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**Where Are All the New Banks? The Role of Regulatory Burden
in New Charter Creation**

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Where Are All The New Banks? The Role of Regulatory Burden in New Charter Creation

By

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The number of new bank charters in the United States has declined dramatically in recent years. From 1990 to 2008, over 2,000 new banks were formed, more than 100 per year. From 2009 to 2013 only 7 new banks were formed, fewer than 2 per year. Many industry observers have suggested that the decline is primarily due to regulatory burden, including new FDIC regulations and the 2010 Dodd-Frank Act. But other influences could have played a role, in particular, the current weak economy. Low interest rates and depressed demand for banking services – both of which depress profit for banks, and particularly new banks – may also have discouraged entry. This paper assesses the causes of the decline in new charter creation. We model firms' new charter decisions at the county level with an ordered probit using U.S. data from 1976 to 2013. Our results suggest that even without any regulatory changes following the financial crisis, the weak economy and low interest rate environment would have caused 75-80% of the current decline in new charters.

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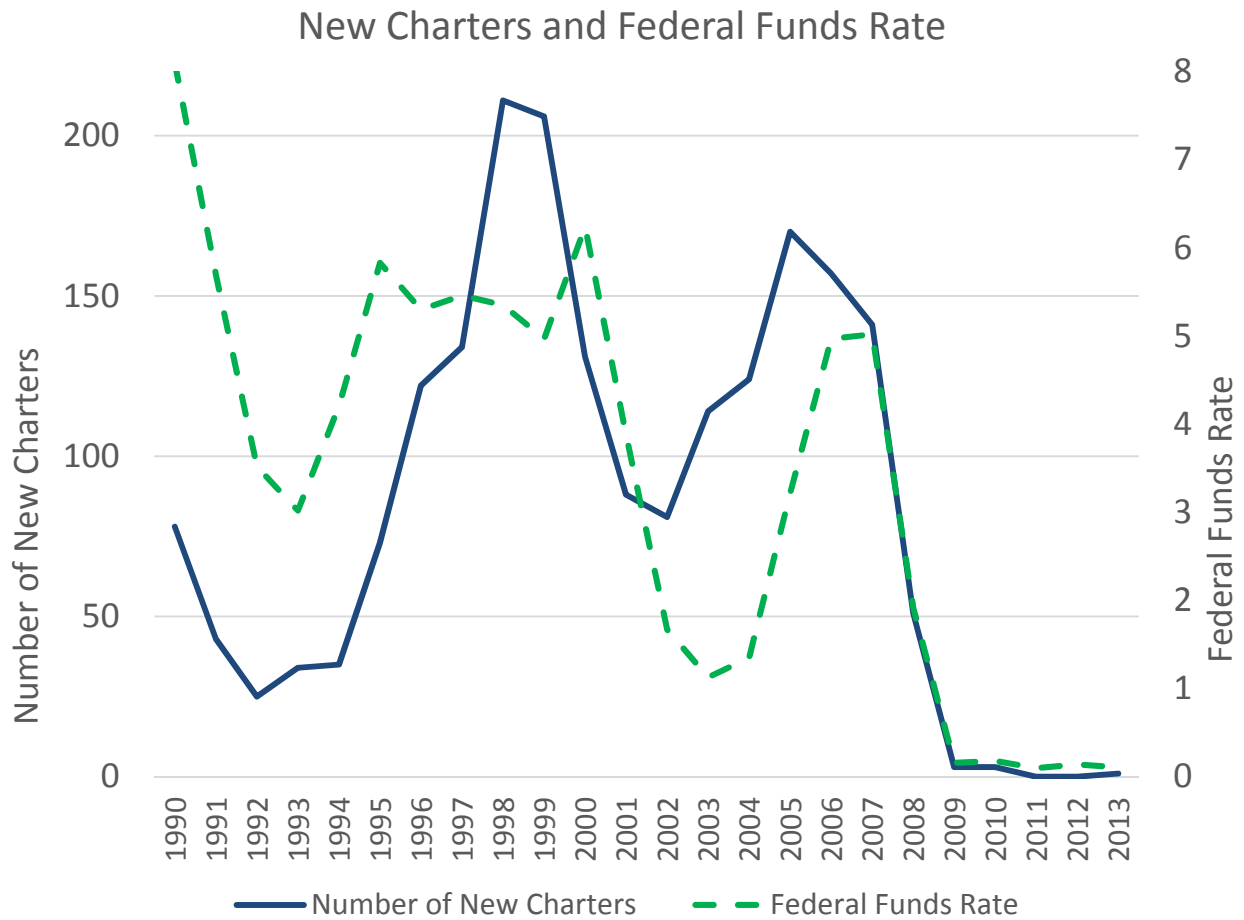
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1. Introduction

The rate of new bank formation in the United States (the solid line in Figure 1) dropped dramatically in recent years. From 1990 to 2008, over 100 new banks were chartered each year on average. Some years saw the formation of over 200 new institutions. From 2009 to 2013, however, only 7 new charters were formed.

Figure 1



This dramatic reduction in new bank charters could be a concern for policymakers if, as some suggest, the decline has been caused by increased regulatory burden imposed in response to the financial crisis

of the late 2000's. Numerous regulations have been passed since the financial crisis, some affecting large banks, some affecting small banks, and some affecting both. These regulations include increased capital and liquidity requirements instituted by the Basel Committee, increased regulatory compliance stipulated by the Dodd-Frank Financial Reform Act, new rules for mortgage lending instituted by the Consumer Financial Protection Bureau, and new requirements for de novo banks seeking deposit insurance from the FDIC. Collectively these regulations and uncertainty around their interpretation, enforcement, and future extension may have depressed banking profits and thus new bank supply to inefficiently low levels.²

Other factors besides regulation, however, may have contributed to the decline in new bank charters. In particular, the macro economy has been weak since the financial crisis, which leads to at least two effects that lower banking profits. First, the weak economy has introduced a low interest rate environment (the dotted line in Figure 1), which diminishes banks' ability to earn spread interest. Banks have difficulty earning returns on loans when interest rates are low, and this especially hurts new banks (more evidence later in the paper). As seen in Figure 1, there is a strong correlation between interest rates and new entry. Second, in a weak economy households and businesses may have depressed demand for banking services such as loans and deposit-taking services. If factors such as these are responsible for the decline in new charters then there should be less cause for concern on the part of policymakers. Low interest rates and a likely-transitory decline in bank demand are among the more innocuous explanations for a decline in new bank supply.

This aim of this paper is to understand how much of the decline in new bank formation is attributable to increased regulatory burden since the financial crisis, as opposed to other observable factors such as the

² One manifestation of these opinions was Senator Pat Toomey's comments at Federal Reserve Chair Janet Yellen's Senate Confirmation hearing in the fall of 2013. Senator Toomey specifically attributed the lack of new charters to increased regulatory burden in recent years and asked the future Chair to address the issue.

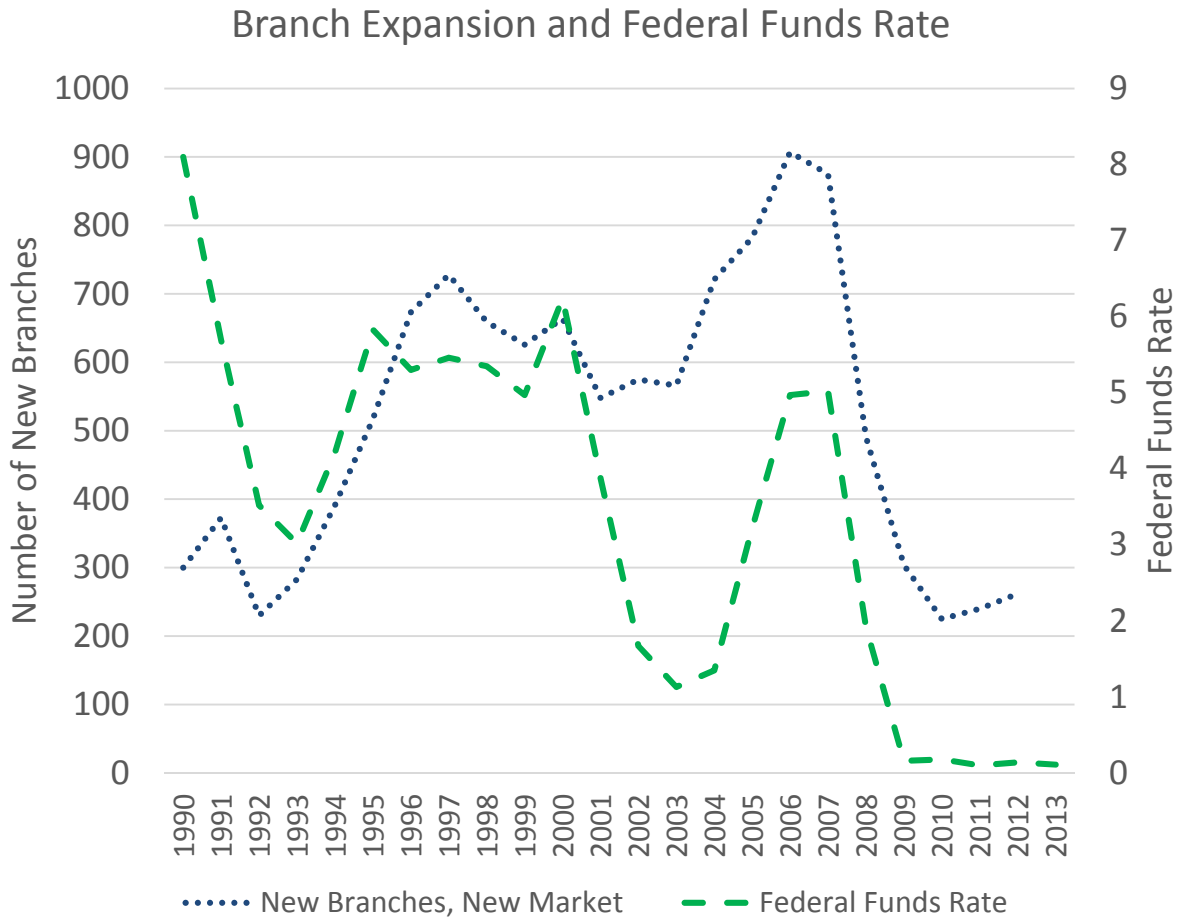
weak economy with its low interest rates and weak banking demand. To address this question, we estimate a model of new bank entry using observable, time- and geography-varying determinants of prospective banking profit. These include factors related to income, GDP, population, regulation, interest rates, and consumer credit worthiness. We use the model to predict the level of new bank formation that would have occurred absent any regulatory changes post-crisis, and compare the model's predicted levels of bank formation to the actual level of bank formation.

Our model indicates that most of the current decline in new charters – approximately 75-80% in our preferred specifications, and between 65 and 85% in nearly every regression specification we run – can be explained by non-regulatory factors. These include the weak economy, weak demand for banking services, and low interest rate environment, and exclude any potential regulatory effect.

The model does suggest that there has been a structural shift to lower levels of bank formation post-crisis. This effect could be due to regulation – suggesting new charters may not rebound when the economy recovers – but there are a number of other plausible explanations. In fact, the nearness to the zero-lower-bound interest rates could well be a factor, in which case our results would understate the effects of interest rates.

It is worth noting that the other form of bank entry – branch expansion by existing banks into new geographic markets – has also declined dramatically in recent years (Figure 2).

Figure 2



There are two implications of this. First, the decline in new bank charters is not being substituted by incumbent expansion. They are part of a common trend, and both forms of entry have been at historically low levels.³ Second, since both expansion and *de novo* entry have declined, regulations that affect only *de novo* banks are likely not the main cause of the entry void. For example, the FDIC's 2009 restrictions on *de novo* banks should not affect expansion by incumbents, so other factors must be discouraging expansion those would likely discourage *de novo* entry, as well.⁴

³ The annual correlation between national *de novo* entry and national expansionary entry is .93.

⁴ Some regulations could, of course, slow both expansion and *de novo* entry. But not all regulations that have been cited as causing the *de novo* decline fall into that category.

The remainder of the paper proceeds as follows. Section 2 discusses the existing literature on bank entry and profitability. Section 3 presents background on new charter formation and recent trends in banking profitability. The descriptive evidence sheds some light on reasons for the compression in bank profits and the associated decline of new entry. Section 4 discusses our model of new banking entry, and Section 5 discusses the data we use to estimate the model. Section 6 describes our results and model predictions. Section 7 concludes.

2. Literature

The literature on new charter creation has focused largely on entry into local banking markets, the factors that lead to greater or lower probability of entry, and competitive outcomes. Since banking has been and continues to be local in geographic scope, local market conditions are generally used in the analyses. Determinants of profitability and entry used in these studies included market growth, market concentration, and recent merger activity.

One of the earliest studies, Hanweck (1971) considered new charter formations in 1968 and 1969. He showed that larger and less concentrated banking markets have significantly more charter formations. Such a result is consistent with most equilibrium models of entry. Other early papers include Boczar (1975) and Rosse (1977), who focused on very restrictive samples from Florida and Texas respectively.

Three more recent studies, Seelig and Critchfield (2003), Berger et al (2004), and Keeton (2000), considered new charter formation in urban markets and the effects of mergers. They found that greater merger activity is associated with greater subsequent entry and that better local market demand conditions are associated with greater entry.

Amel and Liang (1997) and Adams and Amel (2007) also focused on bank competition and local market determinants of entry, and considered both branch expansion and new charter formation. Amel and Liang examined bank profits and entry in over 2,000 banking markets from 1977-88.⁵ They established that local population, population growth, and high incumbent profits are strong determinants of entry. Adams and Amel estimated a reduced form model of bank entry from 1994 to 2008. Their paper likewise included measures of local market demand conditions, but also included past entry and strategic variables. They determined that local market demand conditions are correlated with higher entry probabilities, and that incumbent bank branch expansion and small bank presence deter entry. Contrary to the predictions of some static entry models, they found that past entry correlates positively with future entry, suggesting a role for persistent market-specific unobservables.

Cohen and Mazzeo (2007) estimated a static, single period, cross sectional Nash equilibria across various geographic markets. They modeled aggregate entry decisions on aggregate profitability determinants and found that banks of the same type (thrift, single market, and multi-market) compete more intensely than banks of different types.

3. New Charter Formation and Trends in Banking Profitability

3.1 New Charter Formation

To begin accepting deposits, banks are required to obtain insurance from the Federal Deposit Insurance Corporation (FDIC) and to submit to a primary federal regulator's authority. Banks may open new

⁵ Amel and Liang have measures of bank profit that are more closely tied to local demand conditions, due to the substantial state branching restrictions that existed at the time of their sample. Such an analysis is less viable on a later data sample because the majority of banking assets are now held by companies that span multiple markets and states.

charters either at the national level – in which case their primary federal regulator is the Office of the Comptroller of the Currency (OCC) – or at the state level – in which case the primary federal regulator is the Federal Reserve Board (FRB, for “member” banks) or the FDIC (for “nonmember” banks).

The filing fees and capital requirements for a new bank depend on geography (See Appendix A). The required capital varies both by state and by statute versus practice. Georgia requires \$3M in initial capital, New Jersey \$6M. New York, California, and the OCC (not shown in Appendix) appear to evaluate capital plans on a case-by-case basis, though New York indicates that it may require over \$30M in initial capital to start a successful bank in the New York City metropolitan area. The filing fees in all states are relatively modest compared to the capital requirements, with approximate state averages of \$5,500 and \$2.3 M, respectively.

In addition to receiving a new charter, new banks need to apply to the FDIC for participation in the deposit insurance fund. In the application process the FDIC collects information on business plans and capital plans, among other things, and requires that new charters abide by their business plans for an established period. In 2009, the required time was increased from three to seven years and this regulatory change is one industry observers have pointed to as having reduced the incentives to establish a new charter.

Once a charter is approved, it does not normally take long for a retail presence to be established. Indeed some charter-granting institutions require a physical branch to be opened shortly after a charter is granted in order to avoid charter expiration. In the more than 2,000 new charters in our data from since 1990, all except one were accompanied by a bank branch in the same year.

New charters have a number of characteristics that make them unlike incumbents (see Figure 3).

Figure 3

Mean Characteristics of New Banks and Incumbent Banks

Bank-Year Pairs

	New Charters	Low Asset Banks (<\$1 B)	High Asset Banks (>=\$1 B)
N	1905	190,148	12,832
Assets	\$34,027	\$163,695	\$13,200,000
Deposits	\$22,766	\$136,692	\$8,458,742
Single-Market Bank	97.6%	70.4%	21.3%
% Branches Rural	14.7%	40.4%	13.8%
% Branches MSA & Micropolitan	85.3%	59.6%	86.2%
Net Interest Margin ¹	1.2%	1.8%	1.5%
Net Non-Interest Margin ²	-3.0%	-1.1%	-0.8%
Fed Funds Holdings/Assets	12.0%	1.4%	0.9%
Loans/Assets	41.9%	60.3%	63.8%
Real Estate Loans/Assets	11.2%	26.6%	29.1%
C&I Loans/Assets	10.5%	8.3%	9.4%
Consumer Loans/Assets	3.5%	6.4%	6.1%
Securities/Assets	14.9%	14.6%	18.1%

All dollar amounts are in thousands of dollars.

¹ [(Interest Revenue) - (Interest Cost)] / Assets

² [(Non-Interest Revenue) - (Non-Interest Cost)] / Assets

³ Micropolitan areas have a core urban population of 10,000 - 50,000.

Newly chartered banks are significantly smaller, both by assets and deposits, than incumbents. They are more likely to be single-market competitors and their initial branch placements are less likely to be rural than the average small bank. New charters earn smaller margins on both their interest operations and non-interest operations and also have rather different loan and asset holdings. They hold far more money in Federal Funds Reserves and their overall lending is far below that of incumbent banks.⁶

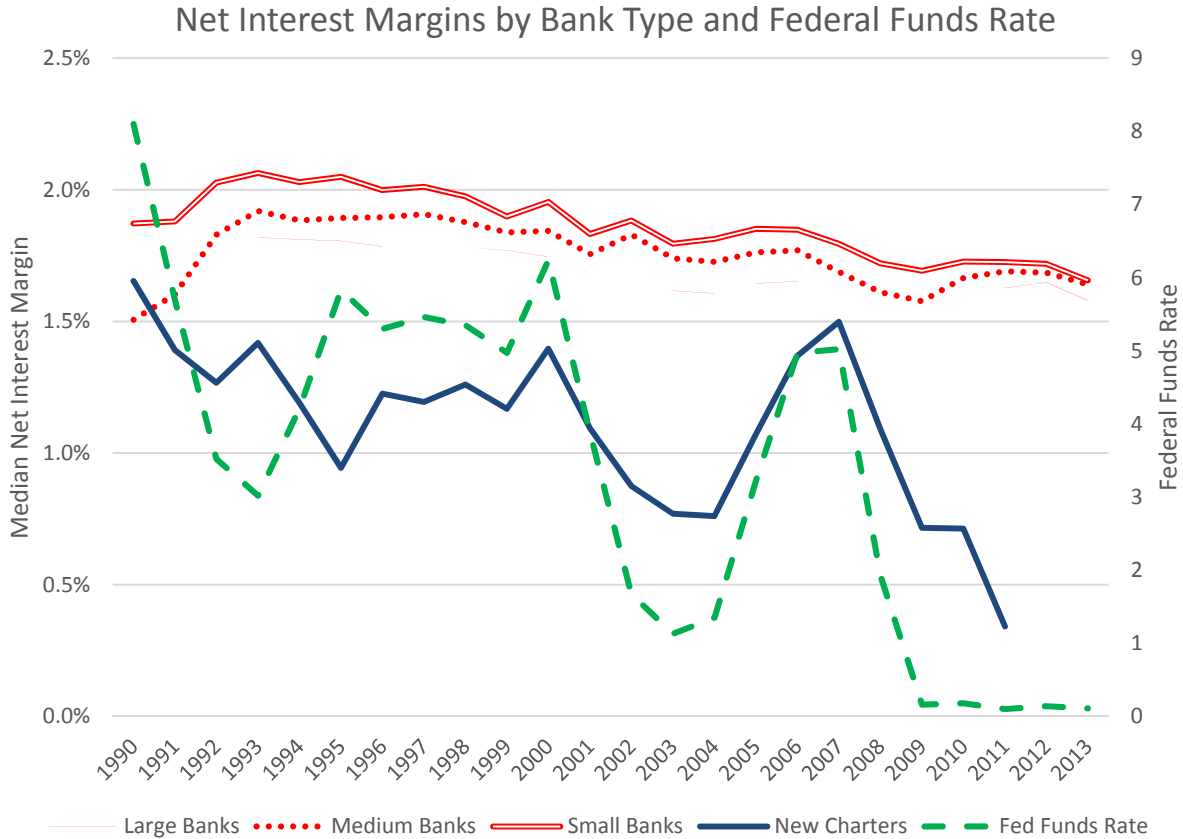
⁶ Other studies have also found differences between entrants and incumbents, both in banking contexts and in other markets. Adams and Amel (2007) found that community banks compete more aggressively than national

3.2 Trends in Banking Profitability

Trends in banking profitability help shed some light on whether cost (regulation) or demand (demographic and interest rate) variables play a larger role in reduced banking profits. Figure 4 displays the Federal Funds Rate and the Net Interest Margins of banks of various sizes and types. Net Interest Margins are defined as interest revenue minus interest costs divided by total assets, and median annual values are shown. Large banks are those with \$1B or more in assets, small banks are those with less than \$250M.

banks do in rural markets. Cohen and Mazzeo (2007) showed that competition between banks of similar types (thrift, single market, or multi market) is stronger than competition across groups, suggesting differentiation. Foster, Haltiwanger, and Syverson (2008) document that in certain manufacturing industries entrants are, on average, more productive than incumbents.

Figure 4



Correlation of Net Interest Margin and Federal Funds Rate

New Charters	0.8371***
Small Banks (<\$250M)	0.6760***
Medium Banks (\$250M - \$1B)	0.2877
Large Banks (>\$1B)	0.1359

Correlations are of Median Annual NIM with Annual FFR.

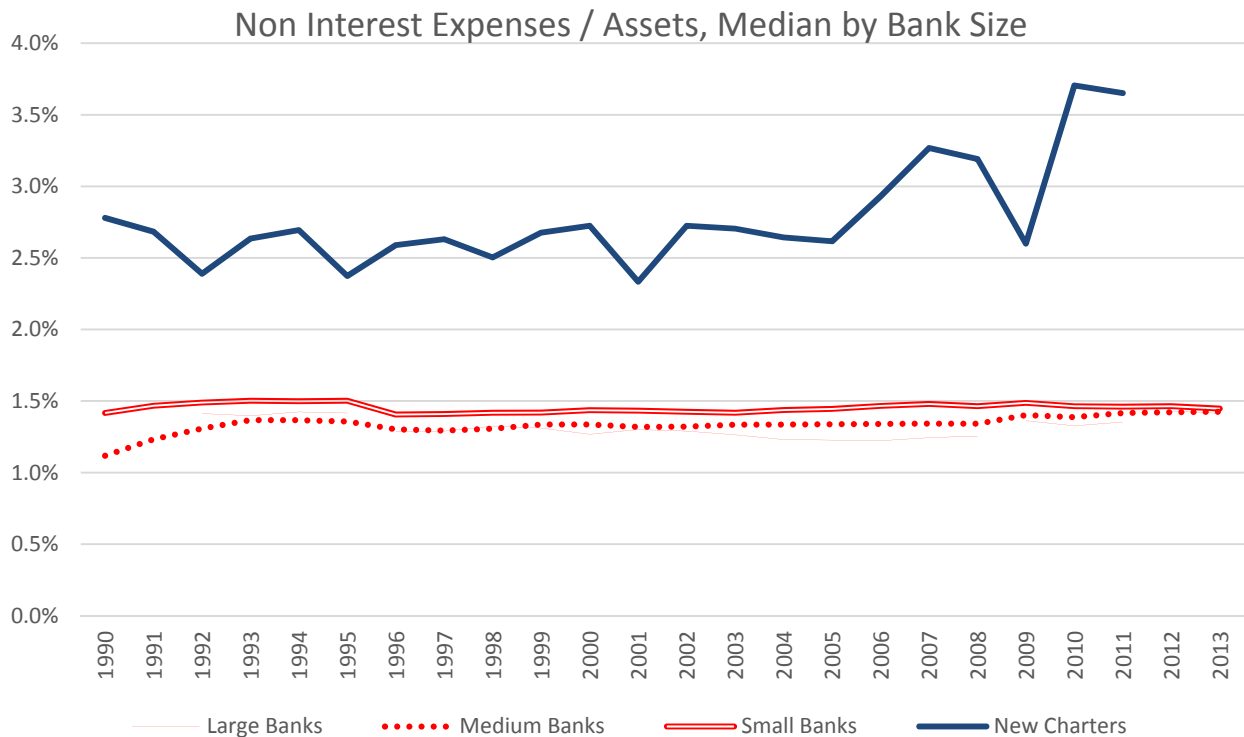
***<0.01, **<0.05, *<0.1 null hypothesis of 0.

In addition to being lower in levels, entrant banks' net interest margins are far more tied to the Federal Funds rate than are the interest margins of incumbent banks. The correlation of entrant banks' interest margins and the federal funds rate is .83, a higher correlation than for incumbent banks of any size including small banks. As we noted before, entrant banks do not have an existing stock of loans on

which they collect interest rates from previous periods, and instead they have high holdings of federal funds. The loans entrants do have on their balance sheets have been issued in the entrants' short lifetimes, and thus are issued at or near current interest rates. So new banks have greater exposure to current interest rates, while incumbent banks have diversified portfolios of loans and securities with varying yields and interest rates (and have lower holdings of federal funds). In light of Figure 4, it is not surprising that would-be new charters are reluctant to form during low interest rate regimes when their profits from interest operations are low.

Figure 5 gives a view of the non-interest side of banks' operations. The figure displays the median non-interest costs as a percentage of assets for various bank sizes and types.

Figure 5



Some new regulations – though not all – may be expected to introduce compliance costs which would show up in non-interest expenses. These could include hiring new staff, consultants, or compliance

software, etc. However, there is no obvious pattern here. Incumbent banks' non-interest costs to asset ratios show little change at all in recent decades, and entrant banks' ratios are only slightly higher than they were in 2007 (and very imprecisely estimated after 2008 due to the scarcity of new charters). Of course regulation may work through the interest margin or may not yet have had a tangible effect, but nonetheless Figure 5 shows no obvious sign of increased compliance expense on the non-interest side of the income statement.

These descriptive facts provide context for our model and estimation through which we attempt to provide more systematic inference on the causes of the decline in new bank charters.

4. Model

Prospective entrants' decisions to apply for a new charter in a particular geographic area are determined by expected bank profits in that area. Expected profits are determined by interest rates, regulation, the demographics of the geographic area (population, income, employment, etc.), changes in these demographics, and the local competitive environment. Entry at the county level is observed according to:

$$NewCharter_{mt} = \begin{cases} \geq 1 & \text{if } X_{mt} + \beta_2 i_{mt} + \beta_3 r_{mt} + \beta_4 R_{mt} + \varepsilon_{mt} > 0 \\ 0 & \text{else} \end{cases}$$

$NewCharter_{mt}$ in county m and time t is defined as [0,1] for a standard probit, or the number of new charters for an ordered probit.⁷ X_{mt} represents a vector of local demand variables such as income, population income growth, population growth and changes in those variables. i_{mt} is the average

⁷ Results change very little between the two models (see Figure 10), because only 0.6% of county year pairs have more than one entrant (see Figure 6).

federal funds rate in year t . r_{mt} is a vector of risk variables in a geography such as consumers' average credit scores and number of delinquencies in the particular area. R_{mt} captures regulatory variables that may vary by time and geography. ε_{imt} is normally distributed and i.i.d. across markets m and time t .

The measures of regulatory effect are dummy variables to capture various regulatory regimes.

Appendix B contains a description of major national regulatory reforms since the start of our sample period. We also estimate specifications with state fixed effects to capture time-invariant, state-specific regulatory conditions, though these change the results very little (see Figures 10 and 11). We considered using other measures of regulation – such as pages of banking regulation or required capital ratios – but judged them not to be useful in this context. They are too restrictive in their functional form. Furthermore, some industry observers point out that new regulation may introduce uncertainty over its future extension, enforcement, and implementation. This “climate of uncertainty” is unlikely to be captured by specific metrics the regulation is designed to affect. Regime dummies are a flexible, unrestrictive functional form for capturing the various effects that regulations have on profit and entry.

We model bank competition and entry decisions as occurring at the local geographic level. Despite the existence of national banks that compete across many geographic markets, retail banking is a geographically local activity which requires proximity to a bank for most bank transactions. Both antitrust enforcement agencies – the Department of Justice (DOJ) and the Federal Reserve Board – consider retail banking markets to be local, and all previous studies to our knowledge consider competition and entry decisions to occur at the local level.⁸

We use the county as the level of observation, rather than the slightly broader definitions (in some cases) of markets used by regulatory authorities.⁹ We do this to take advantage of the finer data that

⁸ See Group of Ten (2001) for further discussion.

⁹ There are approximately 3,000 counties in the United States.

we have for both new charters and demographics. Bank branching decisions appear to focus more on immediate service areas of the branch rather than entire metropolitan statistical areas, and we aim to match this feature by using counties for the new charter decision.

Despite entry being a dynamic, forward-looking decision, we forego modeling a dynamic equilibrium of entry decisions. In doing so our model makes two assumptions. First, that current state variables such as interest rates and demographics are sufficient statistics for firms' beliefs about the future values of these state variables. Indeed, demographic variables tend to change systematically and slowly relative to current levels, and beliefs about future interest rates are likely to be captured by the forward rates we have in our model. Second, we assume that strategic interaction plays a minimal role in firms' entry decisions, a reasonably benign assumption given that only about one half of one percent of county-year pairs have more than one entrant.

We anticipate the regression results will indicate that a higher federal funds rate and more robust local demographic variables lead to greater new charter creation, while increased risk factors lead to lower new charter creation. The effect of each regulatory regimes should depend on whether the regulation was a liberalization or restriction of banking activity.

5. Data

New charter data is constructed from the Summary of Deposits (SOD) and the National Information Center (NIC). The SOD is an annual branch level survey of banking institutions taken on June 30 of each year. The NIC data matches bank entities with their respective holding companies and also tracks the evolution of bank entities over time. This allows us to classify new branches in each year as either acquisitions, expansions by existing firms, or new charters. New charters created by already existing

bank holding companies are not counted as new charters, but rather as branch expansion by an existing institution. Because the SOD is a mid-year report, the number of new charters in a county-year pair is the number of new charters established between July 1 of that year and June 30 of the subsequent year. Forwarding the dependent/outcome variable by 6 months is more appropriate than lagging it by 6 months. Data are at the county level.¹⁰

Federal funds rates and ten year U.S. Treasury rates come from the Federal Reserve Bank of New York and U.S. treasury, respectively, and are annual averages.

County-level demographic variables are pulled from the Bureau of Economic Analysis (BEA), Bureau of Labor Statistics (BLS), and U.S. Census. The BEA provides data on population and per-capita income at their mid-year estimated levels dating back to 1975. The BLS provides weighted average monthly unemployment rates for each year dating back to 1990, and the Census provides the land area of each county which is used to calculate population densities. We calculate annual percentage changes in population and per-capita income as well as annual absolute changes in per-capita income.

We use the FRBNY Consumer Credit Panel/Equifax Data for credit information in each county starting in 1999. The data include average Equifax credit scores and number of annual credit inquiries conducted by third parties for a random sample of residents. Additionally, it includes the share of each county that has at least one account which is 60 days delinquent as of December 31. The dataset includes all people with credit history and social security numbers ending in certain digits.

Figure 6 presents some summary statistics.

¹⁰ We have pulled some market concentration data from the June 30 Call Reports which contain information such as deposits and assets for each banking entity. These data enable us to classify banking organizations by size, as well as to calculate HHIs. In calculating rural counties' HHIs, we exclude urban branches with greater than \$1 billion in deposits and rural branches with greater than \$500 million. We do this because banks sometimes funnel deposits into certain branches for legal or tax purposes.

Figure 6

A. Summary Statistics

County-Year Pairs

	N	Mean *	Median	Std	Min	Max
Year	113,580	1994.6	1995	11.0	1976	2013
Federal Funds Rate (%)	113,580	5.4	5.3	3.9	0.1	16.4
10-Year Treasury (%)	113,580	6.7	6.4	3.1	1.8	13.9
Unemployment Rate (%)	45,519	6.2	5.6	2.8	0.7	30.6
Per Capita Income (\$1000s)	113,580	\$25.8	\$24.3	\$8.8	\$5.8	\$162.9
Change (\$1000s)	113,580	\$0.6	\$0.5	\$1.7	-\$50.4	\$46.3
Population (1000s)	113,580	75.7	23.3	224.3	0.1	10,037
% Change	113,580	0.6	0.4	2.0	-77	43
People per Square Mile (1000s)	113,580	0.19	0.04	1.24	0.00	71.5
Delinquency Rate (%)	45,519	1.9	1.8	0.9	0	13.0
Mean Inquiries	45,519	1.5	1.4	0.6	0.2	4.1
Mean Equifax Credit Score	45,519	686	689	28	580	772
% Deposits in Small Banks	113,527	71.9	85.5	32.2	0	100
HHI	113,548	3262	2592	2216	0	10000

* Unweighted

FRBNY Consumer Credit
Panel/Equifax Data used.

B. Frequency of New Charters

County-Years Pairs

# New Charters	Freq	Pct	Cum Pct
0	116,895	97.1%	97.1%
1	2,738	2.3%	99.4%
2	463	0.4%	99.8%
3	151	0.1%	99.9%
4	55	0.1%	99.9%
5	26	0.0%	100.0%
6	15	0.0%	100.0%
7	10	0.0%	100.0%
8	10	0.0%	100.0%
9+	22	0.0%	100.0%

The sample runs from 1976 to 2013, though not all variables extend back to 1976. We ran some specifications on shorter samples (starting from 1999) with more regressors, and some on longer samples with fewer regressors. The results are very similar across the sample types (see Figures 10 and 11).

The Federal Funds rate and 10-year treasury rates are the only regressors that do not vary by county within a year. They range over the sample period from approximately 0 to over 16 percent and from approximately 2 to 14 percent, respectively. The unemployment rate, per capita income, and changes in per capita income exhibit far more variability at the county level than at the national level.

Unemployment reached 30% in some county-years. Population ranges from as few as 50 people in Loving County, TX 10 million people in Los Angeles County, CA. Population density, population change, credit worthiness, and market structure variables also exhibit variation across counties and time.

Panel B of Figure 6 shows that the vast majority of county-year pairs (97%) experience no new charters. There are approximately 3,000 counties in the United States, and on average only approximately 100 new charters per year. The number of counties with 2 or more entrants is even smaller (approximately one half of one percent) which is why the ordered and standard probits yield such similar regression and prediction results.

6. Results

6.1 Estimation Results

We estimate two primary specifications (displayed in Figure 7), as well as a number of other specifications for robustness (displayed in Figure 10 at the end of the text). Specification (S1) runs our

model on a shorter time sample – 1999 through 2013 – with a greater number of control variables, including those for unemployment and credit worthiness.¹¹ Specification (L1) runs the model on a longer time sample – back to 1976 – though lacks some control variables.¹² The results do not change substantially between the two models. In both of these baseline specifications, we run an ordered probit model on county-year data in which the dependent variable is the number of new charters in a county in a year.

Figure 7

Regression Results		
Specification:	(S1)	(L1)
Observation Type	County-Yr	County-Yr
Dep Var	New Chrtr	New Chrtr
Sample Start	1999	1976
Sample End	2013	2013
Probit Type	ordered	ordered
Notes		
Observations	45,519	113,580
r2_p	0.306	0.233
Coefficient Estimates		
ln_fedfunds	0.1755***	0.2067***
ln_pop	0.4835***	0.4128***
p_c_pop	0.0503***	0.1010***
popdensity	-0.0032	-0.0032
percapitainc	0.0091***	0.0151***
c_percapitainc	-0.0106	0.0253***
unemp_rate	-0.0366***	
mean_equif_credit_score	0.0007	
mean_inquiries	0.2719***	
delinq_rate	-0.0316	
DoddFrank_2010aa	-1.2497***	-1.3922***
SarbanesOxley_2002aa	0.0668	0.0249
MoneyLaundering_2001aa	-0.2069***	-0.1551**
GrammLeachBliley_1999aa		0.0804*
RiegleNeal_1995aa		0.5126***
FDICIA_1991aa		-0.4515***
FIRREA_1989aa		-0.2930***
GarnStGermain_1982aa		0.1233***
DIDMCA_1980aa		-0.1342***

¹¹ “S” for short sample.

¹² “L” for long sample.

Constant / Cut1	8.4375***	7.0651***
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In both baseline specifications, the estimation results yield expected signs for any statistically significant variables. The Federal Funds Rate (FFR) is positively correlated with new charter creation.¹³ Population, population growth, and per capita income are all positive and significant. Population density is insignificant, and per capita income changes have a positive coefficient in specification (L1).

Unemployment has the expected negative sign and is significant.¹⁴ Both mean Equifax credit score and delinquency rate are insignificant, but the number of credit inquiries per capita (a measure of demand for credit and banking services) is positive and significant. Regulation dummies for liberalizing regimes (Garn-St. Germain, Riegle-Neal, and Gramm-Leach-Bliley) have positive coefficients and for restrictive regimes (the remaining regulations) have negative coefficients when they are significant.¹⁵ The R-squared is higher in the shorter sample (specification (S1)), reflecting the greater number of controls.

The remaining specifications ((S2)-(S8) and (L2)-(L8)) in Figure 10 serve as robustness checks of the model. These robustness specifications were run in order to:

- test the standard probit ((S2) and (L2)),
- include state fixed effects to capture variation in state banking regulation ((S3) and (L3)),

¹³ Alternative specifications (not shown) use the 10-year Treasury note rates, the yield curve (the 10-year Treasury note rate minus the FFR), and various functional forms of these interest rate variables. The results change very little. In the interest of space we did not report all the robustness specifications here. The authors can provide additional results upon request.

¹⁴ We tried using national unemployment data in the long sample (because county-level unemployment data are unavailable before 1990) but the coefficient was not significant, and the model predictions did not change.

¹⁵ Sarbanes Oxley (2002) did not appear to have a significant effect on new charter creation, which is unsurprising because the reform dealt with publicly-traded companies which are typically much larger than *de novo* entrants.

- allow for any post-crisis structural shift to be anticipated by market participants, or to otherwise have begun before the implementation of the Dodd-Frank Act ((S4), (S5), (L4), and (L5)),¹⁶
- include lagged regressors to allow for a lengthier charter application process ((S6) and (L6)),
- include structural regressors which are likely to be endogenous but which past literature has relied upon ((S7) and (L7)), and
- make predictions strictly out-of-sample ((S8) and (L8)).

The robustness specifications lead to little change in the regression coefficients. With few exceptions, coefficients have similar signs, magnitudes, and statistical significance.

6.2 Model Predictions

Because the probit is a non-linear model, interpretation of regression results is easier with predicted marginal effect of coefficient, or some similar model prediction. We provide these in graphical form in Figures 8A and 8B.

¹⁶ The Dodd-Frank Act was signed into law in July 2010, initially proposed in June 2009, and may have been envisioned in some form before that time. The FDIC increased restrictions on *de novos* in August 2009.

Figure 8A

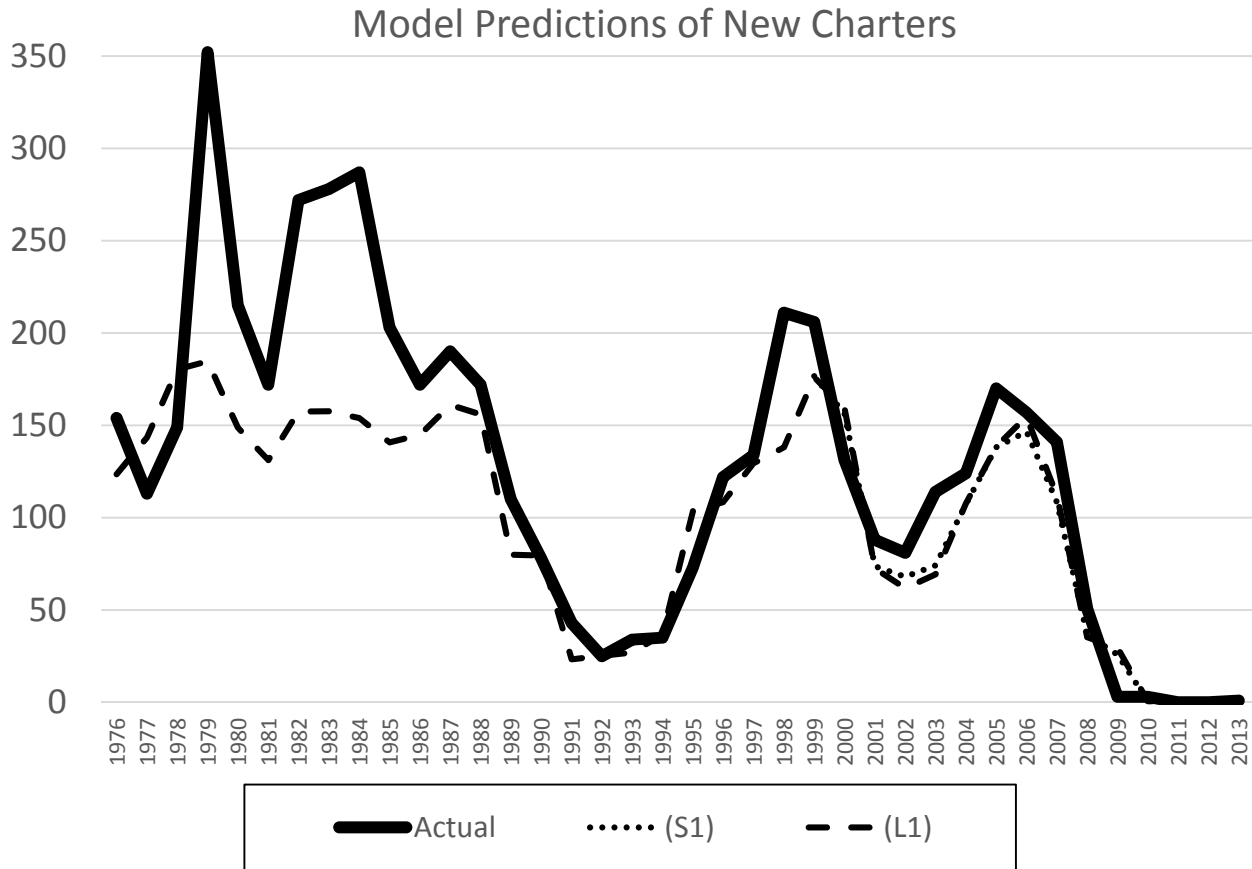


Figure 8A shows the actual number of new charters by year (the heavy, dark line), as well as in-sample predictions by our two baseline model specifications. The models are intended to match the “Actual” line. (L1) does not match the “Actual” well during the 1970s and early 1980s, a period marked by high inflation and changing monetary policy. However, both models match the “Actual” fairly well starting in the mid- to late-1980s.¹⁷ Figure 8A does not make any attempt to decompose the decline in new charters, it simply is intended to evaluate the fit of the model.

¹⁷ Model (S1) cannot make predictions before 1999 because certain regressors in that model are not available.

Figure 8B

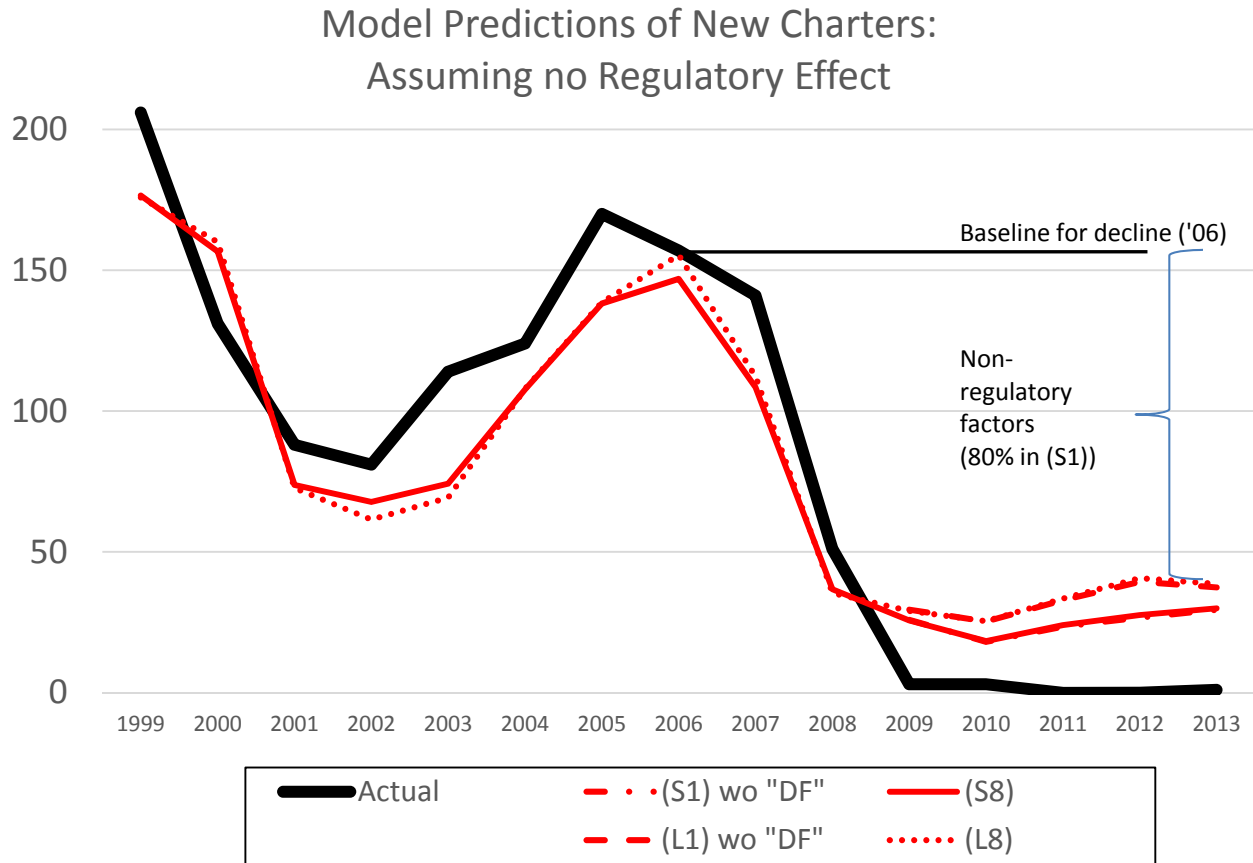


Figure 8B decomposes the decline in new charters. The Figure shows the actual number of new charters by year (the heavy, dark line), as well as predictions by our model for the path of new charters assuming no new regulatory effect since the financial crisis. Even without any regulatory effect, the predicted number of new charters by each of our four models drops off sharply from a baseline year of 2006. This suggests that a very large portion of the current decline in new charter formation is due to the non-regulatory factors.

Note that before 2010, the prediction lines may again be evaluated by how well they match the "Actual" line. Starting in 2010, however, the difference between prediction lines and the "Actual" has a different interpretation. Instead of being poorness of fit, it is the portion of the decline in new charters that the

non-regulatory variables fail to explain. By corollary, it is the upper bound of the effect that regulatory or other structural shifts may have had.

Note also that the paired regression models ((L1) with (L8) and (S1) with (S8)) track each other so closely it is difficult to distinguish them. This is not a coincidence, it is because each pair is a nearly identical specification to its partner. While (S1) and (L1) have four extra years in their samples, they also have a dummy variable to account for a possible structural shift in precisely those years. While these pairs of regressions track each other even more closely than they track the other 12 specifications, it should be noted that differences between any of the 16 specifications are quite small.

Figure 9 quantifies what Figure 8B shows visually and qualitatively. Figure 9 decomposes the model’s predicted percentage decline in bank charters due to non-regulatory versus potentially-regulatory factors. We use the 2006 values as the baseline level of charters before any decline, because 2006 is the last year in which economic and banking conditions were not affected by the financial crisis. In that year the actual number of charters (row [A]) was 157, while specifications (S1) and (L1) predict 147 and 155 new charters, respectively. In row [B] we calculate the number of charters the models would predict with the poor economic and interest rate variables of 2013, but without any regime change or structural variables. These values are 30 and 37, respectively. (“DF” in Figure 8.) Row [C] shows that 80% $([147-30]/147)$ or 76% $([155-37]/155)$ of the decline in new charters is due to non-regulatory factors.

Figure 9

Model Predictions		
Specification:	(S1)	(L1)
Observation Type	County-Yr	County-Yr
Dep Var	New Chrtr	New Chrtr
Sample Start	1999	1976
Sample End	2013	2013
Probit Type	ordered	ordered
Notes		
Observations	45,519	113,580

r2_p	0.306	0.233
Model Predictions		
[A] 2006 (Actual = 157)	146.6	154.7
[B] 2013 w/o "DF" (Counterfactual)	29.5	37.4
[C] % decline from Demand $(1-[B]/[A])$	80%	76%
[D] 2006 w/ "DF" (Counterfactual)	10.99	7.52
[E] % decline from "DF" $(1-[D]/[A])$	93%	95%

Rows [D] and [E] analyze the effect of the structural or regulatory shift variable. Row [D] calculates the model's prediction assuming 2006 levels of all regressors (i.e. representing a healthy economy) except for the 2010-and-after dummy which is turned on to capture any structural or regulatory shift. The predicted numbers of new charters are low, at 11 and 8, respectively, for the two specifications. Correspondingly, row [E] displays the percentage of the current decline that is explained by the structural shift alone, 95% and 96%, respectively, for the two specifications.

It may seem contradictory that rows [C] and [E] are both so high, and that they sum to well over 100%. But these effects are not additive, they are multiplicative. Row [C] indicates that the weak demographic, demand, and interest rate variables of recent years have deterred 80% of would-be *de novo* entrants. Row [E] indicates that a structural shift has deterred 95% of them. Most potential entrants, therefore, are deterred by both effects. The reason the model ascribes such a high structural effect is that, despite the non-regulatory observables explaining a large portion of the decline, the actual decline has been to virtually zero. Eliminating the right tail of error terms in the entry equation requires the structural shift variable to be estimated at a high level.

Based upon the relative magnitudes of [C] and [E], it may be tempting to conclude that recent regulation has played a larger role in the decline of new charters than non-regulatory factors. However, the 2010-and-after dummy variable captures any and all structural shifts that have occurred post-crisis, and these are not limited to regulatory changes. These could also include changes in expectations about risk, the

speed of economic recovery, the prospects for future interest rate movements, and even the potentially-unique effects of interest rates near the lower bound. Indeed, plausible specifications to allow for unique interest rate effects near the zero lower bound could ascribe the entire decline in charters to interest rate and other non-regulatory effects. This is because the interaction effect for “near the lower bound” would be isomorphic to the 2010-and-after dummy. As a corollary, even specifications that surely understate interest rates’ effects by including them linearly indicate that a full 60% of the current decline is due to observed variables such as interest rates and banking demand variables.¹⁸

The full set of model predictions for all 16 specifications is contained in Figure 11 at the back of the text. The predictions are consistent across specifications, with anywhere between 65% and 85% of the current decline being explained by non-regulatory variables (row [C]). This is even the case in specifications (S8) and (L8), which stop the sample period in 2009 so and predict the 2010-and-after period strictly out-of-sample. In row [E] there is again strong evidence of a structural shift post-crisis, but there is no way to know whether this is regulation or some other factor related to risk, economic uncertainty, or even unique effects of low interest rates near the zero bound.

7. Conclusion

The large, recent decline in new bank charter creation has been noted by industry observers, policy makers, and the public press. Concern has been expressed by some parties that the decline may be due to overly-burdensome regulation. This paper addresses that hypothesis by investigating the factors that

¹⁸ We do not include this specification in the regression results (Figure 10) because we do not believe this functional form is supported by economic theory.

have led to the dramatic decline in new charters. Interest rates are known drivers of banking profitability, and regression results suggest that these rates – plus other non-regulatory influences such as weak banking demand – are likely to have caused 75-80% (or perhaps even more) of the current decline in new charters. These non-regulatory effects have been under-emphasized in the popular press. Our findings suggest the presence of a structural shift in the 2010-and-after period, though it remains unclear if this effect is transitory or persistent, regulatory or non-regulatory. Regardless, our investigation indicates that non-regulatory factors have had a substantial impact on the creation of new bank charters since the financial crisis.

References

Adams, Robert and Dean Amel. 2007. "The effects of past entry, market consolidation, and expansion by incumbents on the probability of entry" Federal Reserve Board Working Paper Series.

Adams, Robert M., Brevoort, Kenneth P., and Kiser, Elizabeth K. (2007) "Who Competes With Whom? The Case of Depository Institutions." *Journal of Industrial Economics*, vol. 55 (March), pp. 141-167.

Amel, Dean F. and Liang, J. Nellie (1990) "Dynamics of Market Concentration in U.S. Banking," *International Journal of Industrial Organization*, vol. 8, no. 3 (September), pp.375-84.

Amel, Dean F. and Liang, J. Nellie. 1997. "Determinants of Entry and Profits in Local Banking Markets," *Review of Industrial Organization*, vol. 12, no. 1 (February). pp. 59-78.

Berger, Allen N., Bonime, Seth D., Goldberg, Lawrence G., and White, Lawrence J (2004) "The Dynamics of Market Entry: The Effects of Mergers and Acquisitions on Entry in the Banking Industry," *Journal of Business*, Vol.77, No.4, pp 797-834.

Berger, Allen N. and Dick, Astrid E. (2007) "Entry into Banking Markets and the Early-Mover Advantage" *Journal of Money, Credit, and Banking*, vol. 39, no. 4 (June), pp. 775-807.

Boczar, G. (1975). An empirical study of multibank holding company activity in local markets. *Atlantic Economic Journal*, 3(2), 33-39.

Bresnahan, Timothy F. and Reiss, Peter C. (1991) "Entry and Competition in Concentrated Markets," *Journal of Political Economy*, vol. 99, pp. 977-1009.

Cohen, Andrew M and Michael J Mazzeo. 2007. "Market structure and competition among retail depository institutions" *The Review of Economics and Statistics* 89 (1), 60-74.

Feinberg, Robert M. (2009). "Patterns and Determinants of Entry in Rural County Banking Markets" *Journal of Industry, Competition and Trade*, Volume 9, Number 2, Page 101.

Foster, Lucia, John Haltiwanger, and Chad Syverson. 2008. "Reallocation, Firm Turnover, and Efficiency: Selection on Productivity or Profitability?" *American Economic Review*, 98(1): 394-425.

Group of Ten (2001) Report on Consolidation in the Financial Sector, Basel: Bank for International Settlements.

Hanweck, Gerald (1971) "Bank Entry into Local Markets: An Empirical Assessment of the Degree of Potential Competition via New Bank Formations," *Bank Structure and Competition* (Federal Reserve Bank of Chicago), pp. 161-72.

Jeon, Yongil and Miller, Stephen M. (2007) "Births, Deaths, and Marriages in the U.S. Commercial Banking Industry," *Economic Inquiry*, vol. 45, no. 2 (April), pp. 324-341.

Keeton, W.R. (2000) "Are Mergers Responsible for the Surge in New Bank Charters?" *Federal Reserve Bank of Kansas City Economic Review* vol. 85 (First Quarter), pp. 21-41.

Lee, Donghoon and van der Klaauw, Wilbert (2010) "An Introduction to the FRBNY Consumer Credit Panel," Staff Report, Federal Reserve Bank of New York, No. 479.

Rose, John T. (1977) "The Attractiveness of Banking Markets for De Novo Entry: The Evidence from Texas," *Journal of Bank Research*, vol. 7, no. 4 (winter), pp. 284-93.

Seelig, S.A. and Critchfield T. (2003) "Merger Activity as Determinants of De Novo Entry into Urban Bank Markets," Working paper 2003-01, Federal Deposit Insurance Corporation.

Siegfried, J. J. and Evans, L.B. (1992) "Entry and Exit in United States Manufacturing industries From 1977 to 1982," In: Empirical Studies in Industrial Organization" Essays in Honor of Leonard W. Weiss, ed. D.W. Audretsch and J. J. Siegfried, the Netherlands: Kluwer Academic Publishers, pp. 253-73.

Siegfried, John J., and Evan, Laurie B. (1994) "Empirical Studies of Entry and Exit: A Survey of the Evidence," Review of Industrial Organization, vol. 9, no. 2 (April), pp. 121-155.

Stiroh, Kevin J., and Strahan, Philip E. (2003) "Competitive Dynamics of Deregulation: Evidence from U.S. Banking," Journal of Money, Credit and Banking, vol. 35, no. 5 (October), pp. 801-828.

Sutton, J. (1991) Sunk Costs and Market Structure: Price Competition, Advertising, and the Evolution of Concentration, Cambridge: MIT Press.

Figure 10: Regression Results

A. Short Panel, 1999-

Specification:	(S1)	(S2)	(S3)	(S4)	(S5)	(S6)	(S7)	(S8)
Observation Type	County-Yr	County-Yr	County-Yr	County-Yr	County-Yr	County-Yr	County-Yr	County-Yr
Dep Var	New Chrtr	New Chrtr	New Chrtr	New Chrtr	New Chrtr	New Chrtr	New Chrtr	New Chrtr
Sample Start	1999	1999	1999	1999	1999	2000	1999	1999
Sample End	2013	2013	2013	2013	2013	2013	2013	2009
Probit Type	ordered	probit	ordered	ordered	ordered	ordered	ordered	ordered
Notes		Standard	State			1-year	Struct	
Observations	45,519	45,519	45,519	45,519	45,519	42,399	45,487	33,218
r2_p	0.306	0.336	0.332	0.309	0.301	0.293	0.306	0.268
Coefficient Estimates								
ln_fedfunds	0.1755***	0.1644***	0.2008***	0.1311***	0.1468***	0.2071***	0.1764***	0.1754***
ln_pop	0.4835***	0.4738***	0.5314***	0.4829***	0.4794***	0.4777***	0.4664***	0.4831***
p_c_pop	0.0503***	0.0572***	0.0230*	0.0518***	0.0484***	0.0509***	0.0508***	0.0513***
popdensity	-0.0032	0.0001	0.0094	-0.0041	-0.0022	-0.0131	-0.0036	-0.0025
percapitainc	0.0091***	0.0079***	0.0053	0.0114***	0.0094***	0.0096***	0.0087***	0.0094***
c_percapitainc	-0.0106	-0.0096	0.0004	-0.0410**	-0.0458***	-0.0067	-0.0115	-0.0072
unemp_rate	-0.0366***	-0.0404***	-0.0410***	-0.0194	-0.0441***	-0.0162	-0.0406***	-0.0354***
mean_equif_credit_score	0.0007	0.0009	0.0044**	0.0006	0.0021	-0.0032*	0.0006	0.0007
mean_inquiries	0.2719***	0.2725***	0.0266	0.2666***	0.2721***	0.2450***	0.2580***	0.2735***
delinq_rate	-0.0316	-0.0376	-0.0107	-0.0422	0.0409	-0.1839***	-0.0291	-0.0333
DoddFrank_2010aa	-1.2497***	-1.2722***	-1.3671***			-1.1502***	-1.2457***	
DoddFrank_2009aa				-1.3197***				
DoddFrank_2008aa					-0.5569***			
SarbanesOxley_2002aa	0.0668	0.0537	0.0353	0.0761	0.1138	0.1194*	0.0654	0.0664
MoneyLaundering_2001aa	-0.2069***	-0.2116***	-0.1656**	-0.2749***	-0.2649***	-0.1153	-0.2079***	-0.2073***
GrammLeachBliley_1999aa								
RiegleNeal_1995aa								
FDICIA_1991aa								
FIRREA_1989aa								
GarnStGermain_1982aa								
DIDMCA_1980aa								
hhi							0.0000	
smlbnkdepct							-0.0021**	
Constant / Cut1	8.4375***	-8.3550***	10.5712***	8.3956***	9.4052***	5.6555***	8.0910***	8.4159***

(*** p<0.01, ** p<0.05, * p<0.1)

Figure 10 (cont.) : Regression Results

B. Long Panel, 1976-

Specification:	(L1)	(L2)	(L3)	(L4)	(L5)	(L6)	(L7)	(L8)
Observation Type	County-Yr	County-Yr	County-Yr	County-Yr	County-Yr	County-Yr	County-Yr	County-Yr
Dep Var	New Chrtr	New Chrtr	New Chrtr	New Chrtr	New Chrtr	New Chrtr	New Chrtr	New Chrtr
Sample Start	1976	1976	1976	1976	1976	1976	1976	1976
Sample End	2013	2013	2013	2013	2013	2013	2013	2009
Probit Type	ordered	probit	ordered	ordered	ordered	ordered	ordered	ordered
Notes		Standard	State	DF 2009	DF 2008	1-year	Struct	Stop Sample
Observations	113,580	113,580	113,580	113,580	113,580	110,455	113,527	101,279
r2_p	0.233	0.254	0.259	0.234	0.231	0.233	0.235	0.217
Coefficient Estimates								
ln_fedfunds	0.2067***	0.1981***	0.2260***	0.1562***	0.1696***	0.2488***	0.2088***	0.2063***
ln_pop	0.4128***	0.3988***	0.4377***	0.4127***	0.4121***	0.4188***	0.4310***	0.4117***
p_c_pop	0.1010***	0.1016***	0.0671***	0.1004***	0.1005***	0.1033***	0.0977***	0.1014***
popdensity	-0.0032	-0.0033	0.0075*	-0.0033	-0.0036	-0.0020	-0.0061	-0.0026
percapitainc	0.0151***	0.0154***	0.0214***	0.0158***	0.0155***	0.0129***	0.0152***	0.0154***
c_percapitainc	0.0253***	0.0252***	0.0096	0.0129	0.0076	0.0428***	0.0247***	0.0289***
unemp_rate								
mean_equif_credit_score								
mean_inquiries								
delinq_rate								
DoddFrank_2010aa	-1.3922***	-1.4179***	-1.4655***			-1.1885***	-1.4056***	
DoddFrank_2009aa				-1.3838***				
DoddFrank_2008aa					-0.6588***			
SarbanesOxley_2002aa	0.0249	0.0116	-0.0100	0.0584	0.0531	0.1913***	0.0224	0.0257
MoneyLaundering_2001aa	-0.1551**	-0.1645**	-0.1645**	-0.2153***	-0.2008**	-0.3078***	-0.1589**	-0.1551**
GrammLeachBliley_1999aa	0.0804*	0.0876**	0.0718*	0.0759*	0.0779*	0.0644	0.0742*	0.0797*
RiegleNeal_1995aa	0.5126***	0.5180***	0.4964***	0.5290***	0.5290***	0.4909***	0.5001***	0.5103***
FDICIA_1991aa	-0.4515***	-0.4657***	-0.4704***	-0.4776***	-0.4701***	-0.3456***	-0.4606***	-0.4520***
FIRREA_1989aa	-0.2930***	-0.2722***	-0.2873***	-0.3051***	-0.3016***	-0.3402***	-0.3102***	-0.2935***
GarnStGermain_1982aa	0.1233***	0.1061***	0.1275***	0.0962**	0.1059**	0.1994***	0.1117***	0.1220***
DIDMCA_1980aa	-0.1342***	-0.1185***	-0.1902***	-0.1175***	-0.1245***	-0.2530***	-0.1005**	-0.1330***
hhi							0.0000***	
smlbnkdeppct							-0.0014***	
Constant / Cut1	7.0651***	-6.9052***	7.2666***	6.9558***	6.9702***	7.1434***	7.2784***	7.0605***

(*** p<0.01, ** p<0.05, * p<0.1)

Figure 11: Model Predictions

A. Short Panel, 1999-

Specification:	(S1)	(S2)	(S3)	(S4)	(S5)	(S6)	(S7)	(S8)
Observation Type	County-Yr	County-Yr	County-Yr	County-Yr	County-Yr	County-Yr	County-Yr	County-Yr
Dep Var	New Chrtr	New Chrtr	New Chrtr	New Chrtr	New Chrtr	New Chrtr	New Chrtr	New Chrtr
Sample Start	1999	1999	1999	1999	1999	2000	1999	1999
Sample End	2013	2013	2013	2013	2013	2013	2013	2009
Probit Type	ordered	probit	ordered	ordered	ordered	ordered	ordered	ordered
Notes		Standard Probit	State F.E.	DF 2009	DF 2008	1-year lags	Struct Vars	Stop Sample
Observations	45,519	45,519	45,519	45,519	45,519	42,399	45,487	33,218
r2_p	0.306	0.336	0.332	0.309	0.301	0.293	0.306	0.268
Model Predictions								
[A] 2006 (Actual = 157)	146.6	111.0	151.3	137.1	141.3	138.1	147.4	146.9
[B] 2013 w/o "DF" (Counterfactual)	29.5	25.5	35.8	42.9	32.7	23.7	29.8	30.0
[C] % decline from Demand (1-[B]/[A])	80%	77%	76%	69%	77%	83%	80%	80%
[D] 2006 w/ "DF" (Counterfactual)	10.99	8.69	10.2	8.42	48.42	12.58	11.15	--
[E] % decline from "DF" (1-[D]/[A])	93%	92%	93%	94%	66%	91%	92%	-

Figure 11 (cont.): Model Predictions

B. Long Panel, 1976-

Specification:	(L1)	(L2)	(L3)	(L4)	(L5)	(L6)	(L7)	(L8)
Observation Type	County-Yr	County-Yr	County-Yr	County-Yr	County-Yr	County-Yr	County-Yr	County-Yr
Dep Var	New Chrtr	New Chrtr	New Chrtr	New Chrtr	New Chrtr	New Chrtr	New Chrtr	New Chrtr
Sample Start	1976	1976	1976	1976	1976	1976	1976	1976
Sample End	2013	2013	2013	2013	2013	2013	2013	2009
Probit Type	ordered	probit	ordered	ordered	ordered	ordered	ordered	ordered
Notes		Standard Probit	State F.E.	DF 2009	DF 2008	1-year lags	Struct Vars	Stop Sample
Observations	113,580	113,580	113,580	113,580	113,580	110,455	113,527	101,279
r2_p	0.233	0.254	0.259	0.234	0.231	0.233	0.235	0.217
Model Predictions								
[A] 2006 (Actual = 157)	154.7	114.7	158.6	148.0	149.8	135.4	155.8	155.4
[B] 2013 w/o "DF" (Counterfactual)	37.4	30.5	40.0	52.6	46.4	29.4	38.1	38.7
[C] % decline from Demand (1-[B]/[A])	76%	73%	75%	64%	69%	78%	76%	75%
[D] 2006 w/ "DF" (Counterfactual)	7.52	5.88	8.18	7.21	40.13	10.27	7.56	-
[E] % decline from "DF" (1-[D]/[A])	95%	95%	95%	95%	73%	92%	95%	-

Appendix A

Selected Requirements to Apply for a New State Bank Charter

	Min. Capital Required		Min. # of Directors	Application Fee
	Statutory	By Practice		
Mean	\$2,319,936	\$8,291,667	5	\$5,554
Median	\$1,500,000	\$7,500,000	5	\$3,000
Min	\$0	\$1,000,000	1	\$0
Max	\$10,000,000	\$30,000,000	7	\$25,000
Alabama	\$800,000	\$4,000,000	5	\$25,000
Alaska	\$2,000,000	\$4,000,000	5	\$2,000
Arizona	N/A	N/A	5	\$10,000
Arkansas	\$1,000,000	\$6,000,000	3	\$8,000
California	N/A	\$20,000,000	5	\$5,000
Colorado	N/A	N/A	3	\$0
Connecticut	\$5,000,000	\$5,000,000	1	\$15,000
Delaware	\$750,000	\$2,500,000	5	\$6,900
District of Columbia	\$6,000,000	\$12,000,000	5	\$3,000
Florida	\$8,000,000	\$10,000,000	5	\$7,500
Georgia	\$3,000,000	\$8,000,000	5	\$20,000
Hawaii	\$5,000,000	N/A	5	\$500
Idaho	\$375,000	\$5,000,000	5	N/A
Illinois	N/A	N/A	5	\$1,000
Indiana	N/A	\$12,000,000	3	\$0
Iowa	\$5,000,000	\$5,000,000	5	\$1,500
Kansas	\$250,000	N/A	5	\$0
Kentucky	\$2,500,000	\$3,000,000	5	\$7,500
Louisiana	\$500,000	\$5,000,000	5	\$1,500
Maine	\$100,000	N/A	5	\$2,000
Maryland	\$1,500,000	\$10,000,000	5	\$10,000
Massachusetts	N/A	\$8,000,000	7	\$5,000
Michigan	N/A	\$10,000,000	5	\$1,750

Minnesota	\$250,000	\$8,000,000	5	\$2,000
Mississippi	\$2,000,000	N/A	5	\$2,500
Missouri	N/A	N/A	5	\$1,500
Montana	N/A	N/A	3	\$1,500
Nebraska	\$875,000	\$2,000,000	5	\$2,500
Nevada	\$5,000,000	\$25,000,000	7	\$4,500
New Hampshire	\$250,000	\$1,000,000	5	\$0
New Jersey	\$500,000	\$6,000,000	5	\$5,000
New Mexico	\$500,000	\$4,000,000	5	\$1,000
New York	\$1,200,000	\$30,000,000	5	\$12,500
North Carolina	\$3,000,000	\$12,000,000	5	\$3,000
North Dakota	\$100,000	\$2,000,000	3	\$2,500
Ohio	\$10,000,000	N/A	5	N/A
Oklahoma	\$2,000,000	\$8,000,000	5	\$0
Oregon	\$1,500,000	\$10,000,000	5	\$2,500
Pennsylvania	\$77,500	\$6,000,000	5	\$2,000
Puerto Rico	\$6,000,000	N/A	3	\$3,000
Rhode Island	\$3,000,000	N/A	N/A	
South Carolina	N/A	N/A	N/A	\$10,000
South Dakota	\$600,000	N/A	5	\$7,500
Tennessee	N/A	N/A	5	\$20,000
Texas	\$3,000,000	\$10,000,000	5	\$10,000
			d	
Utah	\$0	\$10,000,000	3	\$2,500
Vermont	\$250,000	\$10,000,000	3	\$5,000
Virginia	\$4,000,000	\$8,000,000	5	\$10,000
Washington	N/A	N/A	5	\$3,000
West Virginia	\$4,000,000	\$7,000,000	5	\$5,000
Wisconsin	N/A	\$5,000,000	5	\$5,000
Wyoming	\$600,000	\$5,000,000	5	\$15,000

Source: Conference of State Bank Supervisors, data as of 2010

Appendix B
Major Banking Regulation

Year	Regulation	Description
1978	International Banking Act	US regulations apply to foreign banks with US branches, incl. requiring deposit insurance and no interstate branching.
1980	Depository Institutions Deregulation and Monetary Control Act	Banks may pay interest on transaction accounts, no limits on time deposit interest rate. Thrifts may perform some activities previously limited to commercial banks and invest in non-mortgage assets. All deposits up to \$100,000 now insured.
1982	Garn-St Germain Depository Institutions Act	Thrifts may perform more commercial bank activities, including commercial loans. FDIC powers to help undercapitalized banks expanded.
1987	Competitive Equality Bank Act	Recapitalized the Federal Savings and Loan Insurance Corporation. Categorized all FDIC-insured institutions as "banks" to require to follow banking regulations.
1989	Financial Institutions Reform, Recovery, and Enforcement Act (FIRREA)	Meant to stabilize thrift industry. Closed accounting loopholes used by thrifts, increased capital requirements and restricted junk bonds purchases. Made FDIC regulator of thrifts, abolished current regulators and created the Office of Thrift Supervision.
1991	Federal Deposit Insurance Corporation Improvement Act (FDICIA)	Recapitalized FDIC after failure of 1,150 banks, allowed FDIC to intervene earlier with troubled banks. Allowed FDIC to borrow from the Treasury. Required annual on-site regulatory visits and required banks to report the fair market value of their assets.
1995	Riegle-Neal Interstate Banking and Branching Efficiency Act	Allowed interstate banking, which had been outlawed for about 70 years. Caused an increase in banking mergers as BHCs acquired banks in neighboring states.

1999	Gramm-Leach-Bliley Financial Services Act	Repealed the Glass-Steagall Act's prohibition the affiliation of commercial and investment banks. Included tighter controls on privacy of customer information at banks. Reduced the frequency of examinations related to Community Reinvestment Act (anti-redlining law) compliance.
2001	International Money Laundering Abatement and Financial Anti-Terrorism Act of 2001	Made it harder to bank anonymously in the U.S. Required banks to have anti-money laundering programs and increased the penalties for money laundering.
2002	Sarbanes-Oxley Act	Increases penalties for publically-traded companies, including banks, providing false financial information in reports; CEO must certify report.
2006	Financial Services Regulatory Relief Act	Reduced various regulatory requirements: Made time between examinations longer for banks with between \$250 and \$500 million in assets (now equal to that for banks with <\$250 million) and reduced required reporting on loans made to bank insiders. Allowed the Fed to pay interest on reserves held at the Fed.
2008	Emergency Economic Stabilization Act	Established TARP, which allowed the government to purchase \$700 billion in "troubled assets" from banks.
2010	Dodd-Frank Act	Allowed the Financial Stability Oversight Council (which includes members from the Treasury and the Fed) to require banks to increase reserves. Required banks to have a plan in case of insolvency. Prohibited banks from investing in hedge funds. Created the Consumer Financial Protection Bureau.