

## Maine State Bank Analysis

### Center for State Innovation – May 2011

In the wake of the financial market collapse of 2009, banks sharply curtailed their lending. Bank lending in 2009 declined more sharply than in any year since 1942, according to FDIC data.<sup>1</sup> This drop off in lending hit small businesses especially hard. For instance, the number of SBA small business loans dropped by about 54% and the total amount lent by 37% from 2007 (the start of the recession) to 2009. Maine was not immune: the largest SBA loan provider in Maine in 2007 – TD Bank N.A. – had by 2009 reduced its SBA loans by 40% in the number of loans and cut the total amount lent by 59%. This systemwide squeeze on access to capital for small businesses has been one driver of current massive and continued unemployment, and has led policymakers to consider a number of reforms designed to increase bank lending, particularly to the small businesses that have been the hardest hit by tightening credit standards.

One such measure that has drawn increasing interest is the creation of a state development bank modeled after the Bank of North Dakota (BND) to increase liquidity and spur lending and development in a given state. This paper offers some predictions about the effect of a potential Maine State Bank on the state banking industry, job creation and small businesses, and the state budget. While the sample size of one makes it difficult to accurately predict a public bank's effect on any given state, we have used FDIC bank data and some conservative assumptions to estimate the effects of a BND-like bank in Maine. Highlights include:

- **Job Creation/Retention.** We estimate that a state bank could help create or retain about 3,500 additional small business jobs in Maine due to increased loan activity through bank participation loans from a state bank at full lending capacity, and that during the recent recession around 600-800 jobs would have been created or retained due to stabilized lending.
- **New Lending.** BND helped to sustain a loan to asset ratio for North Dakota banks – a key measure of direct economic impact – by mitigating the effects of the recession on lending, resulting in reductions of 34%-50% less than comparable states. In Maine, this would have resulted in roughly 1.04 to 1.36 percentage points greater loan to asset ratios during the current economic downturn. We also estimate that a state bank in Maine could generate roughly 8% or about \$1.1B in total new lending activity and \$220M in small business loans due to bank participation.
- **New Revenue.** A Maine State Bank could generate dividends for the state starting in year 3, and a bank capitalized at \$100M—and conservatively run—could pay total accumulated dividends to the state's General Fund or Rainy Day Fund of \$39M after 10 years, \$126M after 20 years, \$346M after 30 years, and \$708M after 40 years.
- **Return on Equity.** A Maine State Bank would have a positive Return on Equity (ROE) to the state (including all costs) within 4 years with prudent banking practices.
- **Other Economic Impacts.** The full effects of a state bank on the state economy and job market would likely be greater than the above estimates, since this analysis does not look at non-small business lending, nor does it try to account for the indirect and induced economic impacts of increased lending.

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<sup>1</sup> "Lending Falls at Epic Pace," *Wall Street Journal*, 2/24/10

## **I. Introduction**

This analysis takes a look at the effect a state bank might have on the state banking industry by helping to provide liquidity and stability, using lending rates as a rough proxy for this effect. Part II compares lending rates in North Dakota small and medium sized banks with the equivalent banks in the comparable states (based on geography, population size and density) of Montana, South Dakota, and Wyoming and finds that loan to asset ratios in North Dakota have averaged almost 8 percentage points greater than these states over the period 2005-2010 (so, including years both pre- and post-financial collapse). During the current recession (which started in the 4<sup>th</sup> quarter of 2007), with the help of the Bank of North Dakota (BND), North Dakota banks have had the least reduction in loan to asset ratios, compared to neighboring states. This, along with other supporting data, suggests that the BND has helped to raise and sustain the lending market in North Dakota. We also estimate increased lending due to a state bank based on the amount of participation loans undertaken by the BND.

Part III attempts to provide a rough measurement of the effects of this increase in lending rates on state job creation/retention. We estimate that for every 1 percentage point increase (or sustained) loan to asset ratio in the lending market for small and medium sized banks in Maine, about 600 direct small business jobs in Maine are created or retained.

Parts IV & V look at bank ROA and other financials for four likely sources of bank start-up capital: (1) General Fund Revenue, (2) General Obligation Bond w/20yr maturity payment, (3) General Obligation Bond w/sinking fund, and (4) Bank Stock IPO. It estimates the returns to both the state bank and to the state itself.

### **State Banks, Generally**

It seems first useful to start with some general description of state banks (also sometimes referred to as development banks, partnership banks, or publicly-owned banks) for those who are new to the idea. A state bank is in essence a simple concept—simply put, it is a bank capitalized by state money, that would serve as the repository for state deposits, and would be publicly governed and return a negotiated portion of bank profits to the state. Apart from that, it would operate similarly to a private bank in many respects, though deposits would be guaranteed by the state rather than the FDIC. Currently, though publicly-financed bank models are common internationally and at the federal level (the Federal Reserve), only one state has a full public state bank—the Bank of North Dakota.

The Bank of North Dakota was formed in 1919 in response to the agricultural crisis and tightening of credit after the First World War. In North Dakota, most state funds (state tax collections and fees, and funds of state institutions) are deposited with the Bank of North Dakota. This does not include pension funds or other trusts managed by the state; rather the deposits are the state's cash – revenue that the state collects before it is spent on payroll, contracts, procurement, etc. At the end of 2010, state and local government deposits accounted for 86% of total BND deposits; the rest were from a range of other sources, principally commercial banks and other depository institutions. Private individuals and businesses account for less than 3% of total deposits at BND.

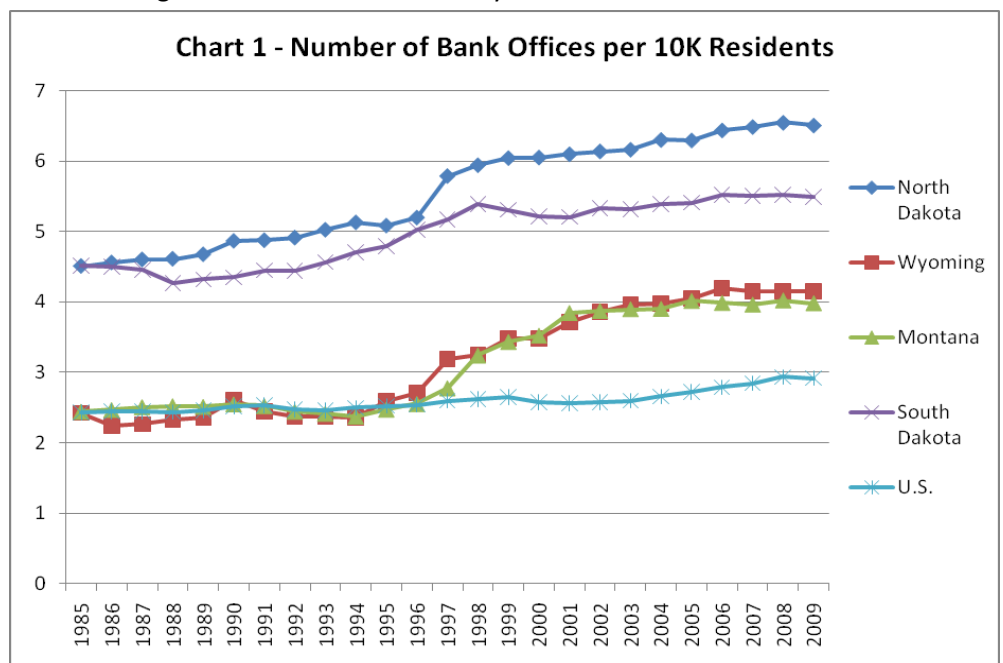
The Bank of North Dakota is governed by the state Industrial Commission, made up of the Governor, Attorney General and Commissioner of Agriculture. A seven-member Advisory Board, appointed by the Governor, reviews the Bank's operations and makes recommendations to the Industrial Commission regarding the Bank's management, services, policies and procedures.

The Bank of North Dakota has a limited portfolio; in that way it is somewhat different than most private banks. A primary activity of the BND is participation lending; that is, participating in loans originated by local banks and credit unions, either by increasing the total size of the loan, buying down the interest rate, or providing loan guarantees. It also performs other banker's bank functions, including check clearing, bond accounting safekeeping, and providing fed funds lines to community banks. The bank is a participant in the secondary market for residential loans, and also a direct lender for student loans for North Dakotans, thereby decreasing rates, though new student loan origination will decrease markedly due to the recent federal reforms of the student loan market.<sup>2</sup> Finally, the bank can make capital available to local banks via direct bank stock lending, as well as by purchasing loans from their portfolios. The BND also has a couple of specific lending programs underwritten by separate legislative appropriations that make low-interest loans available to, for instance, agricultural start-ups and new small businesses. In this way, it leverages the income earned through more lucrative market-driven activities to subsidize economic development activities that may carry somewhat higher risks or where borrowers have difficulty accessing capital.

Finally, while all bank profits belong to the state, a state bank typically transfers a portion of its profits directly to the state General Fund or Rainy Day Fund. In the case of the BND, the size of this "state dividend," explained in more detail below, is set by negotiation between the state legislature and the bank's Governing Board. The amount has varied from year to year (from as little as 0 in some years to up to \$50 million in others), but over the past 10 years has averaged \$29.4 million (about 67% of bank profits) and totaled almost \$300 million.

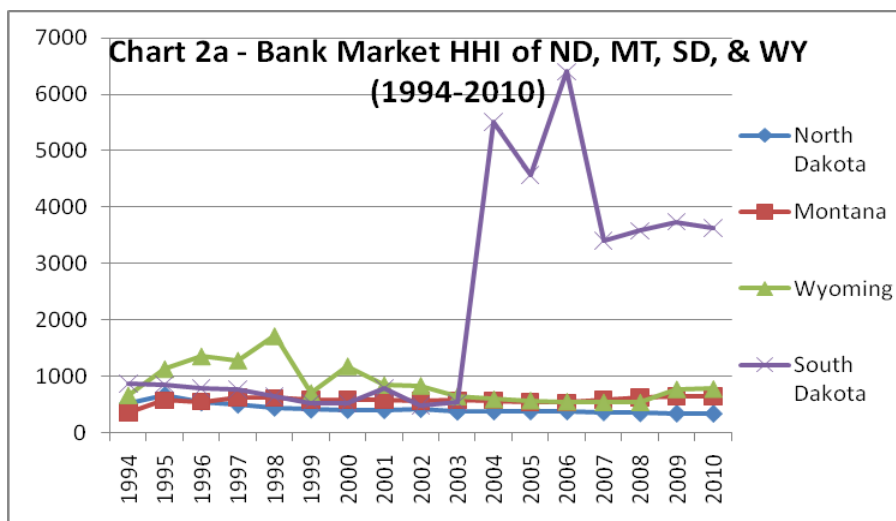
## **II. Effects on State Banking Market**

This section examines the effects of a state bank on the state banking market. We attempt to gauge these effects by comparing the lending markets and state banking in North Dakota to similarly-situated states. The bottom line is that on a variety of indicators, North Dakota's banking system appears healthier than that of nearby states.<sup>3</sup> For instance, North Dakota has both more bank offices per capita and less market concentration than comparator states or the US average. In fact, over the last 25 years, North Dakota has had the greatest number of bank offices per capita, compared to like states in both total population and population density (see Chart 1). And it has more than double the U.S. average.



<sup>2</sup> Post-federal reform, the Bank of North Dakota will continue to service existing student loans but will cease to originate federally-subsidized loans through the Federal Family Education Loan (FFEL) program. The bank will continue to originate state-subsidized supplemental student loans through its Dakota Education Alternative Loan (DEAL) program, but this activity is likely to be a much smaller component of the bank's work.

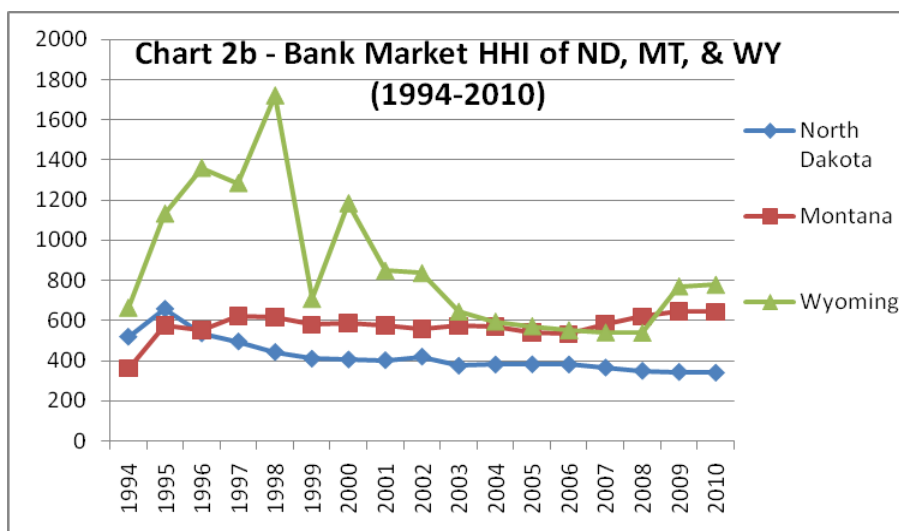
<sup>3</sup> Based on FDIC data for small and medium sized banks in relevant states, with outliers removed to more accurately compare the banks that would actually interact with a state bank. See Appendix 1 for how the data was cleaned.



Similarly, for the last 14 years, North Dakota has had the lowest Herfindahl-Hirschmann Index<sup>4</sup> (HHI)—a measure of market concentration used by the Federal Reserve—and in 2010 it was more than 300 points (or 47%) less than its closest comparator, Montana (see Chart 2a). While none of the bank markets outside of South Dakota would be considered moderately concentrated, the notably low concentration (and therefore greater competitiveness) of the North Dakota bank market may be indicative of the

influence of the state bank. The extra leveraging ability that the state bank provides through participation loans, the increase in municipal deposits from letters of credit, and the other supports that a state bank can provide as a banker's bank are all critical in helping to strengthen small and/or young banks. These indicators would seem to suggest that BND has been effective in broadening and strengthening the banking market, leading to robust competition.

Removing South Dakota—which has had a surge in bank concentration over the past 7 years or so—from Chart 2b provides a better look at the difference between North Dakota and its comparator states.



### Bank Branching Laws

North Dakota was a late adopter of bank branching laws; the state did not deregulate statewide branching through mergers & acquisitions (M&A), interstate banking, and statewide de novo<sup>5</sup> branching until the 1980's and 90's, well after most states. While this history may have played some role in driving the current large number of bank offices and low market concentration—particularly vis-à-vis South Dakota, which abolished bank branching restrictions quite early—it would not seem to explain North Dakota's variation from the other comparator states, most of whom were similarly late deregulators.

<sup>4</sup> The Herfindahl-Hirschman Index is a commonly accepted measure of market concentration. It is calculated by squaring the market share of each firm competing in the market and then summing the resulting numbers. The HHI takes into account the relative size and distribution of the firms in a market and approaches zero when a market consists of a large number of firms of relatively equal size. The HHI increases both as the number of firms in the market decreases and as the disparity in size between those firms increases.

Markets in which the HHI is between 1000 and 1800 points are considered to be moderately concentrated and those in which the HHI is in excess of 1800 points are considered to be concentrated. Transactions that increase the HHI by more than 100 points in concentrated markets presumptively raise antitrust concerns under the Horizontal Merger Guidelines issued by the U.S. Department of Justice and the Federal Trade Commission. See *Merger Guidelines* § 1.51.

<sup>5</sup> De novo banks are state chartered banks in operation for 5 years or less.

**Table 1 – Year of Statewide Branching Law Deregulation**

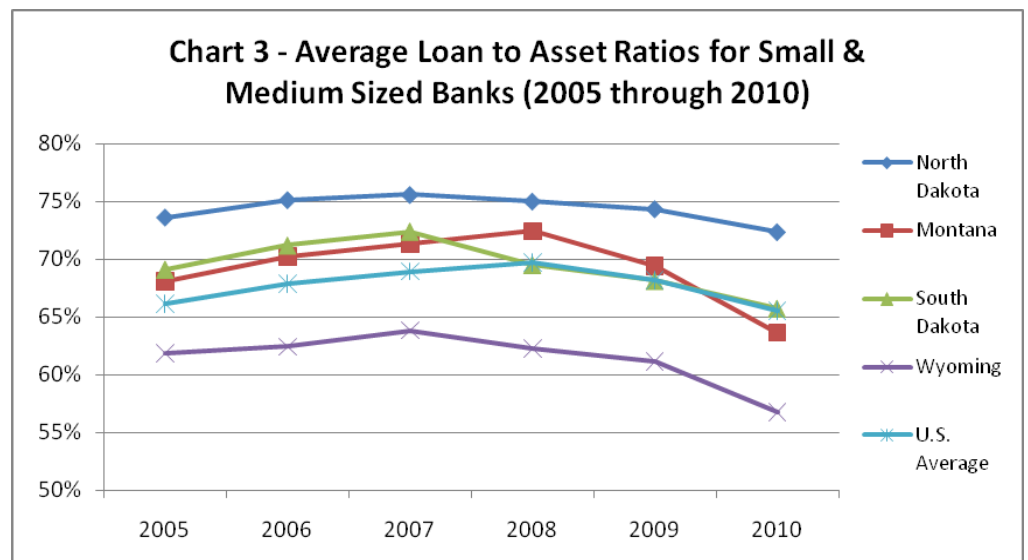
States	Statewide Branching through M&As	Interstate Banking	Statewide De Novo Branching
North Dakota	1987	1991	1996
Montana	1990	1993	1997
South Dakota	1960*	1988	1960*
Wyoming	1988	1987	1999
Average of States that Deregulated After 1960	1986	1987	1990
* For states that deregulated before 1960 the dates is listed as 1960.			
Source: Demyanyk, Ostergaard, and Sorensen. (December 2007). <i>U.S. Banking Deregulation, Small Businesses, and Interstate Insurance of Personal Income</i> . The Journal of Finance, Vol. LXII, No. 6.			

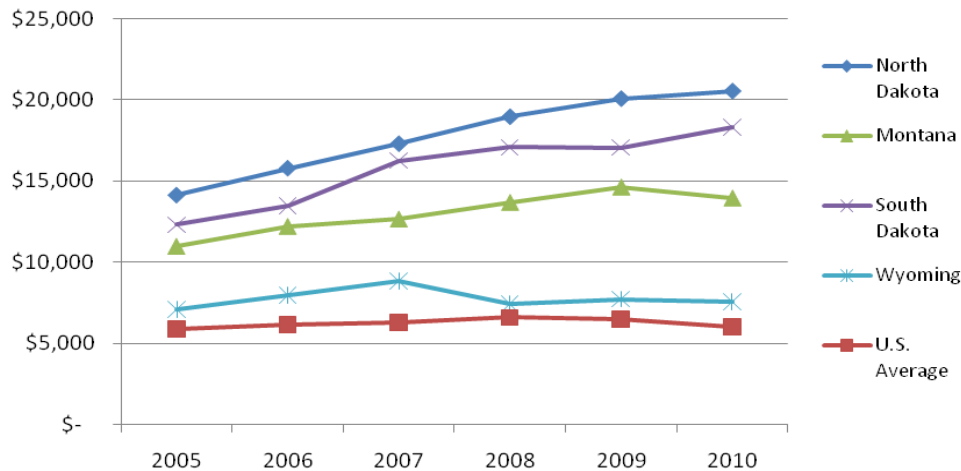
For instance, Montana deregulated its branching laws after North Dakota. In fact, North Dakota is largely in line with the national average of states that deregulated after 1960.

### Lending Rates

Over the last six years, small and medium sized banks in North Dakota had higher loan to asset ratios (5 to 13 percentage points greater) and more loans per capita (13% to 129% greater) than similarly situated states. To provide some sense of the economic and employment effects of a state bank, we attempted to quantify the effect of a state bank on the lending rates of small and medium sized banks in its state. We've compared the 6-year average lending rates of North Dakota banks with assets < \$10B versus the same category of banks (see Appendix 1 for how data was cleaned) in states that are roughly comparable in location, total population, and population density (Montana, South Dakota, and Wyoming in this case). Obviously, this is an imperfect way to parse out the specific effects a state bank has on a state's banking community, but should provide at least some gauge of its effect. As can be seen from the loan activity charts (see Appendix 2 for data), North Dakota banks in the aggregate had significantly higher average loan to average asset and average loan per capita rates than the comparator states.

Chart 3 shows the spread between North Dakota and its comparator states, with the average loans to average asset ratios from small and medium sized banks in North Dakota, over the last five years, at 4.98 percentage points greater than its closest comparator (South Dakota), 7.68 percentage points greater than the average of the like states, and 6.60 percentage points greater than the U.S. average.



**Chart 4 - Avg. Loans Per Capita - Small & Med. Banks**

North Dakota also outperforms comparator states and the U.S. in loan activity per capita (see Chart 4), as its average loans per capita over the past 6 years is 13% greater than its closest comparator (South Dakota), and 186% greater than the U.S. average.

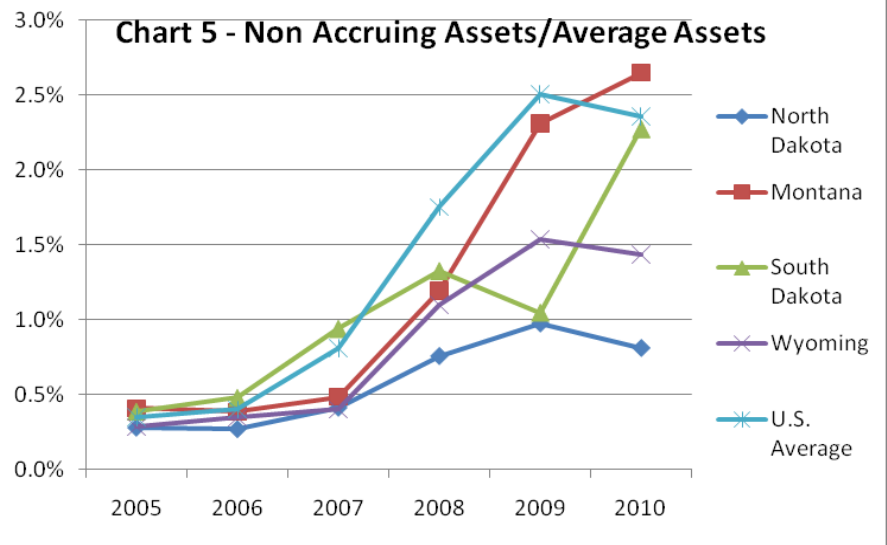
While it is hard to attach a specific figure to the effect, the above lending figures suggest that a state bank helps to grow and

stabilize the loan market in its state.<sup>6</sup> This results from the added liquidity and high rate of participation loans helping to increase or retain loans.

### Loan Strength

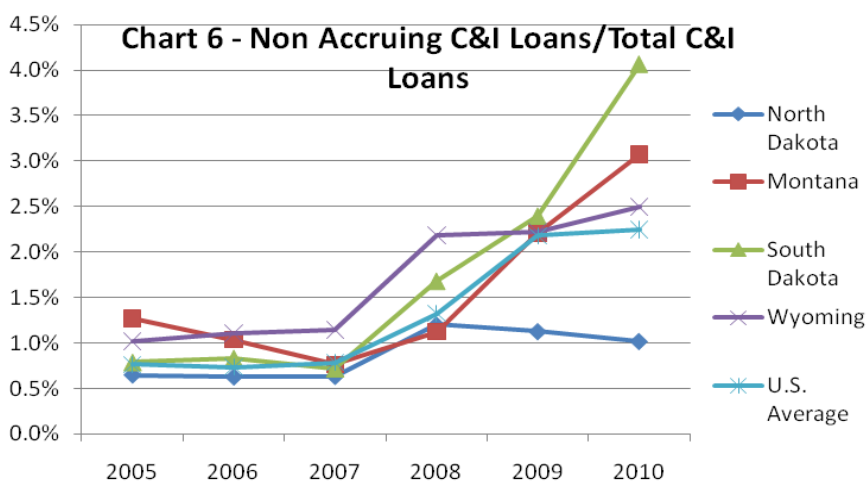
Another effect that a state bank should have on the state banking market is to help make loans more secure, for similar reasons—a state bank that provides participation loans should spread the risk and reduce the number of loans that a bank would have to put into non-accrual status (typically when payment in full of the principal is not expected to happen and the account is 90+ days past due). Over the last six years, we find that small and medium sized banks in North Dakota had

31% to 53% less assets put into non-accrual status and 45% to 50% less C&I loans put into non-accrual status than

**Chart 5 - Non Accruing Assets/Average Assets**

comparator states. This is again, we believe, indirect evidence of the effectiveness of a state bank in supporting the state lending market.

Most of the participation loans that a state bank would take part in would be commercial and industrial (C&I) loans. Chart 6 shows non-accruing C&I loans as a percentage of total C&I loans. North Dakota clearly had the safest C&I loans in 2009-2010. Over the last 6 years, North

**Chart 6 - Non Accruing C&I Loans/Total C&I Loans**

<sup>6</sup> It should be noted that this is a comparison of small and medium sized banks to other small and medium sized banks. Mega banks (banks with assets > \$100B) have far worse loan to deposit ratios and have reduced lending even more since the economic downturn.



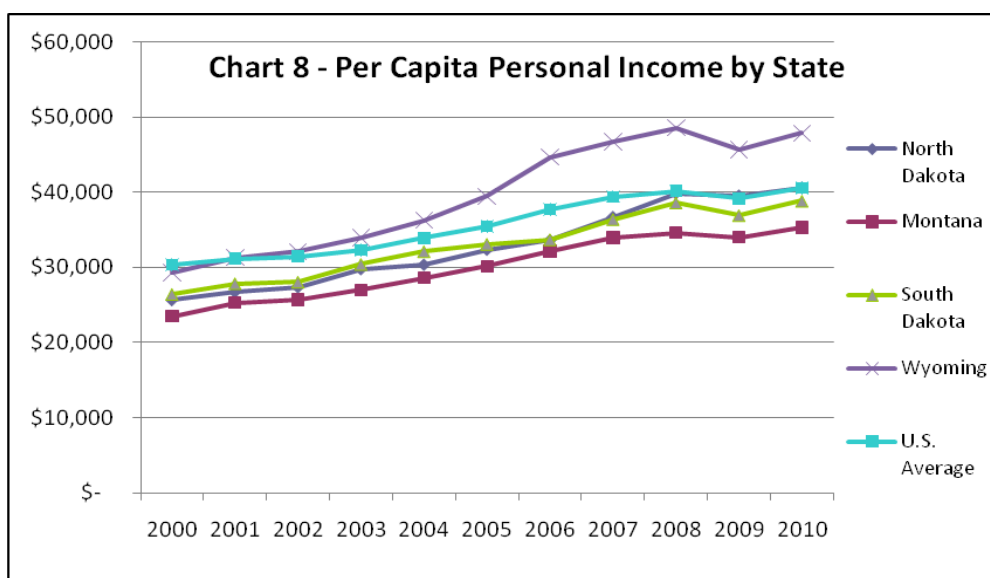
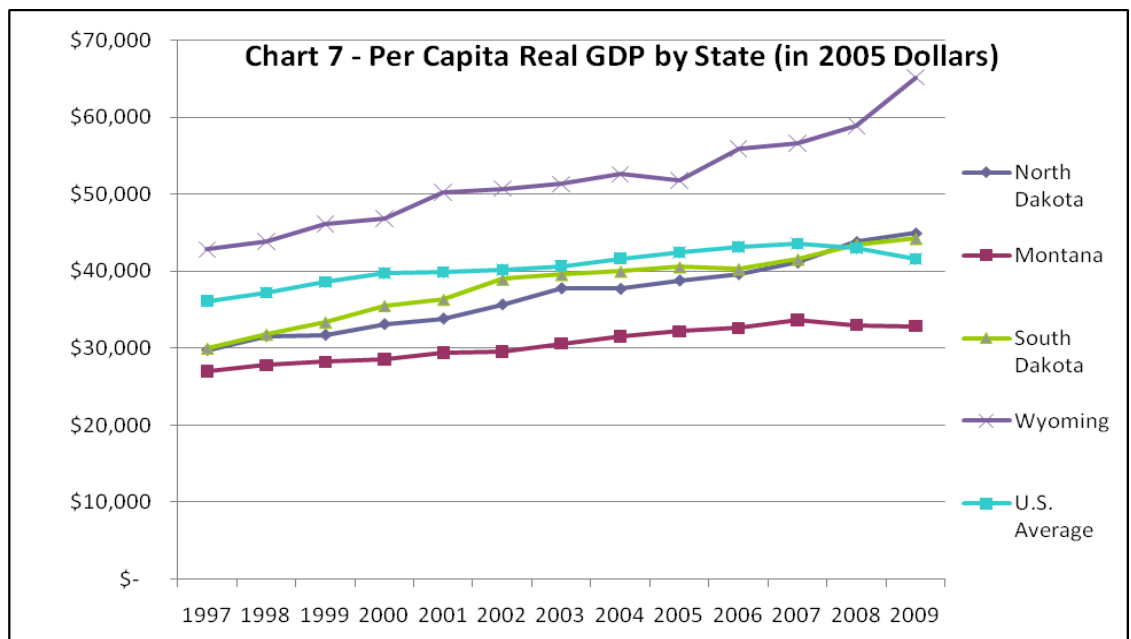
Dakota had 46% fewer non-accruing C&I loans than its closest comparators, Montana. And North Dakota averaged 48% and 50% less than Wyoming and South Dakota respectively. In 2010, the disparity is even greater, as North Dakota's ratio was less than a third of the comparator states and less than half the U.S. average.

### It's the Economy, Stupid (or is it?)

It is, of course, impossible to separate the health of the lending market in a state from the overall economic health of the state. Over the past two years, North Dakota has been one of the states least impacted by the recession and it is difficult to know to what extent that is due to the presence of the BND as opposed to other factors. Nonetheless, we attempt here to tease apart the economy-lending linkage slightly. We find that the major components of the state's economic health (here, state GDP, personal income, the housing markets and oil and gas industries) do not seem to correlate directly with community bank lending. This would seem to suggest that where North Dakota exceptionalism does exist, the BND has been a contributing factor.

To begin with, North Dakota's per capita real

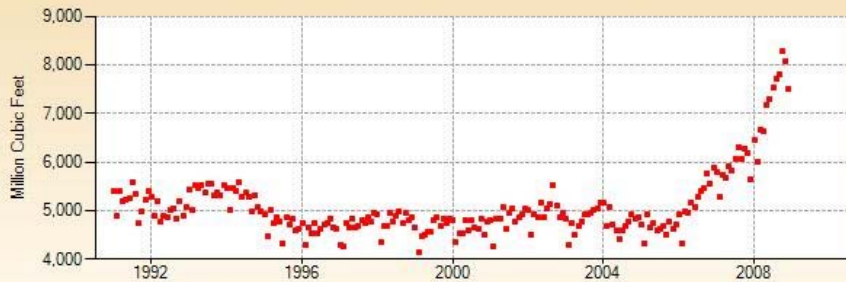
GDP and personal income (reasonable indicators of overall state economic health) have tracked—and for the most part, been lower than—those of its closest neighbors, particularly Wyoming (see Charts 7 & 8).



There is a slight uptick in these indicators in 2006, when an oil and gas boom in the western part of the state helped strengthen the state's economy (as Charts 9 & 10 show, production of oil and natural gas increased dramatically starting in 2006 and 2007). The strength of North Dakota's extractive industries—generally less affected by recession—are certainly one piece of the explanation for the state's general economic health and the health of its lending market in particular.

**Chart 9 – Monthly North Dakota Field Production of Crude Oil**

Source: U.S. Energy Information Administration

**Chart 10 – Monthly North Dakota Natural Gas Gross Withdrawals**

Source: U.S. Energy Information Administration

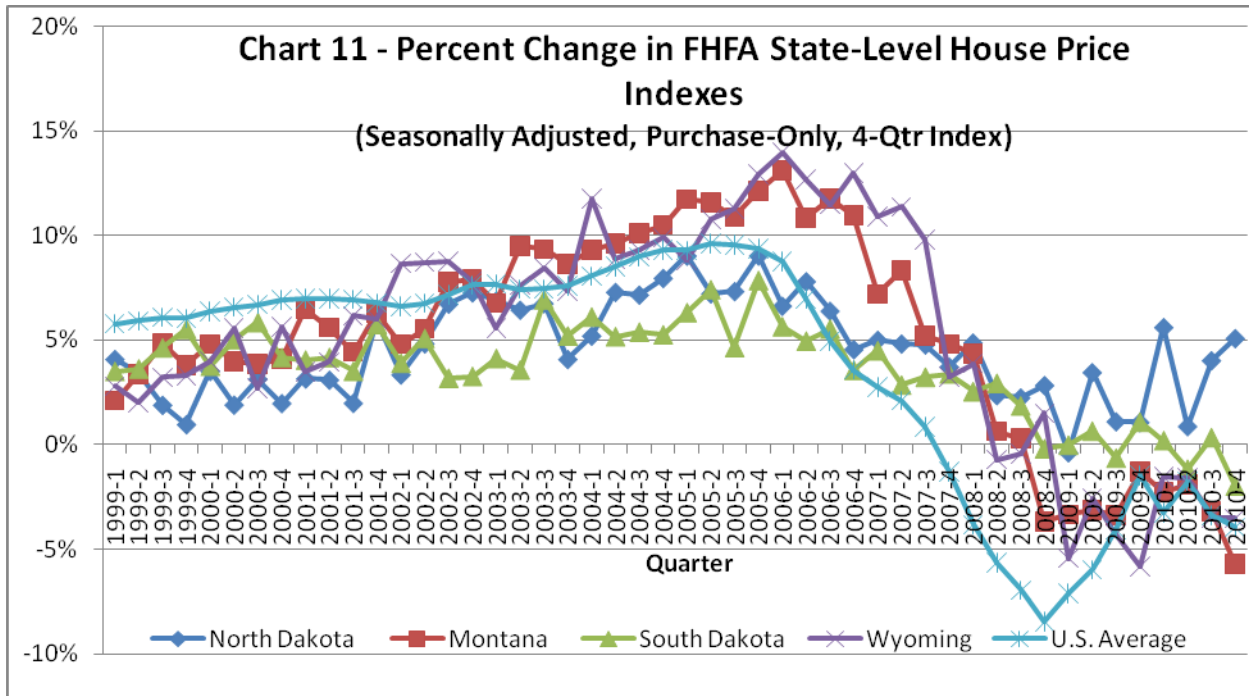
However, neither the generally lower per capita GDP and personal income nor the oil and gas boom in 2006 appears to have had much effect on lending rates at small and medium sized banks in North Dakota, which remained stable. In 2006, average loan to asset ratios in North Dakota did rise by 1.5 percentage points compared to 2005, but even in 2005 (before the oil boom) they were already noticeably greater (7.5 percentage points) than the average of the neighboring states. By the end of 2007, when the oil boom was in full swing, the difference in loan to asset ratios between North Dakota and the average of its bordering states was actually down to 6.8 percentage points, not a significant difference from pre-boom (about 70 basis points) and in the opposite direction one would expect if they were being driven by the oil and gas boom. From 2005 to 2007, the difference between the loan to asset ratios of small and medium sized banks in North Dakota and the U.S. average fell from 7.5 to 6.6 percentage points. It seems likely that larger, mostly out of state, banks were the big loan generators for the oil and gas exploration companies as they ramped up operations in the state; thus the effect on smaller, in-state banks (the BND's target audience) was minimal.

Moreover, it should be noted that most of the comparator states also had large, albeit generally more gradual, increases in natural gas production during the same period (see Appendix 3). Nor is North Dakota's industry significantly larger than that of the other states; in fact, Wyoming's natural gas production is more than 20 times greater than North Dakota's. As for crude oil production, the trends are more mixed. But as with North Dakota, the comparator states' industries do not appear to track closely with small and medium sized bank lending.

In short, neither the small upswing in overall economic indicators like per capita GDP and per capita personal income (still generally lower than those of its neighbors), nor the boom in crude oil and natural gas production, seems to correspond directly or completely explain the consistently higher loan to asset ratios and other indicators of health of North Dakota's small- and medium-sized banking sector.



It is also true that North Dakota was less affected by the real estate market crash than other parts of the country. However, while Chart 11 shows that the North Dakota housing market had a softer rise and fall than its neighboring states, it is also clear that the state was not unaffected by the housing bubble. North Dakota housing prices do appear to



have rebounded more quickly in 2010 than those of its neighbors (The average growth in housing prices from the first quarter of 2009 to the fourth quarter of 2010 for North Dakota was about 2.8 to 6.1 percentage points higher than its comparator states) but, as noted above, bank lending rates have remained relatively constant throughout the past six years, not tracking the real estate crash or the state housing market's price swings.

It should also be noted that Bank of North Dakota is a big player in the residential mortgage secondary market (about \$500M for a state with a total population of about 650K in 2009, 300K housing units and 200K homes owned in 2008). Thus, it is also possible that the state bank, which generally followed an atypically prudent loan investment strategy with regard to real estate (i.e. avoiding the high-risk binge on securitized subprime mortgage loans), may have had some leveling effect on prices.

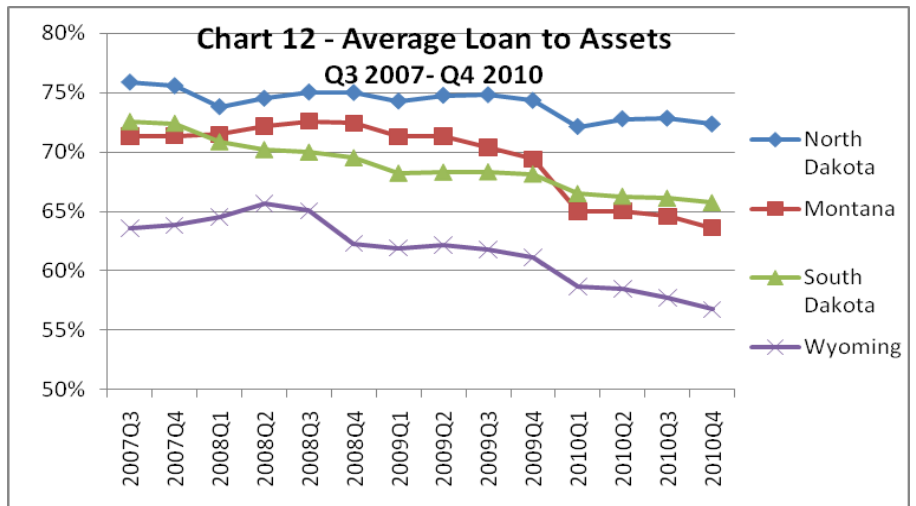
Where the North Dakota loan markets have really shined is in response to the recent economic downturn. In fact, the loan to asset ratios of North Dakota banks versus similar state banks averaged 6.4-14.4 percentage points greater than the comparator states over 2009-2010. The above figures suggest that neither the state's strong extractive industries nor its more stable real estate market fully explains that strength.

### Estimating the Effect of State Bank on Lending Rates Part 2

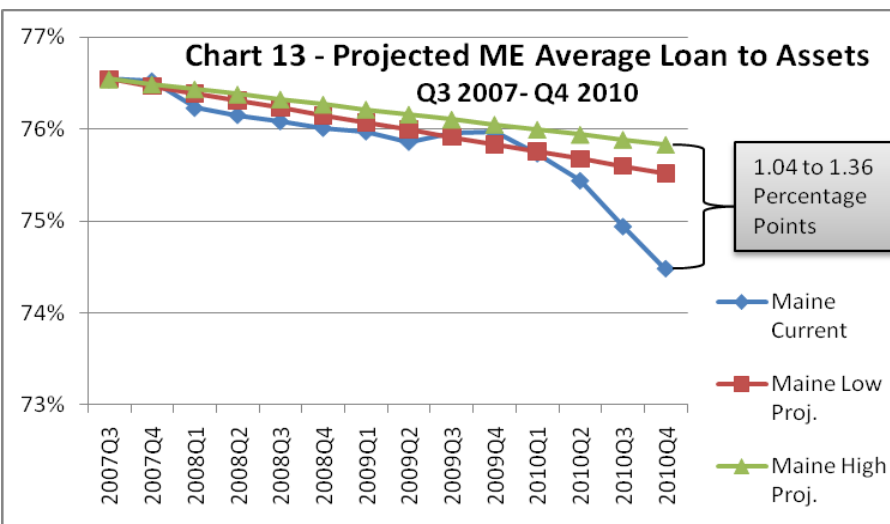
Maine has seen a dramatic reduction in small business lending as a result of the recent recession. The largest in-state SBA loan provider in Maine in 2007 – TD Bank N.A. - had by 2009 reduced the number of SBA loans by 40% and cut the total amount lent by 59%.<sup>7</sup> And the largest out-of-state small business lender in Maine – Bank of America – reduced the total number of small business loans by a massive 82% and total amount lent by 60% from 2007-2009. By comparison, the largest SBA loan provider in North Dakota in 2007 – State Bankshares Inc. – only reduced the number of SBA loans between 2007 and 2009 by 6% and actually *increased* the total amount lent by 4%.

<sup>7</sup> *Small Business and Micro Business Lending in the United States, for Data Years 2007-2008* (Released May 2009) and *Small Business Lending in the United States, 2009-2010* (Released February 2011), Office of Advocacy, U.S. Small Business Administration.

We estimate that a fully functioning state bank in Maine in 2010 could have helped to sustain direct lending by between 1 and 1.4 percentage points in the fourth quarter of 2010. While the precise effect of the BND on lending in North Dakota is difficult to fully estimate, nor does the sample size of one allow us to confidently project the effect of a state bank on lending in other states, one rough way to estimate this effect is to compare the change in loan to asset ratios of banks in North Dakota to those in similar states from pre-recession to current quarterly data. The assumption here is that a state bank would have helped to stabilize the lending market in its state during an economic downturn. Here we examine the drops in loan to asset ratios of small and medium sized banks in North Dakota to its comparator states from the 3<sup>rd</sup> quarter of 2007 (the recession officially began in the 4<sup>th</sup> quarter of 2007) to the most recent FDIC data, 4<sup>th</sup> quarter 2010. We find that over the last 14 quarters (3.5 years) North Dakota banks on average reduced their loan to asset ratios by 4.7%, compared to about 9.4%-10.8% for comparator states. And not all of the state averages show a decrease immediately following the beginning of the recession. When looking at the high-points, we see that the comparator states' LTA's dropped up to 13.6% during the recession (see Chart 12). This means that North Dakota's reduction in LTA's was about 34%-50% of the reduction seen in the comparator states.



How might this translate to Maine? Theoretically, had a Maine state bank mitigated the effects of the recession on the



state's lending market in the same way it appears that BND did in North Dakota, the state's average loan to asset ratios would have fallen to 75.52%-75.83% (from 76.54% in Q3 of 2007), rather than to their current level of 74.48% in Q4 of 2010. In other words, loan to asset ratios would have been 1.04 to 1.36 percentage points higher, with resulting increases in the absolute amount of lending (see Chart 13). That translates into an additional \$189-\$247 million in total lending, and \$39-\$51 million in small business lending (see calculator in Table 3).

Another way to gauge the increase in lending due to a state bank is by estimating the absolute increase in loan activity due to new participation loans from a state bank. In North Dakota, total net loans in the fourth quarter of 2010 for small and medium banks were about \$13.39B. In the same period, the Bank of North Dakota had participation loans of about \$1.12B. BND estimates that on average their loans cover approximately 50% of the overall loan amount; thus, roughly \$2.24B in loans was issued with the help of BND. This amount is an 18.22% increase over the \$12.27B in net non-participation loans for the banks in North Dakota (subtracting out the \$1.12B for the private bank share of the participation loans).

To estimate the proportion of loans that would be in some sense “new loans” – that is, loans that would not have been made without the participation of state money and would not have been made by another bank—and the amount that would be made to in-state lenders, we extrapolate data drawn from a recent state survey of community banks and bankers.<sup>8</sup> That survey found that:

- 57% of new loans were non-replaceable (i.e., does not replace money that would have been used for loans by these banks even absent the state’s money)
- 82% of new loans would not have been made by other banks, and
- 93% of new loans were likely to be made to in-state borrowers/businesses

Discounting by these factors, an 18.22% overall increase in lending would result in about 8% (7.92%) “new” lending activity in the state, a not insignificant increase. While we stress that these estimates are just that—estimates, and rough ones at that—we believe that they provide some sense of the scale of new lending that one might attribute to participation loans due to a state bank.

#### **A Note on Direct Bank Stock Lending**

Another way that a state bank makes capital available to private state banks is through direct bank stock purchases and lending. BND has estimated that they have a total bank stock portfolio of \$150-\$160M. This portfolio is from their bank stock and trust preferred securities financing loan programs. These “loans” are typically for bank M&A, capital refinancing, or capital expansion. Loans that expand private banks’ capital would presumably result in increased lending by those banks. If we assume that on average banks leverage the expansion capital at a 10% leverage ratio, then BND’s \$150M of direct bank stock lending could potentially create up to \$1.5B in additional lending. To estimate how much of this would be new lending (that is, lending that the private banks would otherwise not have done), one would need to discount for other sources of bank stock loans available to the small and medium sized banks in the state as well as other factors. In any event, the economic impact of direct bank stock lending from a state bank on the overall loan activity of the state is both positive and potentially very significant.

### **III. Small Business Jobs Created or Retained**

This section looks at how an increase in lending would affect small businesses, an engine of economic growth and job creation. Bottom line, we estimate that Maine could have created or retained about 600-800 more small business jobs with the help of the additional lending generated by a state bank over the last recession. Via a different method, we estimate that state bank at full loan capacity could have resulted in 3,500 additional small business jobs created or retained in Maine during the 4<sup>th</sup> quarter of 2010 due to participation loan activity.<sup>9</sup>

<sup>8</sup> Popp, Anthony V. & Widner, Benjamin. (March 12, 2009). *New Mexico’s Public Funds Investment Policies: Impact on Financial Institutions and the State Economy*. Arrowhead Center, New Mexico State University. As far as we know, this is the only publicly-available data of its type.

<sup>9</sup> To be clear, this is the number of additional jobs that a hypothetical Maine with a fully-functioning state bank with a full loan portfolio (so, post-start-up period) would have compared to the current Maine due to increased loan activity. Thus, it is not a per year increase, in the sense of 10,000 additional jobs being created in year 1 of state bank, then another 10,000 in years 2, 3, etc. On the other hand, this estimate does not represent a one-time economic boost like, say, a large construction project in which several hundred jobs are created for the duration of the project but then disappear. The additional job creation and economic activity, etc. would be a sustained increase over the baseline, sans state bank, economy. This, of course, necessarily implies some number of new jobs created or retained each year. Our method of estimating job

We arrive at these figures by looking at how the estimated increase in lending activity—and thus, the capital available to small businesses to expand or begin operations—due to the presence of a state bank would impact job creation by small businesses in the state. We use Small Business Administration (SBA) data to derive an estimate of one job created or retained per \$31,801 in small business C&I loans or \$121,374 in small business real estate loans (see Table 2).<sup>10</sup>

<b>Table 2 - Small Business Loan to Job Conversion Estimates</b>	
<b>SBA 7(a) Loans (2/2009-5/2010)</b>	
Approved (Total SBA 7(a) Loans)	\$15,838,836,235
Jobs Created or Retained (Reported by SBA)	592,928
Estimated Jobs Created or Retained (discounted by 16%*)	498,060
Loan AMT/1 Job Created or Retained	\$31,801
<b>SBA 504 Loans (2/2009-5/2010)</b>	
Approved (SBA Backed Portion)	\$5,614,730,000
Total Loan Amt (40% SBA Portion + 50% Bank Portion, but not 10% Downpayment)	\$12,633,142,500
Jobs Created or Retained (Reported by SBA)	104,084
Loan AMT/1 Job Created or Retained	\$121,374
*SBA7(a) job numbers discounted by 16% to account for overestimates highlighted by the SBA OIG in <i>Review of Controls Over Job Creation and Retention Statistics Reported by SBA under the American Recovery and Reinvestment Act of 2009</i> - ROM-10-04.	

Using that conversion factor, we estimate that for every 1 percentage point increase (or not decrease) in loans to assets for the small and medium banking market in Maine, about 600 jobs are created or retained. Thus, if we take our estimate that by December of 2010, a state bank in Maine could have helped to sustain a loan to asset ratio of roughly 1.04 to 1.36 percentage points greater than present, that difference in lending would translate into about 600-800 additional small business jobs created or retained with the support of a fully functional Maine state bank (see the calculator in Table 3 to test the affect of various assumptions regarding increased lending).<sup>11</sup>

<b>Table 3 - Maine Small Business Jobs Calculator - Jobs Created or Retained Per Percentage Point Increase in Loan to Asset Ratio</b>	
<b>Total Average Assets in Maine Small &amp; Medium Sized Banks in 12/2010</b>	<b>\$ 18,165,783,000</b>
<b>Percent Higher Loan to Asset Ratio Projected due to a State Bank</b>	<b>1%</b>
<b>Increased Amount of Total Loans</b>	<b>\$ 247,054,649</b>
<b>Increased Amount of Small Business Real Estate Loans</b>	<b>\$ 34,104,688</b>
<b>Increased Amount of Small Business C&amp;I Loans</b>	<b>\$ 16,914,280</b>
<b>Increased Amount of Small Business Jobs due to Real Estate Loans</b>	<b>281</b>
<b>Increased Amount of Small Business Jobs due to C&amp;I Loans</b>	<b>532</b>
<b>Estimated Total Effect on Small Business Jobs due to a State Bank</b>	<b>813</b>

creation does not allow us to break out the per year number; to know that, we would need other data such as the rate of turnover in the state bank's loan portfolio.

<sup>10</sup> SBA 7(a) loans are roughly analogous to private Commercial & Industrial (C&I) Loans. SBA 504 Loans are effectively small business Real Estate Loans.

<sup>11</sup> As this analysis does not take into account non-small business lending, nor does it try to factor in the indirect and induced economic benefits to increased small business lending, it seems likely that the actual effect on jobs in the state would be even greater.

Alternatively, using the increase in new lending activity generated by the absolute amount of BND participation loans, which we estimated earlier at 8%, we find that if the total average net loans in December of 2010 by Maine small and medium sized banks had been 8% greater due to participation loans from a Maine state bank, around 3,500 additional small business jobs would have been created or retained (see Table 4).

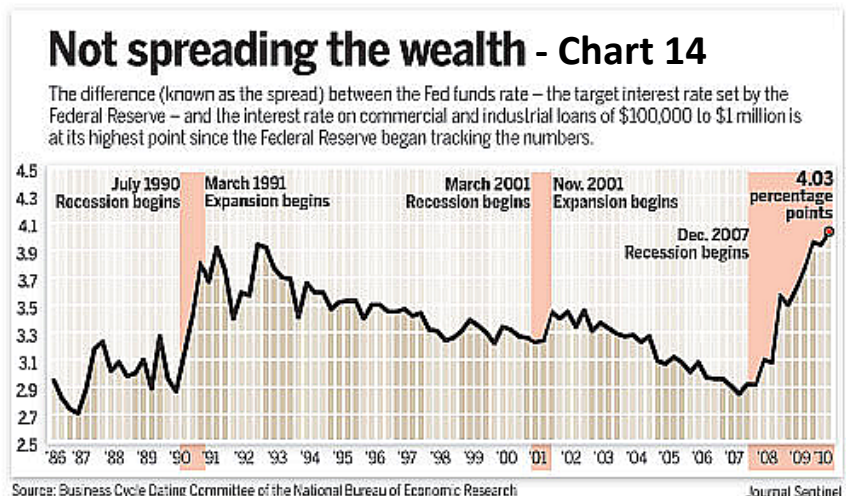
<b>Table 4 - Maine Small Business Jobs Created or Retained From an 8% Increase in Average Loans</b>	
Total Average Net Loans in Maine Small & Medium Sized Banks in Dec. 2010	\$13,322,702,200
Percent Higher Average Loans due to a State Bank	8%
Increased Amount of Total Loans	\$1,065,816,176
Increased Amount of Small Business Real Estate Loans	\$147,130,717
Increased Amount of Small Business C&I Loans	\$72,969,737
Increased Amount of Small Business Jobs due to Real Estate Loans	1,212
Increased Amount of Small Business Jobs due to C&I Loans	2,295
Estimated Total Effect on Small Business Jobs due to a State Bank	3,507

### Supply vs. Demand

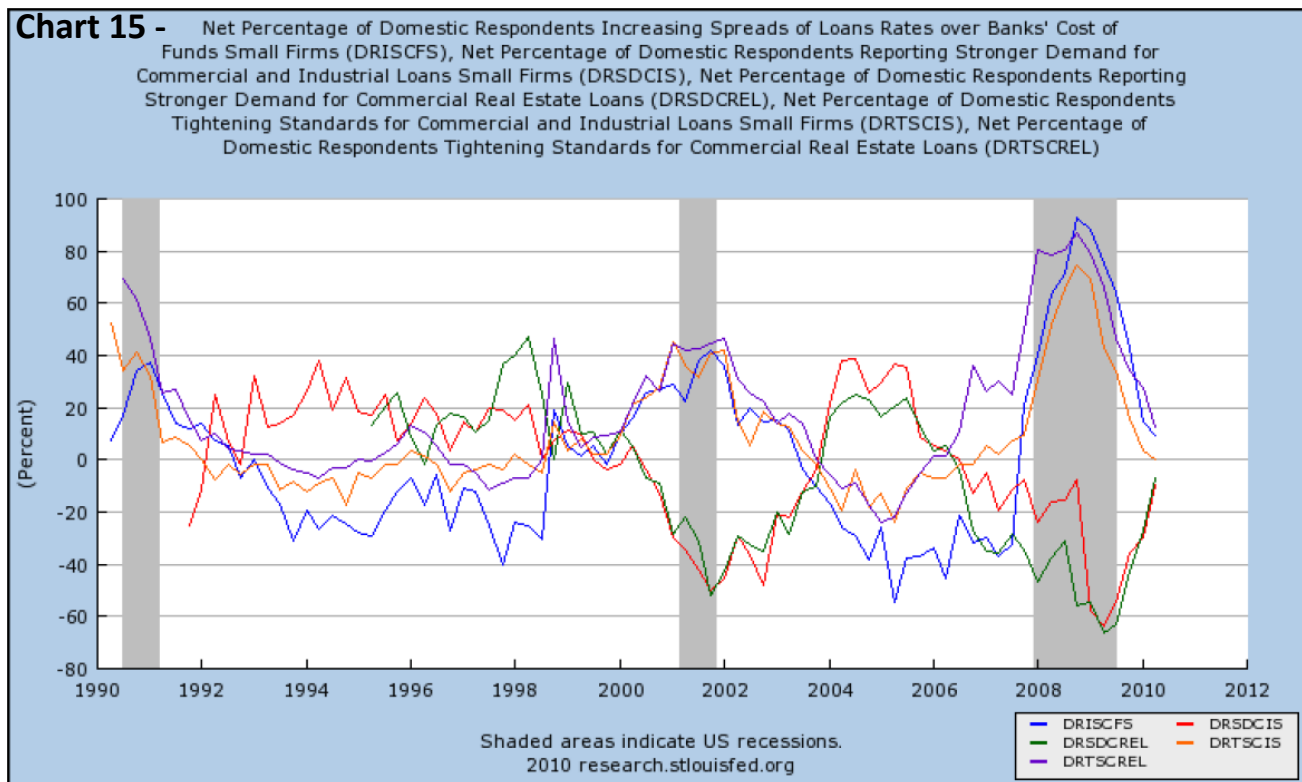
A significant open question, and one that has been debated extensively over the course of the recession—and current fledgling recovery—is whether there is sufficient demand on the part of small businesses such that the increased access to funds generated by a state bank would actually result in additional lending. The brief look we have taken at North Dakota and the BND over the course of this paper seems to suggest that, at least in that state, there has been demand for the increased liquidity the BND provides. At least, the BND has been able to maintain, and in fact expand, its loan portfolio over the course of the recession.

In addition, we believe that there is at least anecdotal evidence that there is demand for small business loans that is currently going unmet (see, e.g., “Banks slashed small business lending by \$43 billion,” *CNNMoney*, 2/11/11; “Lending Falls at Epic Pace,” *Wall Street Journal*, 2/24/10; “Bernanke: \$40B in small biz loans disappears,” *CNN Money*, 7/12/10; “Small business loans lacking,” *Milwaukee Journal Sentinel*, 7/19/10; “Small business owners await Congress to loosen credit,” *Pittsburgh Post-Gazette*, 8/5/10).

One reason for this may be that many U.S. banks are under pressure from regulators to reduce risk, and one of the main ways that banks have done so is by reducing the amount of higher risk assets on their books, including certain small business loans, by tightening credit standards and increasing the cost of debt for small businesses. This cost is currently at the highest point since the Fed began tracking it (see Chart 14).



Moreover, Federal Reserve data shows a strong inverse relationship between bank loan spread and tightening underwriting standards on the one hand and demand for new loans on the other (see Chart 15). Note that changes to demand happen right *after* the bank policies occur, as loan demand reacts to the change in banking policies. This suggests that the decrease in demand for loans is being driven at least in part by tightened credit rather than simply suppressed economic activity.



Whether banks are increasing the cost of small business loans due to risk-averse bank regulation or because of internal business decisions, or more likely a combination of the two, a state bank (which would operate outside of FDIC regulation) that contributes to lower loan to value ratios for commercial bank loans via participation lending will reduce risk and should lead to a reduction in the spread and an increase in total lending. And, assuming that the demand is there, this should bring increased small business lending and ultimately the creation of new small business jobs.

#### **IV. Returns to the Bank**

There is evidence that a state bank would help to strengthen the lending market in its state and thereby increase the amount of jobs created or retained due to that economic activity. We now assess the cost of this economic engine – both to the state bank and to the state itself. We find that with prudent banking practices, Maine could expect an average Return on Assets (ROA) for a state bank of around 1% until all start-up debt obligations are expired, after which the ROA would be closer to 1.7%.



### Estimating Bank ROA

We first estimate the Return on Assets (ROA) of a Maine state bank.<sup>12</sup> A state bank modeled after BND would have a large percentage of its loan portfolio made up of bank participation loans and much of its expenses based on the average market rates. This would presumably result in its financial performance being closely connected to the health and performance of small and medium sized banks in its state. Thus, for the purposes of this analysis, we assume a close correspondence between the performance of a state bank and the banks in its state, and we extrapolate relevant data by assuming a proportional relationship: Bank of North Dakota/North Dakota

**Table 5 - Estimated Maine State Bank Income and Expense Ratios**

Based on 16-yr Averages (1995 through 2010)	Interest Income (as % of Loans)	Interest Income (as % of Non-Loan Assets)	Interest Expense (as % of Liabilities)	Noninterest Income (as % of Assets)	Noninterest Expense (as % of Net Int. Inc. + Nonint. Inc.)	Provision for Loan Losses (as % of Loans)
North Dakota Small & Medium Banks	7.44%	4.20%	2.85%	1.01%	62.43%	0.45%
Bank of North Dakota	6.17%	2.69%	2.93%	0.40%	27.41%	0.27%
Ratio of BND vs North Dakota Banks	0.8290	0.6423	1.0258	0.3968	0.4390	0.5889
Maine Small & Medium Banks	7.07%	3.89%	2.95%	0.78%	66.80%	0.33%
Maine State Bank Estimates	5.86%	2.50%	3.03%	0.31%	29.33%	0.20%

Small and Medium Banks = Maine State Bank/Maine Small and Medium Banks. The results of that calculation, using these ratios and primarily 16-year averages of average YTD FDIC data, are summarized in Table 5 (see Appendix 4A for how the variables were derived).

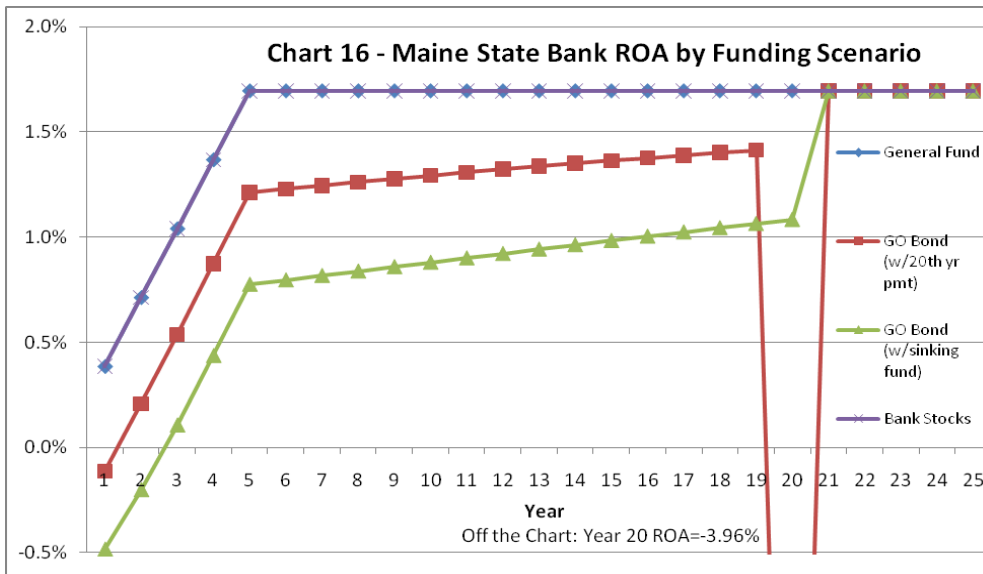
We then apply the net income estimates for a Maine State Bank (see above) to medium and small Maine banks (assets < \$10B), which we assume are the primary market for a bank that effectively expands the leveraging power of private banks.<sup>13</sup> Using a reasonable range of assumptions, that is a leverage ratio between 7% (BND's leverage ratio) and 10% and a loan to assets ratio of 65% to 75%, we estimate an ROA for a Maine state bank of around 1.4-1.7%.<sup>14</sup> This range is

<sup>12</sup> ROA is equal to Net Income/Average Assets. We calculate Net Income for a state bank by the following formula: Net Income = Total Interest Income – Total Interest Expense + Total Noninterest Income – Total Noninterest Expense – Provision for Loan Loss. In order to better estimate the effects that policymakers and bank officials can have on the overall return, we broke down Total Interest into Interest Income from Loans and Interest Income from Non-Loan Assets. Note that net income is usually calculated as Bank Net Income = Total Interest Income – Total Interest Expense + Total Noninterest Income + Securities Gains (Losses) + Extraordinary Gains – Total Noninterest Income – Provision for Loan Loss – Applicable Income Taxes. But because recent FDIC data (2005-2010) indicates that securities gains/losses are extremely small for medium and small sized banks (that is, those with assets less than \$10B) in Maine, a mean of -\$212K, and relatively small for BND (.01% of assets) we have not included securities gains/losses in the following calculation. BND also had zero extraordinary gains over the last 5 years and does not pay income taxes, thus those variables are irrelevant to the calculation.

<sup>13</sup> The basic calculation is: Estimated Net Income for ME State Bank = Total Interest Income (Loans\*5.86%+ Assets that are Not Loans\*2.50%) – Total Interest Expense (Liabilities\*3.03%) + Total Noninterest Income (Assets\*0.31%) – Total Noninterest Expense [(Net Int. Inc.+Nonint. Inc.)\* 29.33%] – Provision for Loan Loss (Loans\*0.20%)

<sup>14</sup> The calculation finds, as one would expect, the higher loan to asset ratio, the greater the return (as loans have both a higher risk and return). But it also shows that a smaller leverage ratio (smaller capital to assets or inversely greater assets to capital) returns a smaller ROA and greater ROE. This is because as assets grow, the denominator (assets) grows faster than the numerator (net income) in the ROA calculation.

higher than the average post-tax ROA for small banks (about 1.2%) but that may be partially explained by the fact that a state bank would be tax-exempt and would have low noninterest expenses (see Appendix 4A). This estimate is very much in line with the ROA generated by the Bank of North Dakota, which averaged 1.8% over the past 5 years (figures in Appendix 4B). And with the cost of capitalization from a general obligation (GO) bond factored in, the bank's effective ROA actually falls closer to the industry average (see Chart 16).



Some argue that while a state bank could become profitable over time, creating the bank in the first place would be cost prohibitive and result in a true loss to the state. We find this not to be the case, at least in terms of the initial capitalization. Even including the cost of start-up capital for the bank in the form of payment on a General Obligation bond "GO bond" in bank net income (though the state would technically be the entity responsible for repaying the debt), we still estimate that after taking

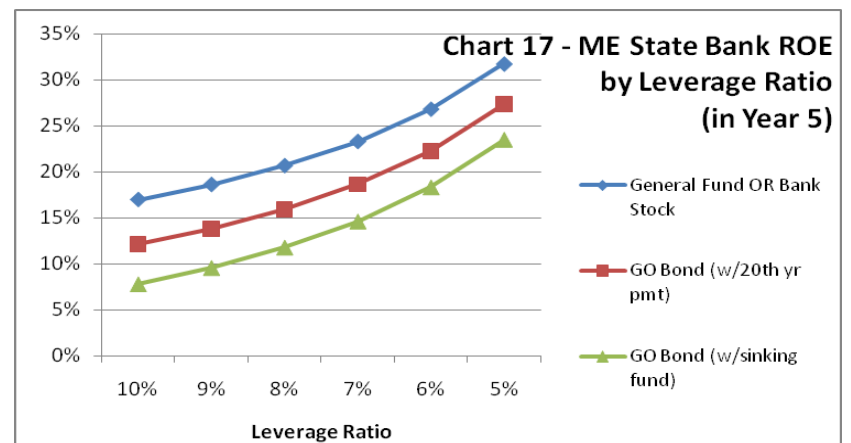
into account bond payments on a 20-year bond with a 5% coupon rate and sinking fund with a 2.76% interest rate, the bank would have an ROA that would grow from 0.77% in year 5 to 1.08% in year 20, and 1.69% after paying off its start-up debt (see Chart 16).

### Funding Sources

While we believe that a GO bond with a sinking fund is the most likely source of capital for a state bank, this is by no means the only option. For starters, there is no requirement that we are aware of that there be a sinking fund; the bond principal could be paid off in one lump sum when the bond matures. The state could also use general funds for bank start-up capital. While there are obvious political difficulties attendant on this option, it also reaps the greatest returns as the bank is effectively created with no debt obligations. Another option is to raise capital through the sale of bank stock, much like a private bank would. Some start-up funds from the state would also be required in order for the state to earn dividend payments; however, this would also mean that the state would hold shares in the bank which could very well appreciate over time. Pension or

### A Note on Leverage Ratios

The leverage ratio (capital/assets) is one of the biggest decisions a bank makes. The larger the leverage ratio, the less assets there are for every dollar of capital – which is less risky, but also less profitable. This is because a bank really earns a return off of its profit-generating assets (like commercial loans), not its core capital. So, all else equal, the more you leverage capital (a smaller leverage ratio), the more assets you have and the more profits you make. But with more rewards comes more risk, and a bank's capital is a critical cushion when assets default. Chart 17 shows a state bank's ROE for the four likely capital sources by leverage ratios of 5-10% (other variables are held constant). The General Fund and Bank Stock scenarios yield the same ROE's as neither scenario incurs a debt service cost to the bank itself.



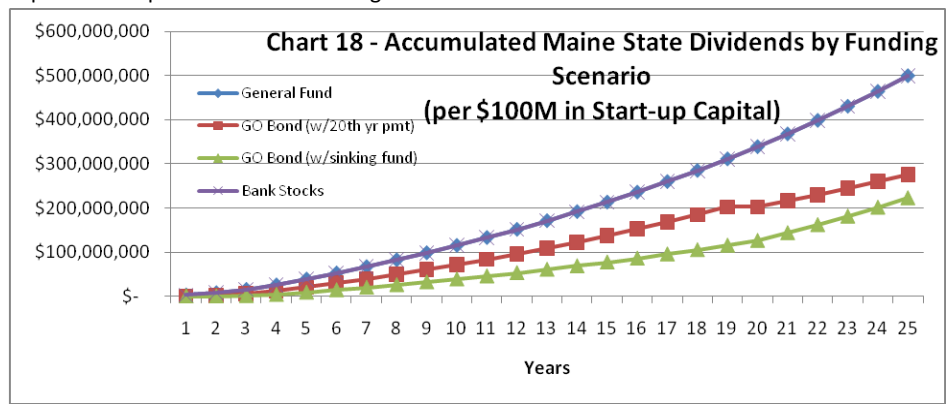
other state investment money could also provide bank startup capital, either by investing pension funds in bank stock or by using them in lieu of general funds through some dedicated fund.

## V. Returns to the State

While we have found that a state bank in Maine could stabilize the banking market, would likely contribute to job creation, and would be financially self-sustaining, policymakers and the public will presumably want some estimate of the bottom-line costs and returns to state taxpayers. We find that after a relatively short start-up phase (3-5 years), the state could not only be getting an annual dividend, but that even after taking into account the opportunity cost of capital, lost tax revenue and other costs of a state bank, it is still a revenue positive tool for the state.

### **Another Note on Funding Sources**

The source of the state bank's start-up capital is a critical early decision, and has a great effect on the amount returned to the state. Looking at Chart 18, we see that the funding scenarios that rely on state funds (e.g. the general fund and bank stock) return the greatest dividends, as the bank is effectively free from debt service obligations. The bond scenarios show that requiring a sinking fund will keep the accumulated dividends the lowest during the first 25 years of operation. It should also be noted that even after the bonds mature in year 20, the general fund and bank stock scenarios accelerate at a quicker rate, as they have built up more capital to compound returned earnings off of.



### **State Dividends**

One of the virtues of a state bank is that, while it should primarily be seen as a tool for stabilizing and increasing state lending by providing liquidity to private banks (and as a potential source of leveraged economic development funds), it can also return a portion of its profits to the state.<sup>15</sup> In the case of the Bank of North Dakota, the amount returned the state's General Fund is determined by the Industrial Commission (which is composed of the Governor, the Attorney General, and the Agriculture Commissioner and governs the bank's operations) and bank leadership in negotiation with the state legislature. Thus, in flush times the state can choose to plow all bank profits back into the bank, while drawing on them (within reason) in times of fiscal need. For instance, from 2004-2009 the negotiated return from the bank to North Dakota was \$30 million per year; in 2001 the BND returned \$50 million to the state; while in 2010 the bank did not return any profits to the state. Since the return to the state general fund—or state dividend as we call it here—is set by bank and the legislature on a yearly or biannual basis, any projection regarding return to the state is obviously completely contingent. And, of course, returning a greater percentage of the profits to the state in the short term hurts bank profitability in the long-term and the converse. That said, under most scenarios, the bank's dividend return to the state would be

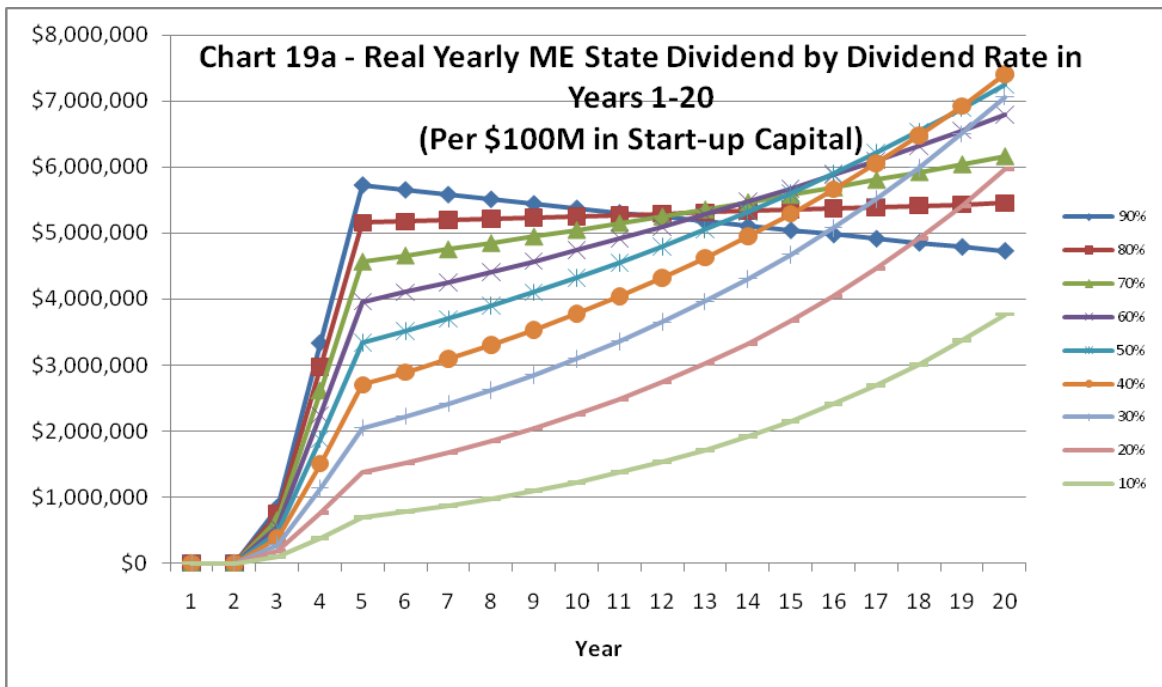
### **State Dividend Example**

A \$100M general obligation (GO) bond issuance, with a 5% coupon rate, 20-year term & 2.76% IR on a sinking fund; bank policies that result in a 10% leverage ratio and 75% loan to asset ratio (graduated increase from 15% to 75% over 5 years); and state dividend of 70% of profits per year would result in the following *accumulated* dividends to Maine:

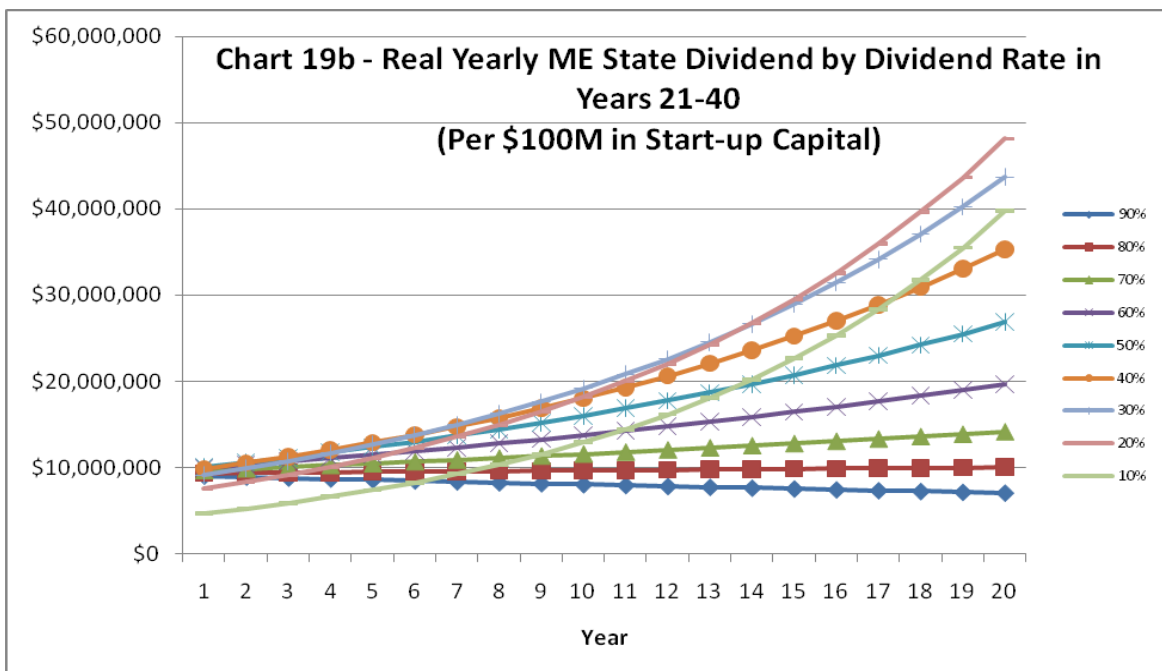
Year 5	\$8,681,930	Year 25	\$222,487,094
Year 10	\$38,561,022	Year 30	\$346,247,910
Year 15	\$76,843,718	Year 35	\$504,816,906
Year 20	\$125,893,561	Year 40	\$707,984,008

<sup>15</sup> Not that since the bank is an organ of the state, *all* bank profits belong to the state; it's simply a question of whether they are left in the bank as capital or transferred to the state general fund.

positive starting in year 3, and would ramp up quickly thereafter, such that if the bank returned an average of 70% of profits (the average return to the state from the BND over the past 10-years was 67%), by year 5 the bank would have cumulatively returned almost \$9 million in dividends to the state per \$100 million in start-up capital and by year 10, almost \$39 million (see the State Dividend Example box).



Charts 19a and 19b illustrate the compound effect of reinvesting state bank profits back into capital that can be leveraged for asset generation (both charts are in real dollars and assume a GO bond with a sinking fund). For instance, in year 5 (when the bank had fully assembled its loan portfolio) a state bank could return anywhere from less than



\$700K to over \$5.7M per year to the state general fund depending on whether the state chose to take very little (10%) or almost all (90%) of the state bank's profits. However, by year 40, if the bank consistently returned 90% of profits to the state, the year-by-year real return would be only about \$7M (having peaked in Year 21 with \$9M) compared to the \$40M-\$48M in real dividends if the state let the bank keep and accrue 80%-90% of its profits (see Appendix 5 for the

data behind these charts). In the chart years 1-20, we see that the higher the dividend rate, the greater the state's yearly dividend in the early years (the first 15 years). But as the state bank's capital grows more slowly with a high state dividend, the lower dividend rate numbers start to return a higher profit such that even with the lower rate going back to the state the absolute amount of state dividend becomes greater. The crossover for many of the dividend rates happens in years 15-20. The trend continues in years 21-40, but with more steady growth rates.

#### A Note on Total Returns to the State

While state dividends are one source of funds to a state's general fund, it should be noted that interest is also earned on the state money deposited with a state bank. To be conservative, we have estimated a rate of return on state deposits to be lower than that which would be obtained in the private market. When estimating total funds moved from a state bank to a state general fund, this amount is an important piece. For our estimates we assume the same return that BND provided to North Dakota over the last 7 years, 1.62%. This amount is not insignificant. For example, in the GO Bond (w/sinking fund) scenario, in year 5 we would expect about \$5M sent to the state from the bank dividend payment and \$10M from deposit interest.

These are clearly very long timeframes to be planning out for, and to some extent the real yearly dividend charts are simply meant to show the general effect of the dividend rate on the amount returned to the state. However, like any bank, a public state bank would take some time to start-up operations, to assemble its loan portfolio, and to mature its operations, and it is over the (relatively) long haul that such a bank would both maximize its efficacy and return the most to the state. The Bank of North Dakota has been in operation for over 90 years, progressively increasing both the magnitude of its operations and its return to the state.

#### Real Profits to the State

The state dividends described above plus interest paid to the state on its deposits with the state bank are the amounts of money that would go back into a state General Fund or Rainy Day Fund, and thus clearly important from both a budgetary and political perspective, but this is not a perfect measure of financial return. A more complete accounting would encompass all profits of the state bank (since it is an entity of the state in its entirety after all) along with the estimated loss in interest income due to moving state deposits from demand deposit accounts with higher yields (estimated to be about 0.25% or 25 basis points greater) and lost income tax revenues from moving the deposits into a nontaxable financial institution, as well as the cost of start-up debt service as described above.<sup>16</sup> With those amounts included, actual net profit to the state would be about \$6.4 million per \$100 million in start-

**Table 6 - Maine State Bank  
Fiscal Impact Calculator**

<b>Capital</b>	<b>\$ 100,000,000</b>
<b>Leverage Ratio</b>	<b>10%</b>
<b>Loans to Assets</b>	<b>75%</b>
<b>State Dividend</b>	<b>70%</b>
<b>Bond Coupon Rate</b>	<b>5.00%</b>
<b>Bond Term (in Years)</b>	<b>20</b>
<b>Bond Sinking Fund IR</b>	<b>2.76%</b>
<b>Interest Income</b>	<b>\$ 50,209,468</b>
<b>Interest Expense</b>	<b>\$ (27,258,436)</b>
<b>Nonint. Income</b>	<b>\$ 3,100,380</b>
<b>Nonint. Expense</b>	<b>\$ (7,640,562)</b>
<b>Provision for Loan Loss</b>	<b>\$ (1,471,906)</b>
<b>Net Income (Before Bond Payments)</b>	<b>\$ 16,938,945</b>
<b>Bank ROA (Before Bond Payments)</b>	<b>1.69%</b>
<b>Bank ROE (Before Bond Payments)</b>	<b>16.94%</b>
<b>Bond Interest Payment</b>	<b>\$ (5,000,000)</b>
<b>Bond Sinking Fund Payment</b>	<b>\$ (3,710,891)</b>
<b>Net Income (After Bond Payments)</b>	<b>\$ 8,228,054</b>
<b>Bank ROA (After Bond Payments)</b>	<b>0.82%</b>
<b>Bank ROE (After Bond Payments)</b>	<b>8.23%</b>
<b>State Dividend</b>	<b>\$ 5,759,638</b>
<b>State Dividend ROE</b>	<b>5.76%</b>
<b>Loss in Interest Income</b>	<b>\$ (1,687,500)</b>
<b>Loss of Income Tax Revenue</b>	<b>\$ (161,325)</b>
<b>Actual Profits to State</b>	<b>\$ 6,379,229</b>
<b>Actual State ROE</b>	<b>6.38%</b>

<sup>16</sup> This does not take into account potential savings from reduced fiscal agent fees, which would offset some of this cost.

up capital (assuming the leverage ratio, etc. outlined above) and net state ROE would be around 6.38%. Since this analysis is meant to inform policymakers, we have set-up a fiscal impact calculator that allows one to set capital, leverage ratio, loan to asset ratio, state dividends, bond coupon rate, bond term, and bond sinking fund interest rate (based on capitalization from a bond with a sinking fund; see Appendix 4C for conversion ratios). This calculator is not an accurate tool for projecting out multiple years, but it does demonstrate how decisions by policymakers and bank officials regarding bank set-up and operations can affect the returns to the bank and the state itself (double click on Table 6 to input values). For example, you can see that by changing the leverage ratio from 10% to 9%, all else equal, the actual state ROE would rise from 6.4% to 7.8%.

Chart 20 shows actual net profits to the state over a 25-year period based on the four start-up capital scenarios (and discounting the profits back to the state by 3% per year to account for inflation). As mentioned earlier, we assume a 5-year start-up period, over which the loan to asset ratio gradually ramps up to account for the fact that it will take time to generate the participation loans this analysis is based on. To simplify the applicability of the estimates to other capital amounts, the profits are projected per \$100M initial start-up capital.

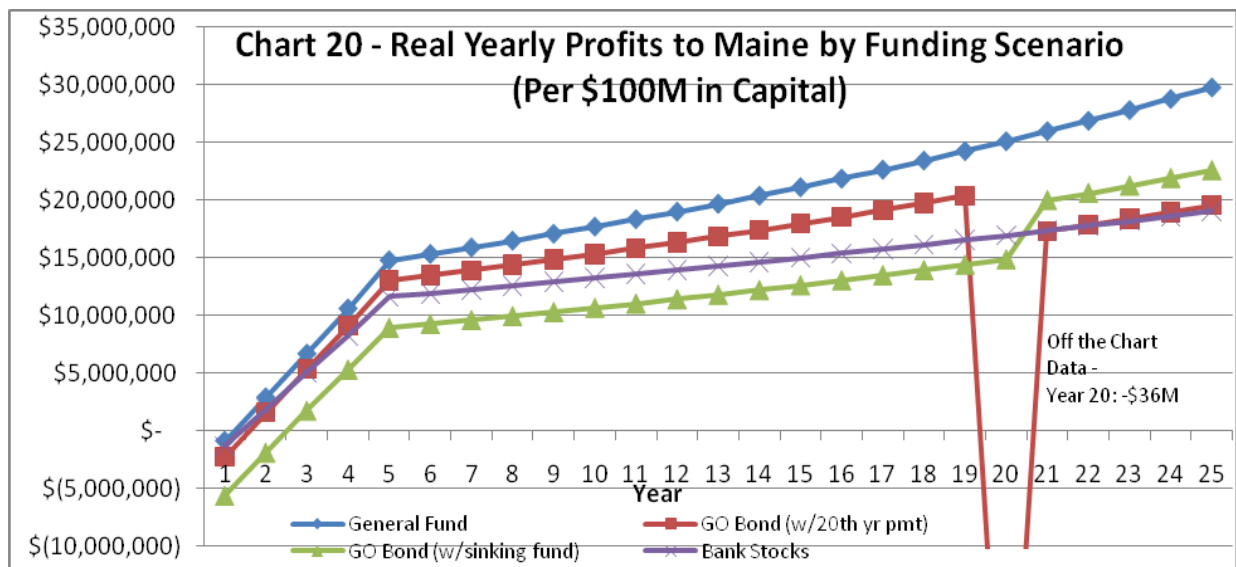
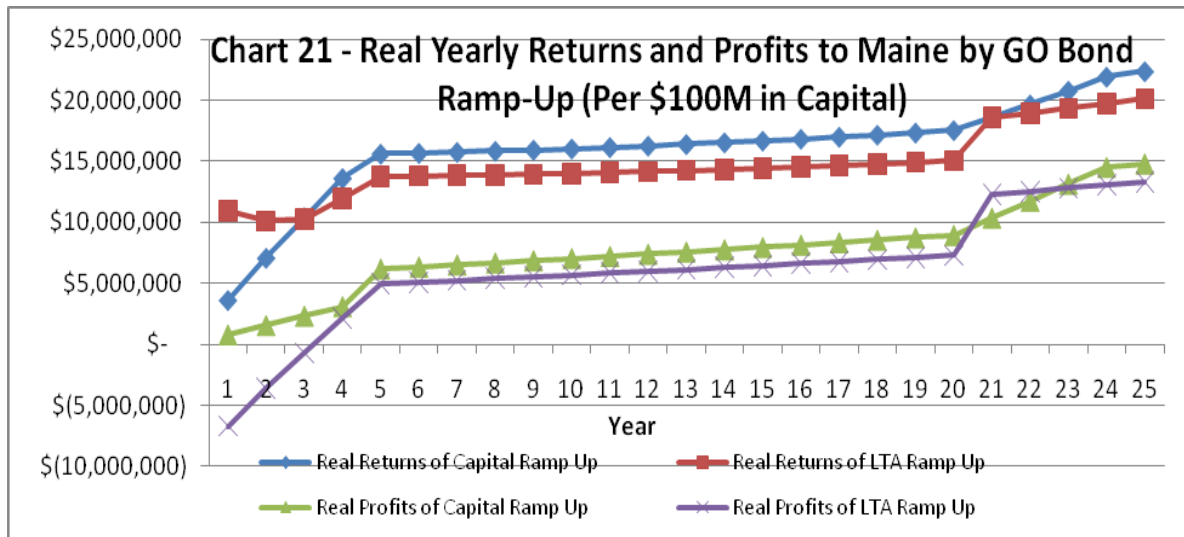


Chart 20 highlights three important points: 1) the loan to asset ratio greatly affects profits during the start-up phase, 2) the year 20 maturity has opposite effects on the two bond scenarios, and 3) the general fund scenario is the most “profitable” to the state, even after taking into account the opportunity cost of the funds. It should be noted that while the general fund scenario returns the greatest real profits to the state, it does not come without some drawbacks, namely that 1) the funds are all from state coffers (unlike the bond scenarios) and 2) while the state gets the dividends it does not have tradable stock shares that can appreciate over time like the bank stock scenario.



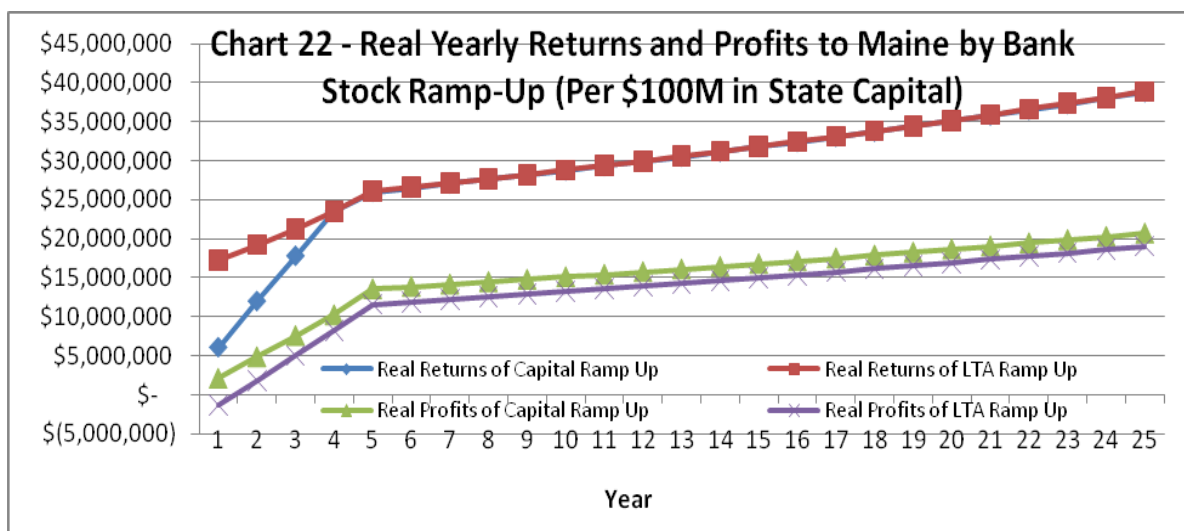
### Ramping Up Capital

Given that it will take some time for the bank to ramp up its lending, some have suggested a phased capitalization period as well. This could be done, for instance, by issuing four bonds during the the first four years of operation: rather than a \$100M bond in year 1, the state would issue \$25M in year 1 and another \$25M in years 2, 3, & 4. This scenario returns a slightly higher real returns and real profit per year (see Chart 21). Enacting four bonds, e.g., as opposed to one arguably presents more of a political hurdle, but does result in a greater return due to the higher loan to asset ratio over the early years of the bank.



### Multiple Bank Stock Scenario

Also, take the example of a state bank created in Maine from a total of \$133M in bank stock issuances (which could be, in part, capitalized through state pension funds), with capital investment ramped up gradually (\$33M in capital per year for the first 4 years), 75% state ownership, and assuming 75% LTA for years 5 and on and an average 70% state dividend.



In this scenario, accumulated real profits would cover the initial state investment of \$100M (75% of \$133.33M) in slightly more than 9 years with the stock ramp-up vs. slightly less than 11 years when ramping-up the LTA instead. Even though real state profits grow more slowly than real returns (state dividends + interest on state deposits), they show that even after accounting for inflation, there is a strong return to the state. In fact, the \$100M state investment returns real yearly profits of about \$14M-\$15M in years 5-10, and \$19M-\$21M in years

20-25. So by year 25, the state would be getting a real yearly return of around 21% on the initial investment by the state. And presumably the \$100M in bank stock that was purchased in years 1-4 could have appreciated, especially if dividends remain relatively large and stable (see State Dividend Example).

### **State Dividend Example**

A \$100M state investment; bank policies that result in ramped up capital; a 10% leverage ratio; up to 75% loan to asset ratio; and state dividend of 70% per year would result in the following *accumulated* real yearly profits to the state of Maine:

<b>Year 5</b>	<b>\$38,352,329</b>	<b>Year 25</b>	<b>\$379,804,502</b>
<b>Year 10</b>	<b>\$110,715,139</b>	<b>Year 30</b>	<b>\$489,907,164</b>
<b>Year 15</b>	<b>\$191,176,286</b>	<b>Year 35</b>	<b>\$611,998,833</b>
<b>Year 20</b>	<b>\$280,566,409</b>	<b>Year 40</b>	<b>\$747,323,090</b>

## **VI. Conclusion**

This analysis is a first—and admittedly simplified in many respects—effort to estimate the effect of a Maine State Bank on the state’s fiscal health, banking industry, and small businesses. While we were forced to make a number of assumptions, in each case we have endeavored make those as conservative as possible. With more time and the application of more powerful analytical tools, a more comprehensive analysis of the economic impact of a state bank is certainly possible. This first step does, however, strongly suggest that a state bank would have a positive effect on state revenue and could effectively strengthen the banking industry and create and sustain jobs through a revenue positive investment in a state bank.

## **APPENDICES**

### **Appendix 1 – Cleaning the Data**

In order to more accurately compare the banks that we believe a state bank would work with, we started isolating outlier banks based on their loan to deposit ratios (LTD). We found that there were bank trusts with 0 LTD's and credit card processing facilities with well over 400% LTD. We also removed retail store credit card banks as well as banks that are part of a megabank holding company; the financial institutions that we removed from the analysis are listed below:

<b>Financial Institution</b>	<b>State</b>	<b>Big Bank Holding Company</b>	<b>Average Loan to Deposits</b>	<b>Years Removed</b>
<b>Fleet Maine, National Association</b> (fka Fleet Bank of Maine and BankBoston Maine, National Association; fka Bank of Boston (Maine), National Association)	Maine	BANK OF AMERICA	38%	1995 - 2004
<b>TD Bank USA, National Association</b> (fka TD BankNorth, National Association; fka BankNorth, National Association; fka Peoples Heritage Bank, National Bank; fka Peoples Heritage Savings Bank)	Maine	TORONTO-DOMINION BANK	75%	1995 - 2010
<b>Davidson Trust Co.</b>	Montana	No	0%	2001-2010
<b>U.S. Bank National Association MT</b> (fka First Bank Montana, National Association)	Montana	U.S. BANCORP	86%	1995-2001
<b>Wells Fargo Bank Montana, National Association</b> (fka Norwest Bank Montana, National Association)	Montana	WELLS FARGO & COMPANY	67%	1995-2002
<b>Frontier Trust Company, FSB</b>	North Dakota	No	0%	2000-2006
<b>U.S. Bank National Association ND</b> (fka First Bank National Association ND; fka First Bank, Federal Savings Bank)	North Dakota	U.S. BANCORP	5092%	1995-2010
<b>Wells Fargo Bank North Dakota, National Association</b> (fka Norwest Bank North Dakota, National Association)	North Dakota	WELLS FARGO & COMPANY	69%	1995-2003
<b>Axsys National Bank</b> (fka Fingerhut National Bank)	South Dakota	No	8.45%	1996-2003
<b>Citibank USA, National Association</b> (fka Hurley State Bank)	South Dakota	CITIGROUP INC.	268%	1995-2005
<b>Department Stores National Bank</b>	South Dakota	CITIGROUP INC.	31%	2005-2010
<b>First Bank of South Dakota (National Association)</b>	South Dakota	U.S. BANCORP	232%	1995-1997

<b>Green Tree Retail Services Bank</b>	South Dakota	No	12192%	1996-2002
<b>Target National Bank</b> (fka Retailers National Bank)	South Dakota	No	1380%	1995-2010
<b>Wells Fargo Bank South Dakota, National Association</b> (fka Norwest Bank South Dakota, National Association)	South Dakota	WELLS FARGO & COMPANY	197%	1995-2003
<b>Wells Fargo Financial Bank</b> (fka Dial Bank)	South Dakota	WELLS FARGO & COMPANY	2545%	1995-2008
<b>Wells Fargo Bank Wyoming, National Association</b> (fka Norwest Bank Wyoming, National Association)	Wyoming	WELLS FARGO & COMPANY	93%	1995-2002
Source: FDIC Data				

For the U.S. Averages, we eliminated all banks with LTD's of less than 0.5% (those that round down to 0%) and those with LTD's of greater than 200%.

**Appendix 2 - Average Loan to Asset Ratios and Loans Per Capita for North Dakota and Like States**

<b>Average Loan to Asset Ratios for ND and Like States</b>						
	12/31/05	12/31/06	12/31/07	12/31/08	12/31/09	12/31/10
North Dakota	73.61%	75.12%	75.58%	75.00%	74.33%	72.33%
Montana	68.07%	70.25%	71.37%	72.43%	69.41%	63.63%
South Dakota	69.10%	71.19%	72.41%	69.51%	68.13%	65.72%
Wyoming	61.89%	62.44%	63.84%	62.30%	61.14%	56.76%
U.S. Average	66.11%	67.85%	68.94%	69.72%	68.17%	65.55%

<b>Average Loans Per Capita for ND and Like States</b>						
	12/31/05	12/31/06	12/31/07	12/31/08	12/31/09	12/31/10
North Dakota	\$14,135	\$15,792	\$17,299	\$18,960	\$20,074	\$20,537
Montana	\$10,975	\$12,197	\$12,647	\$13,670	\$14,608	\$13,934
South Dakota	\$12,217	\$13,393	\$16,158	\$16,983	\$16,887	\$18,331
Wyoming	\$7,089	\$7,970	\$8,839	\$7,434	\$7,716	\$7,556
U.S. Average	\$5,871	\$6,143	\$6,297	\$6,599	\$6,467	\$6,001

Average Loan to Assets by Quarter	2007Q3	2007Q4	2008Q1	2008Q2	2008Q3	2008Q4	2009Q1	2009Q2	2009Q3	2009Q4	2010Q1	2010Q2	2010Q3	2010Q4
North Dakota	75.88%	75.58%	73.79%	74.51%	75.04%	75.00%	74.27%	74.76%	74.81%	74.33%	72.11%	72.78%	72.82%	72.33%
Montana	71.35%	71.37%	71.49%	72.20%	72.59%	72.43%	71.29%	71.31%	70.41%	69.41%	65.00%	65.03%	64.59%	63.63%
South Dakota	72.56%	72.41%	70.86%	70.19%	69.98%	69.51%	68.21%	68.29%	68.33%	68.13%	66.49%	66.27%	66.11%	65.72%
Wyoming	63.58%	63.84%	64.53%	65.67%	65.06%	62.30%	61.92%	62.20%	61.78%	61.14%	58.70%	58.49%	57.74%	56.76%
Maine	79.27%	79.19%	79.52%	79.75%	79.83%	79.60%	77.78%	76.92%	75.51%	74.27%	68.76%	68.33%	66.93%	65.55%

### Appendix 3 – Oil and Gas Industries in Montana, South Dakota, and Wyoming

#### Natural Gas Withdrawals in MT, SD, & WY

Monthly Wyoming Natural Gas Gross Withdrawals



Source: U.S. Energy Information Administration

Monthly Montana Natural Gas Gross Withdrawals



Source: U.S. Energy Information Administration

Monthly South Dakota Natural Gas Gross Withdrawals



Source: U.S. Energy Information Administration



## Appendix 3 (Continued) – Oil and Gas Industries in Montana, South Dakota, and Wyoming

### Crude Oil Production in MT, SD, & WY

Monthly Montana Field Production of Crude Oil



Monthly Wyoming Field Production of Crude Oil



Monthly South Dakota Field Production of Crude Oil



## Appendix 4(A, B, &C) – Calculations & Variables

### Appendix 4A – How Revenue Variables Were Derived

1. **Total Interest Income:** Interest Income as a percentage of average net loans, in order to take into account the greater return on loans and allow for policymakers to adjust the loan to asset ratio accordingly. BND Loan and Non-Loan Averages are derived from averaging net loans; all others from averaging average YTD loans.
2. **Total Interest Expense:** Interest Expenses as a percentage of average liabilities, in order to take into account a more nuanced effect of the leverage ratio . . . a smaller leverage ratio not only increases assets compared to capital but also liabilities compared to assets (a 10% leverage ratio results in \$9 liabilities for every \$10 in assets or 9/10 or 90% liabilities to assets, but a 5% leverage ratio would result in 19/20 in liabilities over assets or 95%).
3. **Total Noninterest Income:** Total noninterest income as a percentage of average total assets.
4. **Total Noninterest Expense:** We extrapolate the total noninterest expense by utilizing the standard efficiency ratio, which is noninterest expense/(net interest income + noninterest income). BND has a very low efficiency ratio (which is very good) due in large part to not needing branches and not needing to spend a lot of money on marketing their services. As the state bank and a banker's bank, they avoid much of the overhead seen in private banks. We would expect the same efficiency advantages for a state bank in Maine.
5. **Provision for Loan Loss:** This loan loss is as a percentage of average loans, and acts as a small counterbalance to the higher rate of return, by factoring in a cost to the higher risk of having a larger loan to asset ratio.
6. **Interest Cost of General Obligation Bond:** The other likely funding mechanism for the bank's start-up capital is a General Obligation Bond. For this bond issuance we assume a 20-year maturity and a 5% coupon rate.
7. **Sinking Fund for General Obligation Bond:** Over the last 10 years, the state of Maine's return on its fiduciary fund investments has averaged 2.76%. We use this figure to estimate an annual compounded return of 2.76% on the bond sinking fund. For simplicity, we assume the bond will be retired at its maturity and will not have the principle paid down beforehand.
8. **Bank Assets:** Based on capital and leverage ratio (Capital/Leverage Ratio).
9. **Return on Assets (ROA):** Based on leverage ratio and loans/assets (see above for details).
10. **State Dividend:** The percentage of bank profits returned to the state.
11. **Loan to Asset Ratio:** Over the last 5 years, the Bank of North Dakota had an average of about 75% net loan to average assets. In order to take into account a start-up phase, we assume the following loan to assets: 15% in year 1, 30% in year 2, 45% in year 3, 60% in year 4, 75% in years 5-40.
12. **Loss of Interest Income:** We assume a slightly lower rate of return for deposits in the state bank. We use 0.25% or 25 basis points less interest earned by depositing in state bank vs. commercial banks as a rule of thumb, see Hearings on OR SB 3162 [cite to record].
13. **Loss of Tax Revenue:** The state bank is not taxed, so this would be a loss of corporate income taxes on revenue from in-state private banks (and some out-of-state banks with offices inside Maine) derived from state deposits. As Maine is a combined reporting state and to be conservative with our estimate, we assume that all state deposits moved out of private banks (even those headquartered outside of the state) would result in a loss in tax revenue. Corporate income tax on banks and financial institutions in Maine is the lesser of 1% of income plus 0.008% of assets, or 0.039% of assets only (source: Tax Foundation). Here we assume these rates when calculating the lost state tax revenues.
14. **State Deposits:** For BND's 16-yr average, deposits make up 75% of liabilities. For the Maine model, we assume that all deposits will be state deposits.

## Appendix 4B – BND ROA for the Past 5 years

Bank of North Dakota – Return on Average Assets						
	12/31/2006	12/31/2007	12/31/2008	12/31/2009	12/31/2010	MEAN
Return on Average Assets (Annualized)	1.99%	2.04%	1.86%	1.57%	1.49%	1.79%

## Appendix 4C – Conversions used to calculate fiscal impact on state

Assets = Capital/Leverage Ratio

Liabilities = Assets - Capital or [(Capital/Leverage Ratio) - Capital]

Loans = Loan/Assets\*Assets or [(Loan/Assets)\*(Capital/Leverage Ratio)]

Non-Loan Assets = {Capital/Leverage Ratio - [(Loan/Assets)\*(Capital/Leverage Ratio)]}

State Deposits = Liabilities\*0.75 or [(Capital/Leverage Ratio) - Capital]\*0.75

## Appendix 5 – Real Yearly State Dividends based on Dividend Rate - Data Table

### Years 1-20

Yearly State Dividends - Bond Issue with Sinking Fund Scenario (\$100M in Start-up Capital, 10% Leverage Ratio, Rising Loan to Asset Ratio up to 75%, & 20-yr Bond w/5% Coupon Rate + 2.76% Sinking Fund IR)										
State Dividend	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10
90%	\$-	\$-	\$838,164	\$3,334,441	\$5,731,211	\$5,658,535	\$5,586,782	\$5,515,938	\$5,445,992	\$5,376,933
80%	\$-	\$-	\$745,035	\$2,973,836	\$5,155,374	\$5,174,784	\$5,194,267	\$5,213,823	\$5,233,453	\$5,253,156
70%	\$-	\$-	\$651,905	\$2,610,759	\$4,564,581	\$4,656,834	\$4,750,951	\$4,846,970	\$4,944,930	\$5,044,870
60%	\$-	\$-	\$558,776	\$2,245,210	\$3,958,710	\$4,103,821	\$4,254,251	\$4,410,195	\$4,571,855	\$4,739,442
50%	\$-	\$-	\$465,647	\$1,877,189	\$3,337,638	\$3,514,872	\$3,701,517	\$3,898,074	\$4,105,068	\$4,323,054
40%	\$-	\$-	\$372,517	\$1,506,695	\$2,701,243	\$2,889,107	\$3,090,036	\$3,304,940	\$3,534,789	\$3,780,624
30%	\$-	\$-	\$279,388	\$1,133,730	\$2,049,404	\$2,225,638	\$2,417,027	\$2,624,874	\$2,850,594	\$3,095,725
20%	\$-	\$-	\$186,259	\$758,292	\$1,381,998	\$1,523,568	\$1,679,640	\$1,851,699	\$2,041,385	\$2,250,501
10%	\$-	\$-	\$93,129	\$380,382	\$698,904	\$781,993	\$874,959	\$978,978	\$1,095,363	\$1,225,584
State Dividend	Year 11	Year 12	Year 13	Year 14	Year 15	Year 16	Year 17	Year 18	Year 19	Year 20
90%	\$5,308,751	\$5,241,432	\$5,174,968	\$5,109,346	\$5,044,556	\$4,980,588	\$4,917,431	\$4,855,075	\$4,793,509	\$4,732,724
80%	\$5,272,934	\$5,292,786	\$5,312,714	\$5,332,716	\$5,352,793	\$5,372,946	\$5,393,175	\$5,413,480	\$5,433,861	\$5,454,319
70%	\$5,146,829	\$5,250,849	\$5,356,971	\$5,465,239	\$5,575,694	\$5,688,382	\$5,803,347	\$5,920,635	\$6,040,295	\$6,162,372
60%	\$4,913,171	\$5,093,269	\$5,279,968	\$5,473,511	\$5,674,149	\$5,882,141	\$6,097,757	\$6,321,277	\$6,552,991	\$6,793,198
50%	\$4,552,616	\$4,794,367	\$5,048,956	\$5,317,064	\$5,599,409	\$5,896,747	\$6,209,875	\$6,539,629	\$6,886,895	\$7,252,600
40%	\$4,043,556	\$4,324,775	\$4,625,551	\$4,947,245	\$5,291,313	\$5,659,309	\$6,052,898	\$6,473,861	\$6,924,100	\$7,405,652
30%	\$3,361,935	\$3,651,037	\$3,965,000	\$4,305,962	\$4,676,244	\$5,078,367	\$5,515,070	\$5,989,327	\$6,504,366	\$7,063,695
20%	\$2,481,039	\$2,735,192	\$3,015,381	\$3,324,272	\$3,664,805	\$4,040,222	\$4,454,096	\$4,910,366	\$5,413,376	\$5,967,914
10%	\$1,371,286	\$1,534,310	\$1,716,715	\$1,920,805	\$2,149,158	\$2,404,658	\$2,690,534	\$3,010,395	\$3,368,283	\$3,768,718

## Appendix 5 (Continued) – Yearly State Dividends based on Dividend Rate - Data Table

### Years 21-40

Yearly State Dividends - Bond Issue with Sinking Fund Scenario (\$100M in Start-up Capital, 10% Leverage Ratio, Rising Loan to Asset Ratio up to 75%, & 20-yr Bond w/5% Coupon Rate + 2.76% Sinking Fund IR)										
State Dividend	Year 21	Year 22	Year 23	Year 24	Year 25	Year 26	Year 27	Year 28	Year 29	Year 30
90%	\$9,013,419	\$8,899,123	\$8,786,276	\$8,674,861	\$8,564,858	\$8,456,250	\$8,349,020	\$8,243,149	\$8,138,620	\$8,035,417
80%	\$9,333,262	\$9,368,401	\$9,403,673	\$9,439,077	\$9,474,615	\$9,510,286	\$9,546,092	\$9,582,032	\$9,618,108	\$9,654,320
70%	\$9,663,023	\$9,858,318	\$10,057,560	\$10,260,828	\$10,468,205	\$10,679,773	\$10,895,617	\$11,115,823	\$11,340,479	\$11,569,676
60%	\$9,936,016	\$10,300,231	\$10,677,797	\$11,069,204	\$11,474,958	\$11,895,585	\$12,331,631	\$12,783,660	\$13,252,259	\$13,738,035
50%	\$10,049,230	\$10,582,861	\$11,144,829	\$11,736,638	\$12,359,873	\$13,016,203	\$13,707,385	\$14,435,270	\$15,201,807	\$16,009,049
40%	\$9,849,898	\$10,534,932	\$11,267,607	\$12,051,239	\$12,889,369	\$13,785,789	\$14,744,553	\$15,769,996	\$16,866,756	\$18,039,793
30%	\$9,118,025	\$9,902,109	\$10,753,620	\$11,678,354	\$12,682,609	\$13,773,222	\$14,957,621	\$16,243,869	\$17,640,725	\$19,157,701
20%	\$7,543,859	\$8,316,640	\$9,168,584	\$10,107,799	\$11,143,226	\$12,284,720	\$13,543,147	\$14,930,486	\$16,459,941	\$18,146,071
10%	\$4,699,059	\$5,257,702	\$5,882,758	\$6,582,124	\$7,364,633	\$8,240,170	\$9,219,794	\$10,315,880	\$11,542,273	\$12,914,465
State Dividend	Year 31	Year 32	Year 33	Year 34	Year 35	Year 36	Year 37	Year 38	Year 39	Year 40
90%	\$7,933,523	\$7,832,921	\$7,733,595	\$7,635,528	\$7,538,704	\$7,443,109	\$7,348,726	\$7,255,539	\$7,163,534	\$7,072,696
80%	\$9,690,667	\$9,727,152	\$9,763,774	\$9,800,534	\$9,837,433	\$9,874,470	\$9,911,647	\$9,948,964	\$9,986,421	\$10,024,019
70%	\$11,803,505	\$12,042,060	\$12,285,437	\$12,533,732	\$12,787,045	\$13,045,478	\$13,309,134	\$13,578,118	\$13,852,539	\$14,132,506
60%	\$14,241,618	\$14,763,660	\$15,304,838	\$15,865,854	\$16,447,434	\$17,050,333	\$17,675,332	\$18,323,240	\$18,994,899	\$19,691,178
50%	\$16,859,156	\$17,754,406	\$18,697,194	\$19,690,047	\$20,735,621	\$21,836,717	\$22,996,284	\$24,217,425	\$25,503,411	\$26,857,685
40%	\$19,294,411	\$20,636,284	\$22,071,481	\$23,606,492	\$25,248,259	\$27,004,206	\$28,882,275	\$30,890,958	\$33,039,339	\$35,337,134
30%	\$20,805,126	\$22,594,218	\$24,537,159	\$26,647,178	\$28,938,645	\$31,427,161	\$34,129,672	\$37,064,579	\$40,251,867	\$43,713,239
20%	\$20,004,926	\$22,054,198	\$24,313,396	\$26,804,021	\$29,549,782	\$32,576,815	\$35,913,932	\$39,592,899	\$43,648,732	\$48,120,039
10%	\$14,449,788	\$16,167,636	\$18,089,710	\$20,240,286	\$22,646,532	\$25,338,842	\$28,351,225	\$31,721,732	\$35,492,938	\$39,712,480