

**EDHEC Alternative  
Investment Days  
2007**

Bringing Academic Insights to  
Alternative Investment

**16:00-17:30  
Stream 3J:  
Real Estate Investment and Risk Management**

Chairman:

**Theo Jeurissen**, Director Investments, PMT and Advisory Board Member, EDHEC Risk and Asset Management Research Centre

Speaker:

**Frédéric Ducoulombier**, Associate Professor and Director, EDHEC Asset Management Education

Panellists:

**Stephen Ashworth**, Partner, Reech Alternative Investment Management

**Jon Lekander**, International Director - Head of Investment Strategy, Aberdeen Property Investors Holding AB

**Liz Peace**, Chief Executive, British Property Federation

**EDHEC Alternative Investment Days 2007**  
*London, November 21 – 16:00-17:30*

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# **Real Estate Investment and Risk Management**

Results of a pan-European EDHEC survey sponsored by:

**Aberdeen Property Investors**  
and **Groupe UFG**

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# Real Estate Investment and Risk Management

## **1. Revisiting real estate as an asset allocation class**

1.1 The case for real estate: a brief review of academic results

1.2 Real estate as an asset class: investors' perceptions

## **2. Real estate risks and risk management**

2.1 Investors' risk perceptions and risk management practices

2.2 The benefits and challenges of real estate diversification

## **3. Real estate access routes**

3.1 Investors' perceptions and practices

3.2 Benefits and limits of the main access routes

3.3 The potential of indices as investment vehicles

## **4. The emergence of property derivatives**

4.1 Benefits, limits, and challenges of property derivatives

4.2 Investors' perceptions and expectations

## 1.1 The case for real estate: review of academic results

### The state and limits of knowledge

- 30 years of academic research have confirmed the excellence of real estate as a diversifier.
- However, data availability and quality limits make it difficult to define an optimal allocation.
  - The emergence of information providers compiling indices is a recent phenomenon in all but a few countries.
  - Reference commercial property indices are based on intermittent and subjective valuations, which results in late availability, smoothing, lagging, and seasonality in data. Newly developed transactions based indices also have problems.

## 1.1 The case for real estate: review of academic results

### Real estate in an asset management perspective

- The early applications of modern finance tools to multi asset class portfolios typically suggested unreasonably high allocations to real estate.
- Recent studies addressing the biases of indices recommend allocating between 15% and 25% to real estate based on a risk budget comparable to a 60%-40% equities-bonds allocation.
- When international investment is allowed, the overall allocation to real estate is generally found to increase.

## 1.1 The case for real estate: review of academic results

### Real estate in an ALM perspective

- Most exploratory studies looking at real estate in an ALM framework suggest lower allocations (5%-15%) owing to poor correlations with pension fund liabilities.
- Unfortunately, these studies neither unsmooth the returns from direct real estate indices nor neutralise liquidity fluctuations.
- Booth and Matysiak (2004) show that the use of unsmoothed data reduces real estate risk in an ALM context.

## 1.1 The case for real estate: review of academic results

### Real estate in an ALM perspective

- Good correlation to inflation and demographic factors would support the use of real estate for liability-hedging.
- There is no longer a consensus on whether real estate is a good hedge against inflation; however, the question is not yet settled.
- Studies looking at housing and residential real estate or the long-term confirm inflation protection benefits e.g., Bond & Seiler (1998), Quan & Titman (1999), Goetzmann & Valaitis (2006).

## 1.2 Real estate as an asset class: investors' perceptions

### Geographic and institutional coverage of survey

- Survey conducted between November 2006 and May 2007
- European results based on 143 completed questionnaires
- Geographic break-up
  - EU15: 80.4%; Switzerland: 14.7%; EU25-EU15: 2.1%
- Institutional break-up
  - Insurance companies, pension funds, foundations: 35.0%
  - Diversified asset managers: 31.5%,
  - Real estate investment managers/funds and REITs: 26.6%
  - Private Bankers, Family Offices, Consultants, Others: 7%

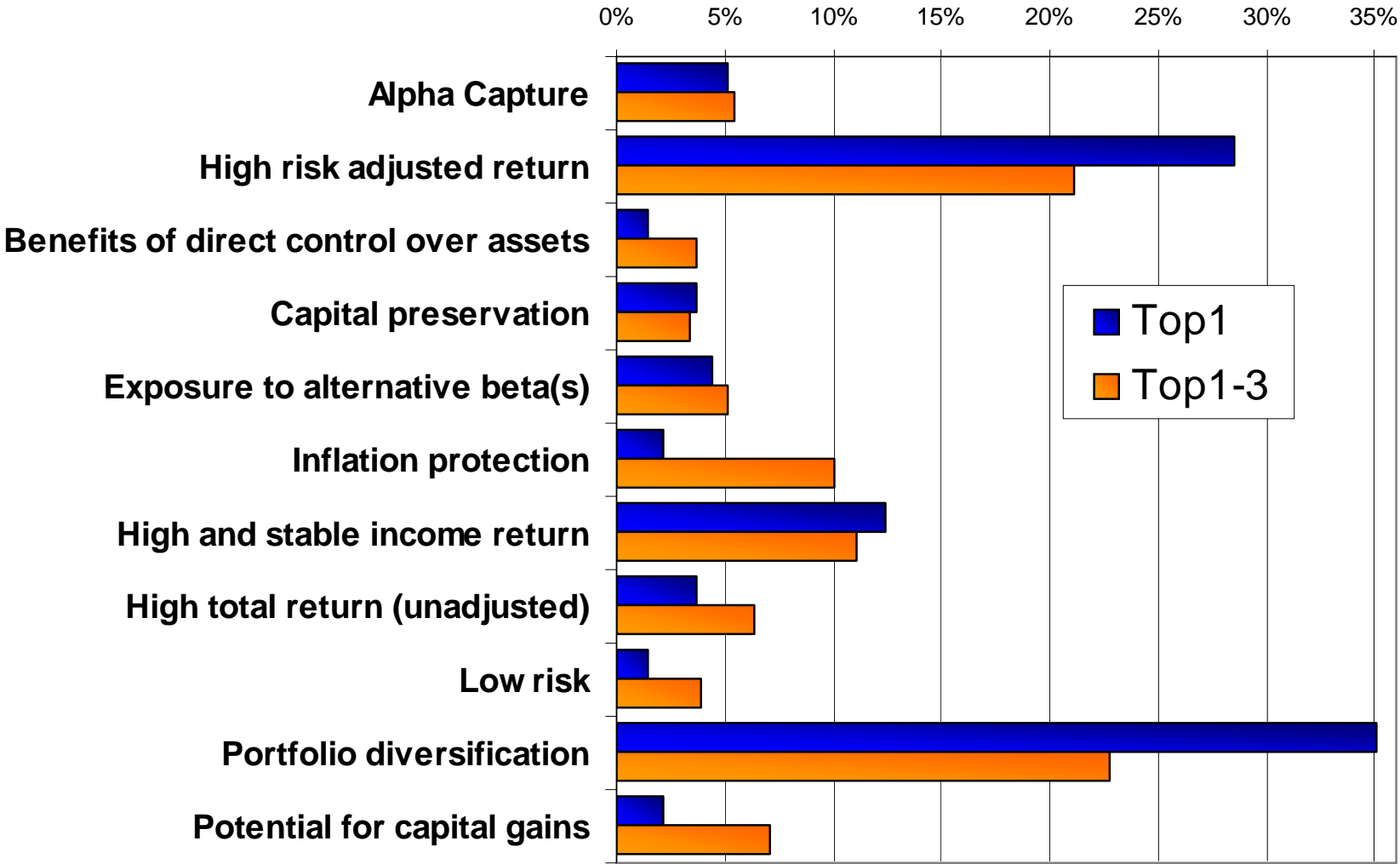
## 1.2 Real estate as an asset class: investors' perceptions

### Experienced survey respondents

- Experience of real estate
  - 86% standing real estate investments
  - 3.5% investments in progress
  - 5.6% reviewing the appropriateness of the class
  - 4.9% no investment project
- Invested institutions have an average experience of 24.5 years (median of 15 years).
- Real estate holdings: Median €700m, Average €4bn

# 1.2 Real estate as an asset class: investors' perceptions

## Diversification and high returns key reasons for investing



## 1.2 Real estate as an asset class: investors' perceptions

### Investment approach and target allocation

- Real estate investment specialists excluded
- 74.5% consider real estate as a strategic asset allocation class
  - Average allocation: 9.9%,
  - Average allocation range: 5.7%-13.5%,
  - No significant differences between types of investors
- 23.5% invest opportunistically

# 1. Real estate as an asset class

## The allocation puzzle

- The real estate allocation found is short of the optimal level suggested by academic studies.
- Possible explanations:
  - data and statistical issues,
  - unrealistic assumptions:
    - failure to account for illiquidity,
    - failure to account for high transaction/management costs,
    - use of non-investable non-replicable indices,
    - no restrictions on international investment.
- Better studies and new vehicles could help narrow the gap.

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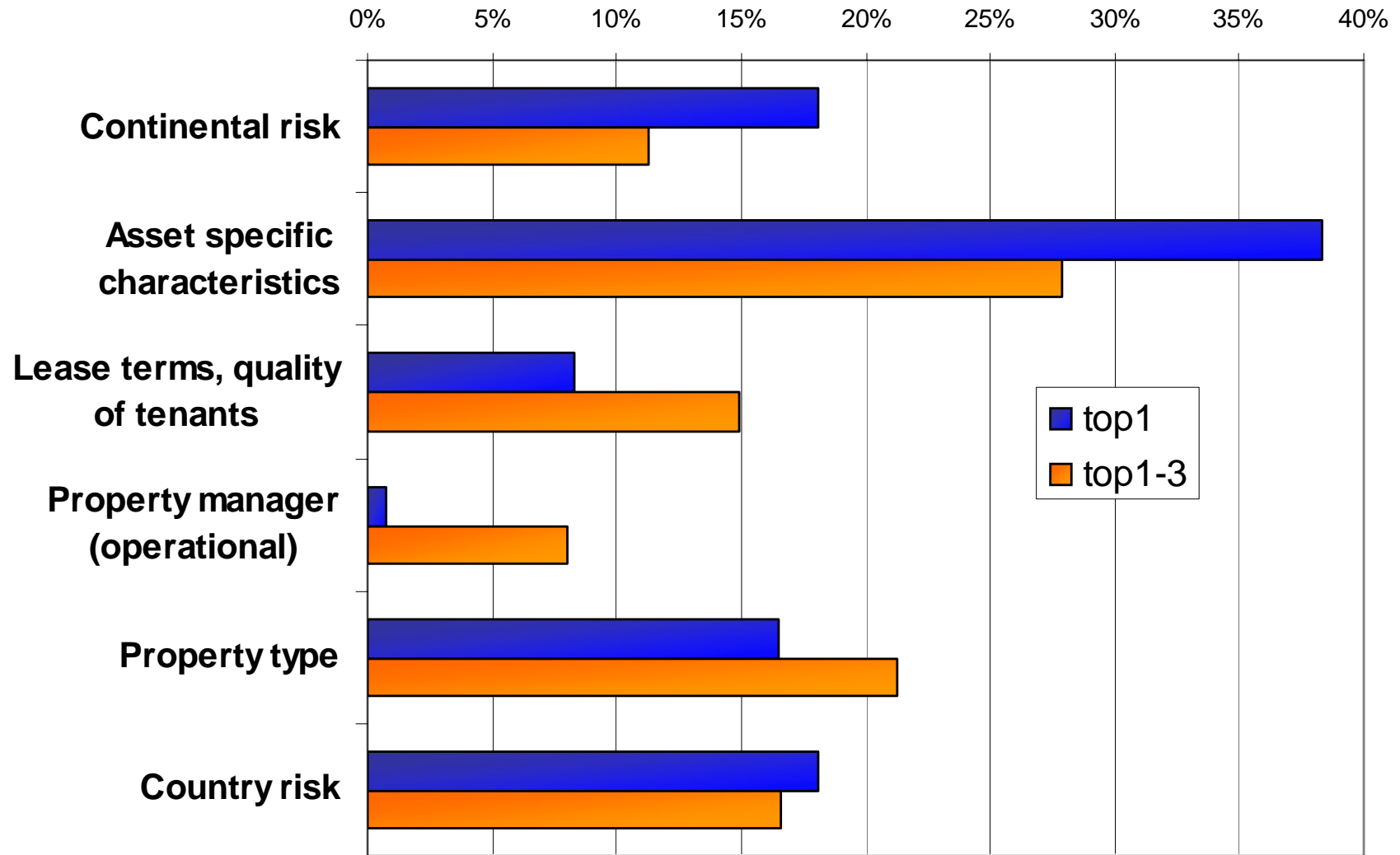
## 4. The emergence of property derivatives

4.1 Benefits, limits, and challenges of property derivatives

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## 2.1 Investors' risk perceptions and management practices

### Idiosyncratic, geographic, property type risks drive returns



## 2.1 Investors' risk perceptions and management practices

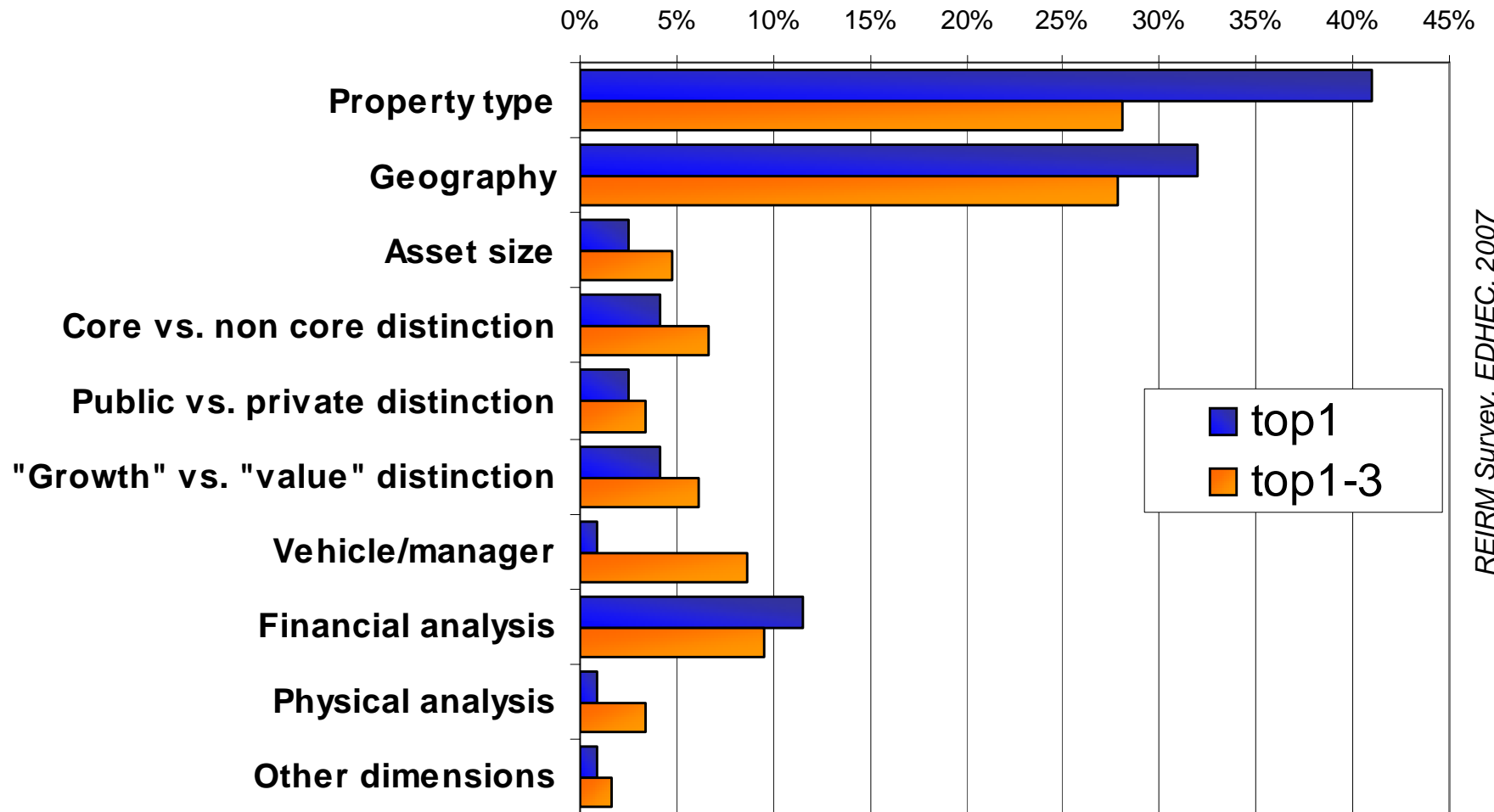
### Relevance of various risk management approaches

	Very useful	Rather useful	Not so useful	Useless	Average score
Allocation ceiling	<b>44.0%</b>	29.6%	11.2%	15.2%	0.8
<b>Diversification</b>	<b>71.2%</b>	24.0%	3.2%	1.6%	1.6
Capital protected products	4.2%	15.1%	34.5%	<b>46.2%</b>	-1
Property derivatives	6.0%	30.8%	30.8%	<b>32.5%</b>	-0.5

*REIRM Survey, EDHEC, 2007*

## 2.1 Investors' risk perceptions and management practices

### Relevance of various diversification approaches



## 2.2 Benefits and challenges of real estate diversification

### Diversification is a daunting task

- Idiosyncratic risk is much more important in real estate than in other asset classes.
- On average, equal-weighted investment in 30-40 buildings with normal returns is needed to establish a highly diversified portfolio.
- Equal weighting is not possible, returns are not normal, and actual portfolios are distributed around the average...
- Investment in thousands of properties is required to achieve 95% diversification of the specific risk.

## 2.2 Benefits and challenges of real estate diversification

### Domestic diversification

- At the country level, property type diversification is found to be superior to geographic distribution.
- The use of economic rather than administrative regions confirms this superiority.

## 2.2 Benefits and challenges of real estate diversification

### Benefits of international diversification

- The bulk of academic studies concludes that international diversification is highly relevant in real estate.
- However, real estate markets are more integrated than many think as they are jointly dependent on economic conditions at the continental and world levels.
- The existence of a continental factor in Europe and North America has been documented, suggesting additional gains from intercontinental diversification.

## 2.2 Benefits and challenges of real estate diversification

### Intermediated investment as a must for diversification

- Realising the benefits of real estate as an asset class requires a diversified portfolio be set up.
- According to practitioners and academics, the two main dimensions of diversification are geography and property type.
- The specific characteristics of real estate make diversification through direct investments a daunting challenge.
- Costs and difficulties further increase when an investor leaves its home country or field of expertise.

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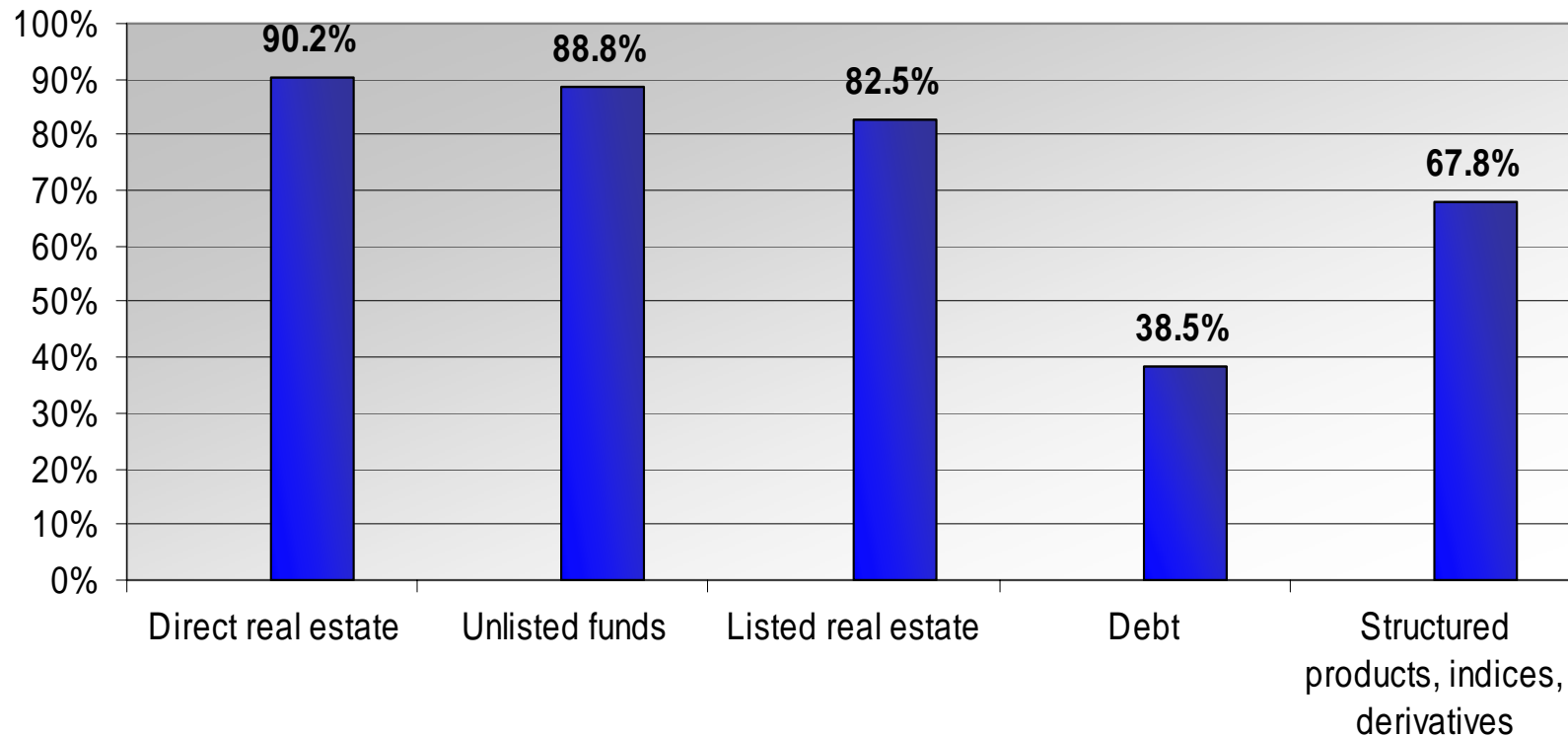
4.1 Benefits, limits, and challenges of property derivatives

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### 3.1 Investors' perceptions and practices

Perceptions: investors are open to intermediated investment

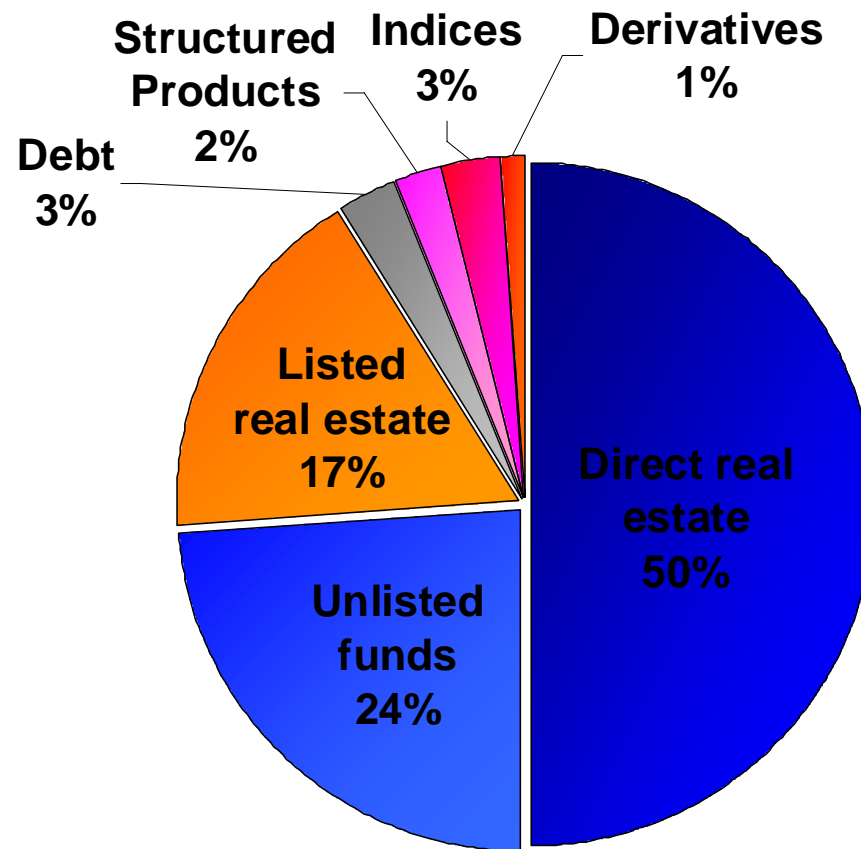
**What investments belong to the real estate class?**



*REIRM Survey, EDHEC, 2007*

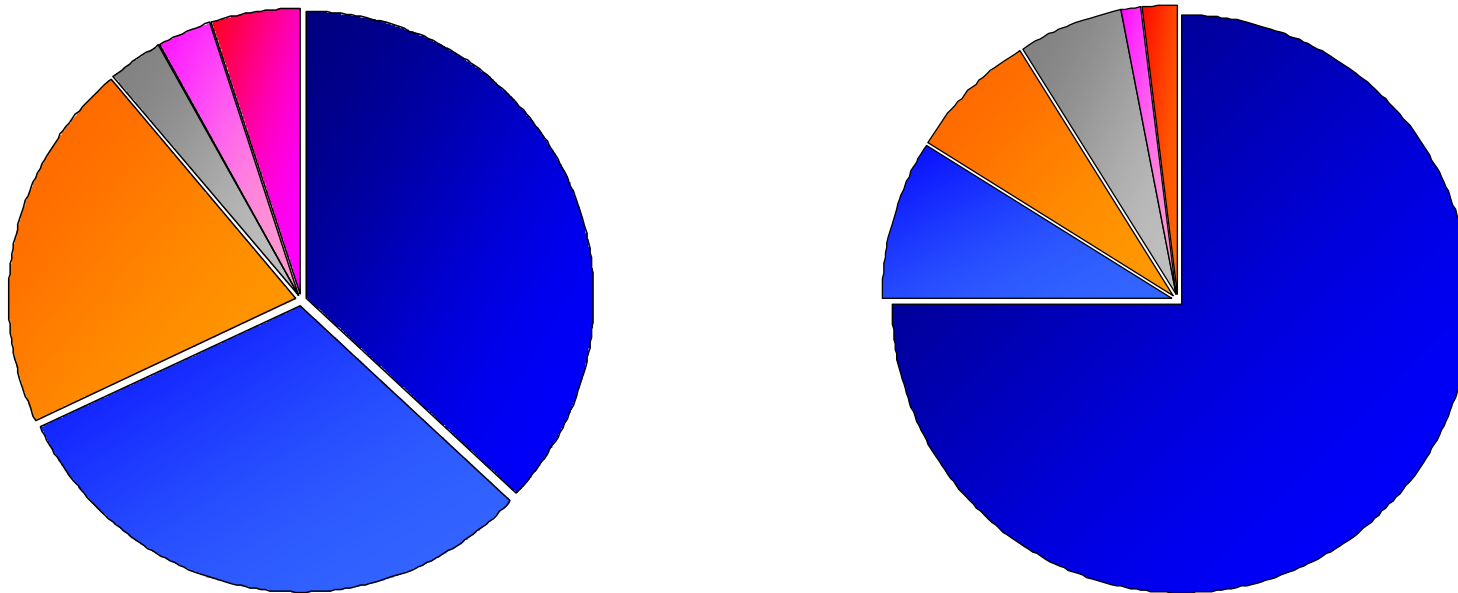
### 3.1 Investors' perceptions and practices

Allocation: tie between direct and indirect investments



### 3.1 Investors' perceptions and practices

Allocation: specialists invest 75% of their funds directly



## 3.2 Benefits and limits of the main access routes

	<b>Direct investment</b>	<b>Non-listed closed fund</b>	<b>Non-listed open fund</b>	<b>Listed real estate</b>
<b>Control / Need for property mgt</b>	<b>Maximum</b>	Delegated	Delegated	Delegated
<b>Unit price</b>	<b>Very high</b>	<b>High</b>	<b>Low</b>	<b>Very Low</b>
<b>Diversification of holdings</b>	<b>Very Poor</b>	Some	<b>Average to good</b>	<b>Average to v. good</b>
<b>Liquidity risk</b>	<b>High</b>	<b>Very High</b>	Moderate	<b>Limited</b>
<b>Transaction costs</b>	<b>Very High</b>	<b>Very High</b>	<b>High</b>	<b>Low</b>
<b>Closeness to direct RE</b>	<b>The real thing</b>	<b>Close</b>	<b>Relatively close</b>	<b>Disconnected</b>
<b>Information efficiency</b>	<b>Low</b>	<b>Very Low</b>	Variable	<b>High</b>
<b>Need for expertise</b>	<b>Multiple</b>	Fund selection	Fund selection	Stock selection
<b>Leverage</b>	Possible	High	Moderate	Moderate
<b>Management costs</b>	n/a	<b>Very High</b>	<b>High</b>	n/a
<b>Management &amp; operational risk</b>	n/a	Yes	Variable	Variable
<b>Access to impracticable assets</b>	n/a	<b>Yes</b>	<b>Yes</b>	<b>Yes</b>
<b>Complete market</b>	Yes	No	No	No
<b>Correlation to equities</b>	<b>Very Low</b>	<b>Very Low</b>	Variable	<b>High</b>
<b>Short-selling</b>	<b>Impossible</b>	n/a	n/a	Some

## 3.3 The potential of indices as investment vehicles

### Indices as killer aps?

- As investment vehicles, real estate indices can:
  - Provide exposure to a diversified portfolio at the property type, country, region, world level,
  - Give investors access to new sectors and regions.

### 3.3 The potential of indices as investment vehicles

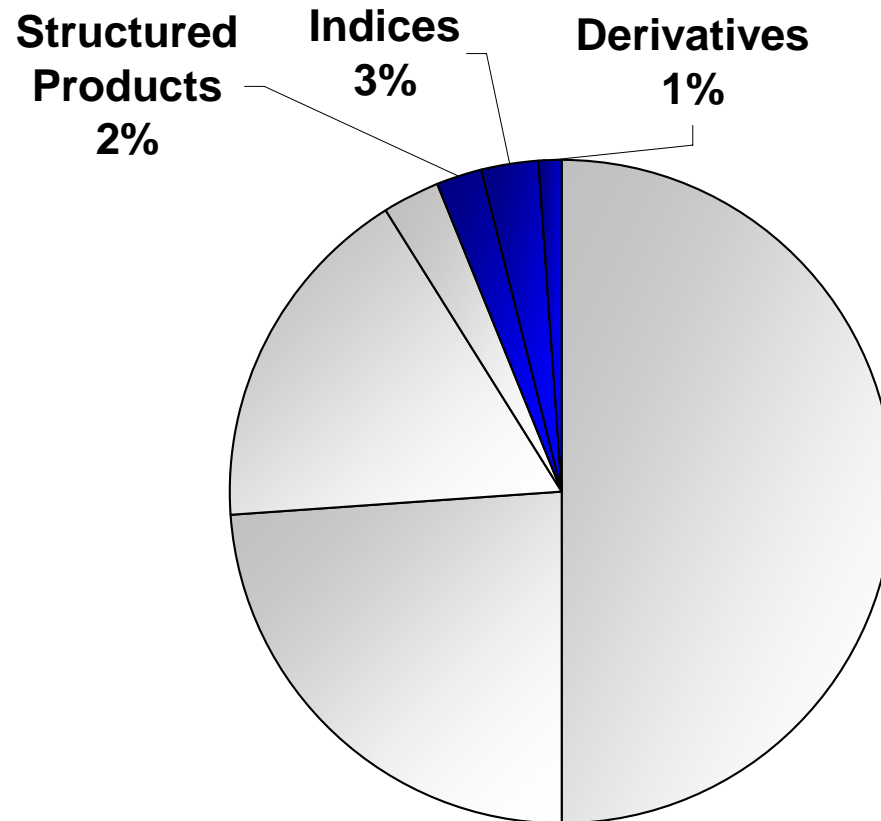
#### The potential of indices as diversifiers

<b>Reason for investing in RE</b>	<b>Need for</b>	<b>Index Relevance</b>
Diversification	Beta	Total
High risk-adjusted return	Alpha + Beta	High
Inflation protection	Beta	Total

<b>Key risks perceived</b>	<b>Need for</b>	<b>Index Relevance</b>
<b>Specific Risk</b> Asset characteristics Lease terms and quality of tenants Operational management	Diversification	Total
<b>Geographic Risk</b> At the country or sub-country regional level At the continental level	Diversification	Total
<b>Sector Risk (Property Type)</b>	Diversification	Total

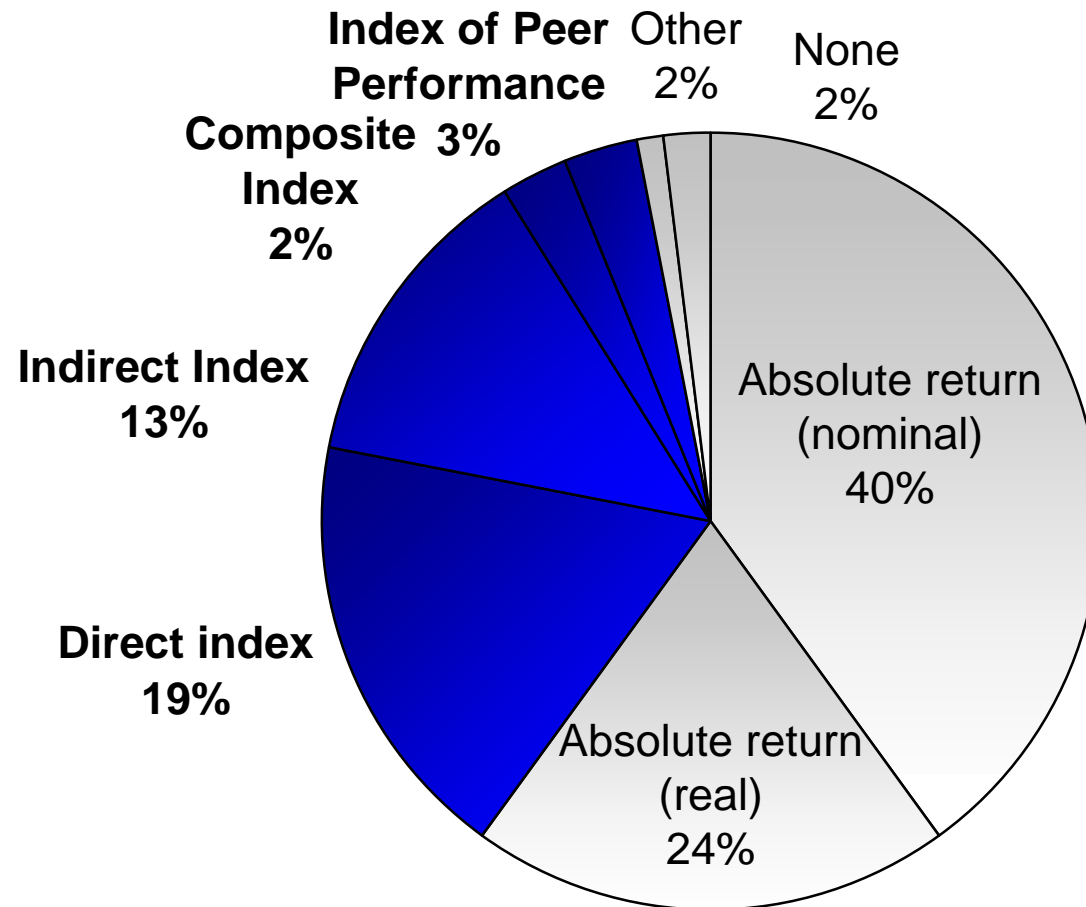
### 3.3 The potential of indices as investment vehicles

Currently only 4%-6% of investments are index-related...



### 3.3 The potential of indices as investment vehicles ... but 31-37% of investors have a relative return orientation

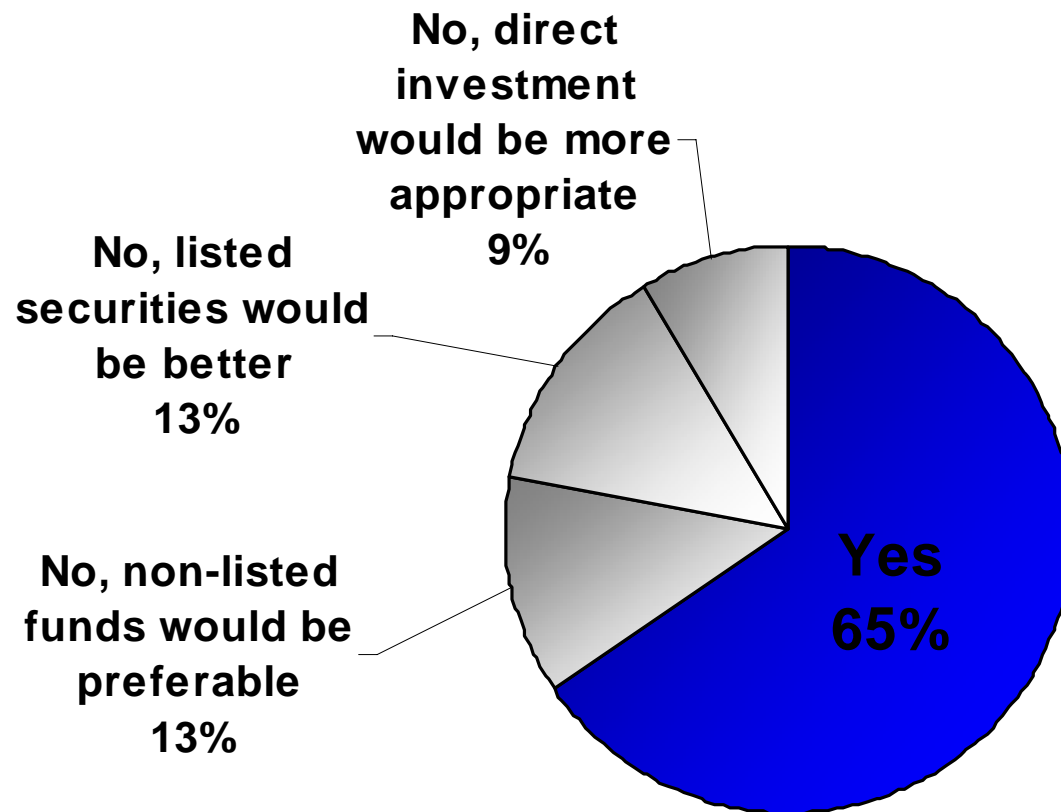
**Main benchmark used for RE performance measurement**



### 3.3 The potential of indices as investment vehicles

#### Indices as international diversifiers

**Would a European investable index be appropriate to diversify the real estate portfolio of an investor?**



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## 4.1 Benefits, limits and challenges of property derivatives

### Property derivatives as a hedging tool

- In a hedging perspective, property derivatives can theoretically:
  - protect the financial conditions of real estate transactions,
  - immunise a real estate portfolio against market-wide movements.
- Without property derivatives, it is difficult to hedge the risks of direct or unlisted real estate investments.
- The limit to hedging with property derivatives is the tracking error of the portfolio vis-à-vis the index.
  - this basis risk can be very important,
  - If the portfolio is the index, hedging effectiveness is optimal.

## 4.1 Benefits, limits and challenges of property derivatives

### Other uses of property derivatives

- Besides hedging, property derivatives products allow one to:
  - gain exposure to non-investable indices,
  - implement a wider range of arbitrage strategies,
  - “sell the market”
  - reduce transaction costs, increase liquidity,
  - take advantage of leverage,
  - get access to cheaper financing (swaps),
  - rebalance portfolios synthetically.

## 4.1 Benefits, limits and challenges of property derivatives

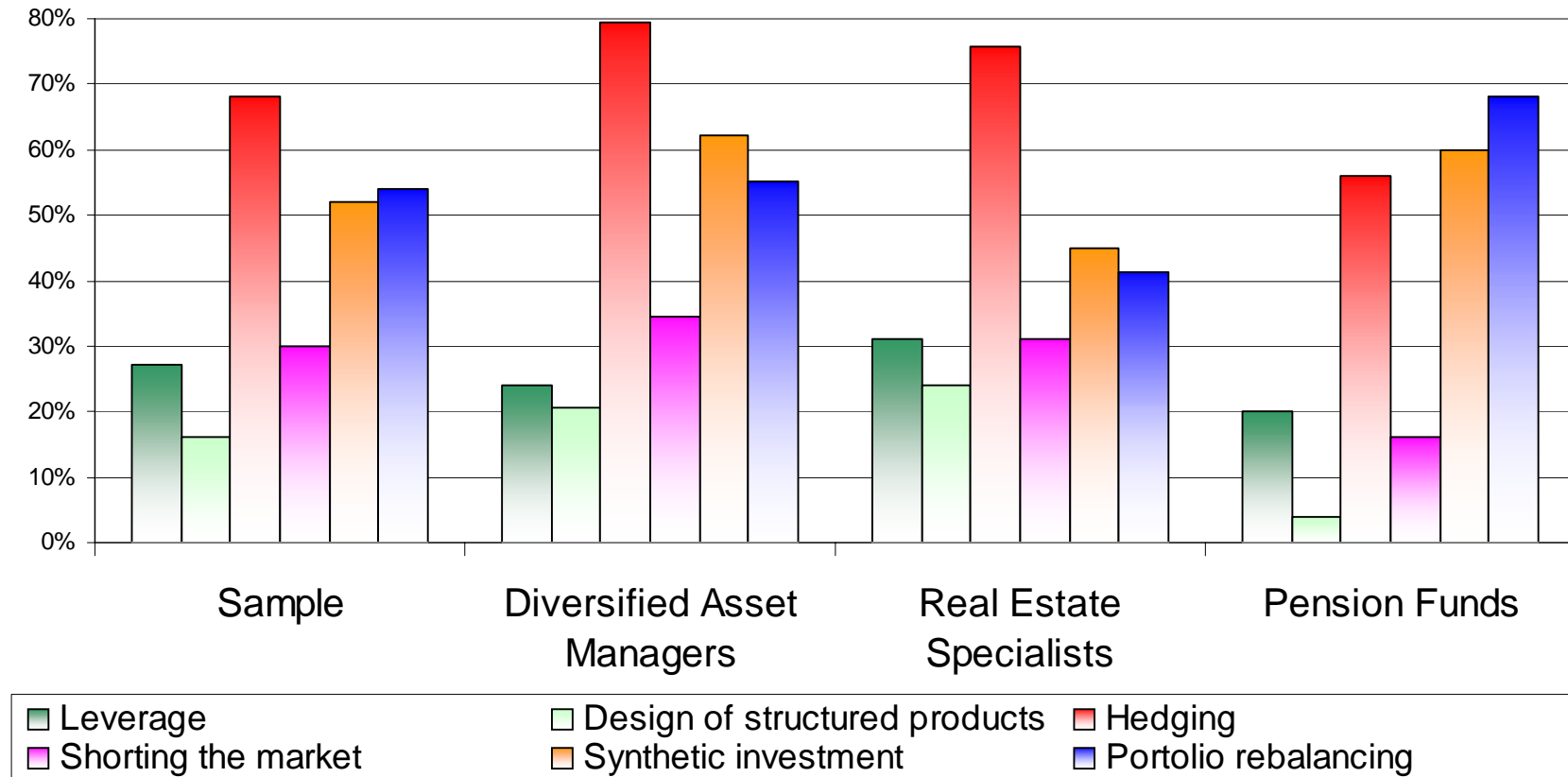
### Challenges for real estate derivatives issuers

- Derivatives on non-investable indices are hard to hedge/price since cash hedging is not possible.
- Two (non-exclusive) possibilities exist for hedging such derivatives:
  - A cash based approach,
  - A synthetic approach relying on risk factor analysis.
- Investable indices allow partial cash hedging of derivatives.
- A thriving market in investable indices would be a healthy prerequisite to the offering of derivatives as it would enable pricing by arbitrage.

## 4.2 Investors' perceptions and expectations

### Investors understand the possible uses of derivatives

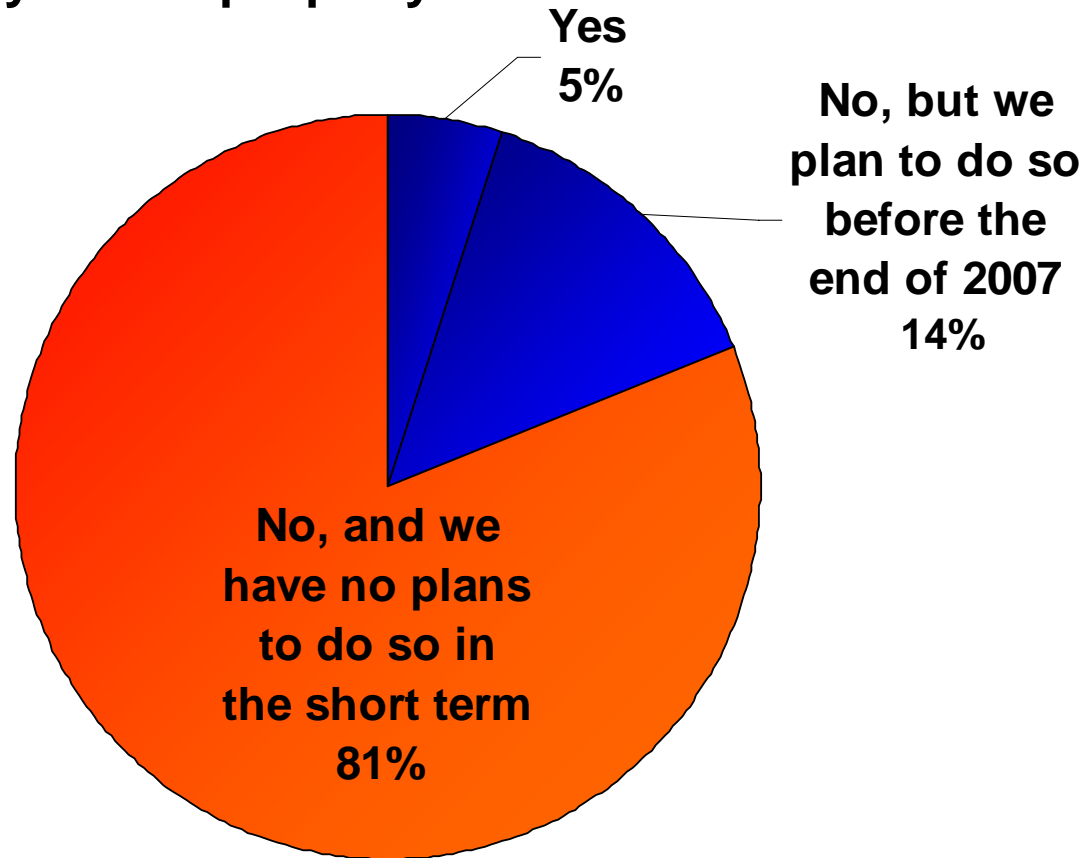
#### Which of the following are possible uses?



## 4.2 Investors' perceptions and expectations

81% of investors have no intention to use derivatives

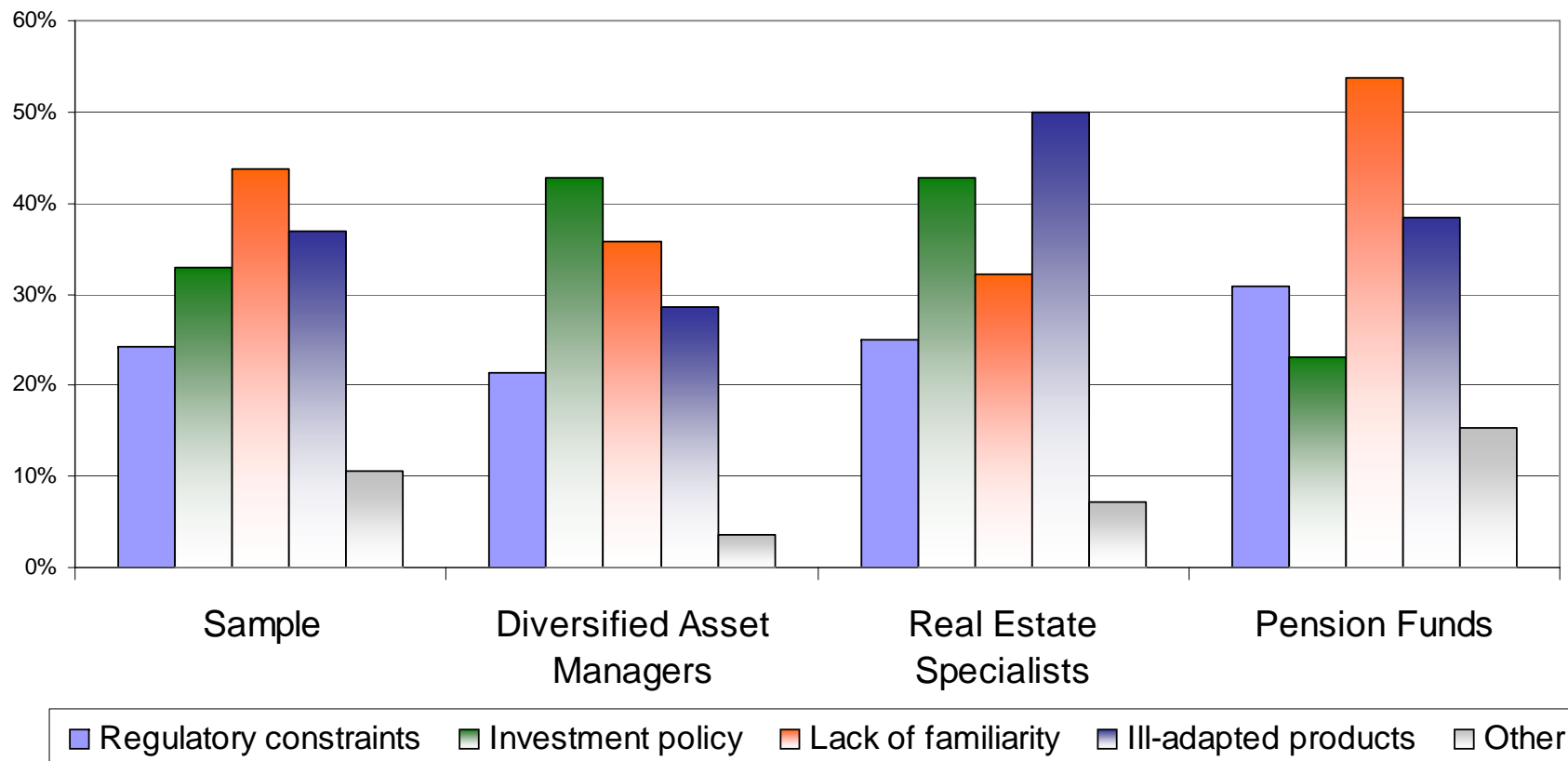
**Do you use property derivatives?**



## 4.2 Investors' perceptions and expectations

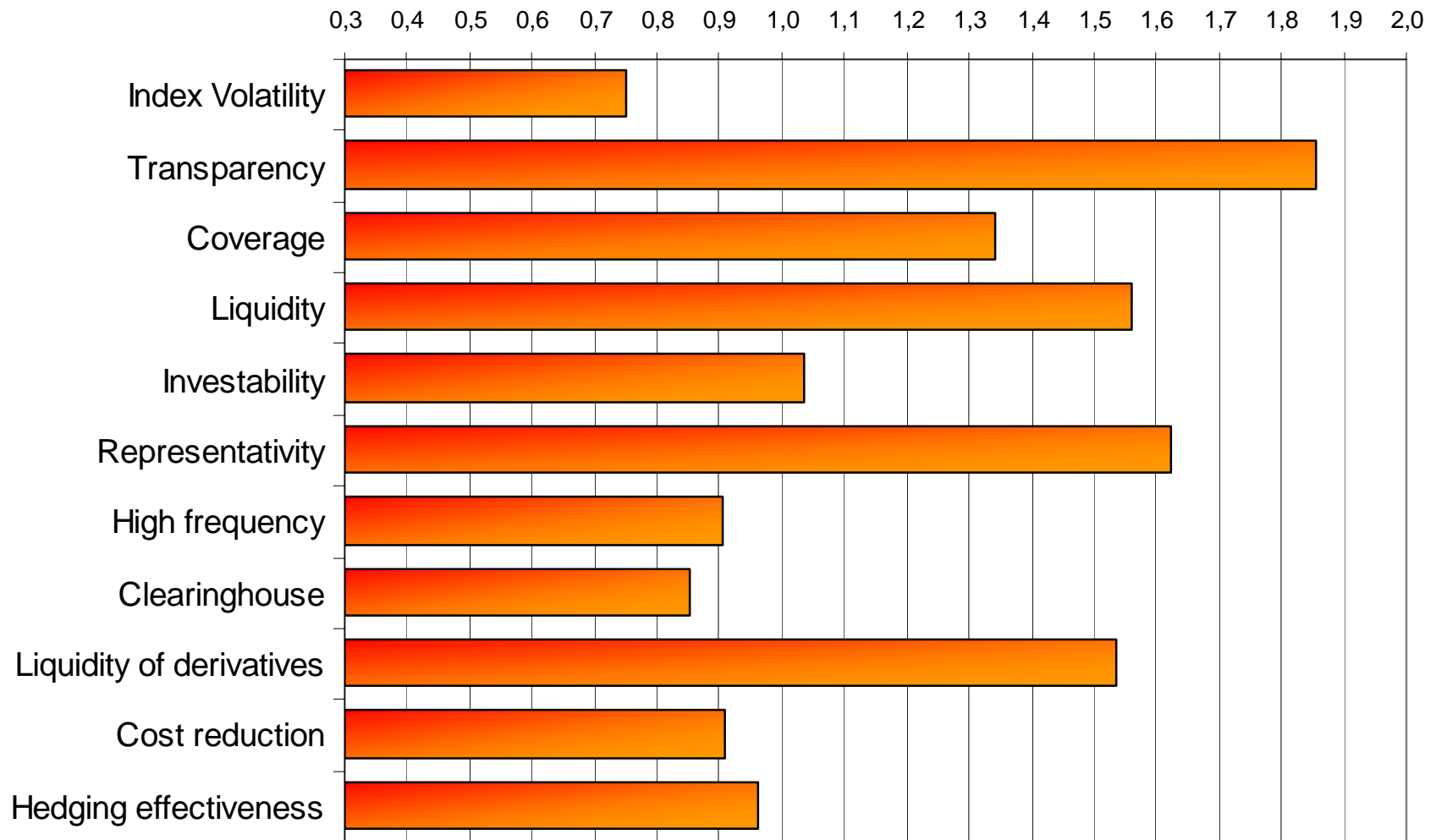
### Investors lack familiarity with or find derivatives unattractive

**Reasons for rejecting derivatives**



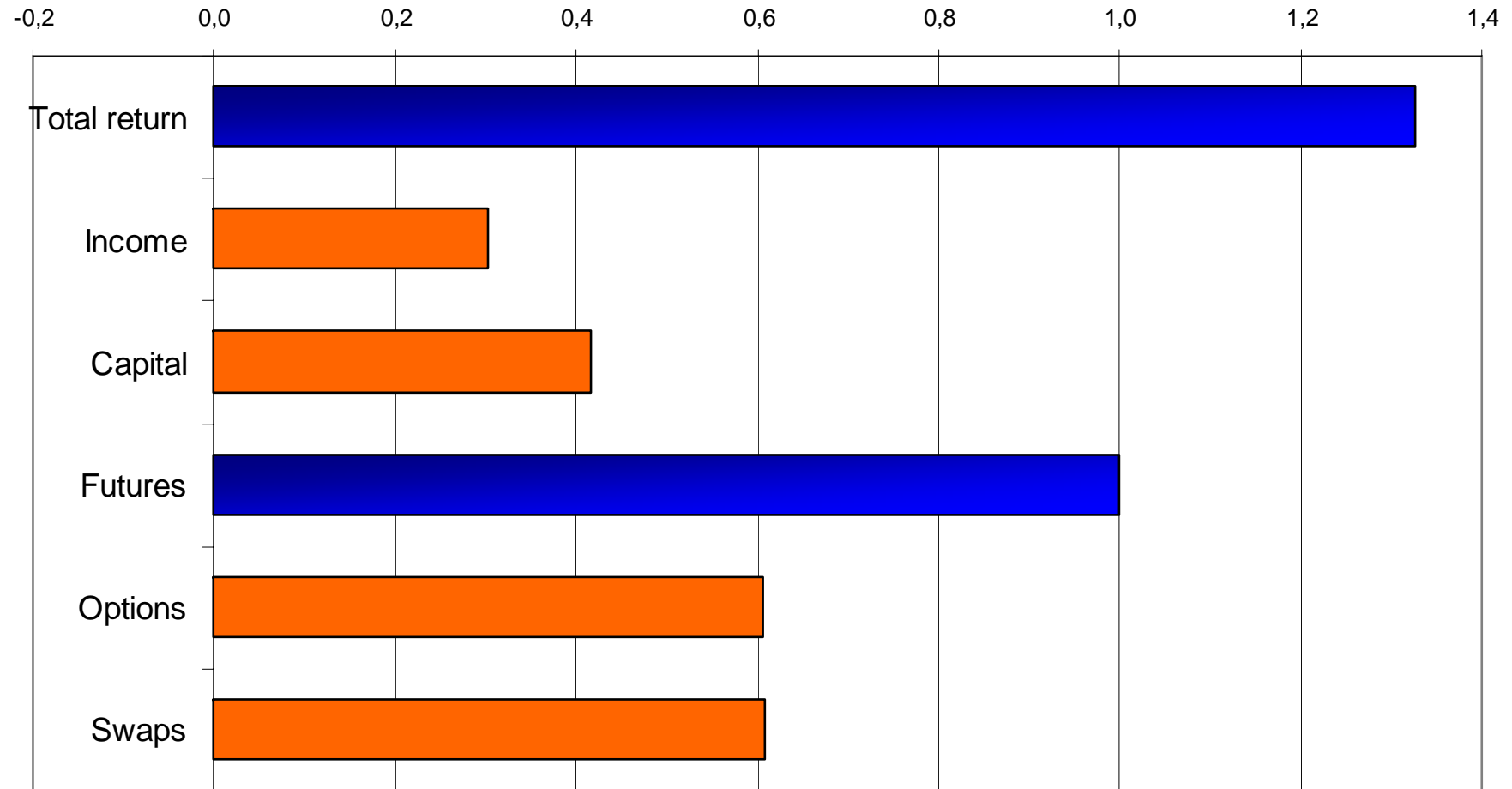
*REIRM Survey, EDHEC, 2007 - All results are preliminary*

## 4.2 Investors' perceptions of key success factors Transparent, Representative, Liquid Index, Liquid Contracts

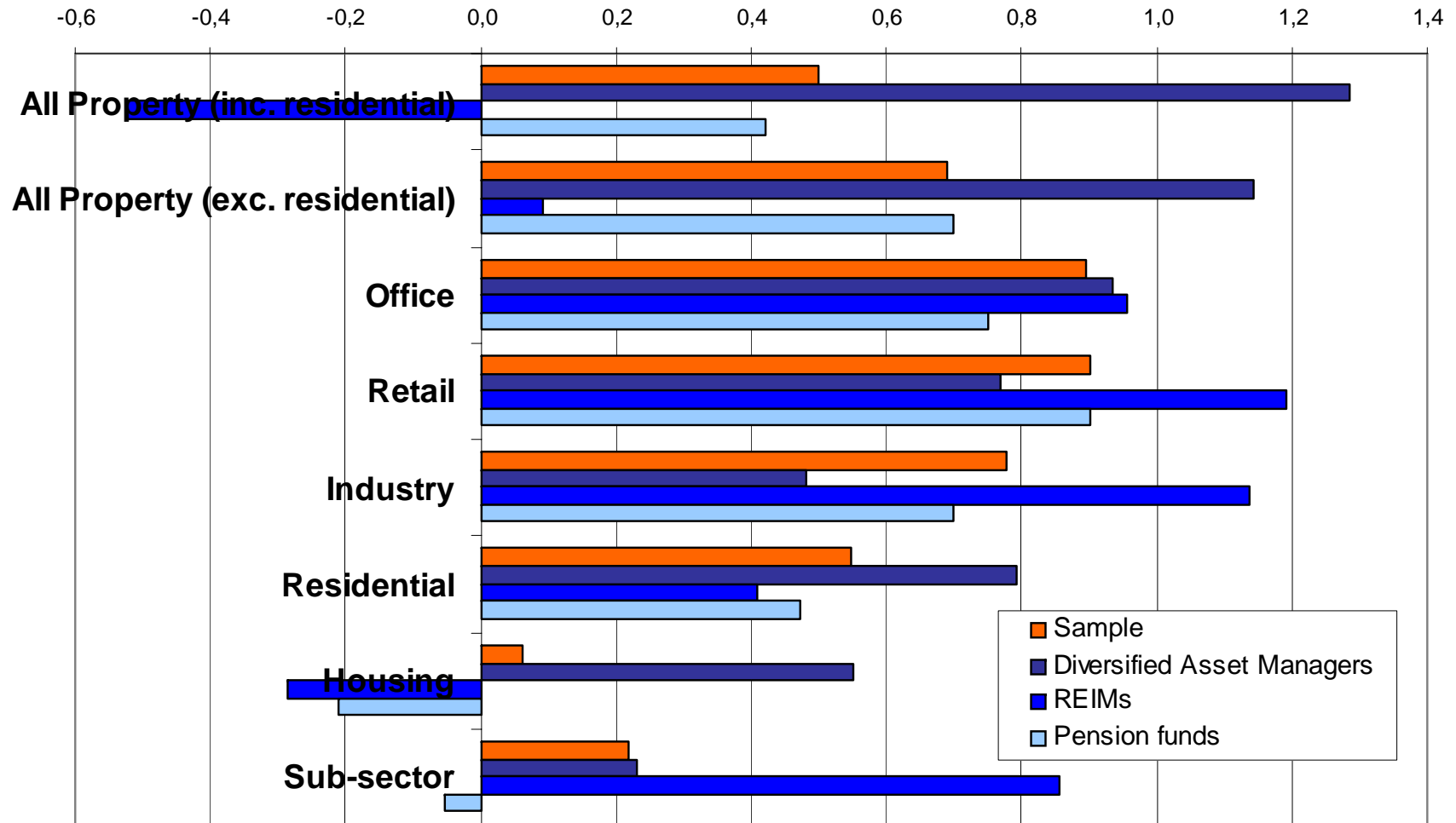


## 4.2 Investors' demand for different types of derivatives

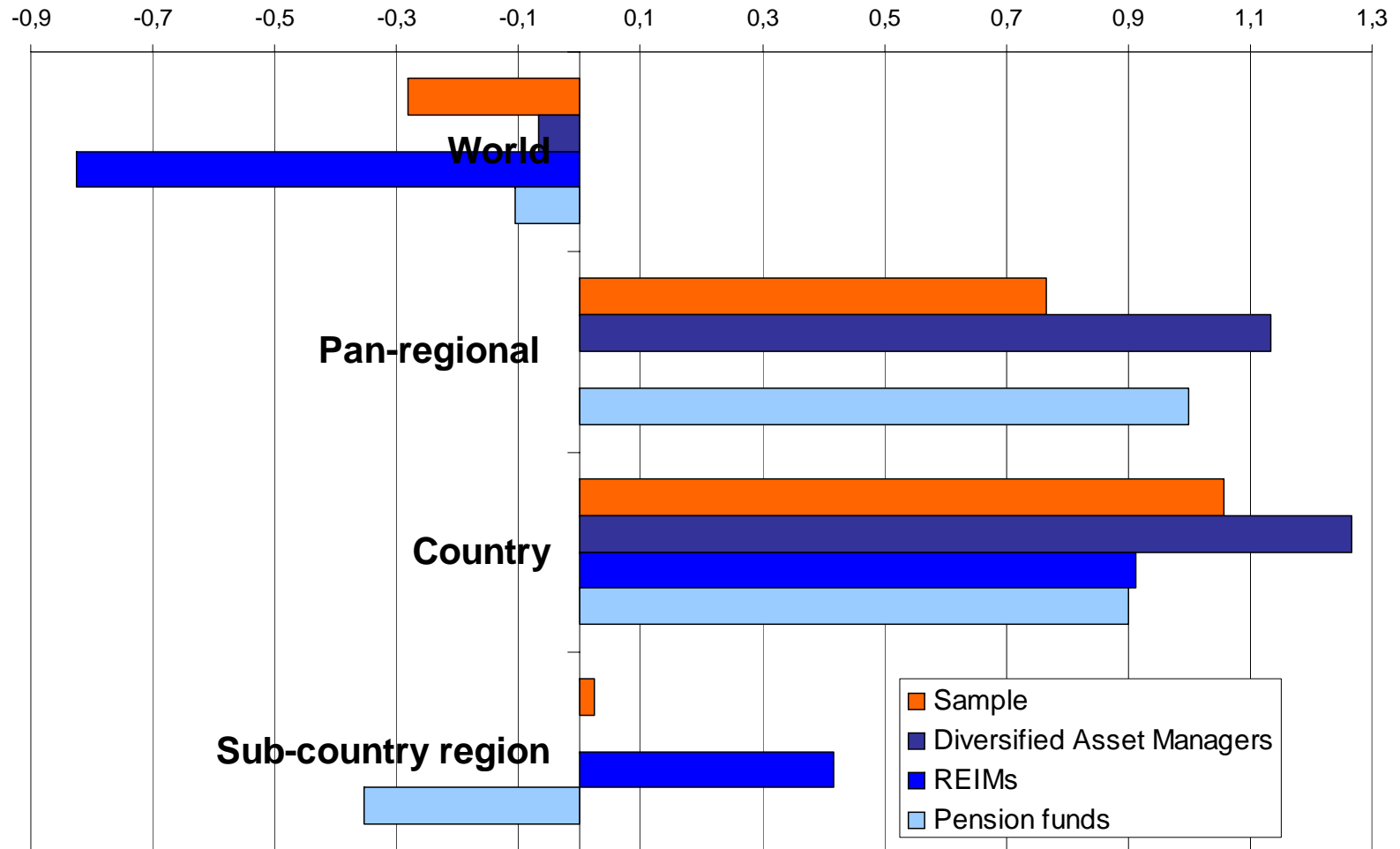
### Total-Return and Futures preferred



## 4.2 Investors' demand for different underlying – sectors Contrast between REIMs and non-specialists



## 4.2 Investors' demand for different underlying – region Continental and Country-level derivatives



# Real Estate Investment and Risk Management

## Top 10 conclusions

1. Real estate is regarded as an asset class that encompasses the various types of equity vehicles whether direct or indirect.
2. Institutional investors regard diversification and performance as the key reasons for allocation to real estate.
3. The targeted strategic asset allocation to real estate is 10% and the allocation range is 5%-13%.
4. Investment-specific, geographic and sector risks are seen as the top three drivers of real estate returns.
5. Diversification is perceived as the best risk management tool and should be both geographic- and sector-based.

# Real Estate Investment and Risk Management

## Top 10 conclusions

6. Indirect vehicles make up a large share of the portfolios of non specialists and there is potential for index-based real estate investments, especially for international diversification.
7. However, there is only modest interest in property derivatives.
8. Investment policy, lack of familiarity, and ill-adapted products are cited as main problems hindering investment in property derivatives.
9. According to investors, key success factors for a derivatives market are a transparent, representative, and liquid underlying and a liquid contract.
10. The ideal derivative is a medium-term and highly liquid forward contract on the total return of a national or international commercial real estate index of all property or of a single property type.