Contractual incompleteness, limited liability and asset price bubbles

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Executive Summary

Does an excess of leverage lead to bubbles? Discussions of past financial crises have pointed to a link between asset price inflation and excessive credit. For example, Acharya and Naqvi (2012) note "from 2002 to 2007, the ratio of debt to national income went up from 3.75 to one, to 4.75 to one. During this same period, house prices grew at an unprecedented rate of 11% per year...". Reinhart and Rogoff (2008) argue that historically, real estate lending has been linked to bubbles. The existing papers in the literature such as Stein (1995), and Kiyotaki and Moore (1997) focus on amplification of shocks into asset prices, but do not address the issue of overvaluation per se. If investors are credit rationed, an expansion of credit will drive up prices by allowing them to buy assets they want to buy, but they should only want to buy assets that are not overvalued. If they do not want to buy the assets anyway, a relaxation of the credit rationing will not increase investor demand for the assets. Why would investors want to buy overpriced assets?

The corporate finance literature suggests a mechanism whereby leverage could cause asset prices to rise above fair value: risk-shifting (also known as asset substitution). Under limited liability, leverage creates an incentive to investing in riskier assets (e.g., Jensen and Meckling, 1976). To argue that limited liability could generate bubbles, however, we need to consider how they can raise capital in

the first place. In other words, why would anybody be willing to support unprofitable investment by financing those who will invest in overvalued assets?

To answer these questions, our paper studies a general equilibrium model with financial intermediaries under limited liability and contractual incompleteness. This paper has three main goals. First, we develop the risk-shifting argument in a model where financial intermediaries raise equity and debt from investors. We show that bubbles will arise when both (a) contracting is imperfect and does not allow equity investors to control leverage or asset choice–either by financial contract, or by intervention in managerial decisions, and (b) management has preferences that differ from those of investors. When the agency problem is severe enough, risky assets will be overpriced in equilibrium. Second, we provide a model with an explicit analysis of the welfare implications of bubbles. In our model assets are supplied by producers in response to prices. Bubbles cause overproduction of riskier assets. In equilibrium, consumers are worse off compared to the first-best benchmark in which contracting allows control over leverage. Third, we provide a model that predicts when bubbles are prone to occur.

Our analysis is based on intermediaries who raise capital from agents and invest in assets. Since the process of intermediation induces inefficient bubbles, there must be reasons why the agents choose to supply capital to intermediaries rather than invest directly on their own behalf. As in most models of separation of ownership and control, these reasons are not explicitly modeled. The underlying reasons could include free rider problems with multiple shareholders resulting from risk diversification, difficulties of contractual enforcement between agents with capital and agents with managerial ability, or economies of scale in managing the investment. For example, economies of scale in mortgage origination and servicing makes it unattractive for individual consumers to make mortgage loans directly, but they may be willing to hold securities issued by intermediaries who act as mortgage lenders. Plausibly, most assets held by banks are uneconomic for the ultimate capital providers to hold.

We extend the intuition of Modigliani and Miller's Theorem by showing that leverage is irrelevant to equity value in the absence of bubbles, but lowers equity value in the presence of bubbles. This intuition is applied to study two extensions of our model. First, we study monitoring as a potential solution to the agency problem. In case costly monitoring is allowed in the model, we find that

private incentives for monitoring are not strong enough to prevent bubbles. This is because shareholders will not undertake costly monitoring that prevents bad management from taking excessive leverage if leverage is irrelevant to equity value. Second, we study an extension to the case of subsidies to debt financing. Examples of such subsidies include tax shields, underpriced deposit insurance, or the possibility of government bailouts. In case the government provides debt subsidies, excessive leverage becomes beneficial even for good management. Therefore, debt subsidies (whether implicit or explicit) inevitably create bubbles by distorting the cost of capital. Unlike the main model of the paper, this result does not depend on the presence of agency problems.

Finally, our results shed light on why there may exist frequent bubbles in the economy although the existing literature suggests bubbles can rarely occur with rational investors (e.g., Santos and Woodford, 1997). Why would any rational investor buy overvalued assets, and destroy his own investment value? The answer is that a rational investor may want to do that if he is not destroying his own value but rather destroying someone else's value by doing so. That is, those who provide financing (either directly or indirectly) are effectively subsidizing him to buy overvalued assets. Bubbles can arise because leverage allows marginal investors to exploit limited liability and destroy the value of others such as shareholders or tax payers. Such subsidies may arise in various contexts on both equities and bonds. Incompleteness in equity contracts can create bubbles because intermediaries with good management subsidize those with bad management by pooling equity financing. Likewise, debt subsidies can create bubbles because tax payers subsidize financial intermediaries by artificially lowering the cost of debt capital.

Reference

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