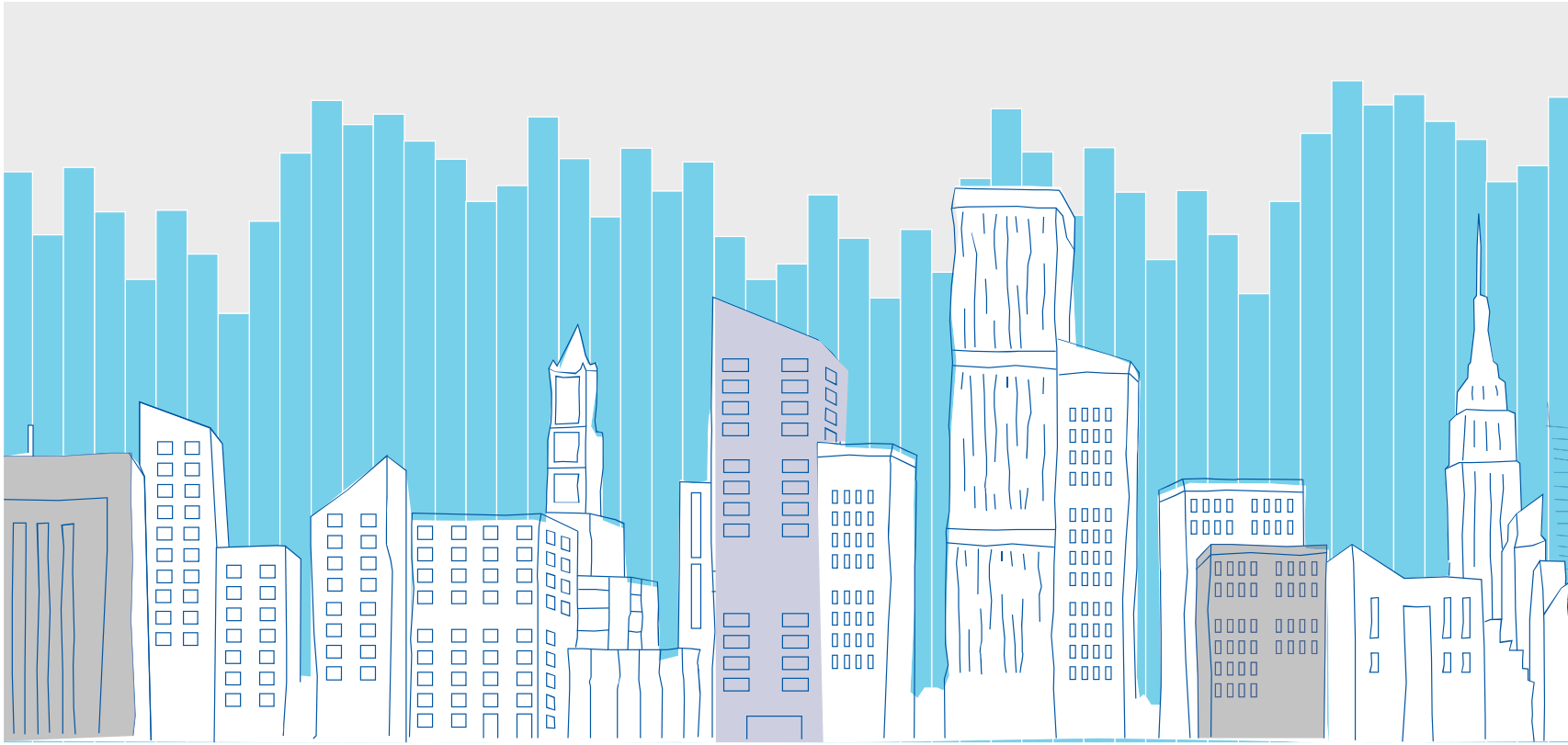

The Index Guide

2019

Market Information

INREV is the European Association for Investors in Non- Listed Real Estate Vehicles. Our aim is to improve the accessibility of non-listed real estate vehicles for institutional investors by promoting greater transparency, accessibility, professionalism and standards of best practice.

As a pan European body, INREV represents an excellent platform for the sharing and dissemination of knowledge on the non-listed real estate industry.

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Executive summary

- The first index, the INREV Annual Index, was launched in 2005
- INREV's suite of indices now includes 12 index publications
- INREV released its last two indices in 2019, the Asset Level Index and the ODCE Index

Unfrozen INREV Annual Index

The INREV Annual Index was launched in 2005 and measures net asset value performance of European non-listed real estate funds on an annual basis. Frozen in 2011, from 2019 INREV Annual Index has been unfrozen including more than 800 historical data points in the series. The history of the Index starts in 2001.

Historical data collection extends the history of the INREV Quarterly Index

The INREV Quarterly Index was launched in 2011 and measures net asset value performance of European non-listed real estate funds on a quarterly basis. Historical data taking the index back to Q2 2000 was released in 2018, prior to that the Index history started in Q2 2010.

A global collaboration creates GREFI

The GREFI (Global Real Estate Funds Index) was launched in 2014 and represents a collaboration between ANREV, INREV and NCREIF to measure quarterly net asset value performance of non-listed real estate funds on a global basis. The history of the index starts in Q1 2010. Global strategy funds were added to GREFI in 2015.

Capturing global investor performance

The Global Investor Index was launched in 2016 and measures total real estate performance of investors on a global basis. The index covers activity in all major real estate sectors, regions and four main routes to real estate investment – listed, non-listed, direct and commercial real estate debt.

Spezialfonds and Publikumsfonds

The German Vehicles Index, both annual and quarterly, was launched in 2016 and measures net asset value performance of non-listed real estate vehicles domiciled in Germany, specifically Spezialfonds and Publikumsfonds. Performance is measured on an annual and quarterly basis and is net of fees.

Measuring the performance of closed end vehicles

The IRR Index was launched in 2018 and measures the since inception internal rate of return performance of European closed end non-listed real estate vehicles.

ODCE Index plugs a main information gap

The INREV European Open End Diversified Core Equity (ODCE) Fund Index is the first pan-European performance index focused on this major group of funds. The index plugs an important gap for global institutional investors for whom data on these funds in the US and Asia Pacific, is already available. Pan-European funds must comply with strict eligibility criteria for four consecutive quarters to be included in the Index.

Assel Level Index launch is a date to remember

The Asset Level Index was launched during the INREV Annual Conference in 2019. The Index measures the performance of real estate assets across Europe. The index has an inception date of Q4 2013. Performance is calculated using a chain-linking methodology and excludes effects of leverage and vehicle level costs, fees and expenses.

Section 1

Introduction

Introduction

The Index Calculation Guide provides an overview of INREV's suite of indices and their specific characteristics.

The first index was launched in 2005. The suite of indices has grown to include 12 index publications:

- INREV Annual Index
- INREV Quarterly Index
- GREFI – Global Real Estate Fund Index
- Global Investor Index
- German Vehicles Annual Index
- German Vehicles Quarterly Index
- IRR Annual Index
- IRR Quarterly Index
- European ODCE Annual Index
- European ODCE Quarterly Index
- Asset Level Annual Index
- Asset Level Quarterly Index

INREV does not use publicly available information, and both members and non-members of INREV can provide data for the Indices.

INREV encourages data delivery via the Data Input Tool, where possible.

INREV would like to thank the Performance Measurement Committee for their guidance and support in developing these index products, and all participants for contributing their data to the indices.

For more information about Performance Measurement visit the INREV Guidelines on Performance Measurement.

Index use

The INREV Indices may be used for research and information purposes only.

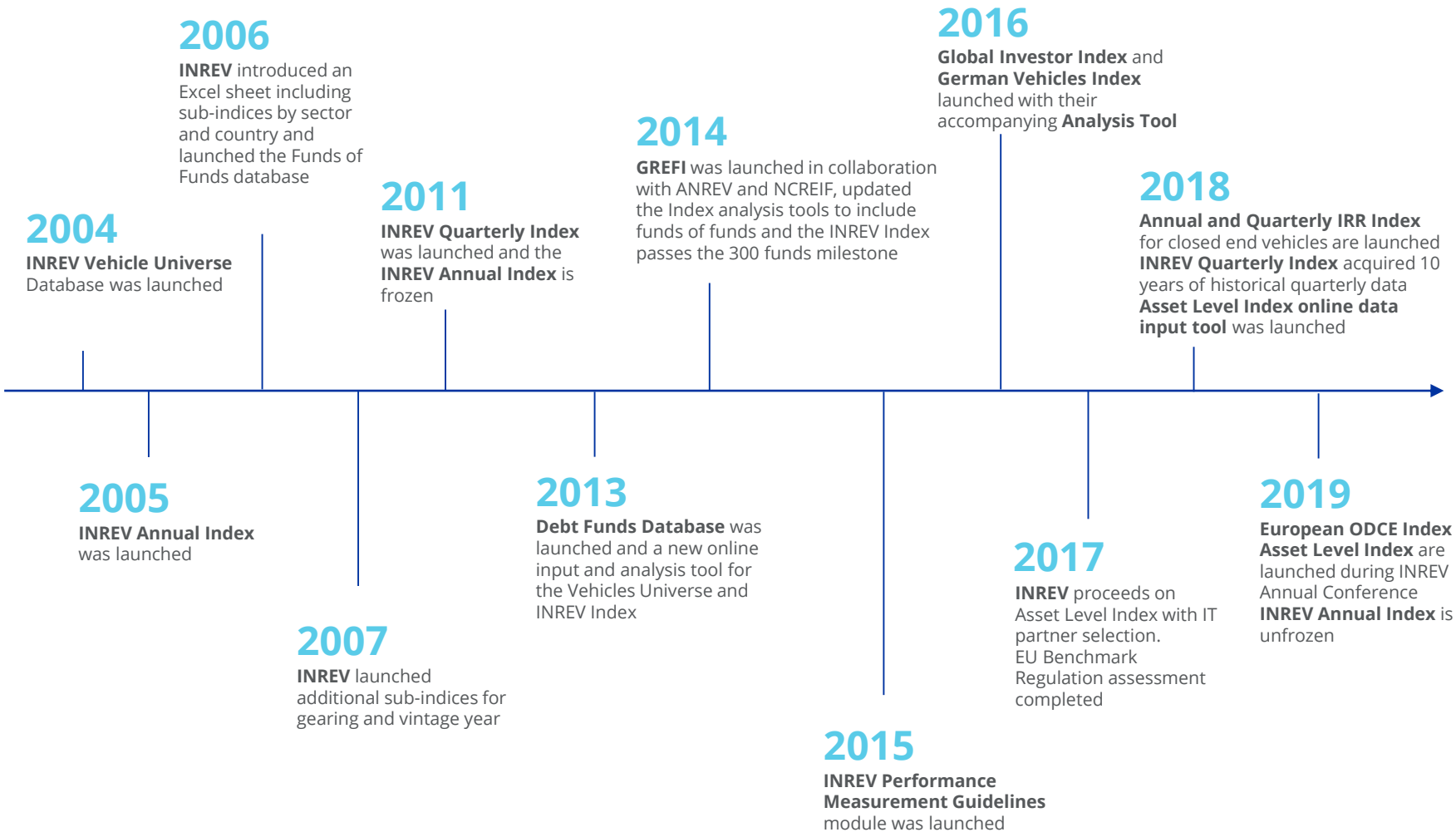
They may not be used for the following:

- To determine the value of a fund
- To determine the value of a financial instrument
- To determine the amount payable under a financial instrument
- To determine the amount payable under a financial contract
- To calculate performance fees
- To define the allocation of a portfolio

The INREV indices are not considered to be benchmarks under the Benchmarks Regulation (BMR) which entered into effect on 1 January 2018.

For more information about the EU BMR visit Public Affairs Monthly Briefings.

Developments



Section 2

INREV Annual Index

INREV Annual Index - introduction

Introduction

The INREV Annual Index measures net asset value performance of European non-listed real estate funds on an annual basis. Performance is measured net of fees and other costs, and represents the aggregate investor return.

The Index was launched in 2005 and is now published on the last Wednesday of April each year. The history of the index starts in 2001.

The INREV Annual Index is now an unfrozen index which means that historical data can change with future updates. It was previously frozen in 2011, and subsequently unfrozen in 2019 due to the success of the Historical Data Collection project which led to a much larger and a more comprehensive sample of funds for the European non-listed real estate industry

The Index results are based on fund level data that is provided to INREV directly by managers. Data collection starts immediately after a year has ended for a period of up to 12 weeks after year end.

The Index includes annually, bi-annually and quarterly valued funds.

INREV encourages managers to deliver data via the Data Input Tool.

Publication and accompaniments

The INREV Annual Index publication includes:

- A PDF publication
- A supplementary Excel workbook with time series data
- A PDF and Excel snapshot that is also available to non-members
- An Index Analysis Tool to carry out detailed analysis

Review of calculations

External party performs a review on the INREV Annual Index and verifies index calculation.

INREV Annual Index - index specification

Inclusion criteria

- Institutional funds, target >50% institutional holding
- Funds invested in Europe, target >90% of GAV invested in European real estate
- Commingled funds, target >2 investors
- Only core or value added funds, opportunity funds are not included
- Annual, bi-annual and quarterly valued funds

Classification

Core and value added funds are self-defined by the manager.

The Continental European Funds Index comprises all funds except single country funds investing in the UK and Ireland.

The Nordic, Central and Eastern European, Southern European and Western European fund indices include funds with a multi-country and single country strategy investing in a specific region.

The pan-European Funds Index includes multi-country funds which do not have a specific Western European, Central and Eastern European, Southern European or Nordic strategy.

The multi-country and Multi-sector indices include funds which have a strategy to invest in more than one country and more than one sector respectively.

Performance calculation

The Modified Dietz methodology is used to calculate annual net asset value fund performance.

The total return measures the performance over a specific period and does not include projections to the end of the fund's life.

The total return is computed as follows:

$$\frac{NAV_t - NAV_{t-1} - contributions + redemptions + distributions}{NAV_{t-1} + TwdC\ - TwdR\ - TwdD}$$

The capital growth is computed as follows:

$$\frac{NAV_t - NAV_{t-1} - contributions + redemptions}{NAV_{t-1} + TwdC\ - TwdR\ - TwdD}$$

The distributed income return is computed as follows:

$$\frac{\sum distributions}{NAV_{t-1} + TwdC\ - TwdR\ - TwdD}$$

NAV_t – net asset value at time t (end of period)

NAV_{t-1} – net asset value at time t-1 (beginning of period)

TwdC – time weighted (daily) contributions over the period

TwdD – time weighted (daily) distributions over the period

TwdR – time weighted (daily) redemptions over the period

For more information about Performance Measurement visit the INREV Guidelines on Performance Measurement.

Section 3

INREV Quarterly Index

INREV Quarterly Index - introduction

Introduction

The INREV Quarterly Index measures net asset value performance of European non-listed real estate funds on a quarterly basis. Performance is measured net of fees and costs.

The Index was launched in 2011 and is now published 8 weeks after quarter end. Owing to the success of the Historical Data Collection project the history of the INREV Quarterly Index now starts at Q2 2000, previously it started at Q1 2010.

The INREV Quarterly Index is an unfrozen index which means that historical data can change with future updates.

The Index results are based on fund level data that is provided to INREV directly by managers. Data collection starts immediately after a quarter has ended for a period of up to 6 weeks after quarter end.

The Index includes quarterly valued funds only.

INREV encourages managers to deliver data via the Data Input Tool.

Publication and accompaniments

The INREV Quarterly Index publication includes:

- A PDF publication
- A supplementary Excel workbook with time series data
- A PDF and Excel snapshot that is also available to non-members
- An Index Analysis Tool to carry out detailed analysis

Review of calculations

External party performs a review on the INREV Annual Index and verifies index calculation.

INREV Quarterly Index - index specification

Inclusion criteria

- Institutional funds, target >50% institutional holding
- Funds invested in Europe, target >90% of GAV invested in European real estate
- Commingled fund, target >2 investors
- Only core or value added funds, opportunity funds are not included
- Quarterly valued funds

Classification

Core and value added funds are self-defined by the manager.

The Continental European Funds Index comprises all funds except single country funds investing in the UK.

The Nordic, Central and Eastern European, Southern European and Western European fund indices include funds with a multi-country and single country strategy investing in a specific region.

The pan-European Funds Index includes multi-country funds which do not have a specific Western European, Central and Eastern European, Southern European or Nordic strategy.

The multi-country and multi-sector indices include funds which have a strategy to invest in more than one country and more than one sector respectively.

Performance calculation

The Modified Dietz methodology is used to calculate quarterly net asset value fund performance.

The total return measures the performance over a specific period and does not include projections to the end of the fund's life.

The total return is computed as follows:

$$\frac{NAV_t - NAV_{t-1} - contributions + redemptions + distributions}{NAV_{t-1} + TwdC - TwdR - TwdD}$$

The capital growth is computed as follows:

$$\frac{NAV_t - NAV_{t-1} - contributions + redemptions}{NAV_{t-1} + TwdC - TwdR - TwdD}$$

The distributed income return is computed as follows:

$$\frac{\sum distributions}{NAV_{t-1} + TwdC - TwdR - TwdD}$$

NAV_t – net asset value at time t (end of period)

NAV_{t-1} – net asset value at time t-1 (beginning of period)

TwdC – time weighted (daily) contributions over the period

TwdD – time weighted (daily) distributions over the period

TwdR – time weighted (daily) redemptions over the period

For more information about Performance Measurement visit the INREV Guidelines on Performance Measurement.

Section 4

GREFI

GREFI - introduction

Introduction

The GREFI (Global Real Estate Funds Index) measures net asset value performance of non-listed real estate funds on a quarterly basis. Performance is measured net of fees and other costs, and represents the aggregate investor return.

The Index was launched in 2014 and is now published 12 weeks after quarter end. The GREFI is an unfrozen index which means that historical data can change with future updates. The history of GREFI starts at Q1 2010.

The Index results are based on fund level data that is provided to ANREV, INREV and NCREIF directly from managers. Data collection starts immediately after a quarter has ended for a period of up to 6 weeks after quarter end.

The Index includes quarterly valued funds only.

ANREV, INREV and NCREIF do not use publicly available information, and both members and non-members can provide data for the Index.

Publication and accompaniments

The GREFI publication includes:

- A PDF publication
- A supplementary Excel workbook with time series data
- A PDF and Excel snapshot that is also available to non-members

GREFI - index specification

Inclusion criteria

- All funds included in the ANREV Quarterly Index – core, value added and opportunity
- All funds included in the INREV Quarterly Index – core and value added
- US core funds – NCREIF Fund Index Open End Diversified Core Equity, NFI – ODCE
- US non-core funds – NCREIF Fund Index Open End, NFI – OE and NCREIF Fund Index Closed End Value Added, NFI – CEVA
- Quarterly valued funds
- Global strategy funds

Classification

ANREV and INREV styles are self-defined by the manager.

Asia Pacific non-core funds include value added and opportunity funds.

European non-core funds include value added funds only.

US non-core funds include open end funds that are not included in NFI - ODCE, NFI – OE and closed end value added funds.

Performance calculation

The Modified Dietz methodology is used to calculate quarterly net asset value fund performance.

The total return measures the performance over a specific period and does not include projections to the end of the fund's life.

The total return is computed as follows:

$$\frac{NAV_t - NAV_{t-1} - contributions + redemptions + distributions}{NAV_{t-1} + TwdC\ - TwdR\ - TwdD}$$

The capital growth is computed as follows:

$$\frac{NAV_t - NAV_{t-1} - contributions + redemptions}{NAV_{t-1} + TwdC\ - TwdR\ - TwdD}$$

The distributed income return is computed as follows:

$$\frac{\sum distributions}{NAV_{t-1} + TwdC\ - TwdR\ - TwdD}$$

NAV_t – net asset value at time t (end of period)

NAV_{t-1} – net asset value at time t-1 (beginning of period)

TwdC – time weighted (daily) contributions over the period

TwdD – time weighted (daily) distributions over the period

TwdR – time weighted (daily) redemptions over the period

The performance for ANREV and INREV funds are calculated from underlying cash flows, while NCREIF funds are based on numerators and denominators provided to NCREIF in compliance with the NCREIF / PREA Reporting Standards Handbook.

Guidelines

- INREV Guidelines on Performance Measurement.
- NCREIF / PREA Reporting Standards Handbook Volume I and Volume II.

Section 5

Global Investor Index

Global Investor Index - introduction

Introduction

The Global Investor Index measures total real estate performance of investors on a global basis. The index covers activity in all major real estate sectors, regions and four main routes to real estate investment – listed, non-listed, direct and commercial real estate debt.

The Index was launched in 2016 and is now published once a year. The Global Investor Index is an unfrozen index which means that historical data can change with future updates. The history of the Index starts in 2005 but due to confidentiality constraints, most data can only be shown from 2007.

The Index results are based on data that is provided to INREV directly from investors. Data collection starts immediately after a year has ended for a period of up to 6 months after year end.

INREV does not use publicly available information, and both members and non-members can provide data for the Index.

Publication and accompaniments

The Global Investor Index publication includes:

- A PDF publication available only for contributing investors
- A supplementary Excel workbook with time series data available only for contributing investors
- A PDF snapshot that is also available to non-members

Section 6

German Vehicles Index

German Vehicles Annual Index - introduction

Introduction

The German Vehicles Annual Index measures net asset value performance of non-listed real estate vehicles domiciled in Germany and follow any regional strategy. Performance is measured on an annual basis and is net of fees.

The Index was launched in 2016 along with an accompanying index analysis tool, and with support from the BVI, the German Investment Funds Association. The Index is now published on the first Wednesday of May each year. The history of the Index starts at 2001.

The German Vehicles Annual Index is an unfrozen index which means that historical data can change with future updates.

The Index results are based on vehicle level data that is provided to INREV directly from managers. Data collection starts immediately after a year has ended for a period of up to 12 weeks after year end.

The Index includes annually, bi-annually and quarterly valued vehicles.

INREV encourages managers to deliver data via the Data Input Tool.

Publication and accompaniments

The German Vehicles Annual Index publication includes:

- A PDF publication
- A supplementary Excel workbook with time series data
- A PDF and Excel snapshot that is also available to non-members
- A German Vehicles Index Analysis Tool to carry out detailed analysis
- A results launch event in Germany once a year

German Vehicles Quarterly Index - introduction

Introduction

The German Vehicles Quarterly Index measures net asset value performance of non-listed real estate vehicles domiciled in Germany and follow any regional strategy. Performance is measured on a quarterly basis and is net of fees.

The Index was launched in 2016 along with an accompanying index analysis tool, and with support from the BVI, the German Investment Funds Association, and is now published 9 weeks after quarter end. The history of the Index starts at Q2 2000.

The German Vehicles Quarterly Index is an unfrozen index which means that historical data can change with future updates.

The Index results are based on vehicle level data that is provided to INREV directly from managers. Data collection starts immediately after a quarter has ended for a period of up to 6 weeks after quarter end.

The Index includes quarterly valued vehicles only.

INREV encourages managers to deliver data via the Data Input Tool.

Publication and accompaniments

The German Vehicles Quarterly Index publication includes:

- A PDF publication
- A supplementary Excel workbook with time series data
- A PDF and Excel snapshot that is also available to non-members
- A German Vehicles Index Analysis Tool to carry out detailed analysis
- A results launch event in Germany once a year

German Vehicles Index - index specification

Inclusion criteria

- Vehicles domiciled in Germany only
- Both retail and institutional vehicles
- All styles are included, core, value added and opportunity
- All vehicles are included, funds, separate accounts, joint ventures and club deals
- The Annual Index includes annually, bi-annually and quarterly valued vehicles
- The Quarterly Index includes quarterly valued vehicles

Classification

Styles are self-defined by the manager.

The Germany Vehicles Index includes vehicles that have a German markets strategy.

The Europe Vehicles Index includes vehicles that have a European markets strategy.

The Europe Vehicles Index – ex Germany includes vehicles that have a European markets strategy but excludes those that have a German markets strategy.

The Global Vehicles Index includes vehicles that have a global markets strategy.

The Multi-sector index includes vehicles that have a strategy to invest in more than one sector.

Performance calculation

The Modified Dietz methodology is used to calculate quarterly net asset value fund performance.

The total return measures the performance over a specific period and does not include projections to the end of the fund's life.

The total return is computed as follows:

$$\frac{NAV_t - NAV_{t-1} - contributions + redemptions + distributions}{NAV_{t-1} + TwdC\ - TwdR\ - TwdD}$$

The capital growth is computed as follows:

$$\frac{NAV_t - NAV_{t-1} - contributions + redemptions}{NAV_{t-1} + TwdC\ - TwdR\ - TwdD}$$

The distributed income return is computed as follows:

$$\frac{\sum distributions}{NAV_{t-1} + TwdC\ - TwdR\ - TwdD}$$

NAV_t – net asset value at time t (end of period)

NAV_{t-1} – net asset value at time t-1 (beginning of period)

TwdC – time weighted (daily) contributions over the period

TwdD – time weighted (daily) distributions over the period

TwdR – time weighted (daily) redemptions over the period

For more information about Performance Measurement visit the INREV Guidelines on Performance Measurement.

Section 7

IRR Index

IRR Annual Index - introduction

Introduction

The IRR Annual Index measures the since inception internal rate of return performance of European closed end non-listed real estate vehicles. Performance is measured net of fees and costs.

The IRR Index is computed on both a pooled return basis and an equally weighted basis (arithmetic mean).

The Index was launched as a consultation release in May 2018 and is now published on the second Wednesday of May of each year.

The IRR Index is an unfrozen index which means that historical data can change with future updates.

The Index results are based on vehicle level data that is provided to INREV directly from managers. Data collection starts immediately after a year has ended for a period of up to 12 weeks after year end.

The Index includes annually, bi-annually and quarterly valued vehicles. Only vehicles that have provided full cash flows since inception can be included in the Index.

INREV encourages managers to deliver data via the Data Input Tool.

Publication and accompaniments

The IRR Annual Index publication includes:

- A PDF publication
- A supplementary Excel workbook with time series data and the following metrics: pooled cash flows IRR, arithmetic mean IRR, standard deviation, minimum, lower quartile, median, upper quartile and maximum. The following multiples are also included in the Excel workbook: TVPI, DPI and RVPI
- A PDF and Excel snapshot that is also available to non-members

IRR Quarterly Index - introduction

Introduction

The IRR Quarterly Index measures the since inception internal rate of return performance of European closed end non-listed real estate vehicles. Performance is measured net of fees and costs.

The IRR Index is computed on both a pooled return basis and an equally weighted basis (arithmetic mean).

The first IRR Quarterly Index was published in June 2018 and is now published 11 weeks after quarter end.

The Index is published The IRR Quarterly Index is an unfrozen index which means that historical data can change with future updates.

The Index results are based on vehicle level data that is provided to INREV directly from managers. Data collection starts immediately after a quarter has ended for a period of up to 6 weeks after quarter end.

The Index includes quarterly valued vehicles only. Only vehicles that have provided full cash flows since inception can be included in the Index.

INREV encourages managers to deliver data via the Data Input Tool.

Publication and accompaniments

The IRR Quarterly Index publication includes:

- A PDF publication
- A supplementary Excel workbook with time series data and the following metrics: pooled cash flows IRR, arithmetic mean IRR, standard deviation, minimum, lower quartile, median, upper quartile and maximum. The following multiples are also included in the Excel workbook: TVPI, DPI and RVPI
- A PDF and Excel snapshot that is also available to non-members

IRR Index - index specification

Inclusion criteria

- Vehicles that have provided full historical cash flows since inception
- Closed end vehicles
- Both retail and institutional vehicles
- All styles are included, core, value added and opportunity
- All vehicles are included, funds, separate accounts, joint ventures and club deals
- Vehicles invested in Europe, >90% of GAV invested in European real estate
- The Annual Index includes annually, bi-annually and quarterly valued vehicles
- The Quarterly Index includes quarterly valued vehicles

Classification

Styles are self-defined by the manager.

Non-core includes value added and opportunity vehicles.

Year of first closing is used as a proxy for vintage year and is provided by the manager.

The Multi-country index includes vehicles that have a strategy to invest in more than one country.

The Multi-sector index includes vehicles that have a strategy to invest in more than one sector.

Confidentiality thresholds

Performance is shown only when the sample size includes at least 3 vehicles from 3 different managers.

Quartiles and the interquartile range are displayed only when the sample size includes 4 or more vehicles.

Performance is included only when a vehicle has at least one year of cash flows.

IRR Index - index methodology

Performance calculation

The IRR, internal rate of return, is also known as a money-weighted return.

The since inception IRR (SI-IRR) for each vehicle is computed as follows:

$$f_0 + \frac{f_1}{(1+IRR)} + \frac{f_2}{(1+IRR)^2} + \frac{f_3}{(1+IRR)^3} + \cdots + \frac{f_n}{(1+IRR)^n} = 0$$

Where:

$f_0 \ldots f_n$ denotes the cash flows for the period 0 through to period n (positive values for inflows and negative values for outflows)

Pooled return

The pooled return represents the weighted average IRR by pooling the cash flows of all vehicles of the same vintage.

The pooled return IRR Index per vintage is computed as follows:

$$f_0 + \frac{f_1}{(1+IRR)} + \frac{f_2}{(1+IRR)^2} + \frac{f_3}{(1+IRR)^3} + \cdots + \frac{f_n}{(1+IRR)^n} = 0$$

Where:

$f_0 \ldots f_n$ denotes the cash flows for all vehicles of the same vintage over the period 0 through to period n (positive values for inflows and negative values for outflows)

Arithmetic mean

The arithmetic mean represents the average IRR for vehicles of the same vintage on an equally weighted basis by taking the individual IRRs of each vehicle and then computing the arithmetic mean of these vehicles.

The arithmetic mean IRR Index per vintage is computed as follows:

$$\frac{1}{m_j}\sum_{i=1}^{m_j} IRR_i$$

Where:

IRR_i is the IRR for vehicle i

m_j is the number of vehicles for vintage j

Total value to paid in capital multiple (TVPI)

The TVPI, total value to paid in capital multiple, also known as the investment multiple is computed as follows:

$$\frac{TV}{PIC}$$

Where:

TV (Total value) = sum of residual vehicle net assets (NAV) plus aggregate vehicle distributions

PIC (Paid in capital) = cumulative capital contributed to the vehicle

Cumulative distributions to paid in capital multiple (DPI)

The DPI, cumulative distributions to paid in capital multiple, also known as the realisation multiple is computed as follows:

$$\frac{D}{PIC}$$

Where:

D = distributions

PIC (Paid in capital) = cumulative capital contributed to the vehicle

Distributions retained in the vehicle and not paid to the investors are considered as realised.

Residual value to paid in capital multiple (RVPI)

The RVPI, residual value to paid in capital multiple, also known as the unrealised multiple is computed as follows:

$$\frac{RV}{PIC}$$

Where:

RV (Residual value) = net asset value (NAV) of the vehicle

PIC (Paid in capital) = cumulative capital contributed to the vehicle

For more information visit the INREV Guidelines on Performance Measurement.

Section 8

European ODCE Index

ODCE Annual Index - introduction

Introduction

The European ODCE Annual Index represents the annual performance of open end core funds with a strategy to invest across Europe and across multiple sectors. Performance is measured net of fees and costs.

The consultation index was launched at the end of April 2019 and is now published on the last Wednesday of April each year. The history of the Index starts at 2011.

The INREV European ODCE Fund Annual Index is an unfrozen index which means that historical data can change with future updates.

The Index is wholly comprised of open end core commingled equity real estate funds that have a strategy to invest across pan Europe and across multiple sectors.

In order to be included funds need to demonstrate compliance to eligibility criteria for four consecutive quarters before their performance can be included in the index.

The Index results are based on fund level data that is provided to INREV directly from managers. Data collection starts immediately after a quarter has ended for a period of up to 12 weeks after year end.

INREV encourages managers to deliver data via the Data Input Tool.

Publication and accompaniments

The European ODCE Annual Index publication includes:

- A PDF publication
- A supplementary Excel workbook with time series data
- A PDF and Excel snapshot that is also available to non-members

ODCE Quarterly Index - introduction

Introduction

The European ODCE Quarterly Index represents the quarterly performance of open end core funds with a strategy to invest across Europe and across multiple sectors. Performance is measured net of fees and costs.

The first publication of the Index was launched as a consultation release in the beginning of April 2019 and is now published 8 weeks after quarter end.

The INREV European ODCE Fund Quarterly Index is an unfrozen index which means that historical data can change with future updates. The Index has an inception date of Q3 2011.

The Index is wholly comprised of open end core commingled equity real estate funds that have a strategy to invest across pan Europe and across multiple sectors.

In order to be included funds need to demonstrate compliance to eligibility criteria for four consecutive quarters before their performance can be included in the index.

The Index results are based on fund level data that is provided to INREV directly from managers. Data collection starts immediately after a quarter has ended for a period of up to 6 weeks after quarter end.

INREV encourages managers to deliver data via the Data Input Tool.

Publication and accompaniments

The European ODCE Quarterly Index publication includes:

- A PDF publication
- A supplementary Excel workbook with time series data
- A PDF and Excel snapshot that is also available to non-members

ODCE Index - Index specification

Inclusion criteria

- Institutional funds, >50% institutional holding
- Commingled funds, >2 investors
- Core, open end funds only
- Funds targeting at least 80% of GAV in real estate
- Funds with a pan-European strategy
  - Funds invested in Europe, > 90% of GAV invested in European real estate
  - Funds targeting at least 80% of GAV in office, industrial, residential and retail
  - Funds targeting at least 80% of GAV in stabilised assets
- Funds targeting < = 40% leverage
- Funds are valued externally at least quarterly
- Funds are valued using the RICS, IVS or another mark-to-market valuation standard
- Funds are audited annually

Diversification

- No more than 65% of GAV in a single sector.
- No more than 65% of GAV in a single country.

Transparency

The fund is visible in the Vehicles Universe, and the fund name and manager name are stated as contributors to the index

Confidentiality

Performance is shown only when the sample size includes at least 3 vehicles from 3 different managers.

Governance

The performance of a fund can only be included in the Index if they satisfy the eligibility criteria for four quarters in a row.

ODCE Index - Index methodology

Performance calculation

The Modified Dietz methodology is used to calculate quarterly net asset value fund performance.

The total return measures the performance over a specific period and does not include projections to the end of the fund's life.

The total return is computed as follows:

$$\frac{NAV_t - NAV_{t-1} - contributions + redemptions + distributions}{NAV_{t-1} + TwdC - TwdR - TwdD}$$

The capital growth is computed as follows:

$$\frac{NAV_t - NAV_{t-1} - contributions + redemptions}{NAV_{t-1} + TwdC - TwdR - TwdD}$$

The distributed income return is computed as follows:

$$\frac{\sum distributions}{NAV_{t-1} + TwdC - TwdR - TwdD}$$

NAV_t – net asset value at time t (end of period)

NAV_{t-1} – net asset value at time t-1 (beginning of period)

TwdC – time weighted (daily) contributions over the period

TwdD – time weighted (daily) distributions over the period

TwdR – time weighted (daily) redemptions over the period

For more information about Performance Measurement visit the INREV Guidelines on Performance Measurement.

Section 9

Asset Level Index

Asset Level Annual Index - introduction

Introduction

The INREV pan-European Annual Asset Level Index measures the annual performance of the real estate assets across Europe and includes assets that report their data on a monthly, quarterly, semi-annual and annual basis.

Performance is calculated using a chain-linking methodology and excludes effects of leverage and vehicle level costs, fees and expenses.

The pan-European Annual Asset Level Index consultation was released in April 2019 and is now published 12 weeks after year end. The index has an inception year of 2014.

The INREV pan-European Annual Asset Level Index is an unfrozen index which means that historical data can change with future updates.

The Index results are based on asset level data that is provided to INREV directly by managers and investors.

Data collection starts immediately after a year has ended for a period of up to 10 weeks after year end.

Asset level data is collected via a dedicated Asset Level Data Input Tool and uses an automated validation process that allows members to provide their data in a very efficient manner.

Publication and accompaniments

The INREV pan-European Annual Asset Level Index publication includes:

- A PDF publication
- A PDF snapshot that is also available to non-members
- An accompanying Asset Level Index Analysis Tool is available to INREV members that have joined this initiative and provide their asset level data. The Index Analysis Tool allows members to create customised asset level indices.

Asset Level Quarterly Index - introduction

Introduction

The INREV pan-European Quarterly Asset Level Index measures the performance of real estate assets across Europe and includes only assets that report their data on a monthly or quarterly basis.

Performance is calculated using a chain-linking methodology and excludes effects of leverage and vehicle level costs, fees and expenses.

The pan-European Quarterly Asset Level Index consultation was released in April 2019 and is now published 10 weeks after quarter end. The index has an inception date of Q4 2013.

The INREV pan-European Quarterly Asset Level Index is an unfrozen index which means that historical data can change with future updates.

The Index results are based on asset level data that is provided to INREV directly by managers and investors.

Data collection starts immediately after a year has ended for a period of up to 8 weeks after year end.

Asset level data is collected via a dedicated Asset Level Data Input Tool and uses an automated validation process that allows members to provide their data in a very efficient manner.

Publication and accompaniments

The INREV pan-European Quarterly Asset Level Index publication includes:

- A PDF publication
- A PDF snapshot that is also available to non-members
- An accompanying Asset Level Index Analysis Tool is available to INREV members that have joined this initiative and provide their asset level data. The Index Analysis Tool allows members to create customised asset level indices.

Index specification

Data delivery

Data must be provided using the asset level index data delivery template and via the online Data Input Tool. Definitions of all data fields can be found in the data delivery template.

Frequency of data

Asset level data can be delivered on monthly or quarterly basis.

Data delivery in reporting currency

Data for each asset needs to be reported in the currency of the country where the asset is located.

Quarterly index

Only assets that are reported on a monthly or quarterly basis can be included in the quarterly index.

Annual index

Only assets that are reported on a monthly, quarterly, semi-annual and annual basis are included in the annual index.

Index inclusion criteria

The INREV Asset Level Index includes the following assets:

- Located in Europe
- All asset types and sub-types
- All life-cycle stages
- All types of valuation approaches
- All accounting standards

Confidentiality

Performance for any index or sub-index is reported only when the sample includes at least 3 assets from 3 different companies and none of the companies accounts for more than 60% of the sample, when measured by market value.

Asset level performance methodology

Monthly chain-linking

INREV uses a monthly chain linking calculation methodology to calculate quarterly asset, portfolio and index level returns. (A portfolio refers to a collection of assets.)

As data may be provided on a monthly or quarterly basis, monthly values need to be estimated.

Calculation of monthly NOI and CAPEX

Quarterly NOI and CAPEX figures are equally distributed to each month based on the number of days an asset is owned during any month.

Monthly asset value estimation

The monthly value of each asset is calculated by taking the beginning and the end of the period market values and evenly distributing value change to each month. If any partial acquisitions and/or disposition takes place during the period, those are used to adjust the value of the assets in the month when they happen.

Monthly asset level performance calculation

The following formulas are used to estimate monthly total return, income return and capital return for each asset if they are not provided.

$$TR_{m_k} = \frac{MV_{k_m} - MV_{k_{m-1}} + \sum D_{k_m} - \sum A_{k_m} - CAPEX_{k_m} + NOI_{k_m}}{MV_{k_{m-1}} + \sum A_{k_m} + CAPEX_{k_m}}$$

$$IR_{m_k} = \frac{NOI_{k_m}}{MV_{k_{m-1}} + \sum A_{k_m} + CAPEX_{k_m}}$$

$$CR_{m_k} = \frac{MV_{k_m} - MV_{k_{m-1}} + \sum D_{k_m} - \sum A_{k_m} - CAPEX_{k_m}}{MV_{k_{m-1}} + \sum A_{k_m} + CAPEX_{k_m}}$$

Where:
TR_m - monthly total return
IR_m - monthly income return
CR_m - monthly capital return
MVk_m– market value at the end of the month
MVk_{m-1}– market value at the beginning of the month
NOI_k – monthly net operating income
$CAPEX_k$ – monthly capital expenditure
D_k – monthly dispositions
A_k – monthly acquisitions
m – month
k - asset

Quarterly asset level chain-linking

Monthly returns are chain-linked to calculate the quarterly returns using the following formula. The same methodology applies to the calculation of the quarterly capital growth and quarterly income return.

$$TR_Q = (1 + TR_{m_1}) * (1 + TR_{m_2}) * (1 + TR_{m_3}) - 1$$

Index and portfolio aggregation methodology

Currency conversion

To calculate aggregate returns, a local currency methodology is used. This means that all asset level indices and portfolio returns do not take currency fluctuations into account. To remove the effect of currency fluctuations the monthly values that are reported in currencies other than the EUR are converted using the first day of the month exchange rate.

Index and portfolio aggregation

Monthly aggregate portfolio and index returns are calculated using the following formula.

$$TR^{p} = \frac{\sum(N^{a^1}, N^{a^2}, N^{a^2}, \dots)}{\sum(D^{a^1}, D^{a^2}, D^{a^2}, \dots)}$$

Monthly portfolio and index returns are chain-linked to calculate quarterly performance using the formula from the previous page.

For more information about Performance Measurement visit the Asset Level Index page

https://www.inrev.org/asset-level-index.

Appendix 1

Summary of key characteristics

Key characteristics

	INREV Annual Index	INREV Quarterly Index	GREFI	Global Investor Index	German Vehicles Annual Index	German Vehicles Quarterly Index	IRR Annual Index	IRR Quarterly Index	European ODCE Annual Index	European ODCE Quarterly Index	Asset Level Annual Index	Asset Level Quarterly Index
Launched	2005	2011	2014	2016	2016	2016	2018	2018	2019	2019	2019	2019
Publication	Last Wed of April	8 weeks after quarter end	12 weeks after quarter end	1st Wed of October	First Wed in May	9 weeks after quarter end	Second Wed in May	11 weeks after quarter end	Last Wed of April	8 weeks after quarter end	12 weeks after quarter end	10 weeks after quarter end
Frozen / unfrozen	Unfrozen	Unfrozen	Unfrozen	Unfrozen	Unfrozen	Unfrozen	Unfrozen	Unfrozen	Unfrozen	Unfrozen	Unfrozen	Unfrozen
History from	2001	Q2 2000	Q2 2010	2007	2001	Q2 2000	Pre-2002 vintages	Pre-2002 vintages	2011	Q3 2011	2014	Q4 2013
Collection method	Data Input Tool	Data Input Tool	Data Input Tool	Templates	Data Input Tool	Data Input Tool	Data Input Tool	Data Input Tool	Data Input Tool	Data Input Tool	Asset Level Data Input Tool	Asset Level Data Input Tool
Corresponding tool	Index Analysis Tool	Index Analysis Tool			German Vehicles Index Analysis Tool	German Vehicles Index Analysis Tool					Asset Level Analysis Tool	Asset Level Analysis Tool
Excel supplement	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes	Yes	Yes	No	No
Snapshot	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Eligibility criteria (1/2)

	INREV Annual Index	INREV Quarterly Index	GREFI	Global Investor Index	German Vehicles Annual Index	German Vehicles Quarterly Index
Vehicle type	Funds	Funds	Funds		Funds Separate accounts Joint ventures Club deals	Funds Separate accounts Joint ventures Club deals
Style	Core Value added	Core Value added	Core Value added		Core Value added Opportunity	Core Value added Opportunity
Structure	Open end Closed end	Open end Closed end	Open end Closed end		Open end Closed end	Open end Closed end
Investor type	> 50% institutional	> 50% institutional	> 50% institutional		Retail, Institutional	Retail, Institutional
Number of investors	> 2	> 2	> 2			
Investment type				Listed Non-listed Direct Commercial real estate debt		
Geography	> 90% of GAV targeting Europe	> 90% of GAV targeting Europe	All geographies	All geographies	All geographies	All geographies
Sector	All sectors	All sectors	All sectors	All sectors	All sectors	All sectors
LTV						
Reporting dates	31 Dec	31 Mar 30 Jun 30 Sep 31 Dec	31 Mar 30 Jun 30 Sep 31 Dec	31 Dec	31 Dec	31 Mar 30 Jun 30 Sep 31 Dec
Minimum data required	One year	One quarter	One quarter	One year	One year	One quarter
Minimum requirement	At least 3 funds by 3 different managers	At least 3 funds by 3 different managers	At least 3 funds by 3 different managers	At least 3 investors. No single investor must represent more than 60% of the total value of investments.	At least 3 funds by 3 different managers	At least 3 funds by 3 different managers

Eligibility criteria (2/2)

	IRR Annual Index	IRR Quarterly Index	European ODCE Annual Index	European ODCE Quarterly Index
Vehicle type	Funds Separate accounts Joint ventures Club deals	Funds Separate accounts Joint ventures Club deals	Funds	Funds
Style	Core Value added Opportunity	Core Value added Opportunity	Core	Core
Structure	Closed end	Closed end	Open end	Open end
Investor type	> 50% institutional	> 50% institutional	> 50% institutional	> 50% institutional
Number of investors	> 2	> 2	> 2	> 2
Investment type				
Geography	> 90% of GAV targeting Europe	> 90% of GAV targeting Europe	> 90% of GAV targeting Europe < 65% of GAV in a single country	> 90% of GAV targeting Europe < 65% of GAV in a single country
Sector	All sectors	All sectors	> 80% in office, industrial, retail, and residential < 65% of GAV in a single sector	> 80% in office, industrial, retail, and residential < 65% of GAV in a single sector
LTV			≤ 40% leverage	≤ 40% leverage
Reporting dates	31 Dec	31 Mar 30 Jun 30 Sep 31 Dec	31 Dec	31 Mar 30 Jun 30 Sep 31 Dec
Minimum data required	One year	One year	One year	One quarter
Minimum requirement	At least 3 funds by 3 different managers	At least 3 funds by 3 different managers	At least 3 funds by 3 different managers	At least 3 funds by 3 different managers

Appendix 2

Glossary

Glossary

NAV

Net Asset Value

A vehicle's GAV less all liabilities as per the chosen valuation principles.

Source: INREV | Date: 17 July 2017 | ID: D0058 | Version: 3

Guidelines References: PV-I01 | PM11