

RESEARCH

Ins and Outs of Emerging Markets Investing: Market Behavior and Evolution

Karen Umland
Senior Investment Director and Vice President

Ethan Wren
Senior Portfolio Manager and Vice President

Nov. 6, 2020

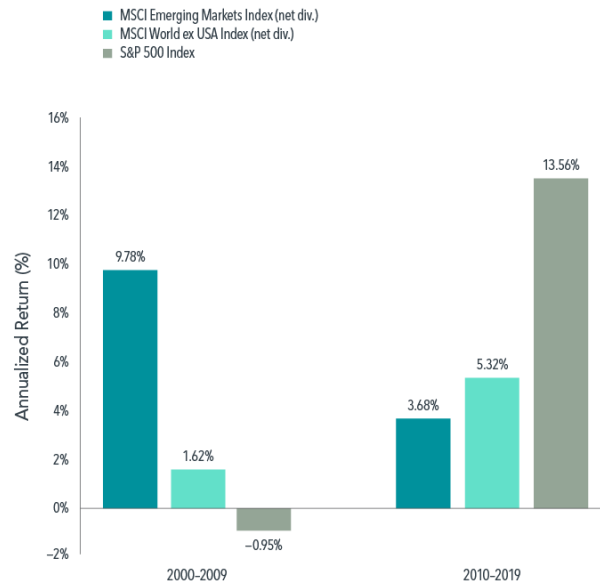
Emerging markets are an important part of a well-diversified global equity portfolio. However, recent history reminds us that they can be volatile and can perform differently than developed markets. In this article, we provide a longer historical perspective on the performance of emerging markets and the countries that constitute them. We also describe the emerging markets opportunity set and how it has evolved in recent years.

RECENT PERFORMANCE IN PERSPECTIVE

In recent years, the returns of emerging markets have lagged behind those of developed markets. As shown in **Exhibit 1**, over the past 10 years (2010–2019) the MSCI Emerging Markets Index (net div.) had an annualized compound return of 3.7%, compared to 5.3% for the MSCI World ex USA Index (net div.) and 13.6% for the S&P 500 Index. While recent returns have been disappointing, it is not uncommon to see extended periods when emerging markets perform differently than developed markets. For example, just looking back to the prior decade (2000–2009), emerging markets strongly outperformed developed markets, with the MSCI Emerging Markets Index (net div.) posting an annualized compound return of 9.8%, compared to 1.6% for the MSCI World ex USA Index and –0.95% for the S&P 500 Index.

Exhibit 1

A Tale of Two Decades

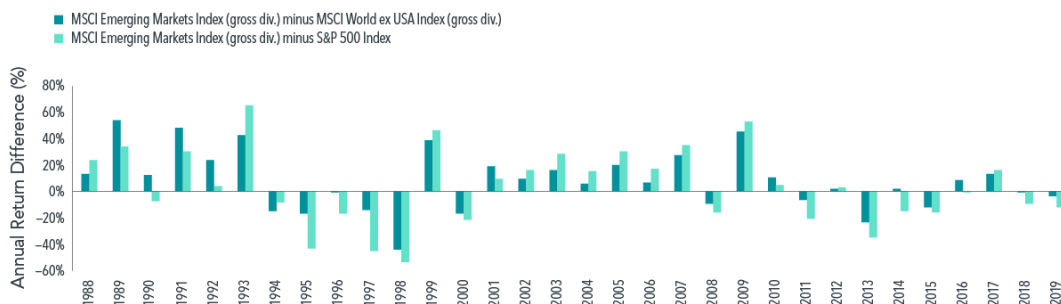


In USD. Past performance is not a guarantee of future results.

MSCI data © MSCI 2020, all rights reserved. S&P data © 2020 S&P Dow Jones Indices LLC, a division of S&P Global. All rights reserved. Indices are not available for direct investment; therefore, their performance does not reflect the expenses associated with the management of an actual portfolio. Indices have been included for comparative purposes only.

The magnitude of the return differences from year to year can be large. For example, relative to the US, the biggest underperformance in the past 10 years was in 2013, when emerging markets underperformed by over 34 percentage points. **Exhibit 2** helps to put this difference into historical context: between 1988 and 2019, emerging markets outperformed US stocks by 34 percentage points or more per year four times (1993, 1999, 2007, and 2009) and underperformed US stocks by that same magnitude four times (1995, 1997, 1998, and 2013).

Exhibit 2 Relative Calendar Year Performance, 1988-2019



In USD. Past performance is not a guarantee of future results.

MSCI Emerging Markets Index and MSCI World ex USA Index shown in total returns with gross dividends in order to show data back to 1988. Net dividend returns series begins in January 1999 for the MSCI Emerging Markets Index. MSCI data © MSCI 2020, all rights reserved. S&P data © 2020 S&P Dow Jones Indices LLC, a division of S&P Global. All rights reserved. Indices are not available for direct investment; therefore, their performance does not reflect the expenses associated with the management of an actual portfolio. Indices have been included for comparative purposes only.

Over the entire period from 1988 to 2019, investors with a consistent allocation to emerging markets were rewarded. The MSCI Emerging Markets Index (gross div.) had an annualized return of 10.7% over this period. That exceeded the 5.9% annualized return for the MSCI World ex USA Index (gross div.) and was similar to the 10.8% average annualized return for the S&P 500, even when including the recent decade of strong performance of the US equity market. However, emerging markets returns were also more volatile. Looking at the same indices, the annualized standard deviation was higher for emerging markets: 22.4% vs. 14.1% for the US and 16.4% for developed markets outside the US.

This higher volatility, as well as the potentially sizable performance deviation from developed markets, underscores the importance of patience, discipline, and an appropriate allocation that investors can stick with when considering investing in emerging markets.

A CLOSER LOOK AT EMERGING MARKETS COUNTRY PERFORMANCE

Diversification across emerging markets countries can improve the reliability of investment outcomes, as dispersion among country returns can be wide. **Exhibit 3** displays individual emerging markets country returns by calendar year for the past two decades. Each country is represented by a different color, and countries are ranked each year from the highest to lowest performer. In the 20 years ended December 2019, no country had the worst-performing market for more than two consecutive years, and no country had the best-performing market in consecutive years. The illustration shows that country performance is volatile and that countries that rank low in one year may rank among the highest performers in the next year.

Exhibit 3
Emerging Markets
Country Returns,
2000-2019
 Equity Returns of
 Emerging Markets
 Annual Return %

	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Highest Return	Czech Rep. 1.3	Russia 55.5	Czech Rep. 43.7	Thailand 143.5	Colombia 132.4	Egypt 161.6	China 82.9	Peru 94.4	Colombia -25.1	Brazil 128.1	Thailand 55.7	Indonesia 6.0	Turkey 64.2	Taiwan 9.1	Egypt 26.3	Hungary 36.3	Brazil 66.2	Poland 54.7	Peru 1.6	Russia 50.9
	Poland -4.2	Korea 48.0	Indonesia 41.9	Turkey 125.3	Egypt 126.2	Colombia 107.2	Indonesia 73.8	Turkey 79.6	Chile -35.8	Indonesia 126.2	Peru 53.3	Malaysia 0.1	Egypt 47.1	Egypt 8.2	Indonesia 26.6	Russia 4.2	Peru 55.6	China 54.1	Russia -0.4	Egypt 41.8
	Brazil -11.7	Colombia 45.1	Peru 30.5	Brazil 114.1	Hungary 91.5	Russia 78.1	Peru 62.1	Turkey 74.1	S. Africa -37.9	Russia 104.2	Chile 44.2	Philippines -0.9	Philippines 40.4	Malaysia 7.7	Philippines 25.6	India -6.1	Russia 54.8	Korea 47.3	Brazil -0.5	Taiwan 36.4
	China -15.8	Peru 19.9	Hungary 30.3	Peru 94.1	Czech Rep. 57.0	Korea 57.0	Philippines 39.2	India 73.1	Peru -40.2	India 102.8	Colombia 43.4	Thailand -2.7	Poland 39.2	Korea 3.9	India 23.9	Korea -6.7	Hungary 35.4	China 42.2	Czech Rep. -4.4	Colombia 30.8
	Malaysia -16.1	Mexico 18.4	S. Africa 28.0	Egypt 91.8	Poland 61.1	Brazil 56.4	Russia 55.6	China 66.2	Malaysia -41.2	Turkey 97.5	Malaysia 37.0	Colombia -5.0	Colombia 35.9	China 3.6	Turkey 18.7	Philippines -6.8	Thailand 26.6	Hungary 39.9	Thailand -5.5	Brazil 26.3
	S. Africa -20.5	Taiwan 10.0	Thailand 27.3	China 87.6	Indonesia 50.6	Turkey 56.1	India 51.0	Egypt 58.4	Mexico -42.9	Chile 85.6	S. Africa 34.2	Czech Rep. -6.0	Thailand 34.5	Poland 2.6	Thailand 16.5	China -7.8	Colombia 26.5	India 38.8	Malaysia -6.0	China 23.5
	Mexico -21.1	Thailand 5.0	Colombia 24.8	Chile 83.3	Mexico 48.3	Mexico 49.1	Brazil 45.3	Czech Rep. 55.3	Czech Rep. -43.1	Taiwan 94.3	Indonesia 33.9	Indonesia -2.0	Korea 20.1	Russia 0.8	Peru 10.5	Taiwan -11.7	Taiwan 18.5	Peru 38.4	Hungary 19.4	Hungary 19.4
	India -21.1	Malaysia 4.6	Russia 15.4	India 78.3	Mexico 48.3	Czech Rep. 45.8	Mexico 41.4	Indonesia 54.2	Taiwan -46.5	Taiwan 79.2	Philippines 33.9	Mexico -12.1	Mexico 26.0	Mexico 9.2	Taiwan 9.4	Mexico -14.4	S. Africa 17.9	India 38.4	India -7.3	Korea 12.5
	Peru -23.9	Czech Rep. -2.3	Korea 8.3	Indonesia 76.5	India 41.4	Poland 37.6	India 40.7	Malaysia 46.1	Thailand -48.5	Hungary 77.6	Hungary 27.6	S. Africa -14.4	Hungary 22.8	Philippines -2.7	China 8.0	Chile -17.7	Chile 17.0	S. Africa 36.1	Taiwan -8.9	Taiwan 11.4
	Hungary -27.0	Chile -3.6	India 7.9	Russia 75.1	Brazil 35.9	Peru 34.7	Malaysia 37.1	Thailand 46.0	Thailand -50.8	Thailand 76.6	Korea 26.7	China -18.4	China 22.7	India -3.8	S. Africa 5.2	Czech Rep. -18.4	Chile 15.6	Czech Rep. 35.5	Indonesia -9.2	Turkey 11.1
	Russia -30.1	Indonesia -10.9	Egypt 7.6	Colombia 64.4	Chile 28.0	S. Africa 28.3	Czech Rep. 33.9	Philippines 40.4	Egypt -52.4	Egypt 71.9	Taiwan 21.9	Korea -19.6	Korea 21.2	Hungary -5.8	Czech Rep. -4.4	Indonesia -19.5	Thailand 8.7	Thailand 34.5	Colombia -11.5	Philippines 10.5
	China -30.3	Hungary -9.4	Poland 1.0	Czech Rep. 64.4	Philippines 25.8	Poland 24.2	Hungary 33.7	Korea 31.9	Philippines -52.6	Korea 71.3	India 20.9	Chile -20.4	Peru 20.2	S. Africa -6.2	Mexico -9.3	Malaysia -21.1	China 0.9	Taiwan 27.5	Poland -12.9	S. Africa 10.0
	Colombia -38.9	Brazil -17.0	Malaysia -0.7	S. Africa 45.9	Korea 22.1	Philippines 22.6	Chile 28.7	Poland 25.2	Poland -54.8	Philippines 65.6	Turkey 20.8	Taiwan -20.9	S. Africa 18.7	Czech Rep. -10.5	Thailand -10.7	Thailand -23.5	Poland 0.1	Malaysia 25.1	Egypt -14.0	India 9.5
	Egypt -43.7	S. Africa -12.2	Mexico -13.3	Taiwan 41.9	India 19.1	Chile 20.9	S. Africa 20.5	Russia 24.5	Korea -55.3	China 62.3	Russia 19.1	Peru -21.4	Taiwan 16.7	Thailand -14.6	India -11.1	Egypt -23.7	India -1.4	Philippines 24.6	Mexico -15.5	Indonesia 9.1
	Taiwan -45.0	Philippines 19.4	China -14.0	Philippines 41.5	Malaysia 19.8	China 20.0	Taiwan 20.0	Chile 23.0	Brazil -58.2	S. Africa 57.8	Poland 15.2	Brazil 15.2	Malaysia 14.3	Brazil -16.0	Chile -31.0	Poland -23.4	Malaysia 2.9	Indonesia 29.9	Philippines -6.5	India 7.6
	Philippines -45.1	India -19.8	Chile -20.3	Poland 35.1	Taiwan 9.0	Hungary 17.9	Egypt 17.1	S. Africa 18.1	Indonesia -56.5	Mexico 56.6	India 12.4	Poland -30.1	Russia 13.7	Colombia -21.1	Chile -14.0	S. Africa -25.5	Czech Rep. -5.0	Brazil 24.1	China -18.9	Peru 4.8
	Turkey -45.8	China -24.7	Taiwan -24.7	Korea 35.0	Russia 5.5	Indonesia 13.6	Colombia 13.6	Hungary 16.8	Hungary -61.5	Hungary 52.1	Brazil 6.5	Turkey -33.6	Chile 7.8	Chile -22.0	Poland -14.2	Peru -31.7	Philippines -6.6	Colombia 16.3	Chile -19.7	Czech Rep. 4.2
	Thailand -49.9	Poland -27.7	Philippines -29.5	Mexico 32.8	Peru 3.0	Thailand 8.7	Taiwan 12.6	Mexico 15.0	Turkey -62.3	Poland 41.5	China 4.6	Turkey -35.4	Indonesia -23.5	Indonesia -23.5	Hungary -19.8	Brazil -31.9	Hungary -8.5	Mexico 16.0	Korea -20.9	Malaysia 2.0
	Thailand -54.4	Turkey -32.6	Brazil -30.7	Hungary 32.0	China 1.9	Taiwan 6.4	Thailand 11.1	Mexico 12.2	India -44.6	India 39.7	Czech Rep. -2.5	India -37.2	Czech Rep. -2.5	Hungary -21.4	Hungary -21.4	Brazil -41.4	Russia -9.2	Russia -24.6	S. Africa -5.9	Peru 7.6
	Indonesia -62.2	Egypt -41.3	Turkey -35.8	Malaysia 26.6	Thailand -1.2	Malaysia 2.3	Turkey -7.2	Taiwan 8.4	Russia -73.9	Czech Rep. 26.5	Hungary -9.6	Egypt -46.9	Egypt 0.0	Peru -29.8	Russia -46.3	Colombia -41.8	Egypt -11.5	Egypt 5.1	Chile -41.4	Chile -16.9
Lowest Return																				

In USD. Past performance is not a guarantee of future results.

In US dollars. MSCI country indices (net dividends) for each country listed. Does not include Greece, which MSCI classified as a developed market prior to November 2013. Additional countries excluded due to data availability or due to downgrades by MSCI from emerging to frontier market. MSCI data © MSCI 2020, all rights reserved. Past performance is no guarantee of future results. Indices are not available for direct investment; therefore, their performance does not reflect the expenses associated with the management of an actual portfolio.

Focusing on the countries at the top and bottom of the columns for each year reveals substantial differences in returns between the best-performing and worst-performing market. **Exhibit 4** shows that, over the past two decades, the annual return difference between the best- and worst-performing emerging markets has ranged from 39 percentage points in 2013 to 159 percentage points in 2005. On average, that difference has been approximately 80 percentage points per year. Perhaps somewhat counterintuitively, the extreme performers were not necessarily dominated by a handful of countries or by the smaller countries. In fact, 13 different countries were the worst annual performers, and similarly, 13 different countries were the best annual performers. These data illustrate the extreme outcomes that investors may be exposed to by concentrating in a few countries. There is no compelling evidence that investors can reliably add value through dynamic country allocation.¹ By holding a broadly diversified portfolio, investors are instead well positioned to capture returns wherever they occur.

Exhibit 4
Best- and Worst-
Performing Markets
Over Last Two Decades

Year	Worst Performer		Best Performer		Best-Worst Return Difference (percentage points)
	Country	Annual Return	Country	Annual Return	
2000	Indonesia	-62.20%	Czech Republic	1.30%	63.50
2001	Egypt	-41.30%	Russia	55.50%	96.80
2002	Turkey	-35.80%	Czech Republic	43.70%	79.50
2003	Malaysia	26.60%	Thailand	143.50%	116.90
2004	Thailand	-1.20%	Colombia	132.40%	133.60
2005	Malaysia	2.30%	Egypt	161.60%	159.30
2006	Turkey	-7.20%	China	82.90%	90.10
2007	Taiwan	8.40%	Peru	94.40%	86.00
2008	Russia	-73.90%	Colombia	-25.10%	48.80
2009	Czech Republic	26.50%	Brazil	128.10%	101.60
2010	Hungary	-9.60%	Thailand	55.70%	65.30
2011	Egypt	-46.90%	Indonesia	6.00%	52.90
2012	Brazil	0.00%	Turkey	64.20%	64.20
2013	Peru	-29.80%	Taiwan	9.10%	38.90
2014	Russia	-46.30%	Egypt	29.30%	75.60
2015	Colombia	-41.80%	Hungary	36.30%	78.10
2016	Egypt	-11.50%	Brazil	66.20%	77.70
2017	Egypt	5.10%	Poland	54.70%	49.60
2018	Turkey	-41.40%	Peru	1.60%	43.00
2019	Chile	-16.90%	Russia	50.90%	67.80

In USD. Past performance is not a guarantee of future results.

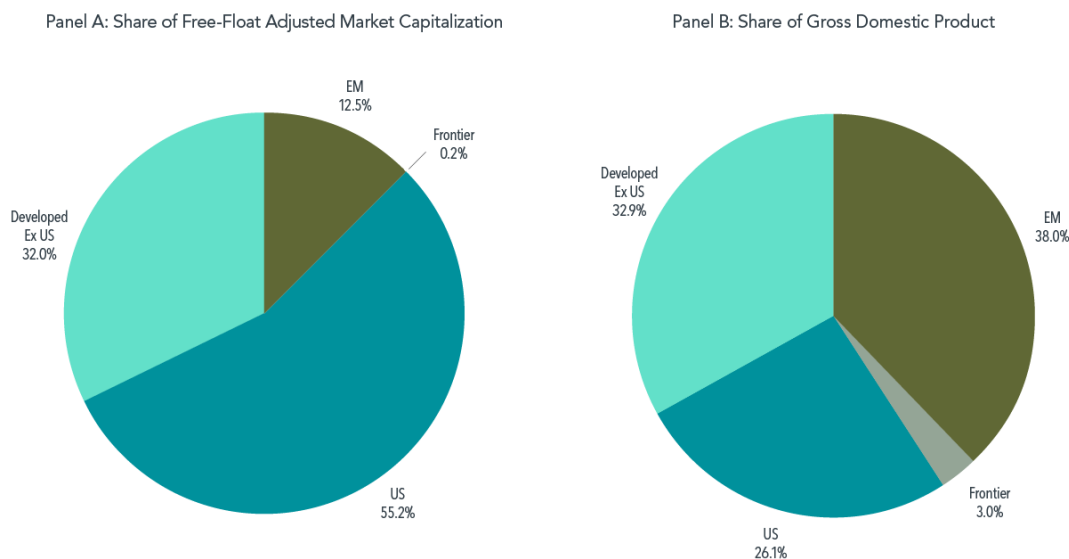
MSCI data © MSCI 2020, all rights reserved. Indices are not available for direct investment, therefore their performance does not reflect the expenses associated with the management of an actual portfolio. Index has been included for comparative purposes only.

THE EVOLVING EMERGING MARKETS OPPORTUNITY SET

As a group, emerging markets represent a meaningful opportunity set for investors. The size and composition of the investible universe of emerging markets have steadily evolved since the late 1980s, when most comprehensive data sets and benchmarks for emerging markets began. Over the years, major geopolitical, economic, and demographic changes have contributed to shifting weights for individual countries and companies within emerging markets, but in aggregate they have continued to grow.

As of the end of 2019, the total free-float adjusted market capitalization of Dimensional's emerging markets universe was \$7.8 trillion and included 24 countries and over 7,000 securities. As shown in Panel A of **Exhibit 5**, emerging markets represented 12.5% of global markets' free-float adjusted market capitalization. Measured by gross domestic product (GDP), emerging markets' share increases to 38.0% (Panel B), reflecting the fact that emerging markets typically have smaller market capitalizations compared to GDP than most developed markets. Regardless of the metric, emerging markets represent a significant component of global markets.

Exhibit 5
Emerging Markets as a Percentage of the World as of December 31, 2019

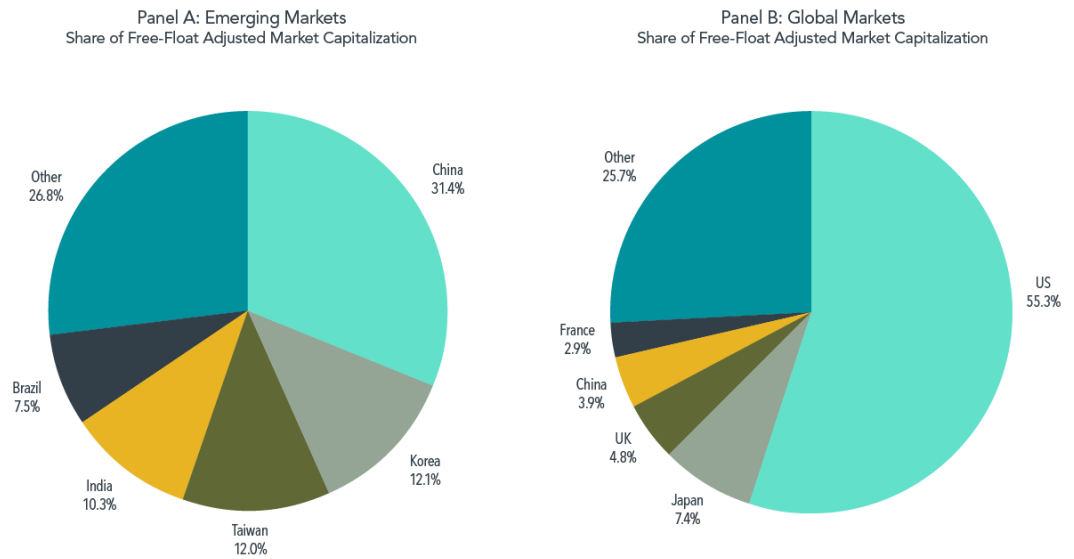


Holdings are subject to change. Numbers may not total 100% due to rounding. Please refer to Eligible Universe Information in the appendix for additional information. Gross domestic product source: International Monetary Fund.

Panel A of **Exhibit 6** examines the country composition of Dimensional's emerging markets universe. The top five countries in terms of market capitalization—Brazil, China, India, Korea, and Taiwan—represented 73.2% at the end of 2019, slightly higher than at the beginning of the decade, when these same five countries represented 68.8% of the universe. A more significant development over the past decade has been the rise in the weight of China, from 17.2% of the universe at the end of 2009 to 31.4% at the end of 2019. This increase has been driven primarily by new equity issuance and new avenues for foreign investors to gain exposure to Chinese companies, including securities listed on the local Shanghai and Shenzhen stock exchanges through Hong Kong stock connect programs.

The growing size of China in the emerging markets has prompted many questions from investors on issues such as benchmarking and concerns about potential concentration. While these issues are complex, it is often helpful to consider China's weight from a global perspective. Panel B of Exhibit 6 shows the weights of the top five countries in the global universe as of the same date. Compared to its 31.4% weight in the emerging markets universe, China's weight was 3.9% in the global market, making it the fourth-largest country after the US, Japan, and the UK.

Exhibit 6
Top Five Country
Weights in Emerging
Markets and Global
Markets as of
December 31, 2019



Holdings are subject to change. Numbers may not total 100% due to rounding. Please refer to Eligible Universe Information in the appendix for additional information.

In addition to changes in size and country composition, emerging markets have undergone important improvements in their market mechanisms and microstructures over the past decade. Generally, emerging markets have become more open to foreign investors with fewer constraints on capital mobility. Evidence of these developments includes fewer instances of market closings, capital lockups, and trading suspensions of individual stocks in many markets. Finally, emerging markets have broadly adopted international accounting and reporting practices over the last decade. Our analysis suggests more than 90% of the firms in most emerging markets now report their annual financial statements according to International Financial Reporting Standards (IFRS) or US Generally Accepted Accounting Practices (GAAP). In countries like China, India, and Taiwan, the national standards have substantially converged with IFRS. This has helped improve the reliability and transparency of financial data in emerging markets.

SUMMARY

In sum, emerging markets represent a meaningful opportunity set within global markets. They continue to evolve in their structures, market mechanisms, and accessibility. Investors in emerging markets can benefit from a long-term perspective, expertise and flexibility in navigating these changing markets, and an approach that emphasizes diversification and discipline.

1. James L. Davis, "Mean Reversion in the Dimensions of Expected Stock Returns" (white paper, Dimensional Fund Advisors, 2014).

Eligible Universe Information

Source: Dimensional, using CRSP and Bloomberg. Data is as of December 31, 2019. Country eligibility determined by Dimensional for developed and emerging markets, and by MSCI classification for frontier markets. Market cap data is free-float adjusted and meets minimum liquidity and listing requirements. Minimum liquidity is \$50K median daily volume in the current month, and minimum total market capitalization is \$10MM for the US and \$50MM elsewhere. Includes equity and REIT securities. China A-Shares only includes those trading on Hong Kong Stock Connect, at a 25% inclusion factor. Totals may not equal 100% due to rounding. For educational purposes; should not be used as investment advice.

Dimensional's Eligible Emerging Markets Universe: The countries included in Dimensional's emerging markets universe are as follows: Brazil, Chile, China, Colombia, Czech Republic, Egypt, Greece, Hungary, India, Indonesia, Korea, Malaysia, Mexico, Peru, Philippines, Poland, Qatar, Russia, Saudi Arabia, South Africa, Taiwan, Thailand, Turkey, United Arab Emirates.

Dimensional's Eligible Global Markets Universe: The countries included in Dimensional's global universe are as follows: Australia, Austria, Bahrain, Bangladesh, Belgium, Brazil, Canada, Chile, China, Colombia, Croatia, Czech Republic, Denmark, Egypt, Estonia, Finland, France, Germany, Greece, Hong Kong, Hungary, India, Indonesia, Ireland, Israel, Italy, Ivory Coast, Japan, Jordan, Kazakhstan, Korea, Kenya, Kuwait, Lebanon, Lithuania, Malaysia, Mauritius, Mexico, Morocco, Netherlands, New Zealand, Nigeria, Norway, Oman, Peru, Philippines, Poland, Portugal, Qatar, Romania, Russia, Saudi Arabia, Senegal, Serbia, Singapore, Slovenia, South Africa, , Spain, Sri Lanka, Sweden, Switzerland, Taiwan, Thailand, Tunisia, Turkey, United Arab Emirates, UK, US, Vietnam.

The information in this document is provided in good faith without any warranty and is intended for the recipient's background information only. It does not constitute investment advice, recommendation, or an offer of any services or products for sale and is not intended to provide a sufficient basis on which to make an investment decision. It is the responsibility of any persons wishing to make a purchase to inform themselves of and observe all applicable laws and regulations. Unauthorized copying, reproducing, duplicating, or transmitting of this document are strictly prohibited. Dimensional accepts no responsibility for loss arising from the use of the information contained herein.

"Dimensional" refers to the Dimensional separate but affiliated entities generally, rather than to one particular entity. These entities are Dimensional Fund Advisors LP, Dimensional Fund Advisors Ltd., Dimensional Ireland Limited, DFA Australia Limited, Dimensional Fund Advisors Canada ULC, Dimensional Fund Advisors Pte. Ltd, Dimensional Japan Ltd., and Dimensional Hong Kong Limited. Dimensional Hong Kong Limited is licensed by the Securities and Futures Commission to conduct Type 1 (dealing in securities) regulated activities only and does not provide asset management services.

UNITED STATES: Dimensional Fund Advisors LP is an investment advisor registered with the Securities and Exchange Commission.

CANADA: These materials have been prepared by Dimensional Fund Advisors Canada ULC. Commissions, trailing commissions, management fees, and expenses all may be associated with mutual fund investments. Unless otherwise noted, any indicated total rates of return reflect the historical annual compounded total returns, including changes in share or unit value and reinvestment of all dividends or other distributions, and do not take into account sales, redemption, distribution, or optional charges or income taxes payable by any security holder that would have reduced returns. Please read the prospectus before investing. Mutual funds are not guaranteed, their values change frequently, and past performance may not be repeated.

AUSTRALIA and NEW ZEALAND: This material is issued by DFA Australia Limited (AFS License No. 238093, ABN 46 065 937 671). This material is provided for information only. No account has been taken of the objectives, financial situation or needs of any particular person. Accordingly, to the extent this material constitutes general financial product advice, investors should, before acting on the advice, consider the appropriateness of the advice, having regard to the investor's objectives, financial situation and needs. Any opinions expressed in this material reflect our judgement at the date of publication and are subject to change.

JAPAN: Provided for institutional investors only. This material is deemed to be issued by Dimensional Japan Ltd., which is regulated by the Financial Services Agency of Japan and is registered as a Financial Instruments Firm conducting Investment Management Business and Investment Advisory and Agency Business. This material is solely for informational purposes only and shall not constitute an offer to sell or

the solicitation to buy securities or enter into investment advisory contracts. The material in this article and any content contained herein may not be reproduced, copied, modified, transferred, disclosed, or used in any way not expressly permitted by Dimensional Japan Ltd. in writing. All expressions of opinion are subject to change without notice.

Dimensional Japan Ltd.

Director of Kanto Local Financial Bureau (FIBO) No. 2683

Membership: Japan Investment Advisers Association

FOR PROFESSIONAL INVESTORS IN HONG KONG.

This material is deemed to be issued by Dimensional Hong Kong Limited (CE No. BJE760) ("Dimensional Hong Kong"), which is licensed by the Securities and Futures Commission to conduct Type 1 (dealing in securities) regulated activities only and does not provide asset management services.

This material should only be provided to "professional investors" (as defined in the Securities and Futures Ordinance [Chapter 571 of the Laws of Hong Kong] and its subsidiary legislation) and is not for use with the public. This material is not directed to any person in any jurisdiction where (by reason of that person's nationality, residence, or otherwise) the publication or availability of this material are prohibited or which would subject Dimensional Hong Kong (including its affiliates) or any of Dimensional Hong Kong's products or services to any registration, licensing, or other such legal requirements within such jurisdiction or country. When provided to prospective investors, this material forms part of, and must be provided together with, applicable fund offering materials. This material must not be provided to prospective investors on a standalone basis. Before acting on any information in this material, you should consider whether it is suitable for your particular circumstances and, if appropriate, seek professional advice.

Unauthorized copying, reproducing, duplicating, or transmitting of this material are prohibited. This material and the distribution of this material are not intended to constitute and do not constitute an offer or an invitation to offer to the Hong Kong public to acquire, dispose of, subscribe for, or underwrite any securities, structured products, or related financial products or instruments nor investment advice thereto. Any opinions and views expressed herein are subject to change. Neither Dimensional Hong Kong nor its affiliates shall be responsible or held responsible for any content prepared by financial advisors. Financial advisors in Hong Kong shall not actively market the services of Dimensional Hong Kong or its affiliates to the Hong Kong public.

SINGAPORE

This material is deemed to be issued by Dimensional Fund Advisors Pte. Ltd., which is regulated by the Monetary Authority of Singapore and holds a capital markets services license for fund management.

This advertisement has not been reviewed by the Monetary Authority of Singapore. This information should not be considered investment advice or an offer of any security for sale. All information is given in good faith without any warranty and is not intended to provide professional, investment, or any other type of advice or recommendation and does not take into account the particular investment objectives, financial situation, or needs of individual recipients. Before acting on any information in this material, you should consider whether it is suitable for your particular circumstances and, if appropriate, seek professional advice. Dimensional Fund Advisors Pte. Ltd. does not accept any responsibility and cannot be held liable for any person's use of or reliance on the information and opinions contained herein. Neither Dimensional Fund Advisors Pte. Ltd. nor its affiliates shall be responsible or held responsible for any content prepared by financial advisors.

Neither Dimensional Ireland Limited (DIL) nor Dimensional Fund Advisors Ltd. (DFAL), as applicable (each an "Issuing Entity," as the context requires), give financial advice. You are responsible for deciding whether an investment is suitable for your personal circumstances, and we recommend that a financial adviser helps you with that decision.

WHERE ISSUED BY DIMENSIONAL IRELAND LIMITED

Issued by Dimensional Ireland Limited (DIL), with registered office 10 Earlsfort Terrace, Dublin 2, D02 T380, Ireland. DIL is regulated by the Central Bank of Ireland (Registration No. C185067). Information and opinions presented in this material have been obtained or derived from sources believed by DIL to be reliable, and DIL has reasonable grounds to believe that all factual information herein is true as at the date of this document.

DIL issues information and materials in English and may also issue information and materials in certain other languages. The recipient's continued acceptance of information and materials from DIL will constitute the recipient's consent to be provided with such information and materials, where relevant, in more than one language.

WHERE ISSUED BY DIMENSIONAL FUND ADVISORS LTD.

Issued by Dimensional Fund Advisors Ltd. (DFAL), 20 Triton Street, Regent's Place, London, NW1 3BF. DFAL is authorised and regulated by the Financial Conduct Authority (FCA). Information and opinions presented in this material have been obtained or derived from sources believed by DFAL to be reliable, and DFAL has reasonable grounds to believe that all factual information herein is true as at the date of this document.

DFAL issues information and materials in English and may also issue information and materials in certain other languages. The recipient's continued acceptance of information and materials from DFAL will constitute the recipient's consent to be provided with such information and materials, where relevant, in more than one language.

RISKS

Investments involve risks. The investment return and principal value of an investment may fluctuate so that an investor's shares, when redeemed, may be worth more or less than their original value. Past performance is not a guarantee of future results. There is no guarantee strategies will be successful.

International investing involves special risks, such as currency fluctuation and political instability. Investing in emerging markets may accentuate these risks. Sector-specific investments can also increase investment risks.

Diversification neither assures a profit nor guarantees against loss in a declining market.

Securities lending is an over-the-counter market that involves the borrowing and lending of securities predominantly for the purpose of covering short-sale positions. Participants include pension funds, mutual funds, and foundations, which lend their security holdings, as well as option traders, hedge funds, and other asset managers, which borrow security holdings. These parties rely on their respective intermediaries (custodians for the lenders and prime brokers for the borrowers) to broker their transactions and manage counterparty risk.

Securities lending involves risks. Revenue is not guaranteed and may fluctuate. Lending activities are conducted by the lending agents for the funds.