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The information content of Property Derivatives

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Executive summary

The objective of this research is to assess the extent to which return expectations implied by real estate derivatives prices provide a better indicator of future direct property capital growth in the UK relative to the Investment Property Forum's *Consensus Forecast*.

Derivative prices are not normally seen to be indicators or forecasts of future returns and, unlike in real estate, usually trade with a negligible spread over LIBOR. Practitioners, however, argue that direct real estate is different to other asset classes because of the cost, time and difficulty involved in transacting¹. A further factor unique to real estate is that the portfolio valuations, which make up the IPD indices which in turn are the basis for real estate derivatives prices, lag the prices at which properties are transacted in the market. Some practitioners argue - correctly in our view - that expectations of how this 'valuation lag' will unwind should be reflected in real estate derivatives prices. On this basis, real estate derivatives prices may include some forecast information.

The IPF's UK *Consensus Forecast* collates the short and medium term views of around 25-30 professional forecasters from the real estate industry on the expected returns for the IPD Annual Index over one, two, three and five years. In this report, statistical techniques are used to evaluate the accuracy of these forecasts against the actual IPD return outcomes. Full methodological details can be found in the companion report "*The UK Consensus Forecast and the Returns Implied by Property Derivative Pricing: Evolution, Record and Influence*" published by the IPF.

A market for property total return swaps, in which the future returns of the IPD Annual Index are exchanged for periodic pre-set payments, was established in the UK in 2005. In this report, the future IPD returns implied by the prices

of these derivatives are calculated from 2006 onwards using widely adopted techniques. These implied returns are also evaluated against the IPD return outcomes and compared with the track record of the IPF *Consensus Forecast*.

The analysis suggests that real estate derivatives provide a better indication than the IPF Consensus of UK IPD capital growth in the very short term (i.e. within six months of the year-end). However, the IPF *Consensus Forecast* has been a better indicator one to three years out.

This conclusion relates to a comparison of the returns implied by the derivative market at the time of the submission deadline for the IPF *Consensus Forecast*. However, a detailed analysis of the forecasts contributing to the consensus in 2009 shows that, on average, they are almost one month old by the time of the submission deadline. Therefore the comparison of a lagging IPF Consensus Forecast with the up-to-date indications from the derivatives market is not strictly like-for-like. These delays in the IPF *Consensus Forecast* distort its track-record relative to the derivatives market. Evaluating the IPF consensus forecasts by allowing for a one-month publication lag shows that there is little difference in the short term forecast accuracy of the two sources of information.

The future IPD returns implied by derivatives prices are more variable and sensitive to new developments than the IPF consensus forecasts. For example, derivatives prices responded more quickly to the banking crisis in the latter part of 2008 and similarly to signs that the UK economy was entering recession. This greater sensitivity is not always helpful. While the derivatives market correctly downgraded its view on 2009 as the banking crisis escalated, it over-reacted in early 2009 to indications that the UK economy was in severe recession. Its poor record in 2009 undermined what had previously been a superior track record in indicating IPD returns six to 12 months out.

The findings of this report are based on the short, four-year period over which derivatives have been actively traded. It may well be that different conclusions could be drawn in the future as knowledge and the history of derivatives expand.

¹ More detail on the pricing of property derivatives can be found in the companion report "*The UK Con*sensus Forecast and the Returns Implied by Property Derivative Pricing: Evolution, Record and Influence", as well as van Braught et al (2009) or Geltner and Fisher (2007). An argument made by some industry researchers is that the usual 'cash and carry' arbitrage-based pricing model for derivative contracts might not apply when the underlying asset is an asset such as commercial real estate (which is illiquid and has a large lot size). In effect, the pricing is only re-set to the underlying index at settlement. Hence some industry participants do view the derivatives prices as indicators of future returns (the authors thank Martin Allen for providing us with this perspective).

1 Introduction

In the short time since their introduction, property derivative contracts have become an important tool for property fund managers. The use of the derivative contracts allows market participants to quickly modify their exposure to the commercial property sector and provides for an effective risk hedging choice that, until recently, was not available to investors.

The goal of this research paper is to extract information on expected capital appreciation implied by the prices on property derivative contracts². These implied or forward returns are then compared to the consensus growth forecasts published by the IPF. Using historical capital growth outcomes on the annual IPD index the forecast accuracy of the two growth estimates is calculated.

This report is a companion report to one recently issued by the Investment Property Forum on *The UK Consensus Forecast and the Returns Implied by Property Derivative Pricing: Evolution, Record and Influence* (August 2009). The focus on this report is specifically on the evaluation of the capital appreciation element of the annual IPD index. Importantly, the later release of this report enables an additional year of data to be added to the study, which allows us to consider the effect of the financial crisis on the results. Furthermore, additional analysis of the impact of the timing of the constituent forecasts and in the IPF Consensus is included in this report.

The next section provides an overview of the property derivatives market in the UK. Section 2 discusses the data used in this study and explains some of the methodological issues that arise in the study. The third section reports on the forecast evaluation comparison and the final section concludes the paper.

2 Background review

The UK real estate derivatives market

The UK commercial real estate derivative contract, in its present form, dates from 2005 when the market for property total return swaps was established. Prior to then, investment in synthetic forms of direct real estate was focused on Barclay's Property Income Certificates (PICs). These have since been followed by a wider range of so-called *structured notes* - where, unlike total return swaps, a principal is exchanged at the outset.

The UK's Investment Property Forum (IPF), which lobbied for the introduction and acceptance of total return swaps, has prepared two useful reports (2006 and 2008)³ which describe the concept, market and attitudes towards pricing real estate derivatives. The investment banks, such as Bank of America Merrill Lynch and the Royal Bank of Scotland, have also periodically produced primers and guides.

Size and evolution of the market

IPD and the IPF also regularly monitor trading volumes in the UK real estate derivatives market. The market has grown rapidly since 2005. As at December 2009, the outstanding notional value of total returns swaps was GBP 9.6 billion. Figure 2.1 illustrates how the value of the trades executed grew between 2005 and the end of 2009 and also highlights a seasonal pattern of relatively low trading volumes in the final quarter.

While initial trading was largely between end-users (such as institutional investors, unlisted real estate funds, listed companies etc), since the middle of 2006 around half has been inter-bank trading. According to presentations by IPD in Spring 2009, around three-quarters of real estate investors' exposures to derivatives were through structured notes (including Property Income Certificates). Inter-bank trading is therefore likely to be a significant influence on pricing, while a large part of direct real estate investors' activity is not captured by the total return swaps market.

² Generally the contracts in the UK are structured as a swap arrangement with one party to the swap receiving a total return that follows the IPD index in exchange for another return. Normally, this other return has been specified as LIBOR plus a fixed margin but, at the beginning of 2008, the basis of pricing property SWAPS in the UK was changed to a simple fixed margin.

³ IPF (2008) Getting into Property Derivatives and IPF (2006) Pricing Property Derivatives: An Initial Review.



Exhibit 2.1: Total Value of Notional Trades Executed each Quarter (£m)

Practitioner attitudes towards pricing real estate derivatives

A recurring theme in all the IPF and investment bank reports is that real estate is different and the pricing of its derivatives should not conform to the traditional theory whereby contracts should be priced with a negligible spread over LIBOR. This is because, as the Royal Bank of Scotland (2009) puts it:

Traditional pricing theory is centred on the fact that it is relatively easy to buy and sell the underlying asset... but we know physical property does not have this characteristic, as it is near impossible to quickly buy and then sell the underlying physical building. Because of this unique characteristic, traditional pricing theory does not hold.

More specific characteristics which make real estate derivatives different are identified as:

- The high costs of transacting and managing physical real estate;
- Time delays in buying and selling physical real estate;
- A tendency for real estate valuations (on which the derivative indices are based) to lag transaction prices. The relationship between property derivatives prices and the valuation lag was briefly explored in the 2009 IPF report, and has also recently been considered by Bank of America Merrill Lynch (2010). In this most recent report, Bank of America Merrill Lynch suggest that

property derivatives prices effectively incorporate a forecast of how this valuation lag will impact of future IPD Index returns;

Basis risk (i.e. the risk that the properties being hedged do not perform in line with the index), although some practitioners are skeptical, pointing to the high correlation between the individual funds in the UK Pooled Property Fund Indices and the overall IPD Index.

As a consequence, it is widely argued by practitioners that expectations or forecasts of property returns play a role in determining the price of contracts⁴.

Practitioner approaches to estimating the returns implied by derivative pricing

Estimates of forward (direct) real estate returns implied by derivative market pricing are regularly made by a number of investment banks and brokers⁵. These institutions essentially invert the approach outlined in the IPF's *Pricing Property Derivatives: an initial review*, to determine the price of a contract given forecasts of property returns. The implied or forward return is that which, given the price of the derivative, sets the net present value of these two sets of cash flows to zero.

While this approach is uniformly adopted, differences emerge on whether or not a property risk premium should be incorporated into the analysis. Most of the published estimates of the direct real estate returns implied by derivative market pricing ignore the risk premium. For example, the Royal Bank of Scotland (2009) justifies this on the grounds that in the market there are many different views and therefore in aggregate the risk premium should cancel out to zero. However, Merrill Lynch (2008), like the IPF (2008), note that most investors would not be willing to swap a guaranteed payment [i.e. the fixed price of the derivative] for an uncertain property payment. We think adding a risk premium to the implied return can be justified.

As outlined later, we estimate implied returns on the two bases, i.e. both including and not accounting for the property risk premium. A more complete discussion of this point and further methodological details are provided in the companion report *The UK Consensus Forecast and the Returns Implied by Property Derivative Pricing: Evolution, Record and Influence* published by the IPF.

Source: IPD/IPF UK Trade Volume December 2009

⁴ See Royal Bank of Scotland, 2009, page 28, Merrill Lynch, 2008, page 19, and Investment Property Forum, 2008, p7.

⁵ For example, see Risk and Manage, February 2010, Tradition Financial Services, www.tfsbrokers.com.

3 Data

The IPF Consensus Forecast

The IPF's *UK Consensus Forecast Survey* started in 1998. Every three months, around 30 forecasters, from the property fund management, equity broking, and agency and consultancy sectors contribute their forecasts on IPD (direct real estate) total returns, capital and rental growth. Forecasts for each of the next three calendar years and for the five year average (from which the average over the final two years can be inferred) are requested.

Only forecasts made within the past three months are accepted, and the results are published by the IPF approximately two weeks after the forecast submission deadline (Table 2.1 shows the details for the surveys from 2006). All this means that the IPF *Consensus Forecast* is somewhat dated by the time of publication. The IPF has only collated detailed information on the dates of contributors' forecasts since the February 2009 survey. The information for the February and May 2009 surveys is presented in Figure 2.2. The forecasts in the May 2009 survey tended to be made a few days earlier than in the February survey. However, for both of the rounds, around half of the forecasts were finalised within a month of the publication date, and about two-thirds were made within a month of the submission deadline.

The average forecast was 20 days old by the submission deadline in February 2009 and 25 days old in May 2009 (the respective figures relative to the publication date were 36 and 41 days). A similar profile applied to the November 2009 *Consensus Forecast* when the average forecast was 21 days old by the submission deadline. Those in the August 2009 *Consensus Forecast* were more dated - possibly because of the holiday season - with the average forecast being 33 days old on the submission deadline and less than half made within a month of the submission deadline.

As noted below, the base for the comparison of derivatives market pricing and the IPF Consensus is the latter's submission deadline date. However, the lengthy period for which forecasts are accepted in the IPF survey is likely to introduce some distortion in the comparison with derivatives market pricing.

Table 2.1: Submission deadlines and publication dates for the IPF Consensus Forecast

Submission deadlines and publication dates for the IPF Consensus Forecast			
Survey	Deadline	Published	
February 2006	February 01, 2006	February 15, 2006	
May 2006	May 03, 2006	May 17, 2006	
August 2006	August 02, 2006	August 16, 2006	
November 2006	November 01, 2006	November 14, 2006	
February 2007	January 31, 2007	February 13, 2007	
May 2007	May 02, 2007	May 15, 2007	
August 2007	August 01, 2007	August 14, 2007	
November 2007	October 31, 2007	November 13, 2007	
March 2008	20 February 2008	March 02, 2008	
June 2008	May 21, 2008	June 06, 2008	
September 2008	August 20, 2008	September 05, 2008	
November 2008	November 12, 2008	November 28, 2008	
March 2009	February 18, 2009	March 06, 2009	
May 2009	May 13, 2009	May 29, 2009	
September 2009	August 19, 2009	September 04, 2009	
November 2009	November 11, 2009	November 27, 2009	

Exhibit 2.2: Distribution of IPF Consensus responses by date, February and May 2009



Source: Authors' calculations using data supplied by the IPF

In the February and May 2009 IPF surveys, there were statistically significant differences between the forecasts made within one month of the submission deadline and those two to three months beforehand. Such differences, however, only applied to the current year forecast, whereas the forecasts for the second and third years and the five year averages were not statistically different. To limit any potential distortion, a further comparison is made between the IPF Consensus Forecast and the derivatives market by lagging the latter by one month. The issue of publication delay will be examined further in Section 4.

In January 2006, the IPF published *Uncertainty in UK Property Market Forecasts*, which looked at the forecasting record up to 2004 of the IPF Consensus Forecast and its contributors. This research illustrated significant differences between the forecasts of capital growth and total returns and the subsequent outturns over the period 1999 to 2004. Furthermore, there was systematic bias in forecasts of total returns and capital growth (i.e. a tendency to under-predict when performance was improving and *vice-versa*).

Interestingly, the report found that forecasts of rental growth had relatively less uncertainly, leading the authors to conclude that the key uncertainty behind forecasts of total returns and capital growth was the difficulty in forecasting yields.

Corresponding to the data on derivative market pricing and the IPD outturns to date, the IPF Consensus Forecast is analysed from February 2006 to November 2009. Figure 2.3 illustrates the evolution of the capital growth forecasts over this period and compares them with the IPD outturns (the final point on each line). Over this period, the consensus's one, two and three year forecasting record has been poor. *Disagreement and Uncertainty in UK Property Market Forecasts* identifies a similarly poor short and medium-term forecasting record.

The derivatives market

There is no unique source of data on UK property derivatives market pricing. A number of the brokers and investment banks collate prices from the deals they are associated with or are aware of, and in some cases through a hypothetical judgment of the prices trades would take place at. A comparison of some of these sources does reveal marginal differences in the prices.

These are normally 'mid-prices' - the average of the 'bid' and the 'offer' price. The corresponding spreads, varying between 50-150bps (and accounting for the bank's profit, the broker's commission, compensation for counter-party risk etc),



Exhibit 2.3: Evolution of IPF Consensus forecasts of capital growth vs. outturns.

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are high by comparison to other derivatives markets. The bid and offer prices imply two slightly different views of the market, the mid-price (used in this report) can be seen as a neutral view.

Bank of America Merrill Lynch's data on property derivatives prices from February 2006 are used. Where necessary, these were supplemented by data either provided by Professor Andrew Baum or extracted from the websites of the various brokers. The dates used correspond to closest available to the submission deadline of the IPF Consensus Forecast; for example, property derivatives prices as at April 30, 2007 were used in the comparison of the May 2007 IPF Consensus whose deadline for contributors was (as can be seen from Table 2.1) May 02.

The pricing convention for commercial property derivatives changed in January 2008. Before then, prices were quoted as a spread over three-month LIBOR; in March 2007, the spread was 200bps meaning that the buyer would, every quarter, have to pay 50bps plus a quarter of whatever three month LIBOR was. Now, prices are quoted as a fixed rate and are settled entirely in the following March, for example in early 2008 the price for a December 2008 contract was -1200bps, meaning that a buyer would be given 1200bps (in addition to the IPD property total return) in March 2009.

It is often remarked how volatile property derivatives prices are by comparison to the derivatives markets of other asset classes. For example, prices for the December 2007 contract moved from 200bps over LIBOR in mid-March 2007 to -200bps over LIBOR at the end of July 2007⁶. Such volatility has persisted under the new pricing convention, with the price of the December 2009 contract moving from -1500bps in early July 2009 to -300bps at the beginning of September 2009.

Derivatives - total returns vs capital growth

UK commercial property derivatives are typically based on total returns but this study is interested in capital growth, which broadly corresponds to the total return less the income return⁷.

It is not possible to infer directly views on capital growth prospects from UK derivatives prices; to do so requires unknown assumptions on what the derivatives market is anticipating for the income return. However, income returns are fairly stable and relatively easy to 'forecast', while almost all the variation in total returns is associated with capital growth. The income returns implicit in the IPF Consensus are used in the calculation of the capital growth rates implied by derivative market pricing, given the corresponding implied total return. Whilst introducing some circularity to the forecast comparison, the effect will be insignificant given the low variation in income returns and the ease in forecasting these.

4 Forecast comparison

In this section the IPF consensus forecasts and the implied derivative market returns are compared to the actual outcomes of the IPD Annual Index. Accuracy is measured using the mean square percentage error criterion. This is a statistical measure that expresses the squared deviation of the forecast from the actual outcome as a percentage of the outcome⁸. Such a measure is commonly used to assess forecast accuracy although further research could explore alternative statistical or economic measures. The forecast errors are shown below in Table 4.1.

Table 4.1: Comparison of Forecast Accuracy

	Average Forecast Error (MSPE)		
Time before Actual Results Released	Derivative Implied Returns Not including Risk Premium	Derivative Implied Returns Including Risk Premium	IPF Consensus
One period	-1.5	-1.4	-3.5
Two periods	-10.0	-9.8	-20.2
Three periods	-31.2	-29.8	-29.0
One year	-36.2	-33.3	-21.0
Two years	-13.3	-16.1	-13.8
Three years	-16.2	-20.5	-15.6

The table shows the accuracy of the derivative implied returns and the IPF consensus forecasts over several different time periods. The time periods are shown in the first column and indicate the number of quarterly periods that remain from when the forecast is made to when the annual period ends (one period is approximately equal to a quarter). In each row the average of the mean square percentage error for all available forecast observations is shown. The second and third columns of the table show the MSPE for the implied returns from the derivatives market. Two forecast accuracy measures are presented, one for the implied returns assuming no risk premium is included in the calculations and one including the risk premium in the calculations⁹. The final column presents the forecast accuracy measure based on the IPF consensus estimates.

From the table it appears that at the one and two-period horizons, the implied returns from the derivatives market provide a more accurate indication of the actual outcome for capital growth in the IPD index than the IPD consensus does. At a horizon of three periods (approximately three guarters) the forecast accuracy of both measures is about the same. At periods from one year to three years the IPF consensus has provided greater forecast accuracy.

The average forecast accuracy measure tells only part of the story. The set of charts below show how the forecast accuracy of the three measures changed over time. In particular, it shows the level of forecast accuracy was better for the derivatives market as the contract expiry date approached¹⁰.

⁶ Note that, under the old LIBOR contacts, derivative prices are not strictly comparable over time because the starting index for the first property payment is the most recent IPD monthly index. This effect does not apply to the new, post-lanuary 2008 pricing convention where the property payment is always the full calendar year's IPD return.

⁷ Capital growth and the income return do not perfectly sum to the total return because of the cross-product

⁸ The formula for the mean square percentage error is $MSPE^{h} = \frac{1}{\pi} \sum_{i=1}^{n} \frac{(R^{forecast, h} - R^{IPD actual})^{2}}{p^{IPD actual}}$ the capital gain estimate either calculated from the derivative prices or taken directly from the IPF consensus forecasts h periods from contract expiry, $R^{IPD actual}$ is the annual IPD outcome, h is the number of periods before contract expiry, and n is the number of return expectations available at each horizon.

⁹ The risk premium is assumed to be 175 basis points. See discussion in Section 2 for further information.

¹⁰ Better forecast accuracy is shown by the solid line (derivatives market) in Figure 4.1 being closer to horizontal axis than the lighter, yellow (consensus forecast) towards the end of each series.

Exhibit 4.1: Evolution of Forecast Error by Time of Contract or Forecast



December 2006 Contracts - Comparison of Implied Capital Returns and Consensus Forecast

2008 Contracts - Comparison of Implied Capital Return and Consensus Forecast





December 2007 Contracts - Comparison of Implied Capital Return and Consensus Forecast

2009 Contracts - Comparison of Implied Capital Return and Consensus Forecast



Source: authors' estimates, IPF

-12.0

-11.8

NA

-4.7

-2.0

-19.3

-18.7

-11.4

-9.1

NA

12

10

NA

5

20

Exhibit 4.1 contains four panels, each tracking the forecast error at the time the derivatives contract was initiated or the time the IPF consensus was published. The four panels cover derivative contracts ending from December 2006 to December 2009 respectively. The closer the lines are to the horizontal axis (when the MSPE equals zero), the more accurate is the forecast. For example, the lower right side panel, covering December 2009 contracts, shows how accurate the implied returns and IPF consensus were in predicting the actual outcome for the 2009 IPD outcome. In the case of panel 4, the impact of the financial crisis is very visible, with both derivative prices and the IPF consensus pricing in much larger falls in the IPD index than actually occurred.

Consistent with the statistical results shown in Table 4.1 above, the greater accuracy of the implied derivative market growth expectations near the expiration of the contract is evident in each panel. In three of the panels (covering the 2007, 2008, and 2009 contracts), the greater accuracy of the IPF consensus over longer horizons is confirmed.

It is also notable that the implied growth expectations of the derivative market are more variable and sensitive to new developments than the IPF Consensus Forecast. The IPF report discusses this in greater detail.

Impact of Publication Delays of the Consensus Forecasts

One question that arises from the conclusion reached in the section above, that the derivative market provides a more accurate indication of future outcomes over short time horizons, is to what extent is this result driven by the publication delay for the consensus forecast? The publication delay of the consensus forecast was described in the second section of this paper. Because the forecasts on which the consensus is based could be several weeks out of date, it may bias our results towards finding the derivative market information is more accurate.

Table 4.2 shows how the consensus forecasts change over the period leading up to the submission. In almost all cases the majority of responses to the IPF survey were received within one month of the submission deadline. The exception to this is for the third quarter, where a slight majority of responses were received in the period of one to two months before the deadline. As discussed in Section 3, it is possible that this unusual finding is driven by forecasters submitting their forecasts early before departing for summer vacations.

IPF Consensus 2009					
Consensus & Deadline	Date of forecast relative to deadline	Full consensus	Number	Mean TR	Mean CG
	2-3 months		3	-11.0	-16.2
18-Feb-09	1-2 months	-11.3	5	-7.6	-14.5
	Within 1 month		21	-12.0	-18.7
	2-3 months		3	-16.4	-22.4
13-May-09	1-2 months	-15.1	8	-16.2	-23.4
	Within 1 month		16	-13.9	-20.9
	2-3 months		3	-14.3	-20.4

-11.9

-2.6

19-Aug-09

11-Nov-09

1-2 months

2-3 months

1-2 months

Within 1 month

Within 1 month

Table 4.2: Submission Deadline and Respondent Expectations for the IPF Concensus Forecast

Source: Based on data provided by the IPF. Full consensus is the published total return forecast. Mean TR is the mean total return forecast and Mean CG is the mean capital growth forecast. Number is the number of submission received in the time period indicated before the submission deadline.

Another interesting point about the submission analysis is the changing expectations of the survey respondents as the submission deadline approaches. Often the published survey estimate differs substantially from the mean forecast of respondents in the months leading up to the forecast deadline.

For comparison, table 4.3 shows a selection of implied (total) returns from the derivatives market is selected to approximately match the dates in the middle of the ranges (e.g. 2-3 months, etc) of the table above¹¹. Examination of the implied derivative returns indicates that market information is changing leading up to the survey deadline. However the movement in derivative prices is not always in the same direction or of the same magnitude as the IPF consensus forecasts.

[&]quot; However, it is impossible to know when the forecasters involved actually made their estimates.

 Table 4.3: Completion Time of Consensus Forecast and Corresponding Implied Returns from the Derivatives Market

Derivative implied return 2009				
Date	TR w/o RP	TR with RP		
4-Dec-08	-17.0	-15.2		
3-Jan-09	-18.5	-16.7		
2-Feb-09	-20.0	-18.2		
26-Feb-09	-18.5	-16.9		
28-Mar-09	-18.0	-16.5		
27-Apr-09	-17.8	-16.4		
4-Jun-09	-16.5	-15.3		
4-Jul-09	-14.8	-13.7		
3-Aug-09	-8.8	-7.7		
27-Aug-09	-6.3	-5.4		
26-Sep-09	-3.5	-2.8		
26-Oct-09	-1.5	-0.9		

Notes: TR w/o RP = Total return without risk premium. TR with RP = Total return including a risk premum.¹²

Using this information on the publication delay of the consensus forecast, it is possible to repeat the analysis shown in Table 4.1 by selecting derivative contracts closer to the time the IPF consensus forecasts, on average, were likely to have been generated (approximately one month before publication).

When the forecast evaluation exercise is repeated using the earlier derivatives market information, it is found that the forecast advantage essentially disappears¹³. Hence, the derivatives market appears to be more accurate at the time the IPF consensus is released (for the short horizons), because additional information has been incorporated into market prices that was not available at the time the forecasts used as input into the IPF consensus were made. When the forecast accuracy of the implied derivative returns are compared to the IPF consensus at the time the consensus forecasts were likely to have been generated, our analysis shows that the information content of the two sources of return expectations are the same.

5 Conclusion

The accuracy of capital gain returns implied by property derivative contracts and the IPD consensus forecasts has been evaluated. It was found that over short horizons the forward returns implied by the derivatives markets were more accurate. However, at horizons of nine months or more the IPF consensus estimates proved to be more accurate. This result is consistent with the view that swap contracts are generally not priced based on return expectations. However, for real estate swaps, over the short-term factors such as valuation lags in the IPD index¹⁴ and market conditions may impact derivative prices.

The finding of better long horizon forecasts is more pronounced than the conclusions published in the companion report "*The UK Consensus Forecast and the Returns Implied by Property Derivative Pricing: Evolution, Record and Influence*" released in late 2009. Additional data for 2009 produced a more favourable finding for the IPF consensus. This was due in part to the strong fall in derivative prices at the depth of the financial crisis that produced an overly negative view of the outcome for 2009. The IPF consensus for 2009, while heavily (and inaccurately) revised downward, did not indicate as great a fall in commercial property prices as was priced into the derivatives market. However, even with the financial crisis, the greater accuracy of the implied forward returns from derivative prices over short horizons is a robust finding from both studies.

The question of publication delay for the IPF consensus was also addressed in this report. It was found that the short term information advantage of the derivatives market essentially disappeared when the results were adjusted to allow for a one-month publication delay. However, at the time of the publication of the IPF consensus, current derivatives market pricing is likely to provide a better indication of future return outcomes up to six months ahead of contract expiry.

It is important to recognise that the findings of this report are based on a small sample of data, as property derivatives have only been actively traded since 2006. As more data becomes available it may well be that different conclusions could be drawn in the future. Based on current evidence, the implied growth estimates calculated from the derivatives market do provide a more accurate indication of future capital appreciation than the published IPF consensus forecast for horizons up to six months. Beyond this horizon the evidence appears to favour the IPF consensus forecasts.

¹² This table shows the implied derivative returns on dates matching the mid-point of the time ranges shown in column 2 of Table 4.2.

¹³ The results are not shown but the forecast evaluation statistics for the implied derivatives returns and the IPF consensus do not differ in any meaningful way.

¹⁴ The companion report published by the IPF presented preliminary evidence to suggest that valuation lags may account for part of the premium paid on property swaps.

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