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journal homepage: [www.elsevier.com/locate/jmoneco](http://www.elsevier.com/locate/jmoneco)Asset Quality Cycles<sup>☆</sup>

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## ABSTRACT

Systemic risk builds up during booms in an economy featuring asymmetric information in asset markets, where investors' hidden effort choices endogenously determine asset quality distribution. Higher asset prices during booms induce more investors to sell their assets, which lowers their incentive to improve quality. This quality deterioration in turn makes the economy vulnerable to future exogenous shocks because market breakdowns become more likely. Private agents do not internalize that their effort choices worsen future adverse selection problems, and thus the planner may improve welfare by taxing trade and thereby lowering asset prices.

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## 1. Introduction

Busts always follow booms, and booms are often blamed for being the seed of crises. While existing macroeconomic models focus on leverage as a source of fragility, an alternative but equally widespread view among policymakers emphasizes that deterioration in the quality of assets during boom periods creates subsequent instability.<sup>1</sup> Yet we often lack a formal understanding of the mechanism behind this view and why it warrants policy intervention. This paper presents a simple theory where endogenous deterioration of asset quality during booms inefficiently creates fragility.

The theory builds on the interaction of two frictions in asset markets: asymmetric information about asset quality and entrepreneurs' hidden effort choices that endogenously determine the quality distribution of assets. Entrepreneurs differ in their productivity and thus benefit by trading capital, but asymmetric information about the quality of capital hampers this reallocation. The quality of capital is determined endogenously when entrepreneurs invest. Since improving quality is costly, entrepreneurs who sell capital do not exert effort because they sell at the same price, regardless of the underlying quality.

In this environment, the quality of assets in the economy deteriorates in response to a positive shock that raises asset prices. Such a shock induces the marginal entrepreneurs to sell the assets that they otherwise would have kept, and these

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<sup>1</sup> For example, Kindleberger (2015) writes "Minsky emphasized the 'quality' of debt to gauge the fragility of the credit structure."

entrepreneurs stop exerting effort to improve quality. This quality deterioration naturally increases the fragility of the economy because market breakdowns are more likely in the subsequent periods through the standard [Akerlof's \(1970\)](#) lemons problem. The effort choices of entrepreneurs are socially inefficient as they do not internalize that the creation of lemons worsens future adverse selection problems. I demonstrate a case in which taxing trade and thereby lowering asset prices always improves ex-ante welfare by correcting this externality. This result holds despite the availability of ex-post interventions.

Although the quality of assets in the economy deteriorates, the quality of assets traded in the market improves in response to the positive shock. This is driven by the fact that marginal entrepreneurs stop exerting effort because they now expect to sell high-quality assets. The improvement in market quality in turn amplifies the response of output and asset prices by mitigating adverse selection problems. It is tempting to think that the deterioration of quality in the economy acts to dampen the booms, but this is not the case. An empirical implication of this result is that looking at the quality of assets that circulate in the market tells us little about the quality of assets in the overall economy.

A series of normative analyses sheds light on the nature of inefficiency. In particular, it is not the quality deterioration per se, but its interaction with future adverse selection problems that justifies policy intervention. This point is made through a comparison between a static environment in which entrepreneurs trade only once and the dynamic extension in which entrepreneurs sequentially trade their capital. The hidden effort is not distortionary in the former, but it is in the latter environment.

Although the model in this paper is abstract, it could be useful for understanding numerous boom-bust episodes in the real world. During the dot-com bubble in the United States in the late 1990s, investors looking for “hot” new stocks triggered a period of high demand for tech stocks. Entrepreneurs with weak fundamentals reacted to this by creating lemons because they were expecting to sell off the companies to investors eventually. The 2008 financial crisis offers another example. Securitization, which enabled debt to be sold in secondary markets, became increasingly popular in the run-up to the crisis. It is often argued that this created a decline in the quality of debt and was at least partially responsible for the recent financial crisis.<sup>2</sup> Despite its simplicity, I view my model as the one that formalizes these narratives and points to why they might have been socially inefficient.

### 1.1. Related literature

This paper builds on the recent studies which show that adverse selection problem is potentially crucial to explaining the sudden collapse of the financial markets ([Bigio, 2015; 2016; Guerrieri and Shimer, 2014; Kurlat, 2013; 2016](#)). The same motivation has led several papers to explore optimal intervention in the presence of adverse selection ([Philippon and Skreta, 2012; Tirole, 2012](#)). In their models, quality distribution is exogenously given.<sup>3</sup> Now asking where the low-quality assets come from is the natural next step. My model takes into account why lemons exist in the first place and shows how the creation of lemons interacts with the business cycles.

Several papers also tackle a question similar to mine. [Matsuyama \(2013\)](#) and [Martin \(2008\)](#) provide models of counter-cyclical credit quality. In their theories, the driving force is the pro-cyclicality of borrowers' net worth. [Gorton and Ordoñez \(2014\)](#) share the same motivation as this paper to explain why busts follow booms. They stress opacity of information as a driver of credit booms and as a source of fragility. In contrast to these papers, pro-cyclical asset prices are the driving force for generating counter-cyclical asset quality in my model.

[Eisfeldt \(2004\)](#), [Eisfeldt and Rampini \(2006\)](#), [Cui \(2017\)](#), and [Lanteri \(2017\)](#) document and explain why capital reallocation is so volatile and pro-cyclical. My analysis takes those aspects as given and studies the implications for endogenous determination of asset quality.

In independent works, [Neuhann \(2017\)](#) and [Caramp \(2016\)](#) pursue an idea similar to the one in this paper.<sup>4</sup> Both papers share a key insight as with this paper that higher asset prices lead to less effort by investors. Among others, the most important difference between this paper is that they both feature financial friction, in addition to adverse selection and moral hazard. I focus on a minimal set of ingredients by abstracting away financial friction. In so doing, my analysis clarifies that financial friction is not necessary to generate endogenous fluctuations in asset quality or to justify policy interventions.

*Layout.* [Section 2](#) presents a simple two-period model to highlight the positive implications of the mechanism. [Section 3](#) extends the model to allow sequential trading and shows that it has novel normative implications. [Section 4](#) concludes. Proofs are collected in the online appendix.

## 2. Mechanisms at play

This section presents a simplest two-period model, which highlights the forces that endogenously determine the quality distribution of assets in the economy.

<sup>2</sup> Indeed, [Keys et al. \(2010\)](#) provided causal evidence that securitization led to the lax screening of borrowers by banks.

<sup>3</sup> [Tirole \(2012\)](#) provides a brief analysis of an economy where quality distribution is endogenously chosen in adverse selection economy.

<sup>4</sup> Relatedly, [Kawai \(2014\)](#) studies a micro model and shows that moral hazard by sellers can destroy gains from trade. [Zyrmov \(2015\)](#) studies a model in which the timing of entry shapes the time-varying market quality.

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