

The Impact of Banking Regulations and Deregulations on the Stock and Housing Markets

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Abstract

The November 8, 2016 election results have boosted stock market performance due to possible upcoming policy changes. The likelihood for even more gains come because of plans to increase government spending, cut corporate taxes, and deregulate the banking sector once again. By looking at the regulations from 1995 to 2017, I assess the effect of changing bank regulations through movements in stock returns and housing prices. By running regressions on these and other variables, I found the regulations' impact on house prices, the returns of the stock market, and the stock market's volatility. I argue that deregulations are only beneficial up to a certain point, which is especially important given that there is much debate about whether the government should repeal the Dodd-Frank act since Donald Trump's election victory.

There are numerous studies and papers which conclude that the deregulation of a country's banking sector is linked to stronger economic growth (for example, see Kroszner & Strahan, 2014; Barth, Gan, & Nolle, 2009; Chava, Oettl, Subramanian, & Subramanian, 2013). Because of Donald Trump's recent election as President, there are many who are expecting him to go through with his promise of banking deregulations, such as the repeal of Dodd-Frank. This is looking even more likely as he signed numerous executive orders within his first week to make good on policies he discussed on the campaign trail. Some favor the removal of Dodd-Frank capital requirements and proprietary trading restrictions because of the belief that they limit competition and prevent banks from operating at full efficiency (Kroszner & Strahan, 2014; Chava, 2013). Although there are few people who would argue that we shouldn't be striving for a stronger economy, there is still much hesitation over whether we should be using bank deregulations as the means to this end.

Due to the original banking regulations of Basel I and Basel II, market adaptations were born which were inherently risky (Barth, Gan & Nolle, 2009; Kroszner & Strahan, 2014). Venture capital firms which used pension funds arose, as did the securitization of assets which created a massive unstable market for mortgage-backed securities (MBS) paired with credit-default swaps (CDS). Because these were largely put in place during times of regulation to circumvent restrictive laws, once Glass-Steagall and other regulations were pushed back the banking sector no longer needed them. However, they continued to operate and instead encouraged aggressive lending practices with minimal oversight (McCoy, 2008).

We can now take these observations and apply them to life in the United States today. Since the passing of the Dodd-Frank Act in 2010, the United States has seen a period of various regulations that greatly outnumber the deregulations we have had. Some proponents of deregulation blame these policies for the sluggish economic growth that the country has seen since

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the financial crisis of 2007. Meanwhile, interest rates have remained at historically low levels throughout this period, allowing the Federal Reserve to get closer and closer to achieving its dual mandate. These facts suggest that although the last 10 years have shown slow growth – likely due to the numerous, harsher regulations – we are currently living in a time where the financial system is very stable, with a trustworthy promise of healthy long-term growth.

The most relevant findings which I came across through my research show that the banking regulations are a meaningful step towards establishing a more secure banking sector. Tables (1) and (2) both show that not only is volatility higher in deregulation periods, but also that it rises more during these times. With this being the case, we question whether it is a good idea to try to repeal Dodd-Frank. If Trump chooses to pull this away, it is very likely that the banking sector will take more risks and create an unsustainable economy. All of this could lead to a bubble, possibly in the stock market. These conditions are reflective of those we saw prior to the crisis of 2007, which creates serious causes for concern.

Relevant Literatures and Hypothesis Development

Many people have examined the effects on the economy from banking deregulations. Papers by Kroszner and Strahan (2014) and Chava et al. (2013) have given empirical evidence that deregulation is an important factor in encouraging the growth of economies. While some would argue that there is actually a two-way relationship between the growth of financial systems and the economy, in this paper I will focus on the relationship that exists starting with the loosening of the banking sector (Barth, Gan & Nolle, 2009). Despite evidence which aids the arguments of proponents of deregulation, Crotty (2009) and McCoy et al. (2008) place the blame for the

financial crisis of 2007 on wide-scale banking deregulations that created an unstable financial system. In addition, Perez-Caldentey & Vernango (2012) and Barth, Gan & Nolle (2009) examine the broader impacts of deregulation by focusing on other parts of the world where they have caused controversial economic events as well.

One way that we have observed volatility in the past, specifically with regards to the financial crisis in 2007, was through the change in housing prices. As deregulations created a massive shadow banking sector, the housing market was being affected by predatory lending practices and instruments created through MBS's. As banks and investors bought, pooled, resold, and shorted instruments that were tied to inherently risky mortgages, a dangerous system of underpricing risk and overpricing assets resulted in a massive bubble in the housing market that was mostly responsible for the recession that ensued (McCoy, 2008). With this being the case, I intend to compare the change in housing prices during regulation periods and deregulation periods to suggest that long-term volatility may be on the rise.

The various arguments surrounding banking regulations ultimately show that they must be present enough to act as a safety net, but not so restricting that they act as an inhibitor to economic progress or a breeding ground for questionable market adaptations. Using this conclusion and those reached by Kroszner and Strahan (2014), McCoy (2008), and Chava et al. (2013), I will argue that the deregulation of the banking sector will preclude parallel increases in stock market performance and instability.

Hypothesis 1: The deregulation of the U.S. banking sector will increase the volatility of financial markets;

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Hypothesis 2: The regulation of the U.S. banking sector will decrease the volatility of financial markets;

Hypothesis 3: The deregulation of the U.S. banking sector will increase the returns of financial markets;

Hypothesis 4: The regulation of the U.S. banking sector will decrease the returns of financial markets;

Hypothesis 5: The deregulation of the U.S. banking sector will increase the average price of homes in the United States;

Hypothesis 6: The regulation of the U.S. banking sector will decrease the average price of homes in the United States;

Data and Methodology

The main data I am using for my independent variables comes from the Federal Reserve's list of banking regulations and deregulations; daily numerical data from the VIX obtained from the Chicago Board Options Exchange (CBOE); US CPI data from the Bureau of Labor Statistics (BLS); 3-month Treasury Bill and the Federal Fund rates from the Federal Reserve Bank of St. Louis; 30-year Mortgage rates from Freddie Mac; and GDP data obtained from the Federal Reserve's Board of Directors. This will all be from the period of 1995-2017 because during this 22-year span, the United States saw many large changes in its bank regulation policy. Table 1 presents the descriptive statistics of these variables, in addition to the dependent variables I will discuss. These descriptive statistics tell us the statistical significance of the differences of the

regulation period and deregulation period averages and medians. As we see from looking at Table (1), it becomes clear that all the chosen variables show varying degrees of statistical significance.

Table 1: Descriptive statistics

The sample period is from 1995 to 2017. The sample includes 29 regulation and 21 deregulation periods. The difference in means test uses the unequal variance t-test. The significance level of the difference in medians is based on a Wilcoxon rank-sum two sample test. The symbols ***, ** and * indicate significance at the 0.01, 0.05, and 0.10 levels, respectively.

Variable	Regulation Periods			Deregulation Periods			Difference	
	N	Mean	Median	N	Mean	Median	Mean	Median
Housing Price	29	145.38	143.35	21	138.17	133.78	7.21*	9.57**
Stock Market Volatility (VIX)	29	17.70	17.85	21	19.65	20.74	-1.95***	-2.89***
S&P 500 Index	29	1,711.15	1,643.94	21	1,497.01	1,345.24	214.14**	298.70***
CPI Index	29	228.13	231.50	21	209.74	204.20	18.40***	27.30***
3-Month T-Bill (%)	29	0.58	0.15	21	1.58	1.72	-1.00***	-1.57***
30-Year Mortgage Rate (%)	29	4.32	4.05	21	5.26	5.53	-0.94***	-1.48***
Federal Funds Rate (%)	29	0.69	0.23	21	1.83	2.06	-1.14***	-1.83***

Each of these variables have considerable effects on the dependent variables which I plan to track. Various banking regulations/deregulations and VIX numbers describing short-term volatility can seriously influence the way investors will act in the market and what they choose to do with their money. Inflation will also be included to create comparable stock returns and housing price data. Assuming GDP growth and bank sector growth affect each other as well, it is important to include the change in GDP in chained 2009 dollars (to avoid double-counting the effects of inflation). Lastly, including various interest rate data in Regression (2) is necessary because the changing rates will directly influence the borrowing cost that consumers face when buying homes.

The results will be shown through Regressions (1) and (2), which track the effects of the independent variables on average housing prices obtained from Freddie Mac (representing volatility and mispriced assets) and returns from the S&P 500 (representing effects on returns).

The models that I intend to use are as follows:

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$$Stock_return_i = \beta_0 + \beta_1 Regulation_Dummy_i + \beta_2 VIX_i + \beta_3 \Delta GDP_i + \beta_4 Inflation_i + \varepsilon_i \quad (1)$$

$$\Delta House_index_i = \gamma_0 + \gamma_1 Regulation_Dummy_i + \gamma_2 \Delta GDP_i + \gamma_3 Inflation_i + \gamma_4 T_bill_i + \varepsilon_i \quad (2)$$

Variations of Regression (2) substitute the T-bill data I obtained with other representations of the borrowing cost that could potentially influence the housing index, such as 30-year mortgage rates and the Federal Funds Rate.

Results

In running these two regressions, the main independent variable that I was concerned with was the dummy variable that concerned regulations and deregulations. Although the main focus of the paper was on how these were going to impact the stock market, I felt it was also important to look at the effects these variables had on the housing prices. Because the housing market played such a massive role in creating the financial crisis in 2007, I felt it was important to look at current home prices and see if the way banks could create another bubble.

Table (1) shows that the most significant differences occurred in the VIX, the CPI, and the various measures of borrowing cost. Each of these discrepancies were statistically significant to the 1% margin. What we see in Table (1) is that during times of measured deregulation, the volatility of the stock market was notably higher, which aligns with Hypotheses (1) and (2). This suggests that as banks move towards looser restrictions, they begin engaging in riskier behavior which raises volatility. Table (1) also shows that each of the interest measures were significantly lower during regulation periods, and this could be because the country saw extremely low interest rates during the post-crisis period. As interest rates are low, people will be more inclined to spend

their money and invest, which is probably why the country experienced significantly higher inflation during the times where harsher regulations were observed. Other differences in Table (1) also produced significant information, such as the spread between the S&P. This was higher during times of regulation – which is inconsistent with Hypotheses (3) and (4) – and I believe it is because people feel more confident during periods when banks are limited by tighter regulations. Additionally, it is possible that the relationship between banking regulation and returns is not a linear one. Rather, it is more likely that regulations only dampen returns when they are excessive. If a balance already exists which allows people to feel safe investing their money but does not inhibit competition among banks, imposing more regulations would only promote the latter.

Combining these results with those in Table (2) provides us with an even clearer picture. The difference between housing prices from Table (1) did not produce a statistically significant result, which was inconsistent with Hypotheses (5) and (6). However, the change in housing prices from Table (2) shows that the 31% difference was statistically significant to the 5% margin. This could be due to the deregulations which allowed for the development of a housing bubble. We also see the rise in inflation being greater (and significant to the 1% level) during the deregulation periods even though it was higher on average during the regulation periods, which is represented in Table (1). This suggests that the mispricing of assets born out of deregulations caused a sharper change in the CPI. Lastly, the change in GDP was larger in deregulation times because of the two-way relationship between GDP growth and banking sector growth that is discussed in Barth, Gan, and Nolle (2009).

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Table 2: The impact of banking regulations and deregulations on the stock and housing markets

The sample period is from 1995 to 2017. The sample includes 29 regulation and 21 deregulation periods. The difference in means test uses the unequal variance t-test. The significance level of the difference in medians is based on a Wilcoxon rank-sum two sample test. The symbols ***, ** and * indicate significance at the 0.01, 0.05, and 0.10 levels, respectively.

Variable	Regulation Periods			Deregulation Periods			Difference	
	N	Mean	Median	N	Mean	Median	Mean	Median
Δ Housing Price	29	28.42%	27.01%	21	59.74%	62.38%	-31.32%**	-35.37%**
Δ Stock Market Volatility (VIX)	29	-18.65%	-19.63%	21	-7.07%	-14.86%	-11.58%	-4.78%
Δ S&P 500 Index	29	81.48%	76.65%	21	83.75%	76.98%	-2.27%	-0.33%
Δ GDP	29	15.00%	13.19%	21	29.05%	28.96%	-14.05%***	-15.77%***
Inflation (Δ CPI Index)	29	12.91%	10.94%	21	29.20%	28.42%	-16.30%***	-17.49%***

By looking at Table (3), it is clear that certain factors are consistently relevant. The main one which was always statistically significant is the change in GDP, which makes sense because of the aforementioned effect GDP has on the banking sector and ultimately the housing market. The Federal Funds Rate and 3-month T-Bill rates also appear to be important in determining stock market and housing price outcomes as shown in Table (3). These directly impact how investors choose to place their money. This tells us that as the rates on these two items go down, investors will inevitably turn towards investments that have higher returns, which will perpetuate inflation. My inflation results in Table (3) also support this idea. The negative effect inflation has on the housing market reflects the notion that returns in the housing market are less tempting to investors. Finally, I found that the VIX results from Table (3) were statistically significant to the 5% margin once I included the Federal Funds Rate in Regression (1), causing a rise in stock market returns. The explanation behind this might be that as a looser banking sector becomes more regulated, volatility will also slightly increase because of the need for banks to expose new loopholes. As

uncertainty in the stock market rises, we deal with more risk which positively influences stock returns.

Table 3: Regressions explaining the impact of banking regulations on the stock market returns and housing price

The sample period is from 1995 to 2017. The sample includes 29 regulation and 21 deregulation periods. The symbols ***, ** and * indicate significance at the 0.01, 0.05, and 0.10 levels, respectively.

Dependent Variable:	Stock Return			Δ Housing Price		
Dummy=1 if regulation	0.46***	0.29**	0.25**	-0.04	-0.06	-0.05
S.E.	(0.13)	(0.11)	(0.11)	(0.04)	(0.04)	(0.04)
Stock Market Volatility (VIX)	-0.02	0.04	0.06**			
S.E.	(0.03)	(0.03)	(0.03)			
Δ GDP	4.33***	6.54***	6.50***	3.27***	3.49***	3.40***
S.E.	(0.92)	(0.87)	(0.85)	(0.29)	(0.29)	(0.29)
Inflation (Δ CPI Index)	-0.27	-1.63*	-1.75*	-1.66***	-1.79***	-1.72***
S.E.	(1.05)	(0.90)	(0.89)	(0.28)	(0.29)	(0.28)
3-Month T-Bill (%)		-0.36***		0.08***		
S.E.		(0.07)		(0.02)		
30-Year Mortgage Rate (%)					0.05*	
S.E.					(0.03)	
Federal Funds Rate (%)			-0.37***			0.06***
S.E.			(0.07)			(0.02)
Intercept	0.03	-0.67	-0.99**	0.01	-0.18	0.00
S.E.	(0.55)	(0.47)	(0.48)	(0.04)	(0.13)	(0.04)
R-square	0.77	0.85	0.86	0.94	0.93	0.93
# of Observations	50	50	50	50	50	50

The dummy variable for regulations provided some very interesting results in Table (3). It always played a significant role in positively influencing the stock returns measured on the S&P 500, which hints that as we see more regulations come into play, we are essentially creating a better perception of the current state of the stock market – which is inviting to investors. This does not fall in line with Hypotheses (3) and (4).

Although regulations did have a measured impact on stock returns, regressions in Table (3) showed that it did not significantly affect the way housing prices changed. This conflicts with the

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results that I gained from my summary statistics in Tables (1) and (2), and with Hypotheses (5) and (6). I believe it is due to the qualitative nature that comes along with trying to determine the effects of bank regulations and deregulations. Papers such as McCoy (2008) definitively point at the deregulations of the late 1990's for having a hand in creating the housing bubble of the mid-2000's. Using this conclusion, we know that the shadow banking sector was at least somewhat responsible for the risky behavior and the inflation of home purchase prices. The fact that this did not become evident in my study shows that my sample and my method of measurement may not have been sufficient in trying to examine the effects of bank regulation on the housing market.

Conclusions

The issue of whether a country should impose stricter regulations is not a black-and-white one. As I conducted my study and examined all the obstacles banks encounter in trying to earn a profit, it became clear that some deregulations can certainly be limiting, while others are truly necessary for the consumer to be protected. History tells us that the banking sector will act in its own best interest if it is given too much leash, which is why it is always important to monitor and reassess the criteria under which we force our banks to operate. My findings indicate that we are at a level where regulation causes stock markets to rise, which means that deregulating at this time would not only hurt markets but also consumers. If President Trump were to eliminate the Dodd-Frank Act, it is very possible that we would see the banking sector act greedily once again.

However, it is also important to remember that the banks which these restrictions are meant to control are the systemically-important ones with the most stakeholders. Small banks that are typically underserved can suffer and fail because of the restrictions written with the large banks in

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mind. Ultimately, the content and extent of regulations imposed is what counts the most. They must only be present enough to act as a safety net, because any further holds will choke economic progress and likely create yet another shadow banking sector.

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Appendix: Examples of Regulations and Deregulations

The sample of regulations and deregulations from 1995-2017 were taken from the Federal Reserve’s list of press releases. They were picked based on if/how they affected the way banks treat consumers, how banks’ leverage and capital ratios changed, how they calculated risk, how they represented their assets, etc.

	Year	Provision	Periods	Related To:
Regulations	<u>1995</u>	Banks have to create "performance-based & objective standard" for banks in lower income areas; more focus on record-keeping; new evaluations of loans & investments made to test compliance with CRA	May 4th, 1995-September 2005	Community Reinvestment Act
	<u>2004</u>	June Proposal for new approaches of "varying sophistication" for calculating operational risk, and new Standardized & Internal approach for market risk; gave regulators better tools; established disclosure requirements	January 2007-January 2014	Basel II
Deregulations	<u>1997</u>	Banks can extend credit to its executive officers under some provisions, effective April 1st	April 1st, 1997-October 13th, 2006	Regulation O
	<u>1997</u>	Removal of risk floor used in calculating market risk, effective January 1st, 1998	January 1st, 1998-November 1st, 2007	Basel Capital Accords