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Wealth effects on the housing markets: Do market liquidity and market states matter?

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ABSTRACT

This paper analyzes the effect of household wealth (including housing and financial wealth) on housing sales and probes their long-run and short-run dynamic relationships. We further examine the short-run effect of financial wealth on housing sales by employing quantile regressions, restricted upon different liquidity (quantile) levels and up-down housing markets, from which the differences between the early and late stages of an uptrend/downtrend can be respectively exhibited. We find that housing wealth, income, and mortgage rates have long-run influences on housing sales. Looking at the short run, we find that housing sales only respond to housing wealth and mortgage rates. When we distinguish the effects of financial wealth on housing sales in up-down housing markets, we note a positive influence of financial wealth on housing sales in down markets, but not in up markets. Particularly, our results show an impact of housing liquidity on the short-run relationships.

1. Introduction

After the subprime mortgage crisis and the global financial crisis that started from about mid-2007, U.S. households have significantly cut consumption due to their shrinking wealth. From 2007 Q3 to 2009 Q1, sales of U.S. single-family new homes presented a noticeable severe drop of over 80%. People cut back on consuming non-necessary or high-priced commodities due to their curtailed wealth.

Previous studies on housing support the positive linkage between housing sales and housing prices. Stein (1995) explains that a cut in housing prices weakens the ability at making downpayments and even obstructs people from buying a new home. Genesove and Mayer (2001) demonstrate a positive relation from the loss-aversion perspective. The condition of decreasing housing prices drives sellers to be averse from selling homes. Differentially, this paper focuses on the relationship between housing sales and households' wealth (including housing and financial wealth), employing a quantile regression with an error–correction model. The quantile regression allows us to examine across various distributions of a dependent variable.[1] In particular, the application of quantile regressions in this paper allows us to consider the importance of liquidity in housing markets. Limited studies exist in the literature examining the impact of housing liquidity levels on the relationship between housing trading volumes and housing wealth.

Many recent studies (e.g., Benjamin et al., 2004; Cai and Ge, 2012; Case et al., 2005) discuss the effects of housing and financial wealth on consumption. Most evidence supports that the positive impact of housing wealth on consumption is larger than the impact of financial wealth. Yet, what about the impacts on durable assets, e.g. homes, arising from changes in household wealth?[2] This paper examines the effects of housing and financial wealth on housing sales, linked to the downpayment effect (Stein, 1995). Our findings shed light on the linkage between changes in households' wealth and the sale of houses, so that builders can appropriately adjust their supply of new homes.

Most financial wealth includes equities, mutual funds, life insurance reserves, etc. Households' financial wealth (or other non-housing wealth) sometimes is used to pay housing downpayments. Therefore, some studies – such as Ioannides (1989) and King and Leape (1998), for example – suggest a negative relationship between mortgage debt

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[1] Many fields have applied the quantile regression (e.g., Deng et al., 2012; Eide and Showalter, 1998; Engle and Manganelli, 2004; Lee and Zeng, 2011), because it not only analyzes possible asymmetries among different distributions of dependent variables, but also avoids the possible bias stemming from traditional linear estimations.

[2] Most studies are concerned about the consumption of non-durable goods and services, rather than durable goods. However durable goods sometimes play an important role in economic developments. Some studies (e.g., Alvarez-Parra et al., 2011; De Gregorio et al., 1998) stress the importance of the consumption spending on durable goods for business cycles, especially in small open economies or emerging markets.

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and non-housing wealth. Their findings support that changes in non-housing wealth should be related to sales of houses. In fact, many studies further discuss the linkage between housing and stock markets (e.g., Chen et al., 2012; Lee et al., 2012; Lu et al., 2007). Essentially, the wealth effect links the relationship between changes in wealth and people's consumption, and it therefore affects economic developments. Among all commodities or assets, housing sales play an important role upon economic prosperity.

Another important discussion of this paper is to investigate the impacts of market liquidity and market states on the relationship between housing sales and financial wealth. The purchase of a house entails paying a lot of money for downpayments. According to the theoretic framework in Stein (1995), the outstanding debts of families are linked to the excess demand of houses. Therefore, any additional gained wealth from financial markets could curtail their debts and increase the purchases of houses. The conditions of liquidity and states of housing markets affect the selling of old houses. On the other hand, up and down housing markets can raise asymmetric effects. For example, Clayton et al. (2008) find an asymmetric effect in which decreases in prices reduce trading volume, but increases in prices have no effect. In fact, there exist much evidence showing an asymmetric effect during cycles (e.g., business cycles, up-down stock market cycles; see, for example, Chang and Tzeng, 2011; Mascarenhas and Aaker, 1989; Perez-Quiros and Timmermann, 2001; Romer, 1996).

This paper examines the effect of financial wealth on housing sales, aiming at not only the difference between uptrends and downtrends of housing markets, but also the difference between early and late stages of an uptrend (or downtrend).[3] To the best of our knowledge, most studies focus on the responses of mortgage debt with respect to changes in non-housing wealth. This paper instead directly explores the responses of housing sales with respect to housing and financial wealth, including long-run and short-run dynamic effects.[4] We apply quarterly data of single-family homes in the U.S., as such data allow us to directly observe the effective results for the influence of housing and financial wealth on housing sales (not as responses from mortgage debt) and present results that correspond well to household wealth via quantile regressions[5] (Koenker and Bassett, 1978). Compared with previous studies, such as Ioannides (1989) and Jones (1994) analyzing with a OLS model, and Moriizumi (2000) applying the Tobit estimation method for avoiding selectivity bias, a quantile regression model not only can solve the heteroscedasticity, selectivity bias, but also allows us to analyze the importance of housing liquidity.

According to our empirical results, except for financial wealth, housing sales have a statistically significant long-run cointegration relationship with housing wealth, income, and housing mortgage rates. Housing wealth has a positive permanent effect on housing sales. However, the long-run effects of income and mortgage rates on housing sales are negative.[6]

In examining the short-run dynamic relationships, we offer the following findings. First, changes in income per capita do not influence changes in housing sales in the short-run relationship, whereas changes in mortgage rates do. Significantly, the short-term changes in income have no influence on housing sales, although income does have a long-term effect on housing sales in our cointegration examination. Second, mortgage rates still have a negative influence on housing sales in the short-run relationships, but they break off when housing markets simultaneously undergo a downward slide in prices and low liquidity. In other words, a policy of lowering mortgage rates has no effect on improving housing sales when housing markets are undergoing depressing prices and low liquidity. Third, changes in housing wealth have a positive linkage with the percentage changes of housing sales only when the liquidity of housing markets is low. Fourth and finally, the changes of financial wealth have no influence on housing when we examine the market without classifying it as being either in an uptrend or downtrend. Interestingly, an increase in financial wealth can enhance the sales of houses when housing prices are classified as being in a downtrend trend and the liquidity of housing markets is deemed non-low.

The rest of this paper is as follows. Section 2 discusses the relative literature. We introduce the data and relative models in Section 3 and Section 4 presents the methodologies. Section 5 analyzes the empirical results and presents suggestions. The final section offers the conclusions.

2. Literature review

There are many studies that explain the non-pervasive positive price–volume relationship in housing markets. For example, Stein (1995) explains that depressed housing prices reduce the ability of making downpayments when people sell their old house in order to move into a new house. Genesove and Mayer (2001) support the effect of loss-aversion. People do not want to realize a loss and therefore do not sell their house under falling prices. Increasing housing prices, and therefore increasing housing wealth, imply a high ability for consumption.

More and more recent empirical works discuss the linkages between wealth and economic activities. Lettau and Ludvigson (2001) and Sousa (2010) find a good predictor to asset returns from consumption–wealth relationships. Benjamin et al. (2004) show that an additional dollar of real estate wealth increases consumption by 8 cents in the current year, as compared with only 2 cents for financial wealth in the U.S. Lettau and Ludvigson (2004) note that permanent changes in wealth do affect consumer spending, but most changes in wealth are transitory and are uncorrelated with consumption. Case et al. (2005) investigate the effects of income and wealth on consumption with regressions in levels, first differences, and in error–correction form in 14 countries. They find a large effect of housing wealth upon household consumption, but a weak effect for financial wealth. Kishor (2007) also presents a larger effect of housing wealth on consumption than the effect of financial wealth after witnessing the increase of U.S. housing wealth over the last thirty years. An optimal allocation of risky assets can be raised with financial wealth (Cai and Ge, 2012).

Scholars compare the impact of housing wealth on consumption with the impact of non-housing wealth, and some discuss the relationship between wealth and the demand for mortgage debt (related to the volume of housing sales). Ioannides (1989) supports substitutability between mortgage debt and financial wealth (i.e., a negative relation) in the U.S. In contrast, King and Leape (1998) find a negative relationship between home mortgage demand and riskless assets, but a positive relationship between home mortgage demand and portfolios containing equity securities and risky bonds. Jones (1994) supports the negative effect of non-housing wealth on excess mortgage debt. Moriizumi (2000) analyzes the wealth effect on private mortgage debt in Japan, finding that

[3] Perez-Quiros and Timmermann (2001) find that stocks are particularly risky to hold around a peak, because their returns have lower conditional mean, higher conditional volatility, and lower conditional skewness. By considering simultaneously the conditions of liquidity and states of housing markets, we can examine the differences between early and late stages in an uptrend/downtrend through the changes in liquidity levels.

[4] Since housing wealth and financial wealth make up a larger share of aggregate wealth, we do not examine other assets. In addition, we add income and housing mortgage rates as two variables in our model, which is similar to previous studies looking at the effect of wealth on consumption.

[5] This paper regards the percent changes of housing sales as liquidity in housing markets. Although liquidity in housing markets has its own definitions (see Forgey et al., 1996), the setting regarding percentage changes of housing sales as liquidity and the use of quantile regressions allow us to observe the influence of liquidity at different distribution locations of the dependent variable (i.e. liquidity).

[6] Financial wealth has a positive effect on housing sales in the long-run relationship, although it is not significant statistically.