S&P Dow Jones Indices

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Why Does the S&P 500 Matter to the UK?

"There are some people who, if they don't already know, you can't tell 'em."

- Yogi Berra

EXECUTIVE SUMMARY

This paper examines the S&P 500® from the perspective of a UK-based investor. We examine:

- The concentration and sectoral makeup of the UK equity market, and the motivations for British market participants to diversify internationally;
- The role of the UK and the U.S. in the global economy and global equity markets;
- Potentially complementary aspects of an S&P 500-linked investment for a broad-based British equity portfolio denominated in British pound sterling (sterling); and
- The differences between the S&P 500 and other indices or active portfolios tracking U.S. equities.

Although this paper provides a perspective on the S&P 500 through the specific filter of an investor with an expected existing bias toward UK equities, many of our observations hold more generally for international investors considering U.S. equities.

INTRODUCTION

Most market participants will have encountered the S&P 500; it is a widely referenced gauge of U.S. equity performance and a popular benchmark for investments. The S&P 500 contains many of the world's largest and most recognizable companies, with a global reach of operations, customers, and revenue sources.

With the increasing popularity and scale of S&P 500-related products, such as exchange-traded funds (ETFs) and index funds, as well as the derivatives, such as futures and options, there has been a reduction in the typical cost and barriers to entry for S&P 500-linked investments.

For an investor predominantly invested in UK equities, U.S. stocks arise in several investment contexts. Most importantly, U.S. stocks represent a significant proportion of the global opportunity set for diversification. Even if geographic diversification is not a primary objective for the investor, a moderate allocation to U.S. equities might arise through a wish to access to the information technology sector, which is dominated by American brands. Or investors may look to U.S. equities in order to benefit from exposure to the U.S. dollar (dollar), which tends to increase during periods of financial crisis. As Exhibit 1 shows, U.S. equities may also be considered simply because of their absolute performance.

Exhibit 1 provides an example of the cumulative annualized total return and the return/risk ratio[1] for various hypothetical combinations of the S&P 500 and S&P United Kingdom over various periods ending in July 2016.

Exhibit 1: Hypothetical Combinations of U.S. and UK Equities

PORTFOLIO	1-YEAR		3-YEAR		5-YEAR		10-YEAR		25-YEAR	
	RETURN (%)	RETURN/ RISK RATIO	RETURN (%)	RETURN/ RISK RATIO	RETURN (%)	RETURN/ RISK RATIO	RETURN (%)	RETURN/ RISK RATIO	RETURN (%)	RETURN/ RISK RATIO
S&P United Kingdom	4.7	0.42	4.1	0.40	6.9	0.60	5.2	0.37	8.0	0.58
95% S&P United Kingdom + 5% S&P 500	5.6	0.50	4.7	0.46	7.5	0.66	5.5	0.40	8.2	0.60
90% S&P United Kingdom + 10% S&P 500	6.5	0.59	5.3	0.53	8.0	0.72	5.8	0.43	8.3	0.61
75% S&P United Kingdom + 25% S&P 500	9.3	0.83	7.1	0.72	9.7	0.90	6.8	0.51	8.7	0.65
50% S&P United Kingdom + 50% S&P 500	14.1	1.22	10.1	1.04	12.6	1.21	8.4	0.64	9.3	0.68
S&P 500 (GBP)	24.1	1.92	16.2	1.50	18.3	1.69	11.5	0.82	10.4	0.66

Source: S&P Dow Jones Indices LLC. Data as of August 2016. Annualized total return and return/risk ratio in sterling for the S&P 500, the S&P United Kingdom, and the various (monthly rebalanced) combinations thereof. Past performance is no guarantee of future results. Table is provided for illustrative purposes and reflects hypothetical historical performance. Please see the Performance Disclosure at the end of this document for more information regarding the inherent limitations associated with back-tested performance.

The results show that over each of the 1-, 3-, 5-, 10-, and 25-year periods, a mix of the UK and U.S. indices offered a better return and a more favorable risk profile than a UK investment in isolation. To understand why this occurs, we begin with a brief discussion of the UK equity market.

SECTION 1: UK EQUITIES AND UK EQUITY INDICES

UK Equities and Country Classifications

The UK is the most significant equity market in Europe and the world's third largest, behind only the United States and Japan.[2] **But what do we mean by "UK equities"?** The question is non-trivial: shares in foreign or quasi-foreign institutions have been listed and traded in London from the late 17th century. In modern times, Great Britain provides the primary listing for a wide range of non-British companies, from Russian energy conglomerates such as Gazprom to Chinese industrials such as the Zhejiang Expressway Corporation.

[1] Annualized return divided by annualized volatility.

[2] Source: S&P Dow Jones Indices LLC, as of June 30, 2016.

In order to benchmark equity markets in different countries, index providers such as S&P Dow Jones Indices associate every company to a particular home. The classification depends on a wide range of potential considerations, and some companies are more difficult to classify than others.[3] The precise process of allocating each company to a single home market differs from index provider to index provider, but in the majority of cases, the classifications are fairly obvious and agree between providers.

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UK Equity Indices

The broadest benchmark that S&P Dow Jones Indices offers for the UK equity market is the S&P United Kingdom BMI (Broad Market Index). This index contains all UK companies with float-adjusted market values of USD 100 million or more and an annual dollar value traded of at least USD 50 million. Together with equivalents from other countries, it is a sub-index of the **S&P Global BMI**. The largest 100 or so companies are considered to be "blue chips" and form the basis of the **S&P United Kingdom** which, along with the **S&P 500**, is a subindex of the **S&P Global 1200**.[4]

Like any other developed equity market, the UK has many more small companies than large. As of June 30, 2016, there were 457 stocks within the broad-based S&P United Kingdom BMI, more than three-quarters (77%) of which would fall under S&P Dow Jones Indices' definition of small cap.

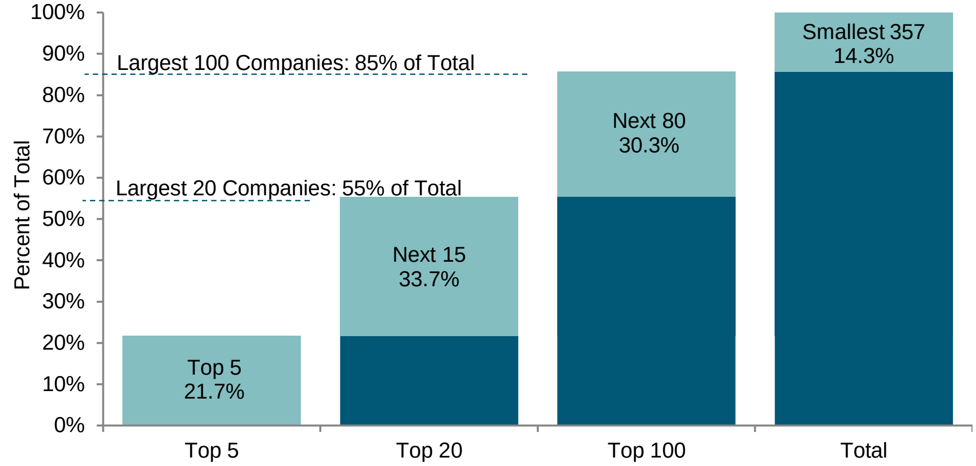
However, by capitalization, the UK market is dominated by a select group of large companies (see Exhibit 2). More than one-half of the value of the British equity market is accounted for by the largest 20 stocks; the top five alone account for more than 20%.

[3] Manchester United Football Club provides an example of the kind of subtlety that index providers must sometimes attempt. Manchester United is incorporated in the Cayman Islands, has its primary listing in New York, is majority owned by an American family, and proudly boasts an international fan base, with a significant component of revenue derived from Asia. It remains classified by S&P Dow Jones Indices as British. Details on how S&P Dow Jones Indices achieves its size and country classifications may be found in the S&P Global BMI methodology, available at http://spindices.com/indices/equity/sp-global-bmi-us-dollar.

[4] The S&P United Kingdom contained 102 companies as of June 30, 2016.

In addition to having a high degree of concentration within a few large companies, the UK equity market is also relatively concentrated by sector—specifically in consumer staples, financials, and energy.

Exhibit 2: S&P United Kingdom BMI Concentration



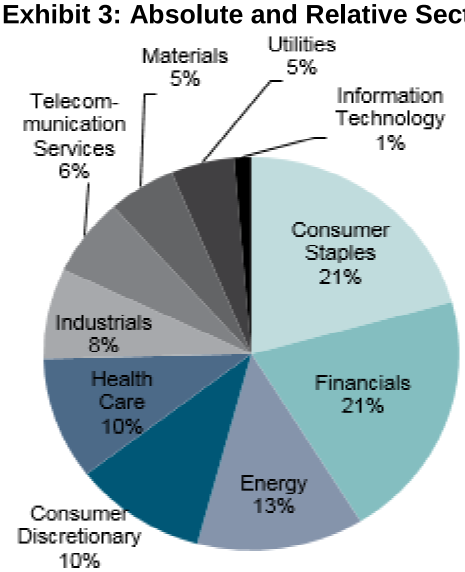
Source: S&P Dow Jones Indices LLC. Data as of June 30, 2016. Chart is provided for illustrative purposes.

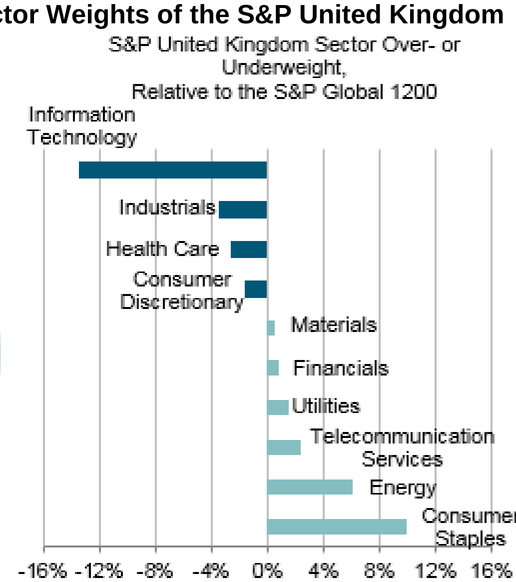
Sectoral Composition of the S&P United Kingdom

In addition to having a high degree of concentration within a few large companies, the UK equity market is also relatively concentrated by sector—specifically in consumer staples, financials, and energy. Conversely, the UK offers only limited exposure to other sectors—notably information technology, which amounts to only 1%.

Exhibit 3 displays the sectoral makeup of the British blue chips from two perspectives. The pie chart shows the absolute weight of each sector within the S&P United Kingdom. The bar chart provides the difference—positive or negative—between those weights and their global equivalents, as represented by the sector weights of the S&P Global 1200.

Exhibit 3: Absolute and Relative Sector Weights of the S&P United Kingdom





Source: S&P Dow Jones Indices LLC. Data as of June 30, 2016. Charts are provided for illustrative purposes.

Managing Concentration and Sector Risk

While stock-picking within UK equities might achieve greater diversification, it might also act to reduce returns.

If investors holding primarily British equities wish to limit their concentration or diversify among sectors, they can attempt to achieve this by investing abroad. However, they do not *need* to do so. One alternative is to simply buy *fewer shares in the largest companies* in the most dominant sectors and buy *more shares in smaller companies*; for example, in the British information technology sector. Small- and mid-cap stocks typically carry more risk, so a disciplined portfolio construction approach might be advisable, picking carefully to provide an optimal mix of industry, size, and risk.

An investor might also look abroad for diversification purposes.

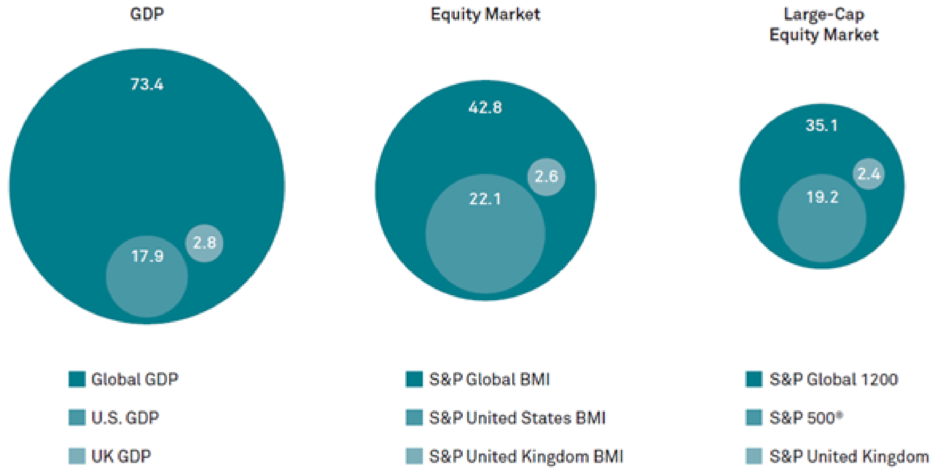
However, while stock-picking within UK equities might achieve greater diversification, it might also act to reduce returns. Finding a manager with enough skill to overcome the additional costs is not easy: according to the S&P Index Versus Active (SPIVA®) Europe Scorecard Year-End 2015, in the 10-year period ending December 2015, **less than 3 out of 10 active funds** operating in the broad UK equity or blue chip UK equity category outperformed an appropriate benchmark. For small-cap UK stocks, the record was even worse; less than 2 out of 10 funds outperformed their benchmark.[5] So, an investor might also look abroad for diversification purposes. If they do so, they will find a significant proportion of the investable opportunity set resides within U.S. equities.

SECTION 2: THE U.S. AND GLOBAL MARKETS

Exhibit 4 shows the relative sizes of gross domestic product along with total and blue chip equity capitalization for the U.S., the UK, and the world. When British investors make choices among countries, more than one-half of their opportunity set is composed of American stocks, approximately 85% of the capitalization of which is in S&P 500 companies.

[5] Source: S&P SPIVA Europe Scorecard Year-End 2015 at http://spindices.com/documents/spiva/spiva-europe-year-end-2015.pdf.

Exhibit 4: Economies and Equity Markets Compared: Global, UK, and U.S. (USD Trillions)[6]



Source: S&P Dow Jones Indices LLC, the World Bank. GDP as of December 2015. Free-float market cap of the S&P United States BMI, S&P United Kingdom BMI, S&P Global BMI, S&P 500, S&P Global 1200, and S&P United Kingdom as of June 30, 2016. Chart is provided for illustrative purposes.

When British market participants make choices among countries, more than one-half of their investable opportunity set is composed of American stocks.

S&P 500 stocks also account for many of the world's more recognizable brands, many of which are listed on the Forbes "Most Valuable Brands List 2016."[7] In addition, it is noteworthy that the brands identified as American are *all* owned by S&P 500 constituents.

Two-thirds of the top brands are American, roughly a quarter of them are based in continental Europe, and a further three brands are located variously elsewhere. Only one British brand makes it into the top 50—HSBC, at rank 37.

[6] The inclusion of GDP in Exhibit 3 allows for a sense of the relative global reach of each market. Both the U.S. and the UK have more significant equity markets than their global share of economic production would suggest; in part because many companies in Britain and the U.S. have significant global operations (and hence their equity capitalization reflects economic activity in many countries). A second important factor is that many of the significant economic drivers of growth in developing markets are state owned (that is to say, not publicly listed).

[7] Forbes, World's Most Valuable Brands List 2016, May 11, 2016.

Two-thirds of the top brands are American, roughly a quarter of them are based in continental Europe, and a further three brands are located variously elsewhere.

Exhibit 5: Forbes' World's Most Valuable Brands by Location

GLOBAL RANKING	BRAND	LOCATION	GLOBAL RANKING	BRAND	LOCATION
1	Apple	U.S.	26	Marlboro	U.S.
2	Google	U.S.	27	SAP	Europe
3	Microsoft	U.S.	28	Gillette	U.S.
4	Coca-Cola	U.S.	29	Pepsi	U.S.
5	Facebook	U.S.	30	VISA	U.S.
6	Toyota	Japan	31	ESPN	U.S.
7	IBM	U.S.	32	Nescafe	Europe
8	Disney	U.S.	33	H&M	Europe
9	McDonald's	U.S.	34	L'Oréal	Europe
10	GE	U.S.	35	Ford	U.S.
11	Samsung	South Korea	36	Audi	Europe
12	Amazon	U.S.	37	HSBC	UK
13	AT&T	U.S.	38	HP	U.S.
14	BMW	Europe	39	Home Depot	U.S.
15	Cisco	U.S.	40	Frito-Lay	U.S.
16	Oracle	U.S.	41	UPS	U.S.
17	Intel	U.S.	42	Accenture	U.S.
18	Nike	U.S.	43	Wells Fargo	U.S.
19	Louis Vuitton	Europe	44	Gucci	Europe
20	Mercedes-Benz	Europe	45	Starbucks	U.S.
21	Verizon	U.S.	46	IKEA	Europe
22	Walmart	U.S.	47	CVS	U.S.
23	Honda	Japan	48	Hermès	Europe
24	American Express	U.S.	49	Nestle	Europe
25	Budweiser	Europe	50	Pampers	U.S.

Source: Forbes' "World's Most Valuable Brands 2016." Country classifications according to S&P Dow Jones Indices LLC. Data as of 2016. Table is provided for illustrative purposes.

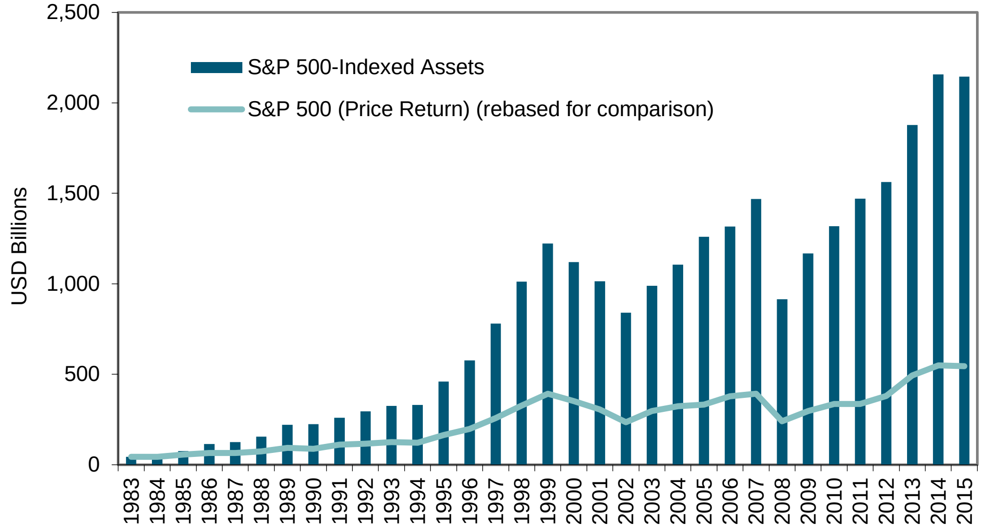
SECTION 3: UNIQUE CHARACTERISTICS OF THE S&P 500

Exhibits 4 and 5 show that the S&P 500 captures a significant proportion of the world's total equity capitalization and major brands. However, the same is true of many similar indices, portfolios, or funds, provided they cover a suitably broad selection of major U.S. stocks. **Why might an investor prefer an investment linked to the S&P 500 in particular?**

Unique Characteristics of the S&P 500

The S&P 500 is one of the world's most popular institutional benchmarks, with a significant amount of capital tied to its performance. Exhibit 6 shows the growth in the assets passively tracking the S&P 500 over time. The growth in the level of the S&P 500 itself is included for purposes of comparison.

Exhibit 6: S&P 500-Indexed Assets



Source: S&P Dow Jones Indices' Annual Survey of Indexed Assets. Data as of year-end 2015. "Indexed Assets" do not include active funds or assets that are benchmarked to S&P DJI indices for performance measurement. Synthetically replicated index-based products, such as derivatives, are also not included. Past performance is no guarantee of future results. Chart is provided for illustrative purposes.

The S&P 500 is one of the world's most popular institutional benchmarks, with a significant amount of capital tied to its performance.

Over time, and as a consequence of its usefulness to major investors and traders, a unique ecosystem of liquid and low-cost solutions has evolved.

- Interest in hedging S&P 500-related exposures has created a highly liquid market for related futures and options.
- Interest in investments tracking the S&P 500 has supported the creation of related low-cost index funds and ETFs.
- Interest in predicting or comprehending the performance of the S&P 500 supports the availability of analysis, forecasts, and commentary.

Exhibit 7 provides a holistic overview of why, when market participants look for a low cost, liquid, and transparent way to invest in or hedge exposures to U.S. equities, they might consider instruments linked to the S&P 500.

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Exhibit 7: The Global Relevance of S&P 500, in Figures

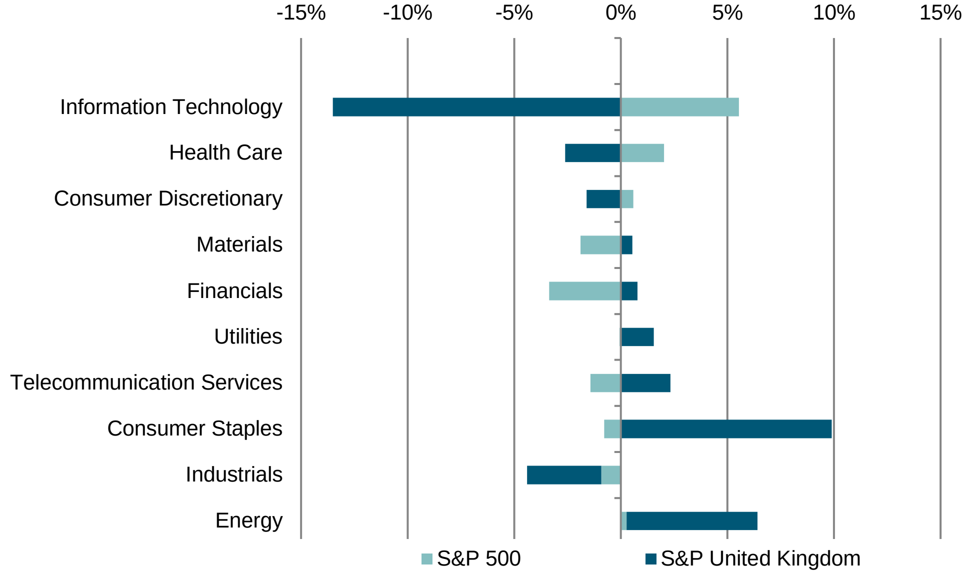
CATEGORY	S&P 500 PRESENCE/RELEVANCE	SELECTED COMPARISONS
Benchmark for Both Active and Passive Portfolios	**USD 7.5 trillion was benchmarked to the S&P 500** as of year-end 2015. USD **2.1 trillion** of which was invested in products **directly indexed to the S&P 500.**	Approximately USD 65 billion in retail funds benchmarked to FTSE's UK indices. Approximately USD 10 trillion benchmarked to *all* MSCI equity indices.
ETFs	Over USD **350 billion** in ETFs linked to the S&P 500 listed across global exchanges. Around USD **50 billion** of which was in London-listed ETFs.	Global ETF industry approximately USD **3 trillion** as of June 2016. Around USD **280 billion of which was** in London-listed ETFs.
Typical Charges for Investment	The largest London-listed ETF linked to the S&P 500 currently charges **0.07%**.	European average annual cost for index-linked funds is **0.30%.**
Tradability/ Liquidity	Notional volume of listed futures and options on the S&P 500 exceeded **USD 90 trillion** of trading in 2015. Most liquid U.S.-based ETFs linked to the S&P 500 averaged USD **25 billion traded every day** in 2015.	Around USD **4.4 trillion** and USD **1.9 trillion** in notional value trading during 2015 in FTSE 100 derivatives and *all* MSCI index futures and options, respectively.
Availability of Academic Analysis	JSTOR, a commercial provider of access to premier academic journals, lists **4,968 journal articles** and 381 books that reference the S&P 500. The broader ScienceDirect finds **5,975 journal articles** and 636 books.	The FTSE 100 is referenced in **358 journal articles** and 64 books accessible via JSTOR, while ScienceDirect offers **938 journal articles** and 163 book references.

Sources: S&P Dow Jones Indices LLC, the London Stock Exchange, MSCI, Morningstar®, Thomson Reuters Lipper, Bloomberg, JSTOR, ScienceDirect, CME, and CBOE. Data as of June 2016. Table is provided for illustrative purposes.

SECTION 4: SECTORS OF THE S&P 500

As shown in Section 1, the UK equity market is somewhat concentrated in certain sectors and contains only a few companies in others. An allocation to the S&P 500 can alleviate these sectoral imbalances. Exhibit 8 provides the *relative* sector under- and overweights of each market as compared with global sector weights (represented by the S&P Global 1200).

Exhibit 8: Sector Tilts of the S&P 500 and S&P United Kingdom, relative to the S&P Global 1200



Source: S&P Dow Jones Indices LLC. Data as of June 30, 2016. Chart is provided for illustrative purposes.

Any combination of the S&P United Kingdom and the S&P 500 will have sector weightings that are closer to the global average than are the weights of the S&P United Kingdom alone.

In comparison with global markets, the UK equity market is skewed toward consumer staples, financials, and energy; it is underweighted in information technology and health care. The S&P 500 is significantly overweighted in information technology (in fact, 90% of the total capitalization of information technology stocks in the S&P Global 1200 is contributed by the S&P 500) and health care; it is underweighted in consumer staples and financials. In other words, **the U.S. market offers what the UK market lacks, and vice versa.**

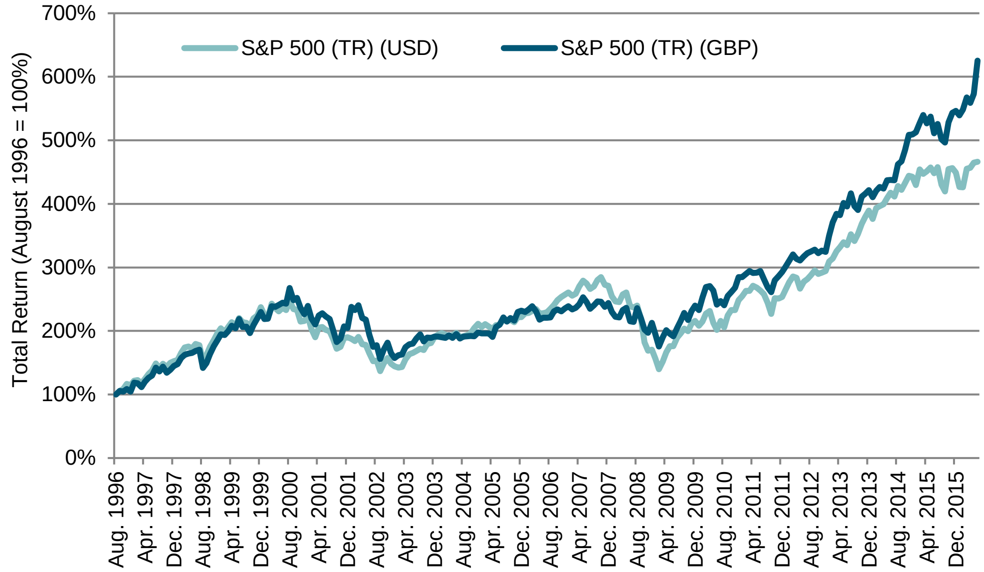
The two exceptions are energy and industrials. However, even in those cases, the S&P 500 is less significantly tilted than the S&P United Kingdom. Any combination of the S&P United Kingdom and the S&P 500 will have sector weightings that are closer to the global average than are the weights of the S&P United Kingdom alone.

SECTION 5: THE S&P 500 AND THE U.S. DOLLAR

As well as fluctuating stock prices, international investors in the U.S. stock market are exposed to fluctuations in the dollar. Exhibit 9 compares the performance of the S&P 500 Total Return (TR) with the same index *expressed in sterling terms,* over the past 20 years. The only difference between these two return series, in other words, is in the reporting currency.[8]

[8] The two series of Exhibit 9 are not directly comparable. Without currency hedging, only a USD-based market participant can earn the USD-based total return, and only a sterling-based one can earn the sterling-based total return.

Exhibit 9: The S&P 500 (TR) Versus the S&P 500 (TR) in GBP



Source: S&P Dow Jones Indices LLC. Data as of June 30, 2016. Past performance is no guarantee of future results. Chart is provided for illustrative purposes.

As well as fluctuating stock prices, international investors in the U.S. stock market are exposed to fluctuations in the dollar.

The difference between the two is sometimes material. Exhibit 9 displays a notable divergence in 2016, when the sterling fell dramatically after the victory for the "Leave" campaign in the EU membership referendum.

When it comes to assessing the impact of currency on investments, two questions naturally arise.

- Is the investor willing to be positively exposed to gains or falls in the dollar/sterling exchange rate?
- What is the relationship between changes in the S&P 500 and the dollar/sterling exchange rate?

Investors who view dollar exposure as attractive should still be aware of the risks: if the S&P 500 rises, a British investor in a related index fund might yet face a loss if the sterling has appreciated significantly against the dollar.[9]

Historically, two key drivers have acted to dampen the effect of currency fluctuations for international investors in U.S. equities: the role of the dollar as a "safe haven," and the international operations of S&P 500 constituents.

The U.S. Dollar as a "Safe Haven"

In times of financial uncertainty, investors tend to buy more defensive assets, such as U.S. Treasuries, and make defensive changes to their portfolios, such as switching from emerging market equities to developed

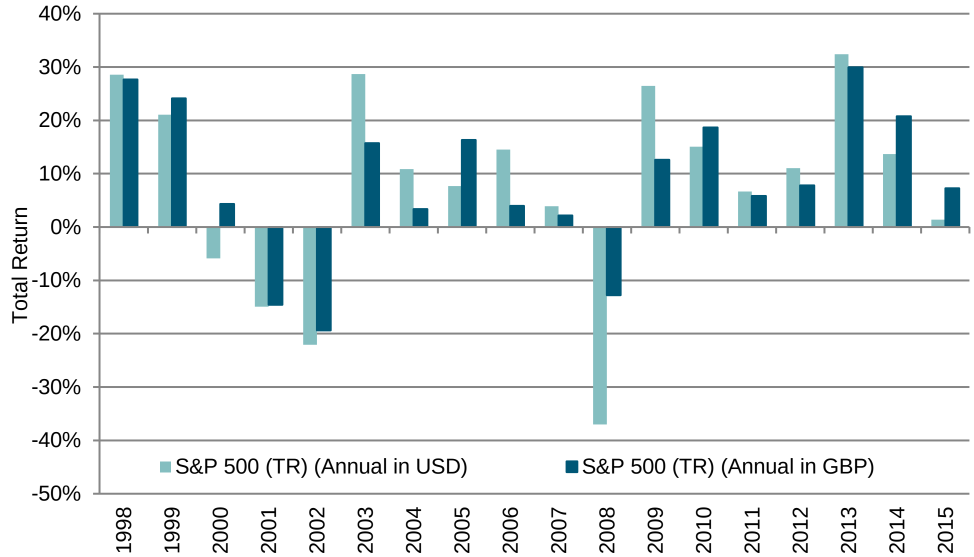
[9] The currency risk in equity investments can be "hedged" via currency forwards in an attempt to offer international investors a return that is more similar to the local performance, a process that forms the basis of S&P DJI's "currency hedged" indices. Several S&P 500-linked funds and ETFs that are hedged into sterling are locally available to UK investors.

In times of financial uncertainty, market participants tend to buy more defensive assets, such as U.S. Treasuries, and make defensive changes to their portfolios, such as switching from emerging market equities to developed market equities.

market equities. These actions create a demand for—and tend to increase the value of—the dollar during times of financial stress.

Foreign investors in U.S. equities, therefore, might expect a degree of mitigation of extreme price swings. For example, if U.S. equities fell dramatically during a crisis, their value in sterling might be supported by an accompanying rise in the dollar. Conversely, during a persistent bull market in U.S. equities, the dollar may weaken and thereby diminish the gains for international investors. Exhibit 10 shows this from the perspective of a sterling-based investor.

Exhibit 10: The S&P 500 (TR) in U.S. Dollar and British Pound Sterling Terms



Source: S&P Dow Jones Indices LLC. Data as of June 30, 2016. Past performance is no guarantee of future results. Chart is provided for illustrative purposes.

Exhibit 9 shows that in years such as 2002 and 2008, when the S&P 500 fell significantly, the rising dollar cushioned the fall. In other years—particularly in the rebounding markets of 2003 and 2009—a falling dollar meant the British investor lagged behind.[10]

The Importance of S&P 500 Foreign Sales

If an American company has significant, profitable foreign operations, then, if the dollar depreciates, those foreign profits will be worth more to that company. Vice versa, if the dollar appreciates, those foreign profits will be worth less in dollar terms. To stress the point, from an international investor's perspective, significant foreign operations act to mitigate the impact of currency movements on stock prices.

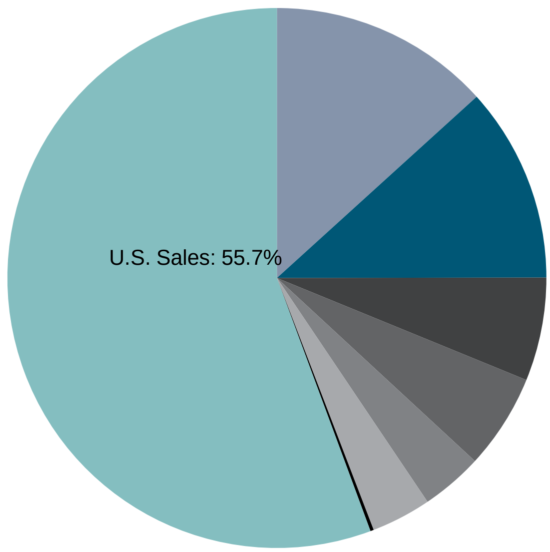
Some—but not all—companies provide a degree of transparency in the location and importance of their international operations. S&P Dow Jones

[10] More formally, the measured beta of the S&P 500 (GBP) to the S&P 500 (USD) was 0.77 during the period from 1996 to 2016.

Indices aggregates these data where available for the constituents of the S&P 500 and provides annual statistics on their geographical sources of revenue. Exhibit 11 provides a summary of the report or fiscal year 2015.

From an international market participant's perspective, significant foreign operations act to mitigate the impact of currency movements on stock prices.

Exhibit 11: S&P 500 Sources of Revenue by Geography



Source: S&P 500 Foreign Sales Report 2015, S&P Dow Jones Indices LLC. Data as of Dec. 31, 2015. Chart is provided for illustrative purposes.

Exhibit 11 shows that **about 44% of sales by S&P 500 companies were made to customers outside of the U.S.** And the distribution of foreign sales was wide; Europe and Asia together represent one-quarter of total sales, and about 20% went to Africa, South America, North America (excluding the U.S.), and Australia.

SECTION 6: ACTIVE AND PASSIVE INVESTMENTS IN U.S. EQUITIES

The question of whether to invest passively or actively in U.S. equities—via an index fund or an active stock-picker, for example—is of significant importance to an investor's eventual outcomes. The observations made in and accompanying Exhibit 7 indicate why an S&P 500 index fund might be cheaper and easier to understand than an active fund, but neither cost nor comprehensibility are frequently cited as reasons to invest actively. Instead, the hope for outperformance and better risk management are more common.

Exhibit 12 highlights a few statistics from the SPIVA Europe Year-End 2015 and the SPIVA U.S. Year-End 2015. The data suggest that outperformance in the large-cap U.S. market is uncommon for fund managers based in either market. Moreover, outperformance appears to become rarer as the measurement period increases.

Exhibit 12: Percentage of U.S. Equity Funds Outperforming the S&P 500 in the U.S. and the UK

TIME PERIOD	LARGE-CAP U.S. EQUITY FUNDS OFFERED IN THE U.S. (%)	ALL U.S. EQUITY FUNDS BASED IN EUROPE AND OFFERED IN STERLING (%)
1-Year	34	22
3-Year	24	20
5-Year	16	5
10-Year	18	5

Source: S&P Dow Jones Indices LLC. Data as of year-end 2015. Table is provided for illustrative purposes.

In a sense, such results are unsurprising. Active managers hope to exploit market inefficiencies, the identification of which can arise through an informational advantage or through a particular insight. The challenge for active managers operating in large U.S. stocks is the widespread availability of data and analysis on those companies. While it is not easy to agree that the U.S. market is perfectly efficient, **the evidence suggests that it is difficult to gain a persistent advantage over passive investors in large-cap U.S. equities.**

CONCLUSION

U.S. equities offer exposure to a broad segment of the global equity landscape and are likely to form a part of any investor's thoughts, especially if they wish to gain exposure to the information technology sector. Investing in a diversified basket of U.S. equities has been made significantly easier, cheaper, and more transparent through the widespread availability of S&P 500 index funds and ETFs, as well as other access vehicles such as options and futures. For the British investor, the sector makeup of the S&P 500 offers a particularly complementary blend for a broad-based UK equity portfolio, and one that has historically improved both the return and return/risk ratio.

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