



# Investment horizons and asset prices under asymmetric information <sup>☆</sup>

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## Abstract

I study a financial market with a generalized overlapping generations structure. Investors live for an arbitrary number of periods, and are asymmetrically informed about future dividends of a risky asset. I compare pricing moments, and the informational content of prices, across economies with different investment horizons. Horizons affect prices through two key mechanisms: as horizons increase, the age-adjusted risk aversion of the average investor falls, and the risk transfer from forced liquidators into voluntary buyers drops. For long enough horizons, there exist two equilibria: a stable, low-volatility equilibrium in which longer horizons reduce price variability and raise average prices, and an unstable, high-volatility equilibrium with the opposite properties. Along the stable equilibrium, longer horizons reduce non-fundamental price volatility and incite more aggressive trading by the informed investors, which impounds their knowledge into prices. Longer horizons thus improve market efficiency, and reduce the uncertainty of the uninformed investors. Expected returns and return volatility are similar to an economy with full-information about fundamentals, even if the informed are relatively few. For short horizons, cautious trading disaggregates information from prices, and the economy approaches one with no private information.

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## 1. Introduction

The fact that investors care about returns over a limited horizon is a pervasive feature of financial markets. With trading carried out mostly by intermediaries who care about short-term performance – be it through explicit contracts, or by the threat of fleeing investors – one has good reasons to suspect long-run prospects might be often overlooked in everyday market transactions. From a more cyclical perspective, the onsets of financial crises are characterized by widespread investors' withdrawals and fund liquidations, suggesting fund managers' bias towards immediacy might be particularly acute during such episodes. This opens the question of whether the radically different behavior of markets during crises – sharp price drops, heightened volatility, and higher expected returns – could be partly explained by variations in the effective horizons of intermediaries. Moreover, even leaving intermediation out of the story, the fact that households *literally* have finite lifespans suggests concerns about the short-term are relevant.

Despite the apparent importance of understanding the role of finite horizons, our knowledge in this regard seems limited. Mainstream asset pricing often assumes infinitely-lived investors who voluntarily trade at all times.<sup>1</sup> Alternative models with finite horizons, on the other hand, build upon an OLG framework where investors live for two periods.<sup>2</sup> While useful to understand some pricing features and the limitations of arbitrage activity, horizons are fixed in these models, making it difficult to compare characteristics across economies with *different* investors' lifespans. The present paper contributes to fill this gap, providing a model where investors have arbitrary investment horizons,  $T$ . The model then studies how economies with different horizons compare in terms of asset pricing characteristics, with a special focus on the implications for the informational role of prices, or market efficiency.

The model is based on the dynamic rational expectations analysis of Wang [29]. Competitive investors trade an infinitely-lived risky asset to maximize utility of lifetime consumption under CARA preferences. There are two types of investors: those who observe private information about the persistent component of the dividend process (informed investors), and those who infer it from dividends and prices (uninformed investors). Investors also differ in their age. At any point in time, there are  $T$  generations of investors coexisting.  $T - 1$  groups (aged 1, 2, ...,  $T - 1$ ) are still active in the market and can take voluntary positions, while the oldest generation (aged  $T$ ) is exiting and must unwind its positions at prevailing prices. The net supply of the asset is random and causes prices to fluctuate for reasons orthogonal to fundamentals. This prevents prices from fully revealing the information observed by informed investors.

Generally speaking, the paper finds that investment horizons matter a great deal for asset prices, and market efficiency. The generalized OLG economy developed here highlights two key mechanisms that account for these results. The first relates to the pricing of risk, which I label the *age-adjusted risk aversion* effect. To understand this effect, consider the case of infinitely-lived investors. In this economy the marginal propensity to consume wealth is the ratio between the net and gross rate of interest,  $r/(1+r)$ . This coefficient is precisely how agents price uncertainty about wealth fluctuations – the age-adjusted risk aversion parameter corresponds to  $\gamma \cdot r/(1+r)$ ,

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<sup>1</sup> See Campbell [9] for a comprehensive survey.

<sup>2</sup> See De Long et al. [15], Spiegel [25], Bacchetta and Van Wincoop [4], Watanabe [30], and Banerjee [5].

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