Switching bubbles: From Outside to Inside Bubbles

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A B S T R A C T

The United States has recently experienced two asset price bubbles: the Dot-Com and the Housing Bubbles. These bubbles had very different effects on investment and debt of manufacturing firms. In this paper I develop a framework to understand the differential effect of two types of rational bubbles. I distinguish between (i) *Outside Bubbles*, which I define as savers purchasing and selling costless assets not-attached to inputs of production and (ii) *Inside Bubbles*, which I define as savers buying an input of production (e.g., land or houses) only as a store of value. The model is an OLG economy with savers and entrepreneurs. Savers save to consume when they are old. Entrepreneurs can borrow to invest but they face a collateral constraint. In this environment, rational bubbles can emerge. I show that the size of an Inside Bubble is larger. I also find that when the economy switches from an Outside to an Inside Bubble, manufacturing (or non-housing) investment and debt is lower, consistent with the U.S. experience. Finally, I show that even though steady-state consumption is higher with an Outside Bubble, a social planner would prefer an Inside Bubble when the productivity of entrepreneurs is low.

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1. Introduction

The United States experienced a large and sudden drop in both the stock market and house prices in the last decade. Fig. 1 shows these drops using the S&P-500 and the Case-Shiller house price indices (in real terms). 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]

The behavior of the economy was different during these two episodes. Fig. 2 represents the evolution of residential and non-residential investment in the last fifteen years. Residential investment largely increased during the Housing Bubble. However, this increase in residential investment coincided with a decline in non-residential investment. A possible channel through which the expansion of residential investment affected non-residential investment is the credit supply. That is, manufacturing firms were able to borrow relatively less during the Housing Bubble. As anecdotal evidence, Fig. 3 represents the evolution of (detrended) liabilities of the manufacturing industry. Note that liabilities during the Housing Bubble were relatively lower than during the Dot-Com Bubble. This suggestive evidence hints to the importance of considering a model with two bubbles.[2]

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[1] See, for example, Case and Shiller (2003), Shiller (2005), Kraay and Ventura (2007) or Laibson and Mollerstrom (2009), for a discussion on these bubble episodes in the United States.
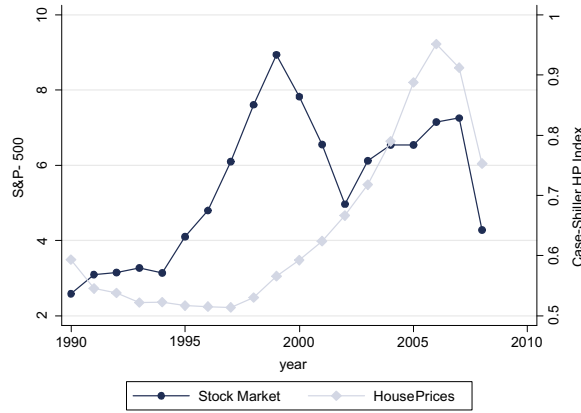[2] Section 4.3 provides more empirical evidence consistent with this differential effects.

Fig. 1. The Dot-Com and the Housing Bubbles. Notes: Stock market prices are obtained from S&P-500 and the house prices index is the Case-Shiller House Price index. Both variables are deflated by the CPI.
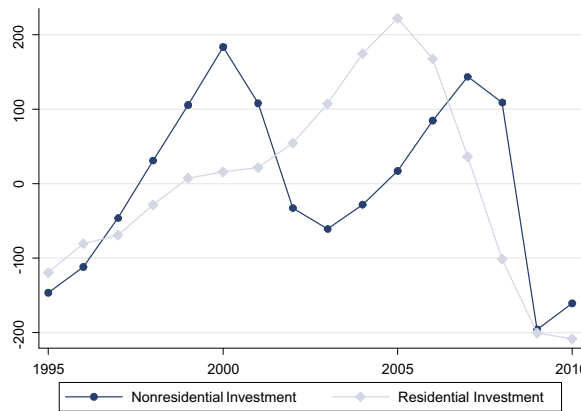

Fig. 2. Evolution of residential and non-residential investment. Notes: Nonresidential and residential investment are differences from the trend. The trend is computed as a linear regression with time. Both series are obtained from the BEA.
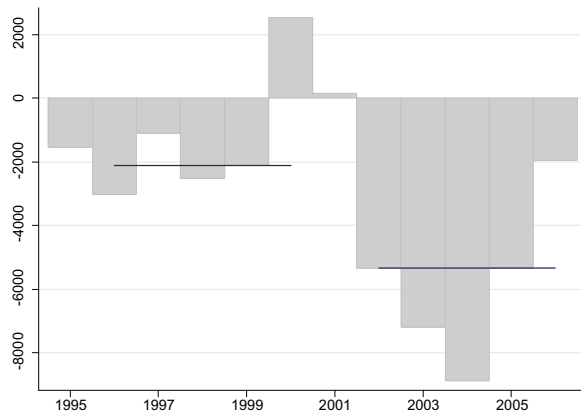

Fig. 3. Evolution of liabilities in manufacturing sector. Notes: I represent the difference from the trend. Manufacturing industries are industries with 2-digit NAICS 31–33. The line represents the median value for the Dot-Com and the Housing Bubble episodes. The Dot-Com Bubble episode was between 1996 and 2000 and the Housing Bubble between 2002 and 2006. These data are obtained from Datastream.

One important difference between the two bubbles is the asset in which the bubble was attached. In the Housing Bubble, the bubble was attached to houses (or land), which can be thought of as an input of production and it is also used by firms as collateral. This is the role of land in, for example, the seminal paper of Kiyotaki and Moore (1997). In contrast, the Dot-Com Bubble was attached to stocks, which does not have these properties. In order to emphasize this difference, I define the *Inside Bubble* as a bubble attached to an input of production (e.g., land or houses) and the *Outside Bubble* as a bubble attached to a costless asset which is not used as an input of production (e.g., a piece of paper). These two bubbles are meant