



Owner-occupied housing in a model of exchange rate determination

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Abstract

This study explores the effect of owner-occupied housing asset holdings on the short and long run determination of exchange rates. In the presence of consumption goods that can simultaneously serve as investment allocation subject to capital gains—such as owner-occupied housing—the general equilibrium model, based on the Obstfeld and Rogoff Redux model, produces exchange rate overshooting both in the presence and in the absence of price rigidities in the markets for final goods. This effect depends on the size of owner-occupied housing expenditures relative to total consumption expenditures, the initial level of housing market inflation, capital gains in housing and other parameters of the model. Depending on parameter values and initial conditions, the model supports the possibility for exchange rate dynamics that include either overshooting or undershooting.
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1. Introduction

Recent models of exchange rate determination are based on the Redux model of [Obstfeld and Rogoff \(1995\)](#). One of the major problems with this model is that it generates no short run deviations in the exchange rate. In response to exogenous shocks, the Redux model must rely on nominal price rigidity in order to produce exchange rate overshooting.

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In addition, the model does not allow for the possibility of exchange rate undershooting. The third source of criticism of the standard Redux model is that exchange rate adjustments last only as long as the assumed period of nominal price rigidity.

In the present model, we propose to address these problems by introducing non-traded goods which simultaneously yield a stream of utility benefits and serve as capital goods subject to capital gains. The main example of such goods is owner-occupied housing.

In the OECD countries, housing costs account for between 20% and 40% of total household disposable income. In the US, an average middle-class family has more than half its assets in the form of housing (Cambell and Cocco, 2003). For example, in a sample from 29 US cities, Engel and Rogers (2001) find that homeownership costs represented 19.8% of total average consumer expenditure, while food away from home—the second largest expenditure component—accounted for only 6.2%. Thus, owner-occupied housing represents an important wealth-effect dimension of the economic environment (Iacoviello and Minetti, 2000; Fratantoni and Schuh, 2001). Several studies highlight the importance of housing investment decisions for consumption, interest rates and monetary policies in general. In addition, some more recent studies (e.g., Ellis et al., 2003) are beginning to pay attention to housing investments as long-term portfolio decisions. This literature considers dynamic effects of housing investment on interest rates and demand for domestic money.

The ageing of the OECD countries' population has created a strong market for refinancing of the housing stock. Since a greater proportion of the elderly own their homes relative to the average population, when the housing component of the CPI rises due to an increase in the owner-equivalent rents, homeowners enjoy capital gains. This allows the elderly to release the liquidity trapped in their real estate holdings for the purpose of financing higher rates of consumption of both traded and non-traded goods. Thus, in addition to strong wealth effects on consumption expenditure, present-day economies can be characterised by age effects in the consumption cycle linked to housing asset holdings of households. These effects make housing price fluctuations more salient in considering household responses to price changes. In line with this, Obstfeld and Rogoff (2005) explicitly identify changes in housing investment flows as a source for potential future shifts in demand for the Euro.

Another aspect of the housing market warrants separate consideration in the model: the relationship between consumption expenditure on housing and savings by households. Browning and Lussardi (1996) point out that housing and other items subject to capital gains can distort the interpretation of the aggregate savings rate. Accounting for these goods can explain, according to Skinner and Daniel (1996), the more than doubling of the US savings rate over the period of 1983–1988 to 15% relative to the official estimates of 4.8–6%. The importance of these housing effects is hard to overestimate. For example, Akraim et al. (2005) estimate the links between the exchange rate, housing and other financial assets and the effect of monetary shocks on the interest rate. The study finds that “exchange rates may have direct effects on inflation through imported inflation, while housing and equity prices may affect inflation and output through their effects on credit growth, aggregate consumption and investment” (Akraim et al., 2005). In our context, we want to look at the relationship between exchange rates and housing.

From the point of view of our model, the fundamental distinction of housing from traditional consumption goods is that housing is subject to potential capital gains due to price appreciation. The consumers who are also owners of their housing derive utility in terms

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