INVESTMENT STRATEGY

NBIM CEO YNGVE SLYNGSTAD
OSLO, 17 DECEMBER 2015

NORGES BANK
INVESTMENT MANAGEMENT

Questions

1. How much should the fund invest in real estate?
2. Should the fund invest in unlisted infrastructure?
3. Is there a need to adjust the management framework?

Supporting analyses

NBIM DISCUSSION NOTE

#2 - 2013

04|2015

RENEWABLE ENERGY INVESTMENTS

DISCUSSION NOTE

The market for renewable energy investments has grown markedly over the last ten years, and is a market in constant change. In this note we look closer at infrastructure investments in renewable energy. Our objective is to provide an overview of the opportunity set, key risks and return drivers from the perspective of an institutional investor.

NORGES BANK INVESTMENT MANAGEMENT

05|2015

INFRASTRUCTURE INVESTMENTS IN LESS MATURE MARKETS

DISCUSSION NOTE

Rapid growth in emerging markets and developing economies (EMDEs) has fuelled demand for infrastructure to support economic and social development. In this note we look closer at infrastructure investments in these less mature markets. Our objective is to provide an overview of the opportunity set, key risks and return drivers from the perspective of an institutional investor.

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The Discussion Note series provides analysis which may form relevant background for Norges Bank Investment Management's investment strategy and advice to the asset owner. Any views expressed in the Discussion Notes are not necessarily held by our organisation. The series is written by employees, and is informed by our investment research and our experience as a large, long-term asset manager.

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NORGES BANK INVESTMENT MANAGEMENT

01|2015

THE DIVERSIFICATION POTENTIAL OF REAL ESTATE

DISCUSSION NOTE

NORGES BANK INVESTMENT MANAGEMENT

02|2015

GLOBAL TRENDS AND THEIR IMPACT ON REAL ESTATE

DISCUSSION NOTE

We review the global trends that are likely to have a significant impact on real estate markets over the coming decades. These are: globalisation, technological progress, sustainability, demographic changes and urbanisation. We consider the consequences of the trends for future growth and the risks of obsolescence for real estate.

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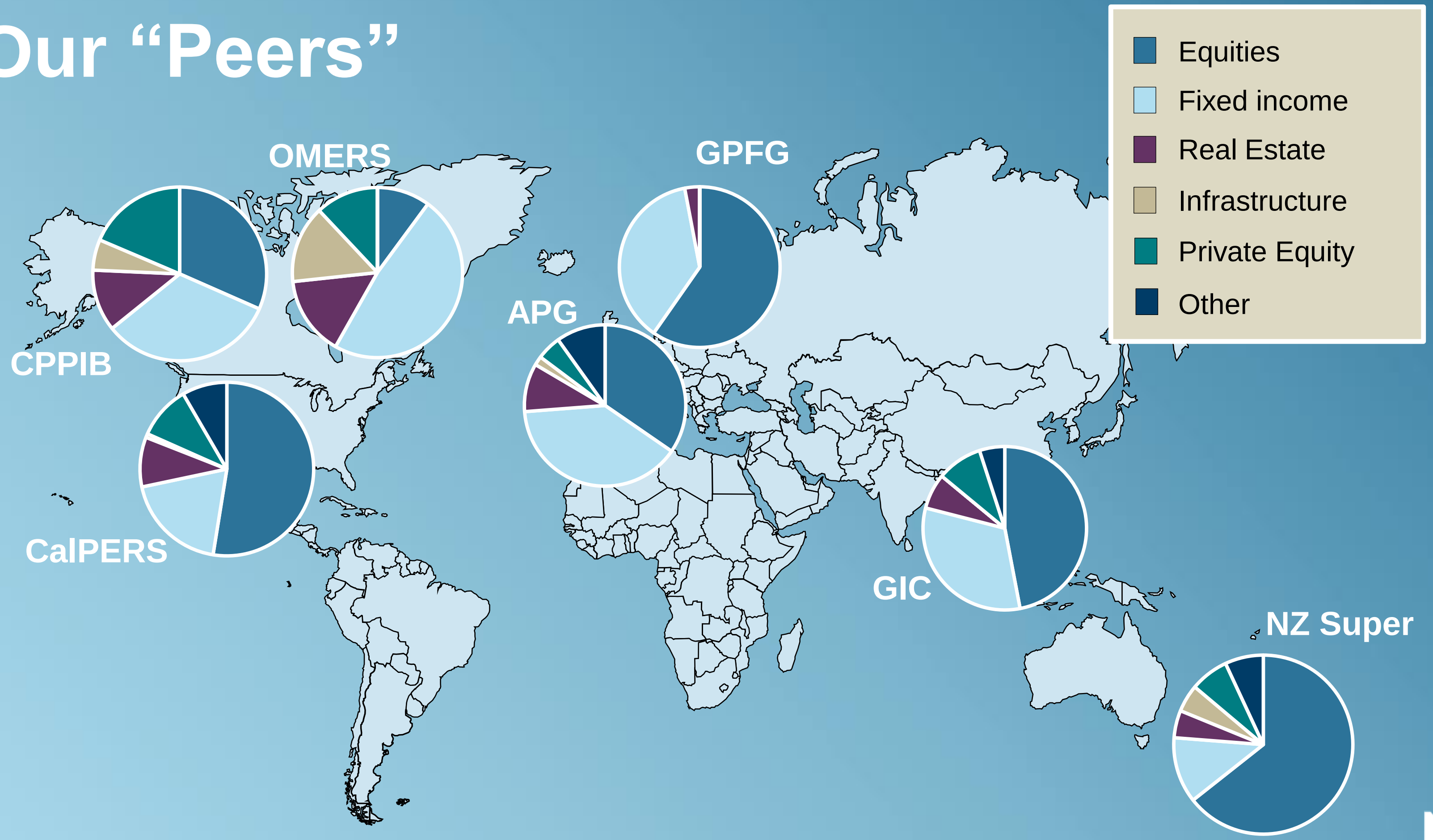
Our "Peers"



Source: based on latest annual/quarterly reports, NBIM calculations

1

How much should the fund invest in real estate?

1

2006 | 2010 | 2011 | 2012 | 2013 | 2014 | 2015

2006: Norges Bank recommends MoF to include real estate in the fund

2010: MoF gives mandate to invest up to 5% in real estate

London

Paris

Berlin

New York

Boston

Washington DC

Munich

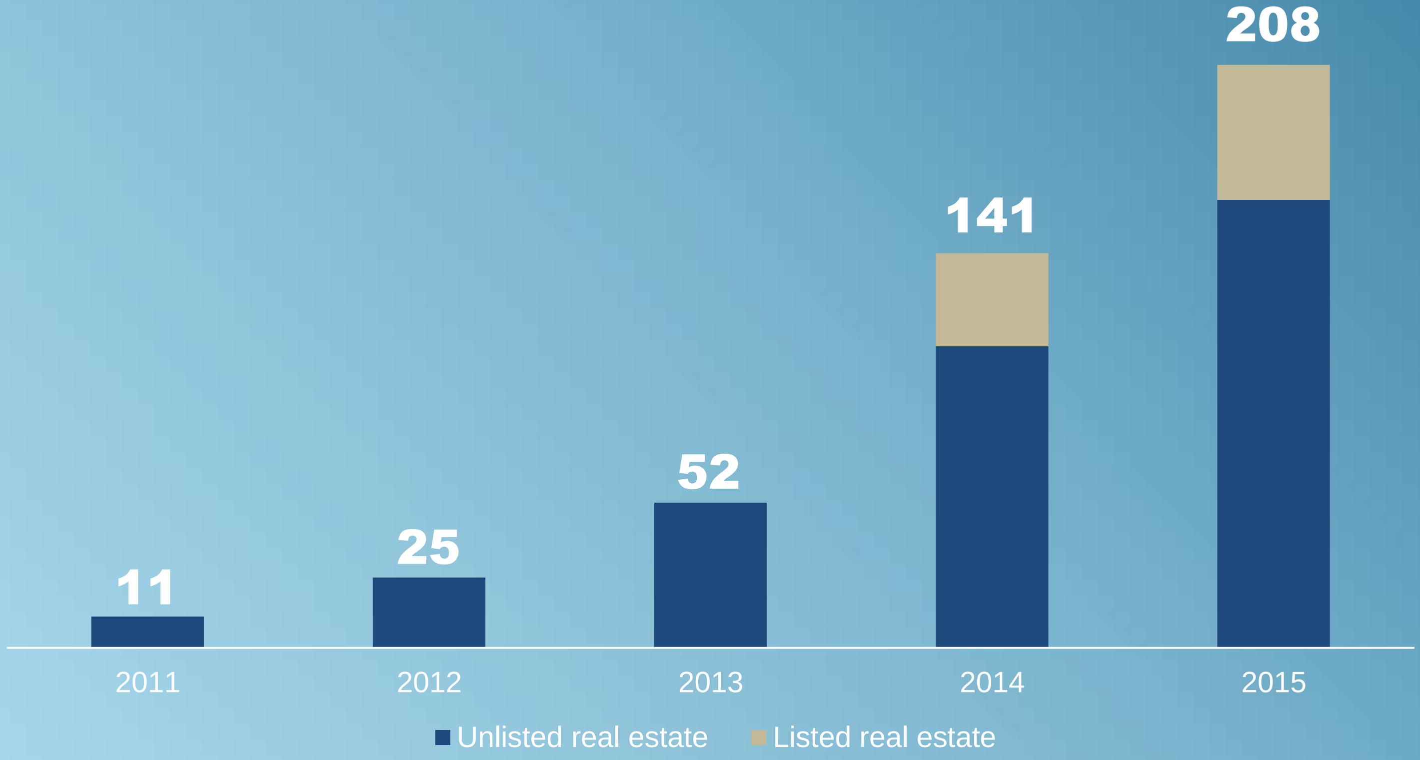
Logistics

San Francisco

2015: Tokyo and Singapore announced as strategic markets

More than NOK 200 bn in real estate

Billion kroner



Source: NBIM

1

13 COUNTRIES

123 HOLDING COMPANIES

849 PROPERTIES

2,100 TENANTS

14m SQM LOGISTICS

3m SQM OFFICE/RETAIL

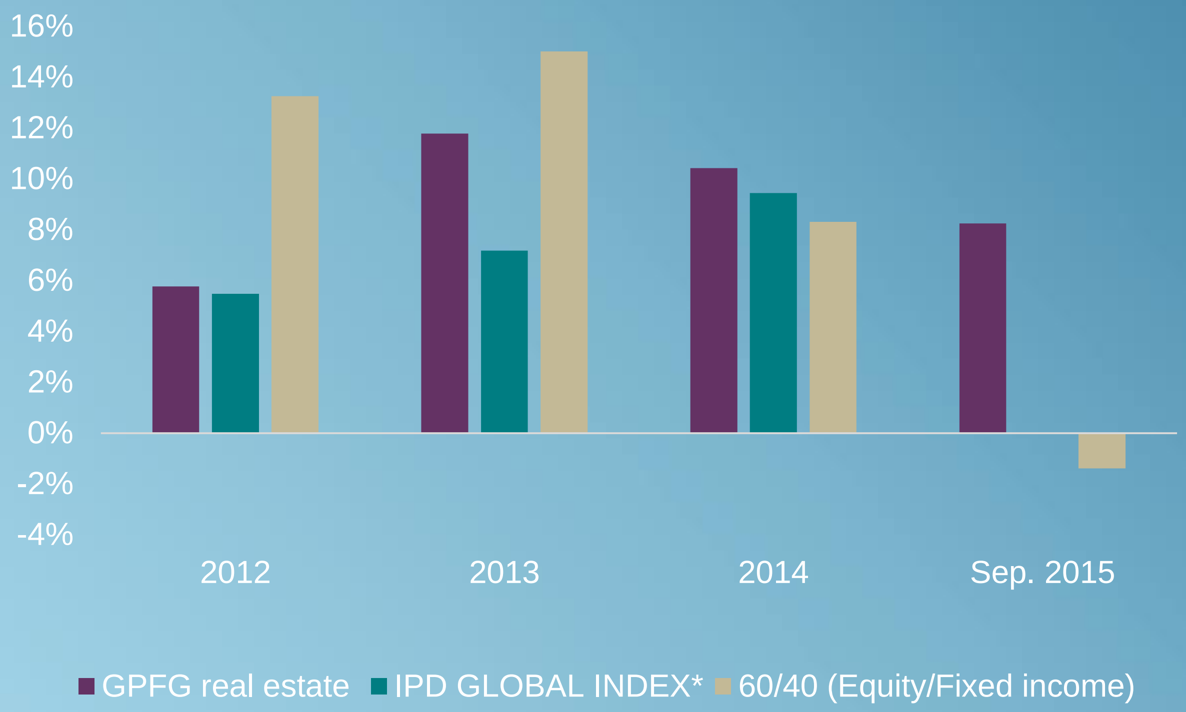
GPFG real estate returns

Measured in fund currency basket

Source: NBIM

Real estate returns

Measured in fund currency basket

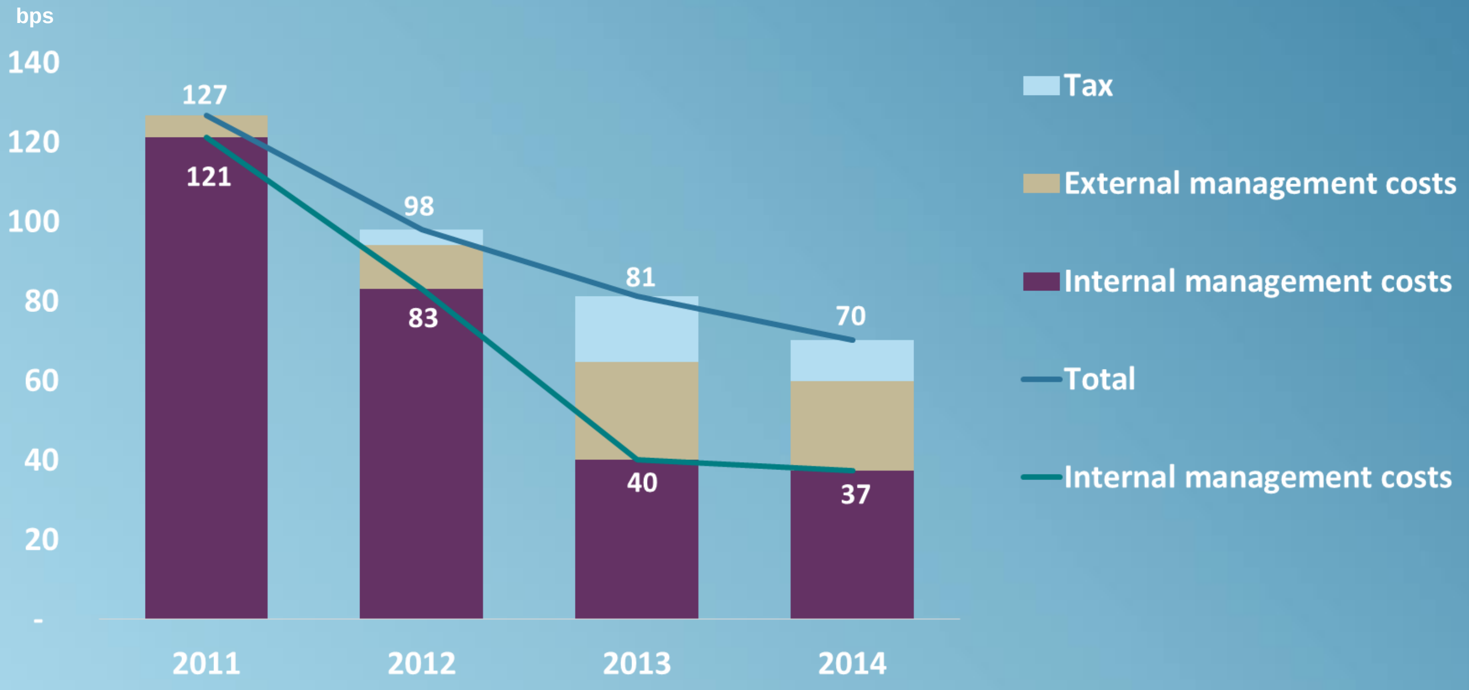


Source: NBIM, FTSE, Barclays and IPD
*The IPD global index is released annually. The latest numbers available are the return figures for 2014.

1

Real estate costs

One-off transaction costs not included



Source: NBIM

1

Reflect universe

Inflation hedge

Illiquidity premium

Absolute return

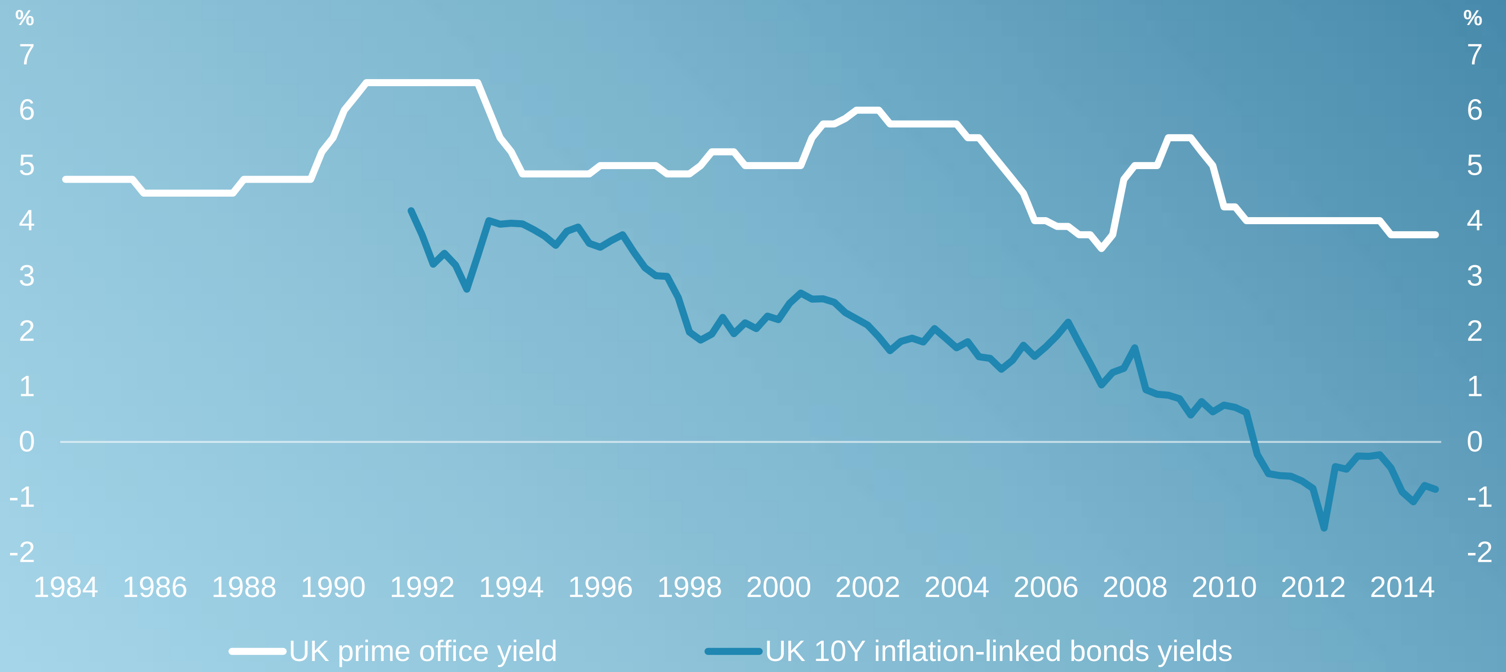
Diversification

Real estate factor

Deliver cash flow

Real estate yields and interest rates

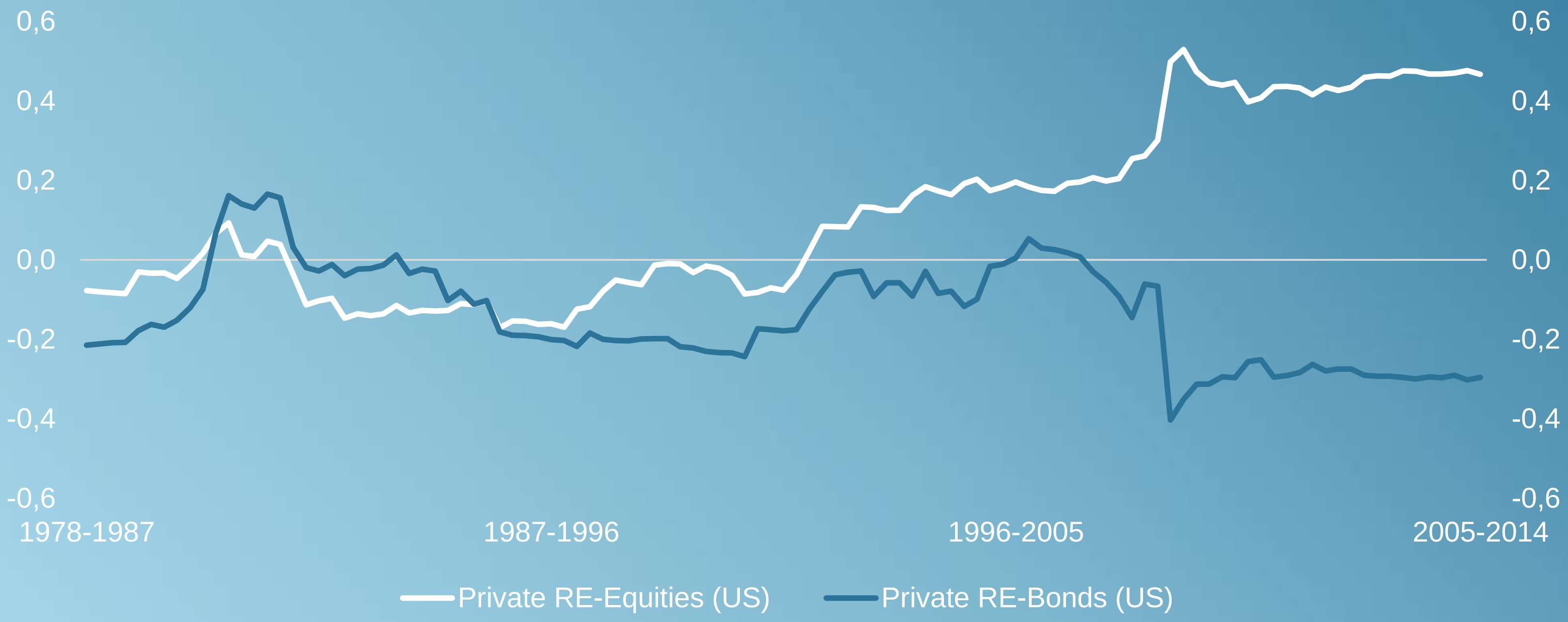
There is no clear link



Source: CBRE, BoE

Correlation with equities and bonds

Confirm that real estate returns follow different pattern, but vary over time



Source: NCREIF, Bloomberg. S&P 500 used as equity index and Barclays 10y government bond index used as bond index.
Private RE calculated using NCREIF, desmoothed to fit autocorrelation of US REITs.

Factors driving real estate returns

1

Economic factors

- GDP growth
- Industrial output
- Consumption

Financial factors

- Interest rates
- Inflation
- Term structure

Structural factors

- Supply and demand
- Market constraints
- Market leverage
- Liquidity

Statistical factors*

Factor loadings	F1	F2	F3
Bonds	-0.1	0.0	**-0.4**
Equities	0.1	**0.6**	0.3
Private real estate (de-smoothed)	**0.8**	0.2	0.1

* Principal components extraction with orthogonal varimax rotation, based on 1978-2014 quarterly returns. US data.

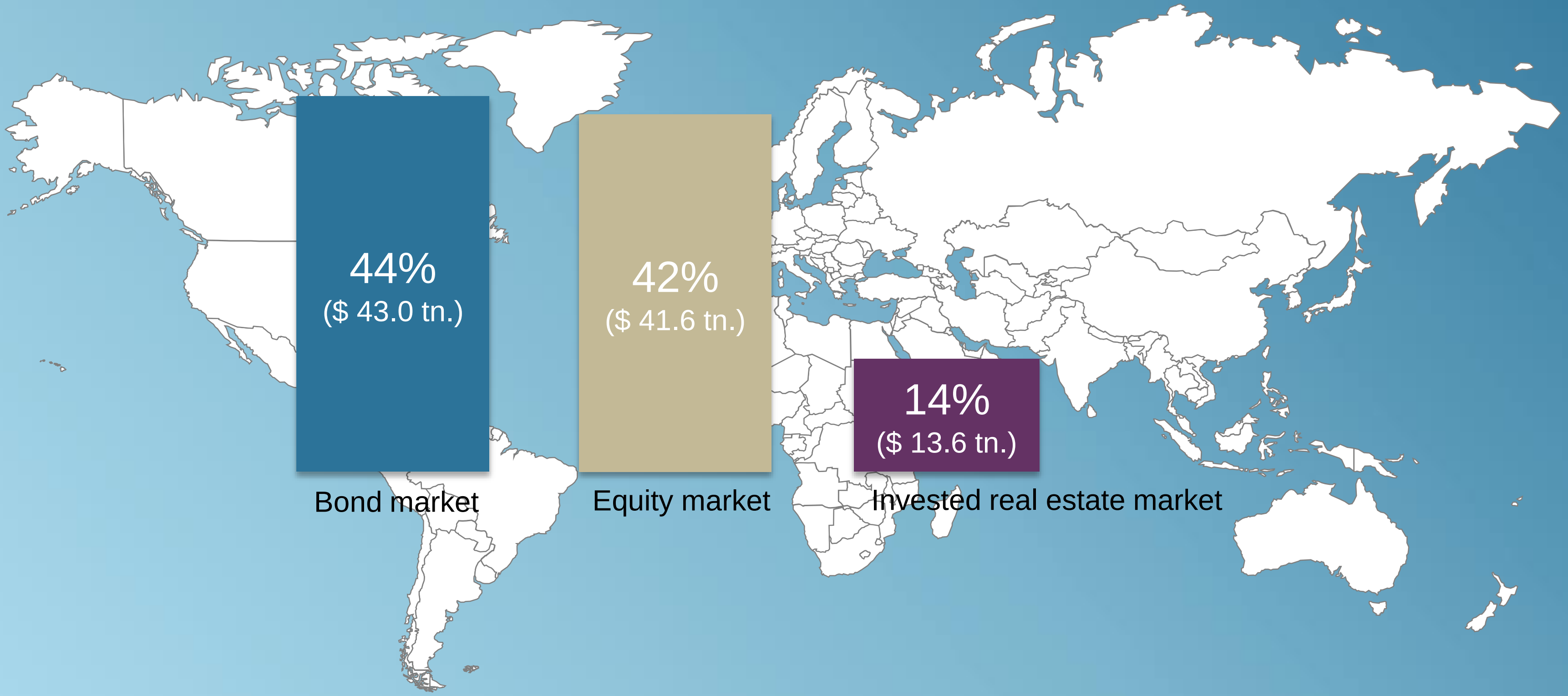
Global trends influencing real estate

1

GLOBALISATION	Global cities and supply chains. Retail “show-windows”
TECHNOLOGY	E-commerce. Smart buildings
SUSTAINABILITY	Lower costs. Higher demand. Properties for the future
DEMOGRAPHY	Population and middle class growth. Age increase
URBANISATION	Global trend, but highest effect for Asia and emerging markets

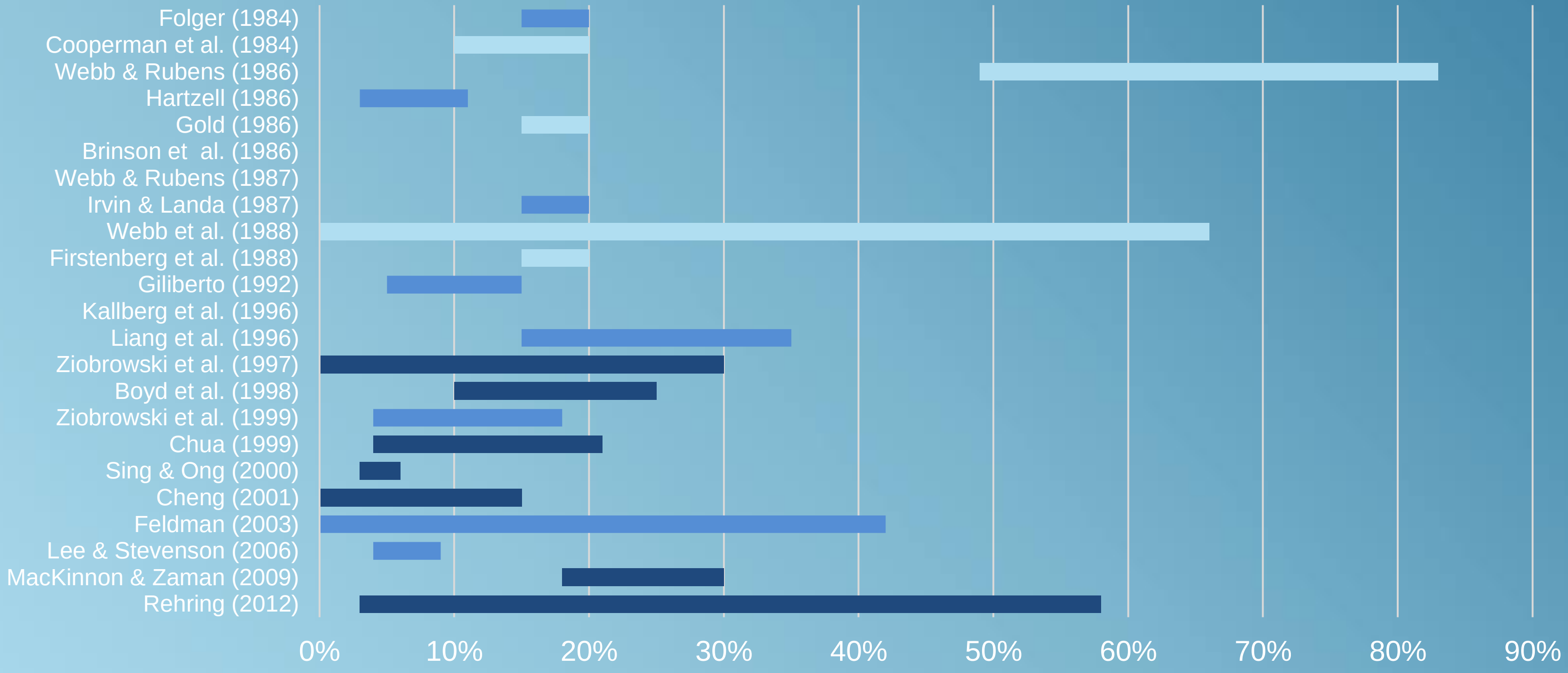
1

Real estate asset class size



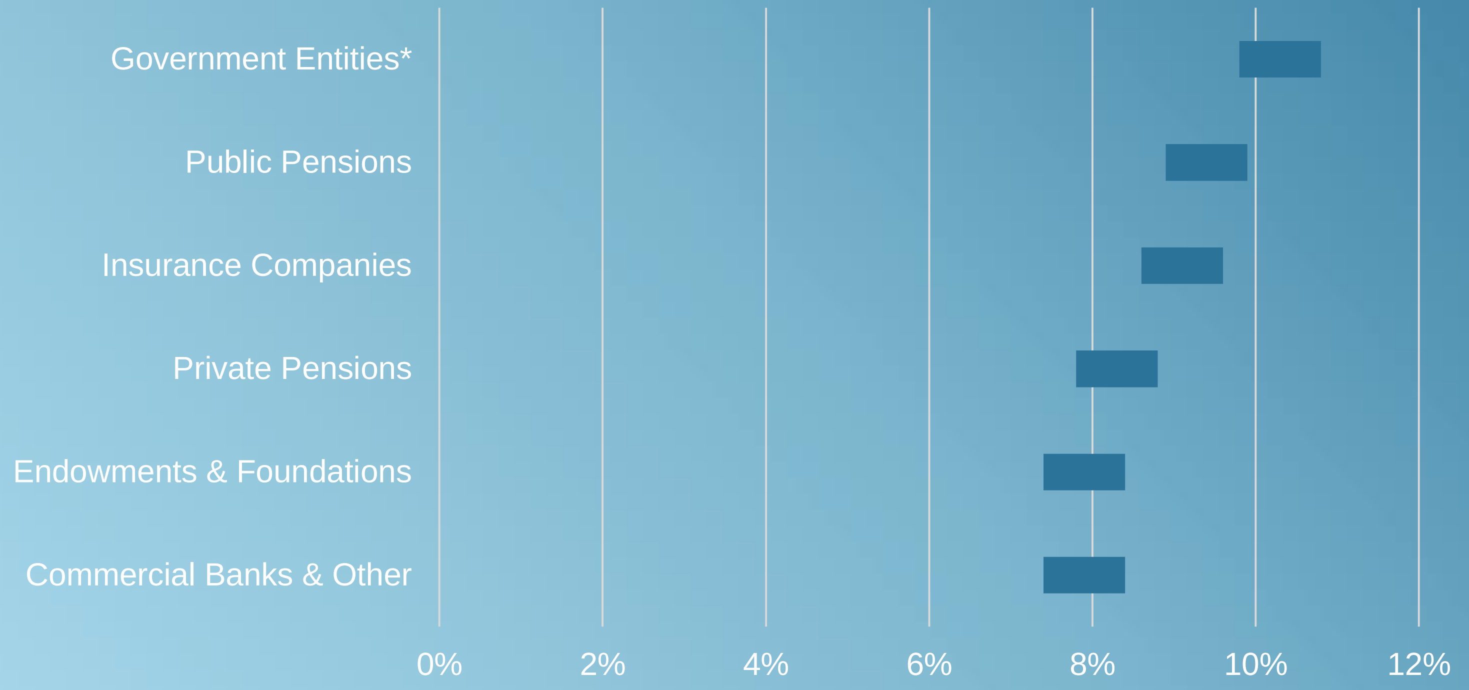
Sources: DTZ Money Into Property (2014), FTSE Global All Cap, Barclays Global Aggregate Bond Index (2015), Oxford Economics (2015)

Academic research results



Source: Seiler et al. (1999) and NBIM own research

Investor target allocation to real estate



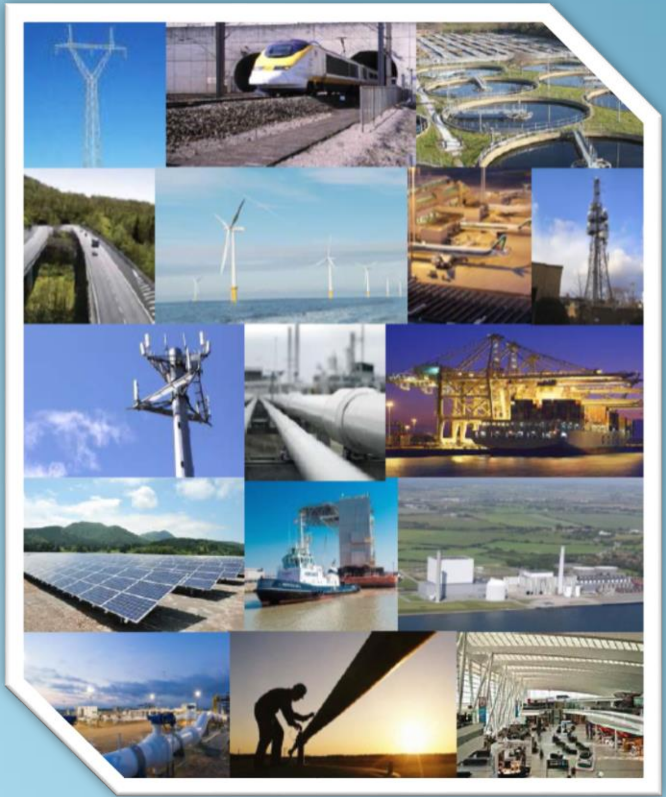
* Including Sovereign Wealth Funds

Source: Cornell University (2013)

1 How much should the fund invest in real estate?

10 percent defined as a range of +/- 5 percent around target

Infrastructure investments



WHAT?	A heterogonous set of investment opportunities
WHY?	Secure long-term purchasing power of the fund
HOW?	A wide range of opportunities available – total portfolio approach warranted

2

Distinguishing features

- Provisions of key public services
- Economies of scale
- Long project life-cycle
- Limited competition
  - Natural monopolies
  - Regulated assets
  - Government concessions

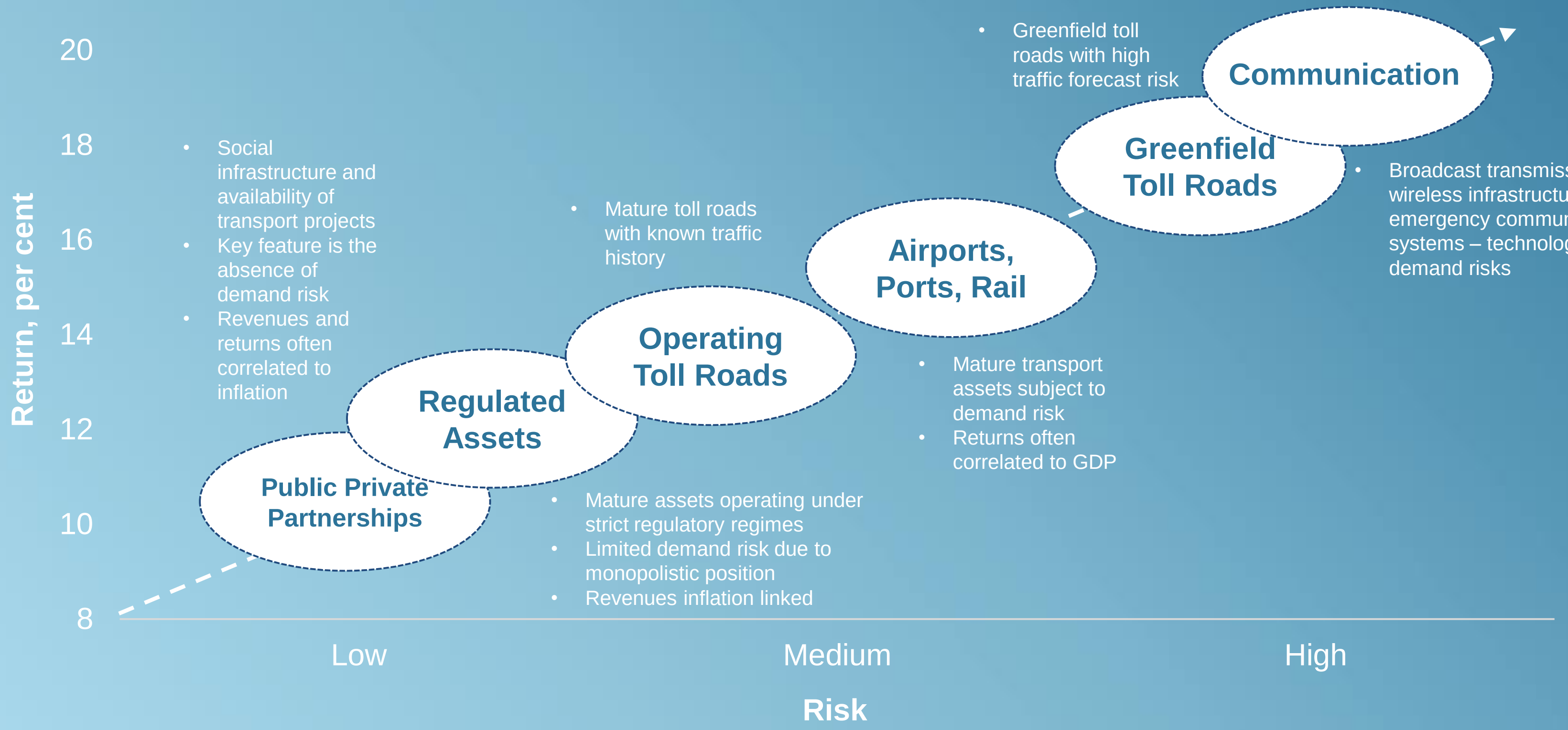
Infrastructure investments

Long-term investments that could provide attractive attributes

Diversification	Yield	Stability	Duration	Inflation
Relatively low correlation with other assets	Existing assets generate free cash flow	Essential service High barriers to entry Less exposed to business cycles	Cash-flow often regulated in long-term contracts	Cash-flows often adjusted for inflation

A heterogeneous set of investment opportunities

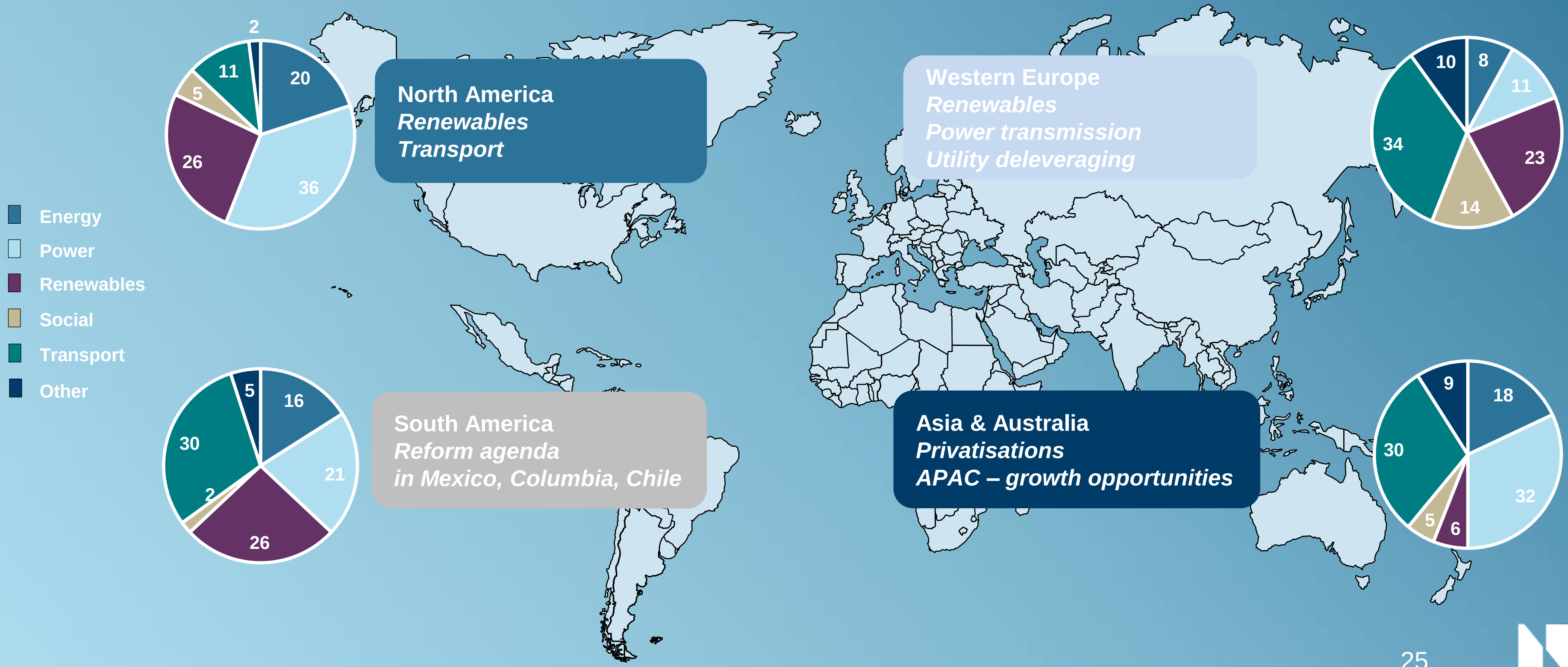
2



Source: First State Investments and NBIM. For illustration purposes only.

The opportunity set is global

Substantial funding needs going forward

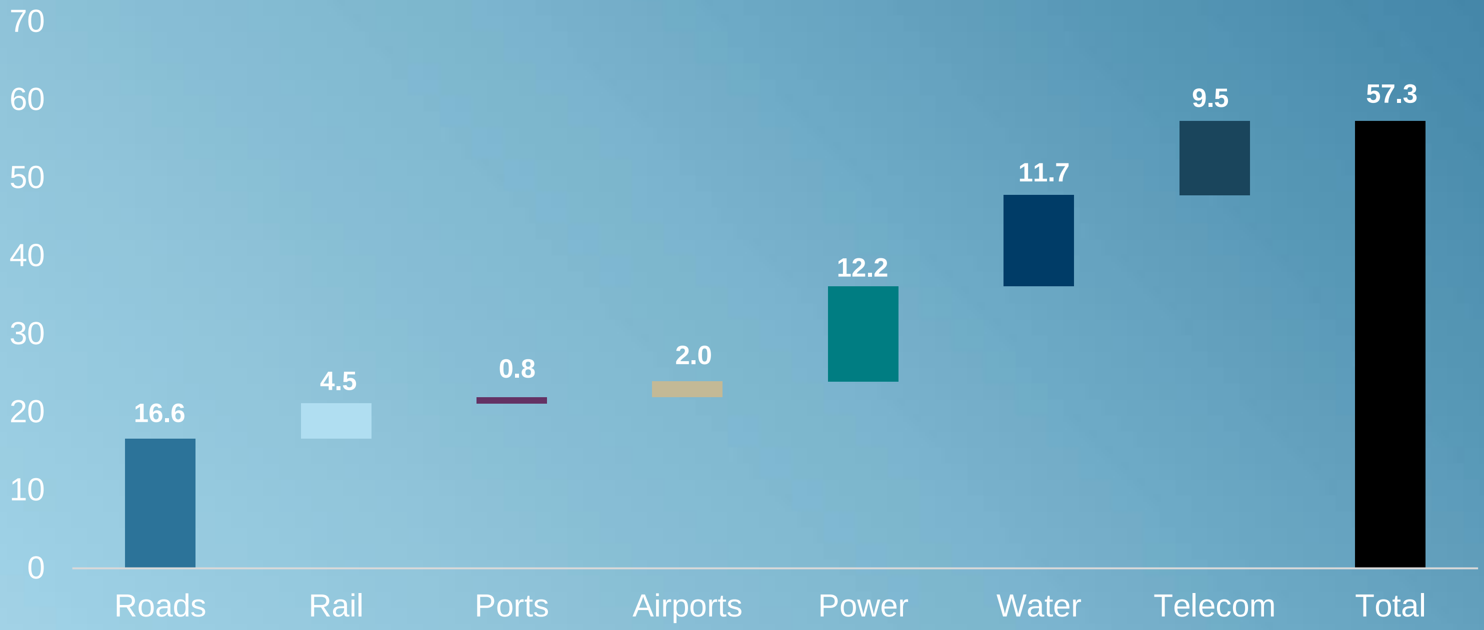


Source: Blackrock, data sourced from Dealogic as of December 31 2014

2

The opportunity set may increase

Substantial funding needs going forward



Sources: McKinsey Global Institute, McKinsey Infrastructure Practice, "Infrastructure Productivity: How to save 1tn USD a year", January 2013. National Economic Counsel and the President's Council of Economic Advisors, "An Economic Analysis of Transportation Infrastructure Investment", July 2014.
Estimate need based on projected growth 2013-2030 assuming infrastructure stock is maintained at 70% of GDP.
Actual spend calculated using weighted average annual expenditure over years of available data, 1992-2011.

2

Key risks with infrastructure

- Liquidity risk
- Currency risk
- Regulatory risks

Key pillars of strategy

Preliminary thoughts

2

- Capitalise on the fund’s comparative advantages
- Concentrate on assets with high cash flow visibility
- Build on existing competence
- Establish strategic partnerships

2 Should the fund invest in unlisted infrastructure?

Yes, but cautious approach is warranted, 0-5 percent range

3

Management framework

Stortinget

Norwegian Parliament

Government Pension Fund Act

Annual white paper. National budget and accounts

FINANSDEPARTEMENTET

Ministry of Finance

Management mandate and ethical guidelines

Quarterly and annual reports. Advice on investment strategy

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3

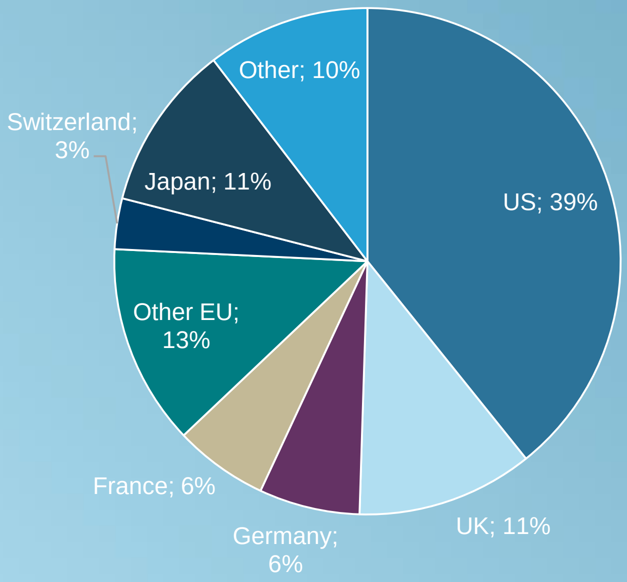
Mandate concepts do not work for unlisted

Index	*Not investable*
Currency basket	*Not given by index*
Risk tolerance	*Real estate adds equity-like exposure*
Relative risk	*No frequently updated market prices*
Rebalancing	*Lack of liquid market place*
Financial investor	*Strategic investor*

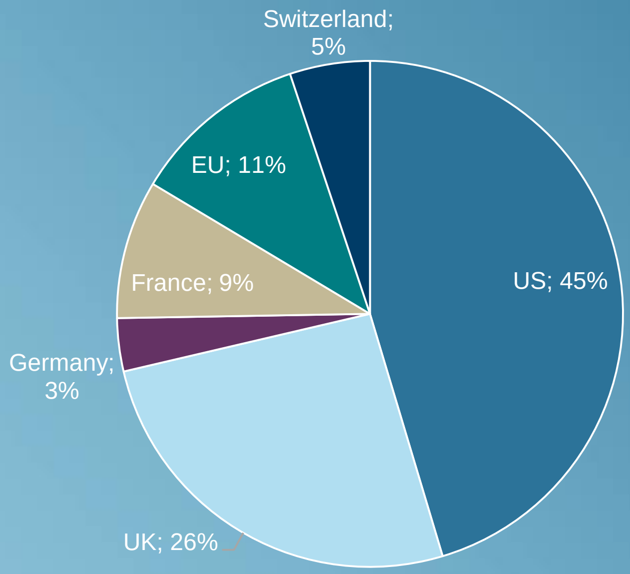
Real estate index not investable

NBIM unlisted RE vs IPD – countries

IPD



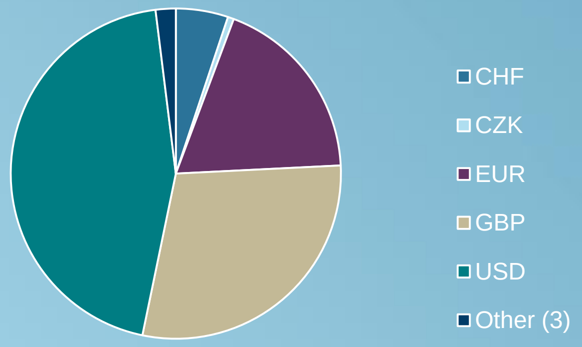
Gross exposure NBIM unlisted RE



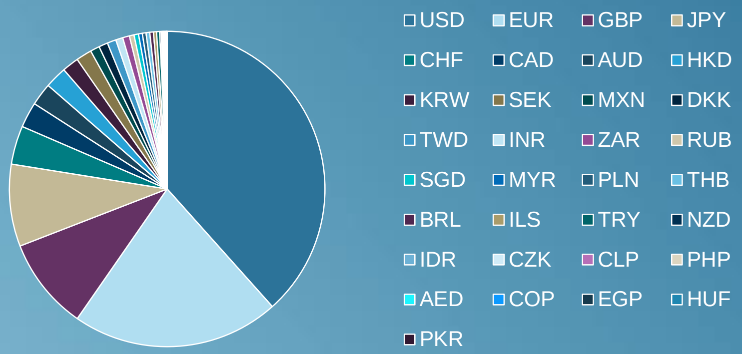
Notes: IPD data is estimated market value as of year-end 2014, NBIM unlisted data is as of end Oct 2015. Category "Other" in IPD includes Australia (34%), Canada (47%), New Zealand (3%), South Africa (7%), South Korea (9%).

Currency basket?

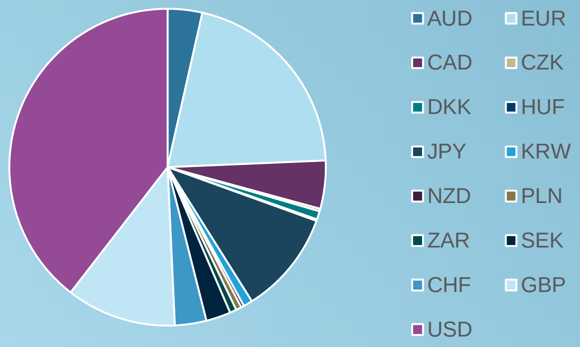
GPFG unlisted real estate



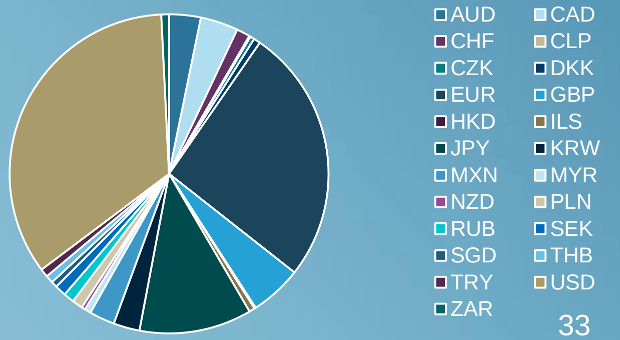
GPFG currency basket



IPD

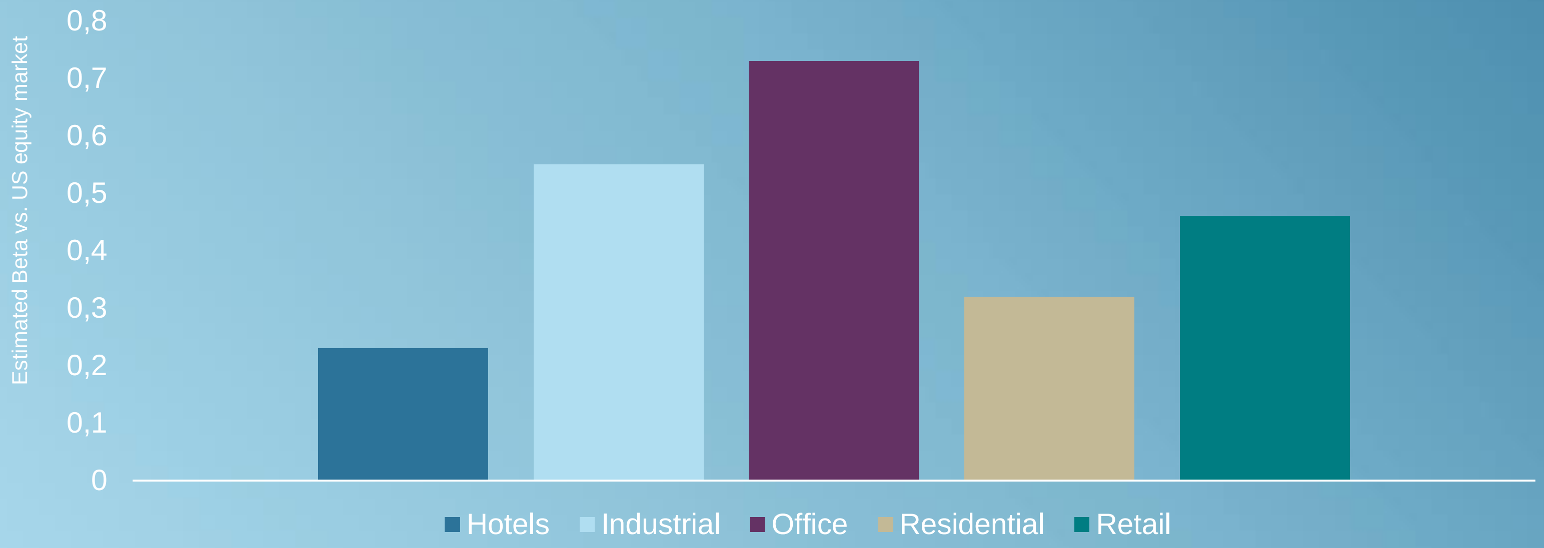


GPFG FI benchmark



Risk tolerance

Real estate investments add equity-like exposure



Source: IPD, MSCI, NBIM calculations. US data only. Period 1991 to 2015.
De-smoothed IPD US return series, all auto correlation removed. For illustration purposes only.

3

We propose to keep as is

- Ministry of Finance decides **asset allocation**
  - Asset classes
  - Ranges
  - Rebalancing

- Ministry of Finance decides **performance measure** and **relative risk limit**
  - Reference index
  - Currency basket
  - Tracking error

To deal with these challenges…

3

- The IPD index – not adequate
- Currency composition of real estate portfolio differs from funding
- Real estate not considered in owner’s risk tolerance
- Real estate not included in relative risk calculations

3

…we propose

- The IPD index – not adequate
  - reference index for fund made up of bonds and equities only
- Currency composition of real estate portfolio differs from funding
  - real estate included in total currency risk
- Real estate not considered in owner’s risk tolerance
  - real estate included in total market risk
- Real estate not included in relative risk calculations
  - real estate included in relative risk

Advice

1. **How much should the fund invest in real estate?**
   10 percent defined as a range of +/- 5 percent around target

2. **Should the fund invest in unlisted infrastructure?**
   Yes, but cautious approach is warranted, 0 to 5 percent range

3. **Is there a need to adjust the management framework?**
   Yes, a more holistic framework should be adopted,
   while MoF takes the most important decisions

OUR MISSION IS TO SAFEGUARD AND BUILD FINANCIAL WEALTH FOR FUTURE GENERATIONS