[Origins and Causes of the US Housing Bubble]

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Project Purpose

An economic bubble, defined as prices rising above fundamental values, is a well-accepted phenomenon in academic financial literature. Unfortunately, although the existence of such bubbles is well established, the actual causes of bubbles are not known. The recent housing bubble that ushered in the financial crisis in the summer of 2007 and the subsequent recession has raised attention to economic bubbles in both the media and academic financial literature. The project that I will be working on, under Dr. Taylor Nadauld and Dr. Keith Vorkink in the Marriot School of Business, will be to investigate the causes of the recent US housing bubble.

Project Importance

This is an extremely important question in finance right now. Dr. Vorkink recently returned from a National Bureau of Economic Research (NBER) conference, and the causes of bubbles were discussed. Yet there is no clear evidence that gives any hypothesis a firm footing right now in the financial academic world. When we successfully investigate and lay out a cause of the housing bubble, our paper will likely be published in one of the top economic journals, *The Quarterly Journal of Economics*.

Not only is this an extremely important question in academia, but this is also a critical question in the public policy sphere. It is well known that the housing bubble and the bursting of the housing bubble (when house prices precipitously dropped back to fundamental values) caused default rates to soar as the amount due on many mortgages far exceeded the value of the homes. This in turn caused residential mortgage backed securities to drop in value since the payment on these securities comes directly from mortgage interest payments on loans that were in default. Since many of the massive financial bedrock firms in the US economy were heavily invested in these residential mortgage backed securities, as the value of these securities fell almost every one of these firms, including Bear Stearns, Wachovia, and Washington Mutual, either went bankrupt or faltered under the weight of losing billions. This in turn created a credit freeze, in which financial institutions stopped lending money to one another out of suspicion and fear of losing money. Since credit is the lifeblood of the financial world, the US economy spiraled into a deep and long-lasting recession when that lifeblood dried up. Thus a bubble in just one sector of the economy caused the entire economy to fall to its knees, taking years to regain even an unsure footing. Understanding what caused this bubble should not only help policy makers prevent future economic crashes, but help the economy reach new heights in a safer financial world. This in turn helps everyone: there will be more jobs in the economy and higher wages, which leads to better education, better technology, and higher standards of living. Ultimately, the importance of understanding the causes of economic bubbles cannot be overstated.

Project Profile Body

I have a unique chance to be able to answer this question. Dr. Nadauld, my mentor, has about thirty-three gigabytes of raw mortgage data from across the United States. The data has addresses and loan amounts for mortgages through time across large cross sections in the US. With this data I can isolate addresses, and observe the prices of particular houses through time. As I aggregate this data, I can get a clear estimation of how much housing prices rose in certain areas and the speed at which they rose. I can then run estimations, by using instrumental variables from econometric theory, to isolate causes of the housing bubble. I will also try to control for other main factors that could possibly explain the housing bubble, and of course work closely with Dr. Nadauld and Dr. Vorkink, who have excellent reputations and experience in isolating and showing causal relationships in economic data.

Our initial hypothesis is that peer effects played a key role in causing the housing bubble. There is obviously clear anecdotal evidence on peer effects artificially inflating prices. For example, a person may buy a house, fix up the property and renovate some areas of the house, and then sell it quickly. As neighbors notice that large profits can be made from this, these neighbors start to buy and sell houses as well. As more individuals push into the market, and the rate of transactions increase, prices are pushed up far above fundamental values. If these peer effects begin in certain areas and radiate out

geographically, then we have an excellent data set to track this over time and therefore test this hypothesis. As I stated above, we will have to control for other factors that could influence housing prices in particular areas, like increased employment opportunities and inflation of other goods in the economy.

This project is not only important, but will prove to be very time intensive. I need to clean up this massive thirty-three gigabyte dataset, eliminate errors, and merge the data with inflation rates, and employment information. I will also need to generate graphs and test different variables as instruments in the econometric estimations. I will almost certainly need to use more than one programming language to do so. Thus the time it will take for me to do this project, not to mention a possibly extensive investment in software and hardware necessary for this unique project will be expensive. This grant money will certainly help this project tremendously.

Anticipated Academic Outcome

The anticipated academic outcome of this project is to produce a research paper of high enough quality to be published in *The Quarterly Journal of Economics*. As I stated above, the question that we attempt to answer with our research is critically important in financial academic literature.

Qualifications

I am uniquely qualified to be able to perform these tasks. I am working to get majors in both mathematics and economics, with minors in computer science and statistics. I have a 4.0 GPA and will graduate from BYU in a total of four years of schooling. My training in economics enables me to think critically about these problems and the economic reasons that could cause a bubble, while my mathematics and statistics training enables me to be able to carefully estimate the factors causing this bubble. My training in computer science is especially useful, as this project will likely require hundreds of hours of programming. I also have extensive research experience working with Dr. Nadauld on other projects. This experience enables me to understand the research process well and the steps included in it. It also has helped me learn to be careful in programming and setting up datasets, as well as careful and precise in my econometric estimations.

Project Timetable

January 15, 2014 – Finish Compilation and Cleaning of Dataset, and begin running estimations and other tests.

February 15, 2014 – Finish initial estimations and work closely to verify and check over estimations with Dr. Nadauld to finalize the empirics.

March 15, 2014 – Finish first draft

April 15, 2014 – Submit paper to *The Quarterly Journal of Economics*

Scholarly Sources

Bank of England, 2008, Financial Stability Report, April.

Bernanke, Ben S. Apr. 2012. "Rethinking Finance." Speech presented at the Sage Foundation and the Century Foundation Conference, New York, NY.

Boyson, Nicole, Helwege, Jean, and Jindra, Jan. 2012. "Crises, Liquidity Shocks, and Fire Sales at Commercial Banks." Working paper.

Coleman, Major IV, Michael LaCour-Little, and Kerry D. Vandell. 2008. "Subprime Lending and the Housing Bubble: Tail Wags Dog?" *Journal of Housing Economics*, 17(4): 272-290.

Diba, Behzad T., and Herschel I. Grossman. 1987. "On The Inception of Rational Bubbles." *Quarterly Journal of Economics*, 102(3): 697-700.

Glaeser, Edward L., Joseph Gyourko, and Albert Saiz. 2008. "Housing Supply and Housing Bubbles." *Journal of Urban Eocnomics,* 64(2): 198-217.