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journal homepage: www.journals.elsevier.com/economic-modellingBorrowing constraints and housing price expectations in the euro area[☆]Miguel Ampudia^{a,*}, Sergio Mayordomo^b^a European Central Bank, Germany^b Banco de España, Spain

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ABSTRACT

This paper analyzes the importance of financial constraints on the home ownership decision of European households and their differential effect in periods of positive expectations of housing prices. We document that financial constraints are key drivers of the household homeownership decision being wealth constraints more relevant than income constraints. The wealth constraint is less binding under a scenario in which housing prices exhibit an upward trend.

1. Introduction

The purchase of the main residence is the single most important financial decision that the majority of households take in their life-time. It usually entails getting indebted for a long horizon and a portfolio rebalancing moving from financial to real assets. Since households need to finance the home purchase with debt, financial constraints reduce access to homeownership and it is important to quantify up to what extent they do so. Households who do not have access to enough financing to buy a house must postpone the purchase and enter the rental market. Up to the point that at the aggregate level this decision will have an effect on both the rental and housing market, as well as on the composition of households' portfolio and their accumulation of wealth; it is interesting to explore the magnitude of this effect and to analyze the factors that might influence this decision.

This paper analyzes the importance of financial constraints (i.e. income and wealth constraints) on the home ownership decision and their differential effect in periods of positive expectations of housing prices. The analysis enables us to understand the relevance of such constraints in restricting access to housing during different stages of the housing market.

Traditionally, the selection of the housing regime was modeled as a function of the income and the demographic characteristics of the household together with information regarding the house price. In those

studies, the age of the household head and his/her income were of special relevance; possibly due to the omission of the financial constraints. [Linneman and Wachter \(1989\)](#) start a literature where the effect of financial constraints on homeownership is modelled directly using micro data. These authors look at income and wealth constraints and document a negative effect of these on the probability of homeownership for US households. The same negative effect is later reported by [Duca and Rosenthal \(1994\)](#), [Haurin et al. \(1997\)](#), [Rosenthal \(2002\)](#), and [Calem et al. \(2010\)](#), among others. Evidence of these effects outside the US is scarcer but there are also several examples with the common result that wealth constraints have a larger negative effect on homeownership than income constraints.

None of these studies, however, dwells into the role of economic factors on the decision faced by constrained households, which ultimately determine the effect of the financial constraints on homeownership. There are different factors that could affect this decision, among them macroeconomic fundamentals and policies. [Linneman et al. \(1997\)](#) updated [Linneman and Wachter's \(1989\)](#) study and through a micro-simulation exercise they showed how changes in macroprudential policies can have a substantial effect on the aggregate homeownership ratio. [Barakova et al. \(2014\)](#) study the impact of credit constraints on the probability of homeownership during the housing market boom between 2003 and 2007 on the basis of a sample of recent movers and find that the marginal effect of income constraints declined during this period.

[☆] This paper uses data from the Eurosystem Household Finance and Consumption Survey. It presents the authors' personal opinions and does not necessarily reflect the views of the European Central Bank, Banco de España, or the Eurosystem Household Finance and Consumption Network. We thank Óscar Arce, Stefano Corradin and María Rodríguez Moreno for helpful comments.

* Corresponding author.

E-mail addresses: miguel.ampudia@ecb.europa.eu (M. Ampudia), sergio.mayordomo@bde.es (S. Mayordomo).

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However, to properly identify the explicit effect of house prices jointly with financial constraints a comparison across countries exhibiting different house price dynamics is needed. Otherwise, the effect could just come from different banking practices or in general changes in the housing market.

Our paper analyzes how financial constraints affect households' homeownership decisions, and more critically, how this relationship changes depending on the particular real estate market cycle, and more in particular on the prevailing house price expectations. To the best of our knowledge, ours is the first paper to identify and quantify this phenomenon. The existence of time variation within each country sample and the use of a bunch of macroeconomic factors as additional controls ease the identification of these effects.

We use household level data from the Household Finance and Consumption Survey (HFCS). Due to the use of a survey that consists of several countries, our sample of recent movers is large compared to the ones employed by previous papers that also use recent movers. We can focus on the impact of both income and wealth constraints since we have complete balance sheet information at the household level together with details from when the house was acquired. A key characteristic of our sample is that it consists of households from different euro area countries surveyed within the period 2008–2011. This provides us with wide heterogeneity in the housing market cycle that households are experiencing, which we consider it is a critical factor in the buying versus renting decision. When experiencing growth in housing prices, households tend to take the decision to buy because they expect they will be able to sell at a higher price in the future and financial institutions to lend because they discount a higher value of collateral. When prices are going down, households might opt for renting and wait for the market to bottom in order to buy and financial institutions would impose tighter financial constraints. These results point out the sample dependence of the previous literature, which looked at a particular country at a particular point in time, and thus could not capture the effect of the real estate market cycle on the household homeownership decision.

As shown by [Kiyotaki and Moore \(1997\)](#) and [Bernanke and Gertler \(1989\)](#), shocks to the real economy are amplified through the credit market by altering the value of borrowers' net-worth. This financial accelerator mechanism suggests that higher housing prices increase the amount of credit needed to finance a given housing purchase. Additionally, the higher prices raise the value of the housing capital, which feeds into a greater net-worth for the households and the value of their collateral. The higher value of the collateral could make the wealth, income and credit constraints nonbinding under the assumption that house values will continue to rise. In the end, the higher housing prices will increase their borrowing capacity. These less restrictive underwriting standards prior to the mortgage crisis could have been detected but were masked by rapid house-price appreciation ([Demanyk and Van Hemert, 2009](#)). For sure, the changes in household borrowing are expected to affect housing prices leading to a self-reinforcing mechanism that has important conclusions in terms of financial stability and points toward the importance of a proper monitoring of both property prices, credit growth, and lending standards to evaluate the vulnerability of the financial sector. Along these lines, [Dell'Ariccia et al. \(2012\)](#) link the recent subprime mortgage crisis to a decline in lending standards associated with the rapid expansion and changes in the structure of this market.

Our study uses information from households who purchased the house during the boom, bust or plane stages of the housing market to investigate the role played by a potential channel that may lead to the differential effects of credit constraints across countries: the expectations on housing prices. While previous literature analyzes the effect of positive price expectations on the easing of credit standards from a macro perspective, we provide new evidence on the effect of credit constraints on households housing demand from micro data referred to euro area households.

In view of the results we conclude that financial constraints are key

drivers of the household homeownership decision. Wealth constraints are more relevant than income constraints but at the same time they are less binding under a scenario in which housing prices exhibit an upward trend. This result highlights the role of households' expectations on future housing prices and so, household net-worth. Although our analysis is implemented from the household perspective, the results are consistent with the literature stating that banks behave more aggressively and take on more risks during booms than in tranquil times ([Ruckes, 2004](#), [Dell'Ariccia and Marquez, 2006](#), and [Gorton and He, 2008](#), among others).

The paper is organized as follows. Section 2 describes the data and the subsamples employ in the paper's two estimation stages. Section 3 explains the methodology. Section 4 presents the results. Section 5 contains several robustness tests. Section 6 concludes.

2. Data

The data employed in this analysis are obtained from the Eurosystem's Household Finance and Consumption Survey (HFCS). The HFCS contains information regarding socio-demographic variables, assets, liabilities, income and consumption for a sample of households that is representative both at the national and the euro area level. An important feature of the HFCS is that missing observations (i.e. questions that were not answered by the respondent households) are imputed five times – an issue that we will take into account when assessing the statistical significance of our estimates.¹

The survey consists of households from 15 European countries: Austria, Belgium, Cyprus, Finland, France, Germany, Greece, Italy, Luxembourg, Malta, Netherlands, Portugal, Slovakia, Slovenia, and Spain. Nevertheless, we exclude Finland and Slovenia from our sample because there is not information on the date in which the household purchased their main residence. France is excluded due to the lack of information on the details on the main residence purchase including the price at which it was purchased. Greece, Malta, and Slovakia are excluded due to the lack of information on several macro variables for several of the years employed to obtain the expected housing prices regimes. Thus, our final sample contains detailed information on the households of seven European countries: Austria, Belgium, Germany, Spain, Italy, Netherlands, and Portugal. The survey year is 2008 for Spain, 2009 for Netherlands and 2010 for the rest of the countries in the sample. Apart from the current financial situation of each household, the survey contains retrospective information on the house where the family lives. In particular, it contains the year in which the house was purchased, the price, and the amount and the conditions of the mortgage loan at the purchase date. For this reason, although the data represent a cross-section, we have information regarding different aspects of the house purchase which took place at an earlier date. This information enables us to consider the housing characteristics that the household considered when taking the decision about the housing purchase and not only the ones of the survey date. Although the survey contains information also on other real estate properties our analysis concerns only the household main residence.

The analysis of the effect of financial constraints on the decision of buying the house will be carried out in a two stage analysis. In the first stage, focusing on a selected sample of home owners we obtain the coefficients that will allow us to estimate the desired house value for all the households in the sample. In the second stage, starting from the estimation of the desired housing value we split the sample in constraint versus unconstrained households to evaluate the effect of this distinction on the buying-renting decision.

For the first stage our sample consists on households in which the person of reference is between 25 and 60 years old and households who

¹ For more information see section 6 and subsection 9.2.7 of [Household Finance and Consumption Network \(2013\)](#), which describes the most relevant methodological features of the survey.

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