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Stock market efficiency in China: Evidence from the split-share reform☆

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ABSTRACT

We perform an event study to investigate the efficiency of the Chinese stock market. We study the reaction of stock returns and trading volumes to the 2005–2006 structural reform which allowed the transformation of non-tradable shares (NTS) into tradable shares (TS) through payment of a compensation to holders of TS. We find evidence of positive abnormal returns in the few days before announcement of which companies will undergo the reform process, that can be explained by information leakage and not by a compensation risk premium, and in the ten days after the readmission to trading of participating companies following the determination of the compensation, which is consistent with a Merton visibility effect. We use a bootstrap procedure designed to replicate the actual degree of covariance across firms.

1. Introduction

The efficiency of the Chinese stock market is a very important issue given its large capitalization ($9.7 trillion as of the end of May 2015 according to Bloomberg data) and China's rapid growth. The size of the Chinese stock market is remarkable when one notices that as of the end of the 1980s the Chinese corporate sector was overwhelmingly dominated by State-Owned Enterprises (SOEs) and that the establishment of the two major stock exchanges took place only in 1990 and 1991. Although the resulting first wave of initial public offerings started a process of dilution of government ownership of Chinese firms, control remained firmly in State hands, largely due to the peculiar structure of listed firms. As of the beginning of 2005, about two thirds of the Chinese stock market was composed of non-tradable shares (NTS). NTS was a special class of shares entitling the holders to exactly the same rights as holders of ordinary shares but which could not be publicly traded. Typically, these shares belonged to the State or to domestic financial institutions ultimately owned by central or local governments[1]. In 2005, the Chinese authorities announced a reform aimed at eliminating NTS by the end of 2006. Policy guidelines stated that the official objective of the reform was not to reduce state holdings, but just to eliminate NTS, and that control would remain tightly in the hands of the government in enterprises deemed strategic (Mattlin, 2007).

One of the main functions of the stock market is to signal the relative scarcity of capital, and this may be attained only if prices are valuation efficient, as pointed out by Tobin (1984). There are divergent opinions about the efficiency of the Chinese stock market. Apart from a long literature on tests of market efficiency to be

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[1] See Sun and Tong (2003) for a detailed explanation

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surveyed next, Allen, Qian, and Qian (2007) claim that the link between saving and investment in China has traditionally been ensured by bank and non-bank intermediaries rather than by the stock market. However, the challenges that will face China in the future, among which the transition to a less resource-intensive and to a greener economy and the need to preserve a high rate of growth at the same time boosting domestic consumption rather than export, may be better met by an efficient stock market. In this paper we assess valuation efficiency by studying price reactions to the 2005 reform of the Chinese stock market, through an event study. This methodology is particularly useful given that the Chinese stock market only started in 1991 with a small number of traded companies. This represents a severe limitation for statistical methods that require long time-series to produce reliable estimates. Moreover, as reported by Carpenter, Lu, and Whitelaw (2014), the Chinese stock market has experienced a sequence of structural breaks associated with different institutional and regulatory reforms. Time-series models are not suited to dealing with structural breaks, unless the dates of the break are known. Instead, we take a different approach and exploit the cross-sectional pricing implications of the transformation of non-tradable shares (NTS) into tradable shares (TS) to study efficiency.

The reform entailed a process whereby NTS holders paid compensation to TS holders in exchange for the right to sell their shares in the future. Compensation is consistent with the idea that the transformation of NTS into TS may damage the current TS holders, who in the past decided to hold shares under the assumption that NTS would have never been turned into TS (see Chen & Xiong, 2001). After successful initial experiments with a small number of firms, in August 2005 the Chinese authorities extended the reform to all companies listed in the Shanghai and Shenzhen markets, setting the end of 2006 as the deadline for its completion[2]. Each participating company had to respect a schedule implying two trading suspensions and subsequent readmissions. The first suspension predated the announcement of the value of the compensation to be paid to holders of TS, the second suspension took place before the actual payment. Typically (almost 80% of the cases) compensation was represented by the transfer of shares from NTS holders to TS holders[3]. In theory, this form of compensation does not affect a company's market valuation, except for a negative effect due to the increased supply if the demand function is downward sloping, and positive effects associated with increased liquidity and visibility of the stocks. We carry out an event study and measure the cumulative abnormal returns (CARs) of stocks as well as turnover, to understand whether the stock price reaction was roughly consistent with rational models of pricing behavior.

Our main findings are as follows: risk-adjusted stock prices increased both in the days immediately prior to the first suspension (by more than 2%) and in the ten days after the first readmission (about 1.7%). Prices fell after the end of the reform, but compensation-corrected abnormal returns were not statistically different from zero for the subsequent ten-day period. Turnover increased substantially in all the event periods. Our findings are coherent with the existence of inside information about the identity of the participating companies, because a compensation premium would not suddenly materialize on the few days before the first announcement. The most likely explanation for the increase in prices after the first readmission is the existence of a visibility (Merton) effect[4]. We do not favor an explanation linked with a decreased liquidity premium as the latter could have been already forecasted by the increase in volume taking place before the first suspension, and should have been priced earlier. It is noteworthy that prices show no abnormal pattern after the end of the reform regardless of the large increase in turnover, and this is inconsistent with a generic speculation story. The results are robust to a variety of tests, notably the estimation of a multi-factor model for the Chinese stock market.

The selection of a CARs methodology rather than a regression-based methodology, see Kothari and Warner (2005), is due to the specificity of our data. The reform was implemented through two periods of trading suspension for each stock. It is therefore impossible to estimate a linear regression involving dummy variables that control for the change in the intercept during the event periods. Moreover, the set-up of the reform requires careful treatment of cross-sectional correlation across firms. Hein and Westfall (2004) deal with bootstrap methods to improve statistical testing in the presence of clustering when using the multivariate regression model. Lyon, Barber, and Tsai (1999) suggest a bootstrap version of a skewness-adjusted t-statistic to control for the skewness in their tests of long-run abnormal returns in a CARs setting. We also use a bootstrap methodology to make our statistical inference robust to the presence of clustering.

Several papers have looked at the efficiency of the Chinese stock markets applying various methodologies, see Charles and Darné (2009) for a list of contributions and an application of variance ratio tests. Groenewold, Tang, and Wu (2003) and Chen and Hong (2003) study the predictability of returns and find deviations from market efficiency. Gao and Kling (2005) find evidence of calendar effects in the Chinese market with excess returns in March and in April and on Fridays, while Chong, Lam, and Yan (2011) study the profitability of trading strategies and suggest that China's stock market has become more efficient since the reform. deBondt, Peltonen, and Santabarbara, (2010) identify booms and busts using a fundamental-based model. Chen, Kim, Yao, and Yu (2010) look at a variety of characteristics drawn from the literature and show that their predictive ability is weaker than in the U.S.A., which they interpret as evidence of persistent mispricing. Carpenter et al. (2014) argue that the Chinese stock market is increasingly able to provide stock price informativeness and is characterized by anomalies resembling those prevailing in the U.S. market. Our paper differs from previous studies, as we consider company-specific event windows, involving periods of trading and non-trading, and examine whether the reaction of prices to well-identified announcements and corporate actions is compatible with market efficiency. Our empirical evidence is complementary to existing results on Chinese stock price reactions to earnings announcements, as done in

[2] By the end of 2006, and thus within the announced deadline, the restructuring process was virtually completed.

[3] Several measures were taken to facilitate the 2005 reform, among which a twelve-months lockup period for the holders of NTS in order to dilute the effect of a possible stock overhang due to a possible massive future sale of shares. In the two years after expiration of the lock-up, NTS holders owning more than 5% of the listed companies were further prohibited from trading on the stock exchange more than 5% (10%) of the company's total share capital within 12 (24) months. Other relevant measures were: (i) the CSRC stated that reform-compliant companies would be given priority to raise new capital (primary issues of shares and IPOs had been frozen since April 2005), (ii) the company and the controlling shareholder are entitled to stabilize the market price of the shares for example through buy-backs (Wan, Yuan and Ha, 2005), (iii) the legislative department amended the Company Law and the Securities Law to perfect the legal framework concerning the capital market. At the end of January, 2006, there was a further rule change making it easier for strategic investors to buy stakes in listed companies; under the new rules the purchase of A-shares is not reserved anymore to the small group of qualified investors but is extended to all the investors willing to buy a minimum stake of 10% of the company and hold the shares for longer than three years.

[4] Merton (1987) assumes that investors form diversified portfolios only composed of stocks they are aware of and studies the equilibrium implications of this behavior for prices and expected returns. Enhanced visibility for a particular stock means more investors know about that stock and include it in their diversified portfolios, increasing its equilibrium price and decreasing its expected return.