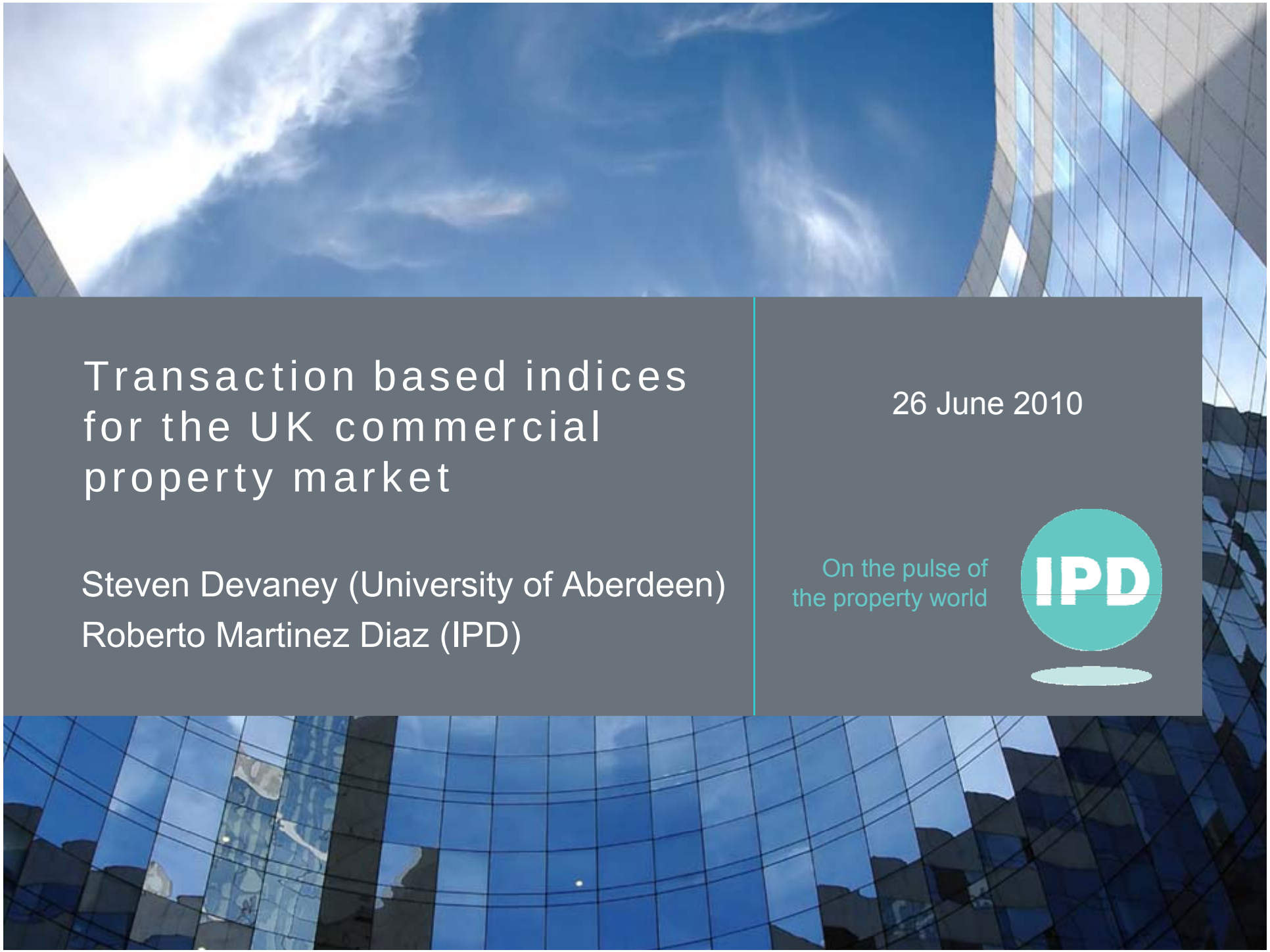

Transaction based indices for the UK commercial property market

Steven Devaney (University of Aberdeen)
Roberto Martinez Diaz (IPD)

26 June 2010

On the pulse of the property world

IPD

Introduction

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- Research has identified potential problems with valuation based indices:
  - Smoothing and/or lagging of market movements
  - Potential for client influence of inputs
- Constructing price based measures of commercial real estate performance is challenging:
  - Low trading volumes, heterogeneous assets
  - Sale samples may be unrepresentative
- However, such measures may give more insights into the nature of real estate risk and return

Introduction

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- IPD research project launched to investigate creating a transaction based index (TBI) using IPD UK data
- This presentation aims to
  - Outline the approach selected to estimate a TBI
  - Show how this TBI compares as an indicator of market movements
  - Compare volatility of the TBI with that of published valuation based series
- Are results consistent with findings from other research and how should the output be used?

Assessed value approach

(Clapp & Giaccotto, 1992; Fisher *et al.*, 2007)

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- Hedonic modelling: real estate prices are a function of many characteristics
- Valuations capture the differences between properties within a single measure
- So instead of modelling:

  $$\text{Price} = \alpha + \beta\,\text{Age} + \beta\,\text{Floorspace}\ldots + \varepsilon$$

- We could estimate:

  $$\text{Price} = \alpha + \beta\,\text{Valuation} + \varepsilon$$

- Can use information to value representative asset over time or to mass appraise non-traded assets

Sample selection issue

(Gatzlaff & Haurin, 1998; Fisher *et al.*, 2003)

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- Problem: do not always get a representative sample of properties selling each quarter
- So standard Heckman two-step procedure is applied:

1) Probit model of which properties sell (see paper)
2) Use parameter generated by probit as additional variable in model of prices

$$\ln P_i = \alpha + \beta \ln V_i + \delta D_{i,j} + \xi C_i + \varepsilon$$

where P = price, V = valuation, D = segment dummies and C = correction factor

Index generation

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- Method applied to sales from IPD UK quarterly database over period Q1 2002 to Q2 2009
- In a given quarter:
  - All properties priced using coefficients from previous quarter's model (a start price)
  - Properties priced again using coefficients from this quarter's model (an end price)
  - Each set of price estimates is summed and the % change is computed
- Changes are chain-linked to form a value weighted TBI

Sales and market performance

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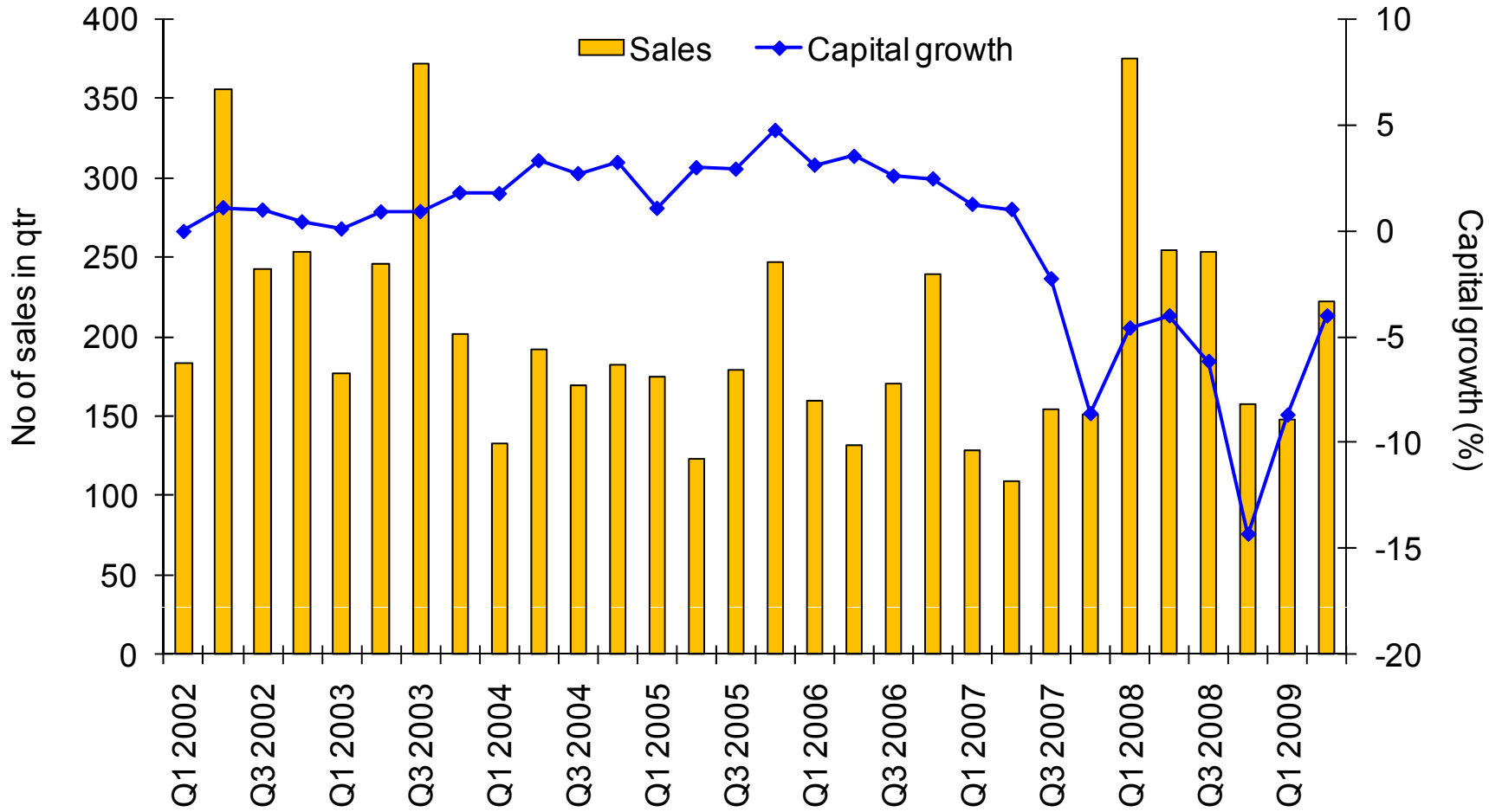

Dataset average size: 6,858

Sample selection variable
Significance in price model

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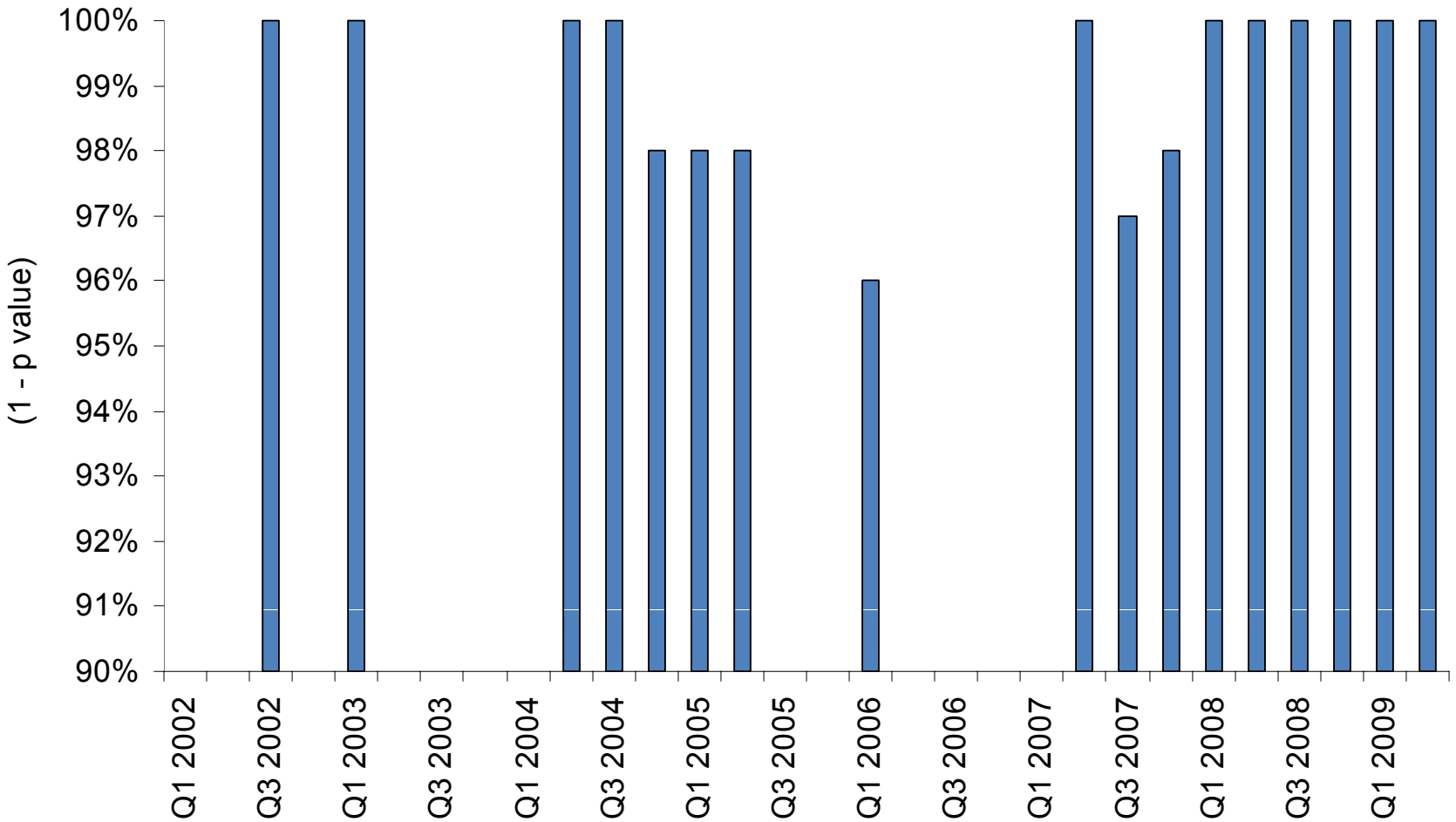

All Property capital growth (Index levels and changes)

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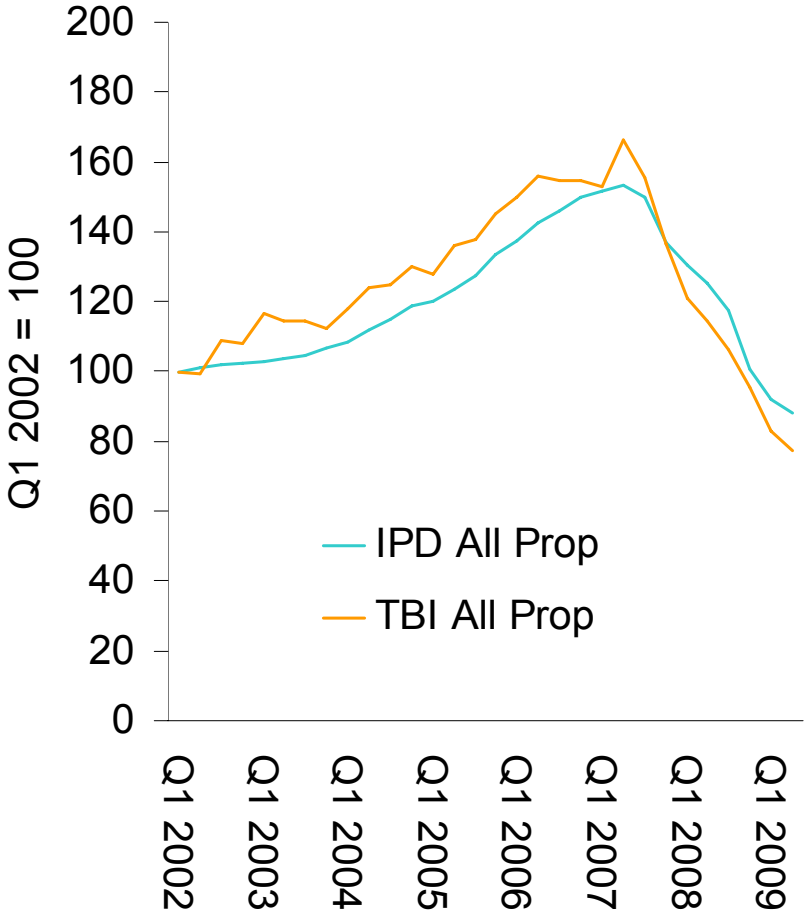

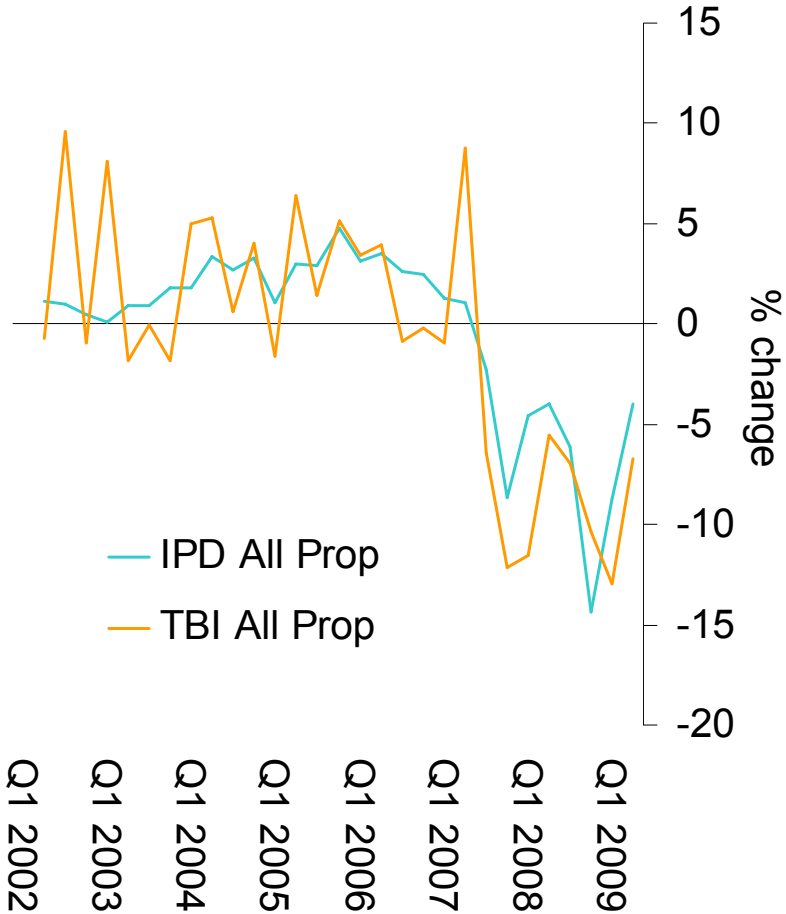

Growth rates & volatility (Q1 2002 – Q2 2009)

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	Geometric mean	Arithmetic mean	Std Deviation
VBI – All Prop	-0.4	-0.3	4.5
TBI – All Prop	-0.9	-0.7	6.3
VBI – Retail	-0.2	-0.1	4.8
TBI – Retail	-0.9	-0.6	7.5
VBI – Office	-0.8	-0.7	4.6
TBI – Office	-0.5	-0.3	7.4
VBI – Industrial	-0.5	-0.4	4.1
TBI – Industrial	-1.0	-0.9	5.3

Valuation index figures taken from IPD UK Quarterly Digest Q2 2009.

Capital growth & turning points (Q1 2002 – Q2 2009)

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	Peak of Index	CG to peak %	CG after peak %
VBI – All Prop	Q2 2007	53.2	-42.4
TBI – All Prop	Q2 2007	66.4	-53.5
VBI – Retail	Q2 2007	68.0	-43.6
TBI – Retail	Q2 2007	96.6	-60.8
VBI – Office	Q2 2007	37.8	-42.7
TBI – Office	Q3 2007	59.8	-46.2
VBI – Industrial	Q2 2007	43.8	-40.4
TBI – Industrial	Q3 2007	30.7	-43.1

Valuation index figures taken from IPD UK Quarterly Digest Q2 2009.

Findings to date

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- Average returns should match in long run, but full cycle not spanned here
- TBI series do exhibit more volatility:
  - Standard deviation of changes in TBI is 1.4 times larger than that for VBI at all property level
  - For office and retail, figure is 1.6 times, industrial 1.3 times higher
- Rises and falls in TBI series generally larger
- Turning points are not notably different from valuation based comparators – why?

Issues and limitations

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- TBI is sensitive to the filters and modelling assumptions that are used
- Difficulties producing series below three sector level
- Results adjusted for effects of sample selection, but not (yet) for variations in liquidity
- Period-by-period estimation contrasts with the panel approach used elsewhere:
  - Suitability of model can be reviewed each period
  - Prevents revisions of index history
  - But some loss in estimation efficiency

Potential applications

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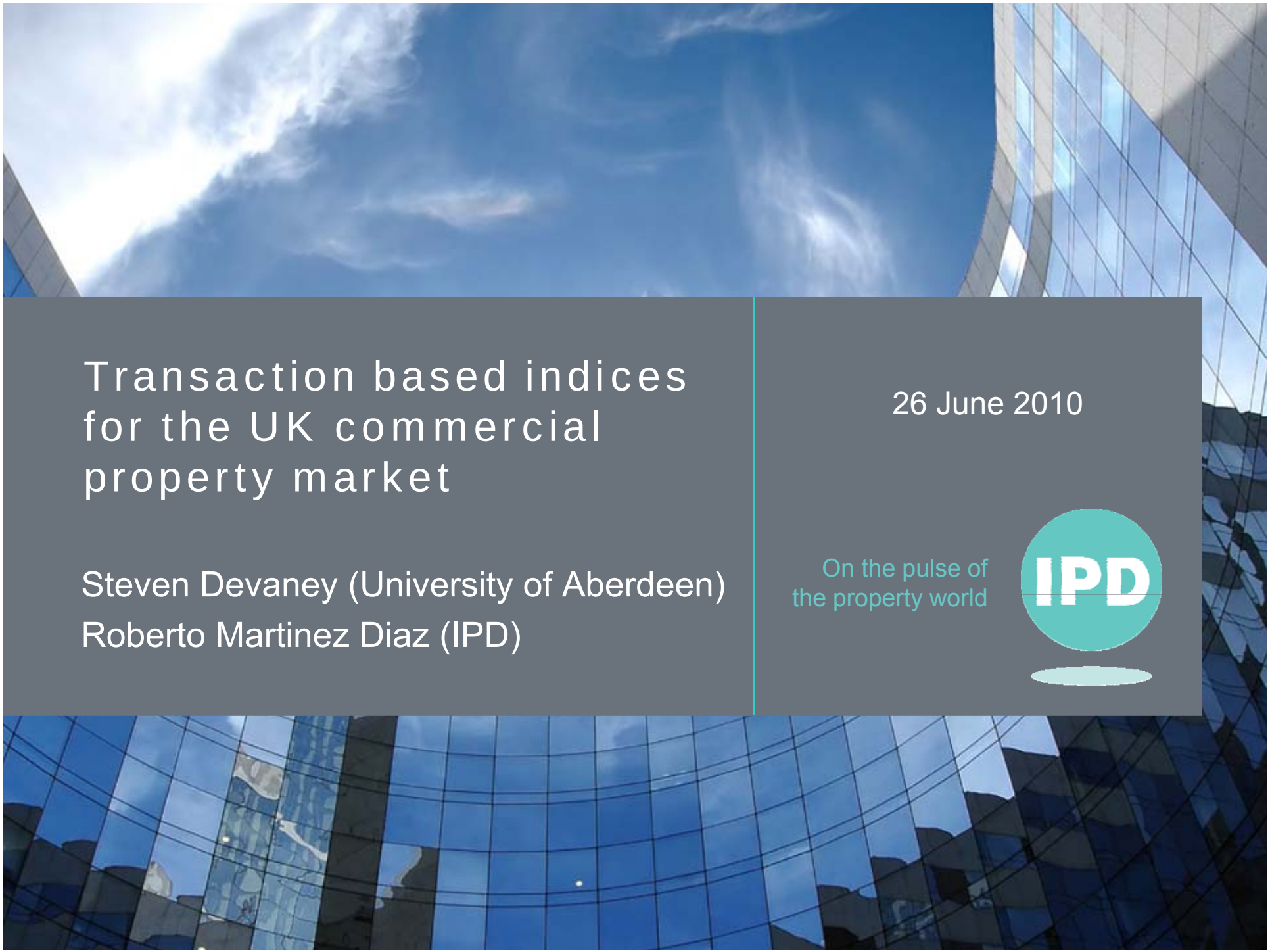
- Small sale samples and estimation noise would prevent use of TBI as a benchmark or traded index, applications that need precision and continuity

but

- It should provide evidence-based estimates of volatility in UK real estate returns, of use to risk modelling and asset allocation
- Could it be useful as a barometer of market conditions at the most aggregated levels (e.g. for all property and the three main sectors)?



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