Homeownership, informality and the transmission of monetary policy ☆

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ABSTRACT

Cross-country aggregate data exhibits a strong (positive) relationship between the size of the informal employment and aggregate homeownership rates. We investigate this empirical observation using a cash-in-advance model with housing markets and argue that the rate of inflation is important in explaining the nexus between informality and homeownership rates. Specifically, we uncover a novel monetary transmission mechanism and show that households with informal employment desire to economize on their short-term cash usage and avoid periodic rental payments when (i) informality is associated with constrained business investment finance, and (ii) inflation expectations are high. Our empirical and theoretical findings highlight an important interaction between the conduct of monetary policy and the performance of housing markets.

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1. Introduction

Does informal production stimulate the demand to own a house, and what is the effect of monetary policy in explaining this relationship? In this paper we address these questions by developing a general equilibrium model of housing markets with nominal frictions, and studying the empirically testable implications of informality on homeownership demand using a cross-country dataset covering 67 economies.

Our benchmark model predicts that the informal production intensity of a household raises the demand for owning a home when informality is associated with constrained business investment. We also show that monetary policy has non-trivial effects on explaining the nexus between informal sector size and the rate of aggregate homeownership. Specifically, by augmenting our benchmark model with a Cash-In-Advance constraint we show that a rise in the inflation rate weakens the sensitivity of homeownership with respect to the intensity of informal production when households' home purchases are constrained with their cash-holdings.

When housing purchases are not subject to cash constraints, or in other words household finance is available, the rate of inflation strengthens the effects of informality on homeownership.

We motivate our theoretical study with a cross-country empirical observation. As we present in Fig. 1 there is a positive correlation between the aggregate size of the informal sector and the homeownership rates. A comprehensive econometric analysis using this 67-country dataset also supports the existence of this positive relationship. Moreover, we also show that inflation strongly interacts with this relationship. Specifically, we find that in countries where the private credit markets are well (less) developed, inflation strengthens (weakens) the positive relationship between informality and homeownership.

Building upon this cross-country empirical evidence we develop a stylized two-sector general equilibrium model with housing markets that has the following features: There are two types of goods in our model economy that we denote as the consumption good and the housing good. Consumption good is produced by a continuum of households who are heterogeneous in terms of the informality of their production plants. We assume that the informality of production constrains the ability to invest in future consumption good production. Housing investment then emerges as an alternative mean of saving for the future for households with a large informal production intensity. We derive closed form expressions for the equilibrium measure of households that choose to become homeowners, and show that the larger the

fraction of "informality intensive" households in the economy the larger is the aggregate homeownership rate of the society.

We extend our benchmark model specification with a Cash-In-Advance constraint. In our cash-in-advance model we allow for financial market imperfections in the form of limited access to finance. Specifically, in addition to the investment barriers generated by the informal production delineated in the benchmark model, in the cash-in-advance extension we assume that exogenously determined fractions of housing and business investment are subject to a cash-in-advance constraint as in Dotsey and Sarte (2000). In equilibrium, the fraction of housing and investment spending that need to be financed by cash-holdings (and not by mortgage finance and investment credit) in turn determines the effects of inflation on homeownership rates. We show that, on the one hand, households with a high informal production intensity increase their demand for homeownership as the rate of monetary growth (and hence the inflation rate) rises if financing housing purchases is relatively less constrained compared to investment credit. On the other hand, informal households decrease demand for homeownership with rising inflation when home-purchases are subject to financing constraints.

There are important policy implications that one can draw upon from our work. Most importantly, we highlight a novel monetary transmission channel and show that the interactions between informal sector size and homeownership rates are important in determining the effects of monetary policy on the real economy. Therefore, our theoretical findings show that monetary growth influences the demand for housing. However, we also show that the implications of monetary policy are non-trivial. For informally employed households, monetary growth and the demand for housing are positively related as long as the mortgage markets are more developed compared to the business credit markets. Since the housing boom-bust cycles are extremely crucial for an economy's aggregate welfare, as we have experienced over the years that led the world economy to the Great Recession, our theoretical and empirical findings point out a novel and important interaction between the conduct of monetary policy and the performance of housing markets.

1.1. Related literature

There is a recent and growing literature that studies the interactions between the size of the informal sector, investment finance and real economy. The studies in this literature that are related to our work are Straub (2005), Amaral and Quintin (2006), Antunes and Cavalcanti (2007), Boedo and D'Erasmo (2009), Massenot and Straub (2011) and much more recently Elgin and Uras (2013). As we highlight in our benchmark model, the common feature of these models is that the magnitude of informality of an entrepreneurial firm constrains the opportunity to access finance to invest in future production opportunities.

Our paper is also related to the literature on housing and homeownership. Chambers et al. (2009) and provide explanations for the significant changes in aggregate homeownership rates during 1940s and 1990s. Gervais (2002) and Nakajima (2010) study the effects of fiscal policy and taxes on demand for housing and homeownership rates. Yang (2009) and Daz and Luengo-Prado (2010) investigate how housing affects the life cycle properties of consumption and wealth respectively. To the best of our knowledge our paper is the first to study the implications of informality on homeownership.

Finally, there is a non-exhaustive list of papers that are motivated to identify channels of monetary transmission. Important strands of this large literature are, balance sheet channel of monetary policy, pioneered by Bernanke and Gertler (1989) and Bernanke and Gertler (1995), credit and bank lending channel highlighted in Bernanke and Blinder (1988), Kashyap and Stein (1995), Peek and Rosengren (1995), and Kishan and Opiela (2000). Some research, similar to our motivation in this paper, focused on studying the implications of monetary policy on housing markets and homeownership. For example, Aoki et al. (2004) study a financial accelerator model of monetary policy with housing markets. Iacoviello (2005) is interested in investigating the interaction between monetary policy and borrowing constraints in a general equilibrium business cycle model. And, Taylor (2007) studies the effects of monetary policy on boom-bust cycles to explain the episode of great moderation. Different from these studies our model uncovers a monetary transmission channel and
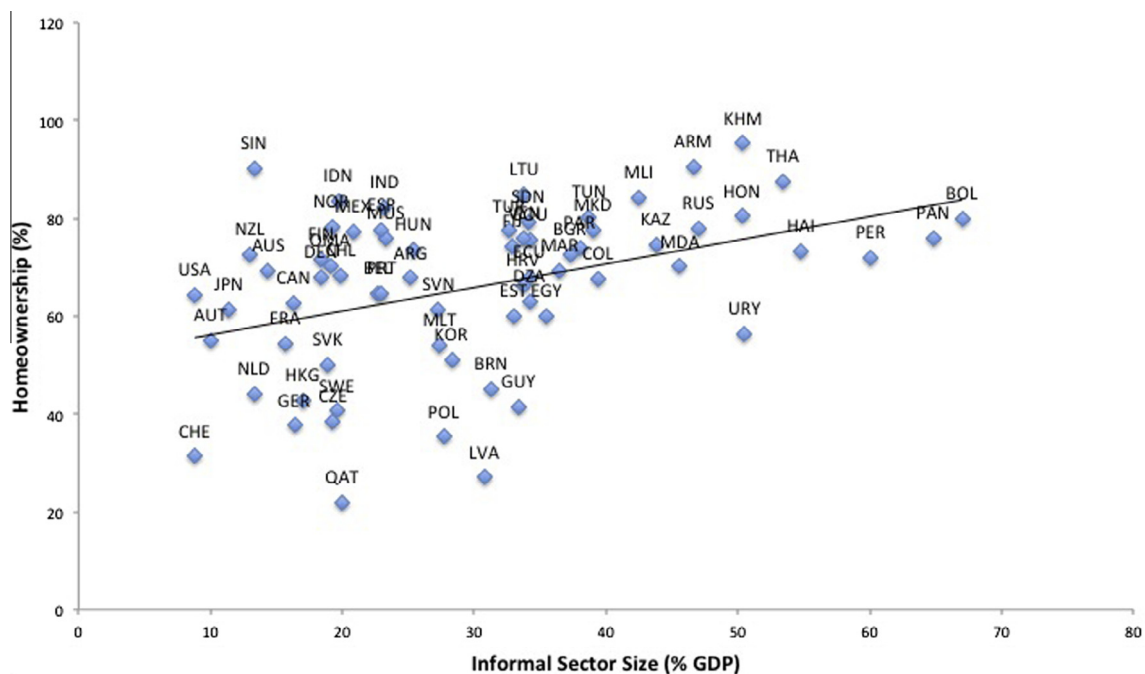

Fig. 1. Homeownership vs. informal sector size.