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MARKET-TIMING PERFORMANCE OF MUTUAL FUND INVESTORS IN EMERGING MARKETS

Alberto Cagnazzo

Working Paper No. 1
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Arcelli Centre for Monetary and Financial Studies
Department of Economics and Finance
LUISS Guido Carli
Viale Romania 32, 00197, Rome - Italy
http://casmef.luiss.edu

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Market-timing performance of mutual fund investors in Emerging Markets *

Alberto Cagnazzo
LUISS

This version: April 18, 2019

Abstract

This paper empirically investigates the performance of market-timing strategies effectively used by investors in Emerging Markets (EMs). We identify short-term determinants of mutual fund flows into EM equity and fixed income, finding a well-established flows-performance relation. Hence, we verify whether investors make good timing decisions with a statistic hereafter referred to as "performance gap". We find that the average performance gap is negative for all funds and equal to -0.06% per month for equity and -0.05% for fixed income. Although gaps remain negative regardless of the investment strategy declared by the fund manager, corporate funds and value funds exhibit the worst timing performance. In order to confirm that our results are effectively driven by the goodness of one or the other strategy, instead than by the actual performance of the market, we simulate a sample of 1,000 funds finding that simulated data are consistent with actual results.

Keywords: Market-timing, Mutual funds, Emerging Markets
JEL Classification: G1, G2, G4

*Department of Economics and Finance, LUISS University, Viale Romania 32, 00197 Rome, Italy; acagnazzo@luiss.it. This paper is a revised version of the first chapter of my Ph.D. dissertation at LUISS University. A previous version of this work circulated with the title "The determinants of aggregate fund flows to emerging markets. A push-pull analysis". I thank Pierpaolo Benigno, Nicola Borri, Cécile Couharde, Robin Koepke, Federico Nucera and Bruno S. Sergi for valuable suggestions. I am also grateful to all participants of the 2017 RCEA Macro-Money-Finance Workshop, the 2018 International meeting of the Academy of Behavioral Finance & Economics at DePaul University, Chicago and to seminar participants at LUISS University.

1 Introduction

This paper empirically investigates the performance of market-timing strategies effectively used by investors in Emerging Markets (EMs). We first identify short-term determinants of individual mutual fund flows into EM equity and fixed income from January 2000 to October 2018, finding a well-established flows-performance relation for both objects of investment. Hence, we verify whether investors make good timing decisions. We measure investor timing ability with a statistic hereafter referred to as "performance gap". We find that the average performance gap, defined as the dollar-weighted return minus the time-weighted return, is negative for all funds and equal to -0.06% per month for equity and -0.05% for fixed income. Although gaps remain negative regardless of the investment strategy declared by the fund manager, fixed income corporate funds and equity value funds exhibit the worst timing performance with a gap respectively equal to -0.07% and -0.08% per month. In order to confirm that our results are effectively driven by the goodness of one or the other strategy, instead than by the actual performance of the market, we simulate a sample of 1,000 funds with 240 monthly return observations and we find that simulated data are consistent with actual results.

This paper is related to two main branches of the literature: one regards the identification of short-term determinants of investment fund flows towards EMs and the other evaluates the profitability of market-timing strategies effectively used by mutual fund investors.

Concerning the first area of study, the relevance of investment fund flows towards developing economies is under debate for years: a wide literature[1] investigates the relevance of these capital flows for financial stability of EMs and evaluates their role for global financial integration. After the burst of the great recession, capital flows to EMs significantly increased while, since 2010, all major capital flows (i.e. FDI, banking flows, other portfolio equity and debt investments) have been showing a common retrenchment[2]. Conversely, mutual funds investing in the area have been growing almost steadily for almost two decades. Net aggregate inflows towards EMs overcome the pre-crisis levels, the overall TNA is close to its historical values and this tendency holds for both equity and debt investment funds (see Investment Company Institute (2018)). Today mutual funds represent the most relevant channel for managed savings account and it is due to their popularity among general investors that do not want to get directly involved with portfolio decisions. We contribute to this area of re-

[1] Koepke (2015) reviews the main literature on drivers of capital flows to EMs with respect to different investments (by type of capital, residency of investors, currency, maturity etc.) taking into account both cyclical and structural determinants.

[2] See for example Milesi-Ferretti and Tille (2011), International Monetary Fund (2016) and European Central Bank (2016).

search identifying short-term determinants of individual flows to EMs. We verify that flows significantly respond to their past performance and to fund-related information, hence we show that investment flows significantly respond to past US market variables. Interestingly, while all kinds of flows are highly responsive to past US interest rates, equity flows better respond to recent US consumer sentiment. This supports the intuition that immediately after a period of positive feelings on US economy, investors withdraw capitals from EM equity moving them to developed countries, through a substitution effect (and viceversa).

Concerning the second branch of literature, many papers[3] document a positive relation between mutual fund flows and past returns. Moreover, fund characteristics such as age, volatility of past performance, affiliation with a specific asset management company and marketing expenditures affect both the level and the sensitivity of flows to past performance[4]. Ferreira et al. (2012) evaluate how mutual fund flows depend on past return across 28 countries while Lou (2012) proposes an investment-flow based explanation for return predictability. Results of short-term investment strategies have been measured, for example, by Bailey et al. (2011). They find that behaviorally-biased investors typically make poor decisions about fund style and expenses, trading frequency, and timing, resulting in poor performance[5]. Other studies examine investors' timing ability, but very few of them use cash flows at individual fund level. For example Friesen and Sapp (2007), using this methodology, find that investors on average underperform by about 0.13% per month, relative to buy-and-hold strategy[6]. We contribute to this literature by studying the profitability of individual mutual funds in EMs with high granularity of data. We find that the average performance gap, defined as the dollar-weighted return minus the time-weighted return, is negative for all funds and equal to -0.06% per month for equity and -0.05% for fixed income. Gaps remain negative regardless of the object of investment or the investment strategy declared by the fund manager. Deltas in the performance of the two strategies are not explained by differences in risk exposure. Simulation analysis shows that our results remain robust under different market scenarios, providing solid investment prescription in favor of a time-weighed strategy.

[3]Early works belonging to this area include, among others, Warther (1995), Gruber (1996), Remolona et al. (1997), Sirri and Tufano (1998), Edelen and Warner (2001), Huang and Yan (2007) and Frazzini and Lamont (2008).

[4]For example Del Guercio and Tkac (2008) and Ivkovic and Weisbenner (2009) study the relation between individual mutual fund flows and fund characteristics.

[5]However these strategies are *ex-ante* doomed to fail, particular in such as volatile sectors as EM equity and fixed income. In fact according to some empirical and theoretical literature, if returns are somewhat predictable, then investors may be able to achieve higher Sharpe ratios by timing the market (see among others Cochrane (2011) and Yagan (2014)).

[6]With a similar methodology Borri and Cagnazzo (2018), working with aggregate mutual fund flows of Italian investors, find that simple buy-and-hold strategies overperform market-timing strategies in three different equity markets.

The remainder of the paper is organized as follows: section 2 presents data, section 3 identifies flows short-term determinants, section 4 measures investor timing performance, section 5 presents simulations, section 6 reports robustness checks and section 7 concludes.

2 Data

We study all active and inactive open-end funds in US$ that invest in EM equity and fixed income. The dataset spans 2000 through October 2018 and containts 96,594 monthly observations across 1,184 unique funds (774 equity and 410 fixed income)[7]. For each fund we collect Total Net Asset (TNA), Total Return (TR)[8] and we obtain fund characteristics such as fees, age, country of domicile, country of management and style of investment. We compute net individual return for fund i at time t ($R_{i,t}$) as $R_{i,t} = TR_{i,t}/TR_{i,t-1} - 1$. We compute individual flows in levels ($Flow_{i,t}$) under the hypothesis that each flow is dated at the end of each month and that dividends are reinvested. Thus, the monthly net cash flow for fund i in month t is:

$$Flow_{i,t} = TNA_{i,t} - TNA_{i,t-1}(1 + R_{i,t}). \tag{1}$$

Table 1 reports selected summary statistics for the sample we study[9].

Table 1 shows that the number of actively managed funds has grown tremendously over time. At December 2000, the sample was made by 18 equity funds and 18 fixed income funds that have been growing in time, reaching respectively 521 and 274 funds in 2018. The size of this market has grown not only in terms of number of funds but also with average TNA, that increases by almost 10 times for equity (from 133 mn$ in 2000 to 1086 mn$ in 2018) and almost 20 times for fixed income (from 36 mn$ in 2000 to 683 mn$ in 2018). The average fixed income fund exhibits positive flows between 2006 and 2012 (respectively equal to 15.87 mn$ in 2006, 10.20 mn$ in 2009 and 20.84 mn$ in 2012) while equity funds show a sensibly high inflow of 11.22 mn$ only in 2012. In both cases inflows are followed by

[7] We exclude from the sample closed-end funds, exchange-trade products and funds-of-funds. To ensure the accuracy of the analysis, we include only funds that exist for at least 18 months during the entire period. The resulting dataset, that contains instruments set under different legislation, is made by Mutual Funds (MF), Sociétés d'Investissement à Capital Variable (SICAV) and Unit Trusts (UT), Fonds Commun de Placement (FCP), Open-Ended Investment Companies (OEIC), Undertakings for Collective Investment in Transferable Securities (UCIT) and open-end pensions. Appendix 1 reports the equity and fixed income lists in alphabetical order.

[8] Individual flows that account for dividend reinvestment can be correctly computed since, for each fund in the sample, TR is different to Net Asset Values (NAV).

[9] Although we collect data from January 2000, our empirical analysis begins in February 2000 because lagged information is required to calculate fund flow, performance, and other variables.

Table 1: Descriptive statstistics (1/2)

	n	TNA (mn$)	Monthly net flow (mn$)	Turnover (%)	Age (years)	Fee (%)	Excess return (%)	Five-Factor alpha (%)	Volatility (%)
Equity									
2000	18	133.31	-1.27	10.94	4.9	1.27	1.92	-	5.65
2003	124	226.00	-0.57	13.29	6.4	1.28	8.26	0.69	3.72
2006	231	796.25	3.02	16.54	7.5	1.25	4.26	0.66	4.73
2009	339	727.93	2.96	20.42	6.9	1.24	3.54	1.18	6.36
2012	472	830.41	11.22	12.10	7.4	1.24	4.71	-0.08	4.39
2015	584	651.77	-4.81	14.16	7.7	1.17	-2.37	-1.48	4.58
2018	521	1085.92	-4.95	9.98	9.2	1.16	-1.01	-0.25	3.67
Fixed income									
2000	18	36.30	-3.10	8.22	3.7	1.06	2.76	-	2.52
2003	68	97.86	0.68	11.64	4.9	1.04	2.50	0.97	1.97
2006	95	324.47	15.87	15.98	6.3	1.04	0.98	0.06	1.55
2009	105	396.12	10.20	21.29	7.9	1.05	0.47	0.61	1.94
2012	219	565.93	20.84	9.02	6.9	0.96	1.34	0.60	1.83
2015	280	413.71	-8.59	18.81	6.8	0.94	-1.93	-0.64	1.76
2018	274	682.85	3.20	11.79	8.8	0.91	1.23	0.10	1.57

This table reports summary statistics of our full sample from 2000 to 2018. At the end of each year, we report the number of active funds and we calculate the cross-sectional averages value of the following fund characteristics: TNA (in million $), monthly net flow (in million $), yearly turnover (in %), fund age (in years), excess return (in %), five-factor model-adjusted return in the preceeding 36 months (alpha, in%), standard deviation of monthly returns in the 12 months prior to each observation (volatility, in %). Yearly individual turnovers are computed as the minimum of purchase or sale of each fund during each year, divided by the TNA of the fund during the same period. Monthly excess returns are computed with respect to the 30-day Tbill. Data are monthly from Bloomberg for the sample Jan. 2000 - Oct. 2018.

outflows, although smaller in magnitude. For both objects of investment yearly turnovers remain below 22% in the overall sample, meaning that the average fund changes, in a year, less than one quarter of the assets under management. Despite the mushrooming of new funds, their age has increased in time, highlighting the presence of well-established funds in this market. In fact, the average fund age steadily increases for equity from less than 5 to 9 years and for fixed income from less than 4 to almost 9 years. Total fees, as percent charges applied at the time of a purchase, slightly declined in time: overall fees for fixed income funds fall from 1.06% in 2000 to 0.91% in 2018 and, although equity funds have fees still a bit higher than 1% in 2018 (1.16%), they share the same declining tendency.

In the first part of the sample, from 2000 to 2012, monthly excess returns are positive for both objects thus turning negative from 2015. In details, the average performance of equity

funds reached its peak in December 2003 with a monthly risk premium of more than 8% and it progressively decreased until the end of the sample when it is -1%. Fixed income funds share a similar pattern with monthly excess return that decrease from 2.76% at the end of 2000 to 0.47% in 2009 while in the last part of the sample, from 2012 to 2018, risk premia ballooned between 1% and -2%.

Table 1 also reports cross-sectional averages of risk-adjusted returns (alphas) in the preceding 36 months, computed according to the five-factor model of Fama and French (2014):

$$R_{i,t} - R_{f,t} = \alpha_i + \beta_i^{MKT} MKT_t + \beta_i^{SMB} SMB_t + \beta_i^{HML} HML_t + \beta_i^{RMW} RMW_t + \\ + \beta_i^{CMA} CMA_t + \epsilon_{i,t}, \quad (2)$$

where MKT_t, SMB_t, HML_t, RMW_t and CMA_t are the month-t returns of the five Fama and French factors[10]. Five-factor alphas substantially confirm the trends emerging from excess returns. In fact, alphas for equity funds remain positive until the end of 2009 turning negative afterwards while, alphas for fixed income are positive for the whole time interval with the exception of 2015. This confirms that both kinds of investment in the area have been largely profitable also after correcting for risk exposures. In particular, while equity funds provide higher alphas in early 2000s and negative alphas after the great recession, fixed income investments have a lower profitability that however remains positive in almost the entire sample. Finally, table 1 reports past performance volatility, measured as the standard deviation of monthly returns in the 12-month period prior to each observation. Equity volatility reached its maximum of 6.36% in 2009 and its low at 3.67% in 2018, while fixed income volatility gradually decreases from the maximum of 2.52% in 2000 to 1.57% in 2018, although a new minor rise in 2009 (1.94%).

In order to better evaluate the characteristics of the sample, table 2 reports the number of funds by size, area of domicile, area of management and style of investment at the beginning, at the middle and at the end of the sample. Sizes are set with respect to TNA and are defined as follows: small, TNA<100 mn$; medium, TNA<500 mn$; large, otherwise. Dimensions across equity funds are well distributed with all the three sizes that have around 30% of the total. Conversely the majority of fixed income funds tend to be smaller with 113 small funds at the end of 2018 which corresponds to the 41% of the total. Interestingly, in 2009 the average size of fixed income funds in EMs slightly increased with middle-sized and large-sized funds respectively weight the 36.2% of the total. This supports the intuition that during the years 2000-2009, equity inflows were allocated homogeneously by fund size, while

[10]Factors are market portfolio (MKT), size (SMB), book-to-market (HML), momentum (RMW) and strategy (CMA). All the factors are from Kenneth French's data library.

in the same years, inflows towards EM debt was mainly invested in medium and large funds. Although equity funds are mostly located in Central Europe (CE), the percentage of European funds gradually declined from 77.78% of 2000 to 54.70% of 2018. North American funds have been showing an inverse tendency and they increase from 11.11% in 2000 to 41.84% in 2018. Similarly, European fixed income funds weight for the 77.78% in 2000 and for the 80% in 2009 and 2018.

For both objects of investment, the majority of funds that explicitly declare the nationality of the manager is managed in CE. This percentage for equity funds spans between 47.21% to 55.56%, while for fixed income it stands between 50% to 63.50%.

Styles of investments declared by equity fund managers are value, growth and blend, while fixed income may invest in government, corporate or aggregate bonds[11]. The majority of equity funds that declare their style of investment are blend funds with a relative weight between 61% to 78% through time. Growth funds show a percentage that increases from 11% to 23% of the total and lastly value funds that were zero in 2003 and increase to 67 in 2018 (corresponding to the 12.86% of the total). Fixed income fund managers declare to invest mainly in aggregate bonds, with a peak in 2009 in which their percentage is 88% of the total. Government and corporate funds respectively weight for the 7.62%, the 44.76% in 2009 and the 8.76% and the 18.25% in 2018.

[11] Aggregate bonds include both government and corporate securities.

Table 2: Descriptive statistics (2/2)

					Area of domicile			Area of management				Style of investment			
	n	Size													
Equity		Small	Medium	Large	NA	CE	Other	NA	CE	Other	n.a.	Value	Growth	Blend	n.a.
2000	18	7	4	7	2	14	2	6	10	1	1	0	2	14	2
(% of total)		(38.89)	(22.22)	(38.89)	(11.11)	(77.78)	(11.11)	(33.33)	(55.56)	(5.55)	(5.55)	(0.00)	(11.11)	(77.78)	(11.11)
2009	339	113	114	112	119	200	20	121	171	43	4	47	65	209	18
(% of total)		(33.32)	(33.63)	(33.04)	(35.10)	(59.00)	(5.90)	(35.69)	(50.44)	(12.68)	(1.18)	(13.87)	(19.17)	(61.65)	(5.31)
2018	521	194	170	157	218	285	18	214	246	46	15	67	121	329	4
(% of total)		(37.22)	(32.63)	(30.13)	(41.84)	(54.70)	(3.45)	(41.07)	(47.21)	(8.83)	(2.88)	(12.86)	(23.22)	(63.15)	(0.77)
Fixed income		Small	Medium	Large	NA	CE	Other	NA	CE	Other	n.a.	Gov.	Corp.	Aggregate	n.a.
2000	18	9	4	5	0	14	4	4	9	4	1	0	0	8	10
(% of total)		(50.00)	(22.22)	(27.78)	(0)	(77.78)	(22.22)	(22.22)	(50.00)	(22.22)	(5.56)	(0.00)	(0.00)	(44.44)	(55.55)
2009	105	29	38	38	13	84	8	31	66	7	1	8	5	86	6
(% of total)		(27.62)	(36.20)	(36.20)	(12.38)	(80.00)	(7.62)	(29.52)	(62.86)	(6.66)	(0.95)	(7.62)	(4.76)	(81.90)	(5.71)
2018	274	113	96	65	40	218	16	76	174	22	2	24	50	195	5
(% of total)		(41.24)	(35.04)	(23.72)	(14.60)	(79.56)	(5.84)	(27.74)	(63.50)	(8.03)	(0.73)	(8.76)	(18.25)	(71.17)	(1.82)

This table reports the number of active funds at the beginning of the sample, in the middle of the sample, and at the end of the sample. For the same years, the table also shows the number of funds by size, by area of domicile, by area of management and by style of investments. Sizes are set with respect to TNA and are defined as follows: small, TNA<100 mn$; medium, TNA<500 mn$; otherwise funds are considered as large. NA, CE respectively stand for North America and Central Europe. Styles of investment for equity funds are: value, growth and blend. Styles of investment for fixed income funds are: government, corporate and aggregate. Percentages of the totals are reported in parentheses, n.a. refers to non available entries. Data are monthly from Bloomberg for the sample Jan. 2000 - Oct. 2018.

3 The flow-performance relationship

In this section we investigate whether fund individual flows to EMs respond to past performance and we further identify their short-term determinants by object of investment. In order to do this, we estimate the following fund fixed-effect panel regression, with standard errors clustered by date[12]:

$$Flow_{i,t} = \alpha + \beta_{Ret} R_{i,t} + \beta_{Ch}^{T} X_{i,t} + \beta_{Mkt} Z_{t-1} + \beta_{Ch} \Gamma_i + \nu_y + \eta_i + \epsilon_{i,t}, \tag{3}$$

where i indicates the fund, t the month, then $Flow_{i,t}$ is the monthly net flow of a given fund. Since we want to verify the presence of a well-established flow-performance relation in EMs, our first variable of interest is the average excess return of the fund ($R_{i,t}$) in the past six-month (in %)[13]. Time-dependent characteristics of each fund ($X_{i,t}$) are size, measured by the natural log of fund's TNA in US dollars, and age (in days).

In order to verify if EM flows also respond to US market past realization, we include 1-month lagged market variables (Z_{t-1}). These controls are the 3mTbills % change, the US Consumer Sentiment index from Michigan University[14] and the US term spread, computed as the difference between the yield to maturity of the 10-year Tbond and that of 2-year Tbond (slope, in %). We further include the VIX index as a measure of the US stock market volatility and, in order to control for any structural break in the series, we add a US recession dummy that equals one after October 2008. We finally consider time-invariant fund characteristics (Γ_i) such as a tax heaven dummy variable that equals one if the fund has an off-shore domicile[15], the fund manager stated fee (in %) and a US manager dummy variable that equals one if the fund is managed in the US. ν_y and η_y are the year and fund-level fixed effects. We run regression 3 separately by objects of investment and table 3 reports results of different specifications.

[12] Aramonte et al. (2018) use a similar methodology in order to study how the sensitivity of daily returns of open-end mutual funds to aggregate liquidity changes around real-activity macroeconomic announcements.

[13] Alternatively to past excess return we substitute in some specifications the average five-factor model-adjusted return in the past-six month computed on the basis of the preceding 36 observations (alpha, in %)

[14] The use of US Consumer Sentiment relies on results by Frazzini and Lamont (2008) and Ben-Rephael et al. (2012) that look at mutual fund flows as a measure of individual investor sentiment. The index is normalized to have a value of 100 in December 1964. Each month at least 500 telephone interviews are conducted of a continental United States sample (Alaska and Hawaii are excluded). Fifty core questions are asked. Although consumers polled for the US Consumer Sentiment index are not asked directly for their views on asset prices, Qiu and Welch (2004) find that changes in that consumer confidence index are highly correlated with changes in the UBS/Gallup index of investor optimism.

[15] We consider off-shore domiciles, countries with favorable tax regime: Ireland, Luxembourg, Cayman Islands, Andorra, British Virgin Islands, Guernsey, Jersey, Mauritius, Bahamas, Bermuda, Liechtenstein, Malta, Curacao, San Marino, Monaco, Isle of Man, Barbados, Cyprus, Gibraltar and Netherlands Antilles.

Table 3: Determinants of mutual fund flows

	Equity					Fixed income				
	(1.a)	(2.a)	(3.a)	(4.a)	(5.a)	(1.b)	(2.b)	(3.b)	(4.b)	(5.b)
Excess return	1.18***	0.85***	1.08***	0.82***		5.28***	5.06***	5.21***	5.08***	
	(5.32)	(3.50)	(4.63)	(3.30)		(5.43)	(4.98)	(5.34)	(4.94)	
Five-factor alpha					0.04					1.92***
					(0.78)					(3.73)
Size	5.11***	5.12***	9.39***	9.43***	9.69***	4.47***	4.47***	6.19***	6.22***	6.56***
	(6.47)	(6.50)	(4.89)	(4.89)	(4.91)	(7.82)	(7.83)	(6.85)	(6.89)	(6.94)
Age	-0.98***	-0.98***	-4.95***	-5.42***	-5.52***	-0.68***	-0.68***	-7.80***	-6.88***	-7.58***
	(-6.60)	(-6.60)	(-3.40)	(-3.76)	(-3.80)	(-4.19)	(-4.19)	(-5.60)	(-5.03)	(-5.36)
3m Tbills	-0.01**	-0.01**	-0.01	-0.01**	-0.01***	-0.01***	-0.01***	-0.01***	-0.01***	-0.01***
	(-1.91)	(-2.54)	(-1.63)	(-2.22)	(-2.77)	(-4.80)	(-4.70)	(-4.39)	(-4.43)	(-5.29)
US sentiment	-0.39***	-0.57***	-0.43***	-0.60**	-0.56***	-0.16	-0.21	-0.20*	-0.26*	-0.30**
	(-2.60)	(-3.27)	(-2.80)	(-3.43)	(-3.23)	(-1.51)	(-1.60)	(-1.84)	(-1.85)	(-2.14)
Slope	-0.04*		-5.12**			-3.10**		-4.64***		
	(-1.81)		(-2.12)			(-2.25)		(-2.91)		
VIX		-0.54**		-0.51**	-0.69***		-0.09		-0.11	-0.49***
		(-2.32)		(-2.24)	(-3.19)		(-0.72)		(-0.86)	(-4.14)
US recession		16.68**		21.37***	19.26**		-4.43		-0.28	-6.93
		(2.36)		(2.96)	(2.59)		(-0.61)		(-0.04)	(-0.85)
Tax heavens	-4.07***	-4.08**	-	-	-	0.56	0.57	-	-	-
	(-2.30)	(-2.31)				(0.41)	(0.42)			
Fee	2.20	2.21	-	-	-	0.03	0.01	-	-	-
	(0.89)	(0.89)				(0.03)	(0.01)			
US manager	1.03	1.04	-	-	-	-1.96	-1.96	-	-	-
	(0.72)	(0.72)				(-1.47)	(-1.47)			
Constant	27.30*	58.21***	-3.24	24.68	32.68*	-3.57	4.60	-47.88***	-33.84**	-8.89
	(1.70)	(2.72)	(-0.19)	(1.12)	(1.73)	(-0.31)	(0.28)	(-3.81)	(-2.20)	(-0.68)
Time fixed effect	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Fund fixed effect	No	No	Yes	Yes	Yes	No	No	Yes	Yes	Yes
Observations	66,438	66,438	66,438	66,438	66,438	30,156	30,156	30,156	30,156	30,156
Adj. R-squared	0.135	0.135	0.060	0.054	0.053	0.165	0.165	0.027	0.031	0.027

This table presents the results of panel regressions examining the market-timing ability of investors on Emerging Markets. Results are presented by object of investment (i.e. equity, fixed income). The dependent variable is fund flows (in mn$). Time-dependent control variables specific for each fund ($X_{i,t}$) include: average of the excess returns of the past six-month (in %); average of the past-six month five-factor model-adjusted return computed on the basis of the preceeding 36 observations (alpha, in %); fund size, measured by the natural log of fund's TNA in US dollars; the fund age (in days). Market 1-month lagged control variables (Z_{t-1}) include 3mTbills % change, US Consumer Sentiment index from Michigan University, US term spread, computed as the difference bewteen the yield to maturity of the 10-year Tbond and that of 2-year Tbond (slope, in %), VIX index and US recession dummy that equals one after Oct. 2008. Time-invariant control variables specific for each fund (Γ_i) include: tax heaven dummy variable that equals one if the fund has domicile in a country with favorable tax regime; fund manager stated fee (in%); US manager dummy variable that equals one if the fund is managed in the US. Standard errors are clustered by date, and t-statistics are in parentheses. ***, **, and * denote significance at the 1 percent, 5 percent, and 10 percent level, respectively. Year and fund fixed effects are included, but the coefficients are not shown.

Table 3 shows that the β_{Ret} coefficient is positive and statistically significant for both objects of investment. This means that after a positive excess return in the previous semester of 1%, equity funds show an inflow between 0.82 mn$ to 1.18 mn$ while for fixed income

funds the inflow is larger and, depending of specification, it stands between 5.08 mn$ and 5.28 mn$. Therefore, table 3 confirms that in EMs, whatever specification we choose, there is statistically significance supporting the flow-performance relationship.

In order to verify whether fund flows respond to past return, once corrected for risk exposure, in specifications (5.a) and (5.b) we substitute past excess return with past five-factor alphas. In the computation of five-factor alphas we use the MSCI Emerging Markets TR index[16] as the market factor for EM equity and the Morningstar EM corporate bond index[17] as the market factor for fixed income. We find that fixed income flows positively and significantly respond to past superior performance, while equity funds do not[18]. This different flow response could be a further signal that equity investors are less sophisticated and more exposed to behavioral biases than fixed income ones.

Turning to the other coefficients in regression 3, in all specifications the loadings on the size and age, are highly significant and respectively positive and negative, as expected. In fact, consistently with Sirri and Tufano (1998) and Ferreira et al. (2012), older funds get progressively less flows while the dimension of the fund is positively correlated with net individual flows.

Market control variables show that inflows into EM mutual funds for both objects of investment respond to 1-month lagged market variables from US market. In specifications (1.a) and (1.b) we find that both equity ad fixed income flows negatively respond to US interest rates and to the slope of the yield curve. It shows that interest rates in developed economies have a negative effect on all investment fund flows. It means that immediately after a rise in US rates or a steeper yield curve, there is an outflow from EMs of investments looking for higher yields or better economic conditions.

As far as the US Consumer Sentiment index, it has a negative sign and is more significant for equity investments. This supports the intuition that immediately after a period of positive feelings on US economy, investors withdraw capitals only from EM equity moving them to developed countries, through a substitution effect (and viceversa). In specification (2.a) we verify the robustness of these findings substituting the slope with the combination of the VIX index and the US recession dummy variable and we find that results remain robust

[16]The MSCI Emerging Markets index covers large and mid caps across 23 EMs. The index has 836 constituents and it covers approximately 85% of the free float-adjusted market capitalization in each country. The list of Countries is: Brazil, Chile, China, Colombia, Czech Republic, Egypt, Greece, Hungary, India, Indonesia, Korea, Malaysia, Mexico, Peru, Philippines, Poland, Russia, Qatar, South Africa, Taiwan, Thailand, Turkey and United Arab Emirates.

[17]The Morningstar Emerging Markets Corporate Bond Index includes the most liquid corporate bonds issued in US$ by corporations domiciled in the Emerging Markets.

[18]We also estimate a model where we include original market portfolio from Fama and French and we find that our results remain substantially unaltered.

for equity but not for fixed income. In specifications (1.a) (1.b) (2.a) and (2.b) we do not include fund fixed effect in order to add time-invariant control variables. Differently from previous literature we find that neither the coefficients for overall fees nor those of the US manager dummy are significant[19]. The coefficient of the tax heaven dummy is significant only for equity funds with a negative sign. It shows that, interestingly equity funds located in off-shore countries tax heaven receive less inflows than others. In specifications (3.a), (4.a), (5.a), (3.b), (4.b) and (5.b) we include both year and fund fixed effect and results remain robust.

4 Investor timing performance

In this section we investigate whether dollar-weighted strategies effectively used by investors in EMs beat a time-weighted strategy. In section 3 we find that the individual flows into and out of mutual funds respond to past performance and to short-term determinants, therefore for each fund we use observed cash flows in order to measure a dollar-weighted (i.e. a market-timing) strategy. Conversely, a time-weighted strategy invests \$1 at the beginning of period t in each mutual fund and holds the investment for h months reinvesting any accrued dividend. In the baseline simulations we fix the investment horizon to $h = 12$, so that the holding period corresponds to 1 year. We denote with $\bar{r}^{TW}_{i,t\to t+h}$ the time-weighted net geometric excess return of an $t, t+h$ investment started in month t with an horizon of h months:

$$\bar{r}^{TW}_{i,t\to t+h} = \left[\prod_{j=1}^{h}(1+R_{i,t+j})\right]^{1/h} - 1, \tag{4}$$

where $R_{i,t}$ is the monthly net return of fund i between period $t-1$ to t. Because a time-weighted average return ignores month-to-month variation in assets under management, it measures the net return of the fund manager, or equivalently, the buy-and-hold return on a dollar invested over the holding period.

If time-weighted is a simple passive investment strategy, dollar-weighted is instead an active market-timing strategy that invests every month in mutual fund i, and with a holding period of 12 months, an amount of resources equal to the net flows into that specific mutual fund. Outflows are considered as dividend distributions, and inflows as additional investments[20]. We estimate the performance of the dollar-weighted strategy through its internal rate of

[19] We also estimate a model where we include front-load fee instead of total management fee and findings are unaltered.

[20] Since dollar-weighted requires buying and selling fund shares, investors are charged by entry/exit fees. Hereafter we abstract from these transaction costs that are likely to reduce the profitability of a dollar-weighted strategy.

return (IRR). In particular, for each mutual fund, we compute the net rate of return that solves the following equation:

$$TNA_{i,t} = -\sum_{j=1}^{h} \frac{Flow_{i,t+j}}{(1+\bar{r}_{i,t}^{DW})^j} + \frac{TNA_{i,t+h}}{(1+\bar{r}_{i,t}^{DW})^j}, \tag{5}$$

where TNA_t (i.e. the value for total net asset under management at time t), is the initial size of the investment, $Flow_{t+j}$, with $j = 1, ..., h$, are the net flows in and out each mutual fund[21], and TNA_{t+h} is the final value of the investment. Since flows take both positive and negative values, the IRR is not necessarily unique, or real valued. Therefore, we follow standard assumptions and, when more than one strictly positive internal rate of return is found, we select the minimum; when no strictly positive internal rate of return is found, but one or multiple negative rates are found, we select the maximum.
Since the computation of the IRR, when net flows change sign multiple times, can be problematic, Dietz (1966) suggests the following approximation:

$$\bar{r}_{i,t}^{D} = \left[\frac{TNA_{i,t+h} - TNA_{i,t} - \sum_{j=1}^{h} Flow_{i,t+j}}{TNA_{i,t} + \frac{1}{2}\sum_{j=1}^{h} Flow_{i,t+j}} + 1\right]^{1/h} - 1, \tag{6}$$

Note that a dollar-weighted return explicitly accounts for net cash flows into and out of the fund over time, reflecting the average investor's performance during the sample period. Therefore we measure the investor timing ability with a statistic hereafter referred to as "performance gap", defined as the difference between fund dollar-weighted and time-weighted return (compute with both IRR and with Dietz formula):

$$\bar{r}_{i,t}^{PG} = \bar{r}_{i,t}^{DW} - \bar{r}_{i,t}^{TW}. \tag{7}$$

Table 4 and table 5 report all performances by object of investment. Statistics are computed from the time-series of the 225 monthly cross-sectional averages. Each table reports separately results for all funds (Panel 1.A and 2.A) and by fund' declared investment strategy.

Table 4 and 5 show that average returns from dollar-weighted are always below time-weighted and then the average performance gap is always negative. Panels (1.A) and (2.A) show that the average gap, computed with IRR methodology, is -0.06% per month for equity and -0.05% for fixed income. Gaps computed with Dietz formula, are a bit larger in absolute value and are respectively equal to -0.09% to -0.07% per month.

[21] Note that inflows into a mutual fund have a positive sign. Therefore, in the formula for the IRR we need to multiply flows by -1.

Table 4: Performance gap: equity

	Mean	Std. dev.	Std. error	Sharpe ratio	Skewness	Kurtosis	% of months	Five-factor alpha
Panel 1.A: all funds (n=774)								
Time-weighted	0.64	2.21	0.15	0.24	-0.80	4.40	-	-0.49
Dollar-weighted	0.59	2.21	0.15	0.21	-0.80	4.36	-	-0.50
Dollar-weighted (Dietz)	0.55	2.25	0.15	0.19	-0.86	4.57	-	-0.51
Performance gap	-0.06	0.10	0.01	-1.80	-1.76	10.73	81.25	-
Performance gap (Dietz)	-0.09	0.16	0.01	-1.33	-1.85	8.44	81.70	-
Panel 1.B: value funds (n=85)								
Time-weighted	0.90	2.21	0.15	0.35	-0.91	5.20	-	-0.54
Dollar-weighted	0.87	2.23	0.15	0.33	-0.93	5.17	-	-0.59
Dollar-weighted (Dietz)	0.88	2.32	0.16	0.32	-0.85	5.64	-	-0.60
Performance gap	-0.04	0.15	0.01	-1.09	-2.33	15.13	62.95	-
Performance gap (Dietz)	-0.03	0.33	0.02	-0.47	6.56	74.53	64.73	-
Panel 1.C: growth funds (n=155)								
Time-weighted	0.70	2.27	0.15	0.26	-1.03	5.05	-	-0.62
Dollar-weighted	0.62	2.29	0.16	0.22	-1.06	5.12	-	-0.65
Dollar-weighted (Dietz)	0.56	2.31	0.15	0.19	-1.26	5.78	-	-0.68
Performance gap	-0.08	0.14	0.01	-1.49	-1.56	6.91	75.89	-
Performance gap (Dietz)	-0.14	0.19	0.01	-1.37	-2.36	11.31	85.71	-
Panel 1.D: blend funds (n=486)								
Time-weighted	0.63	2.19	0.15	0.23	-0.74	4.20	-	-0.55
Dollar-weighted	0.59	2.20	0.15	0.21	-0.73	4.12	-	-0.55
Dollar-weighted (Dietz)	0.55	2.23	0.15	0.19	-0.78	4.21	-	-0.57
Performance gap	-0.04	0.10	0.01	-1.64	-0.81	9.17	72.32	-
Performance gap (Dietz)	-0.08	0.19	0.01	-1.07	-1.58	9.58	73.21	-

This table reports results for investment strategies on Emerging Markets equity funds. For each fund, we calculate the time series of monthly time-weighted and dollar-weighted returns (computed with both IRR and with Dietz formula) with a holding period of 12 months over the entire sample period. Performance gaps are the difference between fund dollar-weighted and time-weighted returns (compute with both IRR and with Dietz formula) and are computed for each fund. The reported statistics are computed from the time-series of the 225 monthly cross-sectional averages for each item. We report mean, standard deviation, standard error estimated by bootstrap, sharpe ratio, skewness, kurtosis of monthly returns (in %). For the performance gap we report the fraction of months in which buy-and-hold outperforms return-chasing (i.e., in which the performance gap is strictly negative). We finally report the cross sectional averages of the five-factor model-adjusted return of the two strategies (alpha, in %). In order to compute alphas we calculate geometric averages of all factors, over the same holding period. All monthly excess returns are computed with respect to the 30-day Tbill. Panel A reports statistics on the full sample of funds. Panel B, C, D reports returns respectively for value, growth and blend funds. Returns are monthly in %.

In both cases standard deviations of monthly returns are quite large. However due to the return persistence, we also report standard errors estimated by bootstrap. Standard errors confirm that the negative performance gap is statistically significant for both EM equity

Table 5: Performance gap: fixed income

	Mean	Std. dev.	Std. error	Sharpe ratio	Skewness	Kurtosis	% of months	Five-factor alpha
Panel 2.A: all funds (n=410)								
Time-weighted	0.53	0.77	0.05	0.52	-0.34	5.24	-	0.08
Dollar-weighted	0.47	0.79	0.05	0.44	-0.37	4.93	-	0.04
Dollar-weighted (Dietz)	0.46	0.79	0.05	0.42	-0.71	5.49	-	0.03
Performance gap	-0.05	0.09	0.01	-1.90	-4.38	24.98	85.27	-
Performance gap (Dietz)	-0.07	0.12	0.01	-1.62	-0.17	15.09	85.27	-
Panel 2.B: government funds (n=37)								
Time-weighted	0.47	0.82	0.06	0.43	-0.32	4.02	-	0.01
Dollar-weighted	0.42	0.84	0.06	0.35	-0.33	3.62	-	-0.03
Dollar-weighted (Dietz)	0.42	0.83	0.06	0.36	-0.51	3.77	-	-0.03
Performance gap	-0.06	0.17	0.01	-1.03	-4.25	25.56	64.73	-
Performance gap (Dietz)	-0.05	0.17	0.01	-1.06	-0.62	12.19	64.73	-
Panel 2.C: corporate funds (n=62)								
Time-weighted	0.37	0.82	0.07	0.30	-0.37	5.06	-	0.17
Dollar-weighted	0.29	0.77	0.06	0.22	-0.18	4.49	-	0.12
Dollar-weighted (Dietz)	0.25	0.69	0.06	0.19	-0.55	4.61	-	0.10
Performance gap	-0.07	0.21	0.02	-0.96	-4.03	24.91	52.68	-
Performance gap (Dietz)	-0.12	0.22	0.02	-1.07	-1.75	7.52	54.02	-
Panel 2.D: aggregate funds (n=264)								
Time-weighted	0.56	0.80	0.06	0.55	-0.39	4.99	-	0.02
Dollar-weighted	0.50	0.82	0.06	0.46	-0.41	4.81	-	-0.03
Dollar-weighted (Dietz)	0.48	0.82	0.06	0.44	-0.76	5.41	-	-0.04
Performance gap	-0.06	0.09	0.01	-1.97	-3.73	19.72	87.05	-
Performance gap (Dietz)	-0.08	0.13	0.01	-1.64	0.64	16.53	88.39	-

This table reports results for investment strategies on Emerging Markets fixed income funds. For each fund, we calculate the time series of monthly time-weighted and dollar-weighted returns (computed with both IRR and with Dietz formula) with a holding period of 12 months over the entire sample period. Performance gaps are the difference between fund dollar-weighted and time-weighted returns (compute with both IRR and with Dietz formula) and are computed for each fund. The reported statistics are computed from the time-series of the 225 monthly cross-sectional averages for each item. We report mean, standard deviation, standard error estimated by bootstrap, sharpe ratio, skewness, kurtosis of monthly returns (in %). For the performance gap we report the fraction of months in which buy-and-hold outperforms return-chasing (i.e., in which the performance gap is strictly negative). We finally report the cross sectional averages of the five-factor model-adjusted return of the two strategies (alpha, in %). In order to compute alphas we calculate geometric averages of all factors, over the same holding period. All monthly excess returns are computed with respect to the 30-day Tbill. Panel A reports statistics on the full sample of funds. Panel B, C, D reports returns respectively for government, corporate and aggregate funds. Returns are monthly in %.

and fixed income. Sharpe-ratios of time-weighted are always larger than those computed for dollar-weighted. Therefore, time-weighted strategies are superior even after controlling for risk. We further report the fraction of months in which the average performance gap is strictly negative. Panel (1.A) shows that for all equity funds performance gaps are negative in

about 80% of the months and for all fixed income funds in 85% of month there are negative. Although we showed that a time-weighted investment is superior with respect to a time-weighted in terms of average returns and Sharpe ratios, returns from the two strategies might represent compensations for exposure to different risk-factors. While we do not report all the results of the Fama and French factors, the last column reports the cross sectional averages of the five-factor model-adjusted return of the two strategies for both objects of investment[22]. For both objects of investment, time-weighted alphas are always higher than those of dollar-weighted strategies. It means that a simple time-weighted strategy remains superior even after controlling for risk.

Panels (1.B) (1.C) and (1.D) of table 4 show that results hold regardless of the declared style of investment of the fund. Growth funds exhibit the worst gap equal to -0.08% per month while the monthly gap for value and blend funds is equal to -0.04%. Panels (2.B) (2.C) and (2.D) of table 5 confirm all negative gaps also for fixed income showing that corporate funds have the worst average IRR gap per month equal to -0.07%. The average gap for government and aggregate funds is -0.06%.

Our findings show that dollar-weighted (i.e. market-timing) strategies, effectively used by investors in EMs, underperform a simple time-weighted strategy. The gap between the two investments remain negative regardless of the methodology of computation, the object of investment and the investment strategy declared by the fund manager.

Although results of the analysis are quite stable, we have some possible concerns about our findings. A first potential concern is that our results may be driven by funds with very negative gaps, since each fund receives an equal weight in the reported average regardless of its characteristics. In order to address this issue we verify the distribution of gaps across funds and results confirm that gaps are distributed quite homogeneously in the fund. Secondly, in order to verify if results remain consistent throughout the fund universe and not only on average through time, we compute cross-sectional averages of performance gap and we order results in percentiles. We find that performance gaps remain negative until the 66^{th} percentile (computing the gap with IRR method) and the 67^{th} percentile of the distribution (computing it with the Dietz formula). The third possible concern is that averages performance gap may be driven by the size of fund. In order to address this possibility, we compute performance gap for all the categories of funds (i.e. small, medium and large funds) and we find that results remain stable for all sizes and for the two objects of investment. We also have to deal with the possible concern that our results are driven by the actual performance of the market, instead than by the goodness of one or the other strategy. Therefore in section 5 we simulate a sample of 1,000 funds with 240 monthly return observations each. Finally,

[22]In order to compute alphas we calculate geometric averages of all factors, over the same holding period.

in order to verify the sensitivity of our results with respect to the holding period chosen, section 6 reports robustness checks on the investment horizon.

5 Market simulation

In this section we use simulated data to study how our measures of performance vary for different market scenarios. In this way, we want to address the possible concern that results from section 4 are driven by the actual performance of the market, instead than by the goodness of one or the other strategy. Hence we simulate a sample of 1,000 funds with 240 monthly return observations each (which correspond to 12 years of monthly observations). Simulated returns are assumed to be independently drawn from a normal distribution with mean return of 7% on annual basis and annual standard deviation of 70% which correspond to the average cross-sectional annual return and to average cross-sectional annual standard deviation drawn from the equity sample[23]. Net cash flows, assumed to occur at the end of each month, are expressed as a percentage of the end-of-month TNA after returns $\left(flow_{i,t} = \frac{Flow_{i,t}}{TNA_{i,t-1}}\right)$. Each simulated flow consists of a random liquidity component for fund i in month t, (i.e. $\epsilon_{i,t} \sim N(0, 1\%)$) plus a behavioral component. Thus, it is defined as follows:

$$flow_{i,t} = \hat{\beta}_{Ret} R_{i,t-1} + \epsilon_{i,t}. \tag{8}$$

The behavioral component that captures the market-timing behavior is derived from a fund fixed-effect panel regression in which the dependent variable is $flow_{i,t}$ and the control variable is the fund return at $t-1$. The sensitivity of percentage cash flows to past returns used was calibrated with the regression coefficient. The resulting coefficient for equity funds is 0.09 and is significant at 1% thus motivating our choice of 0.1 for the performance-cash flow sensitivity coefficient on lagged returns. TNA at the beginning of the simulation (TNA_0) is set to 400 mn$ for each fund[24]. Subsequent monthly total net asset values are calculated endogenously using the simulated returns and net cash flows, with:

$$TNA_{i,t} = TNA_{i,t-1}(1 + R_{i,t}) + TNA_{i,t-1} flow_{i,t}, \tag{9}$$

where $R_{i,t}$ is fund i's net return in month t, and $flow_{i,t}$ is the end-of-month net cash flow in percentage of TNA for fund i in month t. Table 6 compares results for actual and simulated data.

[23] We make the same analysis using sample cross-sectional averages from the fixed income sample (i.e. 6% and 30%) and results remain robust.

[24] In line with the cross sectional average of TNA at the beginning of the real sample.

Table 6: Market simulation

	Actual data		Simulated data							
	Equity	Fixed income	Mean	10th	25th	40th	50th	60th	75th	90th
Time-weighted	0.64	0.53	0.56	-0.05	0.47	0.78	-0.21	0.86	1.01	-0.36
	(0.15)	(0.05)	(0.08)	(0.00)	(0.04)	(0.00)	(0.04)	(0.01)	(0.02)	(0.05)
Dollar-weighted	0.59	0.47	0.54	-0.11	0.41	0.76	-0.23	0.85	1.03	-0.32
	(0.15)	(0.05)	(0.07)	(0.01)	(0.04)	(0.00)	(0.03)	(0.01)	(0.02)	(0.04)
Performance gap	-0.06	-0.05	-0.03	-0.09	-0.06	-0.03	-0.02	-0.01	0.02	0.04
	(0.01)	(0.01)	(0.03)	(0.00)	(0.04)	(0.00)	(0.03)	(0.02)	(0.02)	(0.04)

This table compares results from actual data and simulated data. It reports information on monthly time-weighted and dollar-weighted returns (computed with IRR) with a holding period of 12 months over the entire sample period. Performance gaps are the difference between fund dollar-weighted and time-weighted returns and are computed for each fund. Actual data are computed from the time-series of the 225 monthly cross-sectional averages for each item. Simulated data reports averages from the time-series of funds corresponding to selected percentiles of the distribution. Simulated funds are ordered by performance gap. Returns are simulated for 1,000 funds with 240 monthly return observations per fund. Independent monthly returns are drawn from a normal distribution with mean 7% and standard deviation 70%. Initial fund assets (TNA_0) equal 400 for each fund. Subsequent net assets are calculated endogenously using simulated returns and net cash flows, with $TNA_{i,t} = TNA_{i,t-1}(1 + R_{i,t}) + flow_{i,t}$, where R_j is fund j's return in month t, and $flow_{j,t}$ is the end-of-month net cash flow for fund i in month t as a percentage of the previous month TNA. Monthly net cash flows as a percentage of TNA are equal to a random liquidity component with mean zero and standard deviation 1% plus a behavioral component. The behavioral components is a symmetric return-chasing behavior in which the behavioral net cash flow component equals 0.1 times the difference between the fund's lagged monthly return and its mean return. Returns are monthly in %.

Table 6 reports simulated data from the time-series of funds corresponding to selected percentiles of the distribution. Simulated funds are ordered by performance gap. The average simulated gap per month is equal to -0.03% and gaps remain negative until the 75^{th} percentile when they become positive although small in magnitude.
Simulated results appear to be in line with actual data, that report negative gaps until the $66/67^{th}$ percentile, depending on the methodology. This confirms that results from section 4 remain robust under different market scenarios and in this way it provides investment prescription in favor of a simple time-weighted. In fact, under the hypothesis that market structural variables and investors behavior remain stable in time, a simple time-weighted investment strategy remains more profitable than a dollar-weighted one.

6 Robustness

In this section we verify whether results from section 4 are robust to different investment horizons (i.e. holding period). Therefore, table 7 reports performance gaps as in 4 and 5, by holding period (i.e. 6, 12, 24 and 36 months).

Table 7 confirms that either by shortening or widening the holding period the performance gap remain negative for both objects of investment and for all investment strategies

Table 7: Performance gap by holding period

N. of months	6	12	24	36
Equity				
All funds (n=774)	-0.01	-0.06	-0.08	-0.08
	(0.01)	(0.01)	(0.01)	(0.01)
Value funds (n=85)	-0.01	-0.04	-0.09	-0.06
	(0.01)	(0.01)	(0.02)	(0.02)
Growth funds (n=155)	-0.04	-0.08	-0.12	-0.12
	(0.01)	(0.01)	(0.01)	(0.01)
Blend funds (n=486)	-0.01	-0.04	-0.06	-0.06
	(0.01)	(0.01)	(0.01)	(0.01)
Fixed income				
All funds (n=410)	-0.03	-0.05	-0.08	-0.10
	(0.01)	(0.01)	(0.01)	(0.01)
Government funds (n=37)	-0.04	-0.06	-0.09	-0.11
	(0.01)	(0.01)	(0.01)	(0.01)
Corporate funds (n=62)	-0.04	-0.07	-0.10	-0.11
	(0.01)	(0.02)	(0.02)	(0.02)
Aggregate funds (n=264)	-0.03	-0.06	-0.09	-0.11
	(0.01)	(0.01)	(0.01)	(0.01)

This table reports the mean of performance gap (i.e., the difference between a dollar-weighted and a time-weighted investment strategy) from the time-series of the 225 monthly cross-sectional averages, as a function of the investment horizon (in months). Standard error estimated by bootstrap are in parentheses. Returns are monthly in %.

declared by the fund manager and monthly gaps become more negative widening the holding period. Standard errors estimated by bootstrap confirm that the negative performance gap is statistically significant for both objects of investment.

7 Conclusions

This paper empirically investigates the performance of market-timing strategies effectively used by investors in Emerging Markets (EMs). We first identify short-term determinants of individual mutual fund flows into EM equity and fixed income, finding a well-established flows-performance relation for both objects of investment from January 2000 to October 2018. Hence, we verify whether investors make good timing decisions. We measure investor timing ability with a statistic hereafter referred to as "performance gap". We find that the average performance gap, defined as the dollar-weighted return minus the time-weighted return, is negative for all funds and equal to -0.06% per month for equity and

-0.05% for fixed income. Although gaps remain negative regardless of the investment strategy declared by the fund manager, fixed income corporate funds and equity value funds exhibit the worst timing performance with a gap respectively equal to -0.07% and -0.08% per month. In order to confirm that our results are effectively driven by the goodness of one or the other strategy, instead than by the actual performance of the market, we simulate a sample of 1,000 funds with 240 monthly return observations. Simulation analysis shows that our results remain robust under different market scenarios, providing solid investment prescription in favor of a time-weighed strategy.

Appendix 1

This Appendix reports the lists of mutual funds by object of investment. The sample contains all active and inactive open-end funds in US$ that invest in EM equity and fixed income. The dataset spans 2000 through October 2018 and containts 96,594 monthly observations across 1,184 unique funds (774 equity and 410 fixed income). We exclude from the sample closed-end funds, exchange-trade products and funds-of-funds. Tables 8 and 9 list equity funds in alphabetical order while table 10 lists fixed income funds in alphabetical order.

Table 8: List of equity funds (1/2)

1741 LUX EQ ACT IDX EMK-BUSD	BCV EUROMAC A	EATON VANCE HEX EM EQUITY-A	HSBC FRONTIER MARKETS-A
AB EMERGING MARKETS CORE-ADV	BCV GLOBAL EMERGING-A	EATON VANCE PARA E/M CORE-A2	HSBC GIF-BRIC EQUITY-M1C
AB EMERGING MARKETS PORT	BEL AIR-TOP HI GRW MRKT-IUSD	EATON VANCE PARA EM CORE-INS	HSBC GIF-BRIC MRKT-ECUSD
AB FCP I-EMER MRKT GRW-A	BGF EMERGING MARKETS-2	EATON VANCE PARA EM MK-A2USD	HSBC GIF-EMRGNG WEALTH-AUSDD
AB FCP II-EMRG MKT VL-S1 USD	BGF EMERGING MRKTS EQ IN-A2	EDINBURGH PAR-EMER OPP-I USD	HSBC GIF-FRONTIER MARKETS-AC
AB FLEXFEE EM MKTS GRW-ADV	BGF-EMERGING MARKETS FD-A2	EMEG MMA-MT LATIN AMER FD-A	HSBC GIF-GEM EQ VOL FO-XC
AB SICAV I-EMRG MK EQUITY-A	BGF-LATIN AMER-A2 USD	EMERG MKTS MIN VOL IN-BUSD	HSBC GIF-GL EM MKT EQ FR-M1C
ABARIS EMERGING MKT EQ-A USD	BLACKROCK EMERG MRKTS-I	EMERG INDIA NEXT TRIL DOL OP	HSBC GIF-GL EMERG MKT EQY-AD
ABERBEEN GL-EMSC-AACCUSD	BLACKROCK GIF I EMMKT EQ-X2U	EMERG MARKTS EQTY FUND-I USD	HSBC GLOBAL EMRG MKT-ACC
ABERBEEN GL-FMB-IACCUSD	BLCKRCK ADV EMERG MRKTS-I	EMERG STAR PCC-CELL D EMG MK	HSBC INTL SEL-MA GB EMKT-AD
ABERDEEN EMER MKTS-A	BLCKRCK EMERG MRKTS DVD-A	EMERGING MARKET EQT FUND	HSBC IS-GLOBAL EM MKT EQ-A
ABERDEEN EMER MKTS-INST	BMO LGM EM MARKETS EQUITY-A	EMERGING MARKET GLOBAL FD-A	HSBC-GL E/M EQ ABS RT-L1
ABERDEEN GL-EM INFR-AACCUSD	BMO LGM FRONTIER MRKTS-B ACC	EMERGING MARKETS GROWTH-M	HSBC-SEL EMERGING MARKETS EQ
ABERDEEN GL-EMMKT EQTY-AAUSD	BMOLGM GL EM MR GR IN-Y-B-IN	EMERGING MARKETS STRATEGI-AC	ICON EMERGING MKTS FD-S
ABERDEEN INTL-EMERG MARKETS	BNP PA L1 ASIA EMER-CDIS-USD	EMERGING MARKETS TRUST-B USD	ING EMERGING COUNTRIES-A
ABERDEEN-FRONTIER OPPOR-A US	BNPP L1-EQ WLD EMERG-CD	EMERGING WORLD FUND-GBP INS	INTERFIRST-EMERGING EQUITY-A
ABN AMRO GLB EMERG MKTS EQ-A	BNPPEASY MSCI EMMK EX CW-CL	EMG MMA-MILLTST ASEAN FD-A	INVESCO DEVELOP MRKTS-A
ABN AMRO MM-INV EMK EQ-AUSD	BNPPEASY MSCI EMMK SRI-CL	EMG MMA-MILLTST BRAZIL FD-A	INVESCO EMERG MK STRU EQ-AA
ACADIAN EM EQ UCIT II-AA USD	BNY MEL GL-EMG MKT EQ V-AUSD	EMG MMA-MILLTST INDIA FD-A	INVESCO EMG MKTS EQUITY-A
ACADIAN EMG MRKTS PORT-INV	BNY MELLON EMERGING MKTS-M	EMIRATES EMG MKT EQY-ACC-A	INVESCO EMRG EUROP EQUITY-A
ACADIAN EMMK SM-CAP EQ-AUSDA	BNY MELLON GL-EM MKT EQ-C US	EP EMERG MKTS SM COMPS-A	INVESCO EMRG MRKTS EQTY-A
ACADIAN-EMERG MKTS-A	BNY MELLON GLB-AS RS S-WUSDA	EQUATOR- GLBL EM MKT EQTY-5	INVESCO LOW VOL EMG MKT-A
ACE ASSET MGMT-EMERG MARKETS	BNY MELLON-EMMK EQ CORE-SUSD	EUROPARTNERS-WRD EMR-L-B-CAP	INVESCO VK EMERGING MKTS-A
ACE FUND-EMERGING MARKETS	BNY-GLB EMER MKT-USD C ACC	F&C EMERGING ASIA-B USD ACC	INVESCO-EMERG MKT EQ-AAD
ADVISORY RESEARCH EM OPPORT	BO FUND II-GLOBAL EMERGING	F&C G EM EQTY L/S F-A USD A	INVESCO-PRC EQU-AAD
AFRICA EMERGING MARKETS-A	BO FUND IV-BORDIER GL EM-USD	F&C GLOB E MK FD- A USD DIS	INVEST AD - EMERGING AFRICA
AGF EM MKT ALL CAP EQ-J USD	BOLUX-INTERNATIONAL	F&C PORT FD-BMO GB EMG MKT-A	INVEST AD SICAV-EMG AFR-USDR
AIG ASIAN CAPITAL GROWTH FD	BRANDES EM MKTS VALUE-I-USD	FAST EMERGING MARKETS-AAUSD	INVEST AD SICAV-GCC FOCUS-A
ALAHLI EMERGING MARKETS-ACC	BRANDES INSTL EMG MKTS VAL-I	FAW-EMERGING MARKET-A DIST	INVESTEC EMERGING MKTS EQY-A
ALGER EMERGING MARKETS-A	BROWN ADV SOMERSET EM MK-ADV	FEDERATED EMERG MKTS EQ-IS	INVESTEC PAN AFRICA FUND-S
ALGER-EMERGING MARKETS FD-A	BROWNADV MCQASIA NEWSTRS-INS	FERRUM FUND EMERGING MKTS	ISHARE EMKT-IF-F-AUSD
ALJAZIRA GLOBAL EM MKT FD	BRUNSWICK RUSSIA EQUITY FUND	FIDELITY ADV EM MKT DISC-A	IVY EMERG MRKTS EQUITY-A
ALLIANCE KOREA FUND-AUSD	CADMOS-EMRG MKT ENGAGE FND-A	FIDELITY ADV EMERG MARKET-A	IWF-EMERGING MARKETS EQTY-A
ALLIANZ ASIAN SM CAP-ITUSD	CALAMOS EMERG MRKTS EQ-A	FIDELITY ADV EMG EUR ME-A	JAN HND EM MK L-A USD ACC
ALLIANZ BST STYL EM EQ-I USD	CALAMOS EVLVNG WRLD GRW-A	FIDELITY ADV EMRG ASIA FD-A	JANUS ASIA FRONT MK-A USD AC
ALLIANZ CHINA A-SHRS-AT	CALDORA EMERGING MARKETS-USD	FIDELITY EMERGING MARKET FD	JANUS EMERGING MARKET-A
ALLIANZ CHINA EQUITY-A	CALVERT EMERG MRKTS EQTY-A	FIDELITY EMG MKT DISCOVERY	JANUS HNDRSN EMERG MKTS-A
ALLIANZ CHINA FUND-A USD	CAP INT EMERG ASIA-C USD	FIDELITY EMG MKTS INDEX-FA	JBM PICARD ANGST EM MK-A1USD
ALLIANZ CHINA MLT INC-AT USD	CAP INT EMERGING MKT-I USD	FIDELITY FUNDS-EMERGING M-A	JH EMERG MRKTS EQTY-A
ALLIANZ EMERGING ASIA EQY-A	CAPITAL GP NEW WORLD-B USD	FIDELITY GL EX US INDEX-PREM	JOHCM EMG MKT OPPORT-I
ALLIANZ INDIA EQUITY-I USD	CARMIGNAC PF EMERG-E USDHAC	FIDELITY M-EMER MKT-A$ ACC	JOHCM EMG MKT S/M CAP EQ-IS
ALLIANZ INDONESIA EQY-A USD	CAUSEWAY EMERGING MKTS-INST	FIDELITY SAI EM INDEX FUND	JOHN HANCOCK II-EMG MKTS-A
ALLIANZ KOREA EQUITY-A	CEMBRA EAST FD SICAV-NV USD	FIDELITY SER EMRG MRKT OPP	JP GLOBAL EMERGING MARKETS-A
ALLIANZ LITTLE DRAGONS-A	CHAMPLAIN EMERG MRKTS-ADV	FIDELITY-EMERG ASIA-A USD	JP MORGAN AFRICA EQUITY-AUSD
ALLIANZ ORIENT INCOME-P	CIMB ISLAMIC GLOBAL E/M-I	FIDELITY-EMKT FOCUS-AUSD	JPM EM MKT SC-A PERF ACC USD
ALLIANZ RCM ISLAMIC GL EM-A	CITY NATL ROCHDALE EM MKT-N	FIDELITY-INS EM MKT-I-A USD	JPM EMERG MKTS EQ INC-A
ALLIANZ THAILAND EQY-A USD	CL (GUE) EMERGING MKT EQTY F	FIDELITY-LATIN AMERICA-A USD	JPM INV-JPM LATIN AM SEL E-A
ALLIANZ TTL RTN AS EQ-AT	COHEN & STEERS EMG MRK REL-A	FIERA CAP EMERG MRKTS-INST	JPM LX F-EMERG MKTS DIV-I
ALLIANZGI BST EM MKT EQ-INST	COLUMBIA ACORN EMG MRKT-A	FINREON EMER MK EQ ISOPRO-A	JPM LX F-EMERG MKTS OPPOR-AA
ALLIANZGI EM MKT CONSUM-A	COLUMBIA EMERG MRKTS-I	FIRST STATE-GL EM MK SEL-III	JPM LX F-EMERG MKTS VALUE-AA
ALLIANZGI EM MKT SM CAP-A	COLUMBIA EMG MKTS OPP-A	FISHER EMERGING MRKTS EQ-USD	JPM ULTRA GLOBAL EMERGING-A
ALLIANZGI EMER MKTS OPP-INST	COMGEST GROWTH EM MKTS-USD A	FLEXIBLE EMERGING BOND- USD	JPM-EM ULTRA DIV EQ-XA
ALLIANZGI NFJ EM MKT VAL-A	CONSILIUM EMG MKT S/C-INST	FNK TMP INV-EMKT SM C-A-ACC	JPMORGAN ASIA NEW FRON FUND
ALPINE EMER MARK REAL EST-I	CONSULTING GRP EMG MKTS EQTY	FORTRESS INC-EMRGNG MRKTS-A	JPMORGAN EMERG ECONOMIES-A
ALQUITY LATIN AMERICA-A USD	CONTROLFIDA SUPERDISC-ACC	FORWARD SELECT EM DVD-C	JPMORGAN EMERG MRKT EQ-I
ALQUITY SIC-AL FUT WL F-USDA	CORONATION GLOB EMMKT EQY-B	FPP-GLOBAL EMERG MARKETS-A	JPMORGAN F-EMERG MKTS EQ-A
ALQUITY SIC-IND SUBCO F-USDA	CORONATION GLOBAL EM MKT-A	FRANK TEMP INV TE FR M-AAUSD	JPMORGAN F-EMERG MKTS INF-A
ALQUITY SICAV-ALQ AFRC-B USD	CREDIT SUISSE EMG MKTS EQ-A	FRANK TP INV EM MK-A YDISUSD	JPMORGAN-EM EUR M/E AFR-AUSD
ALQUITY SICAV-ASIA-USD-A	CREDIT SUISSE EMRG MKT-CM	FRONTEGRA HEXAM EMG MARKET	JPMORGAN-EM MID EAST EQ-A
AMANA DEVELOPING WORLD-INV	CREDIT SUISSE EQ-EMG MKTS-B$	FSF - STEW INV FR MK-AACCUSD	JPMORGAN-EM MK ALPHA PL-A-AC
AMER BCN ARCD EM MGD VOL-A	CS HOLT EMERGING MKTS EQTY-M	FULLERTON GLB EMKT EQ-IUSDAC	JPMORGAN-EMMK DIV-A-R-ACCUSD
AMER BCN EP EMER MKTS-A	CS LUX ASIA CONSUM EQ-BUSD	FULLERTON SEL GL EM MK EQ-A	JPMORGAN-LATIN AMER EQ-AUSD
AMER CENT EM MKT SM CAP-A	CS LUX GB S&M EM ILC EQ-BUSD	FUNDQUEST INT-EMERGING GL-CI	JSS EMERGINGSAR NEW FR-C USD
AMER CENT EMERG MKTS-INV	CS LUX GLOBAL EMKT PROP-BUSD	FUNDQUEST INTL-EMERG MKT-CC	JSS SUSTAIN EQTY-GLB EMMKT-P
AMER CENT EMG MRKT VAL-A	CS LUX MM EMERG MKT EQ-F	GAIA WORLD AGRI FUND-B	JSS SYST EQ-EM MARKETS-C USD
AMER CENT NT EMERG MRKTS-G	CS LX GLOB EMK ILC EQ-BUSD	GAM EMERGING MKTS EQ-USD A	JULIUS BAER EQUITY ASIA-B
AMER CENT-EMRGING MKTS EQ-B	CS LX GLOB EMKT BR EQ-BUSD	GAM STAR-EMERGING EQUITY-USD	JUPITER GL EMKT EQT UN-LUSDA
AMER FNDS NEW WORLD-A	CSIF LUX EQTY EM FNDM-DB	GAM-STAR EMERGING ASIA-USD A	JYSKE INVEST EMERG MKT EQ CL
AMERICAN BEACON EMERG MK-AMR	CSIF LX EQ EM MK MIN VOL-DBU	GARTMORE CS-EMERGING MARKETS	KAZIMIR RUSSIA GROWTH INV FD
AMERICAN NEW WORLD HLS-IB	CULLEN EM USD ACC I2	GENESIS EMERGING MKTS INV -A	KAZIMIR UKRAINE CONVERG F-$
AMG TIMESQ EM MKT SM CAP-Z	CULLEN EMG MKTS DIV-C	GENESIS SMALLER COMP SICAV	KBC EQS EMERGING ASIA 1
AMG TRILOGY EM EQ-Z	CUTLER EMERGING MARKETS FUND	GENEVA ADV EMER MKTS-I	KBC EQS EMERGING ASIA 2
AMG TRILOGY EM WLT-Z	DANSKE INV-GLOBAL EM MKT-A	GINSGLOBAL EMERGING MKT INDX	KBC EQS EMERGING ASIA 3
AMUNDI-EQ EMER ANTI-BNCH-I6C	DANSKE INV-GLOBAL EM MKTS-A	GLDMN SCHS E/M EQ INSG-A	KBC EQS EMERGING ASIA 4
AMUNDI-EQ EMERGING WORLD-AUC	DEGROOF EQUITIES FOF EMERG	GLDMN SCHS EM MRKT EQ-A	KBL KEY FUND-GLOBAL EM -AUSD
AMUNDI-EQUITY EMER FOCUS-AUC	DELAWARE EMERG MRKTS-A	GLDMN SCHS N-11 EQTY-A	LAUDUS MONDRIAN INST EM MKT
AMUNDI-INDEX MSCI EM MK-AUC	DELWARE INV EMR MRKTS-USDF-A	GLG INV VI-EMER MKT EQT2-IN$	LAZARD DEVELOPING EQUITY-INS
AOL-EMERGING MRKTS AGRESIVA	DEUTSCHE EM MKTS FRONTIER-A	GLOB EMERG MKTS FNDLGIC	LAZARD EMER MKTS EQ ADV-INST
AQR EM DEFENSIVE STYLE FD-I	DFA EMERG MKTS CORE EQTY	GLOBAL SELECT-SUB-FUND VIII	LAZARD EMERG MKT EQY BLN-INS
AQR EMERGING MULTI-STYLE-L	DFA EMERG MKTS SOCIAL CORE	GMO EMER MRKT OPP FD-3	LAZARD EMERG MKT EQY-INST
AQR EMRG MOMENTUM STYLE-L	DFA EMERGING MARKETS PORT	GMO EMERGING COUNTRIES-III	LAZARD EMG MKT CORE EQ-INST
AQR TM EMERGING M/S-L	DFA EMERGING MARKETS SML CAP	GMO EMERGING DOMESTIC OP-II	LAZARD EMR MKT CORE EQTY-IA
ARTICO DYNAMIC EMERG MKT-USD	DFA EMERGING MRKTS VALUE	GMO EMERGING DOMESTIC OPP EQ	LAZARD GL ACTIVE-EM MK EQ-IS
ARTISAN DEVELOPING WORLD-ADV	DIAM EM MRKT SM CAP EQ EFF	GMO EMERGING MARKETS-III	LEGG MASON EMRG MKT EQ-A1USD
ARTISAN EMERGING MARKETS-INS	DIMENSIONAL EMRG MRKTS II	GOLDMAN SACHS CONC EMG EQ-A	LG ANTENNA FUND LTD
ARTISAN EMERGING MKTS-I USDA	DIMENSIONAL-EMG MRKT V-USD A	GOLDMAN SACHS GR MT P EQ-BUD	LGT SLCT EQ EMER MRKT USD-B
ASG GROWTH MARKETS-A	DIMENSIONAL-EMK LC COR-USDZI	GPB SICAV EMER EUROPE EQ-R	LLOYDS TSB INT-GLB EMK EQ
ASHMORE E/M FRNTIER EQ-USDII	DIMENSIONAL2-EMK T-A-USD-ACC	GQG PART EMERG MKTS EQ-INST	LM EM M CHINA NEW GEN A SH-P
ASHMORE EM FRONTIER EQ-INST	DIREXION MNTH EM MK BE 2X-I	GQG PARTNERS EM MKT EQ-I USD	LM ESEMPLIA EMG MKTS L/S-A
ASHMORE EM MKRT ACT EQ-A	DIREXION MTH EM MK BULL 2X-I	GRANDEUR PEAK EM MKT OP-INST	LM QUAL INV- ESEMP EM ALP EX
ASHMORE EM MKT SM CAP EQ-INS	DISCOVER INV CO-DISCOVER EU	GS EMRG MARKET EQTY IA	LM RARE EMERG MK INFRA-AUSDA
ASHMORE EMERGING ECONOMY POR	DNB-GLB EMERGING MKTS SRI-A	GS EMRG MKT CORE EQ BACLAUSD	LM-QS EMERG MKTS EQ-AAUSD
ASHMORE EMRG MKTS GL SC-IUSD	DREYFUS DIV EMG MKTS-I	GS GIVI EMRG MKT EQTY-BAS	LO FDS-EMER RES EQY EN-USDPA
ASHMORE EMRG MRKTS EQ-INST	DREYFUS EMERGING ASIA FUND-A	GS GR & EM MRKT EQUITY-BASUS	LO GATEWAY-EMG MK OPN AR-IA
ASHMORE-EM MKTS ACT EQ-INUAC	DREYFUS EMERGING MARKETS-A	GS MULTI MANAGER EM MK EQ P	LO-EMERG HIGH CONVICT-PAUSD
ASHMORE-EM MKTS VAL FND-IUSD	DREYFUS GLBL EMRG MKTS-A	GUARDCAP EM MKT EQ-I USD	LODH INV-ASI SMAL CP-PA$
ASIA PACIFIC FUND LTD	DREYFUS PREMIER EM MRKT OP-A	GUIDEMARK EMRG MRKTS FD-SRV	LOS ANGELES CAP EMERG MKT-AU
ASTON/LMCG EMG MKTS-I	DREYFUS STR BETA E/M EQ-A	GUIDESTONE EMG MKTS EQ-INST	LP LAZARD EMERG MARKT
ATRAM EMERG MKTS EQ OPP FEED	DREYFUS STR BETA GL EQ-A	HANSBERGER EMERGING MK FD-IN	MACQUARIE EMERGING MKTS PORT
AUBREY CM-AUB GL EM OPP-IC1	DRIEHAUS EMERG MKTS GRW-INV	HARBOR EMERG MKT EQTY-ADM	MACQUARIE EMRGNG MKTS POR II
AVIVA GLOBAL EMERG MRKT ID-I	DRIEHAUS EMERGING MARK S/C	HARDING LOEV EM MKT RSR-INST	MAJ INVEST EMERG MKTS EQYS-Z
AVIVA INV-EM MKT SPE SIT-A$	DRIEHAUS FRONT EMERG MKTS	HARDING LOEVNER EMG MKTS	MAN MENA EQUITY-D USD
AVIVA INV-EMRG MKT INC-A USD	DUNHAM EMERGING MKT STOCK-C	HARDING LOEVNER-EMMK EQ-AUSD	MANAGERS EMERG MKTS EQUITY
AVIVA-EMG MRKT EQ SMCP-A USD	DUPONT CAPITAL EMG MKTS-I	HARTFORD EMERG MRKTS EQ-A	MANNING & NAPIER EMER MKT-S
AXA ROSNBRG-GL EM MK EQ AUSD	DWS BRIC PLUS FUND-A US$	HARTFORD ENVRMNTAL OPPRT-A	MANULIFE GLB-LAT AM EQ-AAUSD
BARCLAYS GL ACCESS EQT-BA US	DWS CHINA-A FUND	HARVEST CHINA A SHARES E-CUS	MANULIFE GLBL-EMRG EAST EU-A
BARING EMERG OPP FND-USD INC	DWS EMERGING NEW DEAL FUND	HC CAPITAL TR EMERG MKTS-HCS	MANULIFE GLOB EQTY FD-RUSDA
BARINGS EASTRN EUROPE-AUSDIN	DWS EMRG MRKTS EQTY-S	HELIOS-GLOBAL EMERGING MRKTS	MARSICO EMERGING MARKETS
BARINGS FRONT MKTS-A-USD-AC	EAGLE EMERG MKT EQ-A USD ACC	HEPT DRIHAUS-EM M-E CUS	MARTIN CURRIE EMERG MRKT-FI
BARINGS GLB EM MK FD-USA INC	EARNEST-GLOBAL EMER MARK-USD	HIGH GROWTH MARKET-G	MARVIN&PALMER EMMK EQTY-USD
BARINGS LATIN AMERICA-AUSDIN	EASTSPRING EM E ME/AF DY-D	HIMCO VIT AMER FDS NEW WD-IB	MASSMUTUAL PREMIER ST EMMK-A
BARON EMERGING MARKETS-INS	EASTSPRING GL EMK CUST EQ-EU	HRDNG LVNR FR EM MKT-INST	MATTHEWS EMERGING ASIA-INST
BATTERYMARCH GLB EM MKTS FND	EASTSPRING INV EMEAXSA DY-E	HRDNG LVNR INST EM MRKT-I	MCGF-LMMC-GL EMERG MKT-USDA
BB FUND CLASS A	EASTSPRING INV GL EM DY-D	HRI REL EMRG MRKT EQTY USD	MERIAN GBL EMMKT A USD ACC
BBVA PAISES EMERGENTES-A	EATON VANCE EMERGING MKTS-A	HRTFRD SCHR EM MRKT EQ-A	METZLER/PAYDEN EURO EMER MKT

Table 9: List of equity funds (2/2)

MFS BLENDED RSRCH EM EQ-A	PRAMERICA QMA EMKTS C-IIUSDA	TOBAM SA-ANT-BENCH EM MKTS F
MFS BLENDED RSRCH INTL EQ-A	PRINCIPAL GLB-EMG MK-A ACCUM	TOUCHSTNE EM MRKT S/C EQ-A
MFS EMERGING MKTS EQUITY-A	PRINCIPAL INTL EMER MKT-A	TOUCHSTONE SANDS EM GR-Y
MFS INV-EMERG MKT EQT-Q2 USD	PRINCIPAL ORIGIN EM MKT-A	TOWER FUND-EMERG MARKE EQ-AC
MFS MER MANAGED WEALTH-A1USD	PROFUNDS ULTRAEMRG MKTS-INV	TRANSAM EMERG MKTS EQTY-A
MFS MER-EMERG MRKT EQ-A1USD	PROFUNDS ULTRASHT EMRG M-INV	TRANSAMERICA EMER MKTS-I2
MFS MER-EQUITY OPP-A1USD	PROSPERITY CUB FUND-A	TRILOGY EMERGING WEALTH FD-C
MILLTRUST KEYWISE CHINA FUND	PROSPERITY QUEST SUB FUND-A	TRILOGY VALANT EMER MKT-CUSD
MIRABAUD LX-FRONTIER MKT-A	PUB EQUITIES EM MKT 1-IB	TROWE PRICE-EMKTS EQTY-I
MIRABAUD-EQUITIES G EMK-AUSD	PUB EQUITIES EM MKT 2-IB	TROWE PRICE-FRNT MK EQ-A
MIRAE ASSET-GEM SEC-A-USD	PUTNAM EMERG MARKETS EQTY-A	TT EMER MKT UNCONSTRAINED FD
MIRAE ASST EM MKT GR CONS-A	PUTNAM EMRG MRKTS EQTY-A	TT EMERGING MRKTS EQ-A1-USD
MIRAE ASST EMERG MKTS-A	PZENA EMERG MKT VALUE FD-A	UBAM-GLOBAL EMERG EQY-ADIS
MNSTY MCKY EM MRKT EQTY-A	PZENA EMERG MKTS VALUE-INST	UBP MULTIF II-EM MRK EQ-AUSD
MOMENTUM-MOM IF G EM EQ-AUSD	QCF LUX-BAMBOO-I USD	UBS (CH) IF-EQ EM MT AS I-A1
MONACTION EMERGING MARKETS	QS EMERGING MARKETS FD - C	UBS (CH) IF-EQ EM MT SG I-X
MONDRIAN EMRG MRKT EQTY	QUANTIS GLB EM MKT EQY-A	UBS CH EQ EM GLB PASS II-IB
MONDRIAN FOCUS EMER MKT EQTY	RAM LUX SYS-EM COR EQ-IP	UBS CH EQ-EMER HI DVD USD-P
MONTGOMERY VAR SERIES EMG MK	RAM LUX SYS-EMER MKTS EQ-B	UBS CH EQY LAT AMER USD-P
MORGAN ST EMERG LEAD EQ-A	RBC EMERG MKTS SM CAP EQ-I	UBS L E-EM MKTS S/C USD-PA
MORGAN ST INV F-BO NAT-A	RBC EMERGING MARKETS EQ-A	UBS L E-EME MRKT IN USD-PA
MORGAN ST INV F-EMG MK EQ-A	RBC EMERGING MKT VALUE-OAUSD	UBS L EQ S-GL EM OP USD-PA
MORGAN ST INV F-LAT AM EQT-A	RBC LUX EMERG MARKETS EQU-O	UBS L-EM M HI DIV USD-PA
MOST TOBAM A/B EM MK EQ-A	RENAISSANCE GLB EM YLD FD-A	UBS LUX EQ2 - GLOBAL GRWT-P
MOTLEY FOOL EMERG MRKTS-INV	ROBECO EMER MKTS SM COS-DUSD	UBS LUX-EMER M SUS USD-PA
MPS-CEAMS Q EMER MRKTS EQ-B	ROBECO QI EMMK EN IN-IUSD	UBS LUX-EMERG MRKT EQ PAS-BA
MS GALAXY-FRONTIER EM MKT-A	RUSS INV EM MK EQ FUND-AA	UBS LX INST EMERG MRKT EQ-XA
MS INVF-FR MKTS EQ FUN-A USD	RUSSELL EMERGING MARKETS-S	UBS LX-EMMK RIS GT USD-PACC
MSCI EMERG MK ESG EQTY-I USD	RUSSELL FRNTIER MKTS EQ- A	UBS-GL EM MRKT OPPORT-IX USD
MSIF EM MRKT BRKOUT NTNS-A	RUSSELL SHARIA EMERG MRKTS A	UNI-GLOBAL-EQ EM MKTS-SAUSD
MSIF EMERG MRKTS LDRS-I	RWC GLOBAL EMERG MKTSB USD	USAA EMERGING MARKETS-FND
MSIF EMERG MRKTS SM CAP-A	RYDEX SERIES EMG MKT 2X-A	USGI EMERGING EUROPE FUND
MSIF EMERGING MARKETS-I	RYDEX SERIES INV EM 2X-A	USGI-GLOBAL EMERGING MARKETS
MSIF FRONTIER MARKETS-A	SA EMERG MRKTS VAL	VAM FDS-FRONTIER MARKETS-A
MSVIF-EMERG MRKTS EQTY-I	SALIENT EM DIVID SIGNAL-INST	VAM FUND LUX-EMERGING MARK-A
MY FUNDS-EMERG-EQUITIES	SALIENT EM INFRASTRUCTUR-A	VAN ECK EMERGING MARKETS-A
NATIONWD BAILRD EM EQ-A	SANDS CAP EMER MKT GW-AA USD	VAN ECK-EMMKTS EQ UCT-USDR1A
NATIXIS EMERISE LAT AM-IAUSD	SARASIN IE EM SYS MKD-A USDA	VANECK EMERG MRKTS EQY-USDI2
NBAD EMERGING MARKETS	SATRIX-EMER MKT EQTY TRK-AD	VANGUARD EM MKT STK IND-INV
NEUBER BER EMR MKTS EQ-USDIA	SC GLB EMERG MKTS OPP EQTS-A	VANGUARD EMRG MK SEL STK-INV
NEUBERG BERM EMRG MRKT-A	SC GLB EMERG MRK R/V EQT-A	VF-MTX SUST EM MK L-AUSD
NEW RUSSIA GROWTH FUND LTD-$	SCHRODER EMER MKT SM CAP-INV	VICTORIA 1522 FUND-ADV
NEW STAR GLB INV-ASIAN OPP-$	SCHRODER EMERGING MARKET-IN	VICTORY CEMP EM VOL WTD-A
NEWFONDLAND ARMADILIO FD-C	SCHRODER EMG MKT M/C EQ-ADV	VICTORY EXPED EM MKTS S/C-I
NICHOLAS APP EM COUNTRIES-I	SCHRODER INT E ASIA-AUSD-ACC	VICTORY SOPHUS EM MKTS S/C-A
NICHOLAS APP EMG MK OPP-I	SCHRODER INT-GL EM M OP-A-A	VICTORY SOPHUS EMRG MKTS-A
NICHOLAS APPLEGATE EM MRK-I	SCHRODER INTL BRIC-A AC USD	VICTORY SQUARE GEM AGMVK
NILE AFRICA FRONT & EMERG-A	SCHRODER INTL EMERG MKTS-AAC	VICTORY TRIVALENT EM S/C-A
NN L - LATIN AMERICA EQT-PD	SCHRODER INTL LATIN AMER-AAC	VIETNAM EMERGING MARKET FUND
NOMURA FD-GL FR EM EQ-IUSD	SCHRODER-GL EM SM CO-I	VIRTUS EMERGING MKTS EQ-A
NOMURA PART GL EMG MKTS-A	SCHRODER-QEP GL EM MKT-AUSDA	VIRTUS KAR EM MKTS S/C-A
NOMURA-GLOBAL EMERGING-IAUSD	SCHWAB FND E/M LRG CO IX-INS	VIRTUS VNTBL EM MKTS OPP-I
NORDEA 1 EMRG STARS EQ-BPUSD	SCOUT EMERGING MARKETS FUND	VITRUVIUS EMERGING MKTS-BUSD
NORDEA 1-EM MKTS FOC E-EUSD	SCUDDER GLB OP-EMG MKT EQ-A2	VONTOBEL GLB EMRG MKT EQ-I
NORDEA 1-STBLE EMMK EQ-BPUSD	SCUDO AZIONARIO PAESI EMERGE	VONTOBEL-EMERG MARKET EQ-A
NORTHERN EMERG MRKTS EQTY	SEAFARER OVRSEA GR & INC-INS	VOYA EMERG MKTS EQ DVD-A
NRTHRN ACT M EM MRKT EQ	SEB SICAV 1-EMERGING MARKETS	VOYA MM EMERG MKTS EQ-I
NT-EMKTS CUS LC OP EQ ID-USC	SECURITY ASIA EMERGENTE-A	VP-SECTORAL EM MARK HC P USD
NUVEEN TRADE EMERG MRKTS-AUS	SEDCO SC GLOBAL EMKT EQ P-S	WASATCH EMER MKT SM CAP-INV
NUVEEN TRADEWINDS EM MKTS-A	SEG BRY & HAM EMER MRKTS-A	WASATCH EMERGING MKT SEL-INV
OAKTREE EMERG MRKTS EQ-ADV	SEI EMERGING MARKETS EQ-A	WASATCH FRONT EMERG SM-INV
OLD MUT MSCI EM MKT-INDX CHA	SEI EMERGING MARKETS EQ-F	WCM FOCUSED EMG MARKETS-INS
OLD MUTUAL CLAY FIN EMERG-A	SEI ISLAM EM MK EQ-$ ACC	WCM FOCUSED GLOBAL GROW-INST
OMGB EMERGING MARKET EQ USD	SEI-EM MKT EQT-USD INSTIT	WEGELIN GUE EQ ACT EM MKTS-$
OPPENHEIMER DEVELOPING MKT-A	SELIGMAN EMERGING MARKETS-A	WELL EM LOC EQ-S USD AC
OPPENHEIMER EM INNOVATORS-A	SERVICED-JAV CAP EMMK A-DUSD	WELL EM MKT SYST EQ-S USD AC
OPPENHEIMER-BARING DEV MKT-A	SGAM FD-EQUTY GLO EMER CO-A	WELL EM MKTS RES EQ S USD AC
ORBIS SICAV EM EQ- IS	SILK INV NW HRZNS FRNT-SRV	WELL EMG MKT THEMES-D USD AC
OSTRUM EM EMERG EURO-IAUSD	SILK-ROAD FRONTIERS FD-RUSD	WELL EMG MKTS EQ FD-S USD AC
OSTRUM-ASIA EQUITY FD-IAUSD	SIT DEVELOPING MKTS GROW	WELLS FARGO ADV EMG MK E-ADM
OVERSTONE EMERG MRKTS EQ-A	SKYLINE ARGA EMKT EQTY-AUSD	WELLS FARGO ADV IN EM MK-I
OVERSTONE SMM COM EQUITY-A	SOMERSET FRONTIER MARKETS FU	WELLS FARGO E/M EQTY INC-A
OVRSTN UCIT SM CO-A USD UNHG	SOMERSET GLOBAL EMER MKT LLC	WELLS FARGO EM MRKT EQ-A
OYSTER EMERG OPP-C USD	SOMERSET SML MID EM ALL CTRY	WELLS FARGO EMMK EQ II-AUSD
OYSTER FPP EMERG MKTS USD	SOMERSET-EMRG MKTS SMALL CAP	WELLS FARGO EMR MKTS EQ-AUSD
OYSTER GLOBAL EMER MKT-USD	SPI BANGLADESH FUND-A	WESTWOOD EMERGING MKTS-A
PACE INTL EMG MKT EQTY-P	SSGA GLOBAL EMERG MKTS IND E	WFA EMERG MRKTS EQ SEL-A
PAM FUNDS-GLOB EMERG SMALL-I	STANDARD EMERG MARKETS PRO-A	WHV/EAM EMER MKT S/C EQ-I
PARAMETRIC EMERGING MRKTS-A	STANDARD L-G EMK EQ UNCON-A	WILLIAM BLAIR EM S/C GR-N
PARAMETRIC TX-MGD EM MK-INST	STATE ST DISC EM MRKT EQ-N	WILLIAM BLAIR EMER MALEAD -A
PARVEST EMER MRKT EQTYS-CL C	STATE ST EMG MKT EQTY IDX-K	WILLIAM BLAIR EMG MKT LDR-IS
PARVEST EQ WL EMG SM CP-N	STEWART GL EM MK LDR-I	WILLIAM BLAIR EMG MKTS GR-IN
PARVEST EQ WLD EMERG-CC	STRATEGIC ADV INTL MM	WILLIAM BLAIR-EMERG MRKTS-I
PARVEST EQU-WORLD-EM -CC	STT-EMMK SRI ENHNCD EQTY F-I	WILLIAM BLAIR-EMK SMC GR-IC
PARVEST EQUITY BRIC-CLASS C	STT-ENHCD EMERG MKT EQT FN-I	
PARVEST STEP 80 WRLD EM$-CC	SURA ACC DE MER EMERG FMIV	
PARWORLD TRACK EMER MKT-I-PL	SWISSCANTO CH EF EMR M-AAUSD	
PAVILION EMERG MARK FOC EQY	SWISSCANTO LU SUSTN EMERG-AT	
PBI-EMERGING EUROPE EQUITY-Y	SWISSCANTO SAMM EM MKT-SST2	
PBI-GLB EMG MKT RSCH EN F-Y	SYMPHONY-CONCERTO EMERGING F	
PBI-GLOBAL EMERGING M EQ-Y	T ROWE PR EMERG EUR	
PBI-LATIN AMERICA EQUI-Y	T ROWE PR EMERG MKTS VAL	
PCP EMERGING MARKETS FUND	T ROWE PR INST EM MKT EQ	
PEAR TR PANAGORA EM MKT-ORD	T ROWE PR INST FR MKT EQ	
PEAR TREE PANAGORA RSK-INST	T ROWE PRICE EMERG MRKT ST	
PGIM JENN EMERG MRKTS-A	T. ROWE PRICE-EMKT VLU EQT-A	
PGIM QMA EMERG MRKT EQTY-Q	TCW DEVELOPING MARKETS EQ-I	
PICTET CH-EMRNG MK T-ZDYUSD	TCW EMERGING MARKETS EQ-I	
PICTET EMERG MKT SUS EQ-IUSD	TEMPLETON DEVELOP MRKTS-A	
PICTET EMERG MKTS HI D-PUSD	TEMPLETON EMERGING MARKETS	
PICTET F LUX-EM MK LG CAP-I$	TEMPLETON FRONTIER MARKETS-A	
PICTET PICM-GLOB EMER MKT-FL	TEMPLETON SHARIAH GB E-AAUSD	
PICTET-EMERG MRKT-P USD	THE RUSSIAN PROSPERITY FD-A	
PICTET-EMRG MKT INDX-PUSD	THEAM QUANT GURU G EM E-AUSD	
PIMCO EQS EMG MARKETS-C	THOMAS WHITE EMERG MKTS-INV	
PIMCO G RAE PLUS EM MARK-IA	THORNBURG DEVELOPING WRLD-A	
PIMCO RAE EMERG MRKT-A	THREAD-STA GL EM PR SE-IU	
PIMCO RAE PLUS EMG-INST	THREADNED LX MON-EMRG MKT-M	
POLAR EMERGNG MKTS GROW-RUSD	THREADNEEDLE-GL EM MKT E-AU	
POLUNIN CAPITAL PAR DEV CO-A	THRIVENT PART EMER MKTS EQ-A	
POLUNIN DISC-FRONTR MRK-AUSD	TIAA-CREF EM MKT EQ IND-INST	
POLUNIN EMRG MKTS TECH-A USD	TIAA-CREF EMER MRKT EQ-INST	
POLUNIN FUNDS-DEVEL COUNTR	TIMOTHY PLAN EMERG MRKTS-A	
POLUNIN FUNDS-EM SMALL CP	TMPLTN EM MRKT SM CAP-C	
POWER CAPITAL LTD-NAVIGATO-B	TOBAM EMERGING MARKETS-I	

Table 10: List of fixed income funds

1167 ACT-GLB HIGH INC BD-A2	FFTW II-GLB EMERG MKTS BND-B	MAINFIRST-EMMK COR BD BAL-A0	SOVEREIGN HIGH YIELD LOCAL-A
AB SICAV I-EMR MK CR DB-S1	FICA INVESTMENT-EMER MKT BND	MANULIF USD ST IN F-AD1 BE U	SSGA-MUL-FAC PR EMK B-SUSD
ABERD GL II-EM TOT RET BD-I1	FIDELITY ADV GLBL CRDT-A	MANULIFE 3YR ASIA BD FD-USDA	STANDARD LIFE EMERG MK DT-AA
ABERDEEN EM MKT DBT-A	FIDELITY ADV INTL BND-A	MANULIFE STRAT FX INC-RUSDA	STANDARD-EMR MKT ST BD-A
ABERDEEN G-EMMK CB-Z MINCUSD	FIDELITY FD-EMK CP DB-A USD	MBS FUND LAMBDA	STANDISH MELL EMG MKT DBT
ABERDEEN GL-EMLCB-AACCUSD	FIDELITY-EM MKT TR DB-AA USD	MCB AFRICA BOND FUND-A	STNDRD LIFE-EMMK CRP BD-D
ABERDEEN GL-FMB-AMINCUSD	FIRST STATE EMERG MRKTS BD-I	MERIAN EMMKT DEBT A USD ACC	STONE HARBOR EM MKT CORP-INS
ABERDEEN GL-SL EMMK BD-AAUSD	FIRST STATE-GL EM MKT-III AC	MERIAN LOCUREMMKTDE A USD AC	STONE HARBOR EM MKT DEBT-INS
ABN AMRO FDS-GB EM MK BD-A	FRANK EMERG MKT CRP DBT-IAUS	MERIT FIXED INCOME LT-PART	STONE HARBOR-EM MK DBT-MUSDA
AC ALT EM OPP TTL RTRN-A	FRANK TP INV EM BD-A QDISUSD	MERRILL LYNCH DEV LT M-LC-A1	STONE-INV GR EMMK DEBT-IUSDA
ACADIAN EMG MKTS DEBT FD-INS	FRANKLIN EMER MKT I/G-IAUSD	MERRILL LYNCH DEV LT M-U$-A1	STRATEGIC-GLB EMG MKTS FI
ACADIAN EMKT LOCAL DEBT-USD	FRANKLIN EMG MK DEB OPP FUND	MERRILL-EMRG MKTS DEBT 1-S2$	SWISS LF LX-BD EMKTS CP-IC
ACTIVEST EMERGING RENT	FRANKLIN-EMERG MKTS DB-USD I	MFS INV-EMERG MARK DBT-Q2USD	SWISSCANTO LU B EM A HUSD-AT
ALLIANZ CHINA STRG BD-A USD	GALLOWAY BRAZIL FIXED INC-A	MFS MER-EMERG MARK DEBT-A1	SYD EM SUST BLND DBT-IUSDA
ALLIANZ RENMINBI FION-IT USD	GALLOWAY GL EM HY BD-B I 0.5	MFS MER-EMKT DB LOC CU-A1USD	SYMBIOTICS EMER IMP BD-A/C
ALLIANZGI EMER MKTS DBT-INST	GALLOWAY GL EM HY BOND-B STN	MFS MERIDIAN EMER MKTS DB-B2	T ROWE PR-EMER MK BD-I
AMER BCN-FRNTR MRKT INC-A	GALLOWAY GL FIX IN-INI	MFS MERIDIAN GLB OPP BND-A1U	T. ROWE PRICE-GL HI BD-A
AMUNDI F2 - EM MKTS CB-AUSD	GAM ABS RET EMERG BD-USD A	MFS-EMMK LOC CUR DB II-Q2USD	TCW EMERG MKTS INCOME-I
AMUNDI F2 -EMER MKTS BD-IUSD	GAM EM CORPORATE BD-USD A	MILLENNIUM-EMERG MK DBT-R	TCW FUNDS-EMER MKT INC-AU
AMUNDI-BOND GL EMRG CORP-IUC	GAM EM OPPORT BD-USD A	MIRAE ASSET GB DYN BD F-USDA	TEMPLETON EMERG MKTS BND-A
AOL-BONOS SOBER EMERGENTES	GAM EMERGING BD-USD B	MNSTY MCKY EM MRKT DBT-B	TERREUS HIGH INCOME FUND-FAF
ASHMORE EM CORP HY-INC USD	GAM STAR-LOC EMER RA FX-USDA	MORGAN ST INV F-EM MK DOM-A	THE ARAB INCOME FUND LTD
ASHMORE EM MKTS ABS RET D-I	GEMLOC FUND	MORGAN ST-EMER MARK DBT-AUSD	THE EMERGING MARKETS DEBT FD
ASHMORE EM TOTAL RETURN II-I	GENERALI-EMERGING MKT BOND-D	MORGAN ST-EMERG MKTS CP D-A	THE STANDARD LATIN DAILY-A
ASHMORE EM TOTAL RETURN-II	GIM-GIM MG EMK CP DB-U	MSIF EM MRKT FIX INC OPP-A	THE STANDARD S/T BOND FD-A
ASHMORE EMER MK BLEND DB-IIU	GL EVO FD EM FRONTIER-Z USD	MSIF EMKTS FIX IN OPP-A	THREADNEEDLE-EM MK B-RI-USD
ASHMORE EMER MKT DIST DEBT	GLDMN SCHS TTL E/M INC-A	MSIF-EMER MKTS DOM DBT-I	THREADNEEDLE-EM MKT DBT-AU
ASHMORE EMERG MKT LOC C CD-I	GLG INV VI-EM CUR&FI-IL-H$	MULT MGR ACCESS II-USD FA	THREADNEEDLE-EMMKT CP BD-AUP
ASHMORE EMKTS SH DUR-I	GLG-GL EM MK DB TR-I US	MUZIN-EMRG MKTS SHORT DUR-SU	THREADNEEDLE-GL E MKT ST-AU
ASHMORE EMMK ASIAN CO BD-INS	GLOBAL EVOLUT-EMERG MKT LC-$	NATIONW EM MKTS DBT-A	TIAA EMG MKT DB-AUA
ASHMORE EMMK INV GD TR-INS	GMO EMERG COUNTRY DEBT INV	NATIX-LS ST EM MRKT BOND-I/A	TIAA-CREF EM MRKT DEBT-INST
ASHMORE LOCAL CURRENCY FUND	GMO EMERG COUNTRY DEBT-III	NB EMERG MKTS DBT-BL F-USDI3	TOWER FUND-LOC CUR EMRG MKTS
ASHMORE SIC-EM SOV ING DEBT	GRAMERCY CORP EM DBT-USD ACC	NEUBERG BRM-SH DUR EM MK-I U	TRANSAM EMER MKTS DBT-A
ASHMORE SICAV-EMK INGC DEBT	GRAMERCY HY CRP EM D-USD ACC	NEUBERGER BRM EM DB HC-USDAA	TROWE GLOBAL INV GR CRP BD-A
ASHMORE-EM CORP PRV DBT-ACCU	GREATLOTUS GL BOND TOT RETUR	NEW CAP LUX-EM MK BD-A USD	TROWE PRICE-EMKTS CORP B-A
ASHMORE-EM HY CRP DB FD-I3	GS EM DBT BLD PT BASE USD A	NEW STAR GLB INV-ST GVT BD-$	UBAM EMERG MKT CP BD USD-AC
ASHMORE-EM MK INV GR L CR-II	GS EM MKT DBT USD	NIKKO AM E/M LOC CURR B-AUSD	UBAM FCP-E INV G CB IHC-USD
ASHMORE-EM MKTS SOV DB-IUSD	GS EMRG MKT DEBT PT BASE USD	NN L EMK COR DEB-XA	UBAM-EM CPT BD SH DTN-AC
ASHMORE-EMER MKTS DEBT-R USD	GS EMRG MRKT CORP BD PT IA	NN L EMK DBT LOC-IC	UBAM-EMRG MKT DBT OP-USD-IC
ASHMORE-EMKT COR DB-INST USD	H20 GS-MLTI EMERG DBT-I USD	NN L-EMG MKT DEBT OPP-ICPUSD	UBAM-LOC CURR EMMKT BD-AC
ASHMORE-LOCAL CURRENCY-RUSDD	H2O MULTIEMERGING DEBT-IUSDC	NN L-FRNT MK DBHC-I	UBS EMERGING MARKETS DEBT-A
ATRAM EMERG MKTS BOND FEEDER	HARBOR EMERG MKT DEBT-INST	NOMURA - EM MK LC DEBT-I USD	UBS EMKTS BDS 2018 USD-K1ACC
AVIVA EMRG MRKT DBT OPP-I	HARVEST EMER MKT BOND FD-C2	NORDEA 1 EMMK LOCAL DB-BIUSD	UBS EMR ECO-G BD USD-USDP AC
AVIVA II–EMER MKT INF LNK-1	HRTFRD SCH EM MKT M/S BD-A	NORDEA 1 EMRG MKT BOND-BPUSD	UBS GS-HIGH YLD EMMA BDS-FD
AVIVA-EMERGING MKT-BD-B USD	HSBC EM MKT INV GR INC-DIST	NORDEA 1-EM MKT COR BD-BPUSD	UBS LUX EXPOS-EM MRK BND-GD
AXA WF EM MKT LOC CUR BD-I	HSBC EMERG MRKTS DBT-A	NORDEA 1-EMK HRD CUR BD-BPUS	UBS LX INST EM MKTS BD-BA
AXA WF-GLB EM MK BNDS-FCUSD	HSBC GIF-GEM DBT TOT RT-MUSD	NORDEA 1-EMMK BD OPP-EUSD	UBS-EM BD 2017 USD - P ACC
BAILLIE GIF WW EMBD-USD B AC	HSBC GIF-GL EM MKT CORP-AC	NRTHRN MM EMG MKT DBT OPP	UBS-EMERG ECON CRP USD-UX-IX
BARCLAYS GL AC EMK-M USD INC	HSBC GIF-GL EM MKT IGB-I USD	ODDO-GLB EMRG MKTS BOND-CU	UBS-EMERG MKT BD 2016-PAC
BARING EMK CORP DB-A ACCUSDR	HSBC GIF-GL EMER MK BD-PDUSD	ODYSSEY EMERGING MKT BOND FD	VALLEY FUND-FIXED INCOME AGG
BARINGS EMKTS DBTAUSDA	HSBC GIF-GLB EMMK LCL DB-AC	OMG-SCHRODER EMERG MKT BD FD	VAN ECK UNCONST EMERG BND-A
BARINGS G EM DB TR-AUSD ACC	HSBC GLB INV-INDON BD-BC	OPPENHEIMER-BARING EMMK DE-A	VAN ECK-UNCONST EMR MK B-I1
BAYERNINVEST-EMK S BD AK-USD	HSBC INV TR-EM INFL BD-ADUSD	PACTUAL CORP DEBT HIGH YIELD	VAN KAMPEN EMERG MARK INC-A
BB FUND CLASS E	HSBC IS-EMG MKTS BOND	PACTUAL HIGH INCOME FUND LTD	VANGUARD EM MKT GOV BND-ADM
BCP-EMERGING MRK FI USD	HSBC PRV BK-EMMK FS FX INC-A	PACTUAL ORBIT DEBT FUND	VANGUARD EMERG MKTS BND-INV
BGF-EMERGING MARKETS BD-A2	HSBC REPUBLIC LATAM S/D INCO	PARVEST BD WORLD EMER ADV-CA	VONT FD-SUS EM MKT LC BD-B
BLACKROCK GIF I EMKT GOV-X2U	HSBC TOTAL RETURN FUND-A	PARVEST BOND BEST SEL-CC	VONTOBEL E-M CORP BOND-I USD
BLACKROCK GL-EMK COR BD-A2US	HSBC-SEL EMERG MKTS DEBT FD	PARVEST BOND WORLD EMER-CL-C	VONTOBEL-EM MK BD-X
BLACKROCK GL-EMK I/G BD-A2US	IGS-EM MRK INV GR COR D-SUS2	PARWORLD TRACK EMERGING BD-C	VONTOBEL-EM MKT DBT-B
BLACKROCK STR-EMK FX DY B-A2	IGS-EMK LOCAL CUR TRD FD-S2	PARWORLD TRACK EMMKT BD-IP	WELL EMG & SOV OPP-E USD AC
BLUEBAY EMK AGG BD-I USD	IGS-EMRG MKTS CORP DEBT-AUSD	PAYDEN EMER MRKT BOND FUND	WELL EMG MKTS DBT T USD AC
BLUEBAY EMMK CONVER BD-B USD	IGSF-EMERG MRKTS BLEND DB-A	PAYDEN EMER MRKT CORP BD-ADV	WELL OP EM DBT-S USD AC
BLUEBAY-EMER MKT CORP B-RUSD	IGSF-EMK LOC CUR DY DB-AUSDA	PAYDEN-GLB EMRG MKTS-USD	WESTERN ASSET EM MKT DEBT-A
BLUEBAY-EMRGNG MKT BOND-BUSD	ING EMERGING MARKETS FI-A	PBI-GLOBAL EMER MARK BOND-Y	WF GUOTAI JUNAN EM TR-B1 USD
BLUEORCHARD MICROFIN DEBT-US	ING L FLEX- EMD DOLLAR-P-D	PGIM EMER MKT CORP BOND-USDA	WWIDE INV PORT-EMERG FIXED-A
BMO TCH EMG BOND-I	INTL OPP FD SPC-ENH YLD CL A	PGIS-SOCIAL RES EM MK B-IA	
BNPP L1-BOND WORLD EME-N	INVESCO EM MK CORP BD-AAUSD	PHILAE FD ACTIVE EM DEBT-A	
BNY MELLON GL-EM MK DBT-CUSD	INVESCO EMERG MKT BND-A	PHOENIX EMERGING MKT BOND-A	
BNY MELLON-EM DBT OPP-C USD	INVESCO GL HIGH INC-A	PICTET EMERGING CORP BD-IUSD	
BNY-EM MRKTS CORP DEBT-C-USD	INVESCO-GLB HIGH INC-ASD	PICTET-GLOBAL EMRG DEBT-PUSD	
BREVAN HOW-EMMK LOC F/I-AUSD	INVESTEC EM HARD CR DB-AUSD2	PICTET-SHTRM EM CRP BD-IUSD	
BRNGS EM EMT CORP BD-AA USD	INVESTEC EMMK LCL CRCY IUSD	PIMCO CRD FX MT 2019 SEG-USD	
BTG PACT-EMG MKT BND LX-I	INVESTEC-EM MKT INV GR DBT-I	PIMCO GIS EMKTS 2018-IA	
CANDR BONDS-EMER MKTS-DIS	INVESTIN PRO EM MK CORP-I	PIMCO GIS-EM ASIA BND-EUSDI	
CAP GRP EM LOCAL DEBT-B USD	JAN HND HRZN EM MKT CB-A2USD	PIMCO GIS-EMERGING MKT INS A	
CAP GRP EMERG MK DEBT-B USD	JB FI EM HARD CURRENCY USD-B	PIMCO-EMR CRP BD-ACC-INS-USD	
CAP INT EM USD DEBT-B USD	JPM EM MK INV GR BD-A-A-USD	PINEBRIDGE-EM MK CORP BD-A	
CBL-EASTRN EUR BOND-USD	JPM EMER MK COR BD II-AUSDI	PLAINV MACKEY SH EMKT-B1USD	
CLARION GLOBAL EM BOND-AUSD	JPM EMER MRKTS STR DBT-A	PMT MATRIX RUSS & EM FI-A	
COLUMBIA EMERG MKTS BND-A	JPM EMERGING MARKETS BOND-A	PRINCIPAL GL-FIN EM DB-I USD	
COPERNICO LATAM HIGH YLD-B	JPM EMMKT STRATB-APERF ACCUS	PUB BONDS EMG MKTS HC 1-IB	
CREDIT SUISSE BF LUX EM AB-B	JPM LUX F-EMERG MKTS BD F-AA	PUTNAM EMERGING MK DEBT FD-A	
CS GUE EMERGING MKT BD-B	JPM-EMKT CRP BND PORT III-AA	PUTNAM EMRG MRKTS INC-A	
CS LUX EMERG MKT CRP B-BUSD	JPMORGAN EM CORP DEBT-A	RAM LX TAC II-ASIA BDTR-PI	
CS LUX EMMKT CORP IG-B USD	JPMORGAN EMERG MRKT DEBT-I	RBC BLUEBAY EMG MKT CORP-I	
CS SICAV II-EM MKT BD ABER-B	JPMORGAN EMRG MKTS CRP-AAUSD	RBC BLUEBAY EMG MKT UNC FI-I	
CSIF CH BD GV EMKTS US BL-DA	JPMORGAN F-EM MK DB-AUSD	RBC BLUEBAY EMRG MRKTS-I	
DAIWA EME MKT BD-MONTH-AUD H	JSS BOND-EM MKT HIGH YD-CUD	RMB INTL SICAV-EME MKT FI-B	
DAIWA EME MKT BD-MONTH-BRL H	JYSKE INVEST EMERG MARK BND	ROBECO-EMERG CRD-DHUSD	
DAIWA EMERGING TOC-USD AUD H	KAMES EMRG MKT BD OPP-CACUSD	ROGGE EM MKT LOCAL CURR-USD	
DAIWA EMERGING TOC-USD BRL H	KB LUX BD EM MKT USD DIST-A	RUBRICS EMER MKT FIX INC-A	
DAIWA EMERGING TOWER CUR-USD	KBC BONDS EMERGING MKTS-CAP	RUSS INV EM MKT DT FUND-BRLU	
DB ADV-EMMKT SOV DEBT-ICUSD	KBC MULTISAFE EMER MKTS BD1	RVF-RBZ EMERGING MKT BDS-1A	
DB PLAT-EMLIN SOVERIGN B-I1C	L&G EM MK SH DUR B-Z USD ACC	RYDEX EM BOND STRATEGY-A	
DEL ESTE HIGH YIELD FUND LTD	L&G EMERG MKT BOND-Z USD ACC	SALIENT EMER CORP DEBT-C	
DELAWARE EMG MARKETS DEBT-A	LAUDUS MNDRN GL GOVT FIX	SANTANDER-AM LATIN AM FIX-A	
DOUBLELINE EMG MKTS INC-I	LAZARD EMERGNG MKTS BD-AAUSD	SARASIN JSS CORP-GB EM-PUSDA	
DOUBLELINE LOW DUR EMG-I	LGT BD EM CREDIT OPPORT-A	SBGH-EMG MKTS DEBT-A DIS	
DRACO HY EM ASIAF-USD B	LGT BOND FUND EMMA QUAL-US-B	SCHRODER ISF EM DBT A R-A AC	
DREYFUS EM MKT DBT USD-A	LGT SLCT BD EMG MKT USD-B	SCHRODER ISF-EM COR BD-AUSDA	
DREYFUS OPPORT E/M DEB-A	LIONGLOBAL EMERG MKTS BD-USD	SCHRODER-CHINA FX INC-IUSDA	
DWS EMERGING SOV BD USD AUD	LM WA MACRO OPPORT BD-AAUSD	SCUDDER GLB OP-EM MKT BND-A1	
DWS EMRG MRKT FIX INC-S	LM-WA ASIAN OPPS-LMAUSD	SEA FD-ASIAN HIGH YLD BD-A	
DWS INSTITUTION EMG MKT BOND	LM-WA EM LOCAL CURR-A USD D	SEB SICAV 1-EMK CRP BD-CUSD	
DWS INVEST EMERGING YLD+$-A2	LM-WA EM MK TR BD-AINCDUSD	SECURITY LOC EM MKT DBT-A	
DWS INVEST-EMR MRK CO-US FC	LM-WA EMRG MRKTS CORP-PAUSD	SEI INST INTL EMG MKT DEBT-F	
EASTSPRING INV GLB EM BD-D	LO FUNDS II-EMG MKT FD-PAUSD	SEI INST INV EMG MKT DEBT-A	
EDM ROTH PRIFUND-BD EM USD-A	LO FUNDS-EMG LC BD FD-NA USD	SEI MASTER-EM MK DBT-USDIS A	
EDR EMRGNG CONVERTIBLES-AUSD	LO FUNDS-EMG MKT TR BD-PAUSD	SGAM FUND-BONDS EMG COUN-A	
EDR FUND EMERGING CRD-A USD	LO II-EME LC CR BD FD-PAUSD	SH-EM MKTS CORP DEBT-MUSDACC	
EMIRATES EM MK CP AB RET-PUI	LOOMIS SAYLES EMG OPPOR-A	SILK-AFRICAN BOND-R	
ESPA BND EMRG MARKETS CORP-A	LORD ABBETT EM MK CR BD-DAUA	SINOPAC SHORT TERM USD FI FD	
F&C PORT FD-EMMK BD-A USD	LUMEN EMG MARKET BD-USDB	SISF-EM MKT BND-A1 USD ACC	
FALCON F-SIC-EM MRK H/Y-AR	LV BONOS CORP BRASIL-P	SISF-EM MKT LCL CUR-A EUR AC	
FEDERATED EMG MKTS DEBT-IS	MAINFIRST EMMK CRD OPP-A0	SOVEREIGN H/Y HARD CURR FD-A	

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