

Costly arbitrage and the myth of idiosyncratic risk[☆]

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Abstract

Transaction and holding costs make arbitrage costly. Mispricing exists to the extent that arbitrage costs prevent rational traders from fully eliminating inefficiencies. Although the relation between mispricing and transaction costs is well-known, the relation between mispricing and holding costs is misunderstood. One holding cost, idiosyncratic risk, is particularly misunderstood. Various myths are debunked, including the common myth that idiosyncratic risk matters because arbitrageurs only have access to a small number of projects [Shleifer and Vishny, 1997. The limits of arbitrage. *The Journal of Finance* 52, 35–55.]. The literature demonstrates that idiosyncratic risk is the single largest cost faced by arbitrageurs.

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1. Introduction

This paper strives to debunk seven myths surrounding the impact of rational arbitrage on irrational prices.

Myth 1: Arbitrage costs make arbitrage a zero-profit exercise.

Myth 2: Arbitrage costs decimate all arbitrage activity.

[☆] Malcolm Baker, Pierluigi Balduzzi, Onur Bayar, David Chapman, Ken French, David Hirshleifer, Gang Hu, Cliff Holderness, S.P. Kothari (the editor), David McLean, Harold Mulherin, Shivaram Rajgopal, Philip Strahan, and Sheridan Titman have provided feedback on a previous draft. Gratitude goes to Denning Aaris who provided helpful copy editing. Special thanks go to Edward Rice for comments on an early draft, as well as a decade of numerous conversations about the practical implications of risk.

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Myth 3: Arbitrageurs avoid shorting high dividend paying stocks, since the short seller must rebate all dividend payments, making a short position more expensive.

Myth 4: Arbitrageurs care about idiosyncratic risk since they only have access to a small number of projects (Shleifer and Vishny, 1997).

Myth 5: Idiosyncratic risk has no impact on mispricing. Even if short-sellers are dissuaded by idiosyncratic risk, idiosyncratic risk will not affect the selling decision of sophisticated investors who already own the stock.

Myth 6: Since arbitrage costs are related to mispricing, the costly arbitrage literature provides proof that markets are efficient.

Myth 7: Costly arbitrage tests are subject to Fama's (1976) joint hypothesis to the same extent as classic tests of market efficiency.

Arbitrage is the transaction where a rational agent tries to profit from mispricing. Mispricing continues in equilibrium since costs prevent arbitrageurs from fully offsetting the price impact of irrational investors. The relation between arbitrage costs and market inefficiencies is often misunderstood. One arbitrage cost, idiosyncratic risk is particularly misunderstood. This misunderstanding likely stems from the detailed treatment of diversification and the capital asset pricing model (CAPM) in elementary finance text books that espouse that idiosyncratic risk does not matter. This logic is often falsely extended to make erroneous claims that idiosyncratic risk should not affect arbitrage activity, since the arbitrageur can costlessly diversify away this risk. Although the text book discussion of idiosyncratic risk is correct in terms of the CAPM, this logic does not carry over to arbitrage and market inefficiencies. Regardless of an arbitrageur's access to a diversified portfolio, and regardless of the number of available arbitrage projects, the idiosyncratic risk of each project will mute the arbitrageur's position in the project.

This article strives to clarify how inefficiencies may exist in equilibrium, and to illuminate the critical role played by idiosyncratic risk. This framework is useful for tests of market efficiency, since the interplay between idiosyncratic risk (as well as other arbitrage costs) and mispricing provides a testable prediction that only relies on the economic rationality of arbitrageurs, and not on the arbitrary behavior of noise traders. As will be shown in Section 5, the empirical studies that have explored such tests have affirmed the importance of idiosyncratic risk as the foremost arbitrage cost.

Recent research on inefficiencies and costly arbitrage has failed to emphasize the importance of idiosyncratic risk. This lack of coverage is attributable to two factors. First, some researchers believe variants of myth 4, and thus they downplay the importance of idiosyncratic risk as only a concern for investors with limited opportunities. Second, theoretical and empirical keystone papers have focused on systematic risk to the exclusion of idiosyncratic risk. One such theoretical paper, De long et al. (1990) argues that noise trader risk creates systematic risk, and asset prices are discounted to reflect this risk. Since there is only one asset in their model and all noise-traders have the same irrational expectations, idiosyncratic risk plays no role. The literature spawned by their paper has focused on irrational comovement, but has forsaken idiosyncratic risk.

Early keystone empirical work by Shiller (1989) tests whether stock index returns are too volatile relative to dividend streams. Since stock indices are not subject to idiosyncratic risk, the excess volatility calculation omits a large proportion of volatility. Pontiff (1997) estimates that 85% of closed-end fund excess volatility is idiosyncratic to a four-factor model that includes the Fama–French factors as well as the Lee et al. (1991) investor

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