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MARKET-TIMING PERFORMANCE OF MUTUAL FUND INVESTORS IN EMERGING  
MARKETS

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

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## 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

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# 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<sup>1</sup> 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<sup>2</sup>. 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-

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<sup>1</sup>[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.

<sup>2</sup>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<sup>3</sup> 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<sup>4</sup>. [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<sup>5</sup>. 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<sup>6</sup>. 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-weighted strategy.

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<sup>3</sup>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 \(2008\)](#).

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

<sup>5</sup>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 \(2014\)](#)).

<sup>6</sup>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 contains 96,594 monthly observations across 1,184 unique funds (774 equity and 410 fixed income)<sup>7</sup>. For each fund we collect Total Net Asset (TNA), Total Return (TR)<sup>8</sup> 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:

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

Table 1 reports selected summary statistics for the sample we study<sup>9</sup>.

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

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<sup>7</sup>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.

<sup>8</sup>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).

<sup>9</sup>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 statistics (1/2)

	n	TNA (mn\$)	Monthly net flow (mn\$)	Turnover (%)	Age (years)	Fee (%)	Excess return (%)	Five-Factor alpha (%)	Volatility (%)
<u>Equity</u>									
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
<u>Fixed income</u>									
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 preceding 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<sup>10</sup>. 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

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<sup>10</sup>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<sup>11</sup>. 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.

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<sup>11</sup>Aggregate bonds include both government and corporate securities.

Table 2: Descriptive statistics (2/2)

	n	Size			Area of domicile			Area of management				Style of investment				
		Small	Medium	Large	NA	CE	Other	NA	CE	Other	n.a.	Value	Growth	Blend	n.a.	
Equity																
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																
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<sup>12</sup>:

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

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 %)<sup>13</sup>. 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<sup>14</sup> 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 ( $\Gamma_i$ ) such as a tax heaven dummy variable that equals one if the fund has an off-shore domicile<sup>15</sup>, the fund manager stated fee (in %) and a US manager dummy variable that equals one if the fund is managed in the US.  $\nu_y$  and  $\eta_y$  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.

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<sup>12</sup>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.

<sup>13</sup>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 %)

<sup>14</sup>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.

<sup>15</sup>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*** (5.32)	0.85*** (3.50)	1.08*** (4.63)	0.82*** (3.30)		5.28*** (5.43)	5.06*** (4.98)	5.21*** (5.34)	5.08*** (4.94)	
Five-factor alpha					0.04 (0.78)					1.92*** (3.73)
Size	5.11*** (6.47)	5.12*** (6.50)	9.39*** (4.89)	9.43*** (4.89)	9.69*** (4.91)	4.47*** (7.82)	4.47*** (7.83)	6.19*** (6.85)	6.22*** (6.89)	6.56*** (6.94)
Age	-0.98*** (-6.60)	-0.98*** (-6.60)	-4.95*** (-3.40)	-5.42*** (-3.76)	-5.52*** (-3.80)	-0.68*** (-4.19)	-0.68*** (-4.19)	-7.80*** (-5.60)	-6.88*** (-5.03)	-7.58*** (-5.36)
3m Tbills	-0.01** (-1.91)	-0.01** (-2.54)	-0.01 (-1.63)	-0.01** (-2.22)	-0.01*** (-2.77)	-0.01*** (-4.80)	-0.01*** (-4.70)	-0.01*** (-4.39)	-0.01*** (-4.43)	-0.01*** (-5.29)
US sentiment	-0.39*** (-2.60)	-0.57*** (-3.27)	-0.43*** (-2.80)	-0.60** (-3.43)	-0.56*** (-3.23)	-0.16 (-1.51)	-0.21 (-1.60)	-0.20* (-1.84)	-0.26* (-1.85)	-0.30** (-2.14)
Slope	-0.04* (-1.81)		-5.12** (-2.12)			-3.10** (-2.25)		-4.64*** (-2.91)		
VIX		-0.54** (-2.32)		-0.51** (-2.24)	-0.69*** (-3.19)		-0.09 (-0.72)		-0.11 (-0.86)	-0.49*** (-4.14)
US recession		16.68** (2.36)		21.37*** (2.96)	19.26** (2.59)		-4.43 (-0.61)		-0.28 (-0.04)	-6.93 (-0.85)
Tax heavens	-4.07*** (-2.30)	-4.08** (-2.31)	-	-	-	0.56 (0.41)	0.57 (0.42)	-	-	-
Fee	2.20 (0.89)	2.21 (0.89)	-	-	-	0.03 (0.03)	0.01 (0.01)	-	-	-
US manager	1.03 (0.72)	1.04 (0.72)	-	-	-	-1.96 (-1.47)	-1.96 (-1.47)	-	-	-
Constant	27.30* (1.70)	58.21*** (2.72)	-3.24 (-0.19)	24.68 (1.12)	32.68* (1.73)	-3.57 (-0.31)	4.60 (0.28)	-47.88*** (-3.81)	-33.84** (-2.20)	-8.89 (-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 between 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 ( $\Gamma_i$ ) 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  $\beta_{Ret}$  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<sup>16</sup> as the market factor for EM equity and the Morningstar EM corporate bond index<sup>17</sup> 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<sup>18</sup>. 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

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<sup>16</sup>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.

<sup>17</sup>The Morningstar Emerging Markets Corporate Bond Index includes the most liquid corporate bonds issued in US\$ by corporations domiciled in the Emerging Markets.

<sup>18</sup>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<sup>19</sup>. 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  $\bar{r}_{i,t \rightarrow t+h}^{TW}$  the time-weighted net geometric excess return of an  $t, t+h$  investment started in month  $t$  with an horizon of  $h$  months:

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

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<sup>20</sup>. We estimate the performance of the dollar-weighted strategy through its internal rate of

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<sup>19</sup>We also estimate a model where we include front-load fee instead of total management fee and findings are unaltered.

<sup>20</sup>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:

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

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  $j = 1, \dots, h$ , are the net flows in and out each mutual fund<sup>21</sup>, 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:

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

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):

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

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.

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<sup>21</sup>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<sup>22</sup>. 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<sup>th</sup> percentile (computing the gap with IRR method) and the 67<sup>th</sup> 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,

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<sup>22</sup>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<sup>23</sup>. 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 ( $flow_{i,t} = \frac{Flow_{i,t}}{TNA_{i,t-1}}$ ). 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:

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

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<sup>24</sup>. Subsequent monthly total net asset values are calculated endogenously using the simulated returns and net cash flows, with:

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

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.

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

<sup>24</sup>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 (0.15)	0.53 (0.05)	0.56 (0.08)	-0.05 (0.00)	0.47 (0.04)	0.78 (0.00)	-0.21 (0.04)	0.86 (0.01)	1.01 (0.02)	-0.36 (0.05)
Dollar-weighted	0.59 (0.15)	0.47 (0.05)	0.54 (0.07)	-0.11 (0.01)	0.41 (0.04)	0.76 (0.00)	-0.23 (0.03)	0.85 (0.01)	1.03 (0.02)	-0.32 (0.04)
Performance gap	-0.06 (0.01)	-0.05 (0.01)	-0.03 (0.03)	-0.09 (0.00)	-0.06 (0.04)	-0.03 (0.00)	-0.02 (0.03)	-0.01 (0.02)	0.02 (0.02)	0.04 (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<sup>th</sup> 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<sup>th</sup> 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
<b>Equity</b>				
All funds (n=774)	-0.01 (0.01)	-0.06 (0.01)	-0.08 (0.01)	-0.08 (0.01)
Value funds (n=85)	-0.01 (0.01)	-0.04 (0.01)	-0.09 (0.02)	-0.06 (0.02)
Growth funds (n=155)	-0.04 (0.01)	-0.08 (0.01)	-0.12 (0.01)	-0.12 (0.01)
Blend funds (n=486)	-0.01 (0.01)	-0.04 (0.01)	-0.06 (0.01)	-0.06 (0.01)
<b>Fixed income</b>				
All funds (n=410)	-0.03 (0.01)	-0.05 (0.01)	-0.08 (0.01)	-0.10 (0.01)
Government funds (n=37)	-0.04 (0.01)	-0.06 (0.01)	-0.09 (0.01)	-0.11 (0.01)
Corporate funds (n=62)	-0.04 (0.01)	-0.07 (0.02)	-0.10 (0.02)	-0.11 (0.02)
Aggregate funds (n=264)	-0.03 (0.01)	-0.06 (0.01)	-0.09 (0.01)	-0.11 (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-weighted 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 contains 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-MIC
AB EMERGING MARKETS PORT	BEL AIR-TOP HI GRW MKRT-IUSD	EATON VANCE PARA EM CORE-INS	HSBC GIF-BRIC MKRT-ECUSD
AB FCP I-EMER MKRT GRW-A	BGF EMERGING MARKETS-2	EATON VANCE PARA EM MK-A2USD	HSBC GIF-FRONTIER WEALTH-AUSD
AB FCP II-EMRG MKT VL-S1 USD	BGF EMERGING MARKETS EQ IN-A2	EDINBURGH PAR-EMER OPP-I USD	HSBC GIF-EMERG MKT-ACC
AB FLEXFEE EM MKTS GRW-ADV	BGF-EMERGING MARKETS FD-A2	EMERG 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-MIC
ABAHIS EMERGING MKT EQ-A USD	BLACKROCK EMERG MKRTS-I	EMERG INDIA NEXT TRIL DOL OP	HSBC GIF-GL EMERG MKT EQY-AD
ABERBEEN GL-EMSC-ACCUSD	BLACKROCK GIF I EM MKT EQ-X2U	EMERG MKTS EQUITY FUND-I USD	HSBC INTL SEL-MA GB EMKT-AD
ABERBEEN GL-FMB-IACCUSD	BLCKCRK ADV EMERG MKRTS-I	EMERG STAR FCC-CELL D EMG MK	HSBC IS-GLOBAL EM MKT EQ-A
ABERDEEN EMER MKTS-A	BLCKCRK EMERG MKRTS DVD-A	EMERG MARKET EQT FUND	HSBC-GL E/M EQ ABS RT-L
ABERDEEN EMER MKTS-INST	BMO LGM EM MARKETS EQUITY-A	EMERGING MARKET GLOBAL FD-A	HSBC-SEL EMERGING MARKETS EQ
ABERDEEN GL-EM INFR-ACCUSD	BMO LGM FRONTIER MKRTS-B ACC	EMERGING MARKETS GROWTH-M	ICON EMERGING MKTS FD-S
ABERDEEN GL-EMMKT EQTY-AAUSD	BMOLGM GL EM MR GR IN-Y-B-IN	EMERGING MARKETS STRATEGI-AC	ING EMERGING COUNTRIES-A
ABERDEEN INTL-EMERG MARKETS	BNP PA LI ASIA EMER-CDIS-USD	EMERGING MARKETS TRUST-B USD	INTERFIRST-EMERGING EQUITY-A
ABERDEEN-FRONTIER OPPOR-A US	BNPP L1-EQ WLD EMERG-CD	EMERGING WORLD FUND-GBP INS	INVESCO DEVELOP MKRTS-A
ABN AMRO GLB EMERG MKTS EQ-A	BNPEASY MSCI EMMK EQ CW-CL	EMG MMA-MILLTST ASEAN FD-A	INVESCO EMERG MK STRU EQ-AA
ABN AMRO MM-INV EMK EQ-USD	BNPEASY MSCI EMMK SRI-CL	EMG MMA-MILLTST BRAZIL FD-A	INVESCO EMG MKTS EQUITY-A
ACADIAN EM EQ UCIT II-AA USD	BNY MEL GL-EMG MKT EQ V-AUSD	EMIRATES EMG MKT EQY-ACC-A	INVESCO EMRG EUROP EQUITY-A
ACADIAN EMG MKRTS PORT-INV	BNY MELLON GL-EM MKT EQ-C US	EP EMERG MKTS SM COMPS-A	INVESCO EMRG MKRTS EQTY-A
ACADIAN EMMK SM-CAP EQ-AUSD	BNY MELLON GLB-AS RS S-WUSD	EQUATOR- GLBL EM MKT EQTY-5	INVESCO LV VOL EMG MKT-A
ACADIAN-EMERG MKTS-A	BNY MELLON-EMMK EQ CORE-SUSD	EUROPARTNERS-WRD EMR-L-B-CAP	INVESCO KW EMERGING MKTS-A
ACE ASSET MGMT-EMERG MARKETS	BNY-GLB EMER MKT-USD C ACC	F&C EMERGING ASIA-B USD ACC	INVESCO-EMERG MKT EQ-AAD
ACE FUND-EMERGING MARKETS	BO FUND II-GLOBAL EMERGING	F&C G EM EQTY L/S F-A USD A	INVESCO-PRC EQY-AAD
ADVISORY RESEARCH EM OPPORT	BO FUND IV-BORDER GL EM-USD	F&C GLOB E MKT FD-A USD DIS	INVEST AD EMERGING AFRICA
AFRICA EMERGING MARKETS-A	BOLUX-INTERNATIONAL	F&C PORT FD-BMO GB EMG MKT-A	INVEST AD SICAV-EMG AFR-USD
AGE EM MKT AGL CAP EQ-I USD	BRANDES EM MKTS VALUE-I-USD	FAST EMERGING MARKETS-AAUSD	INVEST AD SICAV-GCC FOCUS-A
AIG ASIAN CAPITAL GROWTH FD	BRANDES INSTL EMG MKTS VAL-I	FAW-EMERGING MARKET-A DIST	INVESTEC EMERGING MKTS EQY-A
ALAHLI EMERGING MARKETS-ACC	BROWN ADV SOMERSET EM MK-ADV	FEDERATED EMERG MKTS EQ-IS	INVESTEC PAN AFRICA FUND-S
ALGER EMERGING MARKETS-A	BROWNADV MCQASIA NEWSTRS-INS	FERRUM FUND EMERGING MKTS	ISHARE EMKT-IF-F-AUSD
ALGER-EMERGING MARKETS FD-A	BRUNSWICK RUSSIA EQUITY FUND	FIDELITY ADV EM MKT DISC-A	IVY EMERG MKTS EQUITY-A
ALJAZIRA GLOBAL EM MKT FD	CADMOS-EMRG MKT ENGAGE FND-A	FIDELITY ADV EMERG MARKET-A	IWF-EMERGING MARKETS EQTY-A
ALLIANCE KOREA FUND-AUSD	CALAMOS EMERG MKRTS EQ-A	FIDELITY ADV EMG EUR ME-A	JAN HND EM MK L-A USD ACC
ALLIANZ ASIAN SM CAP-ITUSD	CALAMOS EVLVNG WRLD GRW-A	FIDELITY ADV EMERG ASIA FD-A	JANUS ASIA FRONT MK-A USD AC
ALLIANZ BST STYLT EM EQ-I USD	CALDORA EMERGING MARKETS-USD	FIDELITY EMERGING MARKET FD	JANUS EMERGING MARKET-A
ALLIANZ CHINA A-SHRS-AT	CALVERT EMERG MKRTS EQTY-A	FIDELITY EMG MKT DISCOVERY	JANUS HNDRSN EMERG MKTS-A
ALLIANZ CHINA EQUITY-A	CAP INT EMERG ASIA-C USD	FIDELITY EMG MKTS INDEX-FA	JBM PICARD ANGST EM MK-AIUSD
ALLIANZ CHINA FUND-A USD	CAP INT EMERGING MKT-I USD	FIDELITY FUNDS-EMERGING M-A	JH EMERG MKRTS EQTY-A
ALLIANZ CHINA MLT INC-AT USD	CAPITAL GP NEW WORLD-B USD	FIDELITY GL EX US INDEX-PREM	JOHCM EMG MKT OPPORT-I
ALLIANZ EMERGING ASIA EQY-A	CARMIGNAC PF EMERG-E USDHAC	FIDELITY M-EMER MKT-AS ACC	JOHCM EMG MKT S/M CAP EQ-IS
ALLIANZ INDIA EQUITY-I USD	CAUSEWAY EMERGING MKTS-INST	FIDELITY SAI EM INDEX FUND	JOHN HANCOCK H-EMG MKTS-A
ALLIANZ INDONESIA EQY-A USD	CEMBRA EAST FD SICAV-NV USD	FIDELITY SEER EMRG MKRT OPP	JP GLOBAL EMERGING MKRTS-A
ALLIANZ KOREA EQUITY-A	CHAMPLAIN EMERG MKRTS-ADV	FIDELITY-EMERG ASIA-A USD	JP MORGAN AFRICA EQUITY-AUSD
ALLIANZ LITTLE BRAGONS-A	CIMB ISLAMIC GLOBAL E/M-I	FIDELITY-EMKT FOCUS-AUSD	JP MORGAN ASIA NEW FRON FUND
ALLIANZ ORIENT INCOME-P	CITY NATL ROCHDALE EM MKT-N	FIDELITY-INS EM MKT-I-A USD	JP MORGAN EMERG ECONOMIES-A
ALLIANZ RCM ISLAMIC GL EM-A	CL (GUE) EMERGING MKT EQTY F	FIDELITY-LATIN AMERICA-A USD	JP MORGAN EMERG MKRT EQ-I
ALLIANZ THAILAND EQY-A USD	COHEN & STEERS EMG MKT REL-A	FIERA CAP EMERG MKRTS-INST	JP MORGAN F-EMERG MKTS EQ-A
ALLIENZ TTL RTN AS EQ-AT	COLUMBIA ACORN EMG MKRT-A	FINREON EMER MK EQ ISOPRO-A	JP MORGAN F-EMERG MKTS INF-A
ALLIANZGI BST EM MKT EQ-INST	COLUMBIA EMERG MKRTS-I	FIRST STATE-GL EM MK SEL-III	JP MORGAN-EM EUR M/E AFR-AUSD
ALLIANZGI EM MKT CONSUM-A	COLUMBIA EMG MKTS OPP-A	FISHER EMERGING MKRTS EQ-USD	JP MORGAN-EM MID EAST EQ-A
ALLIANZGI EM MKT SM CAP-A	COMGEST GRWTH EM MKTS-USD A	FLM EM MKT CON-D USD	JP MORGAN-EM MK ALPHA FL-A-AC
ALLIANZGI EMER MKTS OPP-INST	CONSILIUM EMG MKT S/C-INST	FNK TAMP INV-EMKT SM C-A-ACC	JP MORGAN-EMMK DIV-A-R-ACCUSD
ALLIANZGI NFJ EM MKT VAL-A	CONSULTING GRP EMG MKTS EQTY	FORTRESS INC-EMIRGNG MKRTS-A	JP MORGAN-LATIN AMER EQY-USD
ALPINE EMER MARK REAL EST-I	CONTROLFIDA SUPERDISC-ACC	FORWARD SELECT EM DVD-C	JP MORGAN-EMERG ECONOMIES-A
ALQUITY LATIN AMERICA-A USD	CORONATION GLOB EMMKTK EQY-B	FPP-GLOBAL EMERG MARKETS-A	JP MORGAN EMERG MKRT EQ-I
ALQUITY SIC-AL FUT WL F-USA	CORONATION GLOBAL EM MKT-A	FRANK TEMP INV TE FR M-AAUSD	JP MORGAN F-EMERG MKTS EQ-A
ALQUITY SIC-IND SUBCO F-USA	CREDIT SUISSE EMG MKTS EQ-A	FRANK TP INV EM MK-A YDISUD	JP MORGAN F-EMERG MKTS INF-A
ALQUITY SICAV-ALFRC-B USD	CREDIT SUISSE EMRG MKT-CM	FRONTREGA HEXAM EMG MARKET	JP MORGAN-EM EUR M/E AFR-AUSD
ALQUITY SICAV-ASIA-USD-A	CREDIT SUISSE EQ-EMG MKTS-BS	FRP- STEW INV FR MK-ACCUSD	JP MORGAN-EM MID EAST EQ-A
AMANA DEVELOPING WORLD-INV	CS HOLT EMERGING MKTS EQTY-M	FULLERTON GLB EMKT EQ-USDAC	JP MORGAN-EM MK ALPHA FL-A-AC
AMER BCN ARCD EM MGD VOL-LA	CS LUX ASIA CONSUM EQ-BUSD	FULLERTON SEL GL EM MK EQ-A	JP MORGAN-EMMK DIV-A-R-ACCUSD
AMER BCN EP EMER MKTS-A	CS LUX GB S&M EM ILC EQ-BUSD	FUNDQUEST INT-EMERGING GL-CI	JP MORGAN-LATIN AMER EQY-USD
AMER CENT EM MKT SM CAP-A	CS LUX GLOBAL EMKT PROP-BUSD	FUNDQUEST INTL-EMERG MKT-CC	JSS EMERGINGSN NEW FR-C USD
AMER CENT EMERG MKTS-INV	CS LUX MM EMERG MKT EQ-F	GAIA WORLD AGRI FUND-B	JSS SUSTAIN EQTY-GLB EMMKT-P
AMER CENT EMG MKRT VAL-A	CS LX GLOB EMK ILC EQ-BUSD	GAM STAR-EMERGING EQUITY-USD	JSS SYST EQ-EM MARKETS-C USD
AMER CENT NT EMERG MKRTS-G	CS LX GLOB EMKT BR EQ-BUSD	GAM-STAR EMERGING ASIA-USD A	JULIUS BAER EQUITY ASIA-B
AMER CENT-EMIRNG MKTS EQ-B	CSF LUX EQTY EM FNDM-DB	GAM-STAR EMERGING ASIA-USD A	JUPITER GL EMKT EQT UN-USDIA
AMER FNDN NEW WORLD-A	CSF LX EQ EM MK MIN VOL-DBU	GARTMORE CS-EMERGING MARKETS	JYSKE INVEST EMERG MKT EQ CL
AMERICAN BRACON EMERG MK-AMR	CULLEN EM USD ACC I2	GENESIS EMERGING MKTS INV -A	KAZIMIR RUSSIA GROWTH INV FD
AMERICAN NEW WORLD HLS-IB	CUTLER EMERGING MARKETS FUND	GENESIS SMALLER COMP SICAV	KAZIMIR UKRAINE CONVERG F-8
AMG TIMESQW EM MKT SM CAP-Z	DANSKE INV-GLOBAL EM MKT-A	GENEVA ADV EMER MKTS-I	KBC EQS EMERGING ASIA 1
AMG TRILQY EM EQ-Z	DANSKE INV-GLOBAL EM MKTS-A	GINSGLOBAL EMERGING MKT INDX	KBC EQS EMERGING ASIA 2
AMG TRILQY EM WLT-Z	DANSKE INV-GLOBAL EM MKTS-A	GLDMN SCHS E/M EQ INSG-A	KBC EQS EMERGING ASIA 3
AMUNDI-EQ EMER ANTI-BNCH-16C	DEGROEF EQUITIES FOF EMERG	GLDMN SCHS N-11 EQTY-A	KBC EQS EMERGING ASIA 4
AMUNDI-EQ EMERGING WORLD-AUC	DELAWARE EMERG MKRTS-A	GLD INV V-E-EMER MKT EQ2-INS	KBL KEY FUND-GLOBAL EM -AUSD
AMUNDI-EQUITY EMER FOCUS-AUC	DELAWARE INV EM MKT USD-F	GLOBAL EMER MKTS FNDL-IC	LAUDUS MONDRIAN INST EM MKT
AMUNDI-INDEX MSCI EM MK-AUC	DELSICHE EM MKTS FRONTIER-A	GLOBAL EMER MKTS FNDL-IC	LAZARD DEVELOPING EQUITY-INS
AODEMERGING MKTS AGRESIVA	DFA EMERG MKTS CORE EQTY	GLOBAL SELECT-SUB-FUND VIII	LAZARD EMERG MKTS EQ ADV-INST
AQR EM DEFENSIVE STYLE FD-I	DFA EMERG MKTS CORE CORE	GMO EMER MKRT OPP FD-3	LAZARD EMERG MKT EQY BLN-INS
AQR EMERGING MULTI-STYLE-L	DFA EMERGING MARKETS PORT	GMO EMERGING COUNTRIES-III	LAZARD EMERG MKT EQY-INST
AQR EMRG MOMENTUM STYLE-L	DFA EMERGING MARKETS SML CAP	GMO EMERGING DOMESTIC OP-II	LAZARD EMR MKT CORE EQTY-IA
AQR TM EMERGING M/S-L	DFA EMERGING MKRTS VALUE	GMO EMERGING DOMESTIC OPP EQ	LAZARD GL ACTIVE-EM MK EQ-INS
ARTICO DYNAMIC EMERG MKT-USD	DIAM EM MKRT SM CAP EQ EFF	GMO EMERGING MARKETS-III	LEGG MASON EMRG MKT EQY-AUSD
ARTISAN DEVELOPING WORLD-ADV	DIMENSIONAL EMRG MKRTS II	GOLDMAN SACHS CONC EMG EQ-A	LG ANTENNA FUND LTD
ARTISAN EMERGING MARKETS-INS	DIMENSIONAL-EMG MKT V-USD A	GOLDMAN SACHS GR MT P EQ-BUD	LCT SLCT EQ EMER MKRT USD-B
ARTISAN EMERGING MKTS-I USDA	DIMENSIONAL-EMK LG COR-USDZI	GPB SICAV EMER EUROPE EQ-R	LLOYDS TSD INT-GLB EMK EQ
ASC GROWTH MARKETS-A	DIMENSIONAL2-EMK T-A-USD-ACC	CGQ PART EMERG MKTS EQ-INST	LM EM M CHINA NEW GEN A SH-P
ASHMORE E/M FRONTIER EQ-USDII	DIREXION MTH EM MK BE 2X-I	CGQ 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 EQ
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 BACLAUDS	LM-QS EMERG MKTS EQY-AAUSD
ASHMORE EMRG MKTS GL SC-USD	DREYFFUS DIV EMG MKTS-I	GS GVI EMRG MKT EQTY-BAS	LO FDS-EMER RES EQY EN-USDPA
ASHMORE EMRG MKRTS EQ-INST	DREYFFUS EMERGING ASIA FUND-A	GS GR & M MKRT EQTY-BASUS	LO GATEWAY-EMG MKT OPN IR-IA
ASHMORE-EM MKTS ACT EQ-INSAC	DREYFFUS EMERG MKTS-A	GS HLT MANAGER EM MKT EQ P	LO EMERG HGH CONM EQ-PAUSD
ASHMORE-EM MKTS VAL FND-USD	DREYFFUS GLBL EMRG MKTS-A	GUARDCAP EM MKT EQ-I USD	LODH INV-ASI SML CP-PAS
ASIA PACIFIC FUND LTD	DREYFFUS PREMIER EM MKRT OP-A	GUIDEMARK EMRG MKRTS FD-SRV	LOS ANGELES CAP EMERG MKT-AU
ASTON/LMCG EMG MKTS-I	DREYFFUS STR BETA E/M EQ-A	GUIDESTONE EMG MKTS EQ-INST	LP LAZARD EMERG MARKET
ATRAM EMERG MKTS EQ OPP FEED	DREYFFUS STR BETA GL EQ-A	HANSBERGER EMERGING MK FD-IN	MACQUARIE EMERGING MKTS PORT
AUBREY CM-AUB GL EM OPP-ICI	DRIEHAUS EMERG MKTS GRW-INV	HARBOR EMERG MKT EQTY-ADM	MACQUARIE EMIRNG MKTS POR II
AVIVA GLOBAL EMERG MKRT 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-AS	DRIEHAUS FRONT EMERG MKTS	HARDING LOEVNER EMG MKTS	MAN MENA EQUITY-D USD
AVIVA INV-EMG MKT INC-A USD	DUNHAM EMERGING MKT STOCK-C	HARDING LOEVNER-EMG EQ-AUSD	MANAGERIS EMERG MKTS EQUITY
AVIVA-EMG MKRT EQ SMCIP-A USD	DUPONT CAPITAL EMG MKTS-I	HARTFORD EMERG MKTS EQ-A	MANNING & NAPIER EMER MKT-S
AXA ROSNBURG-GL EM MK EQ AUSD	DWS BRIC PLUS FUND-A USD	HARTFORD ENVRMNTAL OPPRT-A	MANULIFE GLB-LAT AM EQ-AUSD
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 MKRTS EQTY-S	HELIOS-GLOBAL EMERGING MKRTS	MARSCO EMERGING MARKETS
BARINGS FRONT MKTS-A-USD-AC	EAGLE EMERG MKT EQ-A USD ACC	HEPT DRIHAUS-EM M-E CUS	MARTIN CURRIE EMERG MKRT-FI
BARINGS GLB EM MK FD-USA INC	EARNST-GLOBAL EMER MARK-USD	HIGH GROWTH MARKET-G	MARVIN&PALMER EMMK EQTY-USD
BARINGS LATIN AMERICA-AUSDIN	EASTSPRING EM E MF/AF DY-D	HIMCO VIT AMER FDS NEW WD-IB	MASSVUTUAL PREMIER ST EMMK-A
BARON EMERGING MARKETS-INS	EASTSPRING GL EMK CUST EQ-EU	HRDNG LVNR FR EM MKT-INST	MATTHEWS EMERGING MKTS EQUITY
BATTERYMARCH GLB EM MKTS FND	EASTSPRING INV EMEXASIA DY-E	HRDNG LVNR INST EM MKT-I	MCGF-LMCM-GL EMERG MKT-USD
BB FUND CLASS A	EASTSPRING INV GL EM DY-D	HRIL REL EMERG MKRT EQTY USD	MERIAN GBL EMMKKT A USD ACC
BBVA PAISES EMERGENTES-A	EATON VANCE EMERGING MKTS-A	HRTFRD SCHR EM MKRT 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-IHUSDA	TOBAM SA-ANT-BENCH EM MKTS F
MFS BLENDED RSRCH INTL EQ-A	PRINCIPAL GLB-EMG MK-A ACCUM	TOUCHSTONE EM MKRT 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-AIUSD	PROFUNDUS ULTRAEMRG MKTS-INV	TRANSAM EMERG MKTS EQTY-A
MFS MER-EMERG MKRT EQ-AIUSD	PROFUNDUS ULTRASHT EMRG M-INV	TRANSAMERICA EMER MKTS-I2
MFS MER-EQUITY OPP-AIUSD	PROSPERITY CUB FUND-A	TRIOLOGY EMERGING WEALTH FD-C
MILLTRUST KEYWISE CHINA FUND	PROSPERITY QUEST SUB FUND-A	TRIOLOGY 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-FRINT MK EQ-A
MIRAE ASSET-CEM SEC-A USD	PUTNAM EMERG MARKETS EQTY-A	TT EMER MKT UNCONSTRAINED FD
MIRAE ASST EM MKT GR CONS-A	PUTNAM EMRG MKTS EQTY-A	TT EMERGING MKRTS EQ-AI-USD
MIRAE ASST EMERG MKTS-A	PZENA EMERG MKT VALUE FD-A	UBAM-GLOBAL EMERG EQY-ADIS
MNSTY MCKY EM MKRT 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 MKRT 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 MKRT 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 MKRTS-INV	ROBECCO EMER MKTS SM COS-DUSD	UBS LUX-EMER M SUS USD-PA
MPS-CEAMS G EMER MKRTS EQ-B	ROBECCO QI EMMK EN IN-USD	UBS LUX-EMERG MKRT EQ PAS-BA
MS GALAXY-FRONTIER EM MKT-A	RUSS INV EM MK EQ FUND-AA	UBS LX INST EMERG MKRT EQ-XA
MS INV-FR MKTS EQ FUN-A USD	RUSSELL EMERGING MARKETS-S	UBS LX-EMMK RIS CT USD-PACC
MSCI EMERG MK ESG EQTY-I USD	RUSSELL FRNTIER MKTS EQ- A	UBS-GL EM MKRT OPPORT-IX USD
MSIF EM MKRT BRKOUT NTNS-A	RUSSELL SHARIA EMERG MKRTS A	UNI-GLOBAL-EQ EM MKTS-SAUSD
MSIF EMERG MKRTS LDRS-I	RWC GLOBAL EMERG MKTSB USD	USAA EMERGING MARKETS-FND
MSIF EMERG MKRTS 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 MKRTS VAL	VAM FDS-FRONTIER MARKETS-A
MSVIE-EMERG MKTS EQTY-I-I	SALIENT EM DVID SIGNAL-INST	VAM FUND LUX-EMERGING MKR-A
MY FUNDS-EMERG-EQUITIES	SALIENT EM INFRASTRUCTUR-A	VAN ECK EMERGING MARKETS-A
NATIONWID BAILRD EM EQ-A	SANDS CAP EMER MKT GW-AA USD	VAN ECK-EMMKTS EQ UCT-USDRIA
NATIXIS EMERISE LAT AM-IAUSD	SARASIN IE EM SYS MKD-A USDA	VANECK EMERG MKRTS EQY-USD12
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 BERI EMRG MKRT-A	SC GLB EMERG MRK R/V EQT-A	VF-MTX SUST EM MK L-AUSD
NEW RUSSIA GROWTH FUND LTD-S	SCHRODER EMER MKT SM CAP-INV	VICTORIA 1522 FUND-ADV
NEW STAR GLB INV-ASIAN OP-P-S	SCHRODER EMERGING MARKET-IN	VICTORY CEMF EM VOL WTD-A
NEWFONDLAND ARAM-DILIO 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 APPLGATE EM MKR-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-USD	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 EMLB-CO EQ-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 MKRTS EQTY	SEAFARER OVRSEA GR & INC-INS	VOYA EMERG MKTS EQ DVD-A
NRTHRN ACT M EM MKRT EQ	SEB SICAV 1-EMERGING MARKETS	VOYA MM EMERG MKTS EQ-I
NT-EMKTS CUS LC OP EQ ID-USD	SECURITY ASIA EMERGENTE-A	VP-SECTORAL EM MARK HC P USD
NUVEEN TRADE EMERG MKRTS-AUS	SEDCO SC GLOBAL EMKT EQ P-S	WASATCH EMER MKT SM CAP-INV
NUVEEN TRADEWYDS EM MKTS-A	SEC IRY & IJAM EMER MKRTS-A	WASATCH EMERGING MKT SEL-INV
OAKTREE EMERG MKRTS 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-S ACC	WCM FOCUSED GLOBAL GROW-INST
OMGB EMERGING MARKET EQ USD	SEI-EM MKT EQT-USD INSTIT	WEGELIN GUE EQ ACT EM MKTS-S
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-EQUITY 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 EIRO-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 MKRTS EQ-A	SKYLINE ARG 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
OVSTN UCIT SM CO-A USD UNHG	SOMERSET GLOBAL EMER MKT LLC	WELLS FARGO EM MKRT 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 EMER MKT EQTY-P	SSGA GLOBAL EMERG MKTS IND E	WEA EMERG MKRTS EQ SEL-A
PAM FUNDS-GLOB EMERG SMALL-I	STANDARD EMERG MARKETS PRO-A	WHV/EAM EMER MKT S/C EQ-I
PARAMETRIC EMERGING MKRTS-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 MKRT EQ-N	WILLIAM BLAIR EMER MALEAD -A
PARVEST EMER MKRT EQTYS-CL C	STATE ST EMG MKT EQTY IDX-K	WILLIAM BLAIR EMG MKT LDR-IS
PARVEST EQ WLD 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 MKRTS-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 WLD EMS-CC	SURA ACC DE MER EMERG FMV	
PARWORLD TRACK EMER MKT-LPL	SWISSCANTO CH EF EMR M-AUSD	
PAVILLON 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 EQUILY	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 MKT ST	
PGIM JENN EMERG MKRTS-A	T. ROWE PRICE-EMKT VLU EQT-A	
PGIM QMA EMERG MKRT EQTY-Q	TCW DEVELOPING MARKETS EQ-I	
PICCTET CH-EMRNG MK T-ZDYUSD	TCW EMERGING MARKETS EQ-I	
PICCTET EMERG MKT SUS EQ-IUSD	TEMPLETON DEVELOP MRKTS-A	
PICCTET EMERG MKTS HI D-PUSD	TEMPLETON EMERGING MARKETS	
PICCTET F LUX-EM MK LG CAP-IS	TEMPLETON FRONTIER MARKETS-A	
PICCTET PICM-GLOB EMER MKT-FL	TEMPLETON SHARIAH GB E-AAUSD	
PICCTET-EMERG MKT-P USD	THE RUSSIAN PROSPERITY FD-A	
PICCTET-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 MKRT-A	THREAD-STA GL EM PR SE-IU	
PIMCO RAE PLUS EMG-INST	THREADNED LX MON-EMRG MKT-M	
POLAR EMERGN MKTS GROW-RUSD	THREADNEEDLE-GL EM MKT E-AU	
POLUNIN CAPITAL PAR DEV CO-A	THRIVENT PART EMER MKTS EQ-A	
POLUNIN DISC-FRONTNR MRK-AUSD	TIAA-CREF EM MKT EQ IND-INST	
POLUNIN EMRG MKTS TECH-A USD	TIAA-CREF EMER MKT EQ-INST	
POLUNIN FUNDS-DEVEL COUNTR	TIMOTHY PLAN EMERG MKRTS-A	
POLUNIN FUNDS-EM SMALL CP	TMPLTN EM MKRT 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 MKT CR BD-S1	FICA INVESTMENT-EMER MKT BND	MANULIFE USD ST IN F-A-DI-BE-U	SSGA-MUL-FAC PR EMK B-SUSD
ABERD G II-EM TOT RET BD-II	FIDELITY ADV GBLB 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 EMK MKT DBT
ABERDEEN GL-EMLCB-AACUSSD	FIDELITY-EM MKT TR DB-AA USD	MCB AFRICA BOND FUND-A	STNDRD LIFE-EMMK CRP BD-D
ABERDEEN GL-FMB-AMINCUSD	FIRST STATE EMER MKTS BD-I	MERIAN EMMKTD DEBT A USD ACC	STONE HARBOR EM MKT CORP-INS
ABERDEEN GL-SL EMMK BD-AAUSD	FIRST STATE-GL EM MKT-III AC	MERIAN LOCUREMMKTD 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 RTN-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-AUSD	MERRILL LYNCH DEV LT M-US-A1	STRATEGIC-GLB EMG MKTS FI
ACADIAN EMKT LOCAL DEBT-USD	FRANKLIN EMG MK DEB OPP FUND	MERRILL-EMRG MKTS DEBT-1-S28	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 HUDS-AT
ALLIANZ CHINA STRG BD-A USD	GALLOWAY GL EM HY BD-B 1 0.5	MFS MER-EMERG MARK DEBT-A1	SYD EM SUST BLND DBT-IUSDA
ALLIANZ RENMINBI FIION-T USD	GALLOWAY GL EM HY BOND-B STN	MFS MER-EMKT DB LOC CU-A1USD	SYMBIOTICS EMER IMP BD-A/C
ALLIANZGI EMER MKTS DBT-INST	GALLOWAY GL FIX IN-INTI	MFS MERIDIAN EMER MKTS DB-B2	T ROWE PR-EMER MK BD-I
AMER BCN-FRNTR MRKT INC-A	GAM ABS RET EMERG BD-USD A	MFS MERIDIAN GLB OPP BND-A1U	T. ROWE PRICE-GL HI BD-A
AMUNDI F2 -EM MKTS CB-AUSD	GAM EM CORPORATE BD-USD A	MFS-EMMK LOC CUR DB II-Q2USD	TCW EMERG MKTS INCOME-I
AMUNDI F2-EMER MKTS BD-IUSD	GAM EM OPPORT BD-USD A	MILLENNIUM-EMERG MK DBT-R	TCW FUNDS-EMER MKT INC-AU
AMUNDI-BOND GL EMRG CORP-IUC	GAM EMERGING BD-USD B	MIRAE ASSET GB DYN BD F-USDA	TEMPLETON EMERG MKTS BND-A
AOL-BONOS SOBER EMERGENTES	GAM STAR-LOC EMER RA FX-USDA	MIRAE MCKY EM MKT DBT-B	TERRUS HIGH INCOME FUND-FAF
ASHMORE EM CORP HY-INC USD	GEMLOC FUND	MORGAN ST INV F-EM MK DOM-A	THE ARAB INCOME FUND LTD
ASHMORE EM MKTS ABS RET D-I	GENERAL-EMERGING MKT BOND-D	MORGAN ST-EMER MARK DBT-AUSD	THE EMERGING MARKETS DEBT FD
ASHMORE EM TOTAL RETURN II-I	GIM-GIM MG EMK CP DB-U	MORGAN ST-EMERG MKTS CP D-A	THE STANDARD LATIN DAILY-A
ASHMORE EM TOTAL RETURN-II	GL EVO FD EM FRONTIER-Z USD	MSIF EM MRKTD FIX INC OPP-A	THE STANDARD S/T BOND FD-A
ASHMORE EMER MK BLEND BD-IIU	GLDMN SCHS TTL E/M INC-A	MSIF EMKTS FIX IN OPP-A	THREADNEEDLE EM MK B-RI-USD
ASHMORE EMER MKT DIST DEBT	GLG INV VI-EM CURR-GL-HS	MSIF-EMER MKTS DOM DBT-I	THREADNEEDLE-EM MKT DBT-A
ASHMORE EMER MKT LOC C CD-I	GLG-GL EM MK DB TR-I U	MULTI-MGR ACCESS II-USD FA	THREADNEEDLE-EMMKTD CP BD-AUP
ASHMORE EMKTS SH DUR-I	GLOBAL EVOLUT-EMERG MKT LC-S	MUZIN-EMRG MKTS SHORT DUR-SU	THREADNEEDLE-GL E MKT ST-AU
ASHMORE EMKK ASIAN CO BD-INS	GMO EMERG COUNTRY DEBT INV	NATIONW EM MKTS DBT-A	TIAA EMG MKT DB-AUA
ASHMORE EMMK INV GD TR-INS	GMO EMERG COUNTRY DEBT-III	NATIX-LS ST EM MRKT BOND-I/A	TIAA-CREF EM MKT DBT-INST
ASHMORE LOCAL CURRENCY FUND	GRAMERCY CORP EM DBT-USD ACC	NB EMERG MKTS DBT-BL F-USDI3	TOWER FUND-LOC CUR EMRG MKTS
ASHMORE SIC-EM SOV INV DEBT	GRAMERCY HY CRP EM D-USD ACC	NEUBERG BRM-SH DUR EM MK-I U	TRANSAM EMER MKTS DBT-A
ASHMORE SICAV-EMK INCG DEBT	GREATLOTUS GL BOND TOT RETUR	NEUBERGER BRM EM DB HC-USDA	TROWE GLOBAL INV GR CRP BD-A
ASHMORE-EM CORP PRV DBT-ACCU	CS EM DBT PT BASE USD	NEW CAP LUX-EM MK BD-A USD	TROWE PRICE-EMKTS CORP B-A
ASHMORE-EM MKT INV CR L CR-II	CS EM MKT DBT USD	NLTK STG GLB INV CRP BD-S	UBAM EMERG MKT CP BD USD-AC
ASHMORE-EM MKTS SOV DB-USD	CS EMRG MKT DEBT PT BASE USD	NKKO AM E/M LOC CURR B-AUSD	UBAM FCP-E INV G CB HC-USD
ASHMORE-EMER MKTS DEBT-R USD	CS EMRG MKT DEBT PT IA	NN L EMK COR DEB-XA	UBAM-EMR CPT BD SH DTN-AC
ASHMORE-EMKT COR DB-INST USD	H20 GS-MLTI EMERG DBT-I USD	NN L EMK DBT LOC-IC	UBAM-EMRG MKT DBT OP-USD-IC
ASHMORE-LOCAL CURRENCY-RUSDD	H20 MULTIEMERGING DEBT-IUSDC	NN L-EMG MKT DEBT OPP-ICPUSD	UBAM-LOC CURR EMMKTD BD-AC
ATRAM EMERG MKTS BOND FEEDER	HARBOR EMERG MKT DEBT-INST	NN L-FRMT MK DBHC-I	UBS EMERGING MARKETS DEBT-A
AVIVA EMRG MKT DBT OPP-I	HARVEST EMER MKT BOND FD-C2	NOMURA - EM MK LC DEBT-I USD	UBS EMKTS BDS 2018 USD-KIACC
AVIVA II-EMER MKT INF LNK-I	HRTFRD SCH EM MKT M/S BD-A	NORDEA 1 EMMK LOCAL DB-BIUSD	UBS EMR ECO-G BD USD-USD AC
AVIVA-EMERGING MKT BD-B USD	HSBC EM MKT INV GR INC-DIST	NORDEA 1 EMRG MKT BOND-BPUSD	UBS GS-HIGH YLD EMMA BDS-FD
AXA WF EM MKT LOC CUR BD-I	HSBC EMERG MKTS DBT-A	NORDEA 1-EMK HRD CUR BD-IPUS	UBS LX INST EM MKTS BD-BA
AXA WF-GLB EM MK BND-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 ACCUSD	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 EMR BND-A
BARINGS G EM DB TR-AUSD ACC	HSBC GLB INV-IND-IND BD-BC	OPPENHEIMER-BARING EMMK DE-A	VAN ECK-UNCONST EMR MK B-II
BAYERINVEST-EMK S BD AK-USD	HSBC INV TR-EM INFL BD-AUSD	PACTUAL CORP DEBT HIGH YIELD	VAN KAMPEN EMERG MARK INC-A
BB FUND CLASS	HSBC IS-EMG MKTS BOND	PACTUAL HIGH INCOME FUND LTD	VANGUARD EM MKT GOV BND-ADM
BCP-EMERGING MKR 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 EMMKTD BD-IP	WELL EMG & SOV OPP-E USD AC
BLUEBAY EMK ACG BD-I USD	IGS-EMRG MKTS CORP DEBT-AUSD	PAYDEN EMER MKT BOND FUND	WELL EMG MKTS DBT T USD AC
BLUEBAY EMMK CONVYR BD-B USD	IGSF-EMERG MKTS BLEND DB-A	PAYDEN EMER MKT CORP BD-ADV	WESTERN ASSET EM MKT DEBT-A
BLUEBAY-EMER MKT CORP B-RUSD	IGSF-EMK LOC CUR DY DB-AUSDA	PAYDEN-GLB EMRG MKTS-USD	WF GUOTAI JUNAN EM TR-B1 USD
BLUEBAY-EMRNG MKT BOND-BUSD	ING L FLEX- EMD DOLLAR-P-D	PBI-GLOBAL EMER MARK BOND-Y	WWIDE INV PORT-EMERG FIXED-A
BLUEORCHARD MICROFIN DEBT-US	INTL OPP FD SPC-ENH YLD CL A	PGIM EMER MKT CORP BOND-USD	
BMO TCH EMG BOND-I	INVESCO EM MK CORP BD-AAUSD	PGIS-SOCIAL RES EM MK B-IA	
BNPP LI-BOND WORLD EME-B	INVESCO EMERG MKT BND-A	PHILAE FD ACTIVE EM DEBT-A	
BNY MELLON GL-EM MKT DBT-CUSD	INVESCO GL HIGH INC-A	PHOENIX EMERGING MKT BOND-A	
BNY MELLON-EM DBT OPP-C USD	INVESTEC GL-EMG C-ASD	PICOTET EMERGING CORP BD-IUSD	
BNY-EM MKTS CORP BOND C-USD	INVESTEC EM HARD CR DB-AUSD2	PICOTET-EMERG MKT DBT-PUSD	
BREYAN HOW-EMMK LOC F-I/AUSD	INVESTEC EMMK LCL CRCY USD	PICOTET-SHTRM EM CRP BD-IUSD	
BRNGS EM EMT CORP BD-AA USD	INVESTEC-EM MKT INV GR DBT-I	PIMCO CRD FX MT 2019 SEG-USD	
BTG PACT-EMG MKT BND LX-I	INVESTIN PRO EM MK CORP-I	PIMCO GIS EMKTS 2018-IA	
CANDR BONDS-EMER MKTS-DIS	JAN HND HRZN EM MKT CB-A2USD	PIMCO GIS-EM ASIA BND-EUSD1	
CAP GRP EM LOCAL DEBT-B USD	JB FI EM HARD CURRENCY USD-B	PIMCO GIS-EMERGING MKT INS A	
CAP GRP EMRG MK DEBT-B USD	JPM EM MK INV GR BD-A-A-USD	PIMCO-EMR CRP BD-ACC-INS-USD	
CAP INT EM USD DEBT-B USD	JPM EMER MK COR BD H-AUSD1	PINEBRIDGE-EM MK CORP BD-A	
CBL-EASTRN EUR BOND-I	JPM EMER MKT STR DBT-AUSD	PLAINV MACKKEY SH EMKT-BIUSD	
CFL-EMER MKT BOND-AUSD	JPM EMERGING MARKETS BOND-A	PLATINUM EMER MKTS & EM-FA	
COLUMBIA EMERG MKTS BND-A	JPM EMMKTD STRATB-APERF ACCUS	PRINCIPAL GL-FIN EM DB-I USD	
COPERNICO LATAM HIGH YLD-B	JPM LUX F-EMERG MKTS BD F-AA	PUB BONDS EMG MKTS HC 1-IB	
CREDIT ISSUE BF LUX EM AB-B	JPM-EMKT CRP BND PORT III-AA	PUTNAM EMERGING MK DEBT FD-A	
CS GUE EMERGING MKT BD-B	JPMORGAN EM CORP DEBT-A	PUTNAM EMRG MRKTS INC-A	
CS LUX EMERG MKT CRP B-BUSD	JPMORGAN EMERG MKT DBT-I	RAM LX TAC II-ASIA BDTR-PI	
CS LUX EMMKTD CORP IG-B USD	JPMORGAN EMERG MKTS CRP-AAUSD	RBC BLUEBAY EMG MKT CORP-I	
CS SICAV II-EM MKT BD ABER-B	JPMORGAN F-EM MK DB-AUSD	RBC BLUEBAY EMG MKT UNC F-I	
CSIF CH BD CV EMKTS US BL-DA	JSS BOND-EM MKT HIGH YLD-CUD	RMB INTL SICAV-EME MKT FT-B	
DAIWA EME MKT BD-MONTH-AUD H	JYSKE INVEST EMERG MARK BND	ROBECO-EMERG CRD-DHUSD	
DAIWA EME MKT BD-MONTH-BRL H	KAMES EMRG MKT BD OPP-CACUSD	ROGGE EM MKT LOCAL CURR-USD	
DAIWA EMERGING TOC-USD AUD H	KB LUX BD EM MKT USD DIST-A	RUBRICS EMER MKT FIX INC-A	
DAIWA EMERGING TOC-USD BRL H	KBC BONDS EMERGING MKTS-CAP	RUSS INV EM MKT DT FUND-BRLU	
DAIWA EMERGING TOWER CUR-USD	KBC MULTISAFE EMER MKTS BD1	RVF-RBZ EMERGING MKT BDS-IA	
DB ADV-EMMKTD SOV DEBT-ICUSD	L&G EM MK SH DUR B-Z USD ACC	RYDEX EM BOND STRATEGY-A	
DB PLAT-EMLIN SOVEREIGN B-HIC	L&G EMERG MKT BOND-Z USD ACC	SALIENT EMER CORP DEBT-C	
DEL ESTE HIGH YIELD FUND LTD	LAUREN MORG GL GOVT FIX	SANTANDER-AM LATIN AM FIX-A	
DELAWARE EMG MARKETS DEBT-A	LAZARD EMERGING MKTS BD-AAUSD	SARASIN JSS CORP-GB EM-PUSDA	
DOUBLELINE EMG MKTS INC-I	LGT BD EM CREDIT OPPORT-A	SBGH-EMG MKTS DEBT-A DIS	
DOUBLELINE LOW DUR EMG-I	LGT BOND FUND EMMA QUAL-US-B	SCHRODER ISF EM DBT A R-A AC	
DRACO HY EM ASIA-USD B	LGT SLCT BD EMG MKT USD-B	SCHRODER ISF-EM COR BD-AUSDA	
DREYFUS EM MKT DBT USD-A	LIONGLOBAL EMERG MKTS BD-USD	SCHRODER-CHINA FX INC-IUSDA	
DREYFUS OPPORT E/M DEB-A	LM WA MACRO OPPORT BD-AAUSD	SCUDDER GLB OP-EM MKT BND-A1	
DWS EMERGING SOV BD USD AUD	LM-WA ASIAN OPPS-LMAUSD	SEA FD-ASIAN HIGH YLD BD-A	
DWS EMRG MRKT FIX INC-S	LM-WA EM LOCAL CURR-A USD D	SEB SICAV-EMK CRP BD-CUSD	
DWS INSTITUTION EMG MKT BOND	LM-WA EM MK TR BD-ANYCUSD	SECURITY LOC EM MKT DBT-A	
DWS INVEST EMERGING YLD-4-S AC2	LM-WA EMRG MRKTS CORP-PAUSD	SEI INST INTL EMG MKT DEBT-F	
DWS INVEST-EMR MKT CO-US FC	LO FUNDS II-EMG MKT FD-PAUSD	SEI INST INV EMG MKT DEBT-A	
EASTSPRING INV GLB EM BD-D	LO FUNDS-EMG LC BD FD-NA USD	SEI MASTER-EM MK DBT-USDIS A	
EDM ROTH PRIFUND-BD EM USD-A	LO FUNDS-EMG MKT TR BD-PAUSD	SGAM FUND-BONDS EMG COUN-A	
EDR EMRNGC CONVERTIBLES-AUSD	LO II-EME LC CR BD FD-PAUSD	SH-EM MKTS CORP DEBT-MUSDACC	
EDR FUND EMERGING CRD-A USD	LOOMIS SAYLES EMG OPPOR-A	SILK-AFRICAN BOND-R	
EMIRATES EM MK CP AB RET-PUI	LORD ABBETT EM MK CR BD-DAUA	SINOPAC SHORT TERM USD FI FD	
ESPA BND EMRG MARKET'S CORP-A	LUMEN EMG MARKET BD-USD B	SISF EM MKT BND-USD ACC	
F&C PORT FD-EMMK BD-A USD	LV BONOS CORP BRASIL-P	SISF-EM MKT LCL CUR-A EUR AC	
FALCON F-SIC-EM MRK H/Y-A	MAINFIRST EMMK CRD OPP-A0	SOVEREIGN H/Y HARD CURR FD-A	
FEDERATED EMG MKTS DEBT-IS			

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