

**Retail Investors' Biased Beliefs about Stocks that They Hold: Evidence from
China's Split Share Structure Reform**

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Abstract

We investigated the compensation plans during China's split share structure reform, a unique event that affected all listed firms in its A-share stock market, and found that anchoring effects, accruals, and mispricing biased investor estimations of stock value. While previous studies have focused on irrational trading behavior by investors, our study provides direct evidence of biased investor beliefs about stock value. In particular, the compensation ratio was lower for stocks with prices closer to the historical high and further from the 52-week high, for stocks with higher accruals, and for stocks with higher misvaluation relative to industry peers. In addition, we found a strong anchoring effect to the compensation ratios of firms that had already completed the reform. These results are robust to controls for the effects of risk sharing, differences in bargaining power, the price impact from the increased number of tradable shares, and liquidity.

Key Words: cognitive bias, misvaluation, behavioral finance, emerging markets

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While studies in behavioral finance have documented irrational trading behavior among investors, we explain this irrationality based on people's cognitive biases using psychological theory. Although we can argue that irrational trading behavior is a direct result of cognitive bias, there is a gap between investor beliefs about stock values and irrational trading behavior. In some cases, investors may strategically trade in the "wrong" direction, even when they may fully understand a stock's intrinsic value. For example, Shleifer and Vishny (1997) argued that investors might buy (sell) overvalued (undervalued) stocks for forced-closing positions in a short-sale (margin-buy), even though they are correct about the intrinsic value of the stocks. Mei, Scheinkman, and Xiong (2009) found that investors in China held overvalued A-shares for speculative reasons, believing they could resell them to more optimistic investors in the future for a profit. This study aimed to fill in this gap by directly investigating how cognitive bias creates investor bias when estimating stock value.

Specifically, we investigated the compensation ratios negotiated between small investors holding tradable shares (TS) and block shareholders holding non-tradable shares (NTS) during China's split share structure reform. The split share structure refers to the mixed ownership of listed Chinese firms, in which some shares were tradable and the rest were not. The NTS made up about two-thirds of the outstanding shares and were held mainly by the government or government agencies. Unlike in other countries, investors in TS in China were predominantly individual investors. The reform that removed the split structure started in 2005 and most firms had completed the reform by

the end of 2007. The reform converted all non-tradable shares to tradable ones. To complete the reform, NTS holders compensated TS holders with a compensation plan negotiated between the NTS and TS holders. Li et al. (2011) argued that NTS holders were willing to pay compensation because of the gain in risk sharing. We found, however, that the compensation ratios were related to stock mispricing and the psychological bias of investors. Our cross-sectional comparison of compensation ratios provides evidence of biased investor beliefs in stock values related to the anchoring effect, limited attention, and relative misvaluation.

Financial studies are particularly concerned with how agents form expectations. Unlike traditional models, behavioral finance considers the effects of systematic cognitive bias on investor beliefs and preferences. However, studies usually investigate irrational trading by investors. For example, Odean (1999) and Barber and Odean (2000) demonstrated that the stocks retail investors purchase underperform the stocks they sell, which can be attributed to investor overconfidence, limited attention, and the disposition effect. However, irrational trading behavior is not necessarily evidence that investors are unaware of the value of their stocks. For example, Shefrin and Statman (1985) and Odean (1998) found that investors were reluctant to sell losers because of regret aversion. Mei, Scheinkman, and Xiong (2009) found that investors speculated on overvalued Chinese A-shares in the expectation that they could resell them to other more optimistic investors. This study used the unique reform event in China to explore whether investors actually knew the value of the stocks they were holding.

In particular, we studied whether the effects of anchoring and limited attention influenced investor estimations of stock value. The anchoring effect refers to the forming

of an estimate by starting from an initial value (anchor) and then insufficiently adjusting away from it. George and Hwang (2004) suggested that traders may use the 52-week high as an anchor and that investors underreact to good news when a stock's price is at or near its 52-week high. Campbell and Sharpe (2009) and Cen, Hilary, and Wei (2013) found anchoring bias in analysts' earnings forecasts. Li and Yu (2012) used the historical high as an anchor and argued that this anchor had the opposite effect to that of the 52-week high, because individuals underreacted to sporadic news but overreacted to a prolonged record of salient performance (Griffin and Tversky, 1992). Hirshleifer et al. (2011) argued that investors with limited attention attend to earnings but ignore how these earnings are divided between cash flow and accruals. This neglect causes systematic bias and misvaluation of firms that have abnormal accrual levels. In addition, empirical studies by Teoh et al. (1998a, b) found that managers used accounting discretion to manipulate accruals and exploit investor neglect of the earnings components. Similarly, we expected the accrual component to have more power than cash flow in explaining the compensation ratio during the reform, because of the limited attention of investors. Furthermore, we investigated whether investor bias about stock value related to relative misvaluation, as in Rhodes-Kropf et al. (2005). We found that the compensation ratio was lower for stocks priced closer to the historical high and away from 52-week high, for stocks with higher accruals, and for stocks with higher misvaluation relative to industry peers. In addition, we found a strong anchoring effect of the compensation ratios to those of firms that had already completed the reform. These results are robust to controls for the effects of risk sharing (Li et al., 2011), differences in bargaining power, the price impact of the increased number of tradable shares, and liquidity.

Previous studies found that future stock returns were not related to the past 12-month cumulative returns in the Chinese stock market, and ascribed this lack of momentum to cultural differences (Chui, Titman, and Wei, 2010). In other words, investors in Chinese stock markets do not underestimate the value of stocks with good past performance. We found that the compensation ratio was negatively related to the past 12-month cumulative returns. The opposing effects of the past 12-month cumulative return and the price being close to the 52-week high suggest that these two variables may capture different forms of behavioral bias. In addition, we found that stocks with low compensation ratios outperformed in the past, but did not do so in the future.

As the negotiation of compensation took place between block shareholders and *current* small shareholders, our results contribute to the studies on limited investor attention by showing that retail investors wrongly estimated the intrinsic value of the stocks they held. In addition, unlike previous studies that focused mainly on how retail investors trade irrationally, this study contributes to the literature by directly investigating how cognitive bias affects investor beliefs about stock value. It fills the gap between biased investor beliefs about stock value and irrational trading behavior.

The rest of this paper is organized as follows: section 2 introduces the split share structure reform and compensation plans; section 3 describes the data and variables; section 4 presents the empirical results; and section 5 concludes.

2. The Split Share Structure Reform and Compensation Plans

We studied the effect of the split share structure reform, a unique event in China. The Chinese stock market had a split-share structure since its establishment in the 1990s. The mixed ownership included shares that were tradable on the exchanges and those that were non-tradable. The non-tradable shares (NTS) were mainly state-held shares held by government or government-owned enterprises and legal-person shares usually held by business agencies owned by the government. Unlike other in countries, traders of tradable shares (TS) were mostly individual investors. NTS holders (state and legal persons) were in the majority, holding about two thirds of the total. The split share structure in China resulted in many corporate governance problems, because NTS holders and top managers were more concerned about fulfilling political goals whereas TS holders were more profit-oriented. The reform that removed the split structure was intended to resolve these governance problems. The split share structure reform started in 2005 and took place in batches. Most listed firms completed the reform by the end of 2007, after which all NTS were converted to TS.

To complete the reform, NTS holders needed to pay compensation to TS holders in exchange for the liquidity of the NTS. Most compensation was in the form of share payments, an agreed number of shares being received by TS holders from NTS holders for each share held at the time of registration. NTS holders proposed a compensation plan on the announcement date of the reform for that firm, followed by negotiations between the TS and NTS holders. Trading was suspended during these negotiations, and the voting process and compensation plan were passed when at least two-thirds of the voting TS holders approved. The reform was then completed and trading resumed. The most common form of compensation is to transfer shares from the NTS holders to TS holders.

On average the number of shares held by TS holders increased by 30%, which represented a significant transfer of wealth. Li et al. (2011) argued that NTS holders were willing to pay compensation because of the gain in risk sharing. However, why TS holders required this compensation is puzzling. Mei, Scheinkman, and Xiong (2009) suggested that there was a speculative component in A-share prices, which resulted in an overall overvaluation of A-shares. We investigated whether the compensation plan was driven by mispricing or by the cognitive bias of investors.

3. Data and Variables

Our sample consists of 1086 listed A-share firms that had completed the reform by December 31, 2007 and had available the dependent and independent variables in all testing models. To eliminate the effect of outliers, we winsorized all continuous variables at the 1st and 99th percentiles. Table 1 presents the summary statistics and correlations. Data on the split share structure reform stock prices, returns, volume, shares outstanding, and firm characteristics were all taken from the China Stock Market and Accounting Research (CSMAR) database. We defined the compensation ratio (Cmp) as the number of shares TS holders received from NTS holders for each share held at the time of registration.

3.1 Anchoring Effect, Accruals, and Relative Misvaluation

Following George and Hwang (2004) and Li and Yu (2012), we used the 52-week high and historical high as two anchors. In particular, we defined the HH as the measure of nearness to the historical high, which was calculated as the ratio of the closing price 10 days before the reform announcement and its historical high (P_t/P_{max}). We defined 52H

as the measure of nearness to the 52-week high, which was calculated as the ratio of the closing price 10 days before the reform announcement and its 52-week high ($P_t/P_{52-week\ high}$). We used the closing price 10 days before the reform announcement to avoid the effect of information leakage before the announcement (Tong et al., 2012). In addition, we argued that investors might simply have followed the compensation ratios of firms in previous batches to determine their own compensation. We therefore used the average compensation ratio of all firms that had completed the reform before the testing firm (PreC) as the third anchor.

Following Hirshleifer et al. (2009), we used the balance sheet method to estimate accruals. Accruals (Acc) were calculated as the change in non-cash current assets minus the change in current liabilities, excluding the change in short-term debt and in taxes payable, minus depreciation and amortization expenses. Earnings (Earn) were operating income. Cash flow (CF) was calculated as the difference between earnings and accruals. Earnings, accruals, and cash flow were all measured at the end of the year before the reform announcement, and scaled by lagged total assets.

As in Rhodes-Kropf et al. (2005), Hertzal and Li (2010), and Hoberg and Phillips (2010), we used a decomposition that breaks up the market-to-book ratio to get the relative misvaluation of the stock. This measure aimed to capture the extent to which the firm was misvalued relative to its contemporaneous industry peers. Following Rhodes-Kropf et al. (2005), the misvaluation ($MISV$) was defined as ($MISV_{it} = M_{it} - v$), where v is the fundamental value of the firm obtained by applying annual, sector-average regression multiples to firm-level accounting values. We grouped the firms into 13 industries according to the classification of the China Securities Regulatory Commission

and ran cross-sectional regressions for each industry and each year. We used four models to estimate misvaluation,

$$\text{Model 1: } M_{it} = \beta_{0jt} + \beta_{1jt}B_{i,t} + \epsilon_{i,t}.$$

$$\text{Model 2: } M_{it} = \beta_{0jt} + \beta_{1jt}B_{i,t} + \beta_{2jt}NI_{i,t}^+ + \beta_{3jt}I_{(<0)}NI_{i,t}^+ + \epsilon_{i,t}.$$

$$\text{Model 3: } M_{it} = \beta_{0jt} + \beta_{1jt}B_{i,t} + \beta_{2jt}NI_{i,t}^+ + \beta_{3jt}I_{(<0)}NI_{i,t}^+ + \beta_{4jt}BLEV_{i,t} + \epsilon_{i,t}.$$

$$\text{Model 4: } M_{it} = \beta_{0jt} + \beta_{1jt}B_{i,t} + \beta_{2jt}NI_{i,t}^+ + \beta_{3jt}I_{(<0)}NI_{i,t}^+ + \beta_{4jt}MLEV_{i,t} + \epsilon_{i,t}.$$

where M_{it} is the logarithm of market value of asset, calculated as book value of total assets minus book value of equity plus market value of equity; B_{it} is the logarithm of book value of total assets; $NI_{i,t}^+$ denotes the logarithm of the absolute value of net income; $I_{(<0)}$ is an indicator for negative net income observations; $BLEV_{i,t}$ is the book leverage, which is total assets minus book equity, scaled by total assets; and $MLEV_{i,t}$ is the market leverage, which is total assets minus book equity, scaled by total assets minus book equity plus market equity. The error terms for each model (Mis1-Mis4) were proxies of misvaluation and were estimated in the year before the announcement of reform.

3.2 Other Control Variables in the Regressions

We included the idiosyncratic volatility (IV) to capture the gain in risk sharing as in Li et al. (2011). Following their paper, IV was estimated as the average residual in a market model in the period (-260, -60) before the reform announcement. Li et al. (2011) argued that high state-owned shares might represent the (weak) bargaining power of NTS holders, because the government wanted early completion of the reform for political reasons. SS was the percentage of state-owned shares, as measured on the last share

outstanding change date before the reform announcement. To control for the effect of price impact, we used the percentage of tradable shares (TS)¹, as measured on the last share outstanding change date before the reform announcement.

To capture the liquidity effect of the reform, we included the Amihud (2002) illiquidity measure (Amh) and turnover (TO). Amh was the logarithmic transform of 1 plus the ratio of the absolute value of stock daily return over daily dollar volume, averaged in the period (-260, -60) before the reform announcement. TO was the logarithmic transform of 1 plus turnover ratio, averaged in the period (-260, -60) before the reform announcement. ME was the logarithmic transform of market capitalization at the end of the year before the reform announcement. BM was the logarithmic transform of the book-to-market equity ratio measured at the end of the year before the reform announcement. R12 was the cumulative 12-month return ending two months before the reform announcement. SameD was equal to one if the original compensation plan was the same as the final plan, and zero otherwise. PerfD was equal to one if the firm had promises on performance, and zero otherwise. CashD was equal to one if there was cash compensation, and OthD was equal to one if there was another form of compensation.

4. Empirical Results

4.1 Price Impact and Liquidity Changes around the Reform

It has been argued that TS holders received compensation for the price impact, that is, the decrease of the stock price when the NTS were converted to TS, creating a

¹ Li et al. (2011) used the percentage of non-tradable shares (which equals 1-TS) to capture the effect of the price impact.

large supply of additional shares on the market (Zhao, Liao, and Li 2006; Xin and Xu, 2007). Although the price impact would occur only when block shareholders actually sold large amounts of shares, we still wanted to learn the price impact of the reform and the liquidity changes around the reform. Specifically, we report the cumulative abnormal return (CAR) and the sum of CAR and the compensation ratio in the period (1, 3), (1, 10), and (1, 30) after the completion date of reform in Panel A of Table 2. Abnormal return on a stock was calculated as the stock's daily return minus the market return. CAR was the sum of the abnormal returns in the event window. We could observe a negative CAR in event windows (1, 3) and (1, 10) following the completion date of reform. However, the negative CARs were small in absolute value and reversed within 30 days. When we added the compensation ratio to the CAR, TS holders showed a significant gain in these event windows. Panel B of Table 2 reports the Amihud illiquidity measure (Amh) and turnover ratio (TO). The market-adjusted Amihud (2002) illiquidity measure and turnover (Amh_mktadj and TO_mktadj) were Amh and TO minus the average Amh and TO of all A-shares, respectively, excluding the stocks performing reform in that year. Both the raw measures and market-adjusted measures suggest that illiquidity dropped and turnover increased for firms that had completed the reform. Therefore, the short-term price impact and liquidity changes cannot explain the compensation.

4.2 Returns on Portfolios Sorted by Compensation Ratios

Next, we investigated whether the compensation ratio was related to past and future stock performance. Table 3 reports the cumulative returns in the years around the reform event. Panel A reports cumulative raw returns and Panel B reports cumulative excess returns. If TS investors were concerned about long-term performance and had

correctly estimated the stock value, they should have required higher compensation for the overvalued stocks that would underperform in the future. However, we do not observe higher future returns for stocks with a lower compensation ratio, or vice versa. Interestingly, we see that stocks with a lower compensation ratio are normally associated with higher past returns, and vice versa. The portfolio results therefore suggest that TS investors used past stock performance to estimate stock value.

4.3 Cognitive Bias and Compensation Ratio

In this section, we investigated the effect of cognitive bias on the compensation ratios TS received during the reform. Because the compensation ratios are truncated variables with a minimum value of zero, we report both OLS regressions and Tobit regressions for all tests in this section. Table 4 reports regressions testing the anchoring effect on the compensation ratio. Following George and Hwang (2004) and Li and Yu (2012), we used the 52-week high and historical high as two anchors and report the regression in Model 1. In addition, we argued that investors might simply have followed the compensation ratios of firms in previous batches to determine their own compensation. We used the average compensation ratio of previous batches as the third anchor and report the regression in Model 2. Model 3 includes all three anchoring measures. George and Hwang (2004) suggested that stocks priced closer to the 52-week high are stocks about which good news has recently emerged. Investors use the 52-week high as an anchor and then underreact to good news. Therefore, stocks with a price closer to their 52-week high are more likely to be undervalued than other stocks. Li and Yu (2012) suggested that investors might underreact to sporadic news but overreact to a prolonged record of salient performance. The authors used the Dow historical high as

anchor and found that the effect of the historical high was opposite to that of the 52-week high. In Table 4, we see that stocks with prices closer to the historical high paid lower compensation while stocks with prices closer to the 52-week high paid higher compensation. In addition, we find positive coefficients for the average compensation ratio of previous batches, which suggests that TS investors used this as an anchor in deciding their own compensations.

Next, we tested whether the compensation ratio was related to accruals or to cash flow. Hirshleifer et al. (2011) argued that investors with limited attention focus their analysis on earnings but ignore how these earnings are divided between cash flow and accruals, causing systematic bias and misvaluation of firms with abnormal accrual levels. Model 1 in Table 5 suggests that the compensation ratio was negatively related to past year earnings. However, when we decomposed earnings into accruals and cash flow (Models 2 & 3), only the accrual component had a significant effect on the compensation ratio. This result suggests that TS holders may have naively interpreted information on earnings and ignored the information on cash flow.

To further investigate whether investors correctly interpreted information on stock prices, we ran regressions with measures of relative misvaluation as an explanatory variable and the compensation ratio as the dependent variable. The measure captured the extent to which the firm was misvalued relative to its contemporaneous industry peers (Rhodes-Kropf et al., 2005). Table 6 shows that all misvaluation measures (Mis1-Mis4)

have significant negative coefficients.² The results suggest that stocks with higher misvaluation (overvaluation) tended to pay lower compensation.

Thus, TS investors received lower compensation ratios for stocks with prices closer to the historical high and further from the 52-week high, for stocks with higher accruals, and for stocks with higher misvaluation relative to industry peers. In addition, we found a strong anchoring effect to the compensation ratio of firms that had previously completed the reform. These results are robust to controls for the effects of risk sharing, differences in bargaining power, the price impact of the increased number of tradable shares, and liquidity. We show that the anchoring effect, accruals, and mispricing can create biases in investor estimations of stock values.

5. Conclusion

Behavioral finance studies usually investigate the irrational trading behavior of investors and seldom directly inspect what investors believe about the value of the stocks they hold. We used a unique reform event in China to study whether retail investors actually knew the intrinsic value of the stocks they owned. Our results show that retail investors wrongly estimated the value of the stocks in their possession. Using a cross-sectional comparison of the compensation ratio TS holders received from NTS holders in the split shares structure reform, we found that TS holders received lower compensation for the more overvalued stocks. In particular, the compensation ratio was lower for stocks priced closer to the historical high and further from the 52-week high, stocks with higher accruals, and stocks with higher misvaluation relative to industry peers. In addition, we

² Because the relative misvaluation measures (Mis1-Mis4) are functions of market value and book value by design, here we omit market equity and market-to-book ratios as control variables in regressions to avoid the multicollinearity problem.

found a strong anchoring effect to the compensation ratio of firms that had already completed the reform. Unlike previous behavioral finance studies that focused on investor trading behavior, our tests used the compensation ratio negotiated between block shareholders and small shareholders, thus giving direct evidence of investor beliefs. We showed that anchoring, limited attention and relative misvaluation can create biases in an average investor's beliefs about stock value.

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Table 1 Summary Statistics and Correlations

This table reports the summary statistics and correlations. The sample contains all A-shares on the Chinese stock market that completed the split share structure reform in the 2005-2007 period. Cmp is the compensation ratio, which is the number of shares received by holders of tradable share from holders of non-tradable shares for each share held at the time of registration. Mis1-Mis4 are measures of misvaluation estimated using Model 1 to Model 4 in section 3 in the year before the reform announcement. ME is the logarithmic transform of market capitalization at the end of the year before the reform announcement. BM is the logarithmic transform of the book-to-market equity ratio measured at the end of the year before the reform announcement. Earn is the operating income. Acc is the accrual measure, estimated using the indirect balance sheet method as in Hirshleifer, Hou, and Teoh (2009), which is the change in non-cash current assets less the change in current liabilities excluding the change in short-term debt and the change in taxes payable, minus depreciation and amortization expenses. CF is cash flows, which is earnings minus accruals. Earn, Acc, and CF were all measured at the end of the year before the reform announcement and scaled by the lagged-year total assets. PreC is the average compensation ratio of all firms that have completed the reform before the testing firm. HH is the measure of nearness to the historical high and is calculated as the ratio of the closing price 10 days before the reform announcement and its historical high. 52H is the measure of nearness to the 52-week high and is calculated as the ratio of the closing price 10 days before the reform announcement and its 52-week high. R12 is the cumulative 12-month return ending 2 months before the reform announcement. Amh (scaled up by 10^8) is the logarithmic transform of 1 plus the Amihud (2002) illiquidity measure, which is the ratio of the absolute value of stock daily return over daily dollar volume, averaged in the period (-260, -60) before the reform announcement. TO is the logarithmic transform of 1 plus turnover ratio, averaged in the period (-260, -60) before the reform announcement. IV is the idiosyncratic volatility estimated as the average residual in a market model in the period (-260, -60) before the reform announcement. SS is the percentage of state-owned shares, as measured on the last share outstanding change date before the reform announcement. TS is the percentage of tradable shares, as measured on the last share outstanding change date before the reform announcement. SameD is equal to one if the original compensation plan was the same as the final plan, and zero otherwise. PerfD is equal to one if the firm had promises on performance, and zero otherwise. CashD is equal to one if there was cash compensation. OthD is equal to one if there was another form of compensation.

Panel A Summary Statistics

Variable	N	Mean	Std	Med	Min	P25	P75	Max
Cmp	1086	0.346	0.197	0.320	0.000	0.270	0.370	2.520
Mis1	1086	-0.008	0.275	-0.045	-0.515	-0.200	0.148	0.944
Mis2	1086	0.005	0.247	-0.015	-0.502	-0.167	0.137	0.888
Mis3	1086	0.011	0.237	-0.018	-0.438	-0.149	0.126	0.807
Mis4	1086	-0.002	0.233	-0.007	-0.528	-0.158	0.129	0.795
ME	1086	20.995	0.837	20.847	19.433	20.389	21.420	23.916
BM	1086	-0.476	0.540	-0.424	-2.242	-0.786	-0.099	0.578
Earn	1086	0.034	0.071	0.032	-0.205	0.007	0.064	0.265
Acc	1086	-0.046	0.114	-0.042	-0.428	-0.103	0.012	0.274
CF	1086	0.079	0.122	0.070	-0.250	0.009	0.148	0.438
PreC	1086	0.325	0.007	0.323	0.313	0.320	0.331	0.340
HH	1086	0.398	0.213	0.337	0.096	0.237	0.507	0.993
52H	1086	0.827	0.133	0.851	0.461	0.743	0.934	1.000
R12	1086	0.030	0.405	-0.087	-0.545	-0.250	0.207	1.589
Amh	1086	0.669	0.605	0.521	0.027	0.260	0.876	3.679
TO	1086	0.016	0.009	0.014	0.003	0.010	0.021	0.050
IV	1086	0.021	0.005	0.020	0.011	0.017	0.024	0.033
SS	1086	0.366	0.256	0.405	0.000	0.085	0.595	0.774
TS	1086	0.397	0.110	0.379	0.176	0.316	0.457	0.709
SameD	1086	0.076	0.266	0.000	0.000	0.000	0.000	1.000
PerfD	1086	0.055	0.229	0.000	0.000	0.000	0.000	1.000
CashD	1086	0.060	0.237	0.000	0.000	0.000	0.000	1.000
OthD	1086	0.037	0.188	0.000	0.000	0.000	0.000	1.000

Panel B Correlations

	Cmp	Mis1	Mis2	Mis3	Mis4	Earn	Acc	CF	PreC	HH	52H	ME	BM	R12	Amh	TO	IV	SS
Mis1	-0.148																	
Mis2	-0.075	0.845																
Mis3	-0.070	0.852	0.975															
Mis4	-0.071	0.824	0.976	0.932														
Earn	-0.219	0.373	0.179	0.162	0.169													
Acc	-0.083	-0.009	-0.024	-0.030	-0.026	0.197												
CF	-0.045	0.217	0.123	0.121	0.116	0.405	-0.805											
PreC	0.085	-0.058	0.005	0.020	-0.008	-0.217	-0.070	-0.072										
HH	-0.200	0.483	0.307	0.301	0.301	0.536	0.048	0.269	0.073									
52H	0.006	0.017	0.003	0.007	-0.002	0.058	0.024	0.014	0.363	0.320								
ME	-0.163	0.555	0.409	0.370	0.394	0.504	-0.010	0.304	-0.259	0.502	-0.098							
BM	0.079	-0.636	-0.533	-0.587	-0.538	-0.110	0.021	-0.065	-0.009	-0.159	0.079	-0.042						
R12	-0.051	0.193	0.178	0.191	0.160	0.080	-0.004	0.048	0.500	0.387	0.464	-0.053	-0.112					
Amh	0.070	-0.235	-0.142	-0.109	-0.134	-0.276	0.025	-0.187	-0.091	-0.415	-0.052	-0.498	-0.134	-0.152				
TO	0.017	0.093	0.104	0.130	0.095	-0.109	-0.037	-0.042	0.203	0.053	-0.076	-0.180	-0.229	0.180	-0.245			
IV	0.062	0.055	0.174	0.208	0.166	-0.327	-0.098	-0.108	0.091	-0.250	-0.211	-0.310	-0.323	0.096	0.186	0.577		
SS	-0.028	0.121	0.111	0.098	0.104	0.158	-0.050	0.143	-0.079	0.161	0.035	0.256	0.057	0.057	-0.115	-0.043	-0.080	
TS	0.001	-0.226	-0.220	-0.245	-0.209	-0.094	-0.001	-0.051	0.067	-0.060	0.020	-0.099	0.279	-0.026	-0.149	-0.063	-0.053	-0.307

Table 2 Price Impact and Liquidity Changes

This table reports the price impact of the reform and the liquidity changes before and after the reform. Panel A reports the median, mean, and t-value of the cumulative abnormal return (CAR) and the sum of CAR and the compensation ratio in the period (1,3), (1,10), and (1,30) after the completion date of reform. Panel B report the logarithmic transform of 1 plus the Amihud (2002) illiquidity measure (Amh, scaled up by 10^8) and the logarithmic transform of 1 plus turnover ratio (TO). The period before the reform (Pre) is defined as (-60,-10) before the announcement date of reform. The period after the reform (Pos) is defined as (10, 60) after the completion date of the reform. The market-adjusted Amihud (2002) illiquidity measure and turnover (Amh_mktadj and TO_mktadj) are Amh and To minus the average Amh and To of all A-shares excluding the stocks performing reform in that year.

Panel A Price Impact

Variable	Mean	t (Mean)	Median
CAR (1,3)	-0.010***	-5.80	-0.013
CAR (1,10)	-0.009***	-3.42	-0.012
CAR (1,30)	-0.001	-0.30	-0.009
CAR (1,3) +Cmp	0.333***	57.21	0.314
CAR (1,10) +Cmp	0.332***	54.32	0.317
CAR (1,30) +Cmp	0.340***	48.72	0.318

Panel B Liquidity Changes

Variable	Pre	Post	Post-Pre	t(Post-Pre)
Amh	0.367***	0.181***	-0.187***	-28.95
Amh_mktadj	-0.074***	-0.097***	-0.024***	-3.81
TO	0.022***	0.044***	0.022***	30.11
TO_mktadj	-0.002***	0.011***	0.014***	23.75

Table 3 Cumulative Returns Before and After the Reform

This table reports cumulative returns portfolios sorted by the compensation ratio in the event years before and after the split structure reform. Y0 is the year of reform, Y1-Y3 are the first, second, and third years after the reform, and Y(-1)-Y(-3) are the last, last but one, and last but two years before the reform. Panel A reports the cumulative 12-month raw return (R12). Panel B reports the cumulative 12-month excess return (EXR12), which is the stock return minus contemporaneous market return.

Panel A Cumulative Raw Returns Before and After the Reform (R12)

Compensation Ratio	Y (-3)	Y (-2)	Y (-1)	Y0	Y1	Y2	Y3
Low	-0.104	-0.115	0.057	1.042	1.289	0.161	0.899
2	-0.120	-0.078	-0.001	0.889	1.526	0.075	0.922
3	-0.122	-0.157	-0.149	0.810	1.677	-0.048	1.121
4	-0.149	-0.174	-0.155	0.684	1.641	0.115	0.899
High	-0.192	-0.192	-0.049	1.028	1.362	0.139	1.009
(Low-High)	0.089***	0.077***	0.106***	0.013	-0.074	0.021	-0.110
t(Low-High)	3.567	3.052	2.350	0.109	-0.553	0.161	-1.131

Panel B Cumulative Excess Returns Before and After the Reform (EXR12)

Compensation Ratio	Y (-3)	Y (-2)	Y (-1)	Y0	Y1	Y2	Y3
Low	-0.037	0.023	0.006	0.046	0.017	0.197	0.197
2	-0.063	0.061	0.053	0.000	0.070	0.116	0.273
3	-0.077	-0.009	-0.081	-0.142	0.143	0.093	0.354
4	-0.098	-0.033	-0.058	-0.137	0.115	0.101	0.276
High	-0.129	-0.052	-0.127	0.023	0.090	0.138	0.336
(Low-High)	0.092***	0.076***	0.133***	0.023	-0.073	0.059	-0.139***
t(Low-High)	3.733	2.954	4.045	0.222	-0.733	0.745	-2.194

Table 4 Regressions with Measures of Anchoring Effects on Compensation Ratio

This table reports the OLS regressions (Model 1-Model 3) and Tobit regressions (Model 4-Model 6). The dependent variable is the compensation ratio in the split share structure reform. The sample contains all A-shares on the Chinese stock market that completed the split share structure reform in years 2005-2007. PreC is the average compensation ratio of all firms that had completed the reform before the testing firm. HH is the measure of nearness to the historical high and is calculated as the ratio of the closing price 10 days before the reform announcement and its historical high. 52H is the measure of nearness to the 52-week high and is calculated as the ratio of the closing price 10 days before the reform announcement and its 52-week high. R12 is the cumulative 12-month return ending two months before the reform announcement. Amh (scaled up by 10^8) is the logarithmic transform of 1 plus the Amihud (2002) illiquidity measure, which is the ratio of the absolute value of stock daily return over daily dollar volume, averaged in the period (-260, -60) before the reform announcement. TO is the logarithmic transform of 1 plus turnover ratio, averaged in the period (-260, -60) before the reform announcement. ME is the logarithmic transform of market capitalization at the end of the year before the reform announcement. BM is the logarithmic transform of the book-to-market equity ratio measured at the end of the year before the reform announcement. IV is the idiosyncratic volatility estimated as the average residual in a market model in the period (-260, -60) before the reform announcement. SS is the percentage of state-owned shares, as measured on the last share outstanding change date before the reform announcement. TS is the percentage of tradable shares, as measured on the last share outstanding change date before the reform announcement. SameD is equal to one if the original compensation plan was the same as the final plan, and zero otherwise. PerfD is equal to one if the firm had promises on performance, and zero otherwise. CashD is equal to one if there was cash compensation. OthD is equal to one if there was another form of compensation. T-statistics are reported in parentheses.

	OLS	OLS	OLS	Tobit	Tobit	Tobit
	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6
HH	-0.146*** (-3.65)		-0.137*** (-3.44)	-0.140*** (-3.50)		-0.131*** (-3.28)
52H	0.123** (2.46)		0.095* (1.90)	0.123** (2.47)		0.095* (1.90)
PreC		3.173*** (2.86)	2.599** (2.28)		3.192*** (2.82)	2.620** (2.26)
TS	-0.017 (-0.34)	-0.031 (-0.63)	-0.020 (-0.40)	-0.020 (-0.33)	-0.034 (-0.57)	-0.023 (-0.39)
CashD	-0.149*** (-7.43)	-0.158*** (-7.90)	-0.150*** (-7.50)	-0.172*** (-8.62)	-0.182*** (-9.08)	-0.174*** (-8.69)
R12	-0.004 (-0.37)	-0.038*** (-3.84)	-0.020 (-0.98)	-0.008 (-0.77)	-0.041*** (-4.12)	-0.024 (-1.19)
IV	1.851 (1.06)	2.906* (1.74)	1.982 (1.13)	1.818 (1.02)	2.860* (1.68)	1.949 (1.09)
BM	0.022** (2.24)	0.030*** (3.00)	0.021** (2.06)	0.023** (2.29)	0.030*** (3.02)	0.021** (2.11)
ME	-0.012 (-1.17)	-0.021** (-2.09)	-0.007 (-0.65)	-0.014 (-1.36)	-0.022** (-2.22)	-0.008 (-0.84)
Amh	-0.011	-0.004	-0.008	-0.011	-0.005	-0.008

	(-1.13)	(-0.43)	(-0.81)	(-1.10)	(-0.48)	(-0.83)
TO	0.139	-0.689	-0.057	0.037	-0.786	-0.161
	(0.16)	(-0.78)	(-0.06)	(0.04)	(-0.87)	(-0.17)
OthD	-0.075**	-0.077**	-0.077**	-0.095***	-0.097***	-0.097***
	(-2.51)	(-2.56)	(-2.56)	(-3.18)	(-3.22)	(-3.24)
PerfD	-0.156***	-0.148***	-0.153***	-0.172***	-0.165***	-0.169***
	(-7.81)	(-7.41)	(-7.66)	(-8.61)	(-8.26)	(-8.45)
SameD	-0.033*	-0.039**	-0.038*	-0.039*	-0.045**	-0.043**
	(-1.65)	(-1.97)	(-1.88)	(-1.93)	(-2.25)	(-2.16)
SS	-0.005	-0.003	-0.002	-0.004	-0.002	-0.001
	(-0.25)	(-0.14)	(-0.10)	(-0.20)	(-0.08)	(-0.05)
Intercept	0.662***	-0.141	-0.288	0.705***	-0.117	-0.253
Intercept	(2.65)	(-0.29)	(-0.60)	(2.82)	(-0.24)	(-0.52)
Industry Dummy	Yes	Yes	Yes	Yes	Yes	Yes
Year Dummy	Yes	Yes	Yes	Yes	Yes	Yes
Adj R-Sq	0.111	0.106	0.115	215.540	212.646	218.111
N	1086	1086	1086	1086	1086	1086

Table 5 Regressions with Measures of Accrual and Cash Flows on Compensation Ratio

This table reports the OLS regressions (Model 1-Model 3) and Tobit regressions (Model 4-Model 6). The dependent variable is the compensation ratio in the split share structure reform. The sample contains all A-shares on the Chinese stock market that completed the split share structure reform in years 2005-2007. Earn is operating income. Acc is the accrual measure, estimated using the indirect balance sheet method as in Hirshleifer, Hou, and Teoh (2009), which is the change in non-cash current assets less the change in current liabilities excluding the change in short-term debt and the change in taxes payable, minus depreciation and amortization expenses. CF is cash flows, which is earnings minus accruals. Earn, Acc, and CF are all measured at the end of the year before the reform announcement and scaled by the lagged-year total assets. R12 is the cumulative 12-month return ending two months before the reform announcement. Amh (scaled up by 10^8) is the logarithmic transform of 1 plus the Amihud (2002) illiquidity measure, which is the ratio of the absolute value of stock daily return over daily dollar volume, averaged in the period (-260, -60) before the reform announcement. TO is the logarithmic transform of 1 plus turnover ratio, averaged in the period (-260, -60) before the reform announcement. ME is the logarithmic transform of market capitalization at the end of the year before the reform announcement. BM is the logarithmic transform of the book-to-market equity ratio measured at the end of the year before the reform announcement. IV is the idiosyncratic volatility estimated as the average residual in a market model in the period (-260, -60) before the reform announcement. SS is the percentage of state-owned shares, as measured on the last share outstanding change date before the reform announcement. TS is the percentage of tradable shares, as measured on the last share outstanding change date before the reform announcement. SameD is equal to one if the original compensation plan was the same as the final plan, and zero otherwise. PerfD is equal to one if the firm had promises on performance, and zero otherwise. CashD is equal to one if there was cash compensation. OthD is equal to one if there was another form of compensation. T-statistics are reported in parentheses.

	OLS	OLS	OLS	Tobit	Tobit	Tobit
	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6
Earn	-0.460*** (-4.60)			-0.462*** (-4.62)		
Acc		-0.151*** (-3.02)			-0.149*** (-2.97)	
CF			0.039 (0.77)			0.035 (0.70)
TS	-0.028 (-0.55)	-0.031 (-0.62)	-0.029 (-0.58)	-0.030 (-0.50)	-0.034 (-0.57)	-0.032 (-0.53)
CashD	-0.147*** (-7.34)	-0.153*** (-7.63)	-0.156*** (-7.80)	-0.170*** (-8.51)	-0.176*** (-8.82)	-0.180*** (-9.00)
R12	-0.004 (-0.37)	-0.013 (-1.28)	-0.016 (-1.60)	-0.006 (-0.63)	-0.015 (-1.55)	-0.019* (-1.86)
IV	0.806 (0.47)	2.131 (1.27)	2.627 (1.57)	0.696 (0.40)	2.088 (1.22)	2.581 (1.51)
BM	0.024** (2.42)	0.033*** (3.29)	0.034*** (3.35)	0.024** (2.43)	0.033*** (3.33)	0.034*** (3.38)
ME	-0.015 (-1.48)	-0.030*** (-3.04)	-0.031*** (-3.07)	-0.016 (-1.62)	-0.031*** (-3.12)	-0.032*** (-3.19)
Amh	-0.008	-0.007	-0.008	-0.009	-0.008	-0.008

	(-0.80)	(-0.72)	(-0.78)	(-0.87)	(-0.76)	(-0.83)
TO	-0.086	-0.367	-0.503	-0.170	-0.460	-0.598
	(-0.10)	(-0.42)	(-0.57)	(-0.19)	(-0.51)	(-0.66)
OthD	-0.076**	-0.076**	-0.074**	-0.096***	-0.096***	-0.093***
	(-2.55)	(-2.54)	(-2.45)	(-3.19)	(-3.19)	(-3.10)
PerfD	-0.154***	-0.157***	-0.153***	-0.171***	-0.174***	-0.170***
	(-7.69)	(-7.85)	(-7.65)	(-8.53)	(-8.70)	(-8.51)
SameD	-0.043**	-0.034*	-0.033*	-0.049**	-0.039**	-0.039*
	(-2.13)	(-1.70)	(-1.66)	(-2.43)	(-1.97)	(-1.94)
SS	-0.002	-0.008	-0.007	-0.001	-0.006	-0.006
	(-0.11)	(-0.38)	(-0.35)	(-0.05)	(-0.32)	(-0.29)
Intercept	0.807***	1.100***	1.118***	0.842***	1.131***	1.147***
Intercept	(3.67)	(5.00)	(5.08)	(3.66)	(5.14)	(4.99)
Industry Dummy	Yes	Yes	Yes	Yes	Yes	Yes
Year Dummy	Yes	Yes	Yes	Yes	Yes	Yes
Adj R-Sq	0.117	0.107	0.100	218.582	212.633	208.929
N	1086	1086	1086	1086	1086	1086

Table 6 Regressions with Measures of Misvaluation on Compensation Ratio

This table reports the OLS regressions (Model 1-Model 4) and Tobit regressions (Model 5-Model 8). The dependent variable is the compensation ratio in the split share structure reform. The sample contains all A-shares on the Chinese stock market that completed the split share structure reform in years 2005-2007. Mis1-Mis4 are measures of misvaluation estimated with Model 1 to Model 4 in Section 3 and in the year before the reform announcement. R12 is the cumulative 12-month return ending two months before the reform announcement. Amh (scaled up by 10^8) is the logarithmic transform of 1 plus the Amihud (2002) illiquidity measure, which is the ratio of the absolute value of stock daily return over daily dollar volume, averaged in the period (-260, -60) before the reform announcement. TO is the logarithmic transform of 1 plus turnover ratio, averaged in the period (-260, -60) before the reform announcement. IV is the idiosyncratic volatility estimated as the average residual in a market model in the period (-260, -60) before the reform announcement. SS is the percentage of state-owned shares, as measured on the last share outstanding change date before the reform announcement. TS is the percentage of tradable shares, as measured on the last share outstanding change date before the reform announcement. SameD is equal to one if the original compensation plan was the same as the final plan, and zero otherwise. PerfD is equal to one if the firm had promises on performance, and zero otherwise. CashD is equal to one if there was cash compensation. OthD is equal to one if there was another form of compensation. T-statistics are reported in parentheses.

	OLS	OLS	OLS	OLS	Tobit	Tobit	Tobit	Tobit
	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7	Model 8
Mis1	-0.091*** (-4.53)				-0.094*** (-4.71)			
Mis2		-0.048** (-2.40)				-0.053*** (-2.65)		
Mis3			-0.049** (-2.46)				-0.054*** (-2.68)	
Mis4				-0.045** (-2.23)				-0.049** (-2.45)
TS	-0.014 (-0.27)	0.019 (0.38)	0.017 (0.35)	0.023 (0.47)	-0.017 (-0.28)	0.015 (0.26)	0.014 (0.23)	0.020 (0.34)
CashD	-0.160*** (-7.98)	-0.166*** (-8.29)	-0.166*** (-8.29)	-0.166*** (-8.31)	-0.184*** (-9.18)	-0.190*** (-9.52)	-0.190*** (-9.51)	-0.191*** (-9.54)
R12	-0.010 (-0.95)	-0.014 (-1.44)	-0.014 (-1.42)	-0.015 (-1.52)	-0.012 (-1.19)	-0.017* (-1.66)	-0.016* (-1.65)	-0.017* (-1.74)
IV	2.533 (1.53)	2.463 (1.45)	2.459 (1.44)	2.366 (1.39)	2.500 (1.47)	2.437 (1.40)	2.433 (1.40)	2.338 (1.34)
Amh	-0.001 (-0.12)	0.006 (0.58)	0.007 (0.67)	0.006 (0.65)	-0.001 (-0.12)	0.006 (0.59)	0.007 (0.68)	0.007 (0.66)
TO	-0.263 (-0.31)	-0.215 (-0.25)	-0.181 (-0.21)	-0.184 (-0.21)	-0.335 (-0.38)	-0.286 (-0.33)	-0.249 (-0.28)	-0.255 (-0.29)
OthD	-0.084*** (-2.81)	-0.091*** (-3.03)	-0.091*** (-3.02)	-0.093*** (-3.09)	-0.105*** (-3.49)	-0.112*** (-3.72)	-0.111*** (-3.70)	-0.114*** (-3.79)
PerfD	-0.149*** (-7.43)	-0.146*** (-7.29)	-0.146*** (-7.30)	-0.145*** (-7.26)	-0.166*** (-8.29)	-0.163*** (-8.14)	-0.163*** (-8.15)	-0.162*** (-8.10)
SameD	-0.036* (-1.78)	-0.038* (-1.91)	-0.038* (-1.89)	-0.038* (-1.90)	-0.041** (-2.06)	-0.044** (-2.18)	-0.043** (-2.16)	-0.043** (-2.17)

SS	-0.011 (-0.53)	-0.011 (-0.55)	-0.012 (-0.58)	-0.011 (-0.56)	-0.010 (-0.50)	-0.010 (-0.52)	-0.011 (-0.55)	-0.010 (-0.52)
Intercept	0.455*** (9.09)	0.435*** (8.71)	0.438*** (8.75)	0.433*** (8.65)	0.459*** (7.65)	0.440*** (7.33)	0.442*** (7.37)	0.436*** (7.27)
Industry Dummy	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year Dummy	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Adj R-Sq	0.098	0.088	0.087	0.087	206.692	200.896	200.734	200.434
N	1086	1086	1086	1086	1086	1086	1086	1086