HOW U.S. GOVERNMENT EXPANSIONARY MONETARY POLICY HELPS TO LOWER THE INTEREST RATES OF MORTGAGES

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Abstract

The purpose of this project is to find out if expansionary monetary policy of the United States of America decreasing interest rates benefits households to purchase houses. The study will determine the effect of interest rates on housing market sales while holding constant the effects of the unemployment rates, GDP, and Vacancy Rate. This paper uses time-series analysis to determine the effects of US monetary policy on households.

Key words: monetary policy, interest rates, benefits households, unemployment rates, housing market.

JEL Classification Codes: E44; G21

BACKGROUND

In the biggest recession since the Great Depression the American dream of owning a home was the single most prominent threat to the American household. Failure of the mortgage giants like Fannie Mae and Freddie Mac to stop the spread of mortgage-backed securities and their eventual demise ensured a grueling foreclosure process for many American families in the past four years.

The purpose of this project is to determine whether the expansionary monetary policy of the government of lowering interest rates helps families repurchase or buy new American homes. The study will determine the effect of Interest rates (INTEREST) on Housing Market Sales (HOUSING) while holding constant the effects of the Unemployment Rates (UNEMPLOYMENT), Gross Domestic Product (GDP), and Vacancy Rate (VACRATE). This study uses a time-series analysis with 30 quarterly observations from Quarter One of 2004 to Quarter Two of 2011. The model (less constants and coefficients) is:

HOUSE=INTEREST+UNEMPLOYMENT+GDP+VACRATE

The dependent variable Housing Market Sales (HOUSE) is defined as total new houses sold in the United States in thousands (Economagic, 2011). Interest Rates (INTEREST) is defined as interest rates on 30-year fixed rate conventional mortgages expressed in percentage (Economagic, 2011). This variable was chosen because the percentage of interest rate on a mortgage greatly affects a person's decision on purchasing a home and the budget one would have to establish. Unemployment rate (UNEMPLOYMENT) as defined by the Bureau of Labor Statistics is the percentage rate of unemployed individuals who are willing and able to work. This definition has had much controversy in the past couple of years and the Bureau of Labor Statistics has expanded the unemployment definition to include six categories of people:

1. Percentage of labor force unemployed 15 weeks or longer
2. Percentage of labor force who lost jobs or completed temporary work

3. Percentage of labor force who has looked for work in the past four weeks

4. Discouraged workers who have stopped looking for work

5. Loosely or marginally attached workers who would like to obtain work but have not looked for work recently

6. Part-time workers who want to work full time but cannot due to economic reasons (BLS, 2012).

Unemployment has been chosen as one of the variables because people who are unemployed cannot afford to purchase homes. Most mortgages require some sort of guarantee and work history is the most common used criteria for determining the purchase price to be affordable for a person. GDP is Gross Domestic Product which measures the amount of production of the country in today's dollars (Economagic, 2011). This variable was chosen because GDP affects incomes and thus house sales. Vacancy rate (VACRATE) according to Federal Housing Finance Agency is measured as total number of vacated homes per each quarter of a year (FHFA, 2008, p.10). Vacancy rates directly affect housing sales as the amount of vacant homes potentially gives the amount of repurchased homes.

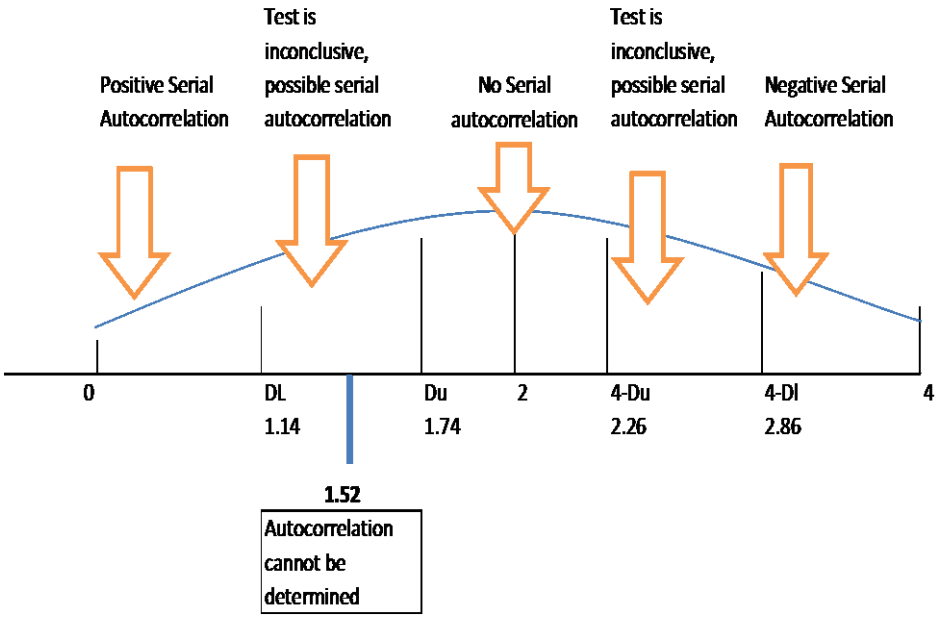
The relationship between INTEREST and HOUSE should be negative as lowered interest rates should increase the number of housing sales. The relationship between GDP and HOUSE should be positive as with the increase of GDP the population increases income and is more willing to purchase a house. The relationship between UNEMPLOYMENT and HOUSE should be negative as the unemployment rate goes higher, less people are able to afford housing. The

relationship between VACRATE and HOUSE should be negative as with the decrease of vacant homes one should see increase in housing sales.

REGRESSION ANALYSIS

The initial model was regressed with the results as shown in the table below:

DEPENDENT VARIABLE: HOUSE	R2=.902		N=30
INDEPENDENT VARIABLES	COEFFICENT	STUDENT T	SIGNIFICANT OF T
INTEREST	7,932.7952	1.073	.2934
EMPLOYMENT	-7,276.0907	-2.478	.0203
GDP	0.6107	0.581	.5667
VACRATE	-56,568.6821	-9.869	.0000
DURBIN WATSON= 1.52			

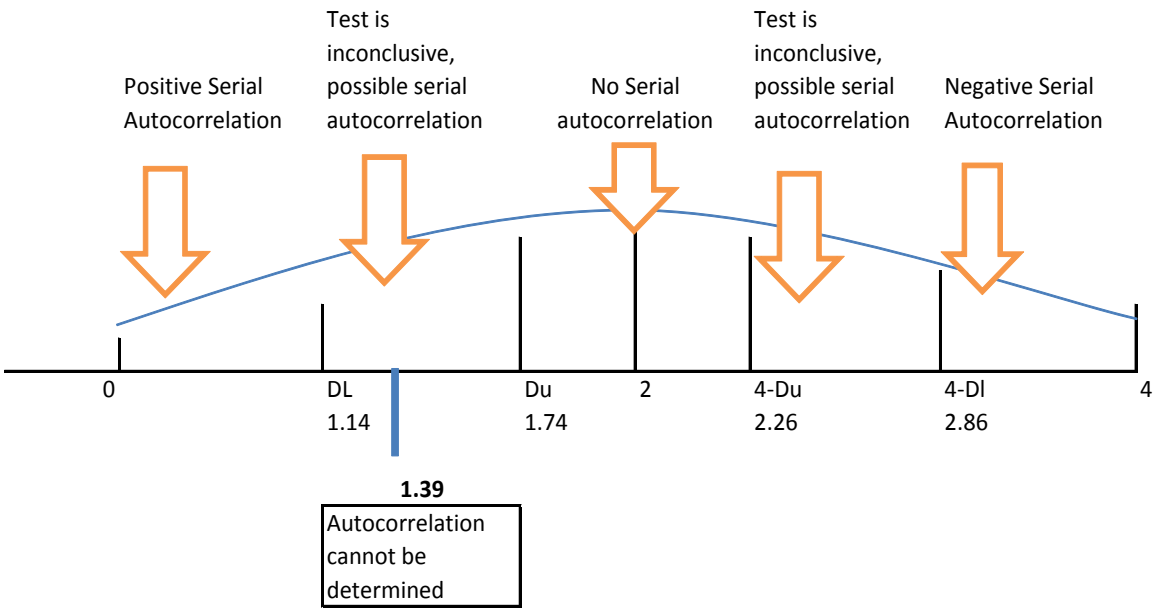


The focus in this study is on the impact of INTEREST on HOUSE. The Durbin-Watson statistic of 1.52 fell in the region which shows us that autocorrelation cannot be concluded. The Durbin-Watson statistic informed us that autocorrelation is

possible, and we should continue with caution toward the regression outcome and try to improve the regression so that we can rule out autocorrelation.

Dependent Variable: LHOUSE	R^2= 0.934	N=30	
Independent Variables	COEFFICIENT	STUDENT T (df=25)	SIGNIFICANCE OF T
Intercept	10.1262	7.397	9.50E-08
LINTEREST	0.9604	1.555	0.1325
LUNEMPLOYMENT	-0.4671	-3.325	0.0027
LGDP	0.1206	1.588	0.1249
LVACRATE	-1.8562	-10.519	1.14E-10
DURBIN WATSON= 1.39			

In order to improve the regression to try to rule out autocorrelation, we logged all variables and ran a separate regression. The Durbin-Watson statistic produced an outcome of 1.39. This still shows us that it is inconclusive to rule out autocorrelation.



In time-series regressions, a test for multicollinearity will show us whether two independent variables are collinear. We tested all variables for multicollinearity in both logged and unlogged regression model and found no multicollinearity. The results are displaced in the tables below.

Unlogged regression	VALUE -R^2					
Model	INT-UNEMPLOYMENT	INTEREST-GDP	INTEREST-VACRATE	UNEMPLOYMENT-GDP	UNEMPLOYMENT-VACRATE	GDP-VACRATE
0.902	0.800	0.052	0.026	0.053	0.087	0.002

Logged Regression	VALUE -R^2					
Model	LINT-LUNEMPLOYMENT	LINTEREST-LGDP	LINTEREST-LVACRATE	LUNEMPLOYMENT-LGDP	LUNEMPLOYMENT-LVACRATE	LGDP-LVACRATE
0.934	0.832	0.060	0.079	0.060	0.079	0.002

From the values displaced in table above, we can conclude that for both logged and unlogged regressions, there is no multicollinearity between the any of the independent variables in the regression as their values for R^2 from the respective regressions are less than the R^2 for the model.

When looking at the unlogged regression and considering the statistical significance of each independent variable to the dependent variable based on the tables below we can conclude that the vacancy rate (VACRATE) is statistically significant at all levels of α, INTEREST and GDP are insignificant and UNEMPLOYMENT is significant at α confidence levels of 90% and 95%.

When looking at the logged regression and considering the statistical significance of each independent variable to the dependent variable based on the table below we can conclude that the vacancy rate (VACRATE) is also statistically significant at all levels of α, INTEREST and GDP are insignificant and UNEMPLOYMENT becomes

significant at all α confidence levels. We can conclude that logging the regression obtained better significance levels for UNEMPLOYMENT.

Conclusion

Our regression model brought us to the conclusion that interest rates are not as statistically significant as is the unemployment to housing sales. This tells us that no matter how low the interest rates would drop, until the unemployment rate improves, housing sales will be stagnant. This is very evident in the current economy as housing experts say localized warning signs of a new wave of foreclosure are likely to be replicated across much of the United States in 2012 (Howell & Schomberg, 2012). The other main factor that could have been examined in the regression model that might have made a difference is the average credit score of a mortgage lessee. Upon the housing market crash, many lenders tightened criteria for mortgage approvals and potential buyers have had much harder time obtaining loans as they have to prove significant clean previous credit history.

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