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## Speculative trading and stock returns: A stochastic dominance analysis of the Chinese A-share market

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### ABSTRACT

The pricing of A-shares in China has long puzzled financial economists. This paper applies recent tests of stochastic dominance (SD) to examine whether differences in the return distributions of A- and B-shares in China are consistent with market efficiency. As SD is nonparametric, market efficiency can be examined without the joint test problem arising from misspecifications in the asset pricing benchmark. Our results show A-shares have second-order dominated B-shares from 1996 to 2005. This dominance was most significant during the market segmentation period, but has continued, albeit to a lesser extent even after the B-share market was opened to local investors in 2001. Our results are robust to using residual returns from an international asset pricing model instead of raw returns. We conclude that the superior performance of A-shares cannot be attributed to risk. The results are more likely due to a return bias caused by intense speculation among retail individuals under limited arbitrage.

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### 1. Introduction

The pricing of A-shares in China has long been a puzzle to financial economists. China is unique among emerging markets because A-shares, which are restricted to Chinese citizens, are priced at huge premiums over B-shares, which are restricted to foreigners. Despite the opening of the B-share market to local investors in 2001, the A-share premium has persisted. A large literature has tried to explain

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the source of this price differential. Recent contributions to this literature include Mei et al. (2005) and Chan et al. (2008).

Several studies argue that China's stock markets are mainly driven by speculation and insider trading. Allen et al. (2006) point out that the desire for quick gains combined with lack of strong legal framework in China fostered a speculative attitude among investors. Mei et al. (2005) point out that share prices probably contain a speculative component due to a limited share float and prohibitions on short sales. Moreover, since the A-share market is dominated by unsophisticated individual investors, the size of the A-share premium is a direct reflection of this speculative component. Using A-share turnover as a proxy for speculation, Mei et al. find that stocks with a higher turnover tend to trade at higher premiums, which is consistent with the speculative demand hypothesis.

Chan et al. (2008) provide an alternative explanation of the B-share discount based on the notion of information asymmetry. Specifically, they argue that foreign investors are less informed about the Chinese market than locals. Hence, they demand a price discount for B-shares to compensate for this information disadvantage. Consistent with their hypothesis, they find that B-share discounts are positively related to measures of information asymmetry that are constructed using bid-ask spreads of A- and B-shares. Furthermore, A-share turnover has no significant impact on this discount after accounting for information asymmetry.

While these studies shed light on factors that explain the cross-section of A-share premiums, they do not explain why such a premium exists in the first place. Existing debate on the sources of the A-share premium have also missed another intriguing aspect of the Chinese stock market. That is, there exists a higher average return of A-shares relative to the average return of B-shares. For example, between January 1996 and February 2001, A-shares outperformed B-shares with average annual returns of 30% and 12%, respectively. This large mean return differential has led to a dramatic increase in A-share premium over the same period. Even after the B-share market was opened to local investors, A-shares still outperformed B-shares. The average annual returns of A-shares and B-shares in the bear market from June 2001 to December 2005 were –14% and –19%, respectively.

Classical finance argues that markets are efficient in promoting price discovery, which leaves no room for noise traders to influence asset prices. This sanguine view has been challenged by mounting evidence from behavioral finance. There is convincing evidence that when stocks are favored by individual investors and difficult to value, they are prone to mispricing. For example, Kumar and Lee (2006) find that firms with high retail concentration and firms that are more difficult to arbitrage have consistently high loadings on measures of investor sentiment. Baker and Wurgler (2006) show that sentiment-driven buying leads to return reversals, which is consistent with ex-ante overvaluations. They show that this effect is more significant among small, young, highly volatile, unprofitable, and non-dividend paying firms as well as among extreme value and growth firms. A common denominator is that these firms have highly subjective valuations.

It is natural to think of mispricing as stochastic. Recent work by Brennan and Wang (2007) provide some insights into the relation between stochastic mispricing and the behavior of asset returns. They show that even if a stock trades *on average* at its fundamental price, its average return may still be biased above its fundamental required return. For example, let  $P_t^*$  and  $P_t$  denote the fundamental and market price of a stock. Suppose  $Z_t$  is a stationary stochastic mispricing variable. Brennan and Wang show that even if  $Z_t$  has a mean of one, so that the stock price is unconditionally rational, Jensen's inequality implies that the expected return of that stock may still be biased above the fundamental expected return (i.e.,  $E(R_t) > E(R_t^*)$ ).<sup>1</sup> Empirically, they find that this bias is larger for smaller firms, low-price firms, growth firms, and firms with high turnover. Their results are generally consistent with those of Kumar and Lee (2006).

Is the higher average return of A-shares consistent with market efficiency, or does it reflect a return bias? It is plausible that noise trading could be prevalent in the A-share market due to the dominance

<sup>1</sup> Consider the special case in which (a) the stock is non-dividend paying and (b) the mispricing variable is uncorrelated with fundamentals. Let  $z = \ln(Z)$  is a stationary, mean zero process, Brennan and Wang (2007) show that in this case,  $E(R_t) = E(R_t^*) + E(Z_{t+1}/Z_t) = E(R_t^*) + E(e^{Az} - 1)$ . The convexity of the exponential function and the assumed stationarity of  $z$  implies that the return mispricing bias is positive.

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