MARKET TIMING OF EQUITY FUNDS IN BRAZIL

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How to cite this paper: Ferreira, R., & Carvalhal, A. (2017). Market timing of equity funds in Brazil. *Corporate Ownership & Control, 15(1-1),* 193-198. http://doi.org/10.22495/cocv15i1c1p3

ISSN Online: 1810-3057
ISSN Print: 1727-9232

Received: 21.03.2017
Accepted: 29.05.2017

JEL Classification: G110, G120, G140
DOI: 10.22495/cocv15i1c1p3

Abstract

The objective of this paper is to analyze the market timing capability of equity fund managers in Brazil. The active management and market timing ability of equity funds are very important to generate consistent positive returns, especially in the current volatile scenario in Brazil. We study 130 equity funds with active management using an alternative methodology for testing market timing. We use an alternative measure of market timing, based on the portfolio held by funds ("holding-based measure") in order to avoid the biases observed in the measurement of observed returns ("return-based measure"). For the period from 2006 to 2013, we find that most equity funds generally had no statistically significant market timing ability. Interestingly, the few funds that had significant market timing ability invested in companies with good governance practices. Moreover, for the funds that had timing ability, managers were based only on publicly available information to predict the market movement. We also provide evidence that market timing ability was significantly different before and after the global financial crisis.

Keywords: Market Timing, Equity Funds, Corporate Governance, Business Cycles

1. INTRODUCTION

Although there is a vast literature on active management and market timing of equity funds, most studies analyze developed countries. The active management and market timing are very important topics studied in the professional and academic literature, since they are usually associated with the ability of fund managers to provide positive returns and beat the market.

This study analyzes the role of active management and market timing by equity funds in Brazil. We measure how the ability to manage active funds is impacted by the predictability of economic cycles, and how it influences the asset allocation according to the expectations of market returns.

The volatile economic scenario in Brazil requires the need of sophisticated investment strategies in order to achieve significant returns. In this sense, the active management of equity funds is important since managers set risk and return objectives for their portfolios by allocating their assets and diversifying them.

We use the conditional CAPM (Capital Asset Pricing Model) approach to differentiate the market timing skills that reflect publicly available information from the skills based on information that not everyone has access (Becker, Ferson, Myers, Schill, 1998).

We analyze the relationship between the asset allocation in the equity funds and the market risk premium during different economic cycles to evaluate market timing skills. Considering the different information available over time and controlling for publicly disclosed information, we identify if there is an ability of managers to exploit this inefficiency of the traditional CAPM model, and how they adjust the fund betas in response to macroeconomic variables.

We use the methodology proposed by Jiang, Yao and Yu (2007) for the Brazilian equity funds. These authors propose an alternative measure of market timing, based on the portfolio held by funds ("holding-based measure") in order to avoid the biases observed in the measurement of observed returns ("return-based measure").

Our results indicate that, for most equity funds, there is no positive market timing ability considering the two methodologies from 2006 to 2013. In addition, we show that the fund managers that presented timing ability has done so by investing in companies with good governance practices and based on public information, that is, they have not benefitted from private information to obtain abnormal gains.

This paper is important and contributes to the study of the active management of equity funds, because it uses an alternative methodology to measure the predictability of the market. Another contribution of this research is to perform a comparative analysis of the behavior and market timing skills of funds before and after the global financial crisis.

The next section presents the theoretical

framework and literature review. Section 3 shows the data and methodology, whereas Section 4 presents the empirical results. Section 5 discusses the main conclusions.

2. THEORETICAL AND LITERATURE REVIEW

The literature on mutual funds generally points to the lack of ability of active fund management to achieve abnormal gains by exploiting the predictability factor of the market. Most studies analyze the significance factor that measures the ability to market timing on the CAPM equation and concludes that there is no such skill.

Jensen (1968) introduced the alpha measure to evaluate the return of mutual funds. This measure, known as Jensen's alpha, informs if the portfolio had a return higher than expected, comparing it with the expected return from the unconditional CAPM. When this measure is significantly positive, there is evidence that the manager is successful in stock selectivity and/or market timing. Jensen (1968) used the CAPM to analyze the annual returns of 115 funds from 1945 to 1964 and found no evidence that managers had the ability to generate a superior return to the market. However, in this study, there was no separation as the ability of managers between stock selectivity and market timing.

Treynor and Mazuy (1966) included a quadratic term in the traditional CAPM regression to assess the ability of market timing. Specifically, the authors proposed that this ability would be measured by the significance of the coefficient γ in the regression (1) below. The authors tested the significance of γ and concluded that market timing was present in only 1 of 57 funds analyzed in the US market.

$$r_t = a + \beta_0 r_{mt} + \gamma r_{mt}^2 + e_t \quad (1)$$

where, r_t is the excess return of the fund in period t; α is a selectivity measure; β_0 is the fund sensitivity to market return; r_{mt} is the excess return of the market; γ is the market timing coefficient; and e_t is an error.

Henriksson and Merton (1981) also analyzed the selectivity and market timing skills by giving more emphasis to the latter. According to their model, fund managers will choose a larger β_0 when they anticipate a future positive market return. They evaluated the market timing through the γ coefficient on max(r_{mt},0) in the equation (2) below.

$$r_t = a + \beta_0 r_{mt} + \gamma \max(r_{mt}, 0) + e_t \quad (2)$$

Fender and Schadt (1996) proposed a conditional version of the Treynor and Mazuy (1966) model, assuming the existence of semi-strong market efficiency. Their goal was to distinguish between market-timing based on public information and private information. In their conditional model, the correlation of the betas with market return that can be attributed to public information would not be considered to measure the ability of market timing. The authors analyzed 67 mutual funds from 1968 to 1990, and concluded that active fund management based on public and private information does produce abnormal returns.

Jiang, Yao and Yu (2007) proposed that the market timing measures indicated in equations (1) and (2) are based on the return of funds and are only useful when their betas are unobservable. However, when the stocks present in the funds' portfolios can be identified, fund betas can be calculated through the weighted average of betas of the stocks in the fund. The authors evaluated market timing calculating γ directly from the regressions (3) and (4) below, which represent the "holding-based" models of Treynor-Mazuy and Henriksson-Merton, respectively.

$$\hat{\beta}^t = a + \gamma r_{m.t+1} + \eta_{t+1} \quad (3)$$

$$\hat{\beta}_t = a + \gamma I r_{m,t+1>0} + \eta_{t+1} \quad (4)$$

where, β_t is the estimated fund beta at beginning of period t + 1, and I is an indicator variable that takes the value 1 when $r_{mt} > 0$ and zero otherwise.

Jiang, Yao and Yu (2007) show that fund managers use not only public macroeconomic information but also private information for market timing. They conclude that the average performance of market timing is significantly positive even after controlling for macroeconomic variables.

In a recent study, Chrétien et al. (2016) compare daily and monthly market timing measures, and find that daily timing measures are better than monthly ones. Furthermore, conditional and unconditional market timing measures present similar performance.

In et al. (2014) analyze the market timing of Australian funds managers using three timing measures, and provide evidence that fund managers have superior timing skills. Frijns et al. (2013) evaluate the market timing ability of 400 US equity mutual funds using a heterogeneous agent model, and show that only 3.25% of the funds have positive timing ability, whereas more than 40% of the funds have negative timing.

Gallagher et al. (2015) analyze the timing strategies of US mutual funds using style rotation models during 1981–2011. The authors find that a buy-and-hold style timing strategy generates significantly positive excess return of 7.26% per annum, but a fund-of-fund timing strategy is not able to outperform the market.

Bender, Hammond and Mok (2014) find that active management of funds is positively related to its performance. Li et al. (2017) analyze market timing skills of debt hedge funds after the 2008 crisis, and find that all debt hedge funds presented superior liquidity timing.

Cuthbertson et al. (2016) evaluate market and style timing ability in Germany. The authors analyze more than 850 equity and bond funds from 1990 to 2009, and find that equity funds do not present significant timing skills, and bond funds present positive and negative timing ability. Cao et al. (2013), and Li and Shawky (2014) analyze timing skills of hedge funds, and find that they have superior liquidity and market ability, respectively. There are a few studies in Brazil that analyzed the market timing in Brazilian equity funds, and they concluded that only a small number of funds produced positive returns due to market timing (Leusin and Brito, 2008; Brito, Bonn and Tarciro, 2003; Brito, 2003, Castro and Minardi, 2009). Most of the Brazilian studies on market timing of mutual funds were published before the global crisis of 2008. This

paper proposes an alternative methodology to measure the market timing ability, and analyze it before and after the crisis.

3. DATA AND METHODOLOGY

3.1. Data

We analyze the market timing of equity funds in Brazil from 2006 to 2013. Data were collected from Quantum Axis Online ® System, and the sample consisted of equity funds with active management according to the classification of the Brazilian Securities Commission (CVM) and Brazilian Association of Banks (Anbima).

Our sample contains 53 active equity funds that survived throughout the period of analysis ("Surviving Funds"), 62 funds that were created after 2006 ("New Funds"), and 15 funds that were liquidated or merged after 2006 ("Terminated Funds").

In order to estimate equations (3) and (4), we calculate fund betas through the weighted average of betas of the stocks in the fund. The betas of the stocks were collected from the Economatica base, considering the stock monthly returns in the previous 5 years. Our risk-free rate was the Central Bank policy rate (Selic), and the market return was proxied by the Sao Paulo stock exchange index Ibovespa.

Our sample period covers monthly data from January 2006 to January 2013. We split the sample period into two sub-periods to analyze the effects of the global financial crisis: January 2006 to August 2008 ("pre-crisis") and September 2008 to January 2013 ("crisis and post-crisis"). We created a dummy variable to represent the crisis, which assumed 0 for the pre-crisis period and 1 for the post-crisis period.

To capture the effects of macroeconomic variables on market timing ability, we estimated equation (3) and (4) based on the conditional version of Ferson and Schadt (1996). In this way, it is possible to verify if managers' skills are based only on public information or private information as well to predict the market return and adjust fund betas according to the forecasts.

We used the following macroeconomic variables as a proxy for public information: Central Bank rate (Selic), spread between 5-year rate (NTNF5) and overnight rate (CDI), spread between working capital rate and CDI, and the average dividend yield of Brazilians companies. Data were obtained from the Central Bank, National Treasury and Bloomberg.

3.2. Models

We estimated the holding-based conditional model in two stages. First, we estimated the model (5) below to verify if fund managers rely on macroeconomic information to adjust the risk exposure of the funds.

$$\hat{\beta}_t = a + bM_{t-1} + e_t \quad (5)$$

where, β_t is the estimated fund beta, and M_{t-1} is a vector of lagged macro-economic variables.

The second stage was to verify if fund managers benefit from private information, not captured by the macroeconomic variables, to allocate the assets in the fund. As suggested by Jiang, Yao and Yu (2007), equation (6) was estimated based on the conditional model proposed by Ferson and Schadt (1996):

$$\hat{\beta}_t = a + bM_{t-1} + \gamma r_{m,t+1} + e_t \quad (6)$$

where, the signal and significance of γ coefficient provide evidence of market timing ability in accordance with the conditional holdings-based model adjusted for lagged macroeconomic variables.

We followed the bootstrapping procedure used by Jiang, Yao and Yu (2007), in which is preserved the correlation between the funds and market timing measures. The procedure was repeated 2,000 times to obtain a distribution of cross-sectional statistics under the null hypothesis of no market timing ability. The tables in this paper present the cross-sectional distribution and statistics of market timing measures of the funds, such as mean, median, 25% and 75% quartiles, and 10% and 90% percentiles. The significance test of these extreme percentiles may suggest highly positive or negative market timing ability.

4. EMPIRICAL RESULTS

Table 1 shows descriptive statistics of monthly returns of equity funds and market return (Ibovespa) from January 2006 to January 2013. We can see that the 53 surviving funds had the highest average return (0.8% per month), slightly higher than the Ibovespa market index (0.7% per month), but the difference is not statistically significant. The new and terminated funds had average returns of 0.6% and 0.3% per month, respectively.

Table 1. Descriptive statistics of the monthly returns

Funds	*Mean*	*Median*	*Min*	*Max*	*St Dev*
Surviving	0.8%	0.8%	-89.8%	45.0%	7.6%
New	0.6%	0.4%	-41.1%	32.5%	6.8%
Terminated	0.3%	1.1%	-81.6%	80.9%	9.0%
Ibovespa	0.7%	0.7%	-24.8%	15.6%	6.5%

Table 2 illustrates the cross-sectional distribution of the holding-based market timing measure (γ) of Treynor and Mazuy for the surviving funds. The time horizons are 1, 3, 6 and 12 months during which it is calculated the weighted beta of the funds and excess market return. The results indicate that the mean and median of γ is positive but not statistically significant. In addition, the percentiles 10% and 90% of γ, which could suggest positive or negative extreme market timing skill, are not statistically significant.

Table 2. Market timing holdings-based model for surviving funds

Time Horizon	Mean	Median	10% Percentile	25% Percentile	75% Percentile	90% Percentile	St Dev
1 month	0.15 (0.29)	0.07 (0.29)	-0.39 (0.73)	-0.24 (0.73)	0.34 (0.15)	0.49 (0.15)	0.89 (0.57)
3 months	0.14 (0.31)	0.06 (0.35)	-0.40 (0.76)	-0.24 (0.75)	0.35 (0.13)	0.48 (0.16)	0.87 (0.60)
6 months	0.13 (0.34)	0.06 (0.33)	-0.42 (0.77)	-0.25 (0.75)	0.35 (0.15)	0.49 (0.16)	0.86 (0.63)
12 months	0.16 (0.28)	0.07 (0.28)	-0.38 (0.69)	-0.21 (0.66)	0.34 (0.15)	0.49 (0.16)	0.98 (0.58)

*Note: market timing measure coefficients γ and their p-values (in parentheses) are reported. ***, ** and * denote statistical significance at 1%, 5% and 10%, respectively*

Table 3 illustrates the cross-sectional distribution of γ for the new funds. The results are similar to those in Table 2. The γ coefficients are positive but not statistically significant, indicating that there is no positive market timing ability. Moreover, considering the non-significance of the extreme percentiles, there is no superior market timing skills for most funds that were after 2006.

Table 3. Market timing holdings-based model for new funds

Time Horizon	Mean	Median	10% Percentile	25% Percentile	75% Percentile	90% Percentile	St Dev
1 month	0.11 (0.30)	-0.02 (0.57)	-0.58 (0.61)	-0.42 (0.84)	0.28 (0.42)	0.84 (0.18)	1.04 (0.27)
3 months	0.11 (0.28)	-0.02 (0.57)	-0.58 (0.62)	-0.42 (0.83)	0.28 (0.40)	0.84 (0.16)	1.04 (0.26)
6 months	0.11 (0.28)	-0.02 (0.56)	-0.59 (0.63)	-0.42 (0.86)	0.28 (0.39)	0.84 (0.16)	1.04 (0.27)
12 months	0.11 (0.27)	-0.02 (0.56)	-0.57 (0.63)	-0.39 (0.82)	0.28 (0.39)	0.84 (0.16)	1.04 (0.24)

*Note: market timing measure coefficients γ and their p-values (in parentheses) are reported. ***, ** and * denote statistical significance at 1%, 5% and 10%, respectively*

Table 4 illustrates the cross-sectional distribution of γ for the terminated funds. Overall the results are similar to those in Tables 2 and 3. The γ coefficients are positive but not statistically significant, showing no evidence of market timing ability. With regard to the extreme percentiles, they are not statistically significant except for the 90% for horizons of 3, 6 and 12 months. This may indicate some evidence of superior market timing skills for those horizons.

Table 4. Market timing holdings-based model for terminated funds

Time Horizon	Mean	Median	10% Percentile	25% Percentile	75% Percentile	90% Percentile	St Dev
1 month	0.14 (0.34)	0.03 (0.42)	-0.84 (0.62)	-0.32 (0.47)	0.81 (0.12)	1.04 (0.24)	0.87 (0.31)
3 months	0.19 (0.30)	0.03 (0.43)	-0.92 (0.68)	-0.32 (0.50)	0.83 (0.11)	1.47* (0.08)	0.98 (0.19)
6 months	0.21 (0.30)	0.03 (0.44)	-1.10 (0.75)	-0.33 (0.49)	0.82 (0.13)	1.70** (0.05)	1.06 (0.16)
12 months	0.22 (0.31)	0.03 (0.43)	-0.98 (0.67)	-0.35 (0.51)	0.72 (0.20)	1.72* (0.07)	1.06 (0.21)

*Note: market timing measure coefficients γ and their p-values (in parentheses) are reported. ***, ** and * denote statistical significance at 1%, 5% and 10%, respectively*

Therefore, we can conclude that most Brazilian equity funds had no significant market timing ability from January 2006 to January 2013, according to holdings-based methodology. These results are in line with other Brazilian studies (Brito, 2003; Leusin and Brito, 2008; Castro and Minardi, 2009). Different from these previous studies, we used an alternative methodology for a longer time period, but the conclusion remained the same, indicating a lack of market timing ability of equity stock fund managers in Brazil.

There are seven funds with significantly positive market timing ability. For these funds, we perform additional analyses in order to verify the existence of other factors that could explain their best performance. We analyzed the assets allocation of these funds in order to distinguish between stock selectivity and market timing.

Table 5 shows the average beta of the stock with greater weight in the portfolio for each of 7 funds. The results show that these funds invested in assets with betas close to or higher than 1. This may indicate that the risk exposure of these funds is more related to the macro environment and market movements and not stock selectivity based on fundamental analysis.

Table 5. Beta of the largest stock for the funds with market timing ability

Fund	2006	2007	2008	2009	2010	2011	2012
1	0.86	1.00	0.96	0.98	0.50	1.10	1.30
2	0.86	1.00	1.07	1.20	1.00	1.00	0.95
3	0.86	1.00	1.07	1.20	1.00	1.00	0.95
4	0.80	0.56	0.73	0.60	0.51	0.51	0.48
5	0.86	1.00	1.07	1.20	1.10	1.00	1.10
6	0.73	0.55	1.07	1.20	1.00	1.04	0.96
7	0.56	0.93	1.00	1.20	1.00	1.00	1.00

Table 6 shows the results of the regressions to evaluate if fund betas depend on economic variables adopted as proxies for public information in the holdings-based conditional model. The table shows

the coefficients (mean, median) and the bootstrapped p-values of the macro-economic variables. The results show that only the dividend yield is statistically significant, which indicate that fund managers use it to establish the risk exposure of their portfolios.

Table 6. Macroeconomic variables and market timing

Statistics	*Central Bank rate*	*Spread between 5-year and overnight rate*	*Spread between working capital and overnight rate*	*Dividend Yield*
Average (p-value)	0.14 (0.09)	-0.15 (0.75)	0.06 (0.52)	5.94*** (0.00)
Median (p-value)	-1.06 (0.70)	0.73 (0.54)	0.25 (0.57)	5.05*** (0.00)

*Note: coefficients (mean, median) of the macro-economic variables and their bootstrapped p-values (in parentheses) are reported. ***, ** and * denote statistical significance at 1%, 5% and 10%, respectively*

We evaluated whether fund managers benefit from private information not captured by macroeconomic variables to allocate the assets in their portfolios. Table 7 shows that, for the seven funds with positive market timing ability, the significance of the coefficient γ changes when the dividend yield is added to the regressions. So, we can conclude that funds managers are based on publicly available information to define the risk exposure of the portfolios.

Table 7. Market timing for funds controlling for public information

Time Horizon	*Mean*	*Median*	*10% Percentile*	*25% Percentile*	*75% Percentile*	*90% Percentile*	*St Dev*
1 month	-0.27 (0.98)	-0.27 (0.98)	-0.82 (0.99)	-0.66 (1.00)	-0.41 (1.00)	0.48 (0.11)	0.83*** (0.00)
3 months	-0.43 (1.00)	-0.43 (1.00)	-0.62 (0.99)	-0.44 (0.98)	-0.31 (0.99)	-0.29 (1.00)	0.18 (0.32)
6 months	-0.12 (0.79)	-0.12 (0.79)	-0.38 (0.91)	-0.19 (0.79)	-0.13 (0.91)	0.21 (0.34)	0.34** (0.02)
12 months	0.17 (0.13)	0.17 (0.13)	-0.02 (0.21)	0.16* (0.06)	0.32* (0.06)	0.34 (0.15)	0.19 (0.31)

*Note: market timing measure coefficients γ and their p-values (in parentheses) are reported. ***, ** and * denote statistical significance at 1%, 5% and 10%, respectively*

We analyzed whether the seven funds that had market timing ability have different performance before and after the global financial crisis of 2008. We added in the regressions a dummy variable that takes the value 0 from January 2006 to August 2008 ("pre-crisis") and 1 from September 2008 to January 2013 ("crisis and post-crisis").

Table 8 shows the coefficients and p-values of the crisis dummy variable. Most coefficients are statistically significant, which indicate that market timing ability varied between periods of pre- and post-crisis. This may be due to a more cautious attitude of fund managers regarding the allocation of their portfolios.

Table 8. Market timing for funds controlling for crisis

Time Horizon	*Fund 1*	*Fund 2*	*Fund 3*	*Fund 4*	*Fund 5*	*Fund 6*	*Fund 7*
1 month	-0.05 (0.14)	0.05** (0.02)	0.06*** (0.00)	0.13*** (0.00)	0.13*** (0.00)	0.25*** (0.01)	-0.11*** (0.00)
3 months	-0.06* (0.08)	0.06** (0.02)	0.06*** (0.00)	0.11*** (0.00)	0.13*** (0.00)	0.25*** (0.01)	-0.11*** (0.00)
6 months	-0.06 (0.11)	0.08*** (0.00)	0.07*** (0.00)	0.09*** (0.00)	0.15*** (0.00)	0.25*** (0.01)	-0.11*** (0.00)
12 months	-0.04 (0.27)	0.14*** (0.00)	0.11*** (0.00)	0.07*** (0.00)	0.14*** (0.00)	0.25*** (0.01)	-0.08*** (0.00)

*Note: coefficients of the crisis dummy variable and their p-values (in parentheses) are reported. ***, ** and * denote statistical significance at 1%, 5% and 10%, respectively*

Table 9 shows the results for the return-based model proposed by Treynor and Mazuy (1966) for the three types of funds. The table presents the γ coefficients and p-values. The results indicate that the mean and median of the coefficients are negative but not statistically significant. These results are in line with those obtained by Jiang, Yao and Yu (2007), Treynor and Mazuy (1966), Henriksson (1984), and Leusin and Brito (2008).

Table 9. Market timing return-based model for equity funds

Type of Fund	*Mean*	*Median*	*10% Percentile*	*25% Percentile*	*75% Percentile*	*90% Percentile*	*St Dev*
Surviving funds	-0.34 (0.60)	-0.29 (0.54)	-0.64** (0.04)	-0.39* (0.08)	0.00 (0.85)	0.04 (0.90)	0.94* (0.10)
New funds	-0.50 (0.59)	-0.23 (0.51)	-2.18 (0.66)	-0.77 (0.42)	0.13 (0.69)	0.49 (0.80)	1.35 (0.41)
Terminated fund	-0.87 (0.63)	-0.38 (0.50)	-2.73 (0.69)	-1.63 (0.63)	0.03 (0.56)	0.69 (0.50)	1.55*** (0.00)

*Note: the market timing measure coefficients γ and their p-values (in parentheses) are reported. ***, ** and * denote statistical significance at 1%, 5% and 10%, respectively*

5. DISCUSSION OF RESEARCH RESULTS

Our results indicate that most Brazilian equity funds had no significant market timing ability from 2006 to 2013. This evidence is obtained using the holdings-based methodology, and is consistent with other Brazilian studies (Brito, 2003; Leusin and Brito, 2008; Castro and Minardi, 2009).

There are only seven funds that present significantly positive market timing ability, and the funds' strategies are more related to the macro environment than stock selection. Most assets invested in the positive timing funds have systematic risk close to the market risk. Further, most fund managers use the dividend yield to select the stocks and set the risk profile of the funds.

We also show that the outperformance of the seven funds with positive market timing is not related to private information. All of them design their timing strategies based on publicly available information to allocate the stocks in the fund. Further, we also show that the market timing strategies change during the crises, and the fund managers become more risk averse during volatile periods.

Overall our evidence indicates that fund managers do not have superior market timing skill in the Brazilian stock market. This evidence contributes to the existing literature on the lack of market timing ability of mutual funds.

6. CONCLUSION

This paper evaluates whether equity funds with active management are able to predict market movements in Brazil. We use a different methodology for testing the market timing skills, and compare the results with previous studies in Brazil and other countries.

We analyze 130 funds from 2006 to 2013 and find no positive market timing ability using two methodologies (holdings-based and return-based). The seven funds that have this market timing ability usually invest in companies with good governance practices, and the fund managers use only publicly available information to predict market movements.

We also analyze their timing ability before and after the 2008 global financial crisis, and found that the market timing skills were affected by the crisis, and fund managers became more cautious in asset allocation after the crisis.

Our research has the following limitations. First, we analyze only the Brazilian market, and our results cannot be necessarily extrapolated to other countries. Second, our sample includes 130 funds, which is a large number of funds for Brazil, but very small when compared to the worldwide fund industry. Finally, our sample period is short (2006 to 2013), and captures two major international crises (sub-prime crisis in the US, and European debt crisis in 2010). Since our results may be biased by these limitations, we invite paper to address these issues in future research.

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