REAL ESTATE MARKET SIZE 2017

Annual Update on the Size of the Professionally Managed Global Real Estate Investment Market

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CONTENTS

OVERVIEW

KEY TAKEAWAYS

- **Market size rose in 2017.** The size of the professionally managed global real estate investment market increased from $7.4 trillion in 2016 to $8.5 trillion in 2017.
- **Currency was a big driver of market size estimates.** Currency movements effectively increased the size of the global real estate investment market by approximately 5.3% in U.S. dollars (USD), in contrast to their negative impact in 2016 (-2.3%). Capital value growth and new developments in the market, such as new construction and sale and leaseback transactions, also contributed to the growth in market size.
- **U.S. weighting decreased.** The relative weight of the U.S. within the IPD® Global Annual Property Index declined in 2017, following seven successive years of increases.
- **Germany replaced China as the fourth-largest market.** Germany ranked as the fourth-largest national market, overtaking China, which had held this position for two years (2015 and 2016). Although both markets grew in 2017, Germany's increase was larger.
- **MSCI's index coverage increased by 50 bps globally** and by 10 bps within the *IPD* Global Annual Property Index. A number of country level changes were more pronounced. The representativeness of MSCI's asset-level real estate indexes increased most in Hong Kong and Belgium, but decreased in Denmark and Spain.

ABOUT THE ESTIMATES

MSCI began systematically estimating the size of professionally managed real estate investment markets in 2004. These estimates are fundamental to the creation of the *IPD* Global Annual Property Index and a range of other multinational indexes, and they provide insights into the coverage of MSCI's direct property indexes. This paper sets out the 2017 market size estimates and explains the main changes that occurred between 2016 and 2017.

The *IPD* Global Annual Property Index weights real estate investment returns across 25 countries. While MSCI's national indexes for Japan and Korea are included in the *IPD* Global Annual Property Index, our market data for seven other Asian countries – China, Hong Kong, Indonesia, Malaysia, Singapore, Taiwan and Thailand – are excluded from that index. In this report, all national market sizes are based on bottom-up, portfolio-specific estimates, and these are converted into U.S. dollars using the year-end currency conversion rate.

ESTIMATING MARKET SIZES

MSCI captures a large amount of information on individual real estate investment portfolios around the world, which forms the foundation of our Portfolio Analysis Service (PAS) for direct real estate holdings at the asset level. By the end of 2017, the value of these directly measured real estate investment portfolios was $2.0 trillion. However, despite this high level of coverage, MSCI does not directly measure all portfolios in the market. While MSCI's data are useful for understanding how the market is changing, additional data sources are needed to build up definitive estimates of market size. MSCI does this by combining bottom-up, portfolio-specific in-house information with data obtained from the public domain, including pre-existing databases, annual and quarterly reports from companies and data from company websites. This approach aims to identify all direct real estate holdings in each country on a portfolio-by-portfolio basis, following the MSCI methodology, which seeks only to capture the value of professionally managed real estate owned for investment purposes.

Invested real estate stock is defined as property owned for the primary purpose of benefitting from investment returns, as distinct from owner-occupied and non-investment leased real estate. The owner-occupied part of the market comprises real estate that is both owned and occupied by private and public companies, real estate owned by governments and used for governmental purposes, and residential buildings owned by private homeowners. In addition, there are organizations that own and lease real estate to tenants but whose primary objective is something other than generating an investment return. These include social housing organizations and municipalities, which in some countries have substantial real estate portfolios (see Appendix 1 for more information about the methodology used).

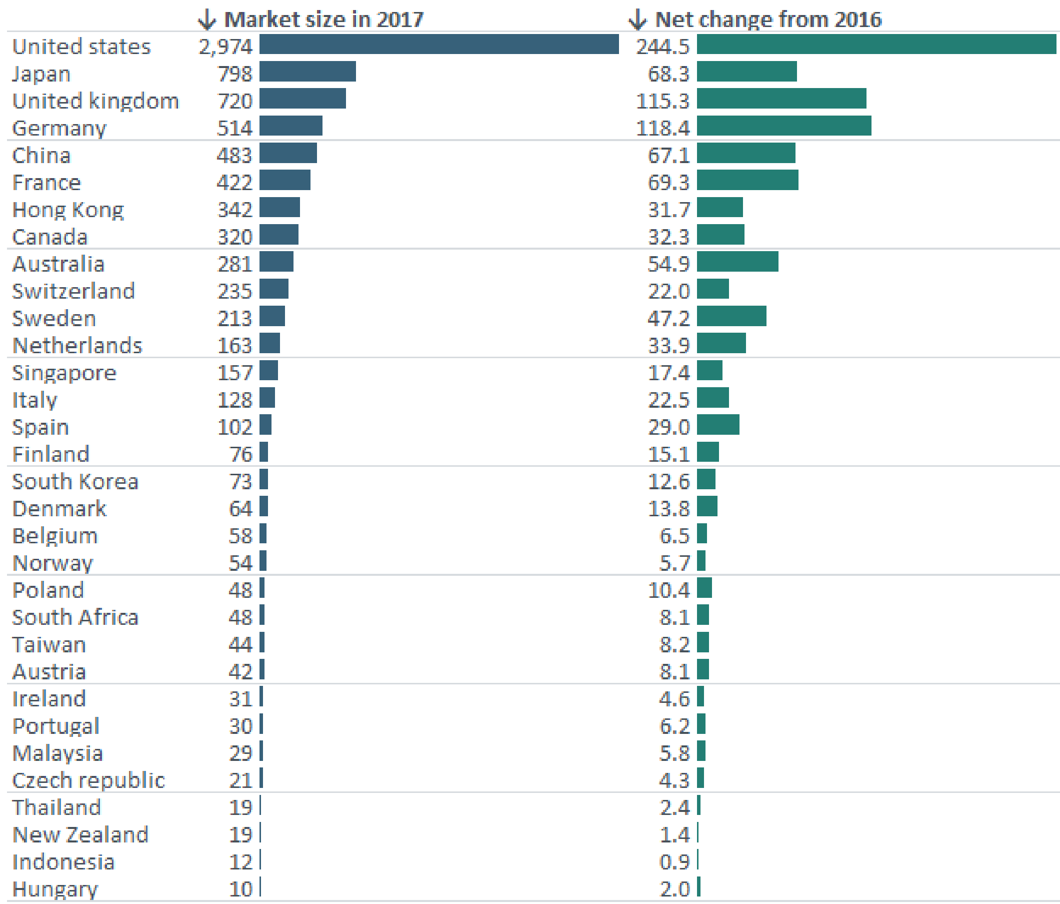
MSCI uses the total estimated size of the professionally managed real estate stock owned for investment purposes in each market to reweight national indexes that contribute to the generation of multinational indexes, including but not limited to the *IPD* Global Annual Property Index. For this purpose, all country-level market size estimates are converted to U.S. dollars at year-end currency conversion rates. Due to differences in MSCI index coverage levels nationally, the indexes are reweighted to provide a more representative balance between markets in the multitnational indexes to which they contribute. The market size estimates are used for reweighting in the *IPD* Global Annual Property Index, the *IPD* Nordic Annual Property Index and the *IPD* Pan-Europe Annual Property Index, as well as other regional indexes and bespoke or custom indexes.

COUNTRY MARKET SIZES

MARKET SIZE ESTIMATES IN 2017

Although individual market size estimates can potentially have a large impact on *IPD* Global Annual Property Index returns, they have proved relatively consistent from year to year. This consistency was again evident in 2017, although there were some important changes for individual countries, as shown in Exhibit 1. The most significant absolute change was for the U.S., with a market size increase of $244 billion, while no country saw a decline in its market size estimate. However, the most significant change in percentage terms was for Spain, with an increase of 39%, driven by a 14% currency impact due to euro appreciation against USD, 9% capital value growth and a residual impact of 14%. Apart from the U.S., the U.K. and Germany also saw their market size increase by more than $100 billion.

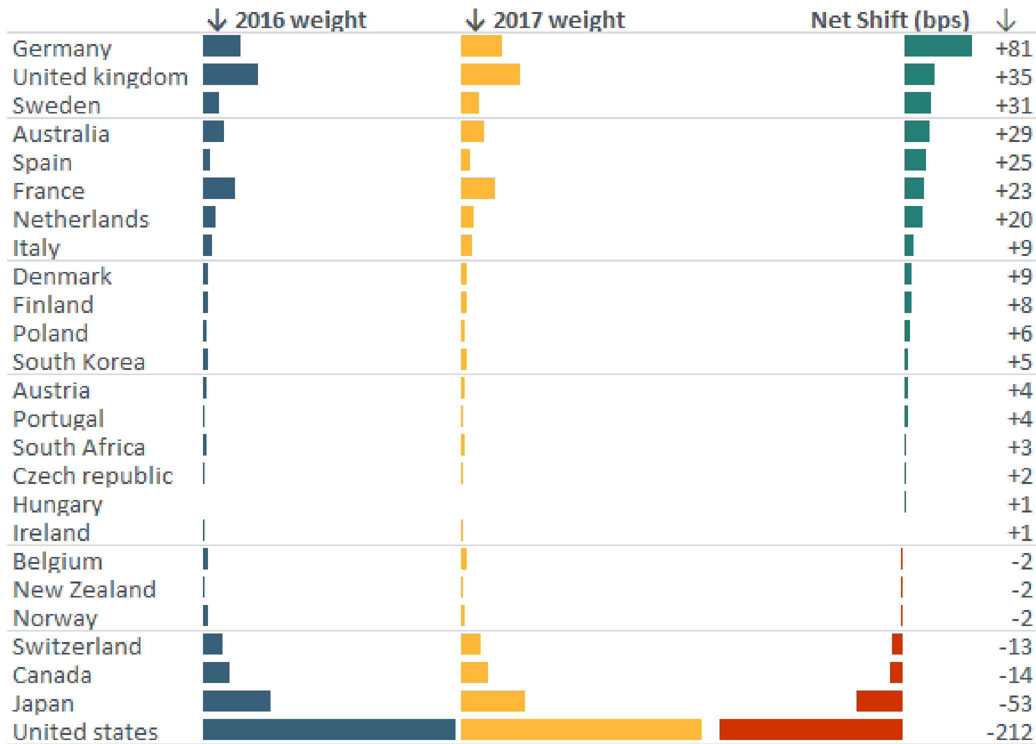
Exhibit 1: Change in National Market Sizes between 2016 and 2017, USD Billion



Source: MSCI, KTI (Finland).

Among the constituents of the *IPD* Global Annual Property Index (see Exhibit 2), only the U.S. weighting changed by more than 100 bps between 2016 and 2017. Although the U.S.remained the largest market in 2017, its share of the 25-country index decreased by 212 bps from 42.1% to 40.0%. Japan remained the second largest market with a 10.7% weight, despite its share declining by 53 bps, while the U.K. remained in third position, although its weight increased by 35 bps to 9.7%. Germany moved into fourth position above China with the largest increase in weighting at 81 bps. Both China and Germany saw increases in absolute market size, but capital value growth and currency impact were stronger for Germany. No other country recorded an increase in weight of more than 50 bps.

Exhibit 2: Change in Weight in the *IPD* Global Annual Property Index, 2016 -2017

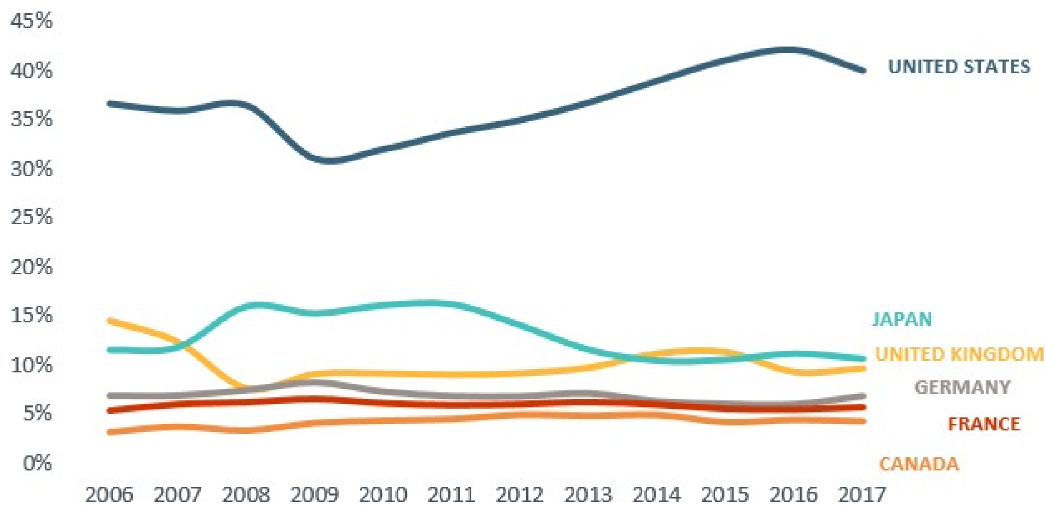


Source: MSCI, KTI (Finland).

LONGER TERM CHANGES IN MARKET WEIGHTING

The relative weights of individual countries in the *IPD* Global Annual Property Index have shifted over time, as shown in Exhibit 3. These changes have mainly resulted from a combination of capital value growth and currency impacts. National weightings were particularly impacted by the Global Financial Crisis (GFC), with large decreases seen in the weightings of both the U.K. and the U.S., due to negative capital growth. Currently, the absolute market sizes of the U.K. and the U.S. have increased by 40% and 70%, respectively, from the trough levels recorded during 2008 and 2009. In contrast, Japan's market size is still below its 2009 level, despite rising in each of the past three years.

Exhibit 3: Weight of the Six Largest Countries in the *IPD* Global Annual Property Index



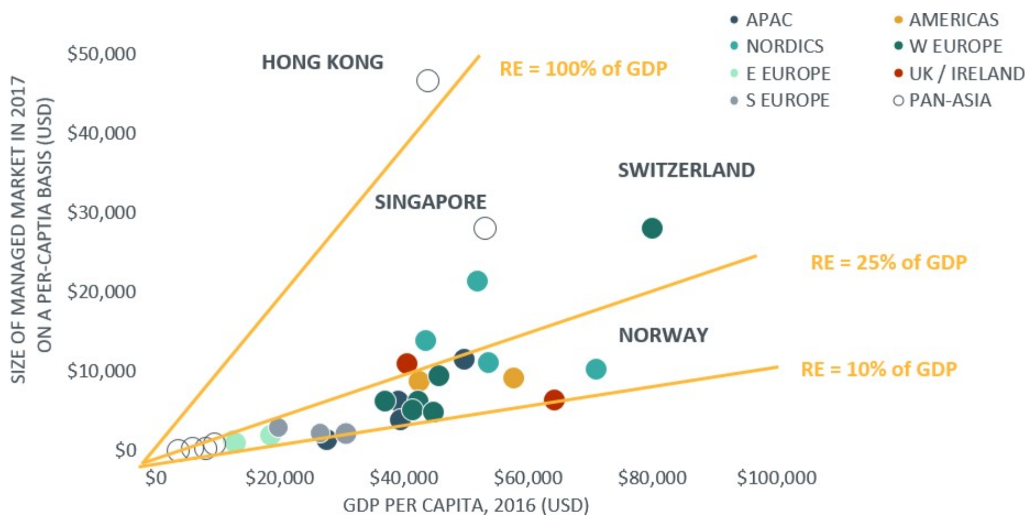
Source: MSCI, KTI (Finland).

RELATIVE MARKET SIZE ESTIMATES

Exhibit 4 compares national real estate market sizes with GDP per capita, with clear regional differences emerging. The wealthy city-states of Singapore and Hong Kong have the largest relative market sizes. The size of the professionally managed real estate investment market in Hong Kong equates to over 100% of GDP, a level driven up significantly by the high value per floor area. Switzerland and Sweden have the largest relative real estate investment market sizes in Europe, as measured by the ratio of market size to GDP. However, Norway, Europe's second wealthiest country in terms of GDP per capita, falls behind several of its Nordic neighbors in relative real estate market size. A more detailed discussion of relative market size is included in the 2013 market size report.[1]

[1] Clacy-Jones, M. and A.J.J. Teuben. (2014). "Real Estate Investment Market Size: A better understanding of the professionally managed real estate investment universe." MSCI Research Insight.

Exhibit 4: Relative Estimated Market Size by GDP per capita



Source: World Bank, MSCI, KTI (Finland).

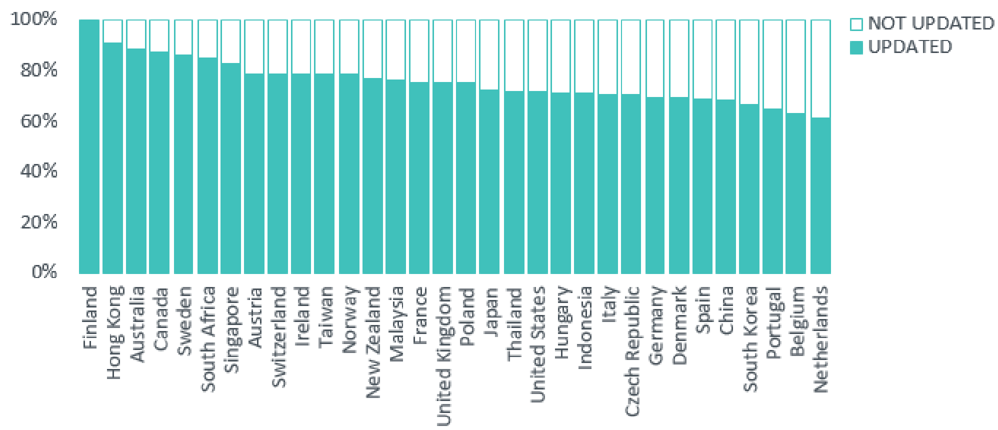
DRIVERS OF MARKET SIZE CHANGES IN 2017

MSCI's estimates of the size of the professionally managed real estate investment market are based on the most recent information available from public and private sources. The estimates are driven by national market changes, including local capital value fluctuations, currency movements and structural changes within each market.

In a perfect world, all relevant information on known real estate portfolios would be updated to year-end for each national market, but in practice this is impossible. One reason is that not all the portfolios with available information report their year-end values by the dates when the market sizes are estimated. The timing question is particularly relevant to the investment portfolios of high net worth individuals, but also applies to some portfolios held by pension funds and sovereign wealth funds. These often have long lead times on the release of their annual reports, sometimes exceeding four months following period-end, while others have reporting years that deviate from calendar years. In general, listed companies do better, publishing their annual reports within three months of their reporting year end, often with quarterly or biannual reports as well. The information is also often regularly available for unlisted funds, particularly open-end funds, which tend to be more transparent than closed-end funds. To minimize the effect of the currency fluctuations resulting from lagging information, the vast majority of information is based on the value of the portfolio in local currency.

Around 75% of the total estimated market size is based on 2017 real estate market values. The proportion of updated information varies between countries, but generally stands at between 70% and 90% of the total identified investment stock. During 2017, the proportion of updated information was at or above 60% in each of the 25 markets covered in the *IPD* Annual Global Property Index, as it was for the seven emerging markets in Asia.

Exhibit 5: Updated AUM by Country, 2017 Data



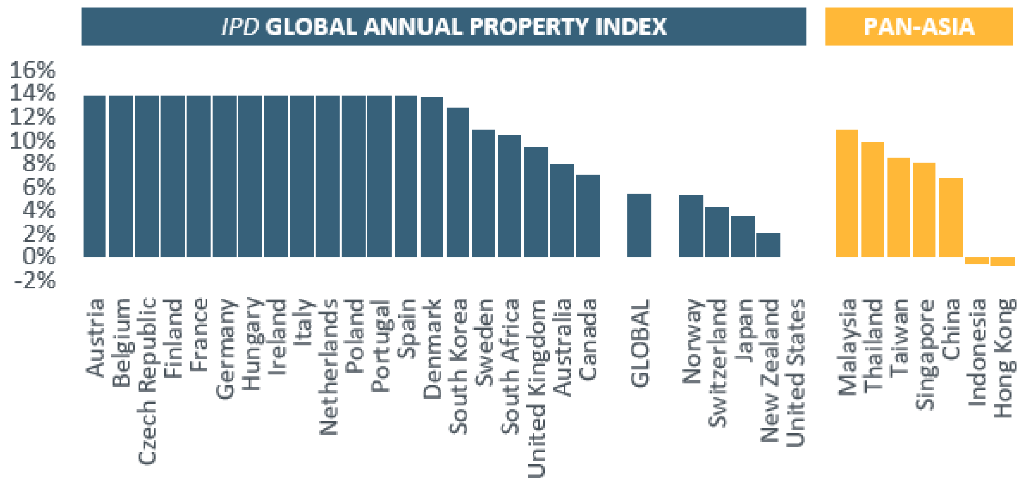
Source: MSCI, KTI (Finland).

The changes in market size estimates between 2016 and 2017 are considered below, broken down into the contributions of currency impacts, capital value growth in local currency and other changes.

CURRENCY IMPACT

The impact of currency movements has been mentioned earlier in this report. Measured in USD, currency movements in 2017 effectively increased the size of the global market by 5.3%. Each country's currency impact expressed in terms of USD is shown in Exhibit 6, which indicates positive impacts across all countries within the *IPD* Global Annual Property Index in 2017. This contrasted with the negative currency impact for all countries in 2016. In 2017 only Indonesia and Hong Kong saw negative currency impacts in USD terms, though these were modest compared to the positive impacts in the other markets. Most notably, the euro appreciated by 14% against USD in 2017. The British pound also strengthened by 9% against USD, in contrast to 2016 when the pound depreciated by 16% as a result of the Brexit vote.

Exhibit 6: Currency Impact by Country in 2017, Local Currencies vs. USD

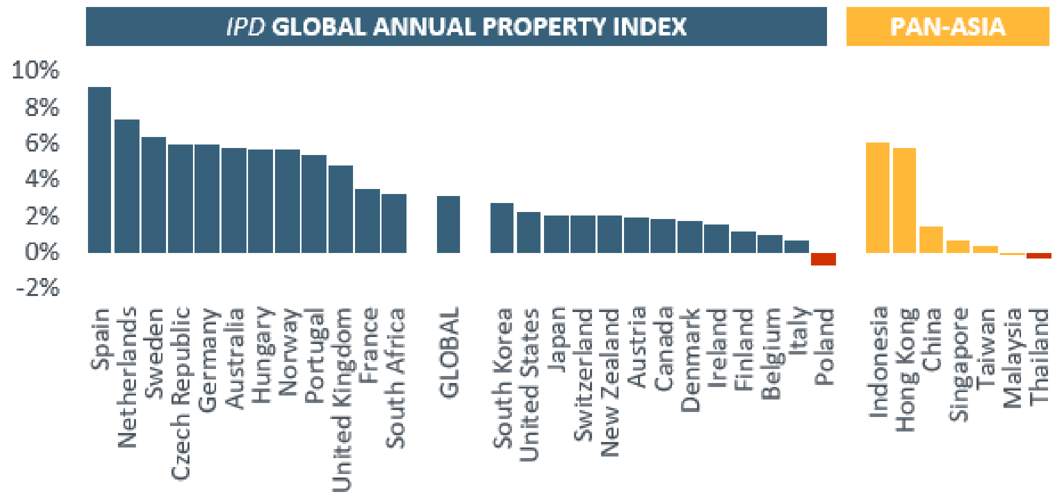


Source: MSCI.

CAPITAL VALUE GROWTH

Many countries showed positive capital value growth in their local currency in 2017, as shown in Exhibit 7. The highest levels of annual capital value growth at standing investment level were recorded for Spain (9.2%) and the Netherlands (7.3%). Ten further countries in the *IPD* Global Annual Property Index — Sweden, the Czech Republic, Germany, Australia, Hungary, Norway, Portugal, the U.K., France and South Africa — also exceeded the *IPD* Global Annual Property Index's 3.1% capital value growth in 2017. All other countries recorded lower capital value growth than the *IPD* Global Annual Property Index. Negative capital value growth occurred in Poland, as well as in Malaysia and Thailand, constituents of the *IPD* Pan-Asia Annual Property Index. The U.S. recorded capital growth of 2.2% in 2017, 90 bps below the *IPD* Global Annual Property Index average. Germany, the market with the largest increase in weight in 2017, saw capital value growth of 6.0%, the country's highest growth rate since the start of the *IPD* Germany Annual Property Index in 1995.

Exhibit 7: Capital Value Growth by Country in 2017, Local Currencies



Source: MSCI, KTI (Finland).

RESIDUAL

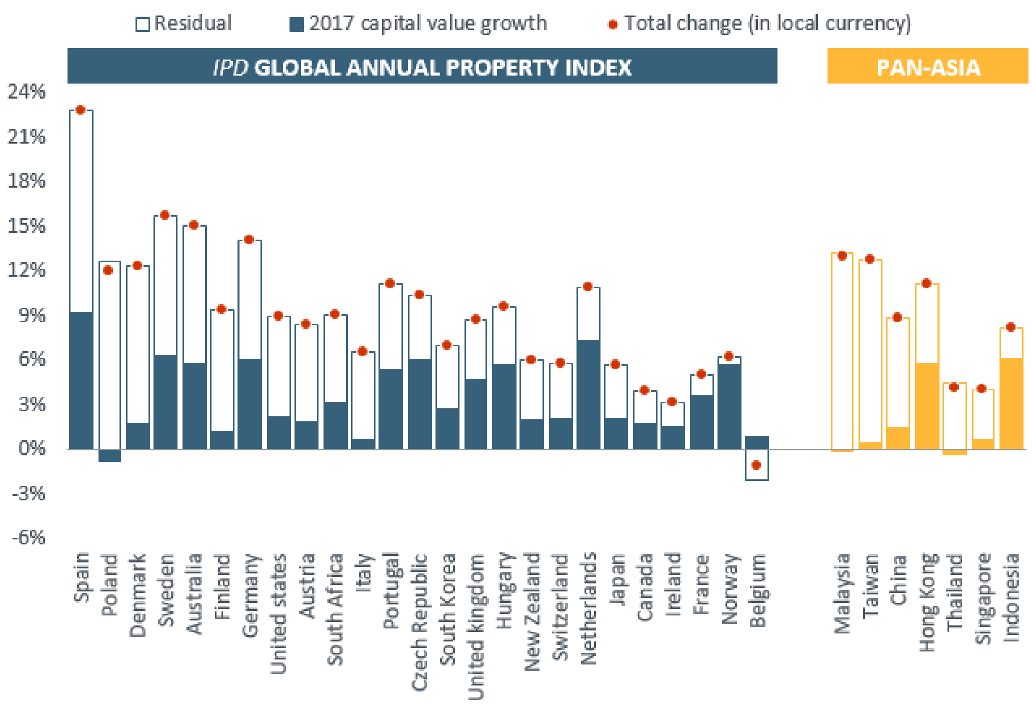
Exhibit 8 shows the percentage change in market size estimates from 2016 to 2017, together with the capital value growth. It should be noted that a residual item remains for many markets when comparing the impact of fundamental drivers and the overall change in estimated market size. In some markets, such as Poland and Denmark, this residual made up a large part of the change. Beyond the 25 countries in the global index, a similar trend was evident in Malaysia and Taiwan. In general, the residual is larger for smaller, less transparent markets. There are a number of possible reasons for the residual, including:

- **Net investment due to capital expenditure on existing assets and new developments.** While MSCI measures net investment on data-submitting portfolios, this sample may not necessarily reflect the wider market. In addition, it is not always possible to break down net investment figures sufficiently to avoid double-counting. Given the uncertainty of its composition, net investment is not reported separately in this exercise, instead being included in the residual.
- **Transactions with non-professionally managed organizations.** These could arise from the sale of portfolios to small private investors or the acquisition of properties from developers or non-professionally managed organizations.
- **Sale and leaseback transactions in which real estate becomes an invested asset, having previously been owner-occupied.** This may relate to particular sectorsthat

become investable, such as hotels and healthcare. In some cases tenants may acquire buildings that they previously leased.

- **Timeliness of reporting.** As discussed above, not all portfolios reported end-2017 data in time to be included in this analysis. In 2017, 74% of those assets supporting *IPD* Global Annual Property Index weightings were updated with 2017 data (the same as in 2016), together with 78% for other Asian markets (versus 85% in 2016). The remainder were included using the most recently available data, mainly dated to the year 2016.
- **Reporting by owner status.** Lower rates of updating occurred for private investors and other direct asset owners that only release data on their portfolios after the first quarter of the year. In general information on listed companies was updated.
- **Asset quality.** Capital value growth for MSCI-measured portfolios may differ from overall market capital value growth because of differences in the quality of the underlying assets.
- **Newly identified portfolios.** Newly identified portfolios that already existed, but were not previously included in market size estimates. These are more common in smaller, more opaque markets.
- **Better information.** Newly identified information on portfolios previously included in market size estimates.

Exhibit 8: Drivers of Market Size Change, 2017



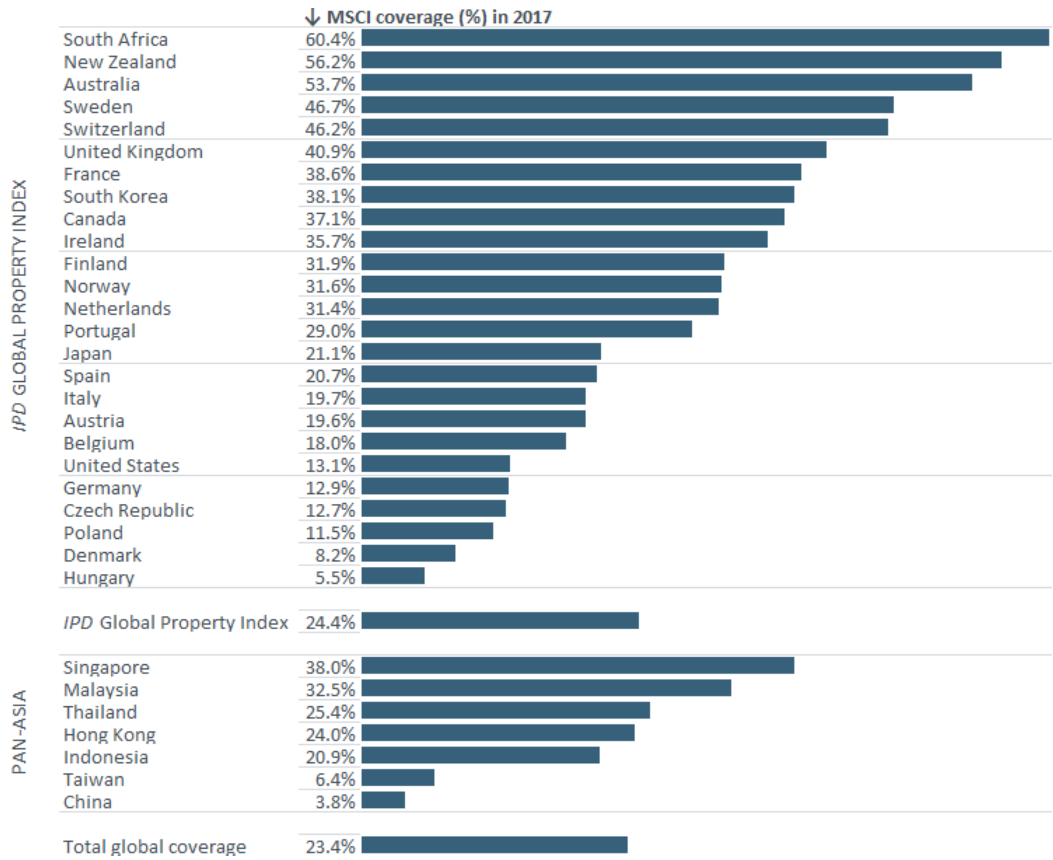
Source: MSCI, KTI (Finland).

MSCI MARKET COVERAGE AND GLOBAL TRANSPARENCY

Among the 25 countries in the *IPD* Global Annual Property Index, coverage ratios range from more than 50% of the market in Australia, New Zealand and South Africa to levels of 6% to 13% in Hungary, Denmark, Poland, the Czech Republic, Germany and the U.S.[2] In aggregate, the 25 countries in the Global Index covered 24.4% of the market by value, an increase of 10 bps compared to 2016. With the seven additional Asian markets added, the global coverage ratio fell slightly, from 24% to 23%, in particular due to low coverage in China. The increase in global coverage for the 32 countries in 2017 was 50 bps.

[2] Although it may appear low in percentage terms, the 13.1% coverage ratio (13.3% in 2016) in the U.S. market relates to a relatively large volume of real estate assets, given that the U.S. has a weight of more than 40% in the *IPD* Global Annual Property Index. One of the reasons for the low coverage in the U.S. is the large proportion of the market owned by listed companies, which are not required to follow market-based appraisal processes; this means that they are not eligible for inclusion in MSCI's direct real estate indexes.

Exhibit 9: MSCI Coverage of the Professionally Managed Market

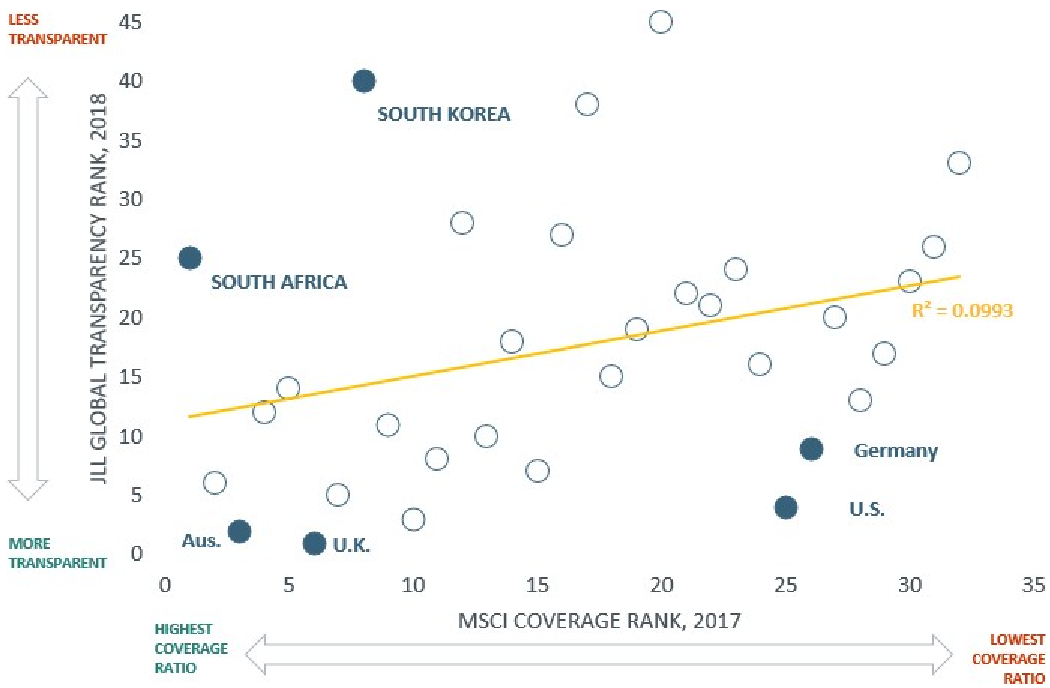


Source: MSCI, KTI (Finland).

In a number of countries, MSCI measures the performance of portfolios not included in the coverage figures in Exhibit 9; these are portfolios that do not fulfill the requirements for index inclusion. This applies, for example, to several portfolios in the U.K. that do not have a December-end reporting year. The coverage of more frequent indexes (monthly, quarterly and biannual) available in some countries is lower than that shown in Exhibit 9. This applies to the *IPD* UK Monthly Property Index, quarterly indexes in the U.S., the Netherlands and the U.K., and biannual indexes in France and Italy. The coverage of these indexes is shown in Appendix 3. MSCI will closely monitor future changes in coverage for Denmark and Hungary, where the coverage level has fallen below 10%, to ensure the representativeness of these indexes remains sufficient to reflect the overall market. The coverage of China and Taiwan also stands below 10%, meaning that the results for these two countries are not reported in an MSCI national market index fact sheet and that they are not included in the *IPD* Global Annual Property Index.

Exhibit 10 plots MSCI's real estate index coverage against JLL's Global Transparency Index, with the country rankings along each axis. The exhibit shows that more transparent markets generally also have a higher MSCI real estate index coverage ratio, with a modest positive correlation. MSCI produces index results for each of JLL's 26 most transparent ranked markets across the world. MSCI real estate indexes are published quarterly in each of the seven most transparent markets, with the exception of France, where index results are published biannually. More than half of the markets included in the *IPD* Global Annual Property Index had coverage ratios exceeding 30% in 2017. Six markets tracked by MSCI had coverage ratios of more than 40% for the year. The two most transparent markets are the U.K. and Australia. MSCI's coverage is high in Australia as well as in the U.K. Of those markets that JLL ranks as less transparent, South Africa and South Korea are among the top 10 markets in terms of MSCI index coverage.

Exhibit 10: Country Ranking, MSCI Real Estate Coverage and JLL Global Transparency Index



Source: MSCI, KTI (Finland), JLL Global Real Estate Transparency Index 2018.

CONCLUSION

The size of the professionally managed global real estate market expanded to $8.5 trillion in 2017 from $7.4 trillion in 2016. MSCI began systematically estimating the size of the professionally managed real estate market in 2004. These estimates underpin the weightings of the *IPD* Global Annual Property Index and a range of other multinational indexes, and they provide insights into the coverage of MSCI's direct property indexes.

Although individual market size estimates have changed from year to year, weightings have proved relatively consistent for each of the 25 countries within the *IPD* Global Annual Property Index. However in 2017, after seven successive years of weighting increases, the weight of the U.S. in the index decreased. At a global level, currency movements effectively increased the size of the global real estate investment market by approximately 5.3% in USD terms, while capital value growth and other factors (including new developments) also increased total market size.

APPENDIX 1: MARKET SIZE ESTIMATE METHODOLOGY

MSCI defines the real estate investment universe in each national market as the aggregation of real estate assets that meet all of the following conditions:

- They are held as investments for the purposes of delivering a mix of income and capital returns.
- They are professionally managed for the achievement of these purposes, either by the beneficial owners or by third party management businesses.
- They are structured as investment interests within portfolios.

These direct real estate portfolios, managed on behalf of institutional or private investors, are financed via a mix of equity and debt.

The criteria that are adopted for the market size estimates are summarized in Exhibit 11, with further clarifications including:

- **Mortgages:** Only direct real estate portfolios are included. We have excluded portfolios of mortgages.
- **Indirect holdings:** In order to avoid double-counting, funds of funds are excluded from the analysis along with the indirect investment holdings of all portfolios.
- **Joint ventures:** In order to avoid double-counting, joint ventures are included as separate holdings, but only with the value of the share of the asset or portfolio included for each holding.
- **Private investors:** The number of direct private investors is enormous, ranging from those holding a single residential unit to some with portfolios of over USD 1 billion. MSCI assumes that any portfolio with a value in excess of USD 100 million is professionally managed. While this figure is somewhat arbitrary, such a threshold is required to compile results. MSCI assumes that the majority of the professionally managed market will be captured by including these larger portfolios.
- **Other real assets:** This analysis aims to estimate the size of real estate markets globally. For this purpose infrastructure (such as airports, ports and toll roads), timberland and farmland are excluded.
- **Developers:** Pure development companies are excluded from this analysis as they do not seek an investment return, but investment property under development and construction is included.

Exhibit 11: Market Size Estimate Inclusion Criteria

Included	Excluded
Insurance and pension funds	Small private landlords (< USD 100 million)
Sovereign wealth funds	Owner-occupied portfolios (pubs, hotels, hospitals)
Unlisted funds (closed and open end)	Timberland, farmland and infrastructure
Traditional estates and charities	Mortgage companies
Listed funds	Development companies
Large private landlords (> USD 100 million)	Funds of funds and indirect holdings (double counting)
Leased office, retail, industrial, residential and other property	Municipal and social housing
Investment property under development	

Source: MSCI.

APPENDIX 2: MARKET SIZE ESTIMATES

	Estimated market size 2016 (USD billion)	Estimated market size 2017 (USD billion)	Capital value growth (%) (Local currency)	*IPD* Index Coverage 2017 in annual index (USD billion)	Coverage ratio in annual index (%)
Australia	225.9	280.8	5.8%	150.7	53.7%
Austria	34.3	42.4	1.9%	8.3	19.6%
Belgium	51.9	58.4	0.9%	10.5	18.0%
Canada	287.7	320.0	1.8%	118.8	37.1%
Czech Republic	16.8	21.2	6.0%	2.7	12.7%
Denmark	49.8	63.6	1.7%	5.2	8.2%
Finland (KTI)	61.4	76.5	1.2%	24.4	31.9%
France	353.1	422.3	3.6%	163.0	38.6%
Germany	395.8	514.3	6.0%	66.1	12.9%
Hungary	8.2	10.2	5.7%	0.6	5.5%
Ireland	26.3	30.9	1.6%	11.0	35.7%
Italy	105.4	127.9	0.7%	25.2	19.7%
Japan	729.2	797.5	2.1%	168.1	21.1%
Netherlands	128.8	162.7	7.3%	51.1	31.4%
New Zealand	17.4	18.8	2.0%	10.6	56.2%
Norway	48.6	54.3	5.7%	17.1	31.6%
Poland	37.7	48.0	-0.7%	5.5	11.5%
Portugal	23.3	29.5	5.4%	8.6	29.0%
South Africa	39.5	47.6	3.2%	28.7	60.4%
South Korea	60.7	73.3	2.8%	27.9	38.1%
Spain	73.0	102.0	9.2%	21.1	20.7%
Sweden	165.7	212.8	6.3%	99.4	46.7%
Switzerland	213.2	235.2	2.1%	108.7	46.2%
United Kingdom	604.6	720.0	4.8%	294.2	40.9%
United States	2,729.7	2,974.1	2.2%	388.8	13.1%
***IPD* Global Property Index**	***6,488.0***	***7,444.3***	***3.1%***	**1,816.4**	**24.4%**

	Estimated market size 2016	Estimated market size 2017	Capital value growth (%)	*IPD* Index Coverage 2017 in annual index	Coverage ratio in annual index (%)
China	415.6	482.8	1.5%	18.5	3.8%
Hong Kong	310.6	342.3	5.8%	82.2	24.0%
Indonesia	11.5	12.4	6.1%	2.6	20.9%
Malaysia	22.8	28.5	-0.1%	9.3	32.5%
Singapore	139.8	157.3	0.7%	59.8	38.0%
Taiwan	36.3	44.4	0.4%	2.9	6.4%
Thailand	16.7	19.1	-0.3%	4.9	25.4%
Total global coverage *(incl. Pan-Asia)*	**7,441.3**	**8,531.1**		**1,996.5**	**23.4%**

Source: MSCI, KTI (Finland).

APPENDIX 3: MARKET COVERAGE FOR NON-ANNUAL INDEXES

	Estimated market size 2017 (USD billion)	*IPD* Index Coverage 2017 (USD billion)	Coverage ratio (%)
United Kingdom (monthly)	720.0	64.7	9.0%
United Kingdom (quarterly)	720.0	206.9	28.7%
Netherlands (quarterly)	162.7	35.9	22.1%
United States (quarterly)	2,974.1	340.4	11.4%
France (biannual)	422.3	46.5	11.0%
Italy (biannual)	127.9	16.6	13.0%

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Our line of products and services includes indexes, analytical models, data, real estate benchmarks and ESG research.

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