Global Equity Fund Performance: An Attribution Approach

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MARCH 2016
WORKING PAPER NO.095/2016 / Project F016

Forthcoming. JASSA.

This research was supported by the Centre for International Finance and Regulation, which is a Centre of Excellence for research and education in the financial sector, funded by the Commonwealth and NSW Governments www.cifr.edu.au.
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Global Equity Fund Performance: An Attribution Approach

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3 March 2016

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Abstract

We use portfolio holdings data to examine the performance of 143 global equity funds over the period 2002 to 2012. We find that the average global equity manager outperforms their benchmark by 1.2\% to 1.4\% per annum before fees. Attribution analysis reveals that the prime source of excess return relates to selecting stocks that beat their local markets. Modest contributions arise from country selection, most notably in emerging markets; while currency effects are mixed. Our findings support giving consideration to active management in global equity markets, at least for institutional investors who pay fees below 1\% per annum.

Acknowledgements: The authors gratefully acknowledge the generous financial support provided by the Capital Markets Cooperative Research Centre, the Centre for International Finance and Regulation and Russell Investments.
While there is voluminous literature examining US equity funds, only a handful of papers consider the performance of international or global equity funds\(^1\) – notwithstanding that international equities comprise an important and growing\(^2\) asset class within investor portfolios. To a large part, the comparative lack of research on global equity funds reflects limits to publicly available data. We add to research in this area by utilizing a unique dataset of quarterly holdings for global equity funds covering the period 2002 to 2012. Access to holdings data allows us not only to examine overall excess returns, but also to perform an attribution analysis to identify the chief sources of any outperformance. Specifically, we decompose the excess returns of funds relative to their respective benchmarks into contributions from stock selection, country selection and currency; as well as estimate ‘unobserved effects’ reflecting the difference between reported fund returns and the returns implied from observed holdings.

We estimate that active global equity managers generate average excess returns versus their benchmark indices of 1.2% per annum based on analysis of portfolio holdings, and about 1.4% per annum based on reported returns. This comfortably exceeds the fees typically paid by institutional investors, but not that paid by many retail investors.\(^3\) Attribution analysis reveals that excess returns are largely sourced from selecting stocks that outperform their country benchmarks in local currencies. In addition, we uncover evidence of modest skill in selecting markets, particularly within emerging markets. Meanwhile, contributions from currency effects are mixed, and unobserved effects (based on the return gap measure) are small. Our results suggest that active managers are worthwhile considering in global equity markets, mostly for

\(^1\) Notable papers include: Breloer, Scholz and Wilkens (2014); Busse, Goyal and Wahal (2014); Turtle and Zhang (2012); Huij and Derwall (2011); Gallagher and Jarneic (2004) and Cumby and Glen (1990).
\(^2\) For instance, Beath (2014) reports that US defined benefit funds held an average weighting in non-US equity of 17.6% over the period 1998 to 2011. Beath also reports that the weighting in non-US equity increased by +5.0% over this period, while the US equity weighting concurrently decreased by -20.1%. Also, see Kang, Nielsen and Fachinotti (2010) for evidence on international equity exposures.
\(^3\) Fees on global equity funds are in the order of 0.7% for institutional investors, but fees for retail investors often well-exceed 1.0%. Further detail on fee levels appears in the discussion of results.
their stock selection skills and capabilities in emerging markets. Mixed currency contributions support the case that the management of currency exposures should occur outside of global equity portfolios, through either hedging or overlays. Regressions of fund excess returns on international factors suggest that benchmark-relative outperformance remains robust to common factor exposures, although loading towards small stocks appears to make a positive contribution.

We extend the work of Busse, Goyal and Wahal (2014), who examine both global and international\(^4\) equity funds based in US dollars (USD). These authors use time-series regressions to relate fund returns to market and style factors; and then perform an analysis of contributions from country selection versus stock selection. They find significant outperformance after adjusting for the market factor, but not under the 4-factor model; although there is some evidence of successful stock picking in the tails of the distribution. In contrast, we examine global funds only; and undertake an attribution analysis of excess returns relative to benchmark indices using stock weights obtained directly from holdings data. As well as identifying contributions from country selection and stock selection, we go a step further than Busse et al. (2014) by decomposing these elements into local currency and currency-related components. Isolating currency effects generates a number of insights. First, the extent to which country selection contributions arise from market selection versus currency selection is identified. Second, we are able to extract the contribution from selecting stocks that outperform their local benchmarks, which is arguably the purest measure of stock selection skill. Third, an understanding of currency contributions that arise from global equity portfolios allows us to comment on how currency exposures might be best managed.

\(^4\) 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.
This article contributes to the understanding of active management in various ways. First, the finding that active managers generate significant outperformance in global equities calls into question whether the uninspiring performance of active management in US markets applies in other contexts. Second, we uncover evidence that the outperformance of global managers primarily relates to stock selection skill. Third, the fact that managers can source significant excess returns from emerging markets raises the possibility that the degree of market efficiency or segmentation might influence the capacity of active managers to outperform.

We also build on the performance attribution literature, where empirical investigations are often limited by a lack of portfolio holdings data. Our main contribution is to present an attribution of global equity fund performance based on actual reported holdings, noting that the global performance attribution analysis literature has so far relied on constructed examples (e.g. Brinson and Fachler, 1985; Ankrim and Hensel, 1994; Singer and Karnosky, 1995 and Menchero and Davis, 2009). Our attribution approach is essentially a subset of the model proposed by Singer and Karnosky (1995). These authors derive a method for decomposing global fund returns into selection of markets, securities and currencies, with the latter delineated into active currency and hedge selection. We focus on currency contributions without separating out the hedged from unhedged components, as this aligns with the fact that

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5 Evidence exists that global equity markets are only partly integrated (see Lewis, 2011); and that market segmentation is greater with respect to emerging markets (Carrié, Chaieb and Errunza, 2013).

6 For instance, Brinson, Hood and Beebower (1986) and Brinson, Singer and Beebower (1991) examine the performance of US pension plans in order to extract asset allocation contributions. Ankrim (1992) details how to incorporate a beta risk-adjustment into the attribution procedure. Clarke, De Silva and Thorley (2005) show how a regression-based attribution system can be used to link the information content of a manager’s security rankings to the actual contribution of the security. Hsu, Kalesnik and Myers (2010) provide a framework to isolate the contribution of static and dynamic factor exposures within the ‘Allocation Effect’.

7 In terms of other approaches to analysing global performance attribution, Brinson and Fachler (1985) decompose non-US equity portfolios into country selection, stock selection and an interaction term, but ignore currency effects. Ankrim and Hensel (1994) derive a model that decomposes the currency contribution into a forward premium and a currency surprise component. Menchero and Davis (2009) refine and generalize the Singer-Karnosky model, including explicitly accounting for the cross-product term.
the vast majority of global equity funds in our sample are managed on an unhedged basis.\textsuperscript{5} We design an attribution approach that identifies the contributions from stock selection, country selection and currency effects, where any cross-product terms are subsumed into the currency contributions. This involves first decomposing the excess return relative to a designated 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 provides insight into the extent to which any excess returns arise from skill in selecting stocks that outperform their local benchmarks; the influence of currency translation on how stock selection contributions manifest in total portfolio returns; and the skill in selecting markets and/or currencies.

This article proceeds as follows. The next section describes the fund sample, followed by a brief analysis of overall performance in terms of magnitude and distribution. We then specify our benchmark attribution approach, before reporting and discussing the attribution results. Finally, some concluding remarks are offered.

Data

This study employs a sample of quarterly stock holdings for 143 active global equity funds\textsuperscript{9} over the period 2002 to 2012. The data is generated by BNY Mellon, and supplied courtesy of Russell Investments.\textsuperscript{10} Each ‘fund’ in the sample is a separately managed account involving large-cap, long-only mandates. The coverage of stock holdings is limited to the equity portion

\textsuperscript{5} Only four out of the 143 funds in our sample actively hedge. This is consistent with a preference for issuing unhedged mandates to managers, with a view to managing currency hedging decisions at the overall plan level.\textsuperscript{5}

\textsuperscript{9} All funds are managed by different organisations except for two; and these funds represent different strategies.\textsuperscript{9}

\textsuperscript{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 upon which to conduct analysis. Blake, Rossie, Timmermann, Tonks and Wermers (2013) use quarterly returns for 2,385 UK pension funds provided by BNY Mellon. Other authors that use data sourced from Russell Investments include Christopherson, Ferson and Glassman (1998) and Lin (2000). The latter analyses the impact of country and sector bets on excess returns for global multi-manager portfolios.
of the fund; and does not include data on cash, derivatives or other non-stock 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% per quarter (2.24%), consistent with a tracking error of around 4.5%-5.0% per annum.

The possibility that the sample data may contain some selection bias cannot be ruled out, to the extent that Russell (or the managers, to a degree) may have discretion around the data that is extracted from (or provided to) BNY Mellon. Nevertheless, the data should not be significantly exposed to survivorship bias, as BNY Mellon retains funds which go out of business or which discontinue involvement. However, bias might occur if some managers discontinue involvement based on poor performance before the poor performance is reported. It is infeasible to quantify the impact; although we take some comfort from the comparability of our excess return estimates with the market-adjusted returns that are reported by Busse, Goyal and Wahal (2014). Stock level data are obtained from Datastream, supplemented by Bloomberg where required.

Our attribution analysis is based around 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 are representative, we compare them with reported quarterly fund returns (reported as Unobserved Effects in Table 2). The gap stands at +0.05% based on a time-series average, and 0.00% based on a pooled average of all fund-quarters. This suggests that any bias is minor on
average; although undoubtedly it covers up compensating unobserved effects. As we cannot be sure whether outliers are due to unobserved contributions to performance versus data error, we exclude fund-quarter observations where the gap between the holdings-based and reported portfolio returns is greater (less) than the 95th (5th) percentile.\textsuperscript{11}

Table 1 presents summary statistics. The sample comprises 143 funds, with 90 (63\%) managed in a ‘base currency’ of USD; 22 in UK Pounds; 20 in Euros; four in Australian dollars; four in Canadian dollars; and one each in the Norwegian Krone, the Danish Krone and the New Zealand dollar. We do not have data for assets under management, but only stock holdings expressed as weights. We believe that our sample is representative of the global equity fund universe. Not only is the sample size large enough for reliable statistical inferences, it is 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 USD.\textsuperscript{12} We note that Busse et al. (2014) employ a sample of 777 funds when undertaking returns-based analysis; but that their sample includes both global and international (presumed ex-US) equity funds, and reduces to 345 funds when conducting analysis that requires country weights.

The funds in our sample collectively hold stocks in 61 countries. Panel B of Table 1 reports the weights from classifying countries into one of seven regions in December of each year.\textsuperscript{13} The portfolios are dominated by Developed Markets (DM), particularly North America (47.7\% in 2012) and Europe and the Middle East (36.3\%).

\textbf{INSERT TABLE 1}

\textsuperscript{11} As a (unreported) robustness test, we re-calculate the main results as presented in Tables 2 and 3 using the complete dataset before deletion of outliers. The findings are consistent.
\textsuperscript{12} We identify 98 institutional global equity funds on Morningstar Direct, all with USD as the base currency.
\textsuperscript{13} The regional classification follows MSCI (2013). Frontier, standalone and unclassified markets (n=17 countries) are omitted from Panel B, as they represent a minute portion of the sample.
Overall Performance – Results

Results reported in this section reflect holdings-based portfolio returns from 2002 to 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 are pooled for analysis. 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 (see Table 2). The median outperformance was 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% in excess of, or equal to +4%. Of the negative observations, 27% are between -2% and 0%; 13% are between -2 and -4%; and 7% are below or equal to -4%. In unreported analysis, we find that a majority of funds outperform the benchmark in eight out of the 11 years. The exceptions are 2003, 2004 and 2008, when the proportion of outperforming funds is slightly below 50%.

INSERT FIGURE 1

Global Performance Attribution – Specification

Our approach to the attribution of fund excess returns relative to the benchmark is as follows: First, we decompose 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 indices; while 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 indices. Second, we further decompose the stock selection and country selection components into effects associated with local currency returns and those related to currency movements. The latter are estimated as a
difference, or residual.\textsuperscript{14} Third, we estimate ‘Unobserved Effects’ as the difference between reported and holdings-based returns. The latter is comparable to the ‘return gap’ measure of Kacperczyk, Sialm and Zheng (2005).

Equations (1) to (4) 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 hence equation (4), which uses the fact that the product of the stock benchmark weights and the respective country index returns sums to the total benchmark return. Equation (4) is the attribution equation that we implement in decomposing HBXR into SS and CS in the base currency.

\[
\text{HBXR} = \sum_{i=1}^{N} (w_{i,p} - w_{i,b}) r_{i,BC} \\
= \sum_{i=1}^{N} (w_{i,p} - w_{i,b})(r_{i,BC} - r_{c,BC,i}) + \sum_{i=1}^{N} (w_{i,p} - w_{i,b}) r_{c,BC,i} \\
=\{ \sum_{i=1}^{N} (r_{i,BC} - r_{c,BC,i})w_{i,p} \} + \{ \sum_{i=1}^{N} w_{i,p} r_{c,BC,i} - \sum_{i=1}^{N} w_{i,b} r_{c,BC,i} \} \\
=\{ \sum_{i=1}^{N} (r_{i,BC} - r_{c,BC,i})w_{i,p} \} + \{ \sum_{i=1}^{N} w_{i,p} r_{c,BC,i} - r_{b,BC} \} \\
= \text{SS} + \text{CS}
\]

Where:
- HBXR is the holdings-based excess return
- SS is the excess return from stock selection
- CS is the excess return from country selection
- \( w_{i,p} \) is the weight of stock \( i \) in the portfolio
- \( w_{i,b} \) is the weight of stock \( i \) in the assigned global benchmark
- \( r_{i,BC} \) is the return on stock \( i \)
- \( r_{c,BC,i} \) is the return on the relevant country index \( c \) for stock \( i \)
- \( r_{b,BC} \) is the return on the global benchmark, and
- All returns are expressed in the base currency of the fund (BC)

\textsuperscript{14} The approach implicitly allocates the cross-product term between returns in local currency and the currency change (i.e. interaction effects) into the currency component.
To further decompose SS and CS into local currency (LC) and currency (C) effects, we assume that managers do not hedge currency. This assumption accords with indications from BNY-Mellon/Russel that only four 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) through (8) set out the approach. It involves initially estimating the local currency contribution with reference to portfolio and benchmark returns expressed in local currency; then calculating the currency effect as a difference between excess returns in base currency and local currency.

\[
SS(LC) = \sum_{i=1}^{N} (r_{i,LC} - r_{c,LC,i})w_{i,p}
\]

(5)

\[
SS(C) = SS - SS(LC)
\]

(6)

\[
CS(LC) = \sum_{c=1}^{N} (r_{c,LC} * w_{c,p}) - r_{c,LC}
\]

(7)

\[
CS(C) = CS - CS(LC)
\]

(8)

Where:
- SS(LC) is the component of HBXR attributable to stock selection in local currency
- SS(C) is the component of HBXR due to conversion of SS(LC) into the base currency
- CS(LC) is the component of HBXR attributable to country selection in local currency
- CS(C) is the component of HBXR due to conversion of CS(LC) into the base currency
- \(r_{i,LC}\) is the return on stock \(i\) in local currency
- \(r_{c,LC,i}\) is the return on the relevant country index \(c\) for stock \(i\) in local currency
- \(r_{c,LC}\) is the return on country index \(c\) in local currency
- \(w_{c,p}\) is the weight of country \(c\) in the portfolio
- \(r_{c,LC}\) is the return on the assigned global benchmark in local currencies

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

\[
Excess\ Portfolio\ Return = \text{Reported Portfolio Return} - \text{Benchmark Return} = HBXR + Unobserved\ Effects
\]

\[
= SS(LC) + SS(C) + CS(LC) + CS(C) + Unobserved\ Effects
\]

(9)

Where: ‘Unobserved Effects’ is the difference between the reported portfolio return and HBXR.

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

\[
Total\ Currency\ Effects\ (TCE) = SS(C) + CS(C)
\]

(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 within 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 will be moderated by currency movements. SS(C) captures this currency translation effect. The interpretation of SS(C) depends on whether managers are considered to have responsibility for actively addressing the currency exposures within 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, it is more appropriate to abstract from currency movements in evaluating stock selection skill by placing emphasis on SS(LC). For instance, currency effects will be 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 attribution of CS into CS(LC) and CS(C) provides insight into whether any contribution arises from underlying market movements in local currencies, or from currency movements. CS is particularly relevant for managers that adopt a top-down approach of first determining the country exposures, and subsequently selecting stocks within each country. The attribution into CS(LC) and CS(C) indicates whether any country selection skill relates to an ability to pick markets, currencies, or both.¹⁵

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 due to the effects of currency adjustments on export revenues or import costs, or translation of overseas assets or earnings streams. We find 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 versus the USD averages 0.31.
Additionally, we report Total Currency Effects (TCE) as the aggregate of SS(C) and CS(C), as this is how currency is often conceptualised in practice. It provides a measure of the total impact arising from currency exposures, whether intentional or incidental. We note that equity market volatility tends to be larger than currency volatility. The standard deviation of local currency equity returns for countries in the MSCI ACWI averages 13.2% per quarter over the analysis period, substantially greater than the 5.9% average for the respective currencies versus the USD. Hence there is greater scope for contributions from market versus currency selection, although the confidence intervals will be 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 impact on reported portfolio returns. Hence, it would appear within Unobserved Effects, along with the influence of any unreported security holdings, transaction costs and intra-period 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 computation methods are similar: we focus on the time-series averages in the discussion. All returns are in the base currency of the funds. Working from left to right, the number of fund-quarters in our sample appears as the second column. The next three columns report averages for Benchmark Returns, Holdings-Based Portfolio Returns, and the Excess Return relative to the Benchmark Return (i.e. HBXR). The subsequent columns report the attribution of HBXR into Stock Selection (SS) and Country Selection (CS); followed by Currency Effects (TCE) which is the

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(median 0.37) over the period for countries in the MSCI ACWI. The majority of countries demonstrate a positive correlation, with the exception of Argentina, Japan and Switzerland.
sum of SS(C) and CS(C). The last three columns report Reported Portfolio Returns, Excess Portfolio Returns and Unobserved Effects.

**INSERT TABLE 2**

Table 2 reveals that the managers exhibit positive stock-picking skill on average, with SS amounting to 0.22% per quarter (about 0.9% per annum), significant at the 10% level. Evidence in favour of stock selection skill is confirmed by a highly significant SS(LC) component of 0.29% per quarter (about 1.2% per annum). Further, SS is only negative and statistically significant in 2011. However, this negative value is predominantly driven by the SS(C) component, and not the stocks selected relative to the local currency benchmark. SS is highest in 2009 as markets recovered from the Global Financial Crisis, when it averaged 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. While positive and significant values of CS(C) are identified in most of the earlier sample years, managers do not consistently exhibit currency selection skill. The notion that currency fails to positively contribute to returns is highlighted by estimates for total currency effects (TCE) that average -0.05% (-0.12% based on the pooled average, which is significant); and which are negative or insignificant in 9 out of the eleven sample years. Overall, we find country selection and currency contributions to be far less meaningful than those arising from stock selection.

16 The attribution uses arithmetic returns, and the results represent the average of return contributions across fund-quarter observations. We do not attempt to cumulate the attributed returns to generate a multi-period attribution given the methodological issues involved (see Menchero, 2004), but would expect the general tenor of the results to be unchanged.
Finally, the average Reported Portfolio Return significantly exceeds the Benchmark Return by 0.35% per quarter, or about 1.4% per annum. This is moderately larger than the estimated HBXR of 0.30% per quarter (1.2% per annum), reflecting Unobserved Effects that average 0.05% per quarter. Gross excess returns of around 1.2% to 1.4% per annum are consistent with a positive net excess return being available to institutional investors, who typically pay fees well below this level. According to Mercer Investment’s Fee Survey 2006 (i.e. around the middle of our sample period), the average fee for global equity core segregated funds was 0.74% per annum for a US$25 million mandate and 0.50% per annum for a US$200 million mandate. Busse et al. (2014) note that average fees for institutional funds in their sample during 2009 range from 0.87% per annum for US$10 million, to 0.72% for US$100 million. For many retail investors, the excess return would be largely consumed by management fees. According to the Investment Company Institute (2007), the median fee on international equity mutual funds in the US at the end of 2006 was 1.60% per annum; although the weighted average was lower at 1.05% per annum. Further, Khorana, Servaes and Tufano (2009) report an average equity mutual fund fee of 1.29% per annum for retail investors across 18 countries. Hence, the availability of net returns in excess of the benchmark could vary across investors, reflecting the fee paid as well as the particular manager selected.

**Global Analysis by Region**

Table 3 reports a breakdown of the attribution by region,\(^\text{17}\) which allows us to trace the areas where global managers are generating positive contributions. A key finding is that there appears to be a 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

\(^{17}\) Only the pooled average across fund-quarters is presented, as 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 due to limited data points.
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.\(^\text{18}\) While HBXR is also positive in all developed market regions, it is of lesser magnitude and only significant (at 10%) in North America.

Stock selection is strongest in Japan, with a highly significant total SS estimate of 0.88%, which is mainly attributable to SS(LC) of 0.71%. Moderately significant SS of 0.22% per quarter is also identified in North America, which encompasses a highly significant SS(LC) component of 0.28%. In European and Middle Eastern developed markets, a highly significant SS(LC) component of 0.37% is offset by a negative currency contribution, leaving SS positive but insignificant. Similarly, a significant SS(LC) component for the emerging markets of Latin America of 1.30% is rendered insignificant at the total SS level by negative currency contributions. It is worth noting that SS(LC) is positive in all regions, and is significant in three out of four developed market regions with the exception of Asia-Pacific. This hints that the stock selection skills of global managers are broad-based.

**INSERT TABLE 3**

Country selection is strongest in the Asia-Pacific emerging market region, where the estimate for total CS of 2.14% is both highly significant and large in magnitude. This is primarily attributable to market selection, as indicated by CS(LC) of 1.85%. Similarly, a highly significant CS(LC) estimate of 1.40% is detected for the emerging markets region of Europe, the Middle East and Africa; although this does not translate to a significant CS value due to a negative CS(C) contribution. Similarly, a significant CS(LC) estimate for the Asia-Pacific

\(^{18}\) Significance testing is based on levels adjusted using the Šidák Correction method to account for testing within multiple sub-groups.
developed market region of 0.69% is offset by a negative CS(C) component, resulting in an insignificant total CS value.

**Role of Country Exposures**

Figure 2 plots the average active country weights for funds assigned the MSCI World Index as their benchmark. It reveals that funds benchmarked to this index were consistently underweight in North America, predominantly due to underweighting the US. Unreported analysis indicates that the managers were underweight the US during 75% of the sample quarters. Given that the MSCI US Index underperformed the MSCI World Index over the sample period by 1.48% per annum, the average underweighting of the US of about 10% would have made a contribution to excess returns of about 0.15% per annum.

**INSERT FIGURE 2**

Figure 3 reveals that the funds benchmarked to the MSCI ACWI also underweighted the US over the sample period, albeit to a lesser extent with an average active weight of -5.16%. Interestingly, they tend to underweight emerging markets, with an average active weight of -3.72%. Furthermore, the managers were underweight emerging markets in 91% of the sample quarters. This would have negatively contributed to excess returns over the sample period since the MSCI Emerging Markets Index outperformed the MSCI ACWI by an average of 12.5% per annum from 2002 to 2012.

**INSERT FIGURE 3**

**Discussion**

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

The attribution allows us to identify that currency effects have a mixed impact on fund returns, which if anything tend to be marginally negative. This suggests that most equity managers either do not possess currency selection skill; or perhaps ignore currency altogether, leaving their portfolios exposed to the risk of incidental losses related to currency translation. This finding reinforces the case for managing currency exposures outside of global equity portfolios, either through a hedging program or currency overlay.

The small level of Unobserved Effects (0.05% time-series average; 0.00% pooled average) suggests that our holdings-based portfolio returns provide a good representation of actual quarterly fund returns. This contrasts with the US literature, where holdings-based returns are typically greater than reported returns (Wermers, 2000), largely due to ignoring transaction costs. The fact that our holdings-based return estimates equal or exceed reported portfolio returns implies that reported returns must be boosted by some positive unobserved effects that are more than offsetting these transaction costs, such as value-accretive intra-period trading (see Puckett and Yan, 2011). Another possibility is unobserved exposures with positive effects, including any currency hedging or derivatives.

Our analysis focuses on excess returns relative to the benchmark, without any further risk adjustment. This leaves open the possibility that the excess returns we observe could arise from exposure to common factors such as momentum, value or size. In unreported analysis, we
perform a time-series regression\textsuperscript{19} of reported excess returns on the global version of the Fama-French factors (market, size, value and momentum) from Ken French’s website.\textsuperscript{20} We conduct this analysis for a subset of 62 funds with USD as their base currency, and at least 20 quarters of return data. The limited sample, combined with the fact that the Fama-French factors are formed from 23 developed markets, makes the analysis indicative only.\textsuperscript{21} Nevertheless, the average regression intercept is 0.4% (around 1.6% per annum) 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 sub-sample have an average market beta of slightly below one, and a positive and statistically significant exposure to small stocks. A positive exposure to value and negative exposure to momentum is 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 examine the performance of 143 global equity funds over the period 2002 to 2012, making use of portfolio holdings data to undertake an attribution analysis to identify the sources of outperformance. Our fund sample generates excess returns versus their benchmarks of about 1.2% to 1.4% per annum before fees. The attribution analysis indicates that a substantial portion of this outperformance is attributable to selecting stocks that outperform their local markets. Dissection of performance finds the contribution from stock selection to be strongest in Japan, but it is also evident across many regions. There are also notable signs of an ability to

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\textsuperscript{19} The method is consistent with the model of Angelidis, Giamouridis and Tessaromatis (2013).

\textsuperscript{20} See http://mba.tuck.dartmouth.edu/pages/faculty/ken.french/data_library.html#International.

\textsuperscript{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 paper. Indeed, the role of currency and its interaction with equity factors has been skirted so far by the literature (see Fama and French, 2012). This provides a potential future research topic.
source excess returns from emerging markets, especially through identifying markets that outperform. On the other hand, global equity managers do not appear to possess currency selection skills, as currency contributions are mixed and moderately negative overall.

This study provides support for considering an active approach in global equity markets, subject to the fee paid by the investor and perhaps the ability to identify and access skilled managers. Given the evidence that the prime sources of excess returns relate to stock selection and emerging markets, there appears to be a case for considering managers that adopt a bottom-up approach and have emerging market capabilities. In contrast, the case for investing with top-down managers who focus on country selection as a driver of returns remains to be established. While it is still possible that a top-down approach could be successful, our analysis suggests that these skills are not broadly held across global equity managers. Furthermore, the evidence that global equity funds generate mixed currency effects buffers the case for separating the management of currency exposures from the management of equity portfolios.
References


Mercer Investments 2006 “Fee Survey 2006”.


Table 1. Descriptive Statistics for Global Equity Funds

<table>
<thead>
<tr>
<th>Year</th>
<th>No. of Funds</th>
<th>MSCI World</th>
<th>MSCI ACWI</th>
<th>No. of Stocks Held</th>
<th>Panel A: Product Sample Data</th>
<th>Panel B: Proportion of Holdings by Region (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>No. of Funds</td>
<td>MSCI World</td>
</tr>
<tr>
<td>2002</td>
<td>28</td>
<td>10</td>
<td>18</td>
<td>161</td>
<td>28</td>
<td>10</td>
</tr>
<tr>
<td>2003</td>
<td>43</td>
<td>14</td>
<td>29</td>
<td>176</td>
<td>43</td>
<td>14</td>
</tr>
<tr>
<td>2004</td>
<td>58</td>
<td>19</td>
<td>39</td>
<td>155</td>
<td>58</td>
<td>19</td>
</tr>
<tr>
<td>2005</td>
<td>71</td>
<td>21</td>
<td>50</td>
<td>119</td>
<td>71</td>
<td>21</td>
</tr>
<tr>
<td>2006</td>
<td>89</td>
<td>32</td>
<td>57</td>
<td>111</td>
<td>89</td>
<td>32</td>
</tr>
<tr>
<td>2007</td>
<td>98</td>
<td>36</td>
<td>62</td>
<td>124</td>
<td>98</td>
<td>36</td>
</tr>
<tr>
<td>2008</td>
<td>106</td>
<td>42</td>
<td>64</td>
<td>136</td>
<td>106</td>
<td>42</td>
</tr>
<tr>
<td>2009</td>
<td>112</td>
<td>44</td>
<td>68</td>
<td>129</td>
<td>112</td>
<td>44</td>
</tr>
<tr>
<td>2010</td>
<td>112</td>
<td>43</td>
<td>69</td>
<td>118</td>
<td>112</td>
<td>43</td>
</tr>
<tr>
<td>2011</td>
<td>113</td>
<td>44</td>
<td>69</td>
<td>118</td>
<td>113</td>
<td>44</td>
</tr>
<tr>
<td>2012</td>
<td>102</td>
<td>40</td>
<td>62</td>
<td>113</td>
<td>102</td>
<td>40</td>
</tr>
</tbody>
</table>

Note: This table presents summary statistics for the sample of 143 global equity funds from 2002 to 2012. Panel A provides broad sample data. ‘No. of Funds’ is the number of funds in the sample as at December of each year. The number of funds assigned to each benchmark at December is provided. The benchmarks are MSCI World and the MSCI All Country World Index (MSCI ACWI). ‘No. of Stocks Held’ is the average number of stocks held per fund over the four quarters of each year. Panel B details the proportion of fund holdings in each region. ‘DM’ indicates a Developed Market region, and ‘EM’ an Emerging Market region.
### Table 2. Benchmark Attribution Analysis

<table>
<thead>
<tr>
<th>Year</th>
<th>No. of Fund-Quarters</th>
<th>Benchmark Return</th>
<th>Portfolio Return (HBXR)</th>
<th>Excess Return (HBXR)</th>
<th>Excess Return</th>
<th>Total (SS)</th>
<th>Total (SSLC)</th>
<th>Currency (SSC)</th>
<th>Total (TCE) = SS(C) + CS(C)</th>
<th>Excess Portfolio Return</th>
<th>Excess Portfolio Return</th>
<th>Reported Returns</th>
<th>Unobserved Effects</th>
</tr>
</thead>
<tbody>
<tr>
<td>2002</td>
<td>66</td>
<td>-3.46***</td>
<td>-2.77**</td>
<td>0.69</td>
<td>0.50</td>
<td>0.59</td>
<td>-0.08***</td>
<td>0.18</td>
<td>-0.23</td>
<td>0.41***</td>
<td>-2.48*</td>
<td>0.98**</td>
<td>0.30</td>
</tr>
<tr>
<td>2003</td>
<td>84</td>
<td>7.70***</td>
<td>7.99***</td>
<td>0.09</td>
<td>-0.25</td>
<td>-0.30</td>
<td>0.05</td>
<td>0.34*</td>
<td>-0.10</td>
<td>0.44***</td>
<td>-1.87</td>
<td>2.30</td>
<td>1.31</td>
</tr>
<tr>
<td>2004</td>
<td>128</td>
<td>4.19***</td>
<td>4.46***</td>
<td>0.27</td>
<td>0.08</td>
<td>0.11</td>
<td>-0.03</td>
<td>0.19*</td>
<td>-0.11</td>
<td>0.30***</td>
<td>4.52**</td>
<td>0.34*</td>
<td>0.06</td>
</tr>
<tr>
<td>2005</td>
<td>177</td>
<td>3.80***</td>
<td>4.40***</td>
<td>0.60***</td>
<td>0.37**</td>
<td>0.41**</td>
<td>-0.04</td>
<td>0.23**</td>
<td>0.52***</td>
<td>-0.29***</td>
<td>-0.33***</td>
<td>4.69***</td>
<td>0.89***</td>
</tr>
<tr>
<td>2006</td>
<td>224</td>
<td>4.56***</td>
<td>5.01***</td>
<td>0.45***</td>
<td>0.37**</td>
<td>0.49**</td>
<td>-0.12</td>
<td>0.08</td>
<td>-0.06</td>
<td>0.13**</td>
<td>0.01</td>
<td>5.10***</td>
<td>0.53***</td>
</tr>
<tr>
<td>2007</td>
<td>263</td>
<td>1.46***</td>
<td>1.65***</td>
<td>0.20</td>
<td>0.16</td>
<td>0.21</td>
<td>-0.05</td>
<td>0.04</td>
<td>0.02</td>
<td>0.02</td>
<td>-0.03</td>
<td>1.90***</td>
<td>0.44***</td>
</tr>
<tr>
<td>2008</td>
<td>245</td>
<td>-11.23***</td>
<td>-11.48***</td>
<td>-0.25</td>
<td>-0.07</td>
<td>0.18</td>
<td>-0.26**</td>
<td>-0.17*</td>
<td>-0.11</td>
<td>-0.06</td>
<td>-0.32***</td>
<td>-11.46***</td>
<td>-0.23</td>
</tr>
<tr>
<td>2009</td>
<td>301</td>
<td>6.84***</td>
<td>7.53***</td>
<td>0.69***</td>
<td>0.81***</td>
<td>0.78**</td>
<td>0.03</td>
<td>-0.12</td>
<td>0.10</td>
<td>-0.22***</td>
<td>-0.19</td>
<td>7.53***</td>
<td>0.69***</td>
</tr>
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<td>2010</td>
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<td>4.26***</td>
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<td>0.39**</td>
<td>0.41**</td>
<td>-0.02</td>
<td>0.04</td>
<td>0.19***</td>
<td>-0.15**</td>
<td>-0.17**</td>
<td>4.08***</td>
<td>0.24**</td>
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<tr>
<td>2011</td>
<td>384</td>
<td>-0.54</td>
<td>-0.86***</td>
<td>-0.32**</td>
<td>-0.29***</td>
<td>-0.11</td>
<td>-0.18**</td>
<td>-0.02</td>
<td>-0.01</td>
<td>-0.02</td>
<td>-0.20***</td>
<td>-0.93***</td>
<td>-0.39</td>
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<tr>
<td>2012</td>
<td>402</td>
<td>3.86***</td>
<td>4.17***</td>
<td>0.31**</td>
<td>0.17</td>
<td>0.32**</td>
<td>-0.15**</td>
<td>0.14***</td>
<td>0.17***</td>
<td>-0.03</td>
<td>-0.19***</td>
<td>3.95***</td>
<td>0.09</td>
</tr>
<tr>
<td></td>
<td>Time-Series</td>
<td>1.54</td>
<td>1.83</td>
<td>0.30**</td>
<td>0.22*</td>
<td>0.29***</td>
<td>-0.07**</td>
<td>0.08</td>
<td>0.05</td>
<td>0.02</td>
<td>-0.05</td>
<td>1.89***</td>
<td>0.35***</td>
</tr>
<tr>
<td></td>
<td>Average</td>
<td>(1.15)</td>
<td>(1.33)</td>
<td>(2.04)</td>
<td>(2.00)</td>
<td>(2.87)</td>
<td>(2.74)</td>
<td>(1.19)</td>
<td>(0.96)</td>
<td>(0.47)</td>
<td>(0.83)</td>
<td>(1.38)</td>
<td>(2.81)</td>
</tr>
<tr>
<td></td>
<td>Pooled</td>
<td>1.92***</td>
<td>2.17***</td>
<td>0.25***</td>
<td>0.20***</td>
<td>0.29***</td>
<td>-0.09**</td>
<td>0.04**</td>
<td>0.07***</td>
<td>-0.03</td>
<td>-0.12**</td>
<td>2.17***</td>
<td>0.24**</td>
</tr>
<tr>
<td></td>
<td>Average</td>
<td>2637</td>
<td>11.06</td>
<td>(4.22)</td>
<td>(3.79)</td>
<td>(5.45)</td>
<td>(4.05)</td>
<td>(1.96)</td>
<td>(3.35)</td>
<td>(1.57)</td>
<td>(4.31)</td>
<td>(11.83)</td>
<td>(4.46)</td>
</tr>
</tbody>
</table>

Note: This table presents the attribution analysis of benchmark-adjusted fund returns. The quarterly average of percentage returns in each year as well as the time-series average and pooled average of the fund-quarter observations for the period 2002-2012 are reported. We report 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 Stock Selection Currency 'SS(C)' components. SS(LC) is an indicator of stock-picking skill prior to the translation of returns into a fund's base currency. SS(C) captures this currency translation effect. Country Selection (CS) is separated into the Country Selection Local Currency 'CS(LC)' and 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. ***, ** and * indicate statistical significance at the 1%, 5% and 10% levels.
Table 3. Attribution Analysis by Region

<table>
<thead>
<tr>
<th>Region</th>
<th>No. of Fund-Quarters</th>
<th>Excess Return (HBXR)</th>
<th>Holdings-Based Returns</th>
<th>Stock Selection</th>
<th>Country Selection</th>
<th>Currency Effects</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>Total (SS)</td>
<td>Local Currency (SS(LC))</td>
<td>Currency (SS(C))</td>
<td>Total (SS)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Asia-Pacific (DM)</td>
<td>2285</td>
<td>0.13</td>
<td>-0.20</td>
<td>0.13</td>
<td>-0.32***</td>
<td>0.33</td>
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<tr>
<td></td>
<td></td>
<td>(0.40)</td>
<td>(-1.13)</td>
<td>(0.78)</td>
<td>(-3.38)</td>
<td>(1.14)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(1.94)</td>
<td>(2.44)</td>
<td>(4.34)</td>
<td>(-4.02)</td>
<td>(1.24)</td>
</tr>
<tr>
<td>Europe and the Middle East (DM)</td>
<td>2509</td>
<td>0.57</td>
<td>0.22</td>
<td>0.37***</td>
<td>-0.15***</td>
<td>0.36</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(2.18)</td>
<td>(6.18)</td>
<td>(5.48)</td>
<td>(2.27)</td>
<td>(1.24)</td>
</tr>
<tr>
<td>Japan (DM)</td>
<td>2278</td>
<td>0.64</td>
<td>0.88***</td>
<td>0.71***</td>
<td>0.17</td>
<td>-0.24</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(2.68)</td>
<td>(2.69)</td>
<td>(3.57)</td>
<td>(-1.77)</td>
<td>(-0.89)</td>
</tr>
<tr>
<td>North America (DM)</td>
<td>2532</td>
<td>0.64*</td>
<td>0.22*</td>
<td>0.28***</td>
<td>-0.06</td>
<td>0.43</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(2.11)</td>
<td>(5.19)</td>
<td>(5.48)</td>
<td>0.81</td>
<td></td>
</tr>
<tr>
<td>Asia-Pacific (EM)</td>
<td>1125</td>
<td>2.39***</td>
<td>0.25</td>
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<td></td>
<td></td>
<td>(4.47)</td>
<td>(0.74)</td>
<td>(1.94)</td>
<td>(-1.95)</td>
<td>(4.77)</td>
</tr>
<tr>
<td>Europe, the Middle East and Africa (EM)</td>
<td>883</td>
<td>2.13***</td>
<td>0.81</td>
<td>0.85</td>
<td>-0.04</td>
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</tr>
<tr>
<td></td>
<td></td>
<td>(3.06)</td>
<td>(2.24)</td>
<td>(2.45)</td>
<td>(-0.22)</td>
<td>(2.15)</td>
</tr>
<tr>
<td>Latin America (EM)</td>
<td>760</td>
<td>1.67</td>
<td>0.76</td>
<td>1.30**</td>
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<td>0.91</td>
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<tr>
<td></td>
<td></td>
<td>(2.11)</td>
<td>(1.54)</td>
<td>(2.78)</td>
<td>(-1.78)</td>
<td>(1.37)</td>
</tr>
</tbody>
</table>

Note: This table presents the attribution analysis of benchmark-adjusted fund returns by region. Quarterly averages of percentage returns across pooled fund-quarter observations for the period 2002 to 2012 are reported. Stock Selection (SS) is decomposed into the Stock Selection Local Currency 'SS(LC)' and Stock Selection Currency 'SS(C)' components. SS(LC) is an indicator of stock-picking skill prior to the translation of returns into a fund’s base currency. SS(C) captures this currency translation effect. Country Selection (CS) is separated into the Country Selection Local Currency 'CS(LC)' and 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 fund 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. 'DM' indicates a Developed Market region, and 'EM' an Emerging Market region. ***, ** and * indicate statistical significance at the 1%, 5% and 10% levels. Significance testing is based on levels adjusted using the Šidák Correction method to account for testing within multiple sub-groups.
Figure 1. Histogram of Benchmark-Adjusted Quarterly Fund Performance

Note: This figure is a histogram of the quarterly benchmark-adjusted performance across all fund-quarter observations between 2002 and 2012. Holdings-based excess returns are used for this analysis.
Figure 2. Average Active Weights by Region for Funds Assigned to MSCI World

Note: This figure shows the average active weights in each region over the sample period 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

Note: This figure shows the average active weights in each region over the sample period 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’.