ASSESSING THE CONSISTENCY OF VALUATION-SMOOTHING AND THE IMPACT ON PROPERTY IN AUSTRALIAN MIXED-ASSET PORTFOLIOS

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ABSTRACT

The use of valuations in the major property indices has seen valuation-smoothing, leading to under-stated levels of property risk. De-smoothing the property returns has become the standard procedure to obtain more appropriate property risk estimates. The impact of valuation-smoothing on property risk and correlations are assessed for Australian commercial property over 1995-2009. The resulting de-smoothed property risk estimates are shown to need to be increased significantly to account for this impact of valuation-smoothing. The impact of valuation-smoothing on property risk is also shown to vary considerably over time and is influenced by the level of property valuation information available. The resulting impact of valuation-smoothing and more appropriate property risk estimates on the level of property in the mixed-asset portfolio is also assessed. Importantly, even after adjusting for valuation-smoothing, Australian commercial property is still seen to play a significant and important role in the mixed-asset portfolio; further validating the contribution of commercial property as an important asset class in an Australian portfolio.

Keywords: Valuation-smoothing, property risk, portfolio diversification, de-smoothing, property levels in mixed-asset portfolio

INTRODUCTION

Commercial property is an important asset class in institutional portfolios in Australia. With over $290 billion in property assets, a wide range of property investment vehicles are available from the leading property players; this includes Westfield ($49 billion), AMP ($22 billion), Colonial First State ($16 billion), Goodman ($16 billion), Stockland ($14 billion) and GPT ($13 billion) (PIR, 2010). With over $1.3 trillion in assets (APRA, 2011b), this has also seen Australian superannuation funds as major property investors; particularly using unlisted wholesale property funds with AMP, QIC, ISPT, Lend Lease, GPT, Colonial First State and Goodman to achieve this property exposure (Higgins, 2010; Newell, 2007a, b, 2008). At June 2010, this saw

the average Australian superannuation balanced fund having 10% of their portfolio in property; consisting of 7% unlisted property and 3% listed property (via REITs) (APRA, 2011a).

The strategic benefits of commercial property in a mixed-asset portfolio include portfolio diversification, inflation-hedging, low risk and strong risk-adjusted returns (Newell, 2005). Numerous studies have shown these benefits to be evident for Australian commercial property (eg: Higgins, 2010; Lee, 2009; Lee and Higgins, 2009; Leung, 2010; Newell, 1996, 2005, 2007a, d), as well as for various international markets (eg: Hoesli et al, 2004; Lee, 2005; Lee and Stevenson, 2006; Stevenson, 2006). These benefits of Australian commercial property have been further enhanced by Australia having one of the most transparent commercial property markets globally (JLL, 2010).

This focus on the contribution of property in a mixed-asset portfolio has seen commercial property performance analysis become increasingly important in recent years to enable informed property investment decision-making by the major institutional investors. However, unlike the equivalent transaction-based performance indices for shares and bonds, commercial property valuations are used as a proxy to assess commercial property performance. This is unavoidable, as there are insufficient commercial property transactions per time period (eg: quarterly) to justify a reliable and representative transaction-based commercial property series. As such, the major international commercial property performance series are valuation-based; namely US (NCREIF), UK (IPD) and Australia (IPD/PCA).

This use of valuation-based property performance series raises issues about the accurate estimation of property risk in these mixed-asset portfolio considerations. This has resulted in a consensus view amongst property researchers and market participants that the resulting estimates of property risk are "smoothed" and do not fully capture the actual volatility of property (Clayton et al, 2001; Edelstein and Quan, 2006; Geltner, 1989, 1991, 1993; Geltner et al, 2003; Key and Marcato, 2007; M^{c}Allister et al, 2003). This under-stated volatility for property is largely attributable to the individual valuation process and the presence of valuation-smoothing in the aggregated property return index series, as well as the underlying inefficiency and structure of the property market. A review of the issues relating to valuation-smoothing is given in the following section of this paper.

The consequences of valuation-smoothing in under-stating property risk are to also cause the other asset allocation parameters to be misspecified; particularly the inter-asset correlations (Giliberto, 1993). This has raised concerns over the use of valuation-based return series in making asset allocation decisions by institutional investors (Giliberto, 1993). As such, the general conclusion regarding valuation-based data is that valuation-based returns are useful for estimating the risk characteristics of

property, provided the data is corrected for valuation-smoothing (Geltner, 1991). This sees the need to develop measures of de-smoothed property risk from these smoothed property returns. Typically, subsequent property research involving property risk assessment would routinely de-smooth (or unsmooth) the property returns data to account for valuation-smoothing and to obtain more appropriate estimates of property risk in assessing the role and contribution of property in a mixed-asset portfolio. This includes Bond and Hwang (2003), Byrne and Lee (2005), Chau et al (2001), Hoesli et al (2004), Key and Marcato (2007), Lee (2005), Lee and Stevenson (2006), Stevenson (2004); as well as Lee (2009) and Lee and Higgins (2009) for Australian commercial property. Importantly, these studies have generally shown that the case for property in a mixed-asset portfolio is not significantly changed, with property still playing an important role in the portfolio.

The impact of valuation-smoothing in estimating property risk is considered to vary over time and to be influenced by the quality and quantity of transaction information changes available to valuers (Clayton et al, 2001; Key and Marcato, 2007). As such, it is important to understand the dynamics of valuation-smoothing and its impact on estimating property risk and the role of property in an Australian mixed-asset portfolio. This paper assesses the consistency of the valuation-smoothing process for Australian commercial property risk estimation over 1995 – 2009 and for selected sub-periods, as well as identifying the subsequent strategic implications concerning the impact on the level of property in Australian mixed-asset portfolios.

VALUATION-SMOOTHING ISSUES

Valuations, rather than transactions, are primarily used to assess commercial property performance in developing the various commercial property indices (eg: IPD/PCA indices for Australia). Importantly, Newell and Kishore (1998) showed that commercial property valuations were a reliable and effective proxy for commercial property transactions in Australia. This was supported by high levels of client satisfaction by Australian institutional investors regarding the quality of valuation reports they commission (Newell, 2004). This perceived stature and integrity of valuations in Australia has also been supported in other markets; eg: UK (Crosby et al, 1997) and Malaysia (Newell et al, 2010). This has validated the development of professional practice standards and valuation guidelines by the API in Australia, RICS in the UK and IVSC internationally.

However, the consensus view is that valuation-smoothing is evident at both the property index and individual valuation level, with property risk being subsequently under-stated (Edelstein and Quan, 2006; Geltner et al, 2003; Key and Marcato, 2007). Valuation-smoothing is due to a number of factors at both the index and individual valuation level. Firstly, valuations are not necessarily available at the end of the

current time period (eg: current quarter) and are often not necessarily available in the current time period. As such, they are reported at the value from previous time periods, with most commercial property indices including the property in the current time period performance analysis if it was valued in the last year. Hence the valuation data is often "stale", with commercial property indices not being true quarterly performance indices but essentially being annual indices that are only partially updated each quarter (Clayton et al, 2001). Often, most of these valuations are conducted in the June and December quarters for financial reporting purposes, further reflecting a seasonality effect in valuation activity. Several property indices (eg: IPD/PCA in Australia) are regarded as "living" indices, as previous index values can be updated to account for new valuations being included on a prorata progressive basis in previous time periods.

Secondly, at the individual property level, there is often a lack of current market sales as comparables, resulting in a lag with current market values, referred to as a tyranny of past valuations (Geltner, 1989). This results in implicit smoothing by individual valuers, which has been shown to be significant (Clayton et al, 2001; Diaz and Wolverton, 1998). There is also evidence of differences between valuers; with some valuers requiring hard transaction evidence, while others use softer signals regarding valuation changes (M^{c}Allister et al, 2003). There is also the potential role and impact of client influences in the client/valuer relationship (Levy and Schuck, 2005).

Whilst Lai and Wang (1998) have raised concerns over the significance and extent of valuation-smoothing, there is strong empirical and clinical evidence of valuation-smoothing and the need for significant adjustments to property risk estimates (Geltner et al, 2003). This has seen "smoothed" property risk estimates having to be de-smoothed and increased by factors of 1.5 to 3.5, depending on the reporting frequency and timeframe (Geltner et al, 2003). The quality and quantity of available transaction information for valuers will also influence the extent of this valuation-smoothing and under-stated property risk (Clayton et al, 2001).

Several techniques have been developed to correct for the impact of valuation-smoothing and provide more appropriate de-smoothed estimates of commercial property risk. These include:

- using equity REIT series (eg: Giliberto, 1990)
- using hedged REIT series (eg: Giliberto, 1993)
- using a transformed return series (utilizing a valuation-smoothing parameter) to produce de-smoothed "derivatives" of the underlying return series (eg:

Barkham and Geltner, 1994; Blundell and Ward, 1987; Geltner, 1989, 1991, 1993b)

- using improved property risk estimates which explicitly adjust for valuation-smoothing, temporal aggregation and seasonality effects (Newell and MacFarlane, 1994, 1995, 1996, 1998)

- using transaction-based evidence to produce regression-based variable liquidity indices; eg: NCREIF TBI index (Fisher et al, 2007; Geltner and Ling, 2006),

with these techniques having provided valuable insights into the impact of valuation-smoothing and more effectively estimating property risk. Full details of these procedures are given in Geltner et al (2003).

Importantly, property fund managers have recognized the significance of this valuation-smoothing issue , with a UK industry survey showing 92% of industry fund managers adjust their property risk estimates upwards using various techniques, as property risk is agreed to be too low (Key and Marcato, 2007). This ensures a more credible comparison of commercial property performance with the other major asset classes for asset allocation purposes.

It is in this context of the importance of accounting for valuation-smoothing in developing more appropriate de-smoothed estimates of property risk and its impact on asset allocation decisions regarding property in a mixed-asset portfolio that the subsequent sections of this paper assess this key issue for Australian commercial property over 1995-2009. In particular, the consistency of this valuation-smoothing and the impact on property risk estimates is assessed over various sub-periods; including during the Global Financial Crisis, and the subsequent impact on the level of property in mixed-asset portfolios in Australia.

METHODOLOGY

Data

The Australian commercial property performance series used in this study is the valuation-based IPD/PCA property index (IPD/PCA, 2010); this being the quarterly benchmark Australian commercial property series. At December 2009, the IPD/PCA series comprised 1,136 properties valued at $84 billion from the portfolios of 35 property fund managers. The total, office, retail and industrial property sectors were assessed. The following major asset series were also used:

- shares: ASX All Ordinaries
- A-REITs: ASX A-REIT300
- Bonds: CBA Bonds: All Maturities.

De-smoothing procedure

The smoothed IPD/PCA property returns are de-smoothed using the standard Geltner (1993) procedure:

$$R_t = (R_t^* - (1 - \alpha)R_{t-1}^*)/\alpha$$

where: R_t = de-smoothed property return at time t

R_t^* = observed smoothed valuation-based property return at time t

α = smoothing parameter.

The smoothing parameter of 0.2 is selected as per other de-smoothing studies; eg: Bond and Hwang (2003), with this smoothing parameter reflecting a one year average lag. The de-smoothing procedure of Geltner (1993) is the standard procedure to produce de-smoothed property returns and has been used in most de-smoothing property analyses; eg: Bond and Hwang (2003), Byrne and Lee (2005), Chau et al (2001), Hoesli et al (2004), Key and Marcato (2007), Lee (2009), Lee and Higgins (2009). In a mixed-asset portfolio context, de-smoothing is only applied to the valuation-based property series, as the other asset series (eg: shares, A-REITs and bonds) are fully transaction-based.

Statistical analysis

For both the smoothed and de-smoothed property returns, property risk and risk-adjusted returns were calculated, as well as the portfolio diversification benefits for Q3: 1995 – Q4: 2009[1]. By comparing the smoothed and de-smoothed property risk estimates, the impact of valuation-smoothing on property risk can be assessed. The impact of using smoothed and de-smoothed property risk in determining the level of property in the Australian mixed-asset portfolio is also assessed. To assess the consistency of the impact of valuation-smoothing on property risk over time, the 14-year period is assessed over the two sub-periods of Q3: 1995 – Q4: 2002 and Q1: 2003 – Q4: 2009, as well as over Q3: 2007 – Q4: 2009 to assess the consistency of the impact of valuation-smoothing on property risk during the Global Financial Crisis.

[1] Q3: 1995 is the start date for this analysis, as the IPD/PCA property index is only available quarterly since Q3: 1995

RESULTS AND DISCUSSION

Impact of valuation-smoothing on property risk

Table 1 presents the property risk analysis for both smoothed property and de-smoothed property over Q3: 1995 – Q4: 2009. The smoothed property risk estimate of 3.06% for total property is too low in a practical sense; even being below the risk for bonds (4.57%). The de-smoothed property risk of 6.42% sees the smoothed property risk increased by a property risk adjustment factor of 2.10, with similar property risk adjustment factors of 2.18 – 2.45 needed for the three property sub-sectors. This improved property risk estimate is now in line with investment expectations, being between the risk for bonds and shares. This property risk adjustment factor of 2.10 for Australian commercial property is generally consistent with the equivalent property risk adjustment factors needed for UK property (1.97) (Key and Marcato, 2007) and US property (2.15) (Fisher et al, 2007).

Table 1: Impact of valuation-smoothing on property risk: Q3: 1995 – Q4: 2009

Asset	Average annual return (%)	Annual risk (%)	Sharpe ratio *	Property risk adjustment factor
Smoothed property				
Total	10.24	3.06	1.51 (3)	
Office	9.19	3.60	0.99 (4)	
Retail	11.13	2.81	1.96 (1)	
Industrial	11.63	3.27	1.84 (2)	
De-smoothed property				
Total	9.83	6.42	0.65 (6)	2.10
Office	8.68	7.85	0.39 (8)	2.18
Retail	10.73	6.64	0.77 (5)	2.36
Industrial	10.71	8.00	0.64 (7)	2.45
Shares	10.54	14.51	0.34 (9)	
A-REITs	7.72	19.41	0.11 (11)	
Bonds	6.93	4.57	0.29 (10)	

*: value in brackets is asset rank based on Sharpe ratio

Importantly, even with these significant increases in property risk after adjusting for valuation-smoothing, property still delivers significant risk-adjusted returns compared to shares, A-REITs and bonds over this 14-year period. In particular, while the smoothed property series gave the best Sharpe ratios, all of the de-smoothed property series also gave superior Sharpe ratios compared to shares, A-REITs and bonds. This further reinforces the risk-adjusted benefits of property in an Australian mixed-asset portfolio, even after adjusting for valuation-smoothing with increased property risk for the de-smoothed property series.

Impact of valuation-smoothing on property correlations

It is also recognized that valuation-smoothing can also cause the inter-asset correlations involving property to be misspecified (Giliberto, 1993). Table 2 presents the correlations for property with the other asset classes for smoothed property returns (Panel A) and de-smoothed property returns (Panel B). Significant differences between the smoothed and de-smoothed property correlations are clearly evident. For example, the correlation with shares increased from r=0.26 (smoothed property) to r=0.55 (de-smoothed property). Similar trends were evident for office property (r=0.20 to r=0.54), retail property (r=0.31 to r=0.40) and industrial property (r=0.25 to r=0.49). Similar increases were seen for the correlations between property and A-REITs, with the correlations between property and bonds being stable for both smoothed and de-smoothed property.

These increased correlations of de-smoothed property and shares see a truer reflection of the correlation between property and shares. In this case, these increased correlations using de-smoothed property show less portfolio diversification benefits by property with shares than previously expected using the smoothed property returns.

Table 2. Impact of valuation-smoothing on asset correlations

Panel A: Smoothed property correlations

	Shares	A-REITs	Bonds
Total	0.26	0.32*	-0.09
Office	0.20	0.24	-0.03
Retail	0.31*	0.34*	-0.18
Industrial	0.25	0.33*	0.02

Panel B: De-smoothed property correlations

	Shares	A-REITs	Bonds
Total	0.55*	0.68*	-0.13
Office	0.54*	0.68*	-0.08
Retail	0.40*	0.45*	-0.22
Industrial	0.49*	0.66*	-0.03

*: significant correlation (P<5%)

Impact of valuation-smoothing on asset allocations

Using the de-smoothed property series has seen increased property risk and less portfolio diversification benefit of property with shares. Both of these factors could be expected to work against the level of property in a mixed-asset portfolio. Table 3 presents the asset allocation scenarios using both smoothed property and de-smoothed property as the measure of property performance over 1995 – 2009. The portfolio risk range of 4% - 12% was chosen, as both scenarios cover this portfolio risk range.

The asset allocation using the smoothed property series saw significant levels of property in the portfolio at low portfolio risk levels. As portfolio risk increased, the level of property was reduced and replaced by shares; but property still figured prominently, even at higher portfolio risk levels. Bonds do not figure in this mixed-asset portfolio, as smoothed property has a higher return than bonds (10.24% p.a. versus 6.93% p.a.), whilst smoothed property also has a lower risk than bonds (3.06% versus 4.57%). Using the de-smoothed property series, property did not figure as prominently at the lower portfolio risk levels; being replaced by bonds. This was due to de-smoothed property now having a higher risk than bonds (6.42% versus 4.57%). However, the higher risk for de-smoothed property saw property figuring more prominently in the mid-level portfolio risk levels; replacing bonds in the portfolio.

Property still figured prominently across the full portfolio risk spectrum; with higher levels of property seen in the high portfolio risk levels compared to when smoothed property was used for the asset allocation process. This reflects the higher risk level for de-smoothed property (6.42%) than for smoothed property (3.06%).

Table 3. Impact of valuation-smoothing on asset allocation: Q3: 1995 – Q4: 2009

Risk (%)	Smoothed			De-smoothed		
	Shares (%)	Bonds (%)	Property (%)	Shares (%)	Bonds (%)	Property (%)
4	17	0	83	5	41	54
5	27	0	73	4	22	74
6	36	0	64	2	6	92
7	44	0	56	17	0	83
8	52	0	48	33	0	67
9	59	0	41	46	0	54
10	67	0	33	57	0	43
11	74	0	26	67	0	33
12	82	0	18	77	0	23

Overall, while de-smoothed property has higher risk and less portfolio diversification benefit than smoothed property, de-smoothed property still figured prominently in the mixed-asset portfolio. This contribution was more evident in the mid-range levels of portfolio risk. Importantly, this contribution by property was across the full portfolio risk spectrum. This reinforces the strategic role of property in the portfolio, even after adjusting for valuation-smoothing; with significant levels of property seen across the full spectrum of portfolio risk. This impact of using de-smoothed property did not see property reduced in the portfolio, but rather saw property have a more significant role at the higher portfolio risk levels.

Sub-period property risk analysis

It is recognized that the impact of valuation-smoothing can vary over time; being influenced by the quality and quantity of transaction information changes available (Clayton et al, 2001; Key and Marcato, 2007). To assess the consistency of the impact of valuation-smoothing on Australian commercial property, Table 4 presents the de-smoothed property risk analysis for the two sub-periods of Q3: 1995 – Q4: 2002 and Q1: 2003 – Q4: 2009, and for the GFC over Q3: 2007 – Q4: 2009.

Considerable variation in the impact of valuation-smoothing on property risk was evident over these sub-periods. This saw the property risk adjustment factor to account for valuation-smoothing in the first sub-period (3.92) being significantly more than the property risk adjustment factor in the second sub-period (2.07) and in the GFC (2.48). Similar trends were evident for the three property sub-sectors. This clearly demonstrates that valuation-smoothing is not a consistent process, but is influenced by various property market information factors for the final determination of property risk.

In this particular case, the property risk adjustment factor required is clearly influenced by the level of valuation activity at that time. This saw less valuation activity for the IPD/PCA index portfolio[2] in the first sub-period (average of 42% of properties valued per quarter) compared to the second sub-period (average of 48% of properties valued per quarter) ; resulting in the need to have more significant adjustments to determine de-smoothed property risk from smoothed property risk in the first sub-period. This was further supported by less valuation activity in Q2 and Q4 for the first sub-period, which are typically the most active quarters for revaluations each year. This saw 59% revalued in the first sub-period versus 66% revalued in the second sub-period in Q2, and 42% revalued versus 62% revalued for the first sub-period versus the second sub-period in Q4. The level of valuation activity in these sub-periods has clearly influenced the respective property risk adjustment factors required; supporting the view that the impact of valuation-smoothing varies over time, dependent on the quantity and quality of property market information available (Clayton et al, 2001; Key and Marcato, 2007).

The property risk adjustment factor of 2.48 during the GFC is marginally above the property risk adjustment factor of 2.10 for the full 14-year period. Whilst the GFC was a volatile environment, the lesser property risk adjustment factor than might have been expected reflects the higher than average levels of valuation activity during the GFC; being 57% revaluations per quarter, with the percentage of revaluations being even higher in the more active Q2 and Q4 periods.

[2] Data on valuation activity per quarter over 1995 – 2009 for the IPD/PCA index portfolio was provided by IPD

Table 4: Sub-period property risk analysis

Asset	Q3: 1995 – Q4: 2002			Q1: 2003 – Q4: 2009			Q3: 2007 – Q4: 2009 (GFC)		
	Annual risk (%)	Sharpe ratio *	Property risk adjustment factor	Annual risk (%)	Sharpe ratio *	Property risk adjustment factor	Annual risk (%)	Sharpe ratio **	Property risk adjustment factor
Smoothed property									
Total	0.49	9.15 (2)		4.41	1.07 (2)		4.84	-0.85	
Office	0.96	3.69 (4)		5.14	0.70 (4)		6.18	-0.74	
Retail	0.91	5.60 (3)		3.96	1.51 (1)		3.43	-0.93	
Industrial	0.74	11.02 (1)		4.47	0.85 (3)		4.83	-1.13	
De-smoothed property									
Total	1.92	2.40 (6)	3.92	9.12	0.41 (6)	2.07	11.98	-0.83	2.48
Office	3.01	1.05 (8)	3.14	10.97	0.27 (8)	2.13	15.41	-0.79	2.49
Retail	3.87	1.43 (7)	4.25	8.77	0.53 (5)	2.11	9.64	-0.78	2.81
Industrial	2.49	3.18 (5)	3.36	11.16	0.19 (9)	2.50	15.74	-0.66	3.26
Shares	12.22	0.30 (11)		16.81	0.38 (7)		25.23	-0.45	
A-REITs	8.49	0.85 (9)		26.27	-0.12 (11)		41.15	-0.66	
Bonds	4.73	0.54 (10)		4.39	0.00 (10)		6.48	0.24	

*: value in brackets is asset rank based on Sharpe ratio
**: negative Sharpe ratios can not be effectively interpreted re: asset rank

Table 5: Sub-period asset correlation analysis

	Smoothed property				De-smoothed property			
	Total	**Office**	**Retail**	**Industrial**	**Total**	**Office**	**Retail**	**Industrial**
Panel A: Q3: 1995 - Q4: 2002								
Shares	0.04	0.19	-0.17	0.15	-0.01	0.19	-0.19	0.05
A-REITs	0.15	0.26	-0.19	0.09	0.03	0.33	-0.29	0.18
Bonds	-0.04	0.19	-0.33	0.10	0.09	0.26	-0.17	0.17
Panel B: Q1: 2003 - Q4: 2009								
Shares	0.32	0.23	0.41*	0.35	0.71*	0.66*	0.62*	0.64*
A-REITs	0.30	0.22	0.37	0.36	0.73*	0.72*	0.56*	0.70*
Bonds	-0.10	-0.08	-0.17	-0.06	-0.22	-0.21	-0.28	-0.12
Panel C: Q3: 2007 - Q4: 2009								
Shares	0.04	-0.02	0.20	0.13	0.74*	0.66	0.75*	0.73*
A-REITs	0.08	0.03	0.18	0.19	0.74*	0.75*	0.55	0.74*
Bonds	-0.00	0.07	-0.21	0.06	-0.27	-0.13	-0.54	-0.11

*: significant correlation (P<5%)

The variable impact of valuation-smoothing across these sub-periods is also evident in the correlations of smoothed and de-smoothed property with shares over these sub-periods, as given in Table 5. These correlations were reasonably stable in the first sub-period; eg: r=0.04 for smoothed property with shares versus r=-0.01 for de-smoothed property with shares. However, major changes in these correlations occurred in the second sub-period and GFC for smoothed property versus de-smoothed property. In particular, in the second sub-period, the correlation of shares with property increased from r=0.32 (smoothed) to r=0.71 (de-smoothed); with similar changes in the correlations of shares with the various property sub-sectors. This clearly reflects a significant loss of portfolio diversification benefit when valuation-smoothing is accounted for in the de-smoothed property series. Similar significant changes in these correlations were also evident in the GFC; again, reflecting the loss of portfolio diversification benefit when accounting for valuation-smoothing.

The impact of these varying property risk factors and property correlations over these sub-periods clearly impacts on the asset allocations and the level of property in the Australian mixed-asset portfolio over these sub-periods. These sub-period asset allocations are given in Table 6 over the portfolio risk range of 4% - 12%. Even with the significant increase in property risk from de-smoothing, the first sub-period (Table 6: Panel A) sees no significant change in the asset allocations across the portfolio risk spectrum. This reflects the increase in property risk (from 0.49% to 1.92%) still seeing de-smoothed property risk being low; particularly compared to the risk for bonds (4.73%); resulting in no bonds being included in the portfolio, even at low portfolio risk levels. Importantly, property figures prominently in this asset allocation in the first sub-period, with lesser levels of property evident at the higher portfolio risk levels. In the second sub-period (Table 6: Panel B), the impact of property in the asset allocation is diminished by accounting for valuation-smoothing (via increased risk and increased correlation with shares). This is more evident in the low-medium portfolio risk levels, with bonds playing a more substantive role; but with property still figuring prominently across the portfolio risk spectrum; particularly at the medium-high portfolio risk levels. This saw de-smoothed property risk (9.12%) now exceeding bond risk (4.39%), resulting in high levels of bonds in the portfolio at low-medium levels of portfolio risk.

Whilst this sub-period analysis has illustrated the significant impact of valuation-smoothing on the resulting mixed-asset portfolios, property still maintains an important role in the portfolio across the mixed-asset portfolio risk spectrum. This further supports the importance of property as an asset, with de-smoothing not diminishing the substantive case for property in an Australian mixed-asset portfolio. This confirms the UK de-smoothing results by Key and Marcato (2007), further adding to the international evidence for the substantive role of property in a portfolio.

Table 6: Sub-period asset allocations: impact of valuation-smoothing

Risk (%)	Smoothed			De-smoothed		
	Shares (%)	Bonds (%)	Property (%)	Shares (%)	Bonds (%)	Property (%)
Panel A: Q3: 1995 – Q4: 2002						
4	33	0	67	31	0	69
5	41	0	59	40	0	60
6	49	0	51	49	0	51
7	57	0	43	57	0	43
8	65	0	35	65	0	35
9	74	0	26	74	0	26
10	82	0	18	82	0	18
11	90	0	10	90	0	10
12	98	0	2	98	0	2
Panel B: Q1: 2003 – Q4: 2009						
4	3	9	88	17	63	20
5	14	0	86	20	51	29
6	24	0	76	22	41	37
7	33	0	67	24	32	44
8	40	0	60	26	23	51
9	48	0	52	29	14	57
10	55	0	45	31	5	64
11	62	0	38	37	0	63
12	68	0	32	50	0	50

PROPERTY INVESTMENT IMPLICATIONS

This study has clearly highlighted the impact of valuation-smoothing on property risk estimation for mixed-asset portfolios in Australia; with significant property risk adjustment factors needed to obtain more appropriate de-smoothed property risk estimates. It has also been shown that the impact of valuation-smoothing varies over time and is influenced by the quality and quantity of property market information available. Importantly, after accounting for valuation-smoothing and using de-smoothing property risk estimates, property is still seen to figure prominently in the Australian mixed-asset portfolio. This further validates the integrity of commercial property as an important asset class in an Australian mixed-asset portfolio.

This research has significant implications for more effectively assessing property risk and articulating the role of commercial property in an Australian mixed-asset portfolio. Firstly, valuation-smoothing is a significant issue in under-stating property risk; hence de-smoothing procedures need to be used to obtain more effective property risk estimates and more appropriate asset allocations concerning the level of property in an Australian mixed-asset portfolio. These adjustments to property risk to account for valuation-smoothing are routinely applied by most UK property fund managers.

Secondly, the impact of valuation-smoothing varies considerably over time; influenced by the quantity and quality of property market information available. This sees the need for Australian property fund managers to regularly assess this issue to determine appropriate and up-to-date property risk adjustment factors to obtain more appropriate property risk estimates for use in asset allocation determinations.

Thirdly, the impact of using these de-smoothed property risk estimates does impact on the make-up of the mixed-asset portfolio; particularly concerning the level of commercial property at various risk levels in the Australian mixed-asset portfolio. While it sees the level of property in the portfolio change significantly, the levels of property are still substantive and often see property figure prominently in the higher portfolio risk levels. As such, this confirms the importance of property in an Australian portfolio, with accounting for valuation-smoothing and using de-smoothed property performance measures not diminishing the substantive case for property in an Australian mixed-asset portfolio.

Overall, this study has further validated the role of commercial property in an Australian mixed-asset portfolio; even after the impact of valuation-smoothing and the variable nature of this impact is accounted for by increased property risk estimates.

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