What Determines the Discount of Closed-End Funds in the China Market?

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Abstract

This paper provides a comprehensive analysis of the determinants of the closed-end fund discount, using information obtained from quarterly portfolio announcement and annual reports. Results indicate that while the discount is positively related to industry concentration as proxied by the weighting of top 5 industry in the fund, it is negatively related to stock concentration as proxied by the weighting of top 10 stocks in the fund. This suggests that while an increase in stock concentration decreases the diversification benefit of the fund, it might also allow fund managers to use their stock picking ability so that the discount decreases with the level of stock concentration. We also find the discount increases with the value of restricted securities, decreases with the market capitalization of the fund and turnover, suggesting that liquidity is a main factor that affects the discount.

JEL classifications: G14; G34

Keywords: Closed-end fund, Discounts, Illiquidity, Investment skill

INTRODUCTION

As the largest emerging market in the world, China market attracts the focus of the global investors. From July 2003 foreign investors are able to invest directly into the China domestic securities market through Qualified Foreign Institutional Investors (QFII) Scheme. As of July 2004, there are 18 foreign institutional investors with a total quota of 1.95 billion US dollar allowed to invest into the China A-share market. Many foreign investors are especially interested in the China closed-end fund market because of the persistent large discounts in the last two years. For example, as of June 2004, the average discount is 25 percent.

According to Malkiel (1977) and Lee, Shleifer, and Thaler (1991), agency costs, illiquidity of assets, capital gains tax liabilities, and investor sentiment are four possible explanations for the discount puzzle of closed-end funds. In the China market, the absence of capital gains tax and uniform management fee preclude agency costs and capital gain tax liabilities as the explanations. While several have investigated the discounts of closed-end funds in China, the findings are mixed.

The objective of this paper is to provide a comprehensive analysis of closed-end fund discounts in the China market and in particular, investigate whether there is any relationship between fund managers' investment skill and discounts of closed-end funds. Given that the China market is highly speculative, the more skilled fund managers are able to take advantage of the market inefficiency and it is preferable for them to invest into a small set of undervalued stocks rather than a well-diversified portfolio. As a result, we conjecture that the discount of closed-end fund will decrease if the fund portfolio is less diversified.

For each closed-end fund, we obtain the portfolio weight of top 10 stocks, the weight of top 5

industries, the number of stocks, the weight of top 10 fund holders and the value of restricted securities in the closed-end fund, and investigate whether these variables affect the closed-end fund discount. To the best of our knowledge, our paper is the first one that investigates all closed-end funds.

There are several findings. First, there is a significantly negative relationship between weights of top 10 stocks in the fund and the discounts. This supports the hypothesis that China investors believe fund managers possess stock picking ability, so that the less well-diversified the fund portfolio, the lower is the discount. Second, there is a positive relationship between the value of restricted securities and the discount. It is consistent with the conjecture that illiquidity of assets in the closed-end fund will increase the fund discount. Third, there is a positive relationship between the weight of top 10 fund holders and the discount. It is again consistent with the illiquidity hypothesis where fewer shares in circulation (as more shares are held by top 10 fund holders) increase the fund discount..

The paper is organized as follows: Section 1 introduces the financial market and closed-end fund market in China, Section 2 reviews the related literatures. Section 3 describes the data collection, and the variable construction. Section 4 reports the preliminary statistics. Section 5 discusses the regression analysis, and Section 6 concludes the paper.

1. CHINA CLOSED-END FUND MARKET

The China stock market was established in the early 1990s. There are currently two stock exchanges - Shanghai Stock Exchange was established on December 19, 1990 and the Shenzhen

Stock Exchange was established on July 3, 1991. The equity market has developed rapidly in the first ten year. As of May 2004, there are around 1300 A-share and 110 B-share, and the total market capitalization is close to 5 trillion RMB.

The first two closed-end funds listed in China stock exchanges were launched on 7 April, 1998, with Kaiyuan listed in Shenzhen Stock Exchange and Jintai listed in the Shanghai Stock Exchange. As of June 2004, there are a total of 54 closed-end funds organized under 17 investment fund houses, with 29 listed in the Shenzhen Stock Exchange and 25 listed in the Shanghai Stock Exchange. It should be noted that all funds were listed before September 2002. After 2002, open-end funds were approved by China Securities Regulatory Commission (CSRC). In fact, all new funds established after 2002 belong to open-end ones as the closed-end funds, which cannot be redeemed, generally better than open-end funds which cannot be redeemed.

In terms of investment objectives, 12 are balanced funds, 36 are growth funds, 3 are index funds and 3 are value funds. The duration of the closed-end period is from 10 to 15 years, although the closed-end fund is not necessarily open-ended at the end of the period.[1] Among the 54 funds, 29 are merged and restructured from old investment funds, and the closest maturity date is 28 May 2007. Table 1 provides the background of each fund. The following are some other characteristics of China closed-end funds:

- All closed end funds have uniform management fee and custodian fee. The initial management fee was originally 2.5 percent per year, and later was reduced to 1.5 percent per year. The custodian fee is maintained at 0.25 percent per year.

[1] At the end of closed-end period, the fund house needs to hold a fund holder meeting whereby fund holders vote on two alternatives: (1) liquidate the fund and distribute all the cash; or (2) open-end the fund.

- In 14 November 1997, the Securities Committee of the State Council issued "Interim Regulation on Securities Investment Funds", which stated clearly that closed-end funds should invest at least 20 percent of the fund's net asset value into the government bonds and the remaining portion into A-share equity only.
- Before October 1999, institutional investors were not allowed to invest into closed-end funds. After that, insurance companies were allowed to buy closed-end funds. Starting 2000, insurance companies become the largest fund holders of closed-end funds. An insurance company is allowed to own a maximum of 10 percent of the fund, while the institutional and individual investors can own a maximum of 3 percent.
- The face value of the fund is standardized at 1 RMB per unit while the issue price is fixed at 1.01 RMB.
- The fund needs to payout at least 90 percent of returns to fund holders in cash at least once per year. However, if the fund has recorded losses in the previous year, the fund needs to cover the loss before pay the rest as dividend. If the current year records a loss, the fund cannot pay dividend.

2. LITERATURE REVIEW

2.1 International Evidence

On the theoretical side, Zweig (1973) has developed a model that illustrates when non-professional investor expectations become "sufficiently" one-sided, it is likely that stock prices will reverse in another direction. By using changes in closed-end fund premiums as a measure of

shifts in investor expectations, he shows that there is predictive ability of closed-end fund premiums. Malkiel (1977) has also developed a model on the valuation of shares of closed-end investment companies. He finds that discounts are related to unrealized appreciation and to capital gain distribution policy, as well as to portfolio strategies related to investing in letter stock and foreign securities. He also finds that fund discounts vary over time, and that investor psychology has an important bearing on the level and structure of discounts.[2]

On the empirical side, Lee, Shleifer, and Thaler (1991) conjecture that fluctuations in closed-end fund discounts are driven by changes in investor sentiment. Their empirical evidence suggests that closed-end funds and small companies tend to be held by individual investors, and that discounts on closed-end funds narrow when small stocks perform well. Swaminathan (1996) provide further evidence on the relationship between closed-end fund discounts and time-varying expected excess returns on small firms. His results show that closed-end fund discounts forecast future excess returns on small firms. Xia and Wu (2004) investigate the relationship between illiquidity and discounts of closed-end country funds. They find that there is a strong association between the fund premium and illiquidity in both the host and the home market. They also find that country funds are sensitive to the systematic liquidity factor, showing that country fund premium may be partially explained by the liquidity risk premium.

Bleaney, and Smith (2003) investigate how past net asset value (NAV) returns affect the premium

[2] Recently, Grullon, and Wang (2001) develop a multi-asset trading model to examine the closed-end fund discount. Cherkes (2003) offers a positive theory of the closed-end fund as an efficiency-driven organizational form of fund management. Berk, and Stanton (2004) show that a parsimonious rational model can generate a discount that exhibits many of the characteristics observed in practice. Dimson, and Minio-Paluello (2002) provide a survey of the research on the closed-end fund discount.

on closed-end funds traded in U.S. and U.K. They find that there is a negative relationship between closed-end fund returns and the premium in the short run. Doukas, and Milonas (2003) examine the investor sentiment hypothesis in the Greece closed-end fund market, and find that investor sentiment represents an independent and systematic asset pricing risk. Chen, Johnson, Lin, and Liu (2004) investigate the open-ending of closed-end funds in the Taiwan market, and find that the open-ending increases returns to shareholders.

2.2 China Evidence

Jiang (2002) reports there is little evidence of performance persistence for China closed-end funds over 3-, 4-, and 6-month holding periods exists. A number of papers have investigated the determinants of closed-end fund discount level. For example, Jing, Liu, and Gao (2002) show that fund size, listing age, dividend payout, and investment concentration are the main factors that affect the fund discount. In another study, Zhang and Malone (2003) conclude that there is insignificant relationship between closed-end fund discounts and stock returns.

Chen, Rui, and Xu (2004) have conducted a comprehensive analysis of closed-end funds from April 1998 to December 2001. First, they show that closed-end fund discounts are negatively related to fund liquidity, percentage of stock holding, and past risk-adjusted performance. They also show that the discount is positively related to the R-square estimated from a marked model applied to the underlying asset returns, managerial ownership, and the size of the fund. Third, "investor overconfidence" and liquidity are major factors that affect the dynamics of discounts.

3. DATA DESCRIPTION

The sample period for our analysis is from 25 February 1999 to 25 June 2004. The data are obtained from several sources. First, weekly fund prices, trading volume, net asset value (NAV), and closed-end fund discounts are obtained from Bloomberg. Second, quarterly portfolio weights in top 10 stocks in the portfolio, as well as the weights of top 5 industry in the portfolio, are hand collected from website of the Shenzhen Stock Exchanges.[3] Third, the number of stocks held by individual funds, the weighting of top 10 fund holders in total NAV, market value of restricted securities (IPO stocks, secondary market placement, bonds etc.) are hand-collected from the internet.[4] Fourth, dividend payouts, dates of fund establishment, listing dates, size, maturity, and names of fund house are obtained from the Shenzhen Stock Exchange's website. Fifth, objectives of the funds (growth, value, index, and balanced) are obtained from Guotai Junan Securities Research. Finally, data on weekly Shanghai A-share index, Shenzhen A-share index, Shanghai Fund index, Shenzhen Fund index, Shanghai Bond index, and the China Inter-Bank Borrowing Rates are obtained from Bloomberg.

We first compute the monthly discount for each fund:

$$DISC_{i,t} = \frac{PRICE_{i,t} - NAV_{i,t}}{NAV_{i,t}} \qquad (1)$$

where $DISC_{i,t}$ = discount of the fund i at the end of month t,

$PRICE_{,i,t}$ = stock price of fund i at the end of month t,

[3] http://www.szse.cn

[4] http://www.homeway.com.cn

$NAV_{,i,t}$ = net asset value of fund *i* at the end of month *t*.

A positive value for $DISC_{i,t}$ indicates discount for the fund while a negative value indicates a premium. We include following variables as possible explanations for the discounts of closed-end funds.

- W5IND: the portfolio weighting of top 5 industry in the closed-end fund, which proxies for the industry concentration. Other things being equal, a higher W5IND indicates that the portfolio is less well-diversified, so that higher industry concentration is less preferred by investors. Therefore, there is a positive relationship between W5IND and closed-end fund discount.

- WSTOCK: the portfolio weighting of stocks in the closed-end fund. According to the regulation, the maximum that closed-end funds could invest into stocks is 80 percent. The more the closed-end fund invests into stocks, this more risky the fund portfolio and the higher the fund discount.

- W10STOCK: the portfolio weighting of top 10 stocks in the fund, which proxies for stock concentration. On the one hand, a fund of higher W10STOCK indicates that the portfolio is less well-diversified, so that it is less preferred by investors. On the other hand, a fund of higher W10STOCK might also mean that fund managers have good stock picking ability, so that it is more preferred by investors. Therefore, the relationship between W10STOCK and discount could be positive or negative.

- WMVRES: the portfolio weighting of market value of restricted securities in the closed-end fund. The restricted stocks are primarily from IPO and cannot be sold in the market for a specified

period.[5] Other types of restricted stocks include seasonal equity offering, government bonds and corporate bonds etc. By holding more restricted securities, the fund incurs higher liquidity cost so that it will be traded at a larger discount. (Malkiel (1977)). Therefore, there is a positive relationship between WMVRES and discount.

- DIV: the dividend payout per unit. According to the regulation, closed-end funds need to payout at least 90 percent of returns to fund holders in cash at least once per year. A fund cannot pay dividend if it records a loss in the current year. If the fund has recorded a loss in the previous year, it needs to cover the loss before paying the remaining profit as dividend. In general, there is little room for the fund house to retain the dividend. According to Malkiel (1997), capital gain distribution represents the partial liquidation of the fund and the bigger the distributions, the better off fund investors. Therefore, a higher DIV leads to a lower discount.

- LNMV: natural log of market capitalizations. Larger funds tend to have more diversified holders and more liquidity than small funds, and therefore we expect a negative relationship between LNMV and discount.

- TN: turnover, which is defined as the trading volume scaled by the number of units issued. Higher turnover indicates higher liquidity, and therefore we expect a negative relationship between TN and discount.

- LNSTOCK: natural log of number of stocks in the portfolio. If there are fewer stocks in the fund, it indicates that the fund manager has a good stock picking ability. Therefore, we expect a positive relationship between LNSTOCK and discount.

[5] The period normally is between two months to twelve months.

- W10HOLD: the weighting of top 10 fund holders in the total net asset value, which proxies for the fund holder concentration. In general, insurance companies are the largest holder of closed-end funds. According to Barclay, Holderness, and Pontiff (1993), managers use blockholdings to derive private benefits by concentrating shares among friendly blockholders. Therefore, a higher W10HOLD implies higher discount. In addition, higher ownership concentration means fewer shares are in circulation, leading to lower liquidity. We therefore expect a positive relationship between W10HOLD and discount.

- LNOPSIZE: the natural log of size of open-end funds, which is the dollar amount of open-end funds raised by the same fund-house. An investor could invest into either the open-end fund or closed-end fund, and therefore the popularity of open-end funds might come at the expense of closed-end funds. Therefore, we expect a positive relationship between LNOPSIZE and discount.

4. PRELIMINARY STATISTICS

4.1 Summary Statistics

Table 2 reports summary statistics of closed-end funds, based on the information collected from the quarterly portfolio report and semi-annual report of each fund. The average number of stocks held by each fund is between 40 and 84. There is as structural change to the weights of top 10 fund holders in 2000. Before 2000, the majority of fund holders were individual investors and the median percentage of funds held by top 10 fund holders was below 10 percent. After 2000, insurance companies were allowed to invest in closed-end funds and become the largest fund holders. The median percentage of funds held by top 10 fund holders increased steadily from 18.5 percent in the

first half of 2000 to 33 percent in 2003. Also, the weight of restricted securities was around 10 percent before 2001 and decreased afterwards.

The weighting of stocks in the closed-end fund shows a reversal pattern. The weight increased from around 55 percent in the first two quarters of 1998 to around 75 percent in the last three quarters of 1999. After that the weight decreased to below 50 percent in the last two quarter of year 2001 and then increased to above 70 percent in the first two quarter of year 2004. The time trend of weighting of top 10 stocks and weighting of top 5 industries are similar, indicating that the two variables are highly correlated.

Figure 1 displays the time-series pattern of closed-end fund discounts. The closed-end funds traded at a premium of around 7 percent at the beginning of 1999 and then decreased to more than 20 percent discount in 2000. The discount then disappeared and a premium of around 5 percent was observed in the second half of year 2001. After that there was a steady decrease of premium and a deep discount of around 25 percent was observed in the June of 2004.

Figure 2 shows the time-series pattern of trading volume of closed-end funds, fund market capitalization, and the market performance. The China stock market during 1998-2004 can be separated into two periods: the bull market from 1998 to first half of 2001 and the bear market from the second half of 2001 to first half of 2004. There is a clear trend of decreasing increasing volume during the bear market. The average trading volume of closed-end funds was 188 million shares during the first half of the sample period, and was only 47 million shares in the second half. Another reason for the decline in trading volume of closed-end fund is that after 2002, open-end funds were established so that the investor interest shifts to open-end funds.

4.2 Correlation Analysis

Table 3 reports the correlations among variables. It is noted that closed-end fund discount (DIS) is highly and positively related to weighting of stocks (WSTOCK) and weighting of top 10 fund holders (W10HOLD), and negatively related to turnover (TN). Therefore, the discounts could be potentially explained by these variables. At the same time, we note that the weighting of top 5 industries (W5IND), the weighting of top 10 stocks (W10STOCK), and the weighting of stocks (WSTOCK) are positively correlated. Therefore, we need to conduct regression analysis to examine the incremental explanatory power of each variable.

5. REGRESSION ANALYSIS

5.1 Univariate Analysis

In the first step we adopt following univariate regression to investigate the relationship between closed-end fund discounts and individual explanatory variable:

$$DIS_{it} = u_i + v_t + \beta_t X_{it} + \varepsilon_{it} \qquad (2)$$

where X is the independent variable which is introduced in Section 4, and u_i, v_t and ε_{it} are error components to control for the cross-sectional and time-series fixed effects.

Table 4 reports the results. The discount level is positively related to industry concentration (W5IND), weighting of stocks (WSTOCK), weighting of restricted securities (WMVRES), dividend payout (DIV), number of stocks in the portfolio (LNSTOCK), and fund holder concentration (W10HOLD). On the other hand, the discount level is negatively related to the weighting of top 10

stocks (W10STOCK), market capitalization (LNMV) and turnover (TN).

Most of the results are consistent with the predictions, except that we find the discount increases with the dividend payout. The negative coefficient of W10STOCK is inconsistent with the hypothesis that the discount decreases with the diversification benefit but is consistent with the hypothesis that closed-end fund investors prefer a more concentrated portfolio as the fund managers are able to utilize their stock picking ability. Another piece of supporting evidence is provided in Table 3, which documents a positive relationship between W10STOCK and dividend payout (with a correlation coefficient of 0.22). Unless the fund manager records good performance, the fund will not be able to pay dividends.

5.2 Multivariate Analysis

In this section we adopt the multivariate regression approach.

$$DIS_{it} = u_i + v_t + \sum_{j=1}^{10} \beta_{jt} X_{ijt} + \varepsilon_{it} \qquad (3)$$

where we again include the error components u_i, v_t and ε_{it} to control for the cross-sectional and time-series fixed effects, and X is a set of independent variables introduced in Section 4. Since W5IND and W10STOCK are highly correlated (with correlation of 0.76 as reported in Table 3), we estimate the regression by using just one of the two variables.

Table 5 reports three different regression models. In general the results are consistent with univariate regression results. The positive relationship between W10HOLD and closed-end fund discount is consistent with the hypothesis that when the majority of closed-end fund shares are held by institutional investors, this reduces the fund liquidity, and results in higher fund discount. The

negative coefficients for LNMV and TN are consistent with the liquidity hypothesis that larger and more actively traded funds are traded at small discount. There is a positive relationship between WMVRES and DIS, suggesting that the fund will be traded at a larger discount if it holds more restricted securities. Finally, the coefficient of W10STOCK remains significantly negatively, confirming the hypothesis of fund manager stock picking ability.

Besides W5IND and W10STOCK, we also calculate the industry and stock concentration based on Herfindal indices computed as follows:

$$HI\_STOCK = \sum_{i=1}^{10} \left(\frac{w_i}{w_{stock}} \right)^2$$

$$HI\_IND = \sum_{i=1}^{N} \left(\frac{w_i}{w_{stock}} \right)^2 \qquad (4)$$

where HI_STOCK is the herfindal index of stock concentration for the top 10 stocks in the portfolio, HI_IND is the herfindal index of industry concentration in the portfolio, w_i is the weighting of individual stock i or industry i at time t, w_{stock} is the weighting of the all stocks in the portfolio, and N is the number of industry. We then estimate the regression model using HI_STOCK and HI_IND.

Results are reported in Table 6, in which we compare the regression model using W5IND and W10STOCK versus the one using HI_IND and HI_STOCK. The results are qualitatively similar. Again, while the coefficient associated with industry concentration (W5IND or HI_IND) is significantly positive, the coefficient associated with stock concentration (W10STOCK or HI_STOCK) is significantly negative. Therefore, the results confirm that the while an increase in industry concentration decreases the diversification benefit and increases the discount, an increase in stock

concentration allows the fund mangers to utilize their stock picking ability and decreases the discount.

6. CONCLUSION

As the largest emerging market in the world, China attracts the global investors' eyes. Starting July 2003 foreign investors can invest in the China domestic market directly through Qualified Foreign Institutional Investors Scheme. Foreign investors show strong interest in the closed-end fund market because of deep and persistent discounts. This paper provides a comprehensive analysis of the determinants of the closed-end fund discount, using information obtained from quarterly portfolio announcement and annual reports. Results indicate that while the discount is positively related to industry concentration as proxied by the weighting of top 5 industry in the fund, it is negatively related to stock concentration as proxied by the weighting of top 10 stocks in the fund. This suggests that while an increase in stock concentration decreases the diversification benefit of the fund, it might also allow fund managers to use their stock picking ability so that the discount decreases with the level of stock concentration. We also find the discount increases with the value of restricted securities, decreases with the market capitalization of the fund and turnover, suggesting that liquidity is a main factor that affects the discount. Finally, there is also a positive relationship between the weighting of top 10 fund holders and the discount, which is again consistent with the conjecture that when there are fewer fund shares in circulation, this will increase the fund discount.

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Figure 1: Time-series Discount of Closed-end Funds. This figure presents the time-series median discounts of closed-end funds between net asset value (NAV) and trading prices. We include all 54 closed-end funds in the China market from their listing date. Weekly closed-end fund prices and NAV are obtained form Bloomberg.

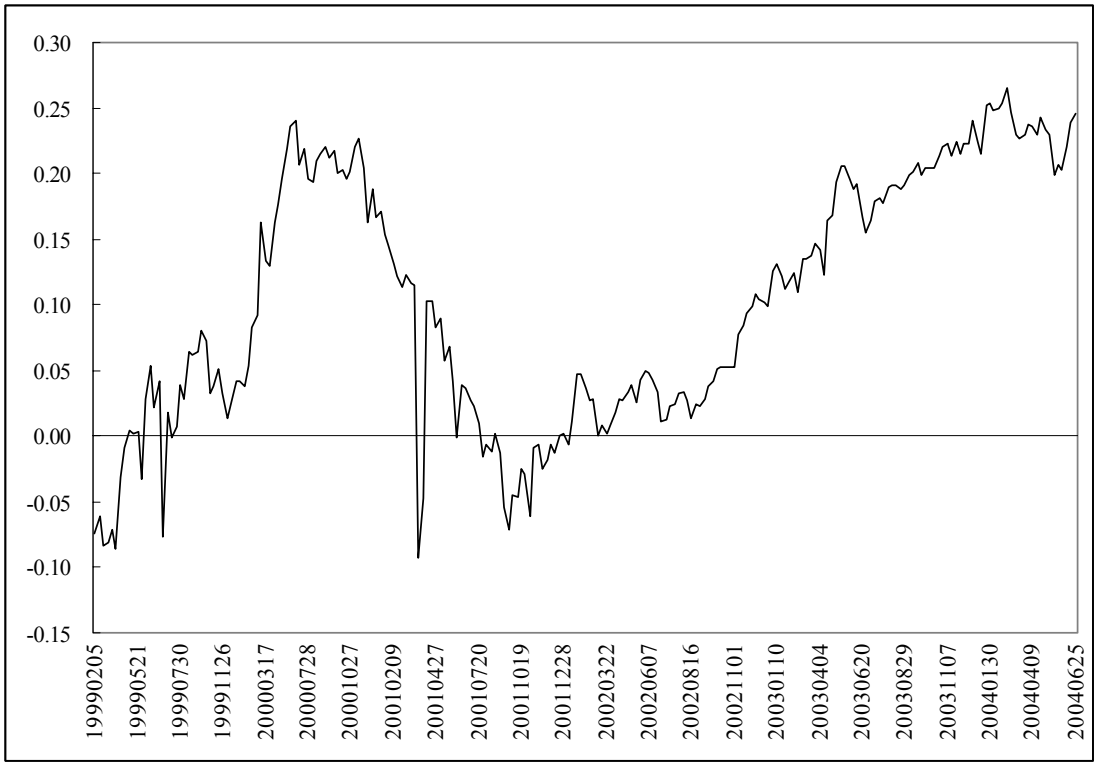

Figure 2: Time-series Weekly Trading Volume and Market Capitalizations. This figure shows the mean of weekly time-series trading volume, mean of fund market capitalizations and market index. Weekly data are obtained from Bloomberg. The market index is the equally weighted Shanghai A-share Index and Shenzhen A-share Index and reconstructed the starting point to 1000 in the beginning of the sample period.

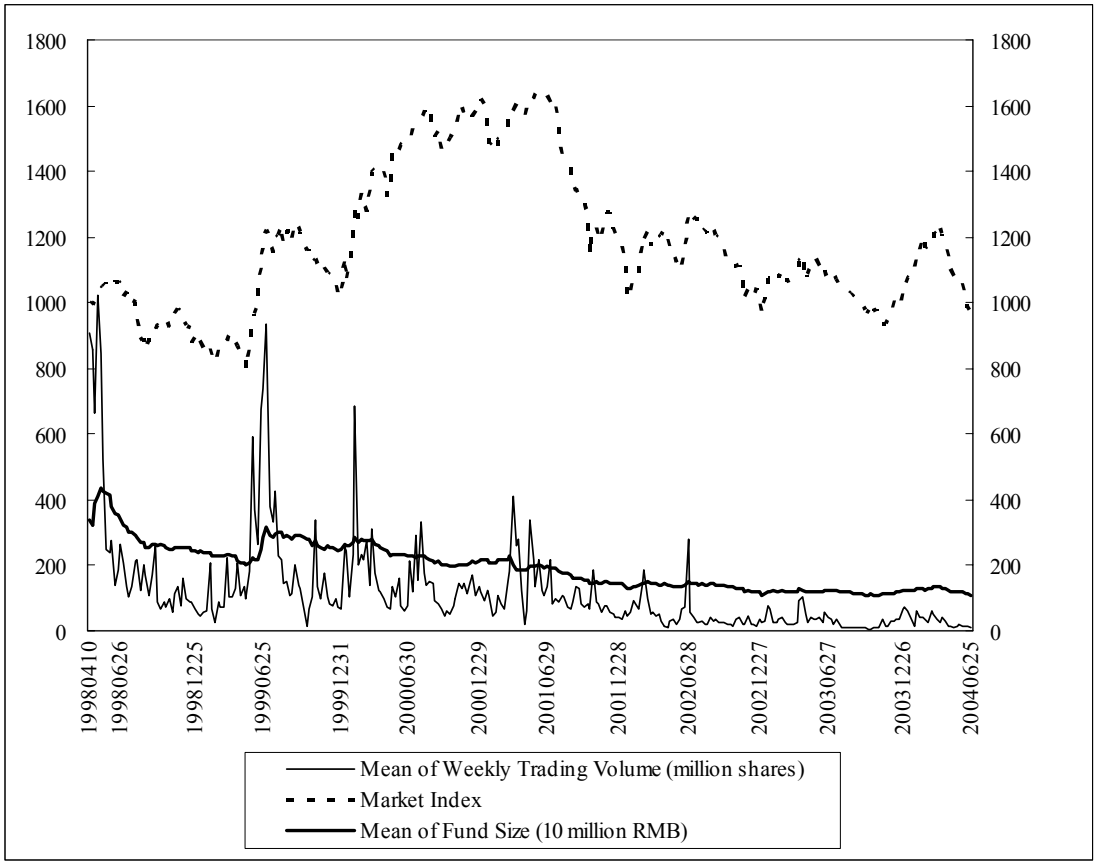

Table 1: Closed-end Fund Background. This table presents the background of 54 closed-end funds in the China market. Data are obtained from the Shenzhen Stock Exchange. The maturity data is obtained from www.hlf-funds.com.

Fund Name	Fund House	Size (100m RMB)	Setup Date	Listing Date	Duration	Maturity Date	Fund Type
Panel A: Shenzhen Stock Exchange							
Kaiyuan	China Southern	20	19980327	19980407	15		Growth
Puhui	Penghua	20	19990106	19990127	15		Growth
Tongyi	Changsheng	20	19990408	19990421	15		Growth
Jinghong	Dacheng	20	19990504	19990518	15		Growth
Yulong	Boshi	30	19990615	19990624	15		Growth
Pufeng	Penghua	30	19990714	19990730	15		Index
Jingbo	Dacheng	10	19920601	19991022		20070601	Growth
Yuhua	Boshi	5	19991110	20000424		20070701	Growth
Tianyuan	China Southern	30	19990825	19990920	15		Balance
Tongsheng	Changsheng	30	19991105	19991126	15		Balance
Hongfei	Baoying	5	20010518	20011128		20080414	Growth
Jingfu	Dacheng	30	19991230	20000110	15		Index
Tongzhi	Changsheng	5	20000308	20000515		20070313	Growth
Jingsheng	Guotai	5	20000426	20000630		20091130	Growth
Yuze	Boshi	5	20000327	20000517		20110531	Growth
Tianhua	Yinhua	25	20000721	20010808		20090711	Growth
Xingke	China	5	20000408	20000718		20070530	Growth
Anjiu	Huaan	5	20000704	20010831		20070830	Growth
Longyuan	China Southern	5	20000724	20001018		20071229	Growth
Puhua	Penghua	5	20001106	20010828		20070528	Growth
Kehui	E Fund	8	20010420	20010620		20081213	Growth
Kexiang	E Fund M	8	20010420	20010620		20081213	Growth
Xinggan	China	5	20000720	20000920		20071229	Balance
Rongxin	China Dragon	8	20010813	20020902		20080204	Growth
Jiufu	Great Wall	5	20011217	20020418		20070520	Value
Fenghe	Harvest	30	20020322	20020404	15		Value
Jiujia	Great Wall	20	20020705	20020827	15		Balance
Hongyang	Baoying	20	20011210	20011218	15		Balance
Tongbao	Rongtong	5	20010516	20010906		20070530	Growth

Panel B: Shanghai Stock Exchange

Jintai	Guotai	20	19980327	19980407	15		Balance
Taihe	Harvest	20	19990408	19990420	15		Balance
Anxin	Huaan	20	19980622	19980626	15		Growth
Hansheng	Fullgoal	20	19990510	19990518	15		Growth
Yuyang	Boshi	20	19980725	19980730	15		Balance
Jingyang	Dacheng	10	19990501	19991022		20071201	Growth
Xinghua	China	20	19980428	19980508	15		Growth
Anshun	Huaan	30	19990615	19990622	15		Balance
Jinyuan	China Southern	5	20000328	20000711		20070527	Growth
Jinxin	Guotai	30	19991021	19991126	15		Growth
Anrui	Huaan	5	20000718	20010830		20070428	Growth
Hanxing	Fullgoal	30	19991230	20000110	15		Balance
Yuyuan	Boshi	15	19990917	19991028		20070531	Growth
Jingge	Dacheng	5	20000815	20011219		20070330	Growth
Xinghe	China	30	19990714	19990730	15		Index
Purun	Penghua	5	20000808	20010904		20070508	Growth
Jingding	Guotai	5	20000516	20000804		20070531	Growth
Handing	Fullgoal	5	20000630	20000817		20081231	Growth
Xingye	China	5	20000818	20010727		20061114	Growth
Kexun	E Fund	8	20010420	20010620		20080111	Growth
Hanbo	Fullgoal	5	20000712	20011017		20070529	Growth
Tongqian	Rongtong	20	20010829	20010921	15		Balance
Tongde	Changsheng	5	20001020	20010801		20071130	Growth
Kerui	E Fund M	30	20020312	20020320	15		Value
Yinfeng	Galaxy	30	20020815	20020910	15		Balance

Table 2: Summary Statistics of Closed-end Funds. This table presents the median summary statistics of 54 closed-end funds in the China market. Data are obtained from the annual reports and quarterly portfolio reports of each funds, which are available in the website of Shenzhen Stock Exchange and homeway.

Panel A: Semi-Annually	Average No of Stocks Hold	Top 10 Holders' Weighting in Total NAV	Weighting of Restricted Securities in Total NAV
199812	NA	0.0752	0.1179
199906	NA	0.0942	0.0804
199912	NA	0.0834	0.0868
200006	66	0.1850	0.1152
200012	60	0.2214	0.0767
200106	40	0.2078	0.0324
200112	50	0.2078	0.0064
200206	84	0.2523	0.0151
200212	75	0.2674	0.0094
200306	43	0.2866	0.0013
200312	42	0.3317	0.0068
200406	53	0.4050	0.0047
Panel B: Quarterly	Stock Weighting	Top 10 Stocks' Weighting in Total NAV	Top 5 Industries' Weighting in Total NAV
1998Q2	0.5948	0.4316	0.4307
1998Q3	0.4860	0.2660	0.3257
1998Q4	0.6675	0.3787	0.4430
1999Q1	0.5793	0.2957	0.3730
1999Q2	0.7885	0.4791	0.6065
1999Q3	0.7634	0.4138	0.5260
1999Q4	0.7072	0.4404	0.4668
2000Q1	0.7689	0.5041	0.6006
2000Q2	0.6953	0.4161	0.5252
2000Q3	0.6933	0.4388	0.5641
2000Q4	0.7410	0.4708	0.5586
2001Q1	0.7275	0.4612	0.5384
2001Q2	0.6766	0.4220	0.4476
2001Q3	0.4876	0.2956	0.3389
2001Q4	0.4908	0.2769	0.3179
2002Q1	0.5430	0.2658	0.3227
2002Q2	0.6673	0.2975	0.3886
2002Q3	0.6512	0.2679	0.3722
2002Q4	0.5680	0.2572	0.3506
2003Q1	0.6317	0.2973	0.3979
2003Q2	0.6349	0.3700	0.4513
2003Q3	0.6633	0.3737	0.4695
2003Q4	0.7495	0.4272	0.5737
2004Q1	0.7646	0.4315	0.5361
2004Q2	0.7192	0.4140	0.4822

Table 3: Correlations among Variables. This table reports the correlations and corresponding p-value among variables. DIS is the discount of the closed-end funds, NAV is the net asset value per unit of the closed-end funds, PRICE is the closing price of the closed-end funds, W5IND is the weights of stocks in top 5 industry holding in the total NAV, WSTOCK is the weights of stocks in the total NAV, W10STOCK is the weights of top 10 stock holding in the total NAV, WMVRES is the restricted securities in the total NAV, DIV is the dividend payout per unit, LNMV is the natural log of market capitalizations, TN is the weekly turnover which is defined as the (trading volume*price)/market capitalizations, LNSTOCK is the natural log of the number of stocks in the portfolio, W10H is the weights of top 10 fund holders in the total NAV.

Fund prices, trading volume, NAV and discounts are obtained from Bloomberg. Portfolio weighting in stocks, weighting of top 10 stocks in total NAV, weighting of top 5 industries in total NAV, dividend payouts are obtained from website of the Shenzhen Stock Exchanges. Number of stocks holds by funds, weighting of top 10 fund holders in total NAV, market value of restricted securities are obtained from homeway website. Shanghai A-share index, Shenzhen A-share index, Shanghai Fund index, Shenzhen Fund index, Shanghai Bond index, and the China Inter Bank Borrowing Rates are obtained from Bloomberg.

	DIS	NAV	PRICE	W5IND	WSTOCK	W10STOCK	WMVRES	DIV	LNMV	TN	LNSTOCK	W10HOLD
NAV	0.23											
	<.0001											
PRICE	-0.52	0.70										
	<.0001	<.0001										
W5IND	0.21	0.14	-0.05									
	<.0001	<.0001	0.0002									
WSTOCK	0.34	0.29	0.02	0.58								
	<.0001	<.0001	0.045	<.0001								
W10STOCK	0.09	0.38	0.27	0.76	0.50							
	<.0001	<.0001	<.0001	<.0001	<.0001							
WMVRES	0.01	0.52	0.48	-0.04	0.11	0.20						
	0.5357	<.0001	<.0001	0.004	<.0001	<.0001						
DIV	-0.06	0.47	0.48	0.02	0.16	0.22	0.41					
	<.0001	<.0001	<.0001	0.0849	<.0001	<.0001	<.0001					
LNMV	0.19	0.51	0.31	-0.15	0.12	-0.08	0.42	0.30				
	<.0001	<.0001	<.0001	<.0001	<.0001	<.0001	<.0001	<.0001				
TN	-0.39	0.17	0.44	-0.10	-0.15	0.09	0.18	0.23	-0.01			
	<.0001	<.0001	<.0001	<.0001	<.0001	<.0001	<.0001	<.0001	0.2639			
LNSTOCK	0.07	0.04	-0.02	0.09	0.04	-0.31	0.02	0.08	0.27	-0.10		
	<.0001	0.002	0.0907	<.0001	0.0003	<.0001	0.0793	<.0001	<.0001	<.0001		
W10HOLD	0.43	-0.07	-0.34	-0.13	0.06	-0.13	-0.14	-0.01	0.28	-0.30	0.12	
	<.0001	<.0001	<.0001	<.0001	<.0001	<.0001	<.0001	0.2254	<.0001	<.0001	<.0001	
LNOPSIZE	0.26	-0.17	-0.35	0.03	0.05	-0.06	-0.13	-0.13	-0.17	-0.16	0.02	0.18
	<.0001	<.0001	<.0001	0.0207	<.0001	<.0001	<.0001	<.0001	<.0001	<.0001	0.0581	<.0001

Table 4: Univariate Regression Analysis. This table presents the univariate regression analysis with fixed effect controlled. Dependent variable is the discount of closed-end fund.

Fund prices, trading volume, NAV and discounts are obtained from Bloomberg. Portfolio weighting in stocks, weighting of top 10 stocks in total NAV, weighting of top 5 industries in total NAV, dividend payouts are obtained from website of the Shenzhen Stock Exchanges. Number of stocks holds by funds, weighting of top 10 fund holders in total NAV, market value of restricted securities are obtained from homeway website (www.homeway.com.cn).

W5IND is the weighting of top 5 industry stocks in the fund, WSTOCK is the weighting of stocks in the fund, W10STOCK is the weighting of top 10 stocks in the fund, WMVRES is the weighting of market value of restricted securities, DIV is the dividend payout per unit, LNMV is the natural log of market capitalization, TN is the turnover of the fund, LNSTOCK is the natural log of no. of stocks in the fund, W10HOLD is the weighting of top 10 holders in the fund, LNOPSIZE is the natural log of initial open-end fund IPO size.

Variable	Predicted Sign	Coefficient	T-value
W5IND	+	0.1010	8.53
WSTOCK	+	0.0763	9.37
W10STOCK	+/-	-0.0711	-7.74
WMVRES	+	0.3973	23.42
DIV	-	0.1613	13.09
LNMV	-	-0.5528	-49.30
TN	-	-0.3666	-22.22
LNSTOCK	+	0.0091	5.80
W10HOLD	+	0.1267	10.67
LNOPSIZE	+	-0.0013	-1.74

Table 5: Multivariate Regression Analysis with Fixed-effect Controlled. This table presents the multivariate regression analysis with fixed effect controlled. Dependent variable is the discount of closed-end fund.

Fund prices, trading volume, NAV and discounts are obtained from Bloomberg. Portfolio weighting in stocks, weighting of top 10 stocks in total NAV, weighting of top 5 industries in total NAV, dividend payouts are obtained from website of the Shenzhen Stock Exchanges. Number of stocks holds by funds, weighting of top 10 fund holders in total NAV, market value of restricted securities are obtained from homeway website.

LNMV is the natural log of market capitalization, TN is the turnover of the fund, LNSTOCK is the natural log of no. of stocks in the fund, WSTOCK is the weighting of stocks in the fund, W10STOCK is the weighting of top 10 stocks in the fund, W5IND is the weighting of top 5 industry stocks in the fund, W10HOLD is the Weighting of top 10 holders in the fund, DIV is the dividend payout per unit, WMVRES is the weighting of market value of restricted securities, LNOPSIZE is the natural log of initial open-end fund IP0 size.

Independent	Model 1		Model 2		Model 3	
Variables	Coefficient	T-value	Coefficient	T-value	Coefficient	T-value
W5IND	-0.0159	-1.12			0.0761	4.92
WSTOCK	-0.0095	-0.92	0.0021	0.23	0.0069	0.68
W10STOCK			-0.0902	-8.41	-0.1778	-13.45
WMVRES	0.1061	6.93	0.2049	13.79	0.1076	7.16
DIV	0.0963	5.30	0.1804	15.36	0.0533	2.94
LNMV	-0.5988	-56.45	-0.5515	-59.90	-0.5944	-57.13
TN	-0.0499	-3.58	-0.0354	-2.41	-0.0491	-3.59
LNSTOCK	-0.0028	-2.18	-0.0059	-3.94	-0.0102	-7.44
W10HOLD	0.2241	16.78	0.2102	18.08	0.2427	18.30
LNOPSIZE	0.0003	0.54	0.0003	0.53	-0.0006	-1.11
R-square	0.90		0.89		0.91	

Table 6: Multivariate Regression Analysis with Fixed-effect Controlled. This table presents the multivariate regression analysis with fixed effect controlled. Dependent variable is the discount of closed-end fund.

Fund prices, trading volume, NAV and discounts are obtained from Bloomberg. Portfolio weighting in stocks, weighting of top 10 stocks in total NAV, weighting of top 5 industries in total NAV, dividend payouts are obtained from website of the Shenzhen Stock Exchanges and SinoFin Database. Number of stocks holds by funds, weighting of top 10 fund holders in total NAV, market value of restricted securities are obtained from homeway website.

LNMV is the natural log of market capitalization, TN is the turnover of the fund, LNSTOCK is the natural log of no. of stocks in the fund, WSTOCK is the weighting of stocks in the fund, W10STOCK is the weighting of top 10 stocks in the fund, W5IND is the weighting of top 5 industry stocks in the fund, W10HOLD is the Weighting of top 10 holders in the fund, DIV is the dividend payout per unit, WMVRES is the weighting of market value of restricted securities, LNOPSIZE is the natural log of initial open-end fund IP0 size. HI_IND is the herfindal index of industry concentration of all stocks in the portfolio, HI_STOCK is the herfindal index of stock concentration for the top 10 stocks in the portfolio, computed as follows:

$$HI\_STOCK_t = \sum_{i=1}^{10}\left(\frac{w_{i,t}}{w_{stock,t}}\right)^2 \qquad HI\_IND_t = \sum_{i=1}^{N}\left(\frac{w_{i,t}}{w_{stock,t}}\right)^2$$

Indep. Var	Coefficient	T-value	Indep. Var.	Coefficient	T-value
W5IND	0.0761	4.92	**HI_IND**	0.1970	9.41
WSTOCK	0.0068	0.68	WSTOCK	-0.0446	-5.5
W10STOCK	-0.1778	-13.45	**HI_STOCK**	-0.4747	-14.46
WMVRES	0.1076	7.16	WMVRES	0.1889	12.61
DIV	0.0532	2.94	DIV	0.158	13.33
LNMV	-0.5944	-57.13	LNMV	-0.5911	-60.83
TN	-0.049	-3.59	TN	-0.017	-1.15
LNSTOCK	-0.0101	-7.44	LNSTOCK	-0.0085	-5.99
W10HOLD	0.2427	18.3	W10HOLD	0.2242	19.19
LNOPSIZE	-0.0005	-1.11	LNOPSIZE	-0.0006	-1.18
R-square	0.91		R-square		