

# Global Equity Fund Performance: An Attribution Approach

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Using data on portfolio holdings, we examine the performance of 143 global equity funds over 2002–2012. We find that the average global equity manager outperforms the benchmark by 1.2%–1.4% a year before fees. Attribution analysis reveals that the prime source of excess return is selecting stocks that beat their local markets. Modest contributions come from country selection, most notably in emerging markets, whereas currency effects are mixed. Our findings support considering active management in global equity markets, at least for institutional accounts that pay annual fees of less than 1%.

Although a large body of literature has examined US equity funds, only a handful of papers have considered the performance of international or global equity funds<sup>1</sup>—notwithstanding that international equities compose an important and growing asset class<sup>2</sup> in investor portfolios. To a large extent, the comparative lack of research on global equity funds reflects the limited publicly available data. Our study adds to the research in this area by using a unique dataset of global equity funds' quarterly holdings over 2002–2012. Access to holdings data allowed us not only to examine overall excess returns but also to perform an attribution analysis to identify the chief sources of any outperformance. We decomposed the excess returns of funds (relative to their benchmarks) into contributions from stock selection, country selection, and currency; we also estimated “unobserved effects” reflecting the difference between reported fund returns and the returns inferred from observed holdings.

We estimated that active global equity managers generate average annual excess returns versus their benchmark indexes of 1.2% on the basis of analysis of portfolio holdings and about 1.4% on the basis of reported returns. These numbers comfortably exceed the fees typically paid by institutional accounts, which can include individual investors through retirement or other omnibus accounts, but not the fees paid by many investors in retail accounts.<sup>3</sup> Our attribution analysis revealed that excess returns primarily come from selecting stocks that outperform their country benchmarks in local currencies. In addition, we uncovered evidence of modest

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skill in selecting countries, particularly in emerging markets. Contributions from currency effects are mixed, and unobserved effects (based on the return gap measure) are small. Our results suggest that active management is worth considering in global equity markets, given that the average fund in our sample demonstrates stock selection skill and capabilities in emerging markets. The mixed currency contributions imply that the management of currency exposures should occur outside global equity portfolios through either hedging or overlays. Our regressions of fund excess returns on international factors suggest that benchmark-relative outperformance remains robust to common factor exposures, although loading toward small stocks appears to make a positive contribution.

Our study extends the work of Busse, Goyal, and Wahal (2014), who examined both global and international equity funds based in US dollars.<sup>4</sup> Busse et al. used time-series regressions to relate fund returns to market and style factors and then analyzed contributions from country selection/stock selection. They found significant outperformance after adjusting for the market factor but not under the four-factor model, although there is some evidence of successful stock picking in the tails of the distribution. In contrast, we examined global funds only, performing an attribution analysis of excess returns relative to benchmark indexes by using stock weights obtained directly from holdings data. In addition to identifying contributions from both country selection and stock selection, we went a step further than Busse et al. (2014) by decomposing these elements into local currency and currency-related components. Our isolating of currency effects generated a number of insights. First, we identified the extent to which country selection contributions arise from market selection versus currency selection. Second, we extracted the contribution from selecting stocks that outperform their local benchmarks, which is arguably the purest measure of stock selection skill. Third, our increased understanding of currency contributions from global equity portfolios informs our comments on how currency exposures might best be managed.

Our study contributes to the understanding of active management in various ways. First, our finding that the global equity funds in our sample

generate significant outperformance calls into question whether the uninspiring average performance of US active equity mutual funds, as detailed in numerous studies, can be generalized to other contexts, such as segregated institutional accounts or global markets (see also Gerakos, Linnainmaa, and Morse 2016). Second, our analysis and results confirm that active managers may possess skill that becomes evident if performance is evaluated by initially abstracting from fees, consistent with Berk and van Binsbergen (2015). Third, in line with US research, we found evidence that the outperformance of global managers relates primarily to stock selection skill (Wermers 2000). Fourth, the fact that managers can source significant excess returns from emerging markets raises the possibility that the degree of market efficiency or segmentation<sup>5</sup> can affect the capacity of active managers to outperform. Dyck, Lins, and Pomorski (2013) drew similar conclusions from examining active management in both US and non-US markets.

Our study also builds on the performance attribution literature,<sup>6</sup> in which empirical investigations are often limited by a lack of portfolio holdings data. Our main contribution to the academic literature is to present an attribution of global equity fund performance based on actual reported holdings—not the constructed examples that the extant literature on global performance attribution analysis has relied on (e.g., Brinson and Fachler 1985; Ankrum and Hensel 1994; Singer and Karnosky 1995; Menchero and Davis 2009). Our attribution approach is essentially a subset of the model proposed by Singer and Karnosky (1995), who derived a method for decomposing global fund returns into selection of markets, securities, and currencies (subdivided into active currency and hedge selection).<sup>7</sup> In our study, we focused on currency contributions without distinguishing between hedged and unhedged components, in line with the fact that the vast majority of global equity funds in our sample are managed on an unhedged basis.<sup>8</sup> We designed an attribution approach that identifies the contributions from stock selection, country selection, and currency effects, with cross-product terms subsumed in the currency contributions. This approach involves decomposing the excess return relative to a global

benchmark index into contributions from stock selection and country selection and then further decomposing each component into local currency effects and currency effects. Attributing returns in this way shows the extent to which any excess returns arise from (1) skill in selecting stocks that outperform their local benchmarks, (2) the influence of currency translation on how stock selection contributions occur in total portfolio returns, and (3) skill in selecting markets and currencies.

## Data

In our study, we used a sample of quarterly stock holdings for 143 active global equity funds<sup>9</sup> over 2002–2012. The data we used were generated by BNY Mellon and supplied by Russell Investments.<sup>10</sup> Each “fund” in the sample is a separately managed institutional account involving large-cap, long-only mandates. The coverage of stock holdings is limited to the equity portion of the fund and does not include data on cash, derivatives, or other nonstock holdings. Each fund is assigned one of two benchmarks: the MSCI World Index or the MSCI All Country World Index (MSCI ACWI). Benchmark assignment is based on regressing the reported fund returns against the benchmark returns, using all available quarters for a given fund and selecting the benchmark for which the  $R^2$  is highest. The average (median)  $R^2$  from these regressions is 92% (94%). The average (median) standard error is 2.50% (2.24%) per quarter, consistent with an annual tracking error of around 4.5%–5.0%.

The possibility that the sample data may contain some selection bias cannot be ruled out, to the extent that Russell Investments (or the managers, to a degree) may have discretion regarding the data received from (or provided to) BNY Mellon. Nevertheless, the data should not be significantly exposed to survivorship bias, because BNY Mellon retains data on funds that go out of business or that discontinue involvement. Bias might occur, however, if managers discontinue involvement because of poor performance before the poor performance is reported. Although quantifying the impact is infeasible, we take some comfort in the comparability of our excess return estimates

with the market-adjusted returns reported in Busse et al. (2014). We obtained stock-level data from Datastream (supplemented by Bloomberg as needed).

Our attribution analysis concerns holdings-based portfolio returns, which may differ from reported returns. Potential sources of difference include incomplete data on portfolio exposures (e.g., missing stocks, derivatives, or cash), failure to account for transaction costs, and the inability to observe intra-quarter trades. To gauge the extent to which holdings-based returns were representative, we compared them with reported quarterly fund returns.<sup>11</sup> The gap is +0.05% if based on a time-series average and 0.00% if based on a pooled average of all fund-quarters. This result suggests that any bias is minor, on average, although it undoubtedly conceals compensating unobserved effects. Because we could not be sure whether outliers were due to unobserved performance contributions or data error, we excluded fund-quarter observations in which the gap between the holdings-based and reported portfolio returns was greater (less) than the 95th (5th) percentile.<sup>12</sup>

**Table 1** presents summary statistics. The sample comprises 143 funds, with 90 (63%) managed in a “base currency” of US dollars, 22 in UK pounds, 20 in euros, 4 in Australian dollars, 4 in Canadian dollars, and 1 each in Norwegian kroner, Danish kroner, and New Zealand dollars. We included no data on assets under management—only stock holdings expressed as weights. Although our dataset captures only a subset of global equity fund products that may be available to investors, we believe that our sample is sufficiently representative of institutional global equity accounts. The sample is not only large enough for reliable statistical inferences but also meaningfully larger and broader than the universe of global funds available on the widely used Morningstar Direct database, mainly because it includes funds based in currencies other than the US dollar.<sup>13</sup> We note that although Busse et al. (2014) used a sample of 777 funds in their returns-based analysis, their sample includes *both* global and international (presumed ex-US) equity funds and falls to 345 funds for analyses that require country weights.

**Table 1. Descriptive Statistics for Global Equity Funds, 2002–2012**

Year	Broad Sample Data				Proportion of Holdings by Region (%)						
	No. of Funds	MSCI World	MSCI ACWI	No. of Stocks Held	Asia Pacific (DM)	Europe and the Middle East (DM)	Japan (DM)	North America (DM)	Asia Pacific (EM)	Europe, the Middle East, and Africa (EM)	Latin America (EM)
2002	28	10	18	161	2.84	36.84	12.65	45.26	1.05	1.01	0.36
2003	43	14	29	176	4.71	37.71	13.56	41.73	0.97	1.03	0.30
2004	58	19	39	155	6.15	39.23	13.93	38.70	1.07	0.78	0.15
2005	71	21	50	119	6.60	31.07	13.55	46.21	0.70	1.36	0.21
2006	89	32	57	111	6.61	35.15	10.36	45.89	0.95	0.69	0.33
2007	98	36	62	124	8.48	39.09	9.14	40.33	1.55	0.95	0.42
2008	106	42	64	136	5.67	38.10	12.41	40.48	1.91	0.84	0.39
2009	112	44	68	129	6.73	38.09	8.38	42.23	2.55	0.97	0.85
2010	112	43	69	118	7.46	33.63	9.65	43.71	2.61	1.18	1.41
2011	113	44	69	118	5.88	34.32	7.85	47.79	1.94	0.77	1.37
2012	102	40	62	113	5.59	36.34	7.01	47.71	1.77	0.74	0.78
Time-series average	85	31	53	133	6.07	36.32	10.77	43.64	1.55	0.94	0.60

Notes: “No. of Funds” is the number of funds in the sample as of December of each year. The benchmarks are the MSCI World Index and the MSCI All Country World Index (MSCI ACWI), and the table reports the number of funds assigned to each benchmark as of December. “No. of Stocks Held” is the number of stocks held per fund over the four quarters of each year. The proportion of fund holdings in each region is provided as of December of each year. The table reports the time-series averages of the yearly values for each item. DM indicates a developed-market region and EM an emerging-market region.

The funds in our sample collectively hold stocks in 61 countries. Table 1 reports the weights from classifying countries into one of seven regions in December of each year as well as on average.<sup>14</sup> The portfolios are dominated by developed markets, particularly North America (43.6%, on average) and Europe and the Middle East (36.3%).

## Overall Performance: Results

The results reported in this section reflect holdings-based portfolio returns over 2002–2012, estimated by weighting stock returns in the fund’s base currency by the portfolio weight at the end of the prior calendar-quarter. All fund-quarter observations were pooled for analysis. We found that funds outperform their respective benchmarks by 0.30% per quarter, on average, which equates to

1.2% annualized and is significant at the 5% level (Table 2). The median outperformance is 0.36% per quarter, or 1.5% annualized. Figure 1 plots the distribution of performance versus the benchmark. In total, 54% of fund-quarter observations are positive—comprising 29% between 0% and +2%, 15% between +2% and +4%, and 9% equal to or greater than +4%. Of the negative observations, 27% are between –2% and 0%, 13% are between –2% and –4%, and 7% are equal to or less than –4%. In an unreported analysis, we found that a majority of funds outperform the benchmark in 8 of the 11 years. The exceptions are 2003, 2004, and 2008, when the proportion of outperforming funds is slightly below 50%.

**Global Performance Attribution: Specification.** We used the following approach to determine the attribution of fund excess

Table 2. Benchmark Attribution Analysis, 2002–2012 (t-statistics in parentheses)

Year	No. of Fund-Quarters	Holdings-Based Returns (%)			Stock Selection (%)			Country Selection (%)			Currency Effects (%)			Reported Returns (%)		Unobserved Effects (%)		
		Benchmark Return (%)	Portfolio Return	Excess Return (HBXR)	Total (SS)	Local Currency (SS[LC])	Local Currency (SS[LC])	Total (CS)	Local Currency (CS[LC])	Local Currency (CS[LC])	Currency (SS[C])	Currency (SS[C])	Currency (CS[C])	Total (TCE) = SS(C) + CS(C)	Portfolio Return	Excess Portfolio Return	Portfolio Return	Excess Portfolio Return
2002	66	-3.46**	-2.77*	0.69	0.50	0.59	0.18	-0.23	0.41**	0.33**	0.33**	0.33**	-2.48	0.98*	0.30	0.30	0.30	0.30
		(-2.71)	(-2.08)	(1.42)	(1.19)	(1.41)	(1.04)	(-1.43)	(3.41)	(2.74)	(2.74)	(2.74)	(-1.87)	(2.30)	(1.31)	(1.31)	(1.31)	(1.31)
2003	84	7.70**	7.79**	0.09	-0.25	-0.30	0.34	-0.10	0.44**	0.49**	0.49**	0.49**	7.84**	0.14	0.05	0.05	0.05	0.05
		(8.65)	(7.55)	(0.23)	(-1.02)	(-1.30)	(1.80)	(-0.66)	(3.42)	(3.40)	(3.40)	(3.40)	(7.74)	(0.42)	(0.28)	(0.28)	(0.28)	(0.28)
2004	128	4.19**	4.46**	0.27	0.08	0.11	0.19	-0.11	0.30**	0.27	0.27	0.27	4.52**	0.34	0.06	0.06	0.06	0.06
		(8.99)	(8.51)	(1.26)	(0.47)	(0.60)	(1.94)	(-1.69)	(3.03)	(2.30)	(2.30)	(2.30)	(8.79)	(1.87)	(0.41)	(0.41)	(0.41)	(0.41)
2005	177	3.80**	4.40**	0.60**	0.37*	0.41*	0.23**	0.52**	-0.29**	-0.33**	-0.33**	-0.33**	4.69**	0.89**	0.30*	0.30*	0.30*	0.30*
		(16.17)	(14.28)	(3.17)	(2.01)	(2.04)	(2.63)	(5.03)	(-5.55)	(-3.02)	(-3.02)	(-3.02)	(15.53)	(5.50)	(2.33)	(2.33)	(2.33)	(2.33)
2006	224	4.56**	5.01**	0.45**	0.37*	0.49**	0.08	-0.06	0.13**	0.01	0.01	0.01	5.10**	0.53**	0.08	0.08	0.08	0.08
		(15.34)	(13.61)	(2.76)	(2.54)	(3.14)	(1.13)	(-1.17)	(2.61)	(0.16)	(0.16)	(0.16)	(14.60)	(3.73)	(0.76)	(0.76)	(0.76)	(0.76)
2007	263	1.46**	1.65**	0.20	0.16	0.21	0.04	0.02	0.02	-0.03	-0.03	-0.03	1.90**	0.44**	0.25*	0.25*	0.25*	0.25*
		(6.75)	(5.23)	(0.97)	(0.86)	(1.10)	(0.54)	(0.30)	(0.50)	(-0.36)	(-0.36)	(-0.36)	(6.72)	(2.69)	(2.27)	(2.27)	(2.27)	(2.27)
2008	245	-11.23**	-11.48**	-0.25	-0.07	0.18	-0.17	-0.11	-0.06	-0.32**	-0.32**	-0.32**	-11.46**	-0.23	0.02	0.02	0.02	0.02
		(-22.47)	(-22.45)	(-0.98)	(-0.31)	(0.76)	(-1.94)	(-1.44)	(-0.73)	(-2.92)	(-2.92)	(-2.92)	(-21.61)	(-0.96)	(0.14)	(0.14)	(0.14)	(0.14)
2009	301	6.84**	7.53**	0.69**	0.81**	0.78**	-0.12	0.10	-0.22**	-0.19	-0.19	-0.19	7.53**	0.69**	0.00	0.00	0.00	0.00
		(10.53)	(11.29)	(3.54)	(4.50)	(4.37)	(-1.42)	(1.40)	(-4.71)	(-1.89)	(-1.89)	(-1.89)	(11.48)	(3.48)	(1.00)	(1.00)	(1.00)	(1.00)
2010	363	3.83**	4.26**	0.43**	0.39**	0.41**	0.04	0.19**	-0.15**	-0.17*	-0.17*	-0.17*	4.08**	0.24*	-0.19*	-0.19*	-0.19*	-0.19*
		(8.22)	(9.04)	(3.45)	(3.35)	(3.32)	(0.75)	(3.81)	(-3.48)	(-2.27)	(-2.27)	(-2.27)	(8.90)	(2.05)	(-2.19)	(-2.19)	(-2.19)	(-2.19)
2011	384	-0.54	-0.86	-0.32*	-0.29**	-0.11	-0.02	-0.01	-0.02	-0.20**	-0.20**	-0.20**	-0.93*	-0.39	-0.07	-0.07	-0.07	-0.07
		(-1.23)	(-1.82)	(-2.13)	(-2.22)	(-0.86)	(-3.79)	(-0.42)	(-0.50)	(-3.47)	(-3.47)	(-3.47)	(-2.01)	(-2.66)	(-0.91)	(-0.91)	(-0.91)	(-0.91)
2012	402	3.86**	4.17**	0.31*	0.17	0.32*	0.14**	0.17**	-0.03	-0.15*	-0.15*	-0.15*	3.95**	0.09	-0.22**	-0.22**	-0.22**	-0.22**

(continued)

Table 2. Benchmark Attribution Analysis, 2002–2012 (t-statistics in parentheses) (continued)

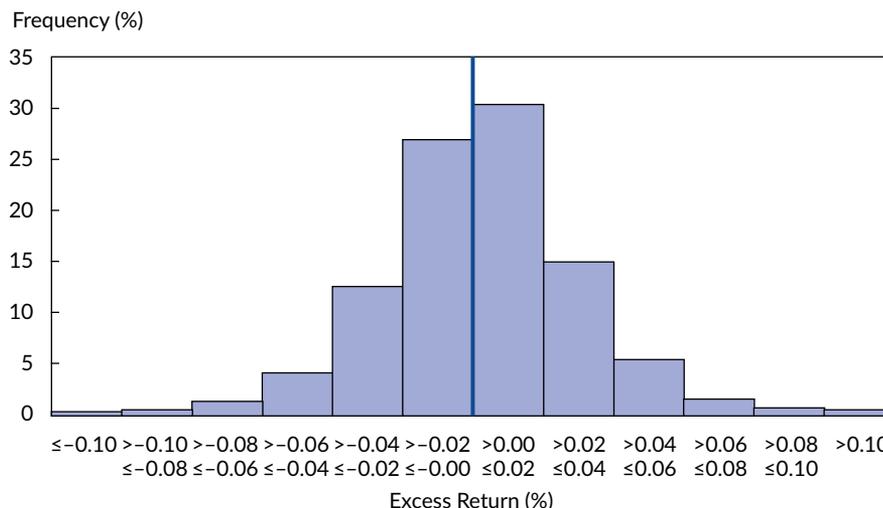
Year	No. of Fund-Quarters	Benchmark Return (%)	Holdings-Based Returns (%)		Stock Selection (%)		Country Selection (%)		Currency Effects (%)	Reported Returns (%)	Unobserved Effects (%)			
			Portfolio Return	Excess Return (HBXR)	Total (SS)	Local Currency (SS[LC])	Total (CS)	Local Currency (CS[LC])				Currency (CS[C])	Portfolio Return	Excess Portfolio Return
		(13.81)	(12.28)	(2.27)	(1.30)	(2.50)	(-2.72)	(3.62)	(3.46)	(-0.98)	(-2.81)	(12.24)	(0.71)	(-3.00)
Time-series avg.	44	1.54 (1.15)	1.83 (1.33)	0.30* (2.04)	0.22 (2.00)	0.29** (2.87)	-0.07* (-2.74)	0.08 (1.19)	0.05 (0.96)	0.02 (0.47)	-0.05 (-0.83)	1.89 (1.38)	0.35** (2.81)	0.05 (0.89)
Pooled avg.	2,637	1.92** (11.06)	2.17** (11.66)	0.25** (4.22)	0.20** (3.79)	0.29** (5.45)	-0.09** (-4.05)	0.04* (1.96)	0.07** (3.35)	-0.03 (-1.57)	-0.12** (-4.31)	2.17** (11.83)	0.24** (4.46)	0.00 (-0.11)

Notes: This table presents our attribution analysis of benchmark-adjusted fund returns. The quarterly average of percentage returns in each year and the time-series average and pooled average of the fund-quarter observations are reported. The table reports holdings-based portfolio returns and the holdings-based excess return (HBXR) for a portfolio relative to the benchmark return. Stock selection (SS) is decomposed into the stock selection local currency, SS(LC), and the stock selection currency, SS(C), components. SS(LC) is an indicator of stock-picking skill before the translation of returns into a fund's base currency. SS(C) captures the currency translation effect. Country selection (CS) is separated into the country selection local currency, CS(LC), and the country selection currency, CS(C), components. CS(LC) is an indicator of manager skill in selecting markets/countries to invest in, and CS(C) indicates how the performance of the currency of the countries selected affects excess returns. Total currency effects (TCE) are the aggregate of the SS(C) and CS(C) values and indicate the total effect of currency movements on excess returns. Unobserved effects are estimated as the difference between reported portfolio returns and holdings-based returns.

\*Significant at the 5% level.

\*\*Significant at the 1% level.

**Figure 1. Histogram of Benchmark-Adjusted Quarterly Fund Performance, 2002–2012**



Note: This figure is a histogram of the quarterly benchmark-adjusted performance across all fund-quarter observations, with holdings-based excess returns used in the analysis.

returns relative to the benchmark. First, we decomposed holdings-based excess returns in the base currency of each fund into stock selection and country selection effects. Stock selection reflects the performance of the stocks held relative to the respective country indexes, whereas country selection reflects the contribution from country exposures relative to the country weights in the benchmark. This decomposition is achieved by “factoring out” the return on the country benchmark indexes. Second, we further decomposed the stock selection and country selection components into effects associated with local currency returns and those related to currency movements. We estimated the local currency contributions directly and then calculated the currency effects as a difference or residual. This approach implicitly allocates the cross-product term between returns in local currency and currency changes (i.e., interaction effects) to the currency component. Third, we estimated “unobserved effects” as the difference between reported and holdings-based returns, which is comparable to the “return gap” measure of Kacperczyk, Sialm, and Zheng (2008).

We used four equations to derive our attribution into total stock selection (SS) and total country selection (CS) components, expressed in the fund’s base currency (BC). Equation 1 provides the

departure point by defining the holdings-based excess return (HBXR) for a portfolio relative to the benchmark return. Equation 2 extends Equation 1 by adding and then subtracting the country benchmark index return, thus establishing the dividing point under which returns are factored. Expanding and manipulating Equation 2 leads to Equation 3 and then to Equation 4, which uses the fact that the product of the stock benchmark weights and the respective country index returns equals the total benchmark return. Equation 4 is the attribution equation that we used to decompose HBXR into SS and CS in the base currency.

$$HBXR = \sum_{i=1}^N (w_{i,p} - w_{i,b}) r_{i,BC} \tag{1}$$

$$= \sum_{i=1}^N (w_{i,p} - w_{i,b}) (r_{i,BC} - r_{c,BC,i}) + \sum_{i=1}^N (w_{i,p} - w_{i,b}) r_{c,BC,i} \tag{2}$$

$$= \left[ \sum_{i=1}^N (r_{i,BC} - r_{c,BC,i}) w_{i,p} \right] + \left( \sum_{i=1}^N w_{i,p} r_{c,BC,i} - \sum_{i=1}^N w_{i,b} r_{c,BC,i} \right) \tag{3}$$

$$= \left[ \sum_{i=1}^N (r_{i,BC} - r_{c,BC,i}) w_{i,p} \right] + \left( \sum_{i=1}^N w_{i,p} r_{c,BC,i} - r_{b,BC} \right) \quad (4)$$

$$= SS + CS,$$

where

HBXR = the holdings-based excess return

SS = the excess return from stock selection

CS = the excess return from country selection

$w_{i,p}$  = the weight of stock  $i$  in the portfolio

$w_{i,b}$  = the weight of stock  $i$  in the assigned global benchmark

$r_{i,BC}$  = the return on stock  $i$

$r_{c,BC,i}$  = the return on the relevant country index  $c$  for stock  $i$

$r_{b,BC}$  = the return on the global benchmark

All returns are expressed in the fund's base currency (BC).

To further decompose SS and CS into local currency (LC) and currency (C) effects, we assumed that managers do not hedge currency. This assumption accords with information from BNY Mellon/Russell Investments that only 4 of the 143 funds in our sample use an active currency hedge. Local currency is defined as the currency of the country in which the stock is listed, whereas base currency is the currency in which the fund is managed. Equations 5–8 set out our approach, which involves estimating the local currency contribution to portfolio and benchmark returns expressed in the local currency and then calculating the currency effect as the difference between excess returns in the base currency and excess returns in the local currency.

$$SS(LC) = \sum_{i=1}^N (r_{i,LC} - r_{c,LC,i}) w_{i,p} \quad (5)$$

$$SS(C) = SS - SS(LC) \quad (6)$$

$$CS(LC) = \sum_{c=1}^N (r_{c,LC} \times w_{c,p}) - r_{b,LC} \quad (7)$$

$$CS(C) = CS - CS(LC), \quad (8)$$

where

SS(LC) = the component of HBXR attributable to stock selection in the local currency

SS(C) = the component of HBXR attributable to conversion of SS(LC) into the base currency

CS(LC) = the component of HBXR attributable to country selection in the local currency

CS(C) = the component of HBXR attributable to conversion of CS(LC) into the base currency

$r_{i,LC}$  = the return on stock  $i$  in the local currency

$r_{c,LC,i}$  = the return on the relevant country index  $c$  for stock  $i$  in the local currency

$r_{c,LC}$  = the return on country index  $c$  in the local currency

$w_{c,p}$  = the weight of country  $c$  in the portfolio

$r_{b,LC}$  = the return on the assigned global benchmark in the local currency

Equation 9 brings together all the components to describe the attribution of the reported excess portfolio return versus the benchmark:

$$\begin{aligned} \text{Excess portfolio return} &= \text{Reported portfolio return} \\ &\quad - \text{Benchmark return} \\ &= \text{HBXR} + \text{Unobserved effects} \quad (9) \\ &= \text{SS(LC)} + \text{SS(C)} + \text{CS(LC)} \\ &\quad + \text{CS(C)} + \text{Unobserved effects,} \end{aligned}$$

where “Unobserved effects” is the difference between the reported portfolio return and HBXR.

We also report the aggregate currency effect, calculated as follows:

$$\text{Total currency effects (TCE)} = \text{SS(C)} + \text{CS(C)}. \quad (10)$$

## Interpretation

Each component of the attribution requires a particular interpretation. SS(LC) is a measure of the ability of managers to select stocks that outperform the

local currency benchmark in individual markets. It provides the purest measure of stock selection skill. Nevertheless, when investing on an unhedged basis, the impact of this contribution on total portfolio returns is moderated by currency movements.  $SS(C)$  thus captures the currency translation effects associated with active stock bets relative to local currency indexes. The interpretation of  $SS(C)$  depends on whether managers are considered responsible for actively addressing the currency exposures in their equity portfolios. If so, evaluation of stock selection skill should incorporate the impact of currency movements. In this case,  $SS$  provides an overall indication of the contribution of stock selection to excess portfolio returns. In cases where managers are not expected to actively manage their currency exposures, abstracting from currency movements is more appropriate in evaluating stock selection skill by emphasizing  $SS(LC)$ . For instance, currency effects are incidental for a bottom-up manager who does not consider currencies when selecting stocks.

$CS$  provides an overall measure of skill in country selection, incorporating both market and currency movements. The further decomposition of  $CS$  into  $CS(LC)$  and  $CS(C)$  offers insight into whether any country selection contribution arises from underlying market movements in local currencies or from currency movements.  $CS$  is especially relevant for managers who adopt a top-down approach of first determining the country exposures and then selecting stocks in each country. The decomposition into  $CS(LC)$  and  $CS(C)$  indicates whether country selection skill is related to an ability to pick markets, currencies, or both.<sup>15</sup>

In addition, we report total currency effects ( $TCE$ ) as the aggregate of  $SS(C)$  and  $CS(C)$ , which is how currency is often conceptualized in practice. It provides a measure of the total impact of currency exposures, whether intentional or incidental. We note that equity market volatility tends to be higher than currency volatility. The average quarterly standard deviation of local currency equity returns for countries in the MSCI ACWI is 13.2% over the analysis period, substantially more than the 5.9% average for the various currencies versus the US dollar. Thus, there is greater scope for contributions from market versus currency selection, although the confidence intervals are wider for the former.

Note that the effect of any unobserved hedging contracts (recalling that only four sample funds actively hedge) is not accounted for in our HBXR estimates but would still affect reported portfolio returns. It would appear in “unobserved effects,” along with the influence of any unreported security holdings, transaction costs, and intraperiod trading.

**Performance Attribution: Results.** Table 2 reports the average quarterly benchmark attribution estimates for each year from 2002 to 2012, along with the time-series and pooled averages. The results for both computational methods are similar; we focus on the time-series averages in our discussion. All returns are in their funds’ base currency. Going from left to right, the number of fund-quarters in each year of our sample appears in the second column. The next three columns report the averages for benchmark returns, holdings-based portfolio returns, and the excess return relative to the benchmark return (i.e., HBXR). The next columns report the decomposition of HBXR into stock selection ( $SS$ ) and country selection ( $CS$ ), followed by total currency effects ( $TCE$ ), which is the sum of  $SS(C)$  and  $CS(C)$ . The last three columns present the reported portfolio returns, excess portfolio returns, and unobserved effects.

Table 2 reveals that portfolio managers exhibit positive stock-picking skill, on average, with  $SS$  amounting to 0.22% per quarter (about 0.9% a year).<sup>16</sup> Evidence in favor of stock selection skill is confirmed by a highly significant  $SS(LC)$  component of 0.29% per quarter (about 1.2% a year). Further,  $SS$  is negative and statistically significant only in 2011. This negative value, however, is driven predominantly by the  $SS(C)$  component and not by stock selection relative to the local currency benchmarks.  $SS$  is highest in 2009—when markets were recovering from the global financial crisis—averaging 0.81% per quarter, with 0.78% attributable to  $SS(LC)$ .

In contrast, country selection does not contribute to excess returns: The average quarterly contribution from  $CS$  is an insignificant 0.08%. The average values of  $CS(LC)$  and  $CS(C)$  are also insignificant at 0.05% and 0.02%, respectively, although some evidence of market selection skill emerges in 2005, 2010, and 2012. Although

positive, significant values of CS(C) are identified in most of the earlier sample years, managers do not consistently exhibit currency selection skill. The absence of any noteworthy positive contribution from currency is highlighted by estimates of total currency effects (TCE) that average  $-0.05\%$  (a pooled average of  $-0.12\%$ , which is significant) and that are negative or insignificant in 9 of the 11 sample years. Overall, we found country selection and currency contributions to be far less meaningful than those from stock selection.

Finally, the average reported portfolio return significantly exceeds the benchmark return by  $0.35\%$  per quarter, or about  $1.4\%$  a year. This number is moderately larger than the estimated HBXR of  $0.30\%$  per quarter ( $1.2\%$  a year), reflecting unobserved effects that average  $0.05\%$  per quarter. Gross excess returns of around  $1.2\%$ – $1.4\%$  a year are consistent with positive *net* excess returns to institutional accounts, in which annual management fees are typically well below  $1\%$ . According to a fee survey by Mercer Investments in 2006 (around the middle of our sample period), the average annual fee for global equity core segregated funds was  $0.74\%$  for a US\$25 million mandate and  $0.50\%$  for a US\$200 million mandate. Busse et al. (2014) noted that during 2009, the average annual fees for their sample of institutional funds ranged from  $0.87\%$  for US\$10 million to  $0.72\%$  for US\$100 million. For many retail investors, the excess return is largely consumed by management fees. According to the Investment Company Institute (2007), the median annual fee for international equity mutual funds in the United States at the end of 2006 was  $1.60\%$ , although the weighted average was lower at  $1.05\%$ . Khorana, Servaes, and Tufano (2009) reported an average annual equity mutual fund fee of  $1.29\%$  for retail investors across 18 countries. Hence, the availability of net returns in excess of the benchmark could vary across investors, reflecting both the fee paid and the manager selected.

## Global Analysis by Region

Table 3 reports a breakdown of the attribution by region, which allows us to trace the areas

where global managers are generating positive contributions.<sup>17</sup> A key finding is an apparently greater ability to add value in emerging markets. Holdings-based excess returns (HBXR) are large in magnitude for all three emerging-market regions and significant in both Asia Pacific and Europe, the Middle East, and Africa. In these two regions, market selection as measured by CS(LC) makes a major contribution. Nevertheless, both stock selection as measured by SS(LC) and market selection as measured by CS(LC) are positive and of a sizable magnitude across all three regions, even if not always significant.<sup>18</sup> Although HBXR is also positive in all developed-market regions, it is of lesser magnitude.

Stock selection is strongest in Japan, with a highly significant total SS estimate of  $0.88\%$ , which is mainly attributable to an SS(LC) of  $0.71\%$ . North America has a moderately significant quarterly SS of  $0.22\%$  and a highly significant SS(LC) component of  $0.28\%$ . In European and Middle Eastern developed markets, a highly significant SS(LC) of  $0.37\%$  is offset by a negative currency contribution, leaving SS positive but insignificant. Similarly, a significant SS(LC) of  $1.30\%$  for the emerging markets of Latin America is rendered insignificant at the total SS level by negative currency contributions. Note that SS(LC) is positive in all regions and is significant in three of the four developed-market regions, the exception being Asia Pacific—a hint that the stock selection skills of global managers are broadly based.

Country selection is strongest in the Asia-Pacific emerging-market region, where the estimate of  $2.14\%$  for total CS is both highly significant and large in magnitude. This result is primarily attributable to market selection, as indicated by the CS(LC) of  $1.85\%$ . Similarly, the emerging markets of Europe, the Middle East, and Africa have a highly significant CS(LC) estimate of  $1.40\%$ , although this number does not translate to a significant CS value owing to a negative CS(C) contribution. Likewise, a significant CS(LC) estimate of  $0.69\%$  for the Asia-Pacific developed-market region is offset by a negative CS(C) component, resulting in an insignificant total CS value.

Table 3. Attribution Analysis by Region, 2002–2012 (t-statistics in parentheses)

Region	No. of Funds Invested	No. of Fund-Quarters	Holdings-Based Returns (%)			Stock Selection (%)			Country Selection (%)			Currency Effects (%)
			Excess Return (HBXR)	Total (SS)	Local Currency (SS[LC])	Currency (SS[C])	Total (CS)	Local Currency (CS[LC])	Currency (CS[C])	Total (TCE) = SS(C) + CS(C)		
											(0.40)	(-1.13)
Asia Pacific (DM)	139	2,285	0.13 (0.40)	-0.20 (-1.13)	0.13 (0.78)	-0.32** (-3.38)	0.33 (1.14)	0.69** (2.97)	-0.36** (-3.06)	-0.69** (-4.51)		
Europe and the Middle East (DM)	143	2,509	0.57 (1.94)	0.22 (2.44)	0.37** (4.34)	-0.15** (-4.02)	0.36 (1.24)	0.32 (1.38)	0.04 (0.37)	-0.11 (-0.95)		
Japan (DM)	140	2,278	0.64 (2.18)	0.88** (6.18)	0.71** (5.48)	0.17 (2.27)	-0.24 (-0.89)	-0.61 (-1.98)	0.38 (1.98)	0.54 (2.64)		
North America (DM)	143	2,532	0.64 (2.68)	0.22 (2.69)	0.28** (3.57)	-0.06 (-1.77)	0.43 (1.95)	0.48 (2.16)	-0.06 (-0.69)	-0.12 (-1.34)		
Asia Pacific (EM)	89	1,125	2.39** (4.47)	0.25 (0.74)	0.61 (1.94)	-0.36 (-1.95)	2.14** (4.77)	1.85** (4.57)	0.29 (2.07)	-0.07 (-0.31)		
Europe, the Middle East, and Africa (EM)	82	883	2.13** (3.06)	0.81 (2.24)	0.85 (2.45)	-0.04 (-0.22)	1.31 (2.15)	1.40** (3.44)	-0.09 (-0.32)	-0.13 (-0.41)		
Latin America (EM)	77	760	1.67 (2.11)	0.76 (1.54)	1.30* (2.78)	-0.53 (-1.78)	0.91 (1.37)	0.95 (2.07)	-0.04 (-0.15)	-0.58 (-1.43)		

Notes: See the notes to Table 2. This table presents the attribution of benchmark-adjusted fund returns by region. Quarterly averages of percentage returns across pooled fund-quarter observations are reported. DM indicates a developed-market region and EM an emerging-market region.

\*Significant at the 5% level.

\*\*Significant at the 1% level.

## Role of Country Exposures

**Figure 2** plots the average active country weights for funds assigned to the MSCI World Index benchmark. Funds benchmarked to this index consistently underweighted North American stocks, mostly because of underweighting the United States. In an unreported analysis, we found that the managers underweighted the United States in 75% of the sample quarters. Given that the MSCI US Index underperformed the MSCI World Index over the sample period by 1.48% a year, the average underweighting of the United States of about 10% would have contributed about 0.15% a year to excess returns.

**Figure 3** reveals that the funds benchmarked to the MSCI ACWI also underweighted the United States over the sample period, albeit to a lesser extent, with an average active weight of  $-5.16\%$ . Interestingly, they tended to underweight emerging markets, with an average active weight of  $-3.72\%$ ; the funds underweighted emerging markets in 91% of the sample quarters. This underweighting would have negatively contributed to excess returns over the sample period because the MSCI Emerging Markets Index outperformed the MSCI ACWI by an average of 12.5% a year from 2002 to 2012.

## Discussion

Our finding that global equity fund managers outperform their benchmark indexes, on average, is broadly consistent with the one-factor market model results of Busse et al. (2014), who reported a quarterly alpha of 0.405% ( $t = 1.89$ ; about 1.6% a year) for their sample of global and international institutional equity funds. We uncovered two important sources of outperformance: stock selection, notably including developed markets, and emerging markets, where market selection also makes a meaningful contribution to outperformance. Nevertheless, the contribution to overall portfolio performance from emerging markets is modest because they account for only a small portion of fund portfolios.

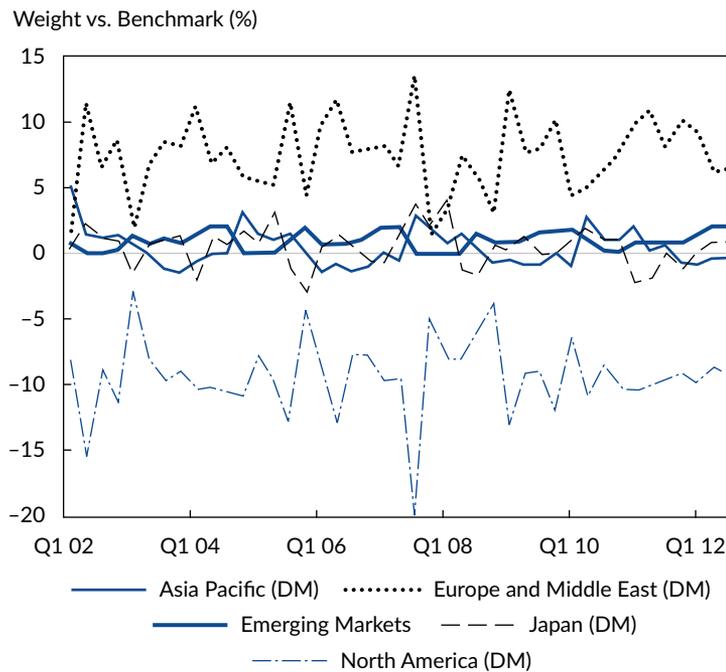
The attribution shows that currency effects have a mixed impact on fund returns, which, if anything,

tend to be marginally negative. This finding suggests that most equity managers either do not possess currency selection skill or ignore currency altogether, thus leaving their portfolios exposed to the risk of incidental losses related to currency translation. This finding also reinforces the case for managing currency exposures outside global equity portfolios, through either a hedging program or a currency overlay.

The low level of unobserved effects (time-series average of 0.05%; pooled average of 0.00%) suggests that our holdings-based portfolio returns are a good representation of actual quarterly fund returns—in contrast to the US literature, in which holdings-based returns are typically higher than reported returns (Wermers 2000), largely because transaction costs are ignored. The fact that our holdings-based return estimates equal or exceed reported portfolio returns implies that reported returns must be boosted by positive unobserved effects that more than offset transaction costs, such as value-accretive intraperiod trading (see Puckett and Yan 2011). Another possibility is unobserved exposures with positive effects, including any currency hedging or derivatives.

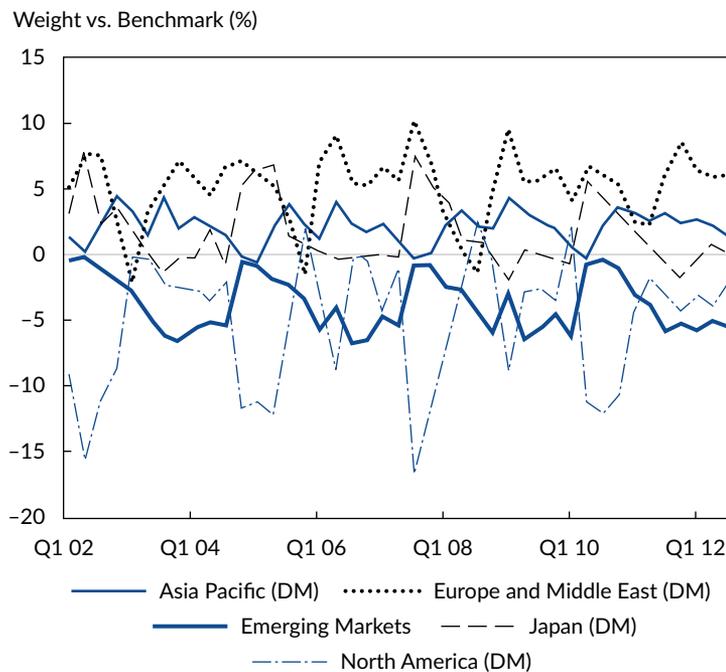
We focused our analysis on excess returns relative to the benchmark, without any further risk adjustment, which leaves open the possibility that the excess returns we observed could arise from exposure to common factors, such as momentum, value, or size. In an unreported analysis, we performed a time-series regression<sup>19</sup> of reported excess returns on the global versions of the Fama–French factors (market, size, value, and momentum) from Ken French’s website.<sup>20</sup> We conducted this analysis for a subset of 62 funds with the US dollar as their base currency and at least 20 quarters of return data. The analysis is only indicative, given the limited fund sample and the fact that the Fama–French factors are formed from 23 developed markets.<sup>21</sup> Nevertheless, the average regression intercept is 0.4% (around 1.6% a year) and statistically significant, tentatively suggesting that our findings are robust after allowing for exposures to common factors. The regression coefficients reveal that funds in the subsample have an average market beta of slightly less than 1 and a positive and statistically significant

**Figure 2.** Average Active Weights by Region for Funds Assigned to MSCI World Index, 2002–2012



Notes: This figure shows the average active weights in each region for funds assigned to the MSCI World Index. DM indicates a developed-market region. The three emerging-market regions have been combined and are identified as “Emerging Markets.”

**Figure 3.** Average Active Weights by Region for Funds Assigned to MSCI ACWI, 2002–2012



Notes: This figure shows the average active weights in each region for funds assigned to the MSCI All Country World Index (MSCI ACWI). DM indicates a developed-market region. The three emerging-market regions have been combined and are identified as “Emerging Markets.”

exposure to small stocks. A positive exposure to value and a negative exposure to momentum are also observed, although both are small and not statistically significant. Overall, we surmise that exposure to small stocks may have contributed to benchmark-adjusted outperformance, but the contribution is insufficient to negate the evidence that global funds possess stock selection skill.

## Conclusion

We examined the performance of 143 global equity funds over 2002–2012, using portfolio holdings data in our attribution analysis to identify the sources of outperformance. Our sample of funds generated annual excess returns versus their benchmarks of about 1.2%–1.4% before fees. Our attribution analysis suggests that a substantial portion of this outperformance is attributable to selecting stocks that outperform their local markets. In our dissection of performance, we found that the contribution from stock selection is strongest in Japan but is also evident across many regions. We also found notable signs of an ability to source excess returns from emerging markets, especially by identifying markets that outperform. But global equity managers do not appear to be skilled at currency selection, because currency contributions are mixed and moderately negative overall.

Our research offers a number of practical implications. First, the average outperformance reported for our fund sample suggests that institutional investors that can access segregated accounts for modest fees are justified in considering active management in global equity markets. Second, our analysis reveals

that the prime sources of excess returns to such accounts are stock selection and emerging markets, making the case for favoring managers who adopt a bottom-up approach that emphasizes stock selection and who have emerging-market capabilities. In contrast, the case for investing with top-down managers who focus on country selection remains to be established. Although a top-down approach could possibly be successful, our analysis suggests that these skills are not broadly held among global equity managers. Third, our finding that global equity funds generate mixed currency effects bolsters the case for separating the management of currency exposures from the management of equity portfolios, perhaps via currency hedging or currency overlays. Finally, we note that our results pertain mostly to the average fund in our sample. Accessing the entire sample would have been infeasible; our findings reflect the expectation that arises from selecting funds at random. Institutional investors may be able to do better with active management than a random draw if they possess manager selection skill or if manager choice can be improved by conditioning on information about, for example, past performance or manager characteristics (see Jones and Wermers 2011). These issues are left for future research.

### Editor's Note

Executive Editor Stephen J. Brown recused himself from the peer-review and acceptance processes because of a potential conflict of interest. Laura T. Starks served as Pro Tem Executive Editor.

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## Notes

1. Notable papers include Cumby and Glen (1990); Gallagher and Jarnecic (2004); Huij and Derwall (2011); Turtle and Zhang (2012); Breloer, Scholz, and Wilkens (2014); Busse, Goyal, and Wahal (2014).
2. For instance, Beath (2014) reported that US defined benefit funds held an average weighting in non-US equity of 17.6% over 1998–2011. Beath also reported that the weighting in non-US equity increased by +5.0% over this period while the US equity weighting decreased by –20.1%. For evidence on international equity exposures, see Kang, Nielsen, and Fachinotti (2010).
3. Fees for global equity funds are about 0.7% for institutional accounts, but fees for retail accounts often well exceed 1.0%. We examine additional details of fee levels in our discussion of the results.
4. The international funds examined by Busse et al. (2014) are mandated to invest in non-US stocks. In contrast, global funds may invest in stocks from around the world.
5. Evidence shows that global equity markets are only partly integrated (see Lewis 2011) and that market segmentation is greater for emerging markets (Carrieri, Chaieb, and Errunza 2013).

6. For example, Brinson, Hood, and Beebower (1986) and Brinson, Singer, and Beebower (1991) examined the performance of US pension plans in order to extract asset allocation contributions. Ankrim (1992) detailed how to incorporate a beta risk adjustment into the attribution procedure. Clarke, De Silva, and Thorley (2005) showed how a regression-based attribution system can be used to link the information content of a manager's security rankings to the security's actual contribution. Hsu, Kalesnik, and Myers (2010) created a framework to isolate the contribution of static and dynamic factor exposures within the "allocation effect."
7. In other approaches to analyzing global performance attribution, Brinson and Fachler (1985) decomposed non-US equity portfolios into country selection, stock selection, and an interaction term but ignored currency effects. Ankrim and Hensel (1994) derived a model that decomposes the currency contribution into a forward premium and a currency surprise component. Menchero and Davis (2009) refined and generalized the Singer-Karnosky model, including explicitly accounting for the cross-product term.
8. Only 4 of the 143 funds in our sample actively hedge, which is consistent with a preference for issuing unhedged mandates to managers, with a view to managing currency-hedging decisions at the overall plan level.
9. Each fund is managed by a different organization (except for two), and all the funds represent various strategies.
10. BNY Mellon is a custodian that collects and maintains a database of funds' stock holdings and provides companies, such as Russell Investments, with a representative dataset for their analyses. Blake, Rossi, Timmermann, Tonks, and Wermers (2013) used data from BNY Mellon on quarterly returns for 2,385 UK pension funds. Other studies have used data from Russell Investments include Christopherson, Ferson, and Glassman (1998) and Lin (2000); the latter study analyzes the impact of country and sector bets on excess returns for global multi-manager portfolios.
11. The difference is reported as "unobserved effects" in Table 2.
12. In an unreported robustness test, we recalculated the main results as presented in Tables 2 and 3 using the complete dataset before deletion of outliers. The findings are consistent.
13. We identified 98 institutional global equity funds on Morningstar Direct—all with the US dollar as their base currency.
14. The regional classifications we used follow MSCI (2013). Frontier, standalone, and unclassified markets ( $n = 17$  countries) are omitted from Table 1 because they represent a minute portion of the sample.
15. We acknowledge that these two effects may be related under some circumstances (e.g., market and currency movements may be responding to common factors, such as economic fundamentals). Alternatively, there may be a degree of trade-off between currency and market movements owing to the effects of currency adjustments on export revenues or import costs or on the translation of overseas assets or earnings streams. We found that currency and local currency stock market movements are mostly positively related over the analysis period. The correlation between quarterly local currency equity market returns and changes in the exchange rate vis-à-vis the US dollar averages 0.31 (median: 0.37) over the period for countries in the MSCI ACWI. The majority of countries demonstrate a positive correlation, excepting Argentina, Japan, and Switzerland.
16. We used arithmetic returns for the attribution, and the results represent the average of return contributions across fund-quarter observations. Although we did not attempt to cumulate the attributed returns to generate a multiperiod attribution given the methodological issues involved (see Menchero 2004), we would expect the general tenor of the results to be unchanged.
17. Only the pooled average across fund-quarters is presented because there are not enough quarterly observations for the emerging-market regions in the earlier years to compute a reliable time-series average. Results are not reported for frontier, standalone, and unclassified markets because of limited data points.
18. We based our significance tests on levels adjusted by using the Šidák correction method to account for testing within multiple subgroups. The effect is to substantially increase the threshold for significance under  $t$ -tests.
19. The method we used is consistent with the model of Angelidis, Giamouridis, and Tessaromatis (2013).
20. See [http://mba.tuck.dartmouth.edu/pages/faculty/ken.french/data\\_library.html#International](http://mba.tuck.dartmouth.edu/pages/faculty/ken.french/data_library.html#International).
21. Incorporating style factors into a global attribution analysis that includes currency effects would be a major extension and is beyond the scope of this article. Indeed, the role of currency and its interaction with equity factors has thus far been skirted in the literature (see Fama and French 2012). This area is a worthy topic for future research.

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## References

- Angelidis, T., D. Giamouridis, and N. Tessaromatis. 2013. "Revisiting Mutual Fund Performance Evaluation." *Journal of Banking & Finance*, vol. 37, no. 5 (May): 1759–1776.
- Ankrim, E. 1992. "Risk-Adjusted Performance Attribution." *Financial Analysts Journal*, vol. 48, no. 2 (March/April): 75–82.
- Ankrim, E., and C. Hensel. 1994. "Multicurrency Performance Attribution." *Financial Analysts Journal*, vol. 50, no. 2 (March/April): 29–35.
- Beath, A.D. 2014. "Asset Allocation and Fund Performance of Defined Benefit Pension Funds in the United States between

- 1998–2011." *CEM Benchmarking* ([www.reit.com/sites/default/files/pdf/Asset%20Allocation%20and%20Fund%20Performance%20Merged%20With%20Title%20Page%20\(12May2014\).pdf](http://www.reit.com/sites/default/files/pdf/Asset%20Allocation%20and%20Fund%20Performance%20Merged%20With%20Title%20Page%20(12May2014).pdf)).
- Berk, J., and J. van Binsbergen. 2015. "Measuring Skill in the Mutual Fund Industry." *Journal of Financial Economics*, vol. 118, no. 1 (October): 1–20.
- Blake, D., A.G. Rossi, A. Timmermann, I. Tonks, and R. Wermers. 2013. "Decentralized Investment Management: Evidence from the Pension Fund Industry." *Journal of Finance*, vol. 68, no. 3 (June): 1133–1178.
- Breloer, B., H. Scholz, and M. Marco Wilkens. 2014. "Performance of International and Global Equity Mutual Funds: Do Country Momentum and Sector Momentum Matter?" *Journal of Banking & Finance*, vol. 43 (June): 58–77.
- Brinson, G.P., and N. Fachler. 1985. "Measuring Non-US Equity Portfolio Performance." *Journal of Portfolio Management*, vol. 11, no. 3 (Spring): 73–76.
- Brinson, G.P., L.R. Hood, and G.L. Beebower. 1986. "Determinants of Portfolio Performance." *Financial Analysts Journal*, vol. 42, no. 4 (July/August): 39–44.
- Brinson, G.P., B.D. Singer, and G.L. Beebower. 1991. "Determinants of Portfolio Performance II: An Update." *Financial Analysts Journal*, vol. 47, no. 3 (May/June): 40–48.
- Busse, J., A. Goyal, and S. Wahal. 2014. "Investing in a Global World." *Review of Finance*, vol. 18, no. 2 (April): 561–590.
- Carrieri, F., I. Chaieb, and V. Errunza. 2013. "Do Implicit Barriers Matter for Globalization?" *Review of Financial Studies*, vol. 26, no. 7 (July): 1694–1739.
- Christopherson, J.A., W.E. Ferson, and D.A. Glassman. 1998. "Conditioning Manager Alphas on Economic Information: Another Look at the Persistence of Performance." *Review of Financial Studies*, vol. 11, no. 1 (January): 111–142.
- Clarke, R.G., H. de Silva, and S. Thorley. 2005. "Performance Attribution and the Fundamental Law." *Financial Analysts Journal*, vol. 61, no. 5 (September/October): 70–83.
- Cumby, R., and J. Glen. 1990. "Evaluating the Performance of International Mutual Funds." *Journal of Finance*, vol. 45, no. 2 (June): 497–521.
- Dyck, A., K.V. Lins, and L. Pomorski. 2013. "Does Active Management Pay? New International Evidence." *Review of Asset Pricing Studies*, vol. 3, no. 2 (December): 200–228.
- Fama, E.F., and K.R. French. 2012. "Size, Value, and Momentum in International Stock Returns." *Journal of Financial Economics*, vol. 105, no. 3 (September): 457–472.
- Gallagher, D., and E. Jarnecic. 2004. "International Equity Funds, Performance, and Investor Flows: Australian Evidence." *Journal of Multinational Financial Management*, vol. 14, no. 1 (February): 81–95.
- Gerakos, J., J.T. Linnainmaa, and A. Morse. 2016. "Asset Manager Funds." Chicago Booth Research Paper No. 16-02 (February): [http://papers.ssrn.com/sol3/papers.cfm?abstract\\_id=2733147](http://papers.ssrn.com/sol3/papers.cfm?abstract_id=2733147).
- Hsu, J., V. Kalesnik, and B. Myers. 2010. "Performance Attribution: Measuring Dynamic Allocation Skill." *Financial Analysts Journal*, vol. 66, no. 6 (November/December): 17–26.
- Huij, J., and J. Derwall. 2011. "Global Equity Fund Performance, Portfolio Concentration, and the Fundamental Law of Active Management." *Journal of Banking & Finance*, vol. 35, no. 1 (January): 155–165.
- Investment Company Institute. 2007. *Investment Company Fact Book*, 47th ed.
- Jones, R., and R. Wermers. 2011. "Active Management in Mostly Efficient Markets." *Financial Analysts Journal*, vol. 67, no. 6 (November/December): 29–45.
- Kacperczyk, M., C. Sialm, and L. Zheng. 2008. "Unobserved Actions of Mutual Funds." *Review of Financial Studies*, vol. 21, no. 6 (August): 2379–2416.
- Kang, X., F. Nielsen, and G. Fachinotti. 2010. "The 'New Classic' Equity Allocation?" *MSCI Research Insight* (October): [https://www.msci.com/resources/research/articles/2010/The\\_New\\_Classic\\_Equity\\_Allocation\(Oct%202010\).pdf](https://www.msci.com/resources/research/articles/2010/The_New_Classic_Equity_Allocation(Oct%202010).pdf).
- Khorana, A., H. Servaes, and P. Tufano. 2009. "Mutual Fund Fees around the World." *Review of Financial Studies*, vol. 22, no. 3 (March): 1279–1310.
- Lewis, K. 2011. "Global Asset Pricing." *Annual Review of Financial Economics*, vol. 3 (December): 435–466.
- Lin, W. 2000. "Controlling Risk in Global Multimanaged Portfolios." *Financial Analysts Journal*, vol. 56, no. 1 (January/February): 44–53.
- Menchero, J. 2004. "Multiperiod Arithmetic Attribution." *Financial Analysts Journal*, vol. 60, no. 4 (July/August): 76–91.
- Menchero, J., and B. Davis. 2009. "Multi-Currency Performance Attribution." *Journal of Performance Measurement*, vol. 14, no. 1 (Fall): 45–55.
- Mercer Investments. 2006. "Fee Survey 2006."
- MSCI. 2013. "Market Classification" ([www.msci.com/products/indexes/market\\_classification.html](http://www.msci.com/products/indexes/market_classification.html)).
- Puckett, A., and X. Yan. 2011. "The Interim Trading Skills of Institutional Investors." *Journal of Finance*, vol. 66, no. 2 (April): 601–633.
- Singer, B.D., and D.S. Karnosky. 1995. "The General Framework for Global Investment Management and Performance Attribution." *Journal of Portfolio Management*, vol. 21, no. 2 (Winter): 84–92.
- Turtle, H., and C. Zhang. 2012. "Time-Varying Performance of International Mutual Funds." *Journal of Empirical Finance*, vol. 19, no. 3 (June): 334–348.
- Wermers, R. 2000. "Mutual Fund Performance: An Empirical Decomposition into Stock-Picking Talent, Style, Transactions Costs, and Expenses." *Journal of Finance*, vol. 55, no. 4 (August): 1655–1695.