-MSA consolidations dummy variable	0.37	0.48
LAGOUTAD	Out-of-MSA acquisitions dummy variable	0.55	0.50
LAGOUTCD	Out-of-MSA consolidations dummy variable	0.43	0.49
UNEMPLR	Unemployment rate for prior year	5.13529	2.741388
POPGROW	Percentage change in population for prior year	0.93	1.07
ROAAVG	Median ROA of all banks and thrifts for prior 3 years	1.08	0.33
SQSHARE	Herfindahl-Hirschman Index for midyear branches	1,986.34	807.71
DUM1996	Dummy variable for the year 1996	0.43	1.16
DUM1997	Dummy variable for the year 1997	0.25	0.44
DUM1998	Dummy variable for the year 1998	0.25	0.43
PCTINA	Two-year total of deposits of acquired institutions by in-market acquirers through the prior year as a percentage of total market deposits	3.30	5.11
PCTINC	Two-year total of deposits of consolidated institutions by in-market affiliates through the prior year as a percentage of total market deposits	2.94	6.52
PCTOUTA	Two-year total of deposits of acquired institutions by out-of-market acquirers through the prior year as a percentage of total market deposits	4.02	6.75
PCTOUTC	Two-year total of deposits of consolidated institutions by out-of-market affiliates through the prior year as a percentage of total market deposits	6.24	12.36

Table 3

Variable	Dependent variable: De novo entry dummy variable		
	First Equation a	Second Equation b	Third Equation c
Intercept	-3.1977 (0.0001)***	-3.609 (0.0001)***	-3.3873 (0.0001)***
YPP	0.000046 (0.0235)**	0.000048 (0.0156)**	0.000037 (0.0745)*
POPPERM	0.6767 (0.0001)***	0.6672 (0.0001)***	0.5837 (0.0001)***
BRANCHES	0.2928 (0.1337)	0.3526 (0.0674)*	0.3339 (0.0887)*
UNEMPLR	-0.1295 (0.002)***	-0.1213 (0.0033)***	-0.1295 (0.0019)***
LAGINA	0.0319 (0.0260)**		
LAGINC	0.00981 (0.3764)		
LAGOUTA	0.00960 (0.3925)		
LAGOUTC	0.00944 (0.1018)		
LAGINOUT		0.6467 (0.0556)*	
LAGINAD			0.3514 (0.0426)**
LAGINCD			0.2651 (0.0913)*
LAGOUTAD			0.3168 (0.0578)*
LAGOUTCD			0.0131 (0.9361)
POPGROW	0.4568 (0.0001)***	0.4748 (0.0001)***	0.4565 (0.0001)***
ROAAVG	0.2759 (0.2497)	0.2678 (0.2569)	0.3150 (0.1915)
SQSHARE	-0.00021 (0.0630)*	-0.0002 (0.0784)*	-0.00017 (0.1337)
DUM1996	0.3359 (0.1462)	0.3036 (0.1823)	0.3354 (0.1424)
DUM1997	0.5266 (0.0215)**	0.5357 (0.0173)**	0.5960 (0.0087)***
DUM1998	0.6439 (0.0075)***	0.6993 (0.0019)***	0.7863 (0.0008)***
Number of Observations	1,276	1,276	1,276
Chi-square Statistic	178.0551 (0.0001)***	173.2022 (0.0001)***	182.4671 (0.0001)***
Pseudo R-square Statistic	0.1880	0.1844	0.1897

Note: The dependent variable (NEWANY) equals one if the MSA has any de novo entrants during a year for 1995 to 1998. Statistics for the probability greater than Chi-square are in parentheses, with *, **, or *** to denote an estimate significantly different from zero at the 10%, 5%, and 1% levels of significance, respectively, using a two-tailed test.

The specification of the model discussed above examines the effect of the amount (or intensity) of merger activity, while the specifications in columns (b) and (c) in table 3 present the findings with variables substituted to measure the effect of the existence of prior merger activity. In the second equation (column (b)), a dummy variable representing merger activity (including holding company consolidation) over a two-year period, ending one year before the granting of a new charter, is substituted for the merger count variables in the first equation. The dummy variable, LAGINOUT, was barely significant (90 percent level) and provides weak support for the finding that mergers encourage de novo entry.

A third specification was estimated (column (c)) with dummy variables LAGINAD, LAGOUTAD, LAGINCD, and LOGOUTCD to indicate whether there had been in-market or out-of-market mergers or holding company consolidations during the two years, ending one year before entry. The results indicate a positive and significant relationship between de novo entry and the existence of prior in-market mergers. The results also showed a positive, but marginally significant, relationship between in-market consolidations and out-of-market mergers. The dummy variable representing the incidence of out-of-market consolidations was insignificant. The branching restriction variable was positive and barely significant in this specification, but the market concentration variable was insignificant.

To further test the robustness of the results and to attempt to reconcile the findings with those of Berger, et. al. (1999), a specification of the model was tested that measured the degree of merger and consolidation activity by the share of market deposits involved in merger or consolidation activity. Similar to the earlier analysis we differentiated in market activity from out of market merger activity. (See table 2.) The specification tested is similar to the first one presented above. As is shown in table 4, the economic

variables, for income per capita, unemployment rate, population, and population growth, had the same signs and were statistically significant. In this specification, the measure of market concentration was more significant and a deterrent to de novo entry. More importantly, the variable for the share of in-market mergers (PCTINA) was positive and statistically significant again. The other measures of merger or consolidation activity were either statistically insignificant or weakly significant. These results lend support to the finding that in-market acquisitions encourage de novo entry, but out-of-market acquisitions do not encourage de novo entry into urban banking markets.

Table 4

Variable	Dependent variable: De novo entry dummy variable
Intercept	-3.0276 (0.0021)***
YPP	0.00004 (0.0565)**
POPPERM	0.7006 (0.0001)***
BRANCHES	0.2699 (0.1671)
UNEMPLR	-0.1275 (0.0024)***
PCTINA	0.0114 (0.0131)**
PCTINC	0.00728 (0.4024)
PCTOUTA	-0.00007 (0.9927)
PCTOUTC	0.00816 (0.0863)*
POPGROW	0.4618 (0.0001)***
ROAAVG	0.3256 (0.1731)
SQSHARE	-0.00027 (0.0183)**
DUM1996	0.3269 (0.1542)
DUM1997	0.5226 (0.0218)**
DUM1998	0.6403 (0.0073)***
Number of Observations	1,276
Chi-square Statistic	178.1168 (0.0001)***
Pseudo R-square Statistic	.1878

Note: The dependent variable (NEWANY) equals one if the MSA has any de novo entrants during a year for 1995-1998. Statistics for the probability greater than Chi-square are in parentheses, with *, **, or *** to denote an estimate significantly different from zero at the 10%, 5%, and 1% levels of significance, respectively, using a two-tailed test.

VI. Conclusion

This study identifies some of the determinants of de novo entry into urban banking markets by examining data on most of the nation's urban banking markets and differentiating between those that had *true* de novo entry and those that did not. Data for the four years from 1995 through 1998 were examined and, for the first time, banks and thrifts were viewed as full competitors. The principal hypothesis tested was one frequently mentioned in the popular press, namely, that merger activity, and in particular out-of-market acquisitions, triggers de novo entry. [12]

Economic theory suggests that the primary impetus for de novo entry should be expected future profitability of the entrant. The results of this study indicate that the measures of expected future profitability for a de novo institution are significantly related to entry. The proxy variables for expected future profitability are income per capita, unemployment rate, and population growth. Of interest is the fact that these were significant in all specifications of the model tested. This contrasts with average return on assets, which reflects performance of banks in the market. The results on branching restrictions suggest a weak positive relationship between these legal constraints and de novo entry, which is different than found in earlier studies. However, it should be noted that these barriers have eroded significantly during the past decade.

The results presented above lead us to accept the hypothesis that merger activity causes de novo entry in urban markets. These results are similar to with those of Berger, et. al. (1999). Analysis of recent data shows a positive relationship between merger activity among market participants and de novo entry. However, the existence of acquisitions by firms from outside the market was not significantly related to de novo entry. Hence, one can not accept the hypothesis that out-of-market merger activity

causes de novo entry. While these results differ from those found by Berger, et. al., their results appear to be driven by a broader definition of merger and acquisition activity, one that treats the markets of acquirers and targets the same. Moreover, because this study focuses on urban markets we were able to use market specific economic data. The results presented above indicate that the clear determinant of de novo entry is the attractiveness of a market in terms of likely future profitability for the entrant and not out-of-market merger and acquisition activity.

References

Amel, Dean F., and J. Nellie Liang. 1997. Determinants of Entry and Profits in Local Banking Markets. *Review of Industrial Organization* 12, no. 1:59–78.

Berger, Allen N., Seth D. Bonime, Lawrence Goldberg, and Lawrence J. White. 1999. The Dynamics of Market Entry: The Effects of Mergers and Acquisitions on De Novo Entry in Banking. In *Proceedings of the 35th Annual Conference on Bank Structure and Competition,* 345–362. Federal Reserve Bank of Chicago.

DeYoung, Robert, Lawrence G. Goldberg, and Lawrence J. White. 1999. Youth, Adolescence, and Maturity of Banks: Credit Availability to Small Business in an Era of Banking Consolidations. *Journal of Banking and Finance* (forthcoming).

DeYoung, Robert, and Iftekhar Hasan. 1997. The Performance of De Novo Commercial Banks. Economics Working Paper 97-3. Office of the Comptroller of the Currency.

_____. 1998. The Performance of De Novo Commercial Banks: A Profit Efficiency Approach. *Journal of Banking and Finance* 22:565–87.

Gilbert, Gary G. 1974. Predicting De Novo Expansion in Bank Merger Cases. *The Journal of Finance* 29, no. 1:151–62.

Gillan, Carey. 1998. Investor: Banks Are Disappearing But Not Start-up Opportunities. *American Banker,* 13 November.

Goldberg, Lawrence G., and Lawrence J. White. 1997. De Novo Banks and Lending to Small Business: An Empirical Analysis. Working Paper Series S-97-8. New York University Salomon Center, Leonard N. Stern School of Business.

Hanweck, Gerald. 1971. Bank Entry into Local Markets: An Empirical Assessment of the Degree of Potential Competition via New Bank Formation. In *Proceedings of a Conference on Bank Structure and Competition*, 161–72. Federal Reserve Bank of Chicago.

Hunter, William C., and Aruna Srinivasan. 1990. Determinants of De Novo Bank Performance. Federal Reserve bank of Atlanta *Economic Review* 75, no. 2:14–25.

Hunter, William C., James A. Verbrugge, and David A. Whidbee. 1996. Risk Taking and Failure in De Novo Savings and Loans in the 1980s. *Journal of Financial Services Research* 10, no. 3:235–71.

Lindley, James T., James A. Verbrugge, James E. McNulty, and Benton E. Gup. 1992. Investment Policy, Financing Policy, and Performance Characteristics of De Novo Savings and Loan Associations. *Journal of Banking and Finance* 16, no. 2:313–30.

McCall, Alan S., and Manferd Peterson. 1977. The Impact of De Novo Commercial Bank Entry. *The Journal of Finance* 32, no. 5:1587–1604.

Murray, Matt. 1998. Bank with a Giant, or Bank with Merton Corn. *The Wall Street Journal,* 25 August.

Peltzman, Sam. 1965. Bank Entry Regulation: Its Impact and Purposes. *The National Banking Review,* December: 163–77.

Rose, John T. 1977. The Attractiveness of Banking Markets for De Novo Entry: The Evidence from Texas. *Journal of Bank Research* 7, no. 4:284–93.

Rose, John T., and Donald T. Savage. 1983. Bank Holding Company De Novo Entry, Bank Performance, and Holding Company Size. *Quarterly Review of Economics and Business* 23, no. 4:54–62.

White, E.N. 1992. *The Comptroller and the Transformation of American Banking,* 1960–1990. *Office of the Comptroller of the Currency.*

Zellner, Wendy. 1998. Little Banks Are Sprouting in the Shadow of Giants. *Business Week,* 4 May: 44.