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The cause of financial crisis: Passive versus the Active credit view

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Causes of Financial Crisis: Passive versus the Active Credit View

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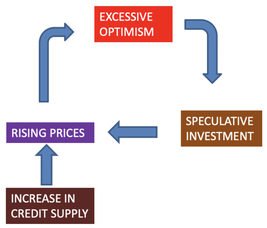
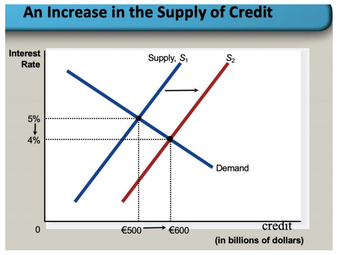
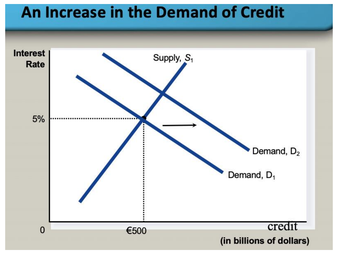
Abstract



In 2008, the US faced a worst financial crisis. From 2002 to 2006, the housing prices in the United States grew substantially which was driven by speculation. This sustained asset price inflation generated excessive optimism. This induced investors to engage in the practice of leveraging for which they borrowed excessively forming a housing bubble. In 2007, this housing bubble burst which led to failure to pay mortgage, financial markets crashing, and banks deleveraging causing a financial crisis. To prevent a financial crisis in the future, it became important for the Federal Reserve to identify the cause of the crisis. This paper explores whether the credit boom was demand driven or supply driven using macroeconomic data.



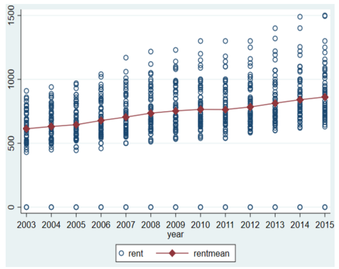


Motivation

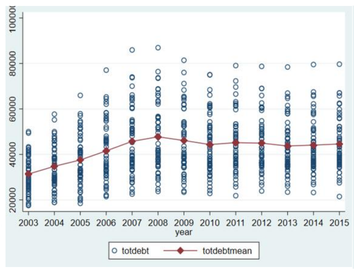
The cause of the financial crisis has important policy implications. Policymakers cannot do much to curb speculative investment, but they can restrain bank credit expansion through the macroprudential policy.

Methods and Data

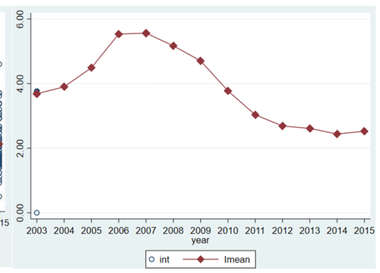
Rent



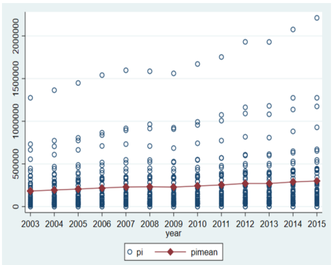
Total Debt



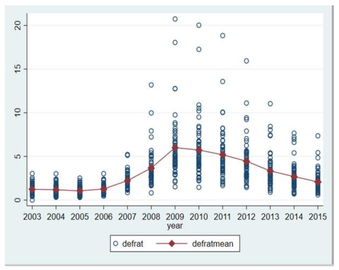
Interest Rates



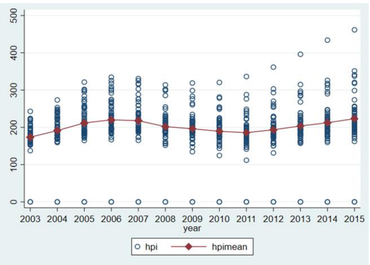
Personal Income



Default Rates



House Price Index



To test my thesis, I have used several macroeconomic variables from 2003-2015 for all 50 states. For this, I have used Panel Data. The frequency of these observations is annual. Panel data allows heterogeneity across states during the same time period. The years 2007-2009 of the crisis are placed well in the middle of this timeline to ensure that the trends are clear. This allows us to see regional disparities of the crisis in terms of the state. The dataset employs various macroeconomic factors which determine the causes of the shift in the credit growth. I chose the House Price Index, Default Rates and Mortgages as my dependent variables. Then I chose Personal Income, Debt to Income Ratio, Credit Card Default Rates, Total Debt, and Unemployment as my independent variables or factors which determine the credit worthiness of individuals buying houses, defaulting on loans, or taking out mortgages. Other variables that I included were rent, and interest rates and tested the effects of these variables on my dependent variables. I ran both fixed and random effects for each model. I then ran a Hausman Test to determine whether I should be using fixed or random effects.

Models

Model 1: CREDIT WORTHINESS MODEL

$$House\ Price\ Index_{it}\ or\ Default\ Rates\ or\ Mortgage = \alpha_i + lnPersonal\ Income_{it})\beta_1 + Debt\ to\ Income\ Ratio_{2,it}\beta_2 + Credit\ Default\ Rate_{3,it}\beta_3 + lnTotal\ Debt_{4,it}\beta_4 + Unemployement_{5,it}\beta_5 + u_{it}$$

Model 2: RENT MODEL

$$House\ Price\ Index_{it} = \alpha_i + lnRent_{it}\beta + + u_{it} + \varepsilon_{it}$$

Model 3: DEFAULT RATE MODEL

$$Default\ Rates_{it} = \alpha_i + Personal\ Incomes_{it} + Interst\ Rates_{it} + Total\ Debt_{it+} + Unemployment_{it} + u_{it}$$

Model 4: MORTGAGE MODEL

$$Mortgage_{it} = \alpha_i + Personal\ Incomes_{it} + Interst\ Rates_{it} + Unemployment_{it} + u_{it}$$

Limitations

It is hard to firmly conclude whether it was the supply or demand side. It is possible that both are true, or one played off the other. We do not what percentage of the mortgages had 15-to-30-year fixed interest and what percentage was variable interest rate which varied over time. We cannot conclude to what extent did the interest rates impact the defaults on mortgages. We have made a lot of assumptions in our models. If we drop these assumptions, we could have different results.

Results

VARIABLES	House Price	House Price	Default Rates	Default Rates	Default Rates	Mortgage
lnpi	211.2***			-5.618***	-4.776***	1,202***
dbtinc	2.702				-1.000***	277.8*
creddef	-6.579***				0.863***	36.20**
lntotdebt	70.78***			8.340***	10.98***	
unemp	-2.573***			1.055***	0.508***	25.67
2004.year	-3.650	18.17***	-0.170	0.00775	-0.562***	-447.6***
2005.year	-3.310	38.84***	-0.630	0.520	-0.503**	-676.2***
2006.year	-8.021**	48.10***	-0.993	1.804	-1.779***	-645.9***
2007.year	-31.81***	46.40***	-0.0574	2.413*	-1.198***	-796.1***
2008.year	-52.65***	31.07***	1.610**	2.144*	-0.752**	-1,077***
2009.year	-29.89***	25.87***	4.208***	0.870	-1.772***	-992.1***
2010.year	-41.90***	19.29***	4.447***	-0.0348	-2.036***	-866.1***
2011.year	-72.31***	15.67***	4.319***	-0.546*	-0.725	-2,055***
2012.year	-82.32***	23.86***	3.778***	-0.434*	-0.284	-2,403***
2013.year	-75.42***	34.67***	2.700***	-0.809***	-0.197	-2,512***
2014.year	-94.82***	44.03***	2.156***	-0.315	1.369***	-2,954***
2015.year	-90.88***	55.49***	1.496***		0.834*	-3,386***
rent		-0.0234				
I			0.559	-1.011*		
totdebt						0.837***
Constant	-2,936***	188.0***	-0.827	-21.81	-65.61***	-19,220***

Conclusion

The quantity of mortgages per capita began increased in the years prior to the crisis indicating that the mortgages rose significantly before the crisis. Default rates on mortgages continued to grow substantially during the crisis, peaking in 2009. Interest rates peaked prior to the crisis which may have led to higher default rates. Total Debt was building up prior to the crisis. Rent steadily increased with no significant spikes. This indicates that there was no improvement in fundamentals, but house prices still increased which indicates that there was a bubble. Personal Income remained steady over the years yet house prices rose prior to the crisis.

House Prices experienced the highest increase from 2006 to 2007 when controlling for factors of credit worthiness. When interest rates increased, default rates also increased. This change was the highest from 2008 to 2009. This indicates that interest rates had a role to play in the increase of default rates. The most significant outcome that we notice is that while controlling for the factors of credit worthiness, the most significant increase has been from 2003 to 2004.

The answer to the question “Was the credit growth during the 2008 financial crisis supply or demand driven?” remains inconclusive given the variables and regressions that have been used in my thesis. However, it is true that both scenarios might be at play in the crisis, or one might be influencing more strongly than the other. However, in my models, it does seem like the credit growth might be demand driven. Most variables that encompass credit worthiness do not seem to be showing any unexpected results which would prove otherwise. Yet, we can’t rule the supply scenario out.