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Globalization and financial development: A model of the Dot-Com and the Housing Bubbles☆

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ABSTRACT

In the last decade the United States experienced the burst of the Dot-Com and the Housing Bubbles. I develop a model to study the relationship between globalization and the emergence of rational bubbles. I also analyze how the effect of globalization on house prices depends on the type of bubble. I show that bubbles cannot arise in a financially developed country in autarky. In contrast, as globalization progresses, bubbles are more likely to appear in the financially developed country. I also show that house prices increase with globalization only when the bubble is attached to houses. This prediction is consistent with empirical evidence for U.S. metropolitan areas.

1. Introduction

In the last decade the United States experienced a large and sudden drop in both the stock market and house prices. Fig. 1 shows these drops using the S&P-500 and the Case–Shiller house price indices (in real terms). Some economists relate these trends in house prices and stock market to changes in fundamentals. However, there is a growing consensus that the large drop in the stock market in 2000 was the burst of the Dot-Com Bubble and the sharp fall in house prices in 2006 was the crash of the Housing Bubble.[1] Consistent with this view, throughout the paper I will assume that there were two different bubbles.

Fig. 2 represents house prices and current account (over GDP) in the United States. I want to emphasize two features: (*i*) the current account has been steadily decreasing over time and (*ii*) there exists a strong and negative correlation between both series, which is exacerbated in the last years of the sample. The first feature is evidence on the much discussed *global imbalances* (e.g. Bernanke, 2005; Caballero et al., 2008a). The negative relationship between both series holds for a larger set of countries, as shown in, for example, Aizenman and Jinjarak (2008) or Laibson and Mollerstrom (2009). Therefore, this figure hints to an effect of global imbalances on house price appreciations and bubbles. Moreover, it seems that the relationship between house prices and current account depends on the type of bubble.

Some papers argue that the integration of financially underdeveloped countries into world capital markets, to which I refer as globalization, created global imbalances.[2] Nonetheless, its relationship with the emergence of rational bubbles has been largely ignored. This paper provides a framework to understand the effect of globalization on the existence of bubbles. It also distinguishes the effect of globalization on house prices depending on the type of bubble.

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[1] See, among others, Case and Shiller (2003) and Shiller (2005) for a discussion on the existence of the Dot-Com and the Housing Bubbles.

[2] For example, Caballero et al. (2008a) develops a model of global imbalances and financial development without bubbles.

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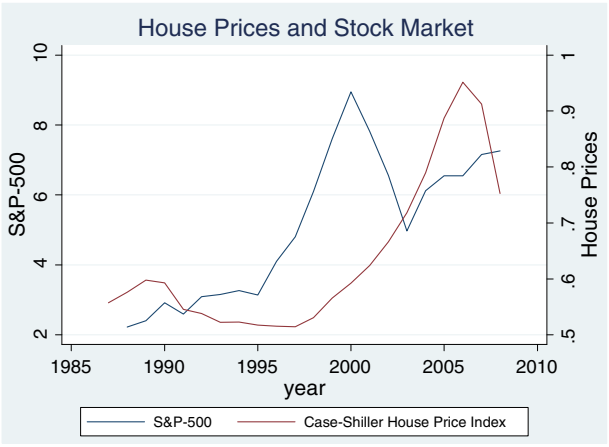

Fig. 1. The Dot-Com and the Housing Bubbles.

This paper yields two main results. The first result is that the possibility of having bubbles in a financially developed country increases with globalization. The intuition is that rational bubbles can only arise if there is a shortage of assets. Under autarky, this can only happen if a country is financially constrained. In the integrated economy, however, bubbles can arise in any country if there is excess demand for assets at the world level. As globalization progresses, more financially underdeveloped countries have access to world capital markets, which makes the world economy more financially constrained and increases the likelihood of having a rational bubble.

My second result highlights the differential effect that globalization has on house prices depending on the type of bubble. House prices are higher with a bubble because the interest rate is lower, which raises housing demand. However, conditional on having a bubble, an increase in globalization raises house prices only if the bubble is attached to houses. The reason is that an increase in globalization affects house prices through two channels. First, it reduces the interest rate, which raises housing demand. Second, it increases the size of the bubble, which raises housing demand if the bubble is attached to houses. When there is a bubble, the interest rate does not depend on the level of globalization and house prices are only affected through the size of the bubble. Therefore, house prices increase with globalization only if the bubble is attached to houses. The empirical section shows that this prediction is consistent with the Dot-Com and the Housing Bubble episodes using U.S. metropolitan area data.

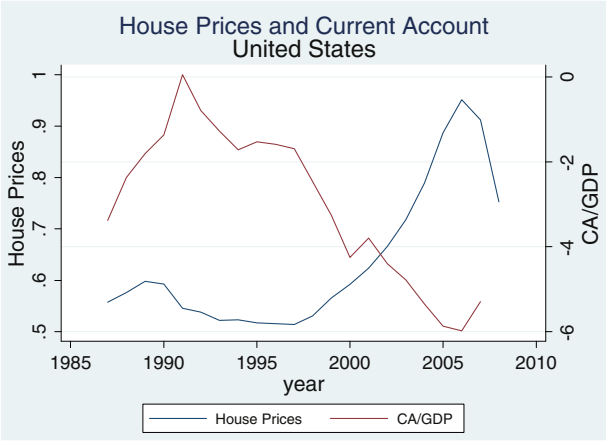

Fig. 2. House prices and current account in the United States. Source: Case–Shiller house price index and International Financial Statistics (IMF).

The model is a three-period OLG economy. In the first period, young agents earn a wage and borrow to purchase a house. In the second period, middle-aged agents enjoy housing services, repay the debt, sell the house and save to consume when they are old. In the last period, old agents consume the return on their savings. These assumptions are meant to capture two aspects of the lifecycle. First, the net asset position is negative when agents are young and it increases over time. Second, house ownership exhibits an inverse U-shape over the lifecycle (see, for example, Banks et al. (2004)).

An important feature of the model and the source of rational bubbles is that agents may be financially constrained. Young agents can only borrow a fraction of the value of the house. The quality of financial institutions determines this fraction. Thus, all debt is collateralized by houses. [3]

There are also developers and consumption good producers. They live one period and hire workers in a competitive labor market to produce houses and consumption goods, respectively. The consumption good is perishable. Houses are durable and depreciate at a constant rate.

Section 2 computes the steady-state equilibrium for a financially developed and a financially underdeveloped country when both countries are in autarky. I show that rational bubbles cannot appear in a financially developed country, which is not financially constrained, because the economy is dynamically efficient. However, bubbles can appear in the financially underdeveloped country. The intuition is that middle-aged agents want to increase their savings to consume more in the last period but there are not enough assets in the economy. Asset supply is limited by the amount of debt of young agents, who are financially constrained. Therefore, bubbles can arise in equilibrium because they increase the asset supply and solve the shortage of assets. This result is similar to those in Arce and López-Salido (2011) and Farhi and Tirole (2012).

In Section 3 I assume that the world consists of two countries, a financially developed and a financially underdeveloped country. The consumption good and capital are tradable but houses are non-tradable and labor cannot migrate. In the trade equilibrium without bubbles, capital flows from the financially underdeveloped to the financially developed country because agents in the former country invest a fraction of their savings in the latter, which has better financial institutions and can generate more assets. There is a current account deficit in the financially developed country. This is analogous to Caballero et al. (2008a). Assets are used by middle-aged agents as a store of value. Thus, when capital flows towards the financially developed country, the value of its assets increases, they become scarcer, which reduces the interest rate. A novelty of this paper is to emphasize the effect that these capital inflows have on house prices. House prices in the financially developed country are higher in the trade equilibrium because housing demand decreases with the interest rate.

Another contribution of the paper is to study, in Subsection 3.3, the effect of globalization on the existence of bubbles. I assume that the financially underdeveloped economy consists of a continuum of mass one of identical countries and only a fraction of these countries has access to world capital markets. I define globalization as an increase in this fraction. I show that the possibility of having bubbles in the financially developed country increases with globalization. Intuitively, as more financially underdeveloped countries gain access to the assets of the financially developed country, it becomes more likely that there exists a shortage of assets in the world economy. Finally, I show that the trends in house prices and current account predicted by the model are consistent with the U.S. experience in the last 20 years.

Section 5 derives the most salient empirical prediction of the model. I extend the model to n financially developed cities. I allow for labor mobility across cities and I assume that the only difference between these cities is the housing supply elasticity. House prices are higher with a

[3] I interpret this borrowing constraint as financial development but it could also be interpreted as liquidity like in, for example, Farhi and Tirole (2012) and, in an extreme version, Woodford (1990).