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Assessing concentration risk in individual countries

Vanguard research

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Executive summary. Single-country exchange-traded funds (ETFs) and mutual funds allow investors to make tactical or long-term strategic investments in individual countries as part of an allocation to international equities. When considering such vehicles, investors should fully appreciate that the market capitalization of individual countries—especially those characterized by relatively small stock markets—can often be concentrated in a few sectors or even just a few companies. The higher concentration risk and/or idiosyncratic risk of investing in these markets could lead to higher return volatility, often without consistently higher returns, as past Vanguard research has shown.¹ In our view, this raises the question of whether such concentrated, single-country portfolios—even if they are index funds—can be considered “broadly diversified.”²

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1 In *Emerging Markets: Individual Country or Broad-Market Exposure?* (Philips et al., 2011), the authors found, for example, that from 1993 to 2010, the MSCI Emerging Markets Index produced a higher return with lower risk than the risk-adjusted performance of most of the individual countries in that index during the period.

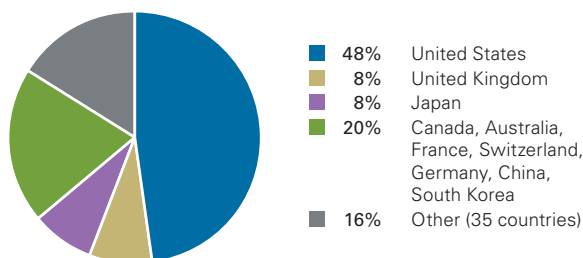
2 This paper does not purport to recommend whether or not single-country funds and ETFs are appropriate for an investor’s portfolio. As discussed in Vanguard’s research paper *The Role of Home Bias in Global Asset Allocation Decisions* (Philips, Kinniry, and Donaldson, 2012), at times investors may find it impractical to hold a significant proportion of foreign assets in their portfolios. Regulatory limitations and other factors may require that they hold mostly assets from their home country, which may or may not be highly concentrated.

This brief research paper provides empirical measures of concentration risk at the sector and individual company level for individual developed and emerging markets to help potential investors determine whether such risk is appropriate for their own portfolios. Of course, they could choose to minimize concentration risk by investing in broader-market vehicles.

Some investors may be surprised to learn how concentrated the portfolios of single-country ETFs and mutual funds can be. The public equity markets of certain developed countries, such as the United States and the United Kingdom, offer broad diversification benefits. However, the markets in many others, even large nations such as Russia, are dominated by one or two sectors or even companies.

Examining a breakdown of the global public equity market by country may provide further insight. **Figure 1** shows various countries along with their percentage share of global market capitalization. Countries with a smaller share typically have relatively fewer investment opportunities and a smaller total number of stocks. For example, despite possessing a large population and land mass, Russia³ composes only 0.7% of the world market index (see Appendix A-1) and holds just 41 stocks in its market. Such countries tend to be highly concentrated. On the other hand, countries with relatively large stock

Figure 1. Global market capitalization breakdown by country



Notes: This chart shows data for the 45 developed and emerging market countries included in the MSCI All Country World Investable Market Index. Of these 45 countries, 31 represent less than 1% each of global market capitalization.

Source: Factset (data as of June 29, 2012).

markets, such as the United States (48% of global market capitalization) and the United Kingdom (8%), tend to be more diversified.

Notes on risk: All investing is subject to risk, including the possible loss of the money you invest. Diversification does not ensure a profit or protect against a loss. Investments in stocks or bonds issued by non-U.S. companies are subject to risks including country/regional risk and currency risk. Stocks of companies based in emerging markets are subject to national and regional political and economic risks and to the risk of currency fluctuations. These risks are especially high in emerging markets.

³ The estimated population of Russia is 142 million (World Bank, 2011).

Sector concentrations

Using the individual country MSCI Investable Market Indices, we began by examining sector concentrations in developed and emerging market countries, as shown in **Figures 2 and 3**, on pages 4 and 5. We found that countries with relatively large stock markets, such as France, Germany, the United States, and the United Kingdom, are fairly diversified across sectors, with the largest sector composing less than 20% of each nation's market capitalization.

However, countries with relatively small stock markets tend to exhibit a high degree of concentration in one or two sectors. For example, Hong Kong, a developed market that composes less than 1.1% of the global market, derives 56% of its market capitalization from the financial sector, and Russia, an emerging market country, derives 58% of its market capitalization from the energy sector. Investors in Russia's publicly traded equity market index might believe that they are getting the benefits of broad diversification, when in fact their investment would depend heavily on the performance of one particular sector. Those interested in investing in Russia may in fact wish to assess the health of the energy sector.

Security concentrations

As mentioned earlier, the market capitalization of countries with relatively small stock markets can also be concentrated in just a handful of securities. **Figure 4**, on page 6, shows the degree to which each country's market capitalization is concentrated in its ten largest stocks, as well as its largest stock. The stock markets of Mexico and Singapore, for example, consist of only 40 and 110 stocks, respectively, and the ten largest stocks make up a significant 78% and 54% of each country's market capitalization. Any market cap-weighted index funds and ETFs tracking such markets would not be considered broadly diversified investments. However, a similar investment in either of the two countries with the largest number of stocks—the United States and Japan—would provide better diversification, because each market contains more than 1,100 stocks, and the ten largest holdings compose only 17% and 19% of market capitalization,⁴ respectively.

Investors in some cases may even be taking on a significant position in a single company. Prospective investors in, say, Brazil, may find it wise to evaluate the prospects of Vale, a metals and mining company that composes 8% of Brazil's market capitalization. Similarly, investors looking at China may wish to assess the latest technologies of China Mobile,

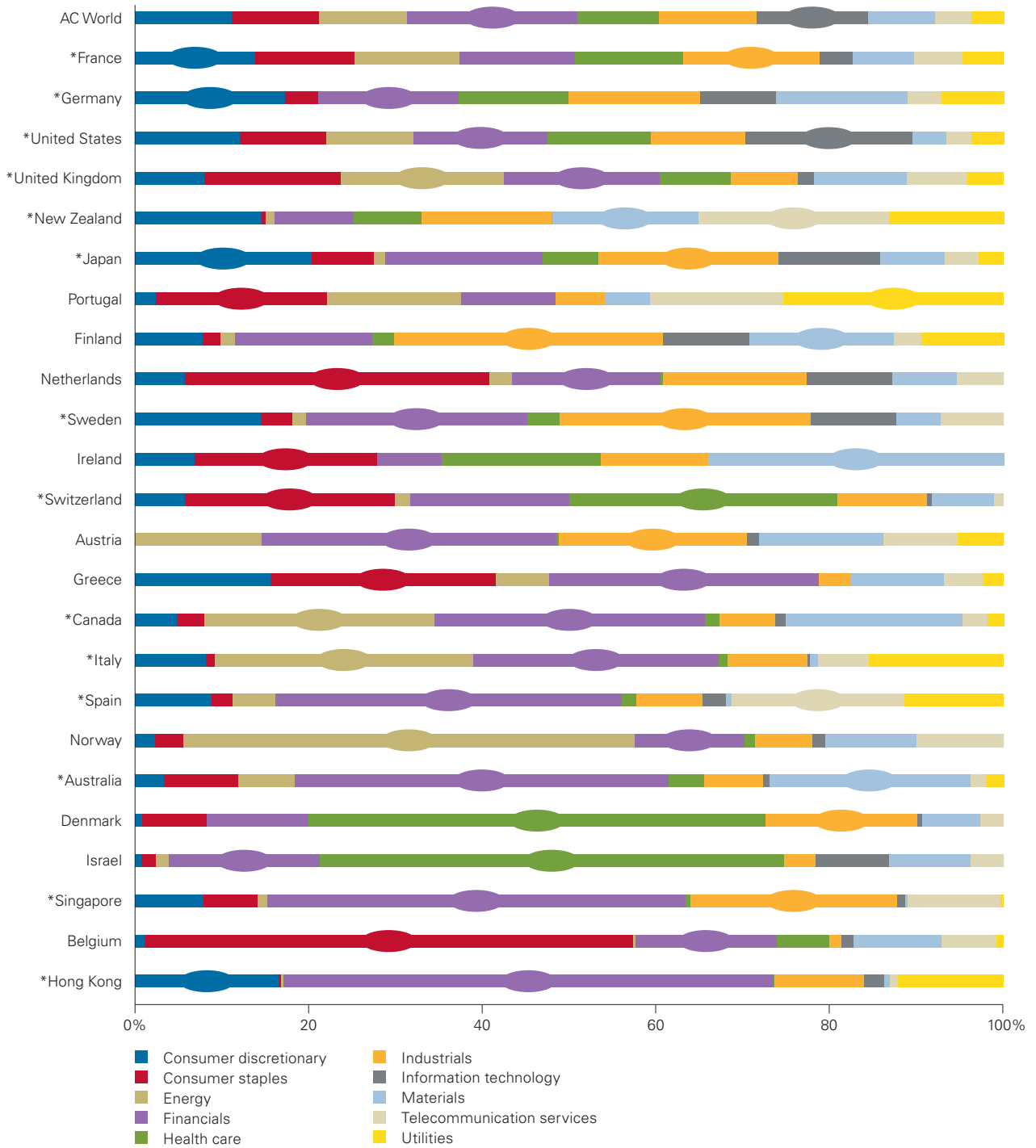
Key terms

MSCI Investable Market Indices (IMI). These indexes cover all investable large-, mid-, and small-cap securities in every country measured. They target approximately 99% of each market's free-float-adjusted market capitalization.

MSCI developed and emerging markets. MSCI considers three key criteria—economic development, size and liquidity, and market accessibility—when classifying a country as developed, emerging, or frontier. A developed market will score highest on all three criteria.

⁴ In fact, a fund tracking the MSCI All Country World Investable Market Index would provide even better diversification, because its components' ten largest holdings make up just 8% of global market capitalization.

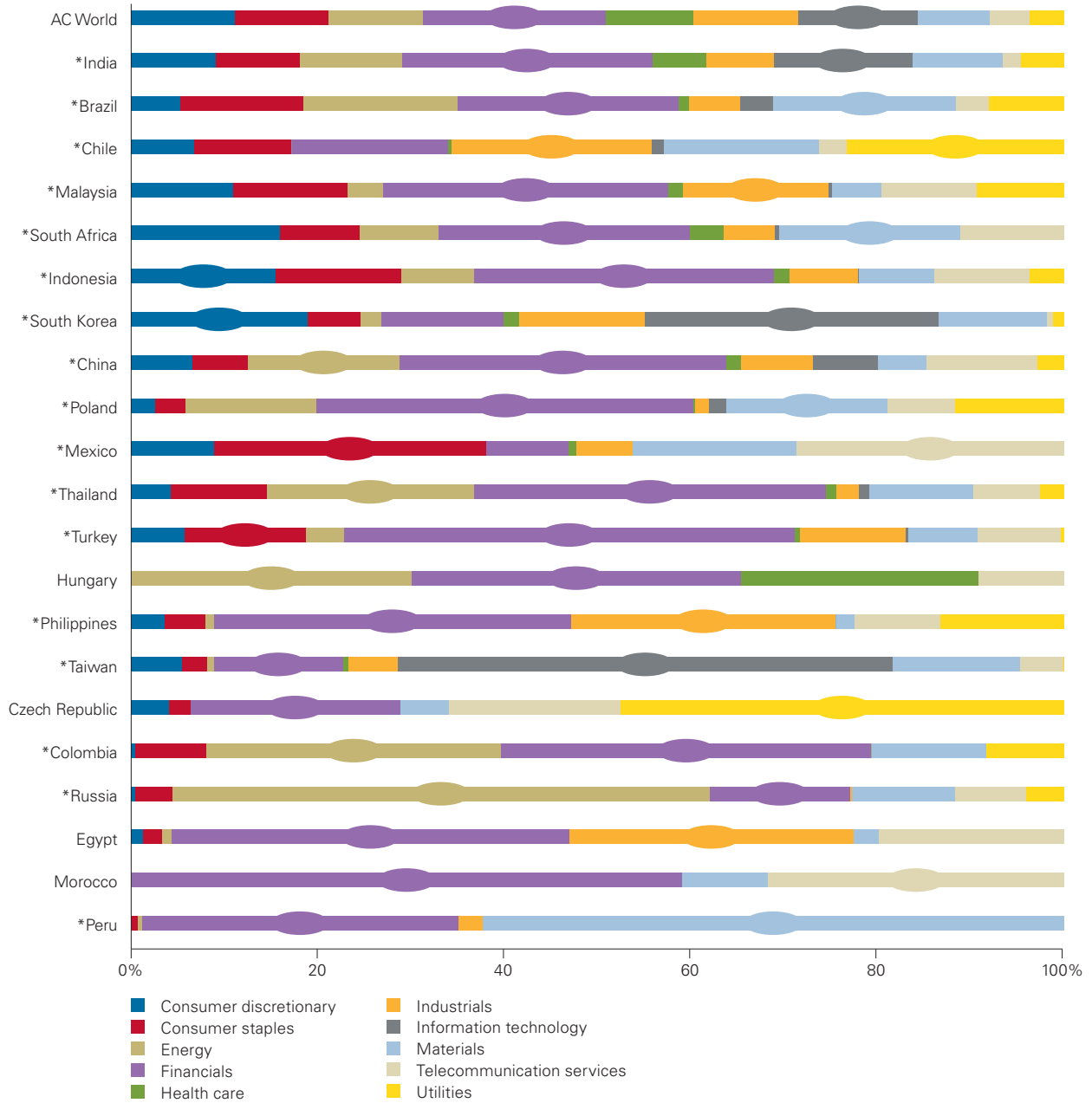
Figure 2. Sector breakdown of developed countries ranked by the percentage total in the largest two sectors, lowest to highest



Notes: Ovals indicate the two largest sectors in each country. See Appendix A-2 for details. Asterisk (*) indicates a country is tracked by U.S.-domiciled ETFs with at least \$100 million in aggregate assets. Single-country ETF asset data obtained from Morningstar, Inc. (as of June 29, 2012). "AC World" refers to MSCI All Country World Investable Market Index, which appears as a comparative benchmark.

Sources: Factset (data as of June 29, 2012).

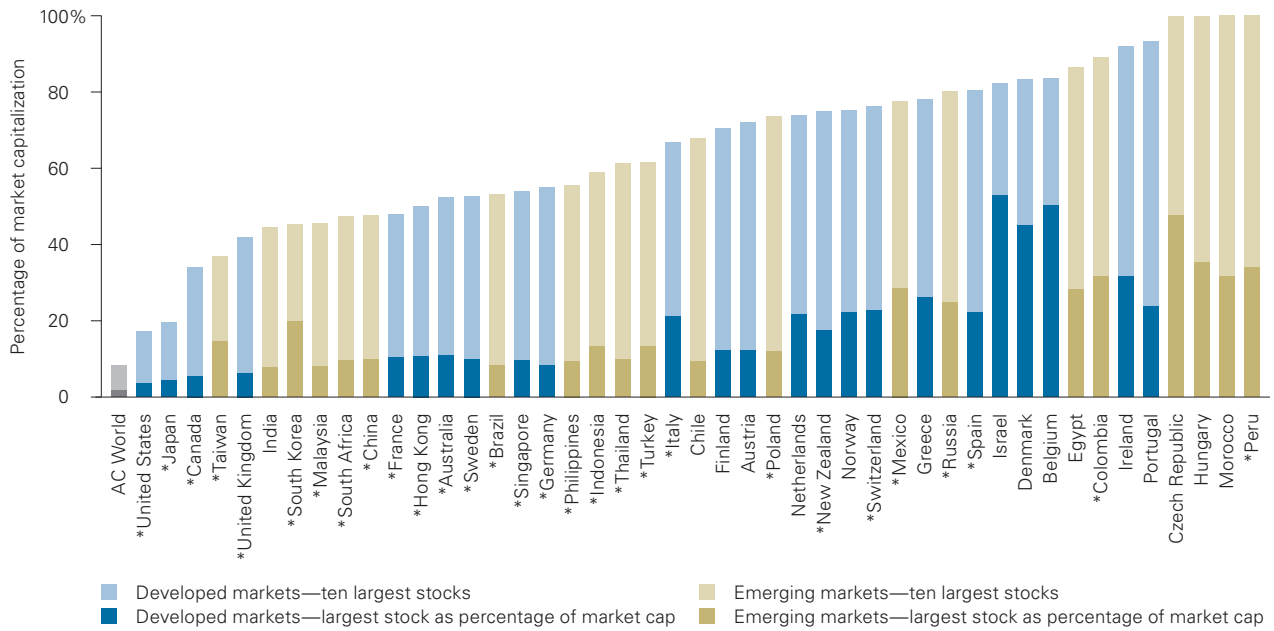
Figure 3. Sector breakdown of emerging market countries ranked by the percentage total in the largest two sectors, lowest to highest



Notes: Ovals indicate the two largest sectors in each country. See Appendix A-2 for details. Asterisk (*) indicates a country is tracked by U.S.-domiciled ETFs with at least \$100 million in aggregate assets. Single-country ETF asset data obtained from Morningstar, Inc. (as of June 29, 2012). "AC World" refers to MSCI All Country World Investable Market Index, which appears as a comparative benchmark.

Sources: Factset (data as of June 29, 2012).

Figure 4. Top ten holdings as percentage of each country's market capitalization (developed and emerging, lowest to highest)



Notes: Asterisk (*) indicates a country is tracked by U.S.-domiciled ETFs with at least \$100 million in aggregate assets. See Appendix A-1 for details. "AC World" refers to MSCI All Country World Investable Market Index.

Source: Factset (data as of June 29, 2012).

a telecommunications company that composes 10% of that country's market capitalization. Other countries are even more concentrated—the largest stocks in South Korea and Russia, for example, represent 20% and 25% of market capitalization, respectively. By comparison, the largest stocks

make up 4% of market capitalization in Japan and in the United States. Heavy concentrations in individual companies may not be readily apparent to investors but should be a major consideration before investing in a single-country fund or ETF.⁵

⁵ As a historical example, the Gulf of Mexico oil spill in 2010 had a significant impact on British pension funds, many of which held a large stake in British Petroleum (BP) stock. BP is currently the third-largest stock in the MSCI United Kingdom Investable Market Index (at 5%).

Conclusion

Single-country mutual funds and ETFs can be used by investors to target a specific country as part of an allocation to international equities. However, when considering such vehicles, investors should fully understand the composition of the underlying portfolios. Although the public equity markets of some countries are fairly diversified, those of many others are much more concentrated. A high level of concentration and/or idiosyncratic risk may lead to heightened return volatility, often without consistently higher returns, as past Vanguard research has shown. In our view, this raises the question of whether these portfolios can be considered “broadly diversified.” Of course, investors can choose to minimize such concentration risk by investing in a broader-market vehicle.

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Appendix A-1: Single-country market characteristics

Region	Index	Weight in global index	Market cap	Population (millions)	Weighted average market cap	Largest stock	Smallest stock	Number of stocks	Largest stock as percentage of market cap	Largest stock name
Broad	MSCI AC World IMI	100.0%	\$30,878B	4,873	\$58B	\$545B	\$11M	8,677	2%	Apple Inc.
Developed	MSCI USA IMI	48.0%	\$14,833B	312	\$87B	\$545B	\$38M	2,496	4%	Apple Inc.
Developed	MSCI Australia IMI	3.1%	\$958B	23	\$38B	\$104B	\$38M	268	11%	BHP Billiton Ltd.
Developed	MSCI Austria IMI	0.1%	\$38B	8	\$3B	\$5B	\$109M	31	12%	OMV AG
Developed	MSCI Belgium IMI	0.4%	\$124B	11	\$33B	\$62B	\$50M	48	50%	Anheuser-Busch InBev
Developed	MSCI Canada IMI	4.3%	\$1,337B	34	\$24B	\$74B	\$85M	347	6%	Royal Bank of Canada
Developed	MSCI Denmark IMI	0.4%	\$131B	6	\$29B	\$59B	\$73M	37	45%	Novo Nordisk A/S
Developed	MSCI Finland IMI	0.3%	\$89B	5	\$6B	\$11B	\$79M	44	12%	Sampo Oyj
Developed	MSCI France IMI	3.0%	\$928B	65	\$34B	\$96B	\$55M	171	10%	Total S.A.
Developed	MSCI Germany IMI	2.7%	\$841B	82	\$33B	\$69B	\$11M	166	8%	Siemens AG
Developed	MSCI Greece IMI	0.0%	\$14B	11	\$2B	\$4B	\$57M	25	26%	Coca-Cola Hellenic Bottling Co. S.A.
Developed	MSCI Hong Kong IMI	1.1%	\$325B	7	\$12B	\$35B	\$39M	147	11%	AIA Group Ltd.
Developed	MSCI Ireland IMI	0.1%	\$44B	4	\$7B	\$14B	\$91M	18	32%	CRH PLC
Developed	MSCI Israel IMI	0.2%	\$69B	8	\$20B	\$37B	\$22M	69	53%	Teva Pharmaceutical Industries Ltd.
Developed	MSCI Italy IMI	0.8%	\$242B	61	\$18B	\$51B	\$48M	118	21%	ENI S.p.A.
Developed	MSCI Japan IMI	8.0%	\$2,474B	128	\$18B	\$110B	\$67M	1,140	4%	Toyota Motor Corp.
Developed	MSCI Netherlands IMI	0.8%	\$253B	17	\$22B	\$55B	\$26M	55	22%	Unilever N.V.
Developed	MSCI New Zealand IMI	0.1%	\$21B	4	\$2B	\$4B	\$80M	23	17%	Telecom Corp. of New Zealand Ltd.
Developed	MSCI Norway IMI	0.4%	\$119B	5	\$11B	\$27B	\$96M	58	22%	Statoil ASA
Developed	MSCI Portugal IMI	0.1%	\$19B	11	\$3B	\$5B	\$80M	16	24%	EDP-Energias de Portugal S.A.
Developed	MSCI Singapore IMI	0.7%	\$216B	5	\$9B	\$21B	\$61M	110	10%	Singapore Telecommunications Ltd.
Developed	MSCI Spain IMI	0.9%	\$279B	46	\$33B	\$62B	\$44M	63	22%	Banco Santander S.A.
Developed	MSCI Sweden IMI	1.1%	\$341B	9	\$13B	\$34B	\$50M	109	10%	H&M Hennes & Mauritz AB
Developed	MSCI Switzerland IMI	2.8%	\$870B	8	\$90B	\$197B	\$95M	108	23%	Nestle S.A.
Developed	MSCI United Kingdom IMI	8.1%	\$2,510B	63	\$60B	\$158B	\$88M	370	6%	HSBC Holdings PLC
Emerging	MSCI Brazil IMI	1.5%	\$469B	197	\$17B	\$39B	\$27M	154	8%	Cia Vale do Rio Doce Pfd Sh -A-
Emerging	MSCI Chile IMI	0.2%	\$75B	17	\$4B	\$7B	\$56M	40	9%	LATAM Airlines Group SA
Emerging	MSCI China IMI	2.2%	\$669B	1,344	\$20B	\$66B	\$18M	474	10%	China Mobile Ltd.
Emerging	MSCI Colombia IMI	0.1%	\$44B	47	\$6B	\$14B	\$159M	17	32%	Ecopetrol S.A.
Emerging	MSCI Czech Republic IMI	0.0%	\$12B	11	\$4B	\$6B	\$84M	8	48%	Cez A.S.
Emerging	MSCI Egypt IMI	0.0%	\$14B	83	\$2B	\$4B	\$71M	23	28%	Orascom Construction Industries S.A.E.
Emerging	MSCI Hungary IMI	0.0%	\$10B	10	\$3B	\$4B	\$253M	5	35%	OTP Bank Nyrt.
Emerging	MSCI India IMI	0.8%	\$251B	1,241	\$7B	\$19B	\$32M	282	8%	Infosys Ltd.
Emerging	MSCI Indonesia IMI	0.4%	\$112B	242	\$6B	\$15B	\$54M	85	13%	Astra International
Emerging	MSCI Korea IMI	1.9%	\$583B	50	\$30B	\$116B	\$42M	427	20%	Samsung Electronics Co. Ltd.
Emerging	MSCI Malaysia IMI	0.5%	\$143B	29	\$4B	\$12B	\$46M	141	8%	CIMB Group Holdings Bhd
Emerging	MSCI Mexico IMI	0.6%	\$179B	115	\$21B	\$51B	\$73M	40	29%	America Movil S.A.B. de C.V.
Emerging	MSCI Morocco IMI	0.0%	\$4B	32	\$1B	\$1B	\$326M	4	32%	Maroc Telecom
Emerging	MSCI Peru IMI	0.1%	\$25B	29	\$6B	\$9B	\$61M	10	34%	Credicorp Ltd.
Emerging	MSCI Philippines IMI	0.1%	\$39B	95	\$2B	\$4B	\$89M	40	9%	SM Investments Corp.
Emerging	MSCI Poland IMI	0.2%	\$54B	38	\$4B	\$6B	\$61M	43	12%	Powszechna Kasa Oszczednosci Bank Polski S.A.
Emerging	MSCI Russia IMI	0.7%	\$203B	142	\$22B	\$50B	\$27M	41	25%	Gazprom OAO
Emerging	MSCI South Africa IMI	1.0%	\$308B	51	\$10B	\$29B	\$122M	112	10%	MTN Group Ltd.
Emerging	MSCI Taiwan IMI	1.5%	\$458B	23	\$14B	\$67B	\$48M	519	15%	Taiwan Semiconductor Manufacturing Co. Ltd.
Emerging	MSCI Thailand IMI	0.3%	\$89B	70	\$4B	\$9B	\$80M	82	10%	PTT PCL
Emerging	MSCI Turkey IMI	0.2%	\$68B	74	\$3B	\$9B	\$48M	93	13%	Turkiye Garanti Bankasi A.S.

Sources: Factset (data as of June 29, 2012). Population statistics from World Bank (2011), except for Taiwan (U.S. Census Bureau, 2012).

Appendix A-2: Single-country sector concentrations

Region	Index	Consumer discretionary	Consumer staples	Energy	Financials	Health care	Industrials	Information technology	Materials	Telecom services	Utilities	Top two sectors
Broad	MSCI AC World IMI	11%	10%	10%	20%	9%	11%	13%	8%	4%	4%	32%
Developed	MSCI USA IMI	12%	10%	10%	15%	12%	11%	19%	4%	3%	4%	35%
Developed	MSCI Australia IMI	3%	8%	7%	43%	4%	7%	1%	23%	2%	2%	66%
Developed	MSCI Austria IMI	0%	0%	15%	34%	0%	22%	1%	14%	9%	5%	56%
Developed	MSCI Belgium IMI	1%	56%	0%	16%	6%	1%	1%	10%	6%	1%	73%
Developed	MSCI Canada IMI	5%	3%	26%	31%	2%	6%	1%	20%	3%	2%	58%
Developed	MSCI Denmark IMI	1%	7%	0%	12%	53%	17%	1%	7%	3%	0%	70%
Developed	MSCI Finland IMI	8%	2%	2%	16%	2%	31%	10%	17%	3%	9%	48%
Developed	MSCI France IMI	14%	11%	12%	13%	12%	16%	4%	7%	6%	5%	30%
Developed	MSCI Germany IMI	17%	4%	0%	16%	13%	15%	9%	15%	4%	7%	33%
Developed	MSCI Greece IMI	16%	26%	6%	31%	0%	4%	0%	11%	5%	2%	57%
Developed	MSCI Hong Kong IMI	17%	0%	0%	56%	0%	10%	2%	1%	1%	12%	73%
Developed	MSCI Ireland IMI	7%	21%	0%	8%	18%	12%	0%	34%	0%	0%	55%
Developed	MSCI Israel IMI	1%	2%	1%	17%	53%	4%	8%	9%	4%	0%	71%
Developed	MSCI Italy IMI	8%	1%	30%	28%	1%	9%	0%	1%	6%	16%	58%
Developed	MSCI Japan IMI	20%	7%	1%	18%	6%	21%	12%	7%	4%	3%	41%
Developed	MSCI Netherlands IMI	6%	35%	3%	17%	0%	17%	10%	7%	5%	0%	52%
Developed	MSCI New Zealand IMI	15%	0%	1%	9%	8%	15%	0%	17%	22%	13%	39%
Developed	MSCI Norway IMI	2%	3%	52%	13%	1%	7%	1%	11%	10%	0%	65%
Developed	MSCI Portugal IMI	2%	20%	15%	11%	0%	6%	0%	5%	15%	25%	45%
Developed	MSCI Singapore IMI	8%	6%	1%	48%	1%	24%	1%	0%	11%	0%	72%
Developed	MSCI Spain IMI	9%	2%	5%	40%	2%	8%	3%	1%	20%	12%	60%
Developed	MSCI Sweden IMI	14%	4%	2%	26%	4%	29%	10%	5%	7%	0%	54%
Developed	MSCI Switzerland IMI	6%	24%	2%	18%	31%	10%	1%	7%	1%	0%	55%
Developed	MSCI United Kingdom IMI	8%	16%	19%	18%	8%	8%	2%	11%	7%	4%	37%
Emerging	MSCI Brazil IMI	5%	13%	17%	24%	1%	6%	3%	20%	4%	8%	43%
Emerging	MSCI Chile IMI	7%	10%	0%	17%	0%	21%	1%	17%	3%	23%	45%
Emerging	MSCI China IMI	7%	6%	16%	35%	1%	8%	7%	5%	12%	3%	51%
Emerging	MSCI Colombia IMI	0%	8%	32%	40%	0%	0%	0%	12%	0%	8%	71%
Emerging	MSCI Czech Republic IMI	4%	2%	0%	23%	0%	0%	0%	5%	18%	48%	70%
Emerging	MSCI Egypt IMI	1%	2%	1%	43%	0%	30%	0%	3%	20%	0%	73%
Emerging	MSCI Hungary IMI	0%	0%	30%	35%	25%	0%	0%	0%	9%	0%	65%
Emerging	MSCI India IMI	9%	9%	11%	27%	6%	7%	15%	10%	2%	5%	42%
Emerging	MSCI Indonesia IMI	15%	13%	8%	32%	2%	7%	0%	8%	10%	4%	48%
Emerging	MSCI Korea IMI	19%	6%	2%	13%	2%	13%	32%	12%	1%	1%	50%
Emerging	MSCI Malaysia IMI	11%	12%	4%	31%	2%	16%	0%	5%	10%	9%	46%
Emerging	MSCI Mexico IMI	9%	29%	0%	9%	1%	6%	0%	18%	29%	0%	58%
Emerging	MSCI Morocco IMI	0%	0%	0%	59%	0%	0%	0%	9%	32%	0%	91%
Emerging	MSCI Peru IMI	0%	1%	0%	34%	0%	3%	0%	62%	0%	0%	96%
Emerging	MSCI Philippines IMI	4%	4%	1%	38%	0%	28%	0%	2%	9%	13%	67%
Emerging	MSCI Poland IMI	3%	3%	14%	40%	0%	1%	2%	17%	7%	12%	58%
Emerging	MSCI Russia IMI	0%	4%	58%	15%	0%	0%	0%	11%	8%	4%	73%
Emerging	MSCI South Africa IMI	16%	9%	8%	27%	4%	5%	1%	19%	11%	0%	46%
Emerging	MSCI Taiwan IMI	5%	3%	1%	14%	1%	5%	53%	14%	5%	0%	67%
Emerging	MSCI Thailand IMI	4%	10%	22%	38%	1%	2%	1%	11%	7%	3%	60%
Emerging	MSCI Turkey IMI	6%	13%	4%	48%	1%	11%	0%	7%	9%	0%	61%

Notes: Sector exposures greater than 50% have a red box. Percentages for "Top two sectors" in individual countries may appear not to compute because of rounding.

Source: Factset (data as of June 29, 2012).



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