



# Valuation and Sale Price Comparison Analysis

2025 Annual Review of Valuation Accuracy

June 2026

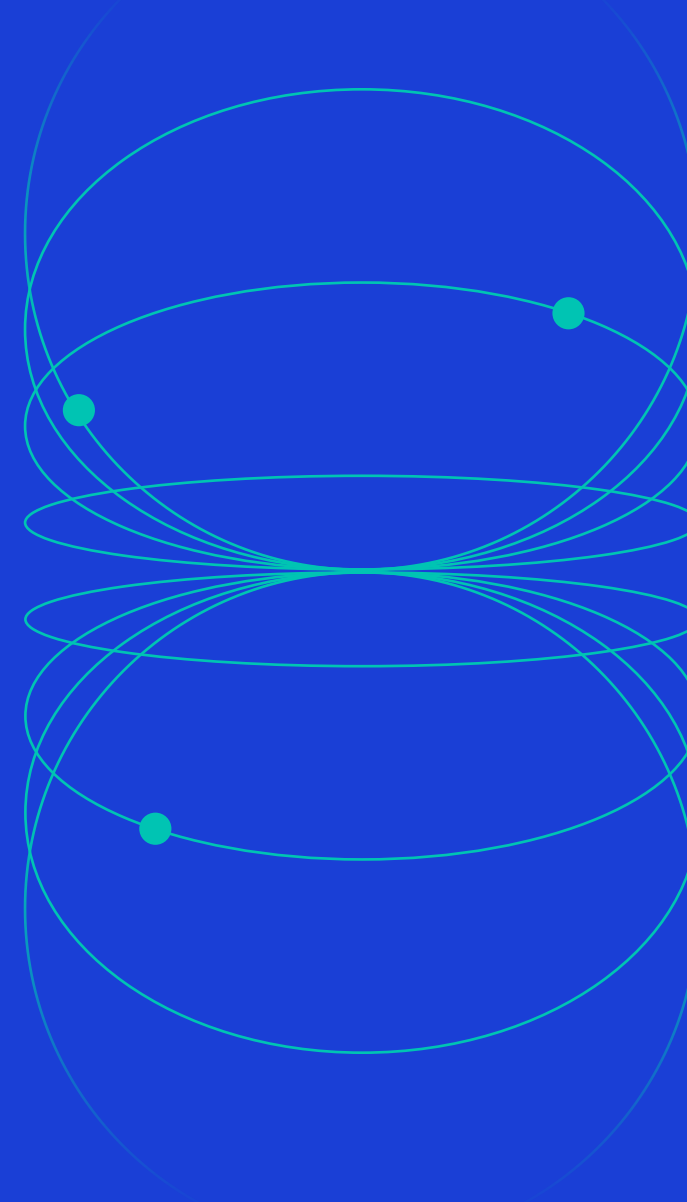
## AUTHORS

Vinay Kakka

Williams Vargas

## Acknowledgement

Manas Jalan

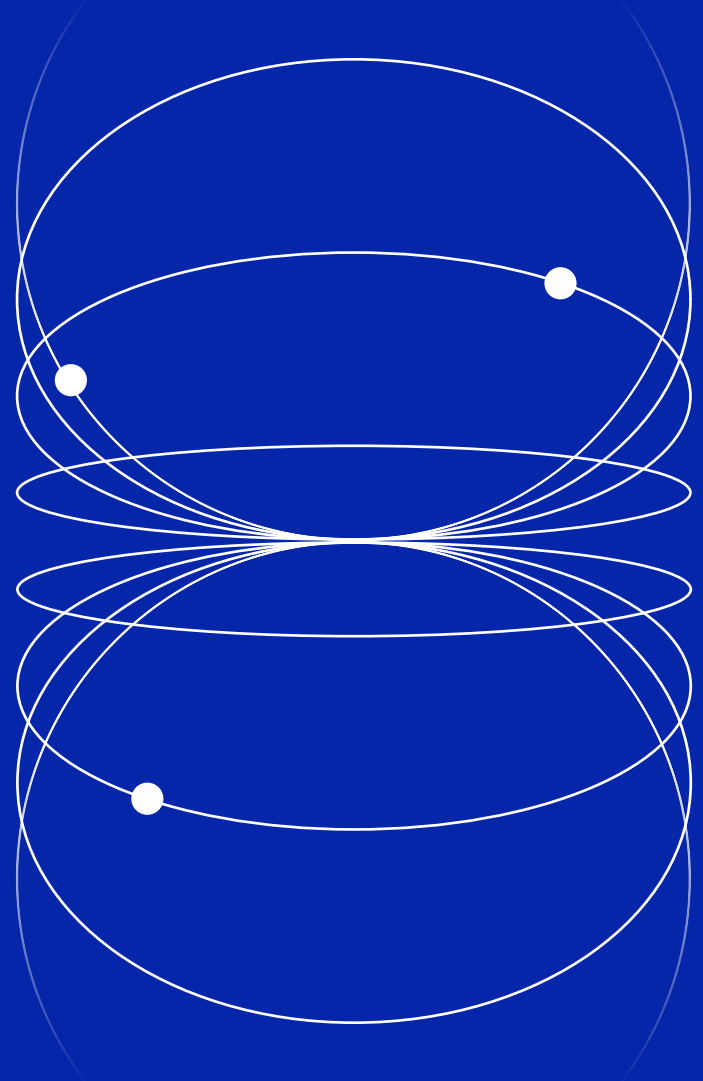


## Introduction

# Why Compare Valuation and Sale Price?

- For mainstream financial asset classes, investment-performance measurement is based on transaction prices. In contrast, direct real estate is well known to be an illiquid and heterogeneous asset class
- Real estate's heterogeneity (by capital value, floorspace, location etc.) results in volatility driven by the sample composition between time periods
- MSCI calculates price indexes based on repeat sales and hedonic methods that are designed to control the sample composition's volatility
- To track the performance of real-estate properties over longer periods and to allow the use of metrics in addition to property valuations, MSCI constructs indexes for private real estate based on professionally sourced open-market valuations (i.e., price estimates based on a set of market-process assumptions combined with available and relevant transaction evidence)
- Valuation-based indexes aim to track as closely as possible actual agreed transaction prices. Therefore, users of these indexes must be able to gauge how closely this goal has been achieved. For this reason, MSCI computes and discloses fair market indicators that compare valuations and prices for assets that transacted in the open market
- To measure each index's synchronization of price and value, MSCI compares professionally generated valuations against subsequent transaction prices on a sample restricted to properties traded out of fully measured portfolios
- Although valuations and transaction prices may differ significantly at the level of individual assets, MSCI's tests are designed to quantify aggregate spreads and thus identify any tendency for valuations to consistently understate or overstate market movements, across countries and time periods
- MSCI's research on valuation and sales price is published for year 2000 to 2025 covering 25 years of history

# 2025 Global Trends

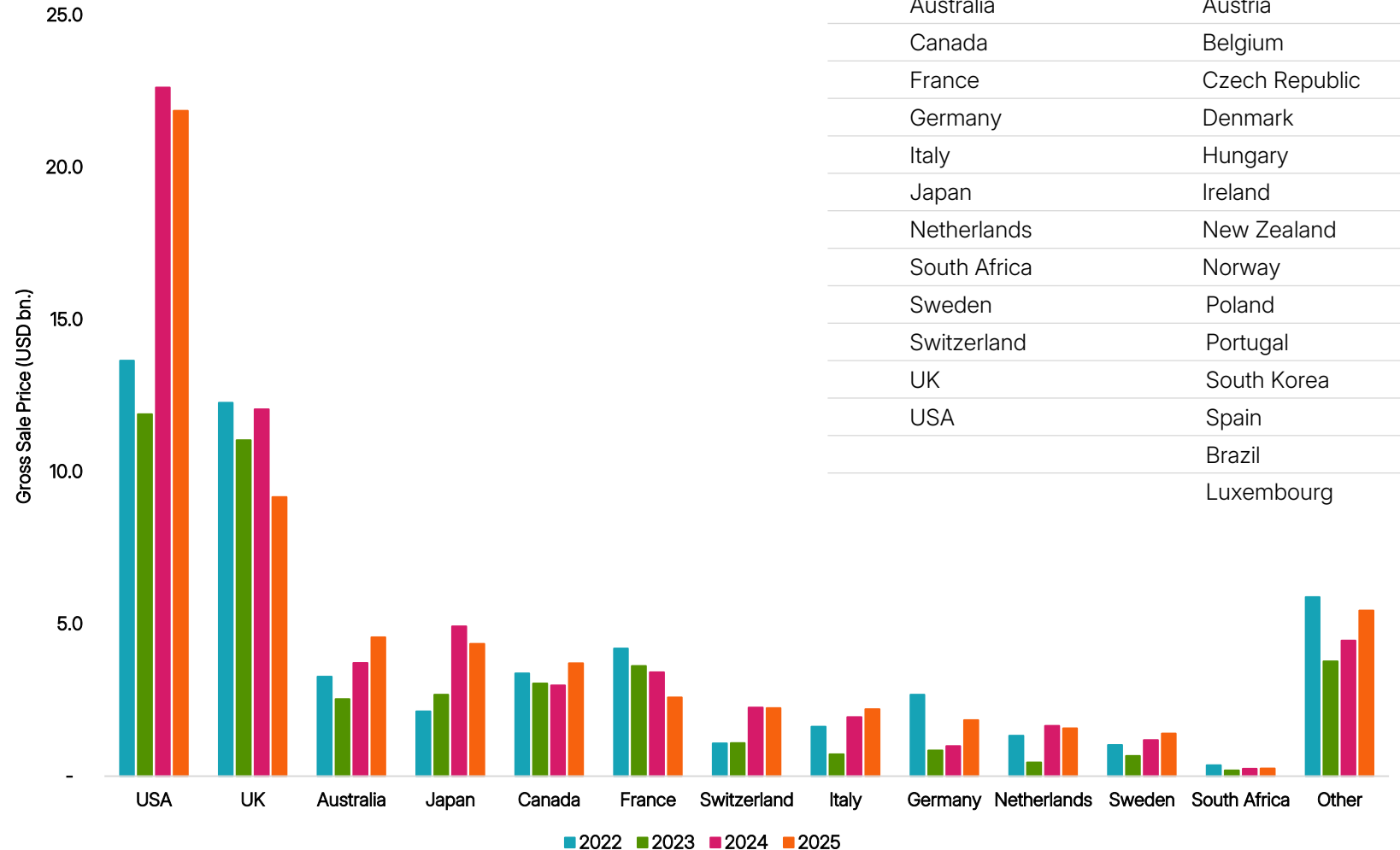


Note: All charts and graphs, unless specified otherwise, are as of December 2025

## Section 1 → 2025 Global Trends

# Markets Covered

- Results cover sale transactions from 26 countries<sup>1</sup> within MSCI Global Annual Property Index
- Results were individually<sup>2</sup> analyzed for 12 of 26 countries
- In 2025, a total of 2,018 sale transactions (-4% YoY) were recorded with a value of USD 61.2bn (-2% YoY)
- US and UK accounted for over 50% of the total transactions by gross sale price



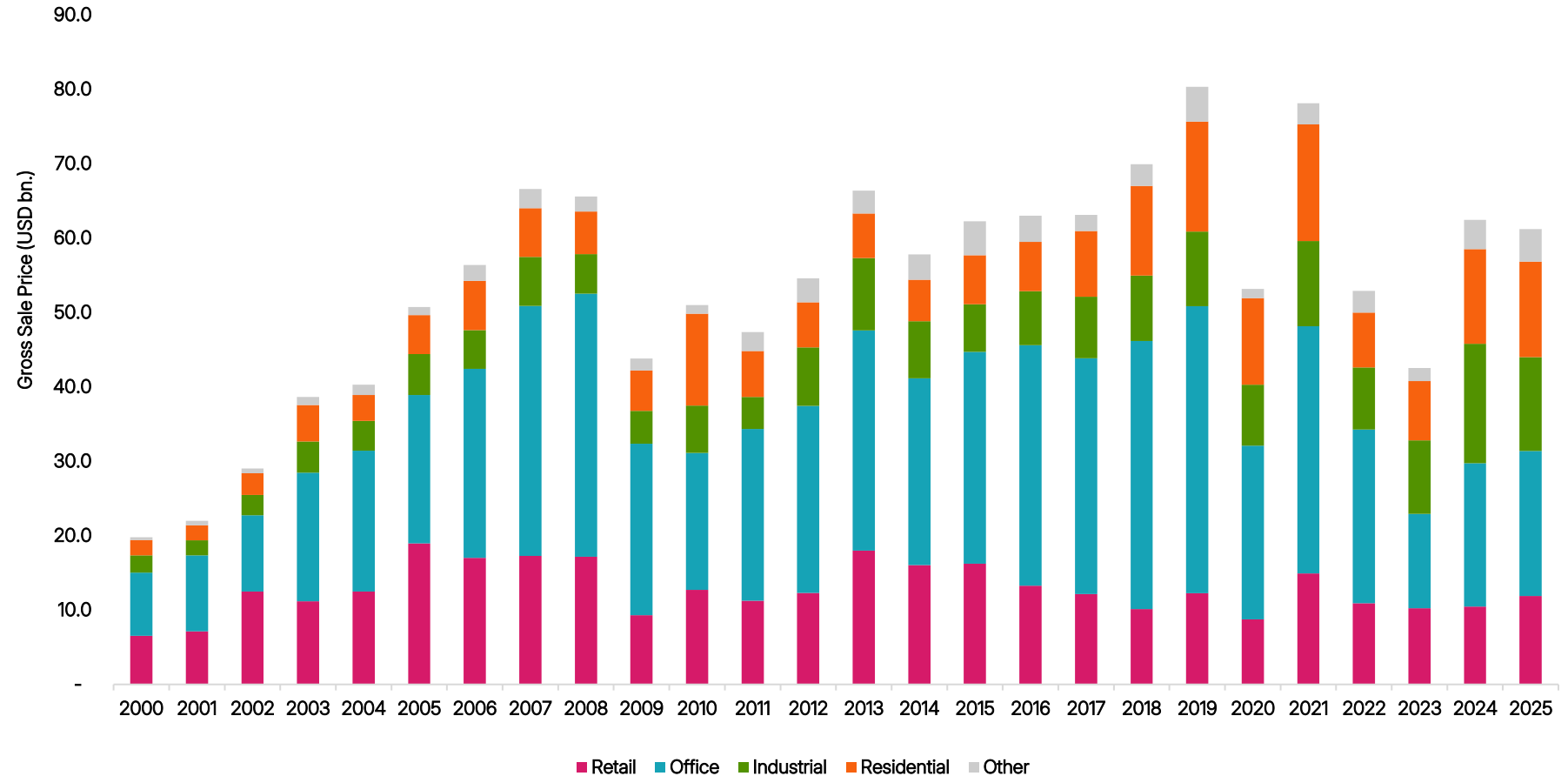
Individually analyzed	Other markets
Australia	Austria
Canada	Belgium
France	Czech Republic
Germany	Denmark
Italy	Hungary
Japan	Ireland
Netherlands	New Zealand
South Africa	Norway
Sweden	Poland
Switzerland	Portugal
UK	South Korea
USA	Spain
	Brazil
	Luxembourg

Source: MSCI Global Annual Property Index (Unfrozen: Weighting: Market Size)

## Section 1 → 2025 Global Trends

# Global Sale Transactions – 2025 (Gross Sale Price by Sector)

- 2025 value of sales totaled USD 61.2bn, equivalent to 3.1% of the MSCI Global Annual Property Index value, consistent with 2024
- All sectors, except for Industrial, recorded an increase in value of sale transactions for 2025 compared to 2024
- Office sector recorded USD 19.5 bn worth of sale transactions during 2025, which was the highest among all sectors and 10% above the Residential sector that stood second in terms of value of transactions
- Industrial sector recorded the lowest YoY growth (-21.4%) in 2025 compared to Retail sector that witnessed the highest growth (13.6%) during the same period

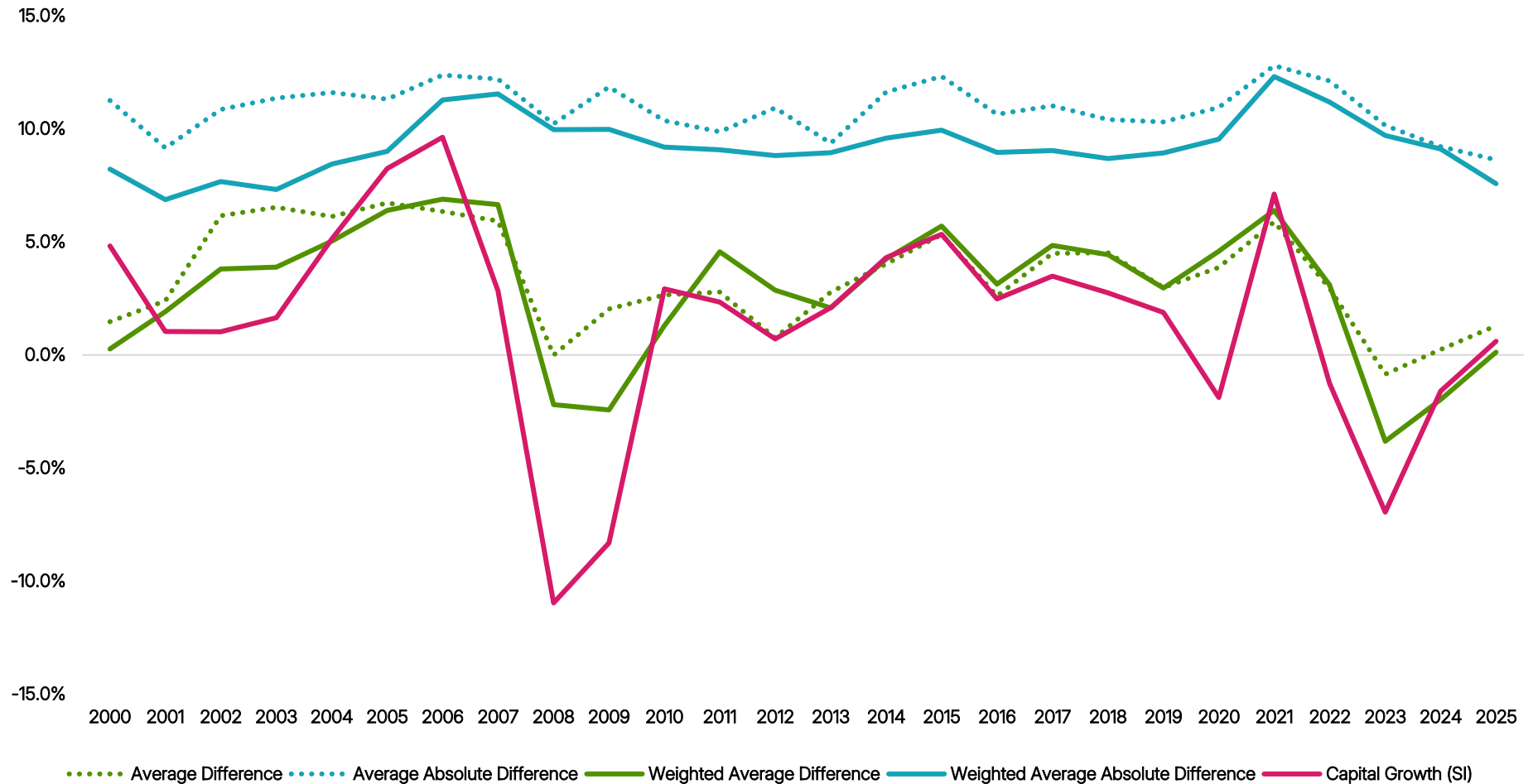


Source: MSCI Global Annual Property Index (Unfrozen: Weighting: Market Size)

Section 1 → 2025 Global Trends

# Global Snapshot

- Capital growth (Standing Investment<sup>3</sup>) recorded for 2025 MSCI Global Annual Property Index is 220bps above 2024 indicating a sharp recovery
- Valuation bias (WAD) at 0.1% in 2025, is 210bps above 2024 but was still significantly lower than the 10-year average of 2.4%
- Valuation accuracy (WAAD) at 7.6% is below 10-year average of 9.5%



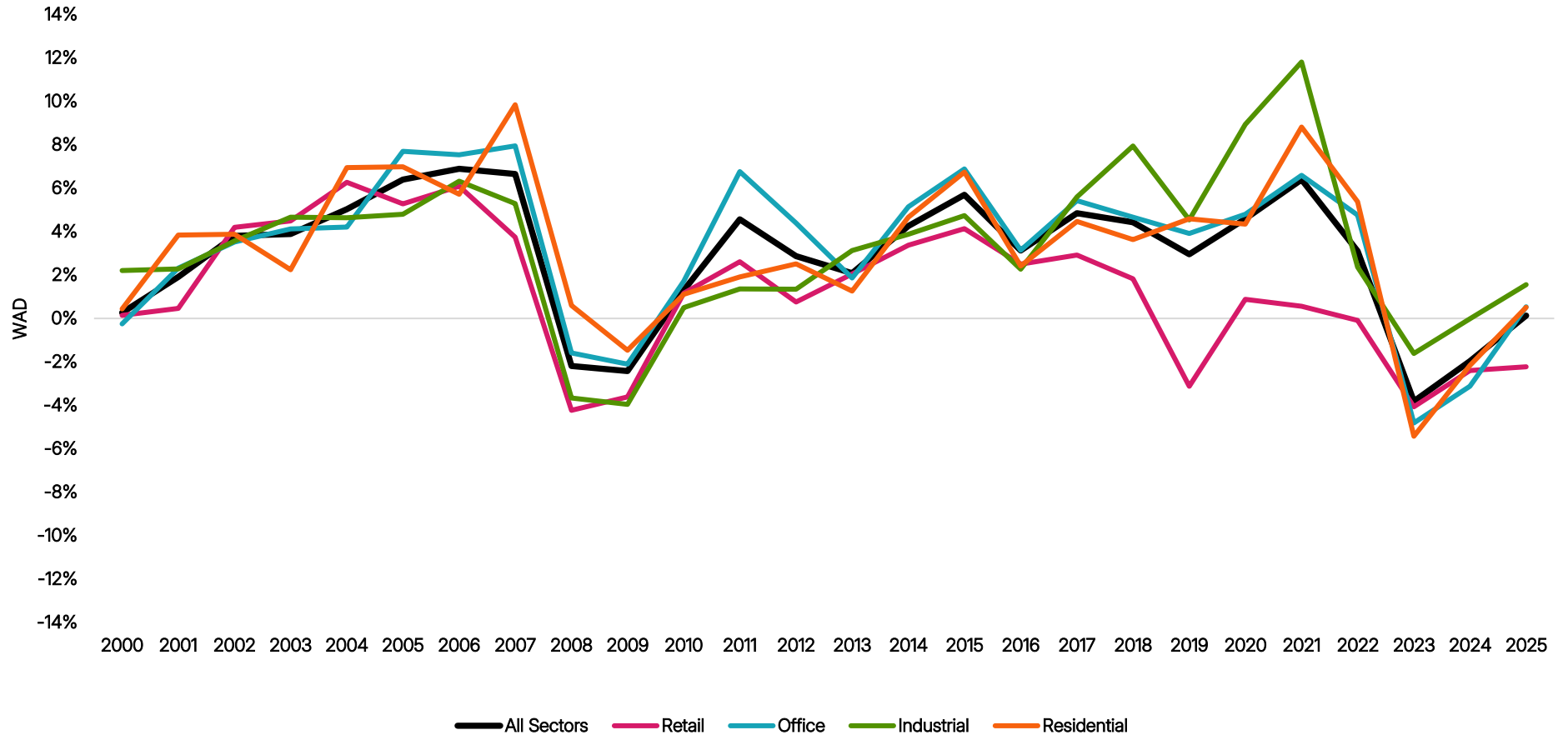
Source: MSCI Global Annual Property Index (Unfrozen: Weighting: Market Size)



3 - "Standing investments" is defined in section 3.2.3 of the [MSCI Property Indexes Methodology](#)

# Weighted Average Difference (WAD) – Global Trends by Sector

- By Wtd. average, sales across all sectors were recorded above valuation estimates, except for Retail which reported WAD of -2.2%
- Global WAD improved to 0.1% compared to -2.0% in 2024

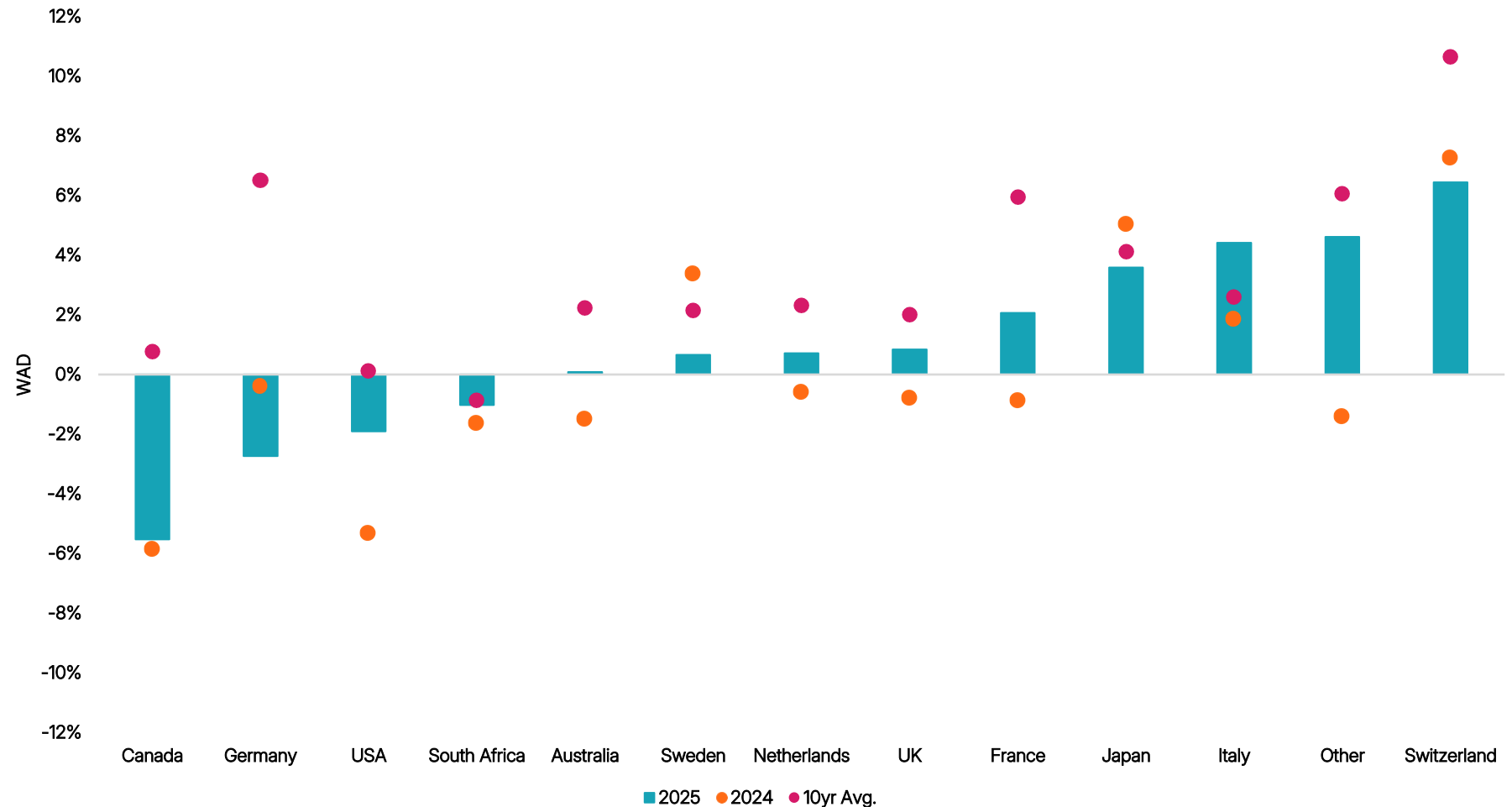


Source: MSCI Global Annual Property Index (Unfrozen: Weighting: Market Size)

## Section 1 → 2025 Global Trends

# Weighted Average Difference (WAD) – by Country

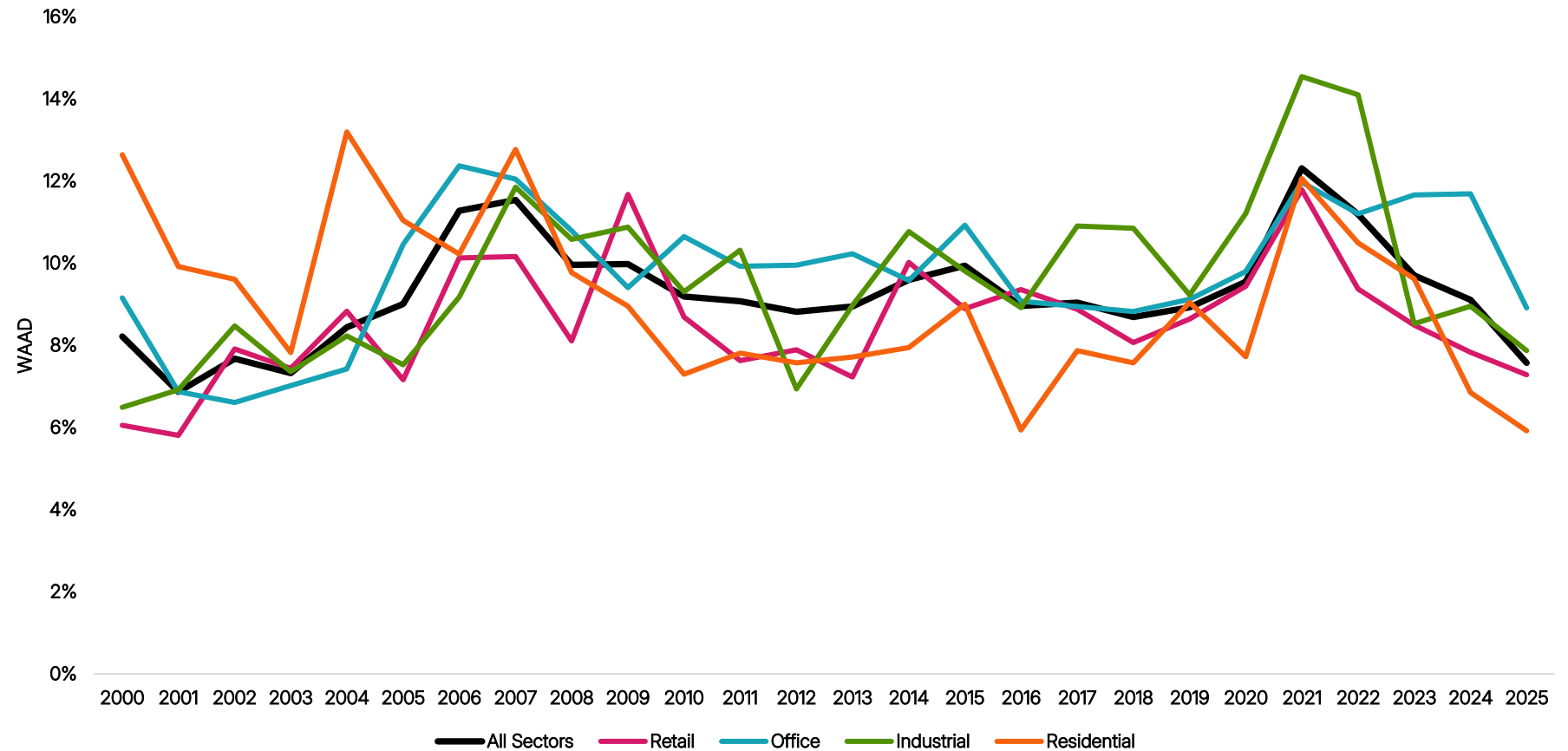
- Negative WAD recorded for 4 of 13 markets segments (compared to 9 in 2024)
- Canada WAD of -5.5% was the lowest, driven by the -6.4% WAD for Retail and -13.4% WAD for Office (33% and 22% of total sale sample respectively)
- USA WAD of -1.9% improved by 340bps due to Office WAD improving to -2.3% compared to -9.4% in 2024 (27% of total sale sample)



Source: MSCI Global Annual Property Index (Unfrozen: Weighting: Market Size)

# Weighted Average Absolute Difference (WAAD) – Global Trends by Sector

- For 2025, weighted average absolute difference between sale price and valuation was 7.6% (vs. 9.1% in 2024)
- The difference in price and valuations remained high at 8.9% for Office sales in 2025 while witnessing a significant improvement in accuracy by 280bps

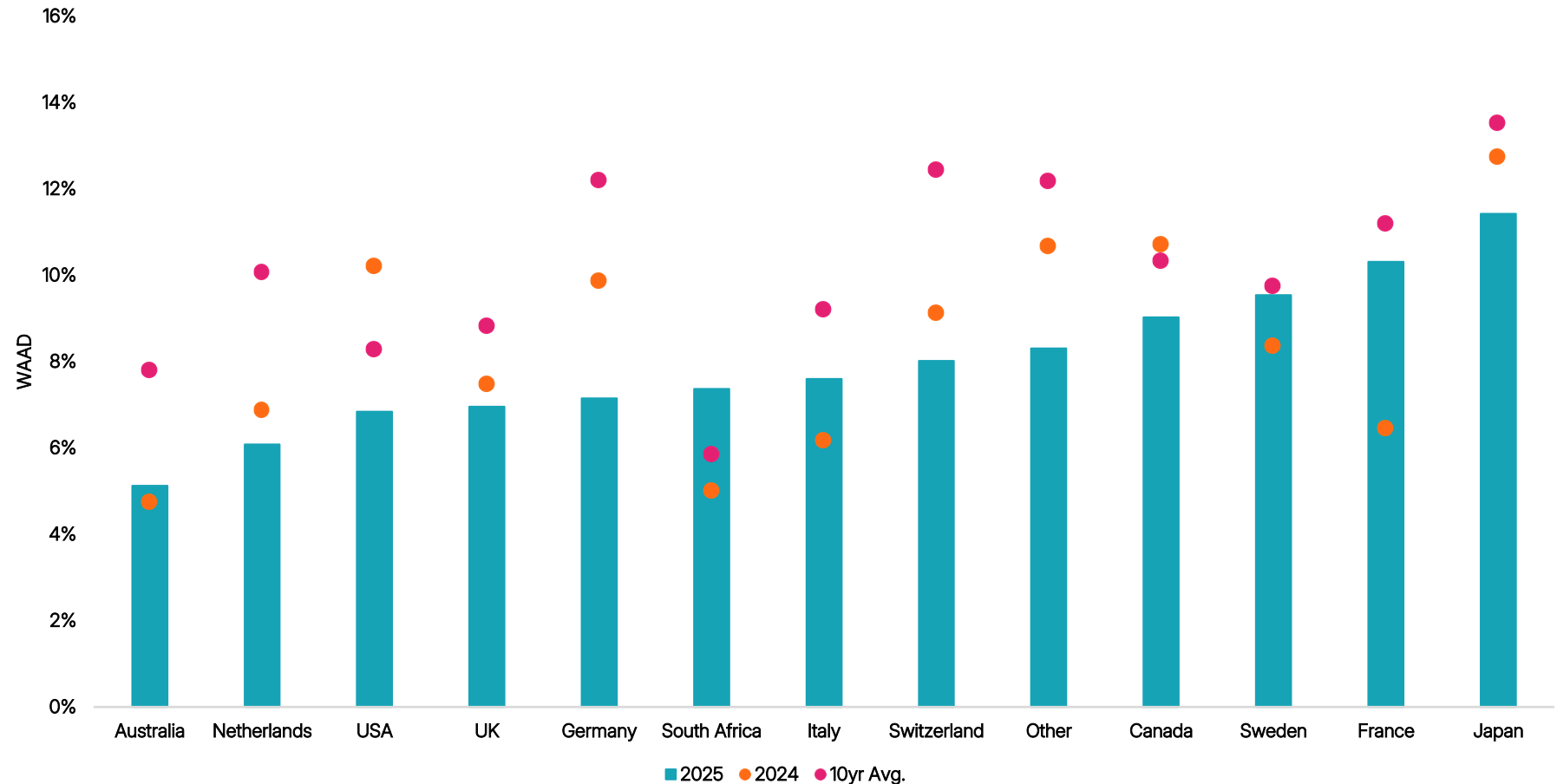


Source: MSCI Global Annual Property Index (Unfrozen: Weighting: Market Size)

## Section 1 → 2025 Global Trends

# Weighted Average Absolute Difference (WAAD) – by Country

- 8 of the 13 markets segments recorded improvement in YoY valuation accuracy with lower WAAD levels for 2025.
- South Africa recorded WAAD higher than its corresponding 10-year average
- Netherlands, Germany and Switzerland witnessed 400bps+ improved valuation accuracy compared to their 10-year average
- France witnessed the highest deterioration in valuation accuracy by 380bps, due to increase in Office sales from 30% to 51% along with decline accuracy from 7.3% to 12.4%
- Germany WAAD improved from 9.88% to 7.15%, driven primarily by stronger valuation accuracy within sectors. Office was the key contributor, with WAAD improving from 16.6% to 7.4% (-915bps); given its ~49% share of 2025 sales

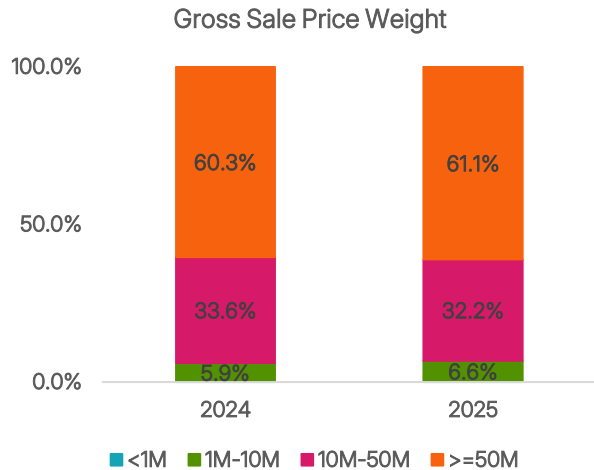


Source: MSCI Global Annual Property Index (Unfrozen: Weighting: Market Size)

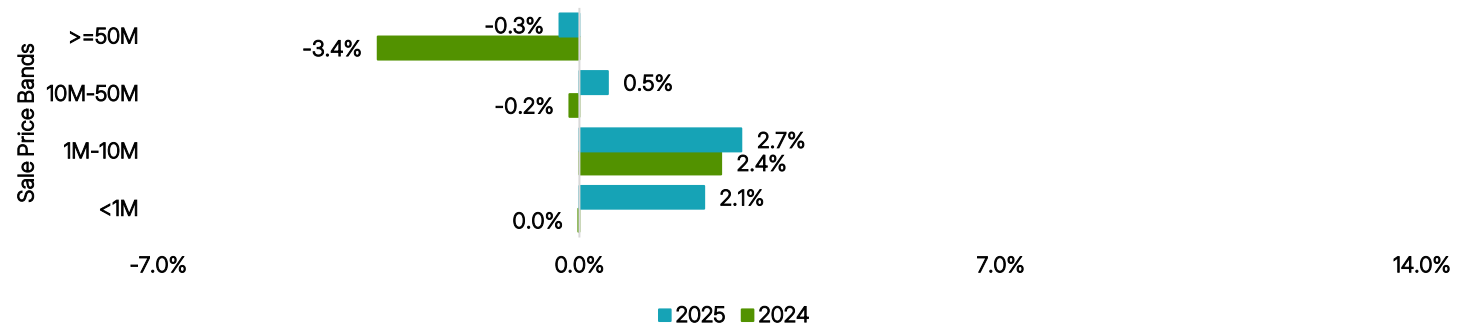
Section 1 → 2025 Global Trends

# Analysis by Asset size - Global

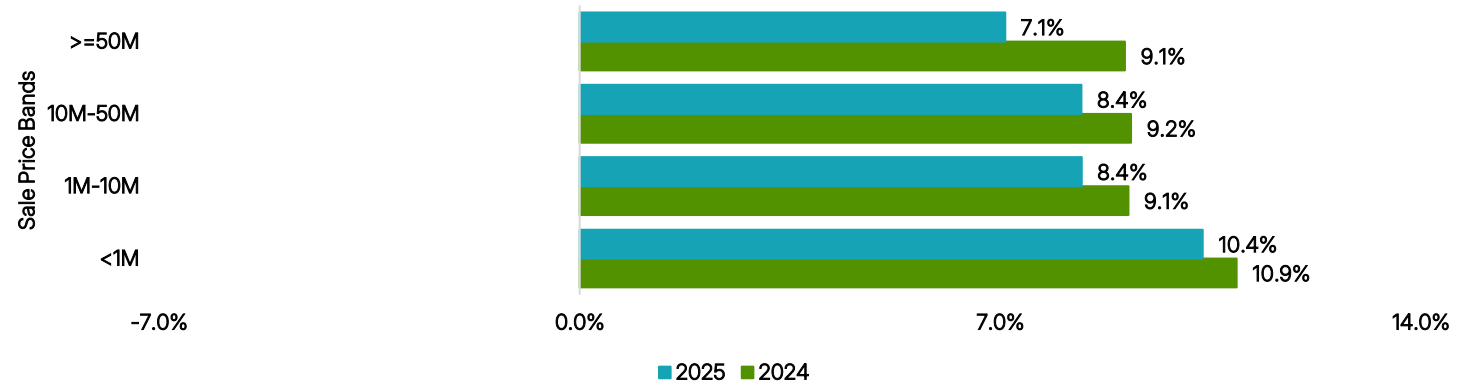
- On an average, large properties (>50m) were sold below their valuation estimates as per WAD
- All Price bands recorded improvement in valuation accuracy with WAAD reducing



WAD



WAAD

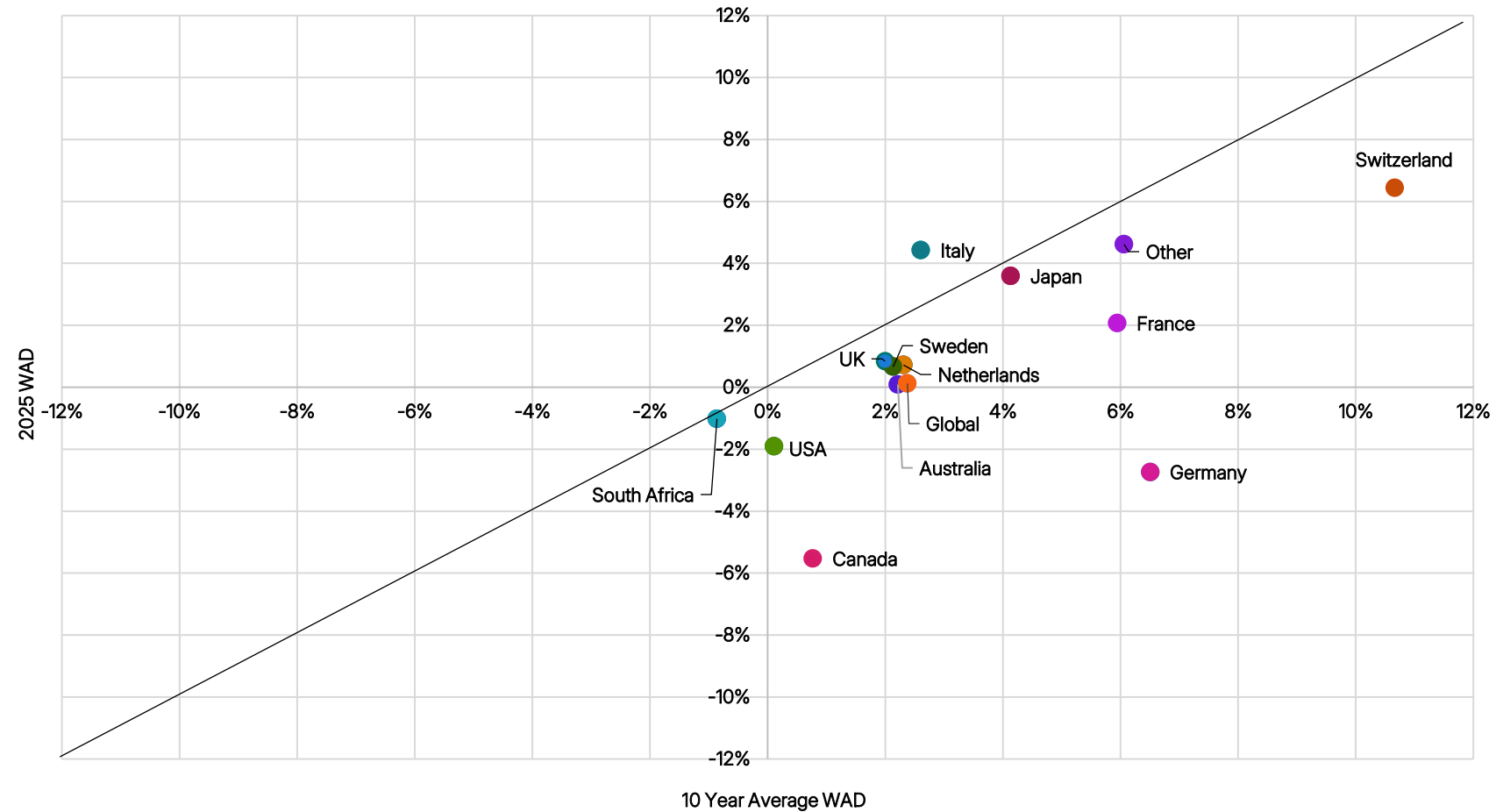


Source: MSCI Global Annual Property Index (Unfrozen: Weighting: Market Size)

## Section 1 → 2025 Global Trends

# WAD 2025 vs. 10-year Avg.

- 11 of 12 markets witnessed WAD lower than its 10-year average
- Italy's WAD of 4.4% ran 180bps above its 10-year average. The office share of sales rose from 48% (10-year average) to 55%, and assets sold at a 6.6% premium.

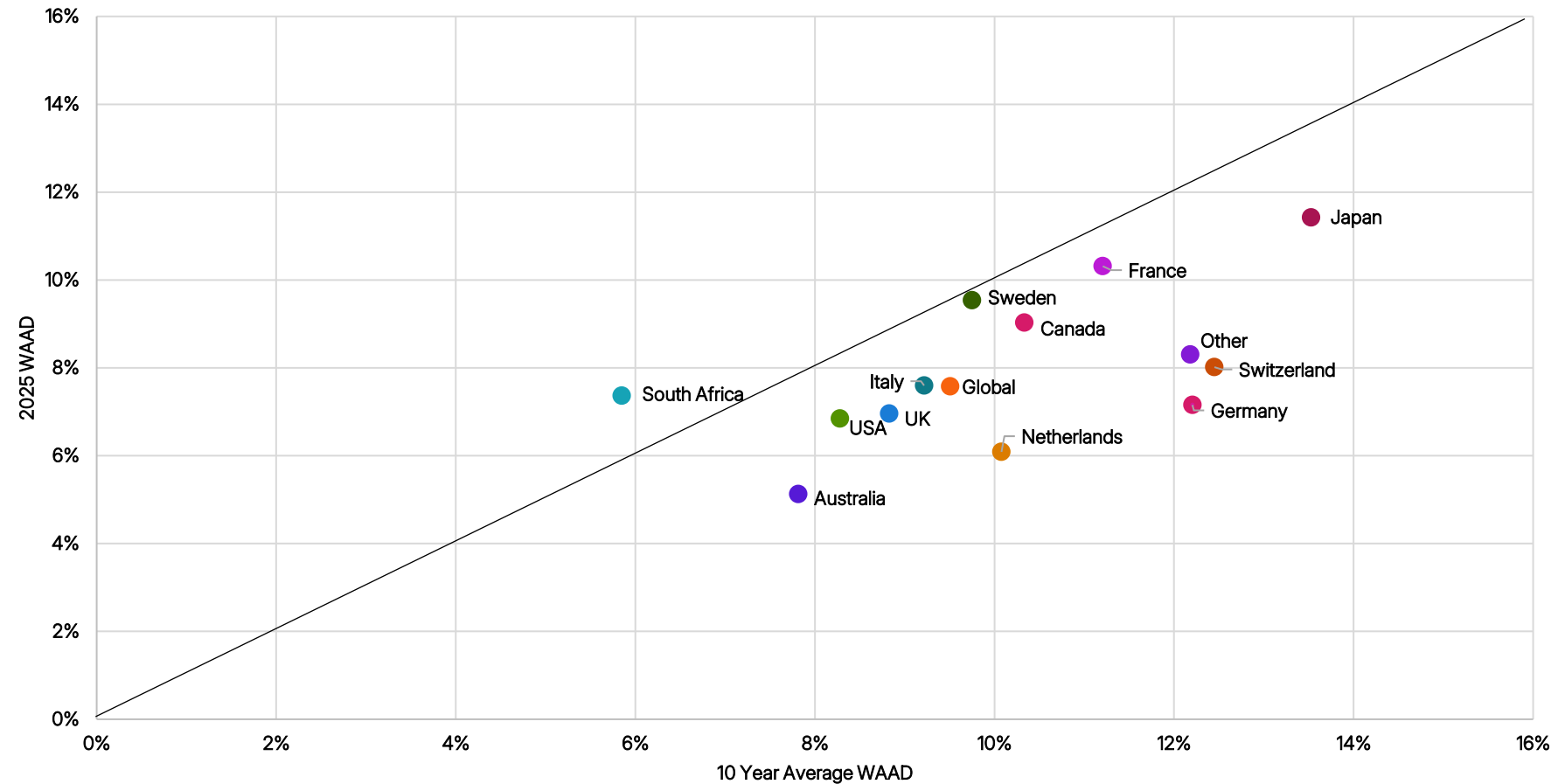


Source: MSCI Global Annual Property Index (Unfrozen: Weighting: Market Size)

## Section 1 → 2025 Global Trends

# WAAD 2025 vs. 10-year Avg.

- 11 of 12 markets reported WAAD lower than their 10-year average
- 7.4% WAAD for South Africa ran 150 bps above its 10-year average, driven by the retail sample (29% of sales by value), where valuation accuracy fell to 10.9% versus a 10-year average of 5.0%



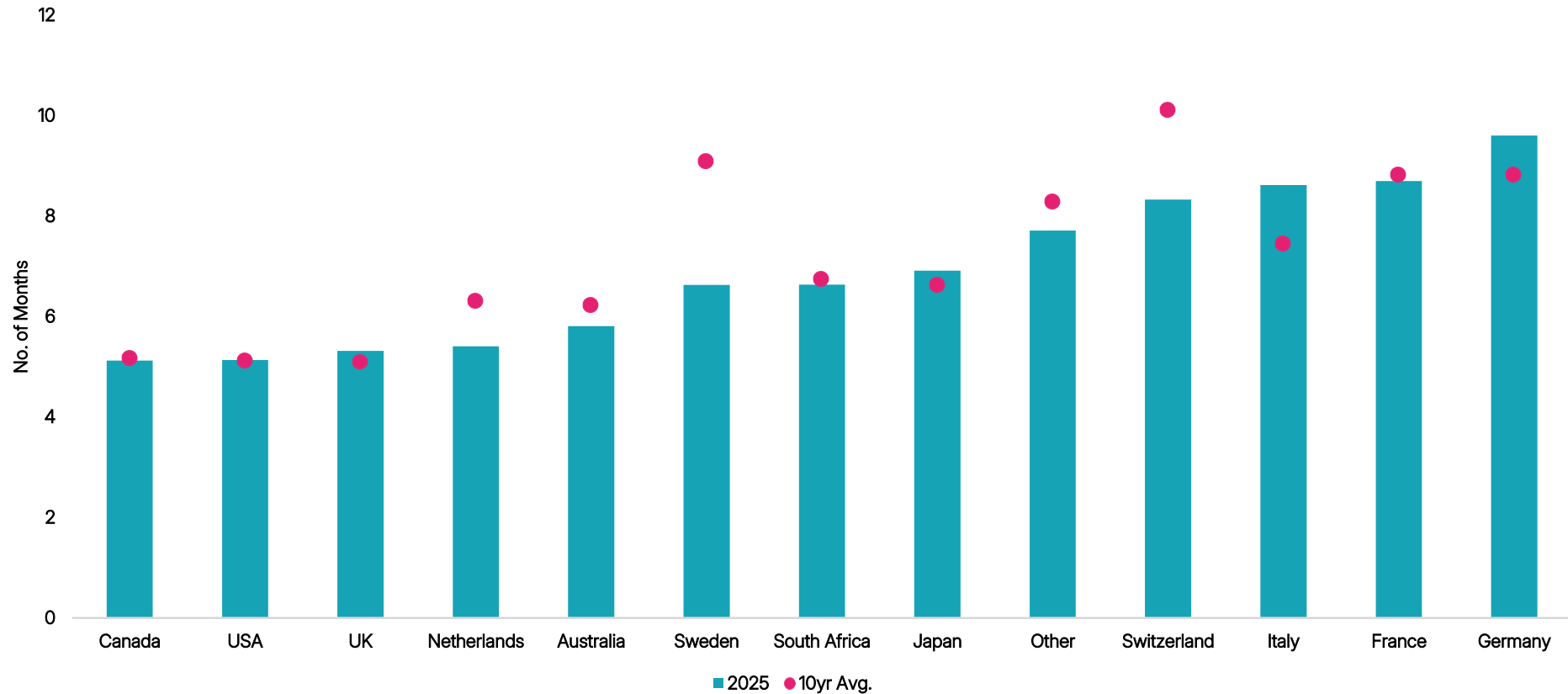
Source: MSCI Global Annual Property Index (Unfrozen: Weighting: Market Size)

# Average number of months between valuation and sale (2016-2025)

→ The longer the time between valuation<sup>4</sup> and sale, the higher the estimation error and this is due to estimated market & sector capital growth used for individual assets to derive adjusted valuations until 3 months prior to the month of sale

→ Markets valued more frequently have shorter intervals between valuation and sale, and lower exposure to estimation error

→ Netherlands, Sweden, and Switzerland benefited from a shorter lag between sale dates and the last uninfluenced valuation, driven by a higher concentration of 2025 sale transactions occurring earlier in the year relative to the 10-year average



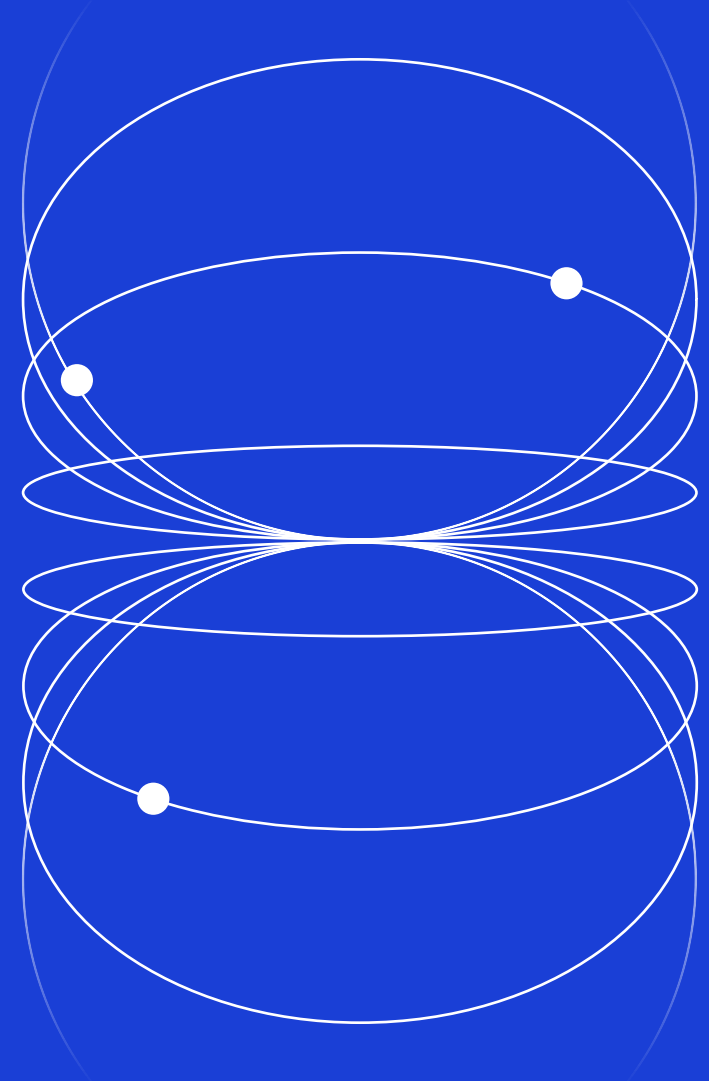
Source: MSCI Global Annual Property Index (Unfrozen: Weighting: Market Size)

# Conclusion

- Weighted Average Absolute Difference between property valuation and sale price reduced and is below its 10-year average indicating the valuation-based indexes closely tracking transacted prices in the open market
- Weighted Average Difference was positive on account of all properties except for large one's (> USD 50mn) being sold above estimated valuations which is in line with the positive capital growth (SI) observed for the MSCI Global Annual Property Index (Unfrozen: Weighting: Market Size)
- 2025 sales value and count witnessed a marginal decline but were in line with their 10-year average indicating stable transaction activity in the market compared to 2022 and 2023 periods when transaction value and count had reduced below 10-year average
- Office sales weighted average absolute difference in price and valuation remained high at 8.9% , due to lower sample compared to historic average (32% compared to 40%+ historically)
- Weighted Average Difference for sales from Canada, Germany, South Africa & USA remained negative as in previous year

# Appendix 1

National and Global Results, 2000 to 2025



## Section 2 → Appendix 1: National and Global Results

# Weighted Average Absolute Difference (%)

	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025
Australia	3.3%	3.2%	4.1%	4.9%	4.4%	6.5%	10.4%	15.5%	10.7%	8.3%	5.5%	6.1%	3.5%	8.1%	8.7%	12.5%	9.0%	12.1%	9.1%	6.2%	8.2%	12.6%	4.9%	6.4%	4.7%	5.1%
Canada	10.8%	7.3%	7.5%	7.5%	10.7%	10.4%	23.1%	16.1%	9.9%	10.2%	8.4%	10.4%	20.2%	7.9%	7.6%	7.3%	11.1%	9.2%	12.5%	10.6%	11.3%	12.8%	8.3%	7.8%	10.7%	9.0%
France	6.2%	8.4%	6.4%	5.4%	9.2%	10.4%	14.8%	14.4%	10.0%	6.9%	10.8%	10.0%	9.6%	8.7%	9.3%	14.5%	13.7%	9.5%	11.2%	12.7%	12.9%	14.7%	10.8%	9.8%	6.5%	10.3%
Germany	9.4%	8.8%	7.1%	10.7%	5.3%	6.2%	13.2%	13.2%	12.4%	5.4%	10.9%	9.2%	10.1%	8.5%	8.6%	8.3%	12.6%	17.3%	7.6%	19.3%	15.3%	14.2%	9.0%	9.8%	9.9%	7.2%
Italy					17.9%	3.3%	9.6%	16.6%	16.3%	9.1%	11.7%	7.6%	9.9%	6.2%	9.1%	8.6%	11.6%	11.9%	14.3%	8.6%	9.0%	8.9%	5.5%	8.6%	6.2%	7.6%
Japan				5.6%	13.3%	20.6%	6.2%	14.5%	7.5%	9.6%	9.1%	7.7%	6.7%	11.6%	11.5%	13.0%	16.0%	10.6%	12.4%	16.4%	9.2%	16.7%	16.0%	13.9%	12.7%	11.4%
Netherlands	9.4%	8.0%	9.4%	8.2%	8.6%	8.3%	11.9%	11.0%	5.4%	8.6%	5.1%	4.9%	6.7%	9.7%	6.0%	7.1%	11.6%	10.7%	10.6%	11.6%	11.2%	14.1%	12.4%	5.7%	6.9%	6.1%
South Africa	10.2%	9.5%	10.3%	7.4%	7.5%	9.7%	8.7%	18.0%	10.9%	6.6%	5.8%	11.5%	9.8%	7.5%	11.5%	4.7%	5.4%	4.9%	4.8%	8.5%	6.7%	5.9%	4.7%	5.3%	5.0%	7.4%
Sweden	17.3%	9.0%	10.2%	8.0%	9.7%	10.1%	25.9%	14.0%	11.2%	15.4%	7.4%	11.1%	7.4%	9.8%	10.4%	13.3%	12.3%	8.2%	8.7%	8.1%	9.0%	13.0%	15.0%	5.3%	8.4%	9.5%
Switzerland				10.3%	9.7%	8.0%	10.3%	8.9%	8.3%	8.3%	11.7%	7.6%	11.6%	7.9%	7.2%	16.6%	24.7%	15.4%	10.7%	12.6%	11.3%	12.2%	10.7%	9.8%	9.1%	8.0%
UK	7.4%	6.7%	7.8%	7.5%	8.3%	8.4%	9.2%	9.4%	9.1%	11.0%	9.5%	9.1%	8.2%	8.5%	11.4%	9.9%	7.5%	8.1%	8.5%	7.3%	9.8%	11.9%	12.3%	8.3%	7.5%	7.0%
USA	5.0%	8.4%	7.9%	6.5%	11.0%	12.0%	11.5%	10.2%	12.6%	13.3%	10.1%	10.4%	9.1%	10.2%	9.1%	8.3%	6.2%	7.1%	6.7%	6.6%	7.1%	11.0%	9.4%	11.7%	10.2%	6.8%
Other	6.1%	7.0%	9.2%	9.6%	15.0%	10.3%	13.8%	12.6%	11.2%	11.9%	8.3%	8.3%	8.4%	8.7%	10.1%	10.5%	12.2%	11.7%	11.7%	10.0%	12.3%	15.2%	20.0%	9.6%	10.7%	8.3%
<b>Global</b>	<b>8.2%</b>	<b>6.9%</b>	<b>7.7%</b>	<b>7.3%</b>	<b>8.4%</b>	<b>9.0%</b>	<b>11.3%</b>	<b>11.5%</b>	<b>10.0%</b>	<b>10.0%</b>	<b>9.2%</b>	<b>9.1%</b>	<b>8.8%</b>	<b>8.9%</b>	<b>9.6%</b>	<b>9.9%</b>	<b>9.0%</b>	<b>9.0%</b>	<b>8.7%</b>	<b>8.9%</b>	<b>9.5%</b>	<b>12.3%</b>	<b>11.2%</b>	<b>9.7%</b>	<b>9.1%</b>	<b>7.6%</b>

Source: MSCI Global Annual Property Index (Unfrozen: Weighting: Market Size)

## Section 2 → Appendix 1: National and Global Results

# Weighted Average Difference (%)

	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025
Australia	1.0%	-0.2%	1.0%	2.8%	1.9%	1.2%	7.5%	14.1%	4.6%	-5.8%	1.3%	3.0%	-0.2%	0.9%	6.9%	11.5%	5.4%	8.1%	4.4%	3.1%	6.6%	2.5%	-4.0%	-2.7%	-1.5%	0.1%
Canada	-0.8%	3.2%	3.8%	2.7%	7.3%	7.5%	21.0%	14.5%	4.6%	-4.4%	0.6%	5.1%	18.7%	5.6%	-0.1%	2.3%	7.1%	6.5%	5.0%	4.7%	1.8%	-2.0%	-0.1%	-4.0%	-5.8%	-5.5%
France	1.8%	-0.3%	0.8%	2.3%	5.9%	8.4%	12.4%	10.2%	2.4%	-0.6%	3.9%	7.8%	5.6%	2.8%	3.6%	7.3%	4.5%	6.6%	9.0%	11.1%	9.5%	11.2%	9.6%	-3.1%	-0.9%	2.1%
Germany	-1.1%	0.7%	-2.9%	-5.0%	-1.6%	0.4%	-3.9%	9.3%	4.9%	-2.5%	1.9%	5.5%	1.7%	1.5%	3.7%	3.8%	5.7%	11.3%	6.2%	18.2%	9.9%	12.0%	7.4%	-2.5%	-0.4%	-2.7%
Italy					17.9%	-1.1%	8.5%	15.4%	13.5%	-1.9%	0.2%	3.3%	3.0%	-3.0%	0.3%	2.9%	0.8%	7.5%	-2.6%	1.7%	2.7%	2.6%	1.8%	5.3%	1.9%	4.4%
Japan				5.6%	10.2%	18.7%	5.5%	12.9%	5.1%	-8.8%	-4.8%	-2.6%	-4.3%	-1.8%	7.4%	8.2%	4.3%	9.0%	9.2%	3.3%	0.3%	2.1%	4.4%	0.2%	5.0%	3.6%
Netherlands	6.7%	2.4%	6.6%	2.6%	4.5%	4.3%	4.3%	8.4%	2.3%	-5.0%	1.9%	1.2%	-1.8%	-6.6%	-2.5%	-1.7%	3.5%	3.7%	4.2%	4.5%	4.1%	5.7%	-0.7%	-1.9%	-0.6%	0.7%
South Africa	0.2%	-3.2%	0.3%	-0.4%	-2.8%	2.6%	-2.7%	6.4%	-4.2%	2.1%	-0.9%	2.1%	1.7%	5.4%	-3.7%	1.0%	0.8%	1.7%	-0.2%	0.2%	-2.6%	-1.3%	-2.2%	-2.2%	-1.6%	-1.0%
Sweden	10.3%	3.0%	4.9%	3.8%	6.1%	6.8%	25.4%	7.3%	-6.3%	10.7%	2.2%	9.7%	3.2%	4.3%	0.5%	8.0%	2.9%	1.5%	0.5%	2.6%	-1.2%	4.5%	10.7%	-4.2%	3.4%	0.7%
Switzerland				4.2%	4.3%	2.0%	8.5%	7.4%	5.9%	6.8%	9.1%	5.8%	8.8%	6.5%	5.7%	12.6%	20.8%	14.3%	8.6%	10.4%	9.7%	9.4%	10.1%	9.7%	7.3%	6.4%
UK	3.2%	2.7%	5.0%	5.4%	6.2%	6.9%	7.3%	2.4%	-5.6%	0.0%	4.8%	5.0%	1.7%	4.9%	8.7%	5.8%	1.9%	5.2%	4.5%	0.7%	4.9%	5.2%	0.0%	-2.4%	-0.8%	0.8%
USA	-1.2%	1.5%	1.9%	4.4%	6.4%	7.1%	8.8%	5.4%	-9.5%	-10.1%	5.1%	4.8%	3.9%	1.6%	5.1%	5.7%	1.0%	3.0%	2.6%	-0.5%	2.5%	7.5%	1.3%	-9.0%	-5.3%	-1.9%
Other	2.7%	3.1%	7.2%	5.3%	11.3%	5.9%	8.2%	8.3%	6.2%	-3.6%	2.3%	5.1%	0.3%	-1.0%	-1.3%	5.1%	8.6%	2.9%	9.9%	2.7%	9.3%	10.3%	13.6%	0.1%	-1.4%	4.6%
<b>Global</b>	<b>0.3%</b>	<b>1.9%</b>	<b>3.8%</b>	<b>3.9%</b>	<b>5.0%</b>	<b>6.4%</b>	<b>6.9%</b>	<b>6.7%</b>	<b>-2.2%</b>	<b>-2.4%</b>	<b>1.3%</b>	<b>4.6%</b>	<b>2.9%</b>	<b>2.1%</b>	<b>4.3%</b>	<b>5.7%</b>	<b>3.1%</b>	<b>4.8%</b>	<b>4.4%</b>	<b>3.0%</b>	<b>4.6%</b>	<b>6.4%</b>	<b>3.1%</b>	<b>-3.8%</b>	<b>-2.0%</b>	<b>0.1%</b>

Source: MSCI Global Annual Property Index (Unfrozen; Weighting: Market Size)

## Section 2 → Appendix 1: National and Global Results

# Average Absolute Difference (%)

	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025
Australia	6.0%	4.2%	6.0%	5.8%	7.1%	6.2%	10.3%	11.9%	8.4%	7.0%	5.9%	7.4%	4.7%	7.3%	6.9%	13.8%	11.5%	11.2%	8.3%	8.6%	12.4%	13.8%	5.3%	4.9%	6.6%	5.8%
Canada	12.9%	11.6%	9.3%	10.4%	14.6%	12.2%	20.4%	16.4%	13.0%	12.9%	12.4%	12.3%	13.7%	11.5%	7.9%	9.3%	11.2%	11.5%	12.9%	11.4%	11.7%	13.0%	9.8%	9.3%	11.0%	8.4%
France	8.5%	9.7%	8.5%	8.2%	11.5%	13.5%	13.5%	15.8%	12.1%	9.0%	12.8%	12.1%	11.9%	10.6%	11.6%	15.4%	13.5%	12.9%	12.2%	12.2%	14.4%	13.6%	13.8%	10.8%	8.7%	9.1%
Germany	12.8%	11.8%	11.0%	10.1%	10.1%	10.8%	14.1%	14.1%	10.6%	7.3%	11.2%	12.5%	11.4%	9.9%	12.2%	10.0%	12.3%	17.0%	13.4%	17.3%	15.7%	17.1%	13.2%	16.3%	10.2%	9.0%
Italy					25.6%	3.2%	9.1%	14.3%	12.0%	10.9%	9.2%	8.7%	8.4%	7.3%	13.4%	7.3%	15.5%	11.5%	15.0%	15.4%	9.7%	14.8%	14.1%	10.2%	7.2%	12.1%
Japan				6.9%	17.1%	18.9%	8.7%	13.0%	7.5%	14.5%	7.2%	7.9%	11.8%	13.0%	13.3%	13.2%	15.7%	11.8%	15.7%	14.1%	7.5%	12.2%	16.1%	14.8%	11.6%	9.5%
Netherlands	11.3%	8.7%	9.6%	9.8%	9.6%	11.4%	14.4%	10.6%	6.5%	7.2%	7.1%	6.7%	7.7%	9.3%	7.4%	8.9%	9.5%	11.2%	10.2%	9.0%	10.5%	12.7%	9.4%	8.8%	6.1%	7.4%
South Africa	11.1%	11.0%	12.9%	11.6%	10.7%	15.0%	12.1%	14.6%	10.4%	7.3%	10.4%	13.3%	12.2%	8.4%	12.6%	7.6%	7.8%	7.9%	7.2%	11.9%	13.3%	10.5%	4.2%	7.2%	8.0%	8.1%
Sweden	17.4%	11.1%	11.3%	9.2%	11.7%	11.4%	23.4%	11.4%	12.9%	17.5%	9.8%	11.2%	12.4%	10.1%	10.0%	12.8%	14.3%	10.7%	9.9%	9.8%	7.9%	12.5%	9.6%	6.6%	8.7%	8.3%
Switzerland				13.9%	11.9%	9.9%	12.5%	10.0%	11.6%	8.0%	11.5%	10.3%	15.7%	7.5%	10.7%	12.5%	22.3%	17.3%	11.3%	13.0%	13.8%	9.9%	11.1%	7.4%	13.0%	7.9%
UK	9.4%	8.5%	11.4%	12.6%	11.7%	10.3%	10.7%	10.8%	9.9%	13.9%	11.2%	8.7%	10.9%	8.6%	13.8%	13.6%	9.3%	10.8%	9.6%	8.1%	10.4%	13.0%	13.3%	9.8%	8.1%	7.4%
USA	6.7%	6.8%	11.5%	7.1%	12.2%	12.4%	11.1%	9.4%	9.0%	13.6%	11.3%	9.5%	10.1%	11.0%	9.9%	10.1%	7.8%	9.0%	9.5%	8.4%	10.1%	11.7%	10.3%	11.3%	10.8%	8.9%
Other	11.4%	11.6%	10.8%	14.0%	14.1%	13.1%	14.2%	13.6%	10.2%	10.3%	11.6%	9.6%	10.2%	11.2%	12.6%	13.5%	14.5%	10.2%	9.2%	10.5%	11.1%	14.0%	13.5%	11.3%	10.3%	10.7%
<b>Global</b>	<b>11.3%</b>	<b>9.2%</b>	<b>10.9%</b>	<b>11.4%</b>	<b>11.6%</b>	<b>11.3%</b>	<b>12.4%</b>	<b>12.2%</b>	<b>10.2%</b>	<b>11.9%</b>	<b>10.4%</b>	<b>9.9%</b>	<b>10.9%</b>	<b>9.4%</b>	<b>11.6%</b>	<b>12.3%</b>	<b>10.6%</b>	<b>11.0%</b>	<b>10.4%</b>	<b>10.3%</b>	<b>10.9%</b>	<b>12.8%</b>	<b>12.1%</b>	<b>10.2%</b>	<b>9.2%</b>	<b>8.6%</b>

Source: MSCI Global Annual Property Index (Unfrozen; Weighting: Market Size)

## Section 2 → Appendix 1: National and Global Results

# Average Difference (%)

	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025
Australia	3.0%	0.8%	2.2%	4.3%	4.7%	2.9%	8.5%	9.9%	1.4%	-4.0%	2.1%	2.8%	-1.1%	2.0%	3.1%	12.3%	7.8%	9.5%	3.5%	6.2%	8.9%	10.4%	-1.9%	-1.9%	-0.8%	0.8%
Canada	5.9%	-0.9%	5.7%	5.6%	7.4%	10.0%	16.8%	14.2%	3.8%	-7.0%	1.9%	7.2%	10.6%	9.6%	3.1%	3.5%	5.4%	7.6%	6.8%	3.3%	3.2%	4.0%	4.4%	-0.8%	-4.3%	-0.5%
France	1.4%	-2.1%	1.5%	1.2%	5.6%	8.6%	6.4%	8.0%	5.6%	0.9%	5.3%	7.4%	3.9%	3.6%	3.7%	5.0%	0.0%	6.1%	6.1%	8.9%	9.0%	7.4%	10.9%	0.5%	1.4%	3.5%
Germany	-3.3%	-0.5%	-1.8%	-5.2%	-3.8%	-0.5%	0.8%	7.5%	2.3%	0.8%	3.9%	5.0%	0.3%	-0.1%	2.7%	2.5%	5.7%	9.0%	10.2%	13.9%	11.0%	13.8%	10.7%	-3.1%	0.7%	-1.9%
Italy					25.6%	-0.6%	6.5%	9.7%	9.4%	1.7%	4.7%	4.5%	2.2%	2.2%	1.2%	2.6%	-9.2%	-0.1%	-7.0%	-9.1%	-0.8%	-3.9%	-6.4%	-3.2%	0.4%	-5.9%
Japan				6.9%	8.6%	15.2%	6.2%	10.3%	4.8%	-13.6%	-5.0%	-3.8%	-3.2%	3.4%	7.9%	9.7%	8.8%	9.2%	12.1%	6.7%	0.7%	4.0%	2.8%	4.1%	3.8%	4.8%
Netherlands	7.7%	3.6%	6.8%	3.6%	6.0%	6.8%	9.4%	6.7%	2.3%	-1.7%	1.6%	1.8%	-1.2%	-4.7%	-2.0%	-2.1%	0.1%	0.5%	3.9%	-0.1%	2.0%	5.1%	0.6%	-1.4%	-1.2%	2.3%
South Africa	-1.6%	-3.7%	-3.1%	-1.3%	-0.4%	4.6%	0.4%	2.9%	1.0%	2.1%	4.7%	2.7%	0.7%	4.4%	1.4%	0.3%	2.7%	1.1%	1.8%	-3.8%	-8.3%	-4.8%	0.1%	-1.2%	-0.1%	-0.9%
Sweden	-6.0%	1.6%	3.2%	4.6%	7.4%	7.5%	22.1%	1.8%	-4.0%	7.8%	1.8%	3.6%	-1.1%	3.3%	-0.7%	10.2%	2.5%	0.2%	-1.2%	1.2%	0.2%	2.9%	4.3%	-3.8%	2.2%	-0.5%
Switzerland				6.8%	5.0%	3.2%	9.0%	7.6%	7.1%	5.9%	7.8%	8.5%	14.5%	5.7%	8.0%	7.9%	20.4%	16.5%	8.5%	10.5%	11.2%	7.2%	10.4%	6.7%	10.1%	6.6%
UK	4.0%	4.2%	8.4%	10.0%	9.0%	7.6%	7.1%	4.3%	-4.1%	5.2%	5.1%	0.7%	-1.4%	3.0%	7.2%	6.6%	4.4%	6.9%	4.5%	0.9%	3.4%	7.3%	1.8%	-0.5%	0.2%	0.5%
USA	0.4%	-2.2%	4.1%	3.4%	4.6%	6.5%	6.3%	3.4%	-5.9%	-7.9%	3.0%	1.7%	2.9%	3.6%	5.1%	4.6%	0.0%	1.8%	4.6%	0.4%	5.8%	7.3%	1.2%	-6.9%	-2.9%	-1.0%
Other	7.0%	6.9%	4.5%	5.3%	6.9%	5.9%	8.6%	7.3%	4.2%	0.6%	3.5%	1.0%	2.4%	0.3%	1.0%	3.6%	1.1%	3.0%	6.1%	4.2%	7.1%	7.9%	5.8%	4.0%	1.5%	5.8%
Global	1.5%	2.4%	6.2%	6.5%	6.1%	6.7%	6.3%	5.9%	0.0%	2.0%	2.7%	2.8%	0.8%	2.8%	4.0%	5.3%	2.6%	4.5%	4.5%	3.0%	3.9%	5.9%	2.9%	-0.8%	0.2%	1.3%

Source: MSCI Global Annual Property Index (Unfrozen; Weighting: Market Size)

## Section 2 → Appendix 1: National and Global Results

# Average Number of Months Between Valuation\* and Sale

	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025
Australia	8.9	9.9	9.4	9.0	9.5	9.4	6.8	8.6	6.6	6.5	6.8	7.8	7.3	7.4	7.0	6.6	7.2	6.7	5.9	5.7	6.1	6.7	5.5	6.0	6.7	5.8
Canada	5.2	5.1	5.2	5.0	4.8	4.9	5.0	5.0	4.9	5.4	5.2	5.1	5.1	5.5	5.3	5.0	5.5	5.2	5.1	5.1	5.3	5.2	4.9	5.2	5.2	5.1
France	9.1	9.8	9.7	8.6	9.0	9.1	10.5	10.6	9.2	9.3	8.7	8.6	8.5	8.6	8.9	8.6	8.9	8.6	8.5	8.7	9.6	9.7	8.5	8.7	8.4	8.7
Germany	8.1	8.5	10.3	10.7	9.6	10.5	10.0	9.9	12.2	9.3	8.6	8.9	8.4	9.4	8.4	8.1	8.2	8.8	10.5	7.9	9.5	6.6	8.9	9.6	8.6	9.6
Italy					9.4	9.3	9.6	8.3	6.8	6.1	6.9	6.5	7.2	7.3	6.8	6.2	6.6	6.6	7.8	8.0	7.3	7.0	7.7	7.4	7.4	8.6
Japan				10.8	7.1	8.2	8.3	7.4	6.1	7.1	7.8	6.0	5.8	7.2	7.7	6.9	6.6	5.7	6.6	7.0	6.8	6.5	6.6	6.3	7.2	6.9
Netherlands	10.5	9.6	8.7	9.0	10.2	9.5	9.8	9.8	8.9	10.0	8.4	7.1	6.1	5.9	6.5	7.4	7.1	7.8	6.6	6.0	5.9	5.9	6.5	5.5	6.3	5.4
South Africa	8.0	8.3	8.2	8.2	8.5	8.2	8.8	10.9	10.0	7.2	7.2	9.1	7.6	7.8	8.1	7.6	6.8	6.8	7.3	6.7	7.3	6.8	6.7	6.8	5.8	6.6
Sweden	8.6	8.2	10.2	9.2	9.2	7.3	10.5	8.5	9.1	9.0	8.5	7.8	9.1	8.0	10.2	7.6	11.5	8.3	10.7	9.7	8.7	9.5	9.2	8.0	8.7	6.6
Switzerland				7.2	9.6	8.8	10.0	11.1	10.5	9.7	7.9	10.3	10.7	10.9	10.0	9.7	9.1	10.7	10.5	10.4	11.1	11.1	10.7	10.1	9.0	8.3
UK	6.8	6.8	7.3	6.8	7.0	6.9	7.1	6.7	5.0	5.5	6.0	5.6	5.7	5.3	5.5	5.7	5.0	4.9	5.2	5.2	5.1	5.6	5.0	4.9	4.9	5.3
USA	5.3	5.6	5.4	5.3	5.1	5.2	5.3	5.4	5.1	5.2	5.3	5.3	5.2	5.4	4.8	5.2	5.2	5.1	5.1	5.2	5.0	5.1	5.0	5.2	5.1	5.1
Other	6.1	7.1	8.8	9.0	8.9	9.0	8.4	9.5	9.3	9.3	8.2	8.8	9.1	8.3	8.9	9.3	9.6	8.3	8.2	8.8	9.3	8.2	8.0	7.2	7.5	7.7
<b>Global</b>	<b>7.6</b>	<b>7.7</b>	<b>8.0</b>	<b>7.6</b>	<b>7.9</b>	<b>7.8</b>	<b>8.3</b>	<b>8.3</b>	<b>7.4</b>	<b>6.9</b>	<b>7.1</b>	<b>6.9</b>	<b>6.6</b>	<b>6.3</b>	<b>7.0</b>	<b>6.8</b>	<b>6.7</b>	<b>6.5</b>	<b>6.9</b>	<b>6.7</b>	<b>6.8</b>	<b>6.5</b>	<b>6.3</b>	<b>6.1</b>	<b>6.2</b>	<b>6.5</b>

Source: MSCI Global Annual Property Index (Unfrozen; Weighting: Market Size)

## Section 2 → Appendix 1: National and Global Results

# Number of Sales Recorded

	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025
Australia	62	156	84	82	48	22	15	43	80	104	88	67	79	82	67	54	72	56	52	63	36	57	33	40	74	74
Canada	31	101	158	138	108	52	54	65	67	130	202	145	118	145	130	65	102	124	177	114	71	116	74	98	94	97
France	105	254	357	445	327	381	399	492	492	460	469	348	302	281	266	185	294	212	283	371	142	139	144	107	140	165
Germany	72	134	298	236	287	241	526	460	266	111	103	195	131	141	119	136	139	98	77	197	64	77	60	37	41	79
Italy					10	11	41	24	44	107	95	127	62	95	73	54	41	74	58	60	67	97	89	56	122	100
Japan				5	11	33	100	76	82	41	515	154	92	104	80	88	56	114	47	78	97	99	67	81	116	177
Netherlands	172	336	408	315	175	400	251	345	288	160	210	148	151	202	151	264	287	299	279	357	284	96	102	46	121	102
South Africa	141	131	94	216	369	226	187	67	50	56	60	183	123	60	54	108	87	96	79	142	101	151	84	70	58	66
Sweden	539	545	319	348	116	110	46	115	208	67	89	74	142	136	265	331	196	209	223	168	139	74	56	47	58	19
Switzerland				47	62	139	74	92	112	155	116	160	87	115	75	45	24	37	86	119	105	88	50	43	106	131
UK	1351	1656	2820	2641	1730	2001	1451	1483	1341	1645	803	1064	1482	2055	891	1204	1094	698	705	876	565	852	743	584	629	486
USA	66	64	90	85	100	148	226	203	136	215	250	247	319	396	403	284	542	391	389	423	282	397	187	212	397	347
Other	20	64	155	206	230	216	298	217	259	221	134	130	182	201	305	323	232	180	237	207	174	168	170	130	149	175
<b>Global</b>	<b>2,559</b>	<b>3,441</b>	<b>4,783</b>	<b>4,764</b>	<b>3,573</b>	<b>3,980</b>	<b>3,668</b>	<b>3,682</b>	<b>3,425</b>	<b>3,472</b>	<b>3,134</b>	<b>3,042</b>	<b>3,270</b>	<b>4,013</b>	<b>2,879</b>	<b>3,141</b>	<b>3,166</b>	<b>2,588</b>	<b>2,692</b>	<b>3,175</b>	<b>2,127</b>	<b>2,411</b>	<b>1,859</b>	<b>1,551</b>	<b>2,105</b>	<b>2,018</b>

Source: MSCI Global Annual Property Index (Unfrozen: Weighting: Market Size)

## Section 2 → Appendix 1: National and Global Results

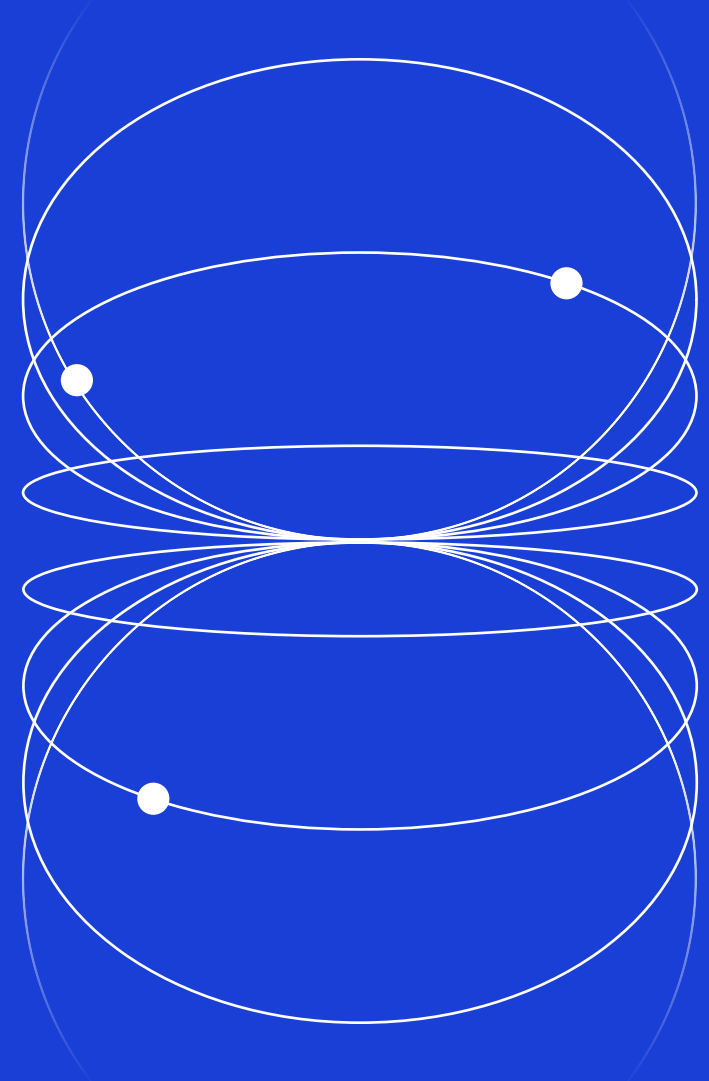
# Total Sale Price (USD Billion)

	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025
Australia	1.3	3.0	1.4	2.9	1.9	0.7	0.4	1.3	2.5	2.6	2.7	2.6	4.5	5.5	4.9	3.0	4.7	3.9	3.1	6.0	2.5	4.8	3.3	2.5	3.7	4.6
Canada	0.1	0.7	1.2	2.1	0.9	0.8	0.9	1.3	1.8	1.6	5.2	3.6	3.3	6.0	3.5	1.2	2.2	3.9	2.8	3.6	1.9	3.6	3.4	3.1	3.0	3.7
France	0.6	1.5	2.4	3.9	3.8	4.0	4.7	7.3	6.8	7.8	5.2	6.0	6.5	5.0	3.9	3.9	4.8	4.2	6.1	8.3	4.4	4.4	4.2	3.6	3.4	2.6
Germany	0.4	0.9	2.0	1.6	4.8	2.4	6.3	10.6	4.6	2.0	1.6	3.5	2.9	3.7	3.8	4.9	3.0	2.2	3.3	3.4	2.2	3.8	2.7	0.8	1.0	1.8
Italy					0.3	0.2	0.9	1.2	0.9	1.2	1.2	1.1	0.3	2.5	1.7	2.1	0.8	1.2	1.1	0.8	1.8	1.2	1.6	0.7	1.9	2.2
Japan				0.2	0.2	0.4	2.4	2.6	2.2	1.3	12.2	3.9	4.7	4.3	1.7	2.4	1.8	3.0	1.9	2.9	2.0	3.6	2.1	2.7	4.9	4.4
Netherlands	0.8	0.9	1.6	1.6	1.3	2.9	1.5	5.0	3.2	1.1	1.3	1.1	1.1	1.5	1.2	1.6	1.8	2.4	2.2	2.5	2.6	1.2	1.3	0.5	1.7	1.6
South Africa	0.2	0.2	0.1	0.4	0.8	0.6	0.6	0.1	0.2	0.5	0.4	0.5	0.5	0.4	0.4	1.0	0.5	0.6	0.5	0.4	0.2	0.6	0.4	0.2	0.2	0.3
Sweden	2.5	2.0	1.4	3.6	1.3	1.4	1.2	1.1	7.3	0.7	1.5	1.2	2.2	1.5	2.8	2.5	1.5	2.6	3.5	3.9	1.6	1.3	1.0	0.7	1.2	1.4
Switzerland				0.1	0.3	0.5	0.5	0.7	0.9	1.2	0.9	2.0	1.2	1.5	0.9	0.9	0.4	0.4	1.2	2.0	1.5	2.4	1.1	1.1	2.3	2.2
UK	10.2	10.8	16.5	18.2	20.1	29.9	23.9	22.1	26.5	14.8	8.8	9.8	10.8	15.6	12.6	16.9	15.8	13.0	12.2	14.3	9.9	16.7	12.3	11.0	12.1	9.2
USA	3.6	1.6	1.3	2.3	3.1	5.2	9.1	9.7	4.8	4.9	8.4	8.9	12.9	13.6	14.3	14.9	20.5	21.1	26.5	26.8	17.6	29.2	13.7	11.9	22.6	21.9
Other	0.1	0.3	1.1	1.7	1.6	1.6	3.9	3.7	3.8	4.1	1.7	3.1	3.6	5.3	5.9	7.2	5.2	4.7	5.5	5.4	5.0	5.4	5.9	3.8	4.5	5.4
<b>Global</b>	<b>19.8</b>	<b>22.0</b>	<b>29.0</b>	<b>38.7</b>	<b>40.3</b>	<b>50.7</b>	<b>56.4</b>	<b>66.6</b>	<b>65.6</b>	<b>43.8</b>	<b>51.0</b>	<b>47.4</b>	<b>54.6</b>	<b>66.4</b>	<b>57.8</b>	<b>62.3</b>	<b>63.0</b>	<b>63.1</b>	<b>69.9</b>	<b>80.3</b>	<b>53.2</b>	<b>78.1</b>	<b>52.9</b>	<b>42.6</b>	<b>62.5</b>	<b>61.2</b>

Source: MSCI Global Annual Property Index (Unfrozen: Weighting: Market Size)

# Appendix 2

Methodology Documentation



## Methodology: Sample Selection

The analysis is based on sales-price and valuation records from MSCI's database of private real estate

**Each sale is carefully considered for inclusion in the analysis. Sales observations are excluded if they fall into any of the following categories:**

- Sales are excluded if the sale or valuation is determined to be unrepresentative
- Sales of assets under development
- Sales for which the sales price is below USD 15,000 or above USD 1.2 billion
- Properties that experience an exceptional (e.g., part transactions) event between the last valuation and the sales date
- Properties that record capital expenditures greater than 45% of the capital value between the last valuation and the sales date
- Properties that are bought and sold within the same year
- Properties that are sold as part of a portfolio sale
- Properties with Average Difference and Average Absolute Difference equal to, greater than or less than +/-50%

# Methodology: Selecting Most Recent Valuation

The analysis is based on sales-price and valuation records from MSCI’s database of private real estate

**The most recent valuation is selected from MSCI’s private-real-estate records provided it does not occur within three months of the sale date**

- Valuations made in the three months immediately prior to the sales date are excluded because the appraiser could have been aware of the impending sale and taken this information into account when assessing the property’s market value
- This three-month period has been called the “Influence Window”
- A comparison of the most recent valuation, if within the influence window, and the sales price could be misleading
- Although our analysis adopts a three-month influence window the length of the influence window can vary by market segment and by country

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2008		Purchase	Val 1						Val 2			
2009			Val 3						Val 4			
2010			Val 5						Val 6		Sale	

Last Uninfluenced Valuation
Influence Window

# Methodology: Calculating Market Adjusted Valuation (MAV)

The analysis is based on sales-price and valuation records from MSCI's database of private real estate

The most recent uninfluenced valuation is adjusted for market-value movements to account for any changes in market-capital values following the valuation

- The valuations are adjusted for market movements, measured by MSCI capital-growth rates at the segment level for each individual country
- The adjustment is based on the broad property type and region/location of each individual asset
- The segments vary from country to country and are based on the standard benchmarking segmentation used in each country
- The market-movement/capital-growth adjustment is applied up to the third month before sale, rather than right up to the sale month. This convention assumes that the sales price would have been agreed around three months before completion
- Any capital expenditures between the most recent uninfluenced valuation month and the sales month are added to the market-adjusted valuation
- Then compare the gross sales price to the market-adjusted valuation<sup>5</sup> to calculate the price-valuation difference.



5 - Certain appraisers included a significant uncertainty disclosure to property valuations in some sectors and countries due to the COVID-19 pandemic. This data was used in the MSCI Private Real Estate Indexes published during 2020

# Methodology: Key Measures

## Average Absolute Difference (AAD):

- Absolute difference between the market adjusted valuation and the sale price
- Ignores if there was a positive or negative bias in the valuations
- An indicator of the overall proximity of market adjusted valuations to transaction prices

## Average Difference (AD):

- Difference between the market adjusted valuation and the sale price
- indicates net effect allowing positive and negative bias to cancel out each other
- An indicator of premium or discount achieved in a sale transaction compared to valuation

## Average number of months between valuation and sale:

- This measure records the average number of months between the valuation and the sale
- In countries where valuations occur less frequently, we expect this indicator to be higher along with the anticipated margin of error between the valuation and the sales price

$$\text{Difference} = \frac{\text{Gross Sale Price} - \text{Market Adjusted Valuation}}{\text{Market Adjusted Valuation}}$$

$$\text{Weighted Difference} = \frac{\text{Gross Sale Price} - \text{Market Adjusted Valuation}}{\text{Market Adjusted Valuation}} * \frac{\text{Market Adjusted Valuation of Property}}{\text{Sum of Market Adjusted Valuation}}$$

	Gross Sale Price (m)	Market Adjusted Valuation (m)	Difference	Market Adjusted Valuation Weight	Weighted Difference
Property 1	1,000,000	500,000	100%	25%	25%
Property 2	1,000,000	1,500,000	-33%	75%	-25%
			<b>Average</b>		<b>Weighted Average</b>
Absolute Difference			67%		25%
Difference			33%		0%

# Methodology Notes

## Methodology Enhancement in 2024

- Average Difference (AD) and Average Absolute Difference (AAD) calculation formula denominator change from Gross Sale Price to Market Adjusted Valuation
- Removing an extra month of capital growth for the starting month of the market value adjustment calculation
- Change from a city-based to property type-based segmentation for the USA
- Weighted Average Difference (WAD) and Weighted Average Absolute Difference (WAAD) calculation weighting factor change from Gross Sale Price to Market Adjusted Valuation

## Methodology Transition in 2019

- In 2019, MSCI implemented changes and improvements to the “Private Real Estate: Valuation and Sales Price Comparison 2019 to align with the [MSCI Global Methodology Standards for Real Estate Investments](#) (GMS).
- Consequently, the availability of additional transactions across multiple periods and countries impacted the previously published historical results. With these changes, the historical results of the analysis were aligned with the methodology used to produce the MSCI Global Annual Property Index.
- Key changes to the methodology to align with the GMS<sup>6</sup> included:
  - Discontinuation of performance flagging
  - Introduction of a new global-interpolation method
  - Implementation of an amended currency-conversion methodology<sup>7</sup>
- In addition, the availability of additional granular segmentations following the current methodology improved the calculation of market-adjusted valuations for transactions in segments in the U.S., Japan, Sweden, Italy, Spain and Ireland. The former methodology used the capital growth of the “Other” category for the calculation of market-adjusted valuations.

# Contact

The process for submitting a formal index complaint can be found on the index page of MSCI's website at: <https://www.msci.com/index-regulation>.

## Americas

**United States**  
+1 888 588 4567 (toll free)

**Canada**  
+1 416 628 1007

**Brazil**  
+55 11 4040 7830

**Mexico**  
+52 81 1253 4020

## Asia Pacific

**China**  
+86 21 61326611

**Hong Kong**  
+ 852 2844 9333

**India**  
+ 91 22 6784 9160

**Malaysia**  
1800818185 (toll free)

**South Korea**  
+82 70 4769 4231

**Singapore**  
+65 67011177

**Australia**  
+612 9033 9333

**Taiwan**  
008 0112 7513 (toll free)

**Thailand**  
0018 0015 6207 7181 (toll free)

**Japan**  
+81 3 4579 0333

## Europe, Middle East & Africa

**South Africa**  
+ 27 21 673 0103

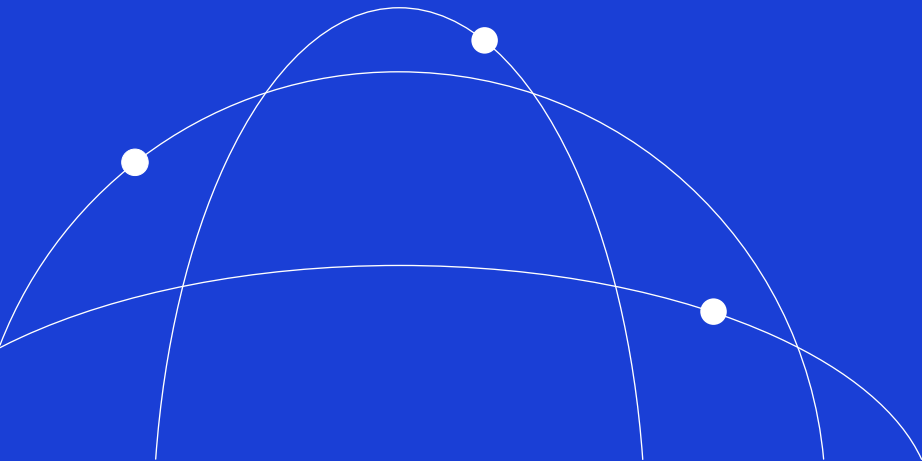
**Germany**  
+ 49 69 133 859 00

**Switzerland**  
+ 41 22 817 9777

**United Kingdom**  
+ 44 20 7618 2222

**Italy**  
+ 39 02 5849 0415

**France**  
+ 33 17 6769 810



# About Us

## About MSCI Inc.

MSCI (NYSE: MSCI Inc.) strengthens global markets by connecting participants across the financial ecosystem with a common language. Our research-based data, analytics and indexes, supported by advanced technology, set standards for global investors and help our clients understand risks and opportunities so they can make better decisions and unlock innovation. We serve asset managers and owners, private-market sponsors and investors, hedge funds, wealth managers, banks, insurers and corporates.

To learn more, please visit [www.msci.com](http://www.msci.com)

The process for submitting a formal index complaint can be found on the index regulation page of MSCI's website at: <https://www.msci.com/index-regulation>.

# Notice and Disclaimer

The data, data feeds, databases, reports, text, graphs, charts, images, videos, recordings, models, metrics, analytics, indexes, ratings, scores, cases, estimates, assessments, software, websites, products, services and other information and materials contained herein or delivered in connection with this notice (collectively, the "Information") are copyrighted, trade secrets (when not publicly available), trademarks and proprietary property of MSCI Inc. or its subsidiaries (collectively, "MSCI"), MSCI's licensors, direct or indirect suppliers and authorized sources, and/or any third party contributing to the Information (collectively, with MSCI, the "Information Providers"). All rights in the Information are reserved by MSCI and its Information Providers and user(s) shall not, nor assist others to, challenge or assert any rights in the Information.

Unless you contact MSCI and receive its prior written permission, you must NOT use the Information, directly or indirectly, in whole or in part (i) for commercial purposes, (ii) in a manner that competes with MSCI or impacts its ability to commercialize the Information or its services, (iii) to provide a service to a third party, (iv) to permit a third party to directly or indirectly access, use or resell the Information, (v) to redistribute or resell the Information in any form, (vi) to include the Information in any materials for public dissemination such as fund factsheets, market presentations, prospectuses, and investor information documents (e.g. KIIDs or KIDs), (vii) to create or as a component of any financial products, whether listed or traded over the counter or on a private placement basis or otherwise, (viii) to create any indexes, ratings or other data products, including in derivative works combined with other indexes or data or as a policy, product or performance benchmarks for active, passive or other financial products, (ix) to populate a database, or (x) to train, use as an input to, or otherwise in connection with any artificial intelligence, machine learning, large language models or similar technologies except as licensed and expressly authorized under MSCI's AI Contracting Supplement at <https://www.msci.com/legal/supplemental-terms-for-client-use-of-artificial-intelligence>.

The intellectual property rights of MSCI and its Information Providers may not be misappropriated or used in a competitive manner through the use of third-party data or financial products linked to the Information, including by using an MSCI index-linked future or option in a competing third-party index to provide an exposure to the underlying MSCI index or by using an MSCI index-linked ETF to create a financial product that provides an exposure to the underlying MSCI index without obtaining a license from MSCI.

The user or recipient of the Information assumes the entire risk of any use it may make, permit or cause to be made of the Information. NONE OF THE INFORMATION PROVIDERS MAKES ANY EXPRESS OR IMPLIED WARRANTIES OR REPRESENTATIONS WITH RESPECT TO THE INFORMATION (OR THE RESULTS TO BE OBTAINED BY THE USE THEREOF), AND TO THE MAXIMUM EXTENT PERMITTED BY APPLICABLE LAW, EACH INFORMATION PROVIDER EXPRESSLY DISCLAIMS ALL IMPLIED WARRANTIES (INCLUDING ANY IMPLIED WARRANTIES OF ORIGINALITY, ACCURACY, TIMELINESS, SUITABILITY, NON-INFRINGEMENT, COMPLETENESS, MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE) WITH RESPECT TO ANY OF THE INFORMATION. Without limiting any of the foregoing and to the maximum extent permitted by applicable law, in no event shall MSCI or any other Information Provider have any liability arising out of or relating to any of the Information, including for any direct, indirect, special, punitive, consequential (including lost profits) or any other damages, even if notified of the possibility of such damages. The foregoing shall not exclude or limit any liability that may not be applicable law be excluded or limited.

The Information, including index construction, ratings, historical data, or analysis, is not a prediction or guarantee of future performance, and must not be relied upon as such. Past performance is not indicative of future results. The Information may contain back tested data. Back-tested performance based on back-tested data is not actual performance but is hypothetical. There are frequently material differences between back tested performance results and actual results subsequently achieved by any investment strategy. The Information may include "Signals," defined as quantitative attributes or the product of methods or formulas that describe or are derived from calculations using historical data. Signals are inherently backward-looking because of their use of historical data, and they are inherently inaccurate, not intended to predict the future and must not be relied upon as such. The relevance, correlations and accuracy of Signals frequently change materially over time.

The Information may include data relating to indicative prices, evaluated pricing or other information based on estimates or evaluations (collectively, "Evaluations") that are not current and do not reflect real-time traded prices. No evaluation method, including those used by the Information Providers, may consistently generate evaluations or estimates that correspond to actual "traded" prices of any relevant securities or other assets. Evaluations are subject to change at any time without notice and without any duty to update or inform you, may not reflect prices at which actual transactions or collateral calls may occur or have occurred. The market price of securities, financial instruments, and other assets can be determined only if and when executed in the market. There may be no, or may not have been any, secondary trading market for the relevant securities, financial instruments or other assets. Private capital, equity, credit and other assets and their prices may be assessed infrequently, may not be priced on a secondary market, and shall not be relied upon as an explicit or implicit valuation of a particular instrument. Any reliance on fair value estimates and non-market inputs introduces potential biases and subjectivity. Internal Rate of Return metrics are not fully representative without full disclosure of fund cash flows, assumptions, and time horizons.

The Information does not constitute, and must not be relied upon as, investment advice, credit ratings, or proxy advisory or voting services. None of the Information Providers, their products or services, are fiduciaries or make any recommendation, endorsement, or approval of any investment decision or asset allocation. Likewise, the Information does not represent an offer to sell, a solicitation to buy, or an endorsement of any security, financial product, instrument, investment vehicle, or trading strategy, whether or not linked to or in any way based on any MSCI index, rating, subcomponent, or other Information (collectively, "Linked Investments"). The Information should not be relied on and is not a substitute for the skill, judgment and experience of any user when making investment and other business decisions. MSCI is not responsible for any user's compliance with applicable laws and regulations. All Information is impersonal, not tailored to the needs of any person, entity or group of persons, not objectively verifiable in every respect, and may not be based on information that is important to any user.

It is not possible to invest in an index. Exposure to an asset class or trading strategy or other category represented by an index is only available through third party investable instruments (if any) based on that index. MSCI makes no assurance that any Linked Investments will accurately track index performance or provide positive investment returns. Index returns do not represent results of actual trading of investible assets/securities. MSCI maintains and calculates indexes but does not manage assets. The calculation of indexes and index returns may deviate from the stated methodology. Index returns do not reflect payment of any sales charges or fees an investor may pay to purchase securities underlying the index or Linked Investments. The imposition of these fees and charges would cause the performance of a Linked Investment to be different than the MSCI index performance.

Information provided by MSCI Solutions LLC and certain related entities ("MSCI Solutions"), including materials utilized in MSCI sustainability and climate products, have not been submitted to, nor received approval from any regulatory body. MSCI sustainability and climate offerings, research and data are produced by, and ratings are solely the opinion of MSCI Solutions. Other MSCI products and services may utilize information from MSCI Solutions, Barra LLC or other affiliates. More information can be found in the relevant methodologies on [www.msci.com](http://www.msci.com). MSCI Indexes are administered by MSCI Limited (UK) and MSCI Deutschland GmbH. No regulated use of any MSCI private real assets indexes in any jurisdiction is permitted without MSCI's express written authorization. The process for applying for MSCI's express written authorization can be found at: <https://www.msci.com/index-regulation>.

MSCI receives compensation in connection with licensing its indexes and other Information to third parties. MSCI Inc.'s revenue includes fees based on assets in Linked Investments. Information can be found in MSCI Inc.'s company filings on the Investor Relations section of [msci.com](http://msci.com). Issuers mentioned in MSCI Solutions materials or their affiliates may purchase research or other products or services from one or more MSCI affiliates, manage financial products such as mutual funds or ETFs rated by MSCI Solutions or its affiliates or are based on MSCI Indexes. Constituents of MSCI equity indexes are listed companies, which are included in or excluded from the indexes according to the application of the relevant index methodologies. Constituents in MSCI Inc. equity indexes may include MSCI Inc., clients of MSCI or suppliers to MSCI. MSCI Solutions has taken steps to mitigate potential conflicts of interest and safeguard the integrity and independence of its research and ratings.

MIFID2/MIFIR notice: MSCI Solutions does not distribute or act as an intermediary for financial instruments or structured deposits, nor does it deal on its own account, provide execution services for others or manage client accounts. No MSCI product or service supports, promotes or is intended to support or promote any such activity. MSCI Solutions is an independent provider of sustainability and climate data. All use of indicative prices for carbon credits must comply with any rules specified by MSCI. All transactions in carbon credits must be traded "over-the-counter" (i.e. not on a regulated market, trading venue or platform that performs a similar function to a trading venue) and result in physical delivery of the carbon credits.

You may not remove, alter, or obscure any attribution to MSCI or notices or disclaimers that apply to the Information. MSCI, Barra, RiskMetrics, and other MSCI brands and product names are the trademarks, service marks, or registered trademarks of MSCI or its subsidiaries in the United States and other jurisdictions. The Global Industry Classification Standard (GICS) was developed by and is the exclusive property of MSCI and S&P Dow Jones Indices. "Global Industry Classification Standard (GICS)" is a service mark of MSCI and S&P Dow Jones Indices. Terms such as including, includes, for example, such as and similar terms used herein are without limitation.

MSCI and its Information Providers may use automated technologies and artificial intelligence to help generate content and output incorporated in the Information.

Privacy notice: For information about how MSCI collects and uses personal data, please refer to our Privacy Notice at: <https://www.msci.com/privacy-pledge>. For copyright infringement claims contact us at [dmca@msci.com](mailto:dmca@msci.com). This notice is governed by the laws of the State of New York without regard to conflict of laws principles