Risk and Style Characteristics of Chinese Funds

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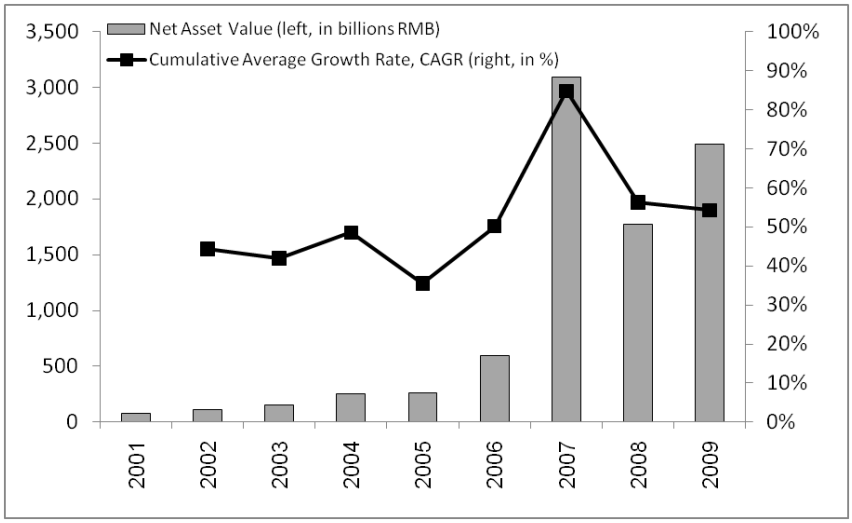
This paper examines the holdings data of various active funds in China to analyze their risk and style characteristics over the last five years. We show that fund managers were quick to increase their equity exposure at the beginning of the bull market, and they started to cut their equity exposure before the 2007-2008 bear market arrived. In terms of style, we find that funds had tilts toward momentum and small caps, but away from value.

Introduction

The fund management industry in China is one of the fastest growing in the world, having expanded by 40% in 2009. The industry started in 1998 with six fund management firms, and now there are sixty such companies. There is a significant number of funds that have operated for several years. The gray bars in Exhibit 1 show the amount under management (in net asset value) over the period from 2001 to 2009.

Due to the bullish market conditions in 2007, which both raised the value of existing holdings and attracted inflows looking for further upside in the stock market, there was an especially sharp increase in the size of the industry. Nonetheless, the growth rate has been consistently high over the entire period in the chart. This is illustrated by the compound average growth rate, which fluctuated between 36% and 85%, as represented by the dark line in Exhibit 1.

Exhibit 1: Net Asset Value of China Funds, All Asset Classes (2001-2009)

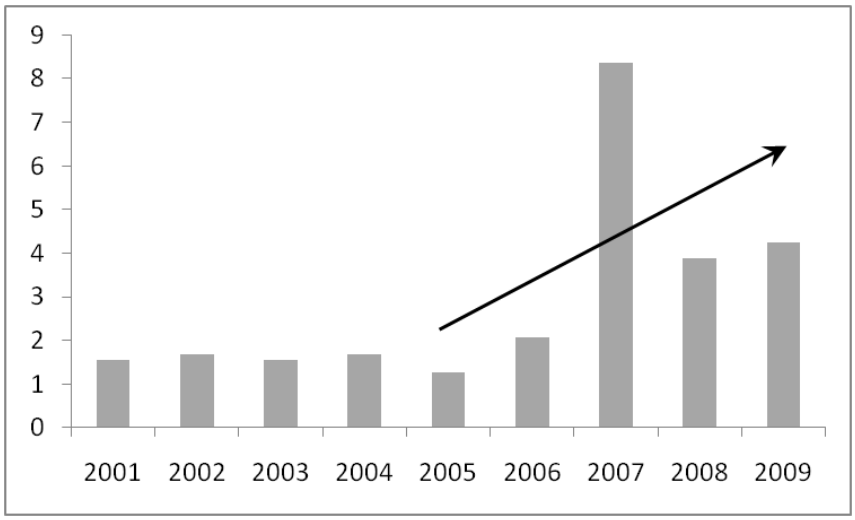


Source: Respective Fund Management Companies[1]

Let us consider whether the growth in the China fund management industry was due to the increasing number of firms or to the expanding size of the average fund. The latter statistic may be seen graphically in Exhibit 2, which plots the net asset value amount per fund (i.e., total net asset value divided by total number of funds) over the same period as in Exhibit 1. In the first part of the sample period, from 2001 to 2004, the amount managed per fund was relatively stable, which suggests that industry growth was largely driven by new entrants. In the second sub period, from 2005 to 2009, there was a steady upward trend in the average fund size. The surge in 2007 is clearly related to the bull-market effect noted earlier, but it does not appear to detract much from the general upward trend in this second period.

[1] Data sourced from the websites companies with China equity funds that have been established for five or more years.

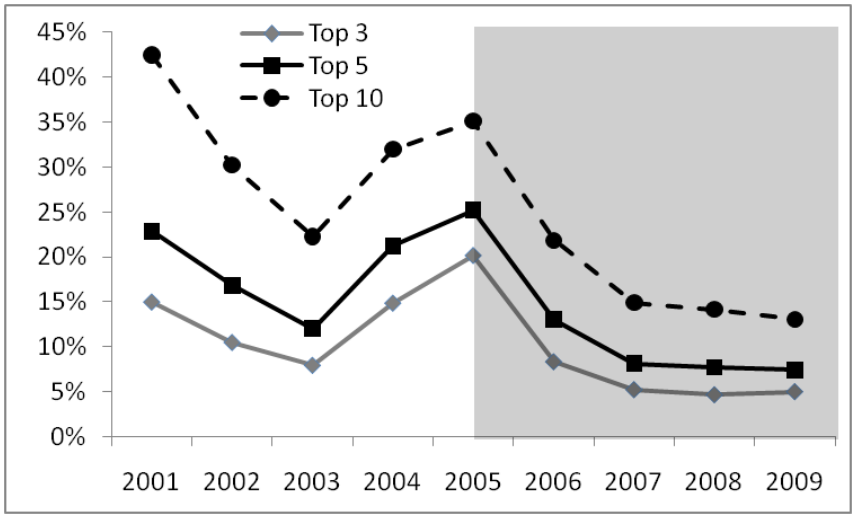
Exhibit 2: Total Net Asset Value per Fund, All Asset Classes (2001-2009)



Source: Respective Fund Management Companies

While the average amount managed by each firm has been on the rise, let us further investigate if this was due to increased domination by the largest funds. Exhibit 3 shows the share of the fund industry held by the top three, top five, and top ten funds. In the first half of the sample period (2001 to 2005), there is no clear trend, but in the second half (2005 to 2009), domination by the largest funds appears to be diminishing.

Exhibit 3: Share of Top 3, Top 5, and Top 10 Funds in Industry (2001-2009)



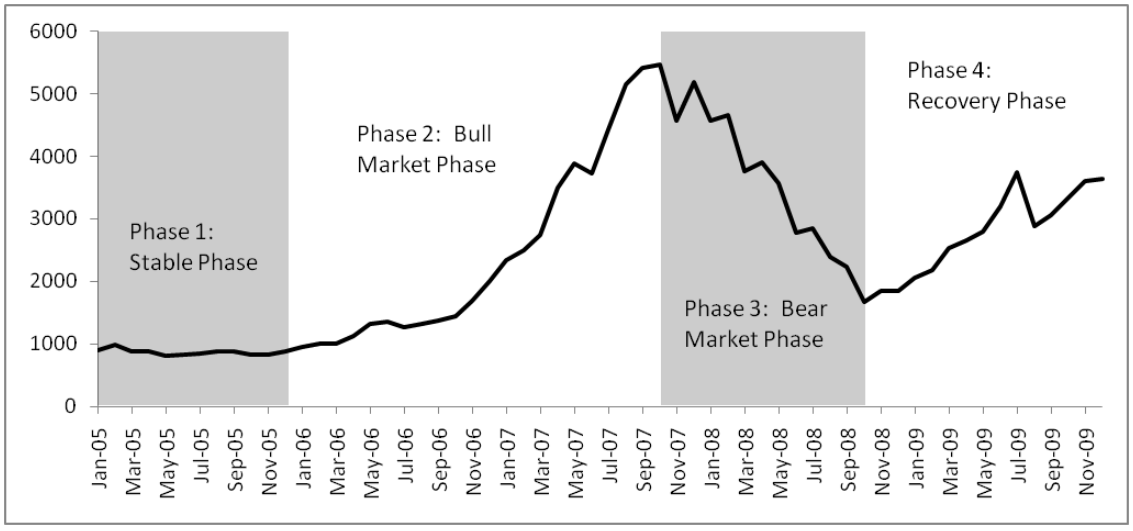
Source: Respective Fund Management Companies

The growth in the size and the number of China funds provides a sample that can be used to examine fund style and risk characteristics. We confine our attention to equity funds that have been established for five or more years. This yields a sample that is about ten percent of the open-ended equity funds. After excluding six passive, index-tracking funds, a total of eighteen open-ended equity funds satisfy the above criteria. These funds with longer histories are sufficiently representative and should therefore be able to offer insights into how funds are managed in general. According to regulatory requirements, fund managers are required to report their full portfolio holdings every six months.[2] This paper uses these semiannual holdings data, which were sourced from the websites associated with the respective fund management companies.

The Different Phases of the China A Stock Market

Before examining the funds, it is important to analyze the five-year performance of the China A market on which they are based. This market went through four important phases during this period, as shown graphically in Exhibit 4. The first phase generally covers 2005 and is marked by relative stability. The second phase is the bull market from 2006 to October 2007, in which China A stocks surged almost six fold. The third phase is the bear market correction from November 2007 to October 2008, which saw a decline that was almost as dramatic in speed and magnitude as the earlier bull market. Finally, the fourth phase is the 2009 recovery, driven by both the Chinese government's stimulus package and the improving sentiment that led to sharply higher stock markets worldwide.

Exhibit 4: Four Phases in China A Stock Market Over Last Five Years (MSCI China A Index)



Source: MSCI Barra

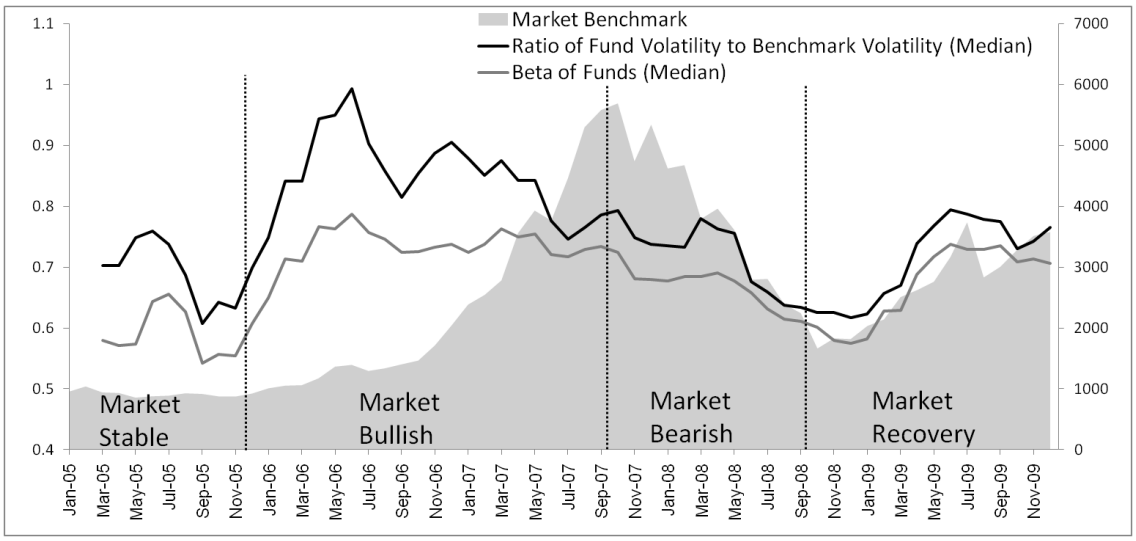
[2] A less detailed report is made quarterly, but it contains only the top ten holdings and is therefore not considered in this paper.

Fund Risk under Varying Market Conditions

With these four phases in mind, we examine if fund volatility was managed differently in each. As a measure of fund risk, we consider relative volatility as well as beta. The former is the ratio of fund volatility to benchmark volatility, while the latter is measured in the usual way[3].

Exhibit 5A shows the movement of these two measures over the four phases. Both risk measures reflect cautiousness or aggressiveness in taking risk, and the degree of optimism about the market's future direction. Notice that the relative volatility ratio generally was less than one, which indicates that fund volatility tended to be below that for the benchmark. The same was true of beta, which seems to be highly correlated with relative volatility. At the beginning of the second phase in early 2006, both measures showed a marked increase. This suggests that fund managers began taking on significantly more equity risk, which turned out to be the right decision given the bull market that followed. Toward the end of the second phase, both relative volatility and beta started to decline, which reveals that managers were cautious about being overexposed in a mature bull market. During the third, bearish phase, the two risk measures continued to fall, as risk-taking was scaled back. Both measures started to rise sharply at the beginning of the fourth phase, as the market recovered from the earlier selloff, which suggests that managers were accurate in predicting that the market would improve.

Exhibit 5A: Fund Risk Relative to Market (Jan 2005–Dec 2009)



Source: Fund returns are obtained from NAV returns provided by funds. Volatility and historical beta measures are computed for each month using daily returns within that month, and are also smoothed using 3-month moving averages.

The risk measures above are based on the median fund, and thus do not reflect differences across funds. To consider fund dispersion, we consider the evolution of the inter-quartile range for the two risk measures, which is shown separately for the four phases in Exhibit 5B. The inter-quartile range captures the dispersion in fund risk, and it reflects the dissimilarity of risk appetite and expected market direction across different funds. Compared to the standard deviation, the inter-quartile range is less sensitive to outliers and is also more robust when the number of observations is not large.

[3] The benchmark used here is the CSI 300 Index.

The results in the table are qualitatively similarly for both measures. As expected, the inter-quartile range was smallest during the first, stable phase. In the second, bullish phase, fund dispersion rose significantly. There is no evidence here to suggest that this dispersion is higher in a bull market than a bearish one, since in the fourth, recovery phase, the degree of dispersion was not higher than in the third, bearish phase.

Exhibit 5B: Dispersion of Relative Fund Risk (Jan 2005–Dec 2009)

Period	Phase	Relative Volatility	Beta
Dec 04 - Dec 05	Stable	0.13	0.111
Jan 06 - Oct 07	Bullish	0.31	0.155
Nov 07 - Dec 08	Bearish	0.17	0.135
2009	Recovery	0.14	0.130

Source: Fund returns are obtained from NAV returns provided by funds. Volatility and historical beta measures are computed for each month using daily returns within that month.

Fund Exposure to Various Equity Styles

A variety of criteria are used in the management of active funds. Although it is difficult to quantify these criteria, since managers may not necessarily follow quantitative rules, it is still possible for us to investigate if they tilt their portfolios toward stocks with certain style characteristics. To do this, we employ the various style factors that are used in the Barra China Model (CHE2), based on the China equity market. There are a total of nine such factors: Volatility, Downside Volatility, Financial Leverage, Growth, Momentum, Shenzhen Market, Size, Trading Activity, and Value. Each stock has a score that indicates its exposure to each of these factors, and this score is normalized such that it is zero for the average stock within the entire universe of China A stocks. A score of one indicates that a stock is one standard deviation above average, while a negative score of minus two indicates that a stock is two standard deviations below average.

Within the sample period, December 2004 to December 2009, we obtain the average active exposures (relative to the benchmark) to the various Barra style factors in the four phases of the China A market. These exposures are shown in Exhibit 6A. While many exposures were close to zero, which indicates little deviation from the benchmark, there are a few noteworthy differences. First, there was consistently high exposure to momentum stocks, which is understandable, since the China A market has often been marked by strong trends. The momentum exposure dipped somewhat when the market entered the third phase, when bearish conditions dominated, but other than that, the exposure to momentum remained high under various market conditions. Second, there was a noticeable bias toward small caps, and this tilt increased steadily over the sample period despite changing market conditions. Finally, there was a strong tilt away from value stocks.

Exhibit 6A: Active Exposures of Funds (Sample Averages, Equal-Weighted)

Increasing trend towards small caps

	Downside Volatility	Financial Leverage	Growth	Momentum	Shenzhen Market	Size	Trading Activity	Value	Volatility
Dec 04 - Dec 05	-0.47	-0.05	0.20	0.47	-0.03	-0.04	-0.04	-0.05	-0.06
Jan 06 - Oct 07	-0.15	-0.18	0.05	0.42	0.02	-0.29	-0.13	-0.30	0.31
Nov 07 - Dec 08	-0.20	-0.16	-0.02	0.30	0.08	-0.39	-0.06	-0.26	0.05
2009	-0.15	-0.17	-0.05	0.40	0.07	-0.50	0.10	-0.32	0.03

Bias towards high momentum stocks but away from value

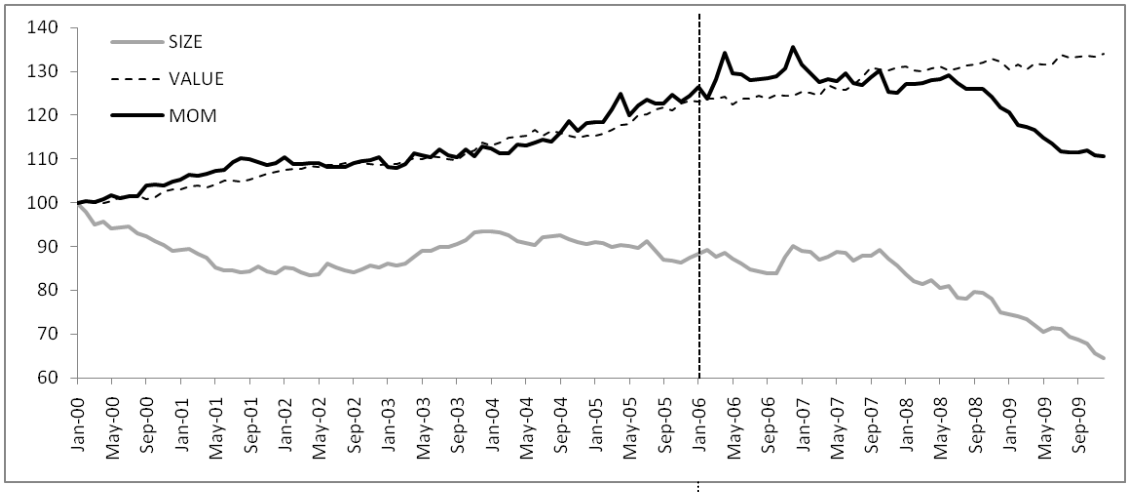
To consider the dispersion among funds, the inter-quartile ranges of the corresponding exposures are shown in Exhibit 6B.[4] This dispersion is a useful statistic, because it reveals the degree of agreement among funds on a given style bias. A lower inter-quartile range indicates that funds are in greater agreement, while a higher value indicates greater diversity of opinion on that style. For most style factors, however, the differences across the four different stock market phases were not significant. Of the three factors with a notable bias, the momentum factor shows little variation in its dispersion. The inter-quartile range of the size factor, however, suggests an increasing trend over the last three phases, which indicates that there is increasing disagreement over the small capsmall cap bias. On the other hand, funds are in increasing agreement regarding the anti-value tilt during the last three phases.

Exhibit 6B: Active Exposures of Funds (Inter-quartile Range)

	Downside Volatility	Financial Leverage	Growth	Momentum	Shenzhen Market	Size	Trading Activity	Value	Volatility
Dec 04 - Dec 05	0.20	0.11	0.17	0.27	0.06	0.26	0.19	0.24	0.19
Jan 06 - Oct 07	0.24	0.16	0.20	0.26	0.05	0.20	0.34	0.26	0.24
Nov 07 - Dec 08	0.20	0.14	0.10	0.23	0.05	0.21	0.27	0.16	0.17
2009	0.19	0.11	0.20	0.25	0.07	0.29	0.25	0.11	0.19

Given the bias of fund managers against value, and toward momentum and small cap stocks, it is worth investigating how these factors performed both during and prior to the sample period, since the prior period would influence expectations of future performance. The 2000-2009 performance of the three corresponding style factors from the Barra CHE2 Model is plotted in Exhibit 7.

Exhibit 7: Performance of Size, Value, and Momentum Factors (2000-2009)



Note: MSCI Barra CHE2 Model

Jan 2000 - Dec 2005:
Momentum: 3.7% p.a.
Value: 3.5% p.a.
Size: –2.2% p.a.

Jan 2006 - Dec 2009:
Momentum: –2.9% p.a.
Value: 2.1% p.a.
Size: –7.3% p.a.

[4] The inter-quartile range is less susceptible to outliers and is also more robust when the number of observations is relatively small. However, using the standard deviation would not yield qualitatively different results.

The first observation is that the momentum and value factors moved closely together in the first part of the period, from 2000 to 2005. The 3.7% annualized return for the momentum factor is very close to the 3.5% for the value factor. During this earlier period, the size factor is clearly the worst performing, declining at an annualized rate of −2.2%. Except for 2003, the size factor mostly declined during this period, which implies that small stocks had generally outperformed.

From 2006, the momentum and value factors started to diverge. The momentum factor did relatively well in the bull market from 2006 to mid-2007, but it fell precipitously after the stock market began its decline. In contrast, the value factor ascended steadily during most of this latter period, from 2006 to 2009. In this latter period, the momentum factor had an annualized return of −2.9%, compared to 2.1% for the value factor. The size factor moved sideways in 2006-2007, but it fell sharply thereafter. The annualized return of this factor was highly negative at −7.3%, again demonstrating the relative strength of small caps.

Recall that the fund data revealed that managers have been increasing exposure to small cap stocks. Given that smaller stocks performed relatively well in the entire sample period, the decision of fund managers to overweight small caps seems correct. The momentum factor clearly declined from mid-2008 onward as the market trend started to change. However, from the beginning of the sample period in January 2005 to the middle of 2008, the momentum factor did rather well, cumulatively increasing by about 9%. The performance of momentum faded when the bear market arrived. We noted earlier that fund managers had relatively high momentum exposure, which did not prove successful after mid-2008. However, the momentum exposure was reduced during the bear market period — the third phase in Exhibit 6A, November 2007 to December 2008 — demonstrating that managers were quick to scale back on these risks as they entered the bear market. Moreover, momentum was a relatively successful strategy for China's trending stock market over the last decade.

The value factor was the most consistent of the three factors. It rose steadily over the entire sample period, which was particularly significant in 2008 when the momentum and size factors started to fall sharply. Over the entire sample period, January 2005 to December 2009, it experienced a cumulative return of 16%. Since fund data indicate that managers tended to have negative exposure to value, they could possibly have improved their performance if they had reduced this underexposure to value stocks.

Conclusion

The fund management industry in China has grown very quickly in the last decade. This paper examines the risk and style characteristics of equity funds in China over the last five years. We found that fund managers over this period were quick to increase their equity exposure at the beginning of the bull market, but they became cautious even before the 2007-2008 bear market began. From a style perspective, the funds displayed tilts toward momentum and small caps, but away from value. The tilts toward momentum and small cap stocks appear to have paid off, because small cap stocks did perform relatively well over the last decade, while momentum was a very good strategy until the bear market in 2008. However, the tilt away from value stocks caused managers to miss the steady outperformance of these stocks in the last ten years.

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