



Household borrowing and metropolitan housing price dynamics – Empirical evidence from Helsinki

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ABSTRACT

This article argues that, especially in the absence of sufficient direct data on credit constraints, it is reasonable to add a household debt variable in an empirical model studying housing price dynamics. This is because household borrowing is likely to reveal information regarding the credit constraints faced by households. Moreover, debt may also give information on expected income growth and interest rate movements. The aim of this study is to examine empirically if household borrowing data, indeed, is of importance in a dynamic housing price model. In line with the prior expectations, it is found that housing appreciation in the Helsinki Metropolitan area is Granger caused by the household debt-to-GDP ratio both in the short and in the long run. Causality from the housing market to credit, in turn, seems to run only through a cointegrating long-run relation. While the estimated long-run relation between housing prices, income and debt-to-GDP ratio appears to have remained stable through the sample period (1975Q1-2006Q2), the short-run dynamics changed somewhat due to the financial liberalization in the late 1980s. The stability of the long-run relation implies that the loan data are able to cater, at least to a notable extent, for the effect of the changes in Finnish households' liquidity constraints on housing demand. In line with previous literature, it is also found that housing price adjustment is sluggish and includes notable backward-looking features.

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1. Introduction

There are several reasons to believe that changes in the household debt can be used to predict future housing price growth and are of importance in empirical modelling of housing price dynamics. The theory expects that housing prices are influenced by the availability of credit. In particular, better availability of credit is likely to increase demand for housing if households are borrowing constrained. The growth in demand will then be reflected in higher housing prices, typically with lag, since price adjustment is generally found to be sluggish in the housing market.

The importance of credit constraints on housing prices is outlined e.g. by Stein (1995). The life-cycle model derived by Ortalo-Magné and Rady (2006), in turn, proposes

that credit constraints faced by young households, in particular, are of great importance to housing price dynamics. Ortalo-Magné and Rady provide empirical evidence in support of their model. The significance of the credit constraints on housing demand has been established empirically also e.g. by Barakova et al. (2003) and Yamashita (2007). Moreover, the general equilibrium model by Jin and Zeng (2004) proposes that monetary shocks have a powerful impact on housing prices because of the liquidity constraints, and Lamont and Stein (1999) find that in cities where households are highly leveraged, housing prices react more sensitively to city-specific shocks. As slacker credit constraints are likely to increase loan-to-value ratios, the finding by Lamont and Stein indicates that changes in credit availability may affect the volatility of housing prices.

Furthermore, household borrowing is likely to reveal information regarding income expectations. Increase in

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the expected permanent income induces households to consume more today to smooth the consumption stream over the life cycle. Desire for more current consumption, in turn, is likely to increase households' borrowing. Borrowing may also reflect households' income uncertainty. The greater the uncertainty is, the less households are expected to borrow due to precautionary savings. In addition, it is reasonable to assume that current and expected future level of interest rates affect household borrowing. Hence, movements in household debt are expected to give information about both income and interest rate expectations as well as about income uncertainty. This information is of relevance, since the expectations and uncertainty are expected to affect housing prices significantly.¹

On the other hand, housing price movements may notably influence household borrowing. Goodhart and Hofmann (2007) mention three channels through which housing wealth may affect households' credit demand. Firstly, since the collateral value of housing is typically high, increase in housing wealth loosens the borrowing constraints faced by households. Iacoviello (2004), for instance, discusses the impact of increase in housing wealth on the household borrowing capacity through the collateral effect. Leung (2004), in turn, provides a summary of empirical studies confirming the importance of the collateral value of housing. Secondly, changes in housing wealth may have significant effects on households' perceived lifetime wealth thereby affecting households' spending and demand for credit. Thirdly, housing price movements have an impact on credit supply through the so-called balance sheet effect. Housing price growth raises the value of bank capital thereby augmenting banks' possibilities and willingness to grant loans.

According to the life-cycle model of housing, credit constraints and future expectations should enter housing price model through the housing user cost of capital. However, this paper argues that in the absence of sufficient direct data on credit constraints and on expected housing price growth it is reasonable to add a household debt variable in an empirical model studying housing price dynamics. This is because household borrowing is likely to reveal information regarding the credit constraints faced by households and it may also give information about the expected housing appreciation. The aim of this article is to examine empirically if household borrowing data, indeed, are of importance in a dynamic housing price model. Hence, the potential informational content of household borrowing with respect to housing price dynamics is emphasized.

The paper also brings further empirical evidence on the linkages between housing wealth and borrowing. While previous empirical studies on the interdependence between credit and housing market have, in general, employed national level data, this paper focuses on housing price dynamics in a single regional housing market, namely the Helsinki Metropolitan area (HMA) in Finland. Housing price dynamics in HMA are analysed employing a quarterly dataset from 1975Q1 to 2006Q2.

Based on an estimated cointegrating long-run relation between housing prices, household debt-to-GDP ratio and income, a vector error-correction model is estimated to examine both long- and short-run interaction between housing prices and credit. Recursive analysis suggests that the estimated long-run relation has remained relatively stable despite the several institutional alterations that have taken place in Finland during the sample period. The stability of the long-run relation implies that the loan data are able to cater, at least to a notable extent, for the effect of the changes in Finnish households' liquidity constraints on housing demand. It appears that the financial market liberalization in the late 1980s changed the short-run dynamics somewhat, though. All in all, the time series analysis supports the hypothesis that household borrowing data contain significant information that relates to housing demand and that is not included in the conventional user cost and income level variables. In line with previous literature, it is also found that housing price adjustment is sluggish and includes notable backward-looking features. The results are likely to be of importance to investors, lending institutions and construction companies as well as to policy makers.

The next section reviews previous empirical evidence on the linkages between property prices and the credit market. Then, the empirical model and data used in the study are presented. The fourth part reports the results from the econometric analysis after which conclusions are derived.

2. Empirical evidence on the interaction between real estate prices and credit

While the coincidence of property cycles with cycles in the credit market has been documented in the literature (e.g. IMF, 2000; BIS, 2001), empirical results on the direction of causality between real estate and credit markets are mixed. Some empirical studies support the existence of a causal linkage from the credit market to property prices, whereas some other studies find that there is a unidirectional causality from the property market to the credit market.

In an early study, Borio et al. (1994) find that adding the credit-to-GDP ratio to an asset pricing equation improves the fit of the model in most countries. According to Collins and Senhadji (2002), credit growth has a significant contemporaneous impact on housing prices in Hong Kong, Korea, Singapore and Thailand. Liang and Cao (2007), in turn, study the causalities between property prices and bank lending in China. Their analysis implies that there exists a unidirectional causality running from bank lending to property prices. The causality runs through a cointegrating long-run relation that includes also GDP and interest rate. A potential problem with the analysis is the short sample (1999Q1–2006Q2). According to Gerlach and Peng (2005), instead, short- and long-run causality runs from property prices to lending, rather than the other way round, in Hong Kong. To study the long-run causality, Gerlach and Peng estimate a cointegrating long-run relation between real bank lending, real GDP and real housing prices.

¹ Negative impact of income uncertainty on housing prices is reported e.g. by Haurin (1991) and Diaz-Serrano (2005a,b).

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