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RESEARCH

Property and Inflation Revisited

FULL REPORT

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Property and Inflation Revisited

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This Programme supports the IPF's wider goals of enhancing the understanding and efficiency of property as an investment. The initiative provides the UK property investment market with the ability to deliver substantial, objective and high-quality analysis on a structured basis. It encourages the whole industry to engage with other financial markets, the wider business community and government on a range of complementary issues.

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Property and Inflation Revisited

Report

IPF Research Programme

May 2024

Property and Inflation Revisited

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Property and Inflation Revisited

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SUMMARY AND CONCLUSIONS

There is debate about whether property as an asset class offers investors a hedge against inflation. This debate is clouded by ambiguity around what is meant by a hedge. For this report, a distinction has been made between an 'inflation match' and the technical definition of an 'inflation hedge'.

- An **inflation match** is used to describe an asset where the investment returns keep pace with, or exceed, inflation over the long term.
- An **inflation hedge** is when if inflation increases by 100 basis points (for example) relative to what was expected, the returns on an asset increase by 100 basis points relative to what would have otherwise happened. In this case, we would describe the relationship between the returns on the asset and inflation as perfectly correlated or as providing a perfect or full hedge against inflation. A partial hedge is where returns increase relative to what was expected but by less than the increase in inflation.

Property depends on a wide range of factors such as economic growth and structural changes in demand and supply as well as inflation. Higher inflation can reduce returns but still leave returns outpacing inflation. This means that it is quite possible for property to be an inflation match but not to be a perfect or even a partial inflation hedge.

A previous IPF report based on data up to 2009 found that the investment returns from commercial property provided an inflation match in the long run but did not provide a perfect technical hedge against inflation. The positive real returns over the longer term were achieved primarily through receipt and reinvestment of the income return rather than through capital value growth. However, since the 2011 report, there have been several economic and geopolitical events, most notably the Covid-19 pandemic and its aftermath, that have led to rates of inflation that have not been seen in the UK since the early 1980s.

For this report, analysis from the 2011 study that examined whether total returns from commercial property provide a technical hedge against inflation has been extended to 2023. Whether property has provided an inflation match over the long run is also examined, as well as whether the income generated by commercial property has been a better hedge against inflation than the total returns. The implications of the findings for investors are then considered.

The updated analysis supports the main conclusions of the 2011 IPF report. In particular:

- While UK property delivers positive long-run real returns, it is not, in most cases, a perfect hedge against inflation, where hedge is defined strictly as moving one-for-one in line with changes in inflation rather than merely keeping pace with (or exceeding) it over the longer term.
- UK equities have tended to provide a far better hedge against inflation, but UK property has been a better hedge than UK government bonds (gilts).
- Property does hedge against economic growth, both real and nominal, and, consequently, is useful for matching future assets to liabilities where those future liabilities are nominal GDP related.
- Asset specific supply and demand factors aside, the three key factors that have affected property investment performance have been: position in the cycle at purchase, GDP growth and inflation, in that order. Inflation is an important driver of property investment returns but not the dominant one.
- While capital value changes generate volatility in investment returns, income has been the driver for UK property achieving positive real total returns over most periods. Therefore, looking at returns in real terms emphasises the need to maintain and protect income.

SUMMARY AND CONCLUSIONS

- The actual performance of property will depend upon the underlying economic conditions at the time and the type of inflation. The best scenario for property investment performance is the High Growth-Low Inflation scenario, associated with the non-inflationary constant expansion (NICE) era (early-1990s to 2007), as well as with the 'Great Moderation' (mid-1980s to 2007).
- A High Inflation-Low Growth (stagflation) scenario is particularly bad for property investment returns. This scenario involves cost-push inflation, usually when commodity prices are rising faster than consumer prices, which is compounded by falling or very weak economic growth. The classic period of stagflation was the mid-seventies but 2022-2023 had many similar characteristics.

In addition, this follow-up report has argued that:

- It is possible that total returns from UK property provided a perfect hedge against inflation in times of very high inflation in the 1970s and 1980s. However, the relationship changed and total returns became only a partial hedge as inflation fell. In fact, returns from UK property have become more negatively sensitive to inflation in recent decades when the inflation rate, on average, has been quite low.
- Income from UK property, rather than total returns, has been a hedge against inflation.
- All the weakness of property as an inflation hedge comes from the capital growth side. This is likely to reflect the influence of interest rates on property pricing since long-term interest rates will typically rise when inflation is higher and expected to remain higher.
- Under certain circumstances, an investor can benefit from the inflation hedging attributes of property income and avoid the negative impact from capital growth by holding assets until inflation reduces again.
- Residential property may provide a better hedge against inflation than the main commercial property sectors, but it is still not a perfect hedge.
- The econometric work was accompanied by consultations with industry experts. In general, they did not express any surprise at the main findings.
- The lack of inflation hedging in overall performance has been to the detriment of commercial property during the recent bout of high inflation. Changes in yields have swamped operational performance, resulting in negative total returns in 2022 and 2023. However, total returns should improve if inflation returns to low levels and economic growth resumes in line with consensus forecasts for the UK economy.

1. INTRODUCTION

1.1. What is an inflation hedge?

There has been longstanding debate as to whether the performance of commercial property offers investors a hedge against inflation. This partly reflects ambiguity around what is meant by a hedge. There is a difference between the ability of an investment to keep pace with inflation over time and its ability to act as a technical hedge against inflation. The former simply implies that the income or value can increase in real (i.e., inflation adjusted) terms over a long period of time (long enough to iron out short-term fluctuations) or, alternatively, that the total returns provided from reinvested income and changes in value are positive in real (inflation adjusted) terms (again over a long period of time).

In contrast, the latter refers to the ability of the returns from an investment to compensate investors for unusual or unexpected movements in inflation. An inflation hedge could be perfect in that changes in the returns of an asset, relative to what they would have been if inflation had not changed, correspond exactly with the deviation of inflation from what was considered usual or was expected. This is also sometimes referred to as a full hedge. It could be a partial rather than a perfect hedge if returns protect investors from some, but not all, of the fluctuations in inflation. For some assets, there may be no relationship between their investment returns and inflation, while for other assets, the relationship could even be perverse in that returns become worse when inflation goes up and are better when inflation goes down.

Property is a real asset and, traditionally, it has often been thought that its investment returns exhibit a close relationship with inflation. Yet its status as a real asset does not mean that its relationship with inflation is straightforward. Property is also a capital asset, so its pricing is not only affected by income, but also other factors such as fluctuations in interest rates (which are related to inflation), risk perceptions and expectations for future income, which influence its pricing and how it is assessed relative to other asset classes. This is at the heart of any relationship between property performance and inflation.

Property depends on a wide range of factors such as economic growth and structural changes in demand and supply and the position in the property cycle as well as inflation. Higher inflation can reduce returns but still leave returns outpacing inflation. This means that it is quite possible for property to be an inflation match but not to be a perfect or partial inflation hedge.

To give an example, if total returns to property over the next five years would have been 5% per annum with inflation at 2% but when inflation unexpectedly increases to 3%, total returns only increase to 5.5%, then, in this example, property still matches, or more than keeps pace with inflation, but it is only a partial hedge. Inflation has gone up by 100 basis points, but property returns have only increased by 50 basis points. For property to be a perfect hedge, total returns would have had to increase by 100 basis points in line with the increase in inflation. If total returns were to stay at 5%, property would still match, or more than keep pace with inflation but property would not even provide a partial hedge.

Many commentators think about the relationship between inflation and the income generated by commercial property, while others think about the relationship between inflation and total return rates (i.e., the capital growth plus the income return). Some may even think about the relationship between inflation and the change in the value of commercial property. Yet, as a depreciating asset, commercial property will always need income to offset depreciation and enable returns to keep up with inflation.

1. INTRODUCTION

1.2. What does this report examine?

The IPF published a major report on the relationship between property and inflation in 2011.¹ This report presented tests of whether total returns from UK property had provided investors with a technical hedge against inflation over different time frames, using data up to 2009. While property had delivered positive long-run real returns, the report found that it had not been a perfect hedge against inflation in most cases, where a hedge was defined as the perfect hedge described above.

In this report, the question of whether total returns for UK property have provided investors with a technical inflation hedge has been re-examined using data to 2023. The report draws upon analysis and insights from an IPF roundtable held in February 2023 on the implications of inflation for UK commercial real estate. Interviews have also been undertaken with senior investment professionals and real estate researchers where the quantitative findings from this report were discussed with the participants.

The addition of more recent data provides a longer time frame for the analysis, and it encompasses the recent bout of high inflation experienced by the UK economy since the Covid-19 pandemic. Over 2022, the Q4-on-Q4 inflation rate as measured by the UK Consumer Price Deflator was 10.4%, the highest level since 1981. Hence, this bout of inflation will have been significant in its magnitude even if it is hopefully short-lived when compared to previous periods of high inflation in the 1970s and 1980s (inflation, on the Consumer Price Deflator definition fell back to 4.3% in Q4 2023). Nonetheless, it has reignited interest in the inflation hedging capabilities of different asset classes, including commercial real estate.

For investors, total returns must be the main consideration. These reflect the impact on performance from changes in income, changes in value, and any capital expenditure that has been undertaken to maintain income and/or value. Yet, many investors have control over when capital gains or losses are realised and so income can be important in the shorter term as well. Therefore, whether the income generated by commercial property might be a better hedge against inflation than total returns is also examined. The ability of property to out-perform inflation over the long run, regardless of its ability to hedge inflation over short horizons, is also considered. The motivation for this additional analysis was to reconcile some of the different views and perspectives on property's inflation hedging abilities and to understand why the view that property is an inflation hedge remains reasonably prevalent, if not widespread, within the real estate industry.

It was evident in the discussions with interviewees that confusion over terminology is an important factor behind the variety of opinions that they encounter in day-to-day practice. All the interviewees appreciated the difference between a hedge and the ability to keep up with inflation in the long run, but they noted that the term hedge was often used interchangeably with real growth. In this report, the term hedge is only used in the technical sense, to describe the ability of property's income or total returns to change in order to keep up with changes in inflation. The terms 'inflation matching' or 'positive real growth' are then used to describe the ability of the income or total returns from either commercial property or other assets to keep up with or outpace inflation in the long run.

¹ Blake, N., Goodwin, A., Mackintosh, A. & Simmons, C. (2011) 'Property and Inflation', IPF Research Programme.

1. INTRODUCTION

This analysis focuses entirely on the UK, and it mainly uses MSCI data for property performance as well as official (ONS) data on the UK economy. Expressions such as 'All Property' and 'Office', for example, refer to the MSCI segmentation of the UK market. Inflation also needs to be defined. The commonly used measures of CPI and CPIH (CPI including owner occupied housing costs) only go back to 1988. As an alternative, the Consumer (also known as the Household) Price Deflator from the National Accounts is used. This incorporates the prices of all goods and services that make up UK consumer spending and is more closely correlated with CPIH than CPI. Although RPI was once the standard reference for rent escalation clauses, and is still referenced in some leases, it is no longer classified as an Official Statistic. More details about the data used are provided in Appendix B.

The 2011 report considered previous research on this subject and there has been little further work for commercial property since then, so the review is not repeated here. The earlier report also cross-checked findings against synthetic total returns based on prime rents and yields, but the analysis in this report focuses on portfolio-based measures as reported by MSCI. The 2011 report also contained a section on the implications for the findings on the relationships between inflation and the returns to different types of assets for optimal portfolio allocations. This has not been repeated in this study.

2. IS COMMERCIAL PROPERTY AN INFLATION MATCH?

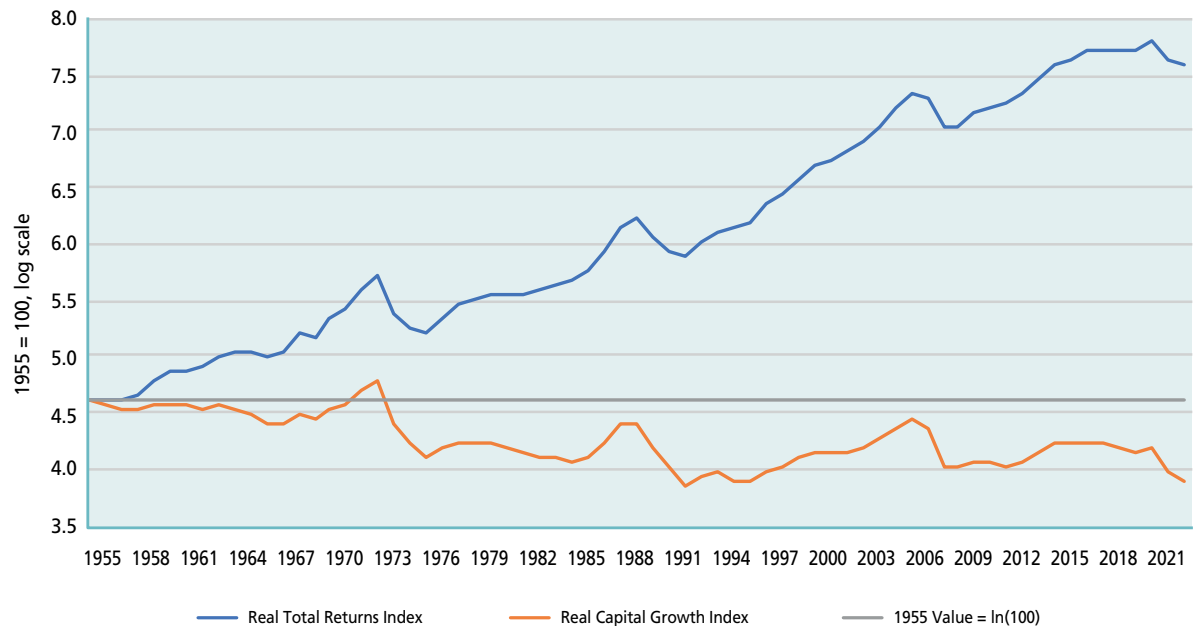
The ability of the total returns generated by UK commercial property investments to match or outpace inflation over time is examined in this section. Comparisons are made with the 'inflation matching' abilities of other assets and between the major sectors of the property market. As a reminder, this is not the same as being a hedge.

All the evidence points to the accumulated total returns from commercial property investment in aggregate being able to more than keep pace with inflation in the long run. There are, however, major cyclical variations that mean that commercial property can under or outperform inflation from time to time. The under-performance is usually associated with sharp downward corrections in capital values while out-performance is smoother and takes place over a number of years. Structural changes also play a part, and this is most evident in the sector level data.

2.1. Have commercial property returns matched inflation over time?

Figure 2.1 shows a real total returns index (i.e., accumulated total returns) and a real capital growth index for 'UK All Property' (i.e., commercial property) over a very long period. 'Real' means that each series is adjusted for inflation by taking the nominal return index and dividing this by the chosen measure of consumer prices.²

Figure 2.1: UK All Property: Real Total Returns Index and Real Capital Growth Index



Sources: MSCI/IPD/Scott³ and CBRE calculations

² Figures 1-3 use a log scale to make it easier to compare changes over a long period of time. The slope of the log-linear line in the chart corresponds to the rate of growth of the variable concerned.

³ Scott, P. (1996), 'The Property Masters, A History of the British Property Sector', Spon E & FN.

2. IS COMMERCIAL PROPERTY AN INFLATION MATCH?

Several things are immediately apparent from Figure 2.1:

- Although there are periods where the real value of the total returns index has fallen back, there is a very strong upwards trend. This means it can be said that All (commercial) Property total returns are 'inflation matching in the long run'. The average real growth in the real total returns index is a creditable 4.5% per annum over the entire period since 1955.
- Capital growth does not do anywhere near as well. Indeed, there is a long-run downwards trend with an average annual fall of 1.1% per annum over the whole period, although the negative trend has been much weaker since 1975 and it has been broadly flat since 1991.
- Total returns are subject to obvious cyclical movements and these largely come from capital growth. The cyclical peaks in the total return and capital growth indices are 1973, 1988-1989 and 2006. In each case, the peak was followed by a steep downwards correction. While 2021 was also a peak, this was more to do with the impact of the Covid-19 pandemic and its consequences rather than the usual monetary and economic influences.

Real capital growth is largely dragged down by depreciation, whether directly or through the capital expenditure undertaken to combat its effects. Factors such as shortening lease lengths might also have had an effect over time, though this is likely to have been relatively small in the long run. The main reason why the decline slows after 1991 is the long-run fall in long-term interest rates that has pushed up capital values (although this has recently been partly reversed).

Whatever the downwards trend in real capital growth over time, all the real returns to commercial property have come from income not capital growth. While accumulated income provides long run real returns, capital growth provides practically all the volatility in those returns in the form of well identified cyclical movements.

Some of the fluctuations in real total returns and capital growth correspond to changes in interest rates but there is more going on. Some of this relates to general financial market conditions such as the impact of the Global Financial Crisis (GFC), but the general state of the economy also has a big effect. This affects real income directly and, through its effects on expectations, has a further impact on capital growth.

Figure 2.1 also shows that one of the persistently good periods for commercial property ran from the aftermath of the early 1990s recession to the eve of the GFC (1993-2006). This is broadly the period of the 'Great Moderation' or the 'NICE' (non-inflationary, constant expansion) era where low levels of inflation were combined with good rates of economic growth. As set out later, this tends to be the best combination for real total returns in commercial property.

2.2. How does commercial property compare to other assets?

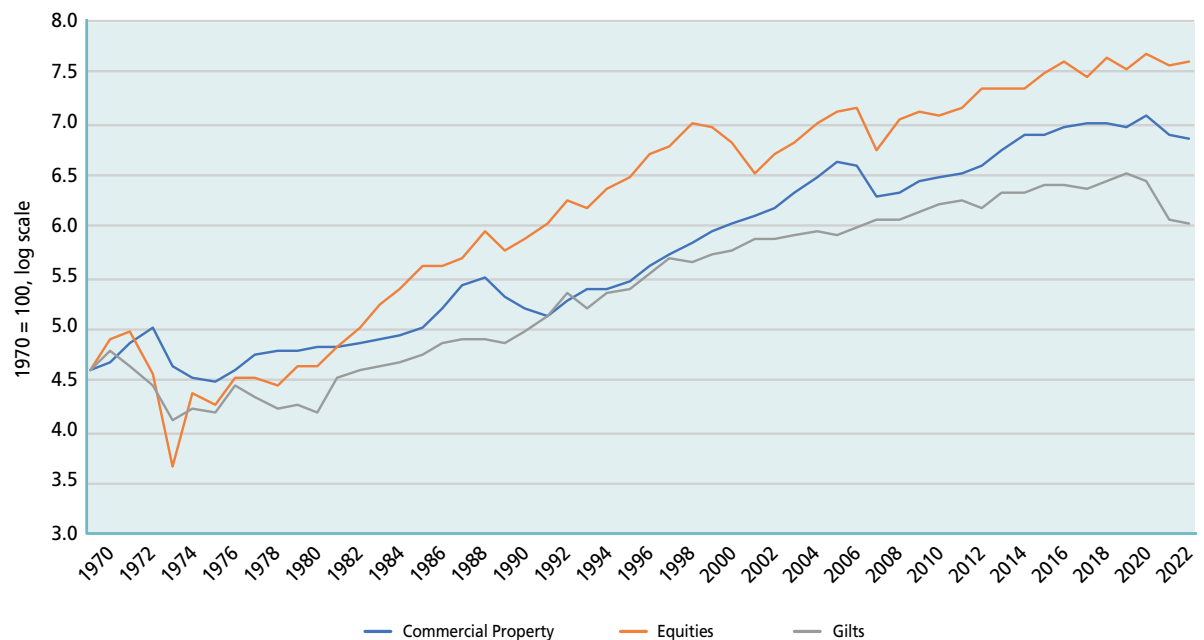
Figure 2.2 shows a similar chart for real total returns of alternative major UK asset classes. This chart begins in 1970 because of data limitations.

Over the full 1970-2023 period, all domestic asset classes are clearly an 'inflation match' in that reinvested total returns have increased in real terms even if real growth for commercial property and equities has slowed (since the GFC in the case of commercial property and since the turn of the millennium in the case of equities) while returns to government bonds (gilts) have been badly hit by the recent correction to interest rates.⁴

⁴ The fact that the index for equities in the chart is highest in 2023, followed by commercial property and then by gilts merely indicates the growth rankings over the entire period since 1970. Growth within sub-periods is indicated by the slopes of the lines not by their level.

2. IS COMMERCIAL PROPERTY AN INFLATION MATCH?

Figure 2.2: UK: Real Total Returns Indices for Major Asset Classes



Source: MSCI/IPD/Scott, Macrobond and CBRE calculations

Although all three asset classes out-perform inflation, the ranking over the full 1970-2023 period is clearly equities, then commercial property and then gilts. Since 2000, however, real returns for commercial property (at 4.0% per annum) have outpaced equities (2.0% per annum) with gilts still the slowest (1.3% per annum). This superiority of UK commercial property over equities is largely the result of the comparison points chosen, as 2000 was a cyclical peak for equities but not for property, and this emphasises the importance of the start and endpoints chosen when making comparisons such as these.

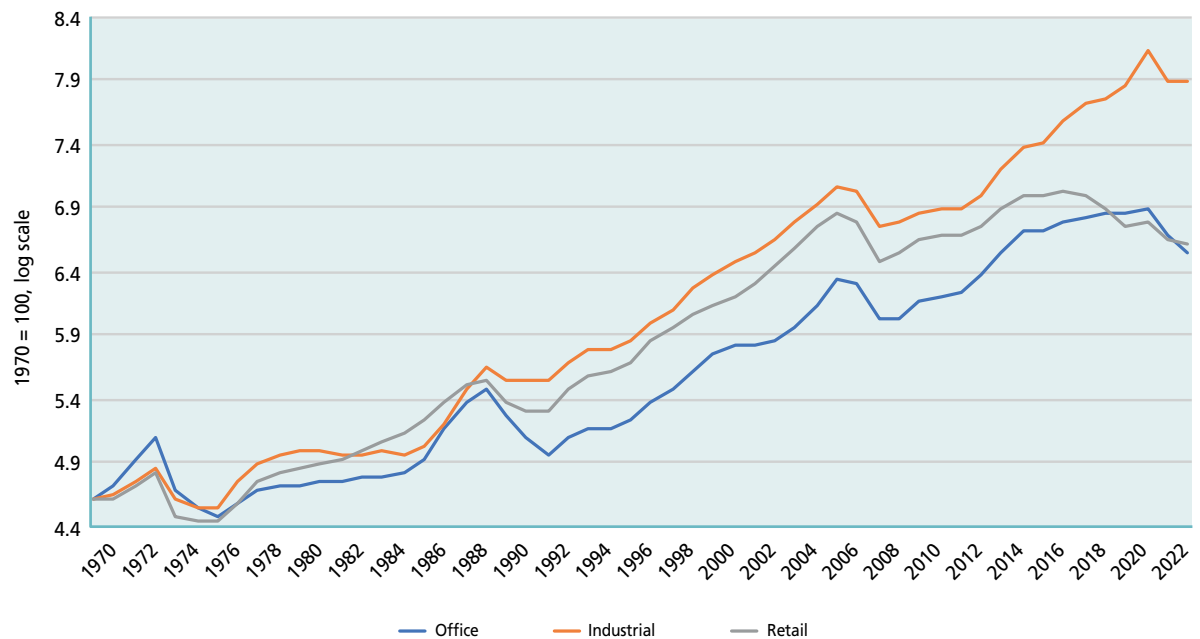
In the post-GFC period, 2010-2023, real returns to commercial property are almost identical to real returns to equities (3.9% per annum versus 4.2% per annum) while annualised real returns to gilts were negative. Since 2023 might well turn out to be close to a cyclical low for property, it is fair to say that real (and nominal) returns to commercial property and equities have been very similar in recent years. That said, UK equities have not exactly exhibited stellar performance post-GFC compared, in particular, to technology-driven US equity markets.

2.3. How do different commercial property sectors compare?

Figure 2.3 shows that all three commercial property sectors illustrated have out-paced inflation over the full period since 1970, but there are periods of over and under-performance that may have cyclical or structural drivers. As with 'All Property' in Figure 2.1, the 'Great Moderation', 1993-2006, was broadly a period of considerable outperformance compared to historical averages. Since then, cyclical fluctuations aside, retail started a period of relative weakness from 2015 and declined in real terms from 2018, while offices have seen lower real growth from 2016. Industrials have been the undoubted recent success story, benefitting from the boom in e-commerce that has dragged retail down.

2. IS COMMERCIAL PROPERTY AN INFLATION MATCH?

Figure 2.3: Real Total Returns Index by UK Commercial Property Sector



Source: MSCI/IPD/Scott and CBRE calculations

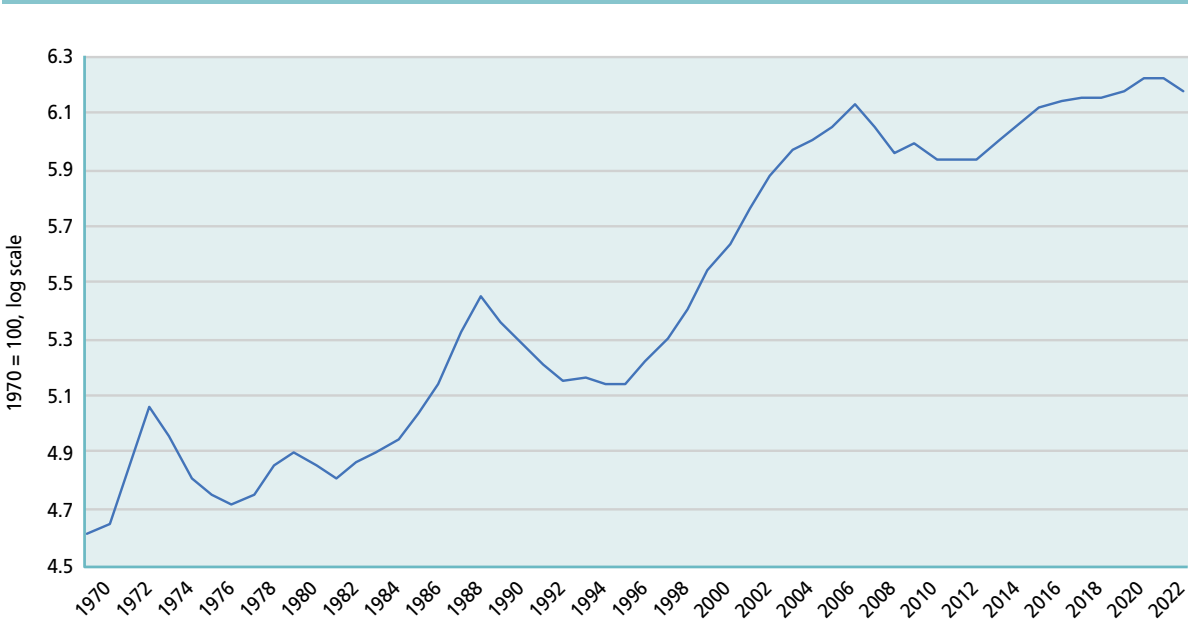
The hotel sector exhibited higher real total returns than any of the sectors shown in Figure 2.3. It is unclear how the MSCI sample of hotel investments is composed and, in any case, most of the relative outperformance of hotels against offices and industrials was over by 2008. However, the comparison between hotels and the other three sectors is still an interesting observation.

Institutional residential investment (e.g., build-to-rent) is also missing from Figure 2.3. This is partly because the MSCI data is not continuous over the period and partly because there are doubts over whether the historical sample of assets is representative of contemporary investment opportunities in the residential sector. This is perhaps inevitable with a rapidly evolving sector.

There is evidence from owner-occupied house prices. This is not the same as total returns or capital growth in that it omits any view on income or imputed rent, and it omits depreciation and maintenance costs. Nonetheless, it does give some idea of the long-run inflation protection offered by owner-occupied housing in the UK. Figure 2.4 shows the long-run movements in real owner-occupied house prices since 1970. Bearing in mind that this is not the same as the real total returns index or the real capital growth index for UK property, there are some similarities with commercial property. There is a clear upwards trend, though it has moderated since the GFC, and house prices share the same cyclical pattern as commercial property.

2. IS COMMERCIAL PROPERTY AN INFLATION MATCH?

Figure 2.4: Real UK House Prices



Source: Bank of England, Land Registry, CBRE calculations

3. IS COMMERCIAL PROPERTY AN INFLATION HEDGE?

The analysis in this section tests whether UK commercial property is a hedge against inflation by looking at the relationship between real total return rates (i.e., nominal returns after inflation has been removed) and inflation rates embedded within a model that also includes GDP growth and lagged real property returns. The tests are then repeated for two key components of overall property performance, capital growth and income growth.

Despite providing a positive real return over time (an inflation match) the results here indicate that property has not been a perfect inflation hedge in the technical sense except for the very earliest years covered by the dataset. This is owing to the effect of capital growth on total returns, which almost certainly reflects the interest rate response to rising inflation and its impact on property pricing. In contrast, income growth does appear to have provided investors with a hedge against inflation.

3.1. Overview of concept and approach

As noted earlier, there is considerable confusion over the term 'hedge'. Many investors and property specialists use 'hedge' to indicate that property as an asset class has provided a positive real return over the longer term. This proposition was examined in the previous section and was termed an 'inflation match'.

In this section, a hedge is taken to be something that counters or compensates for fluctuations in investment returns that are caused by movements in variables such as inflation, exchange rates or interest rates. However, inflation is somewhat different to the other examples in that the relevant impact is on the investor's real return or underlying wealth. An inflation hedge can be perfect in the sense that it removes all volatility in underlying wealth caused by movements in the inflation rate. This could be true for property if the income received in each period was revised in line with the inflation rate and capital value varied only in relation to the income.

Alternatively, an inflation hedge can be partial in that the returns received remove at least some of the volatility in underlying wealth. This might be more likely for property given the periodic need for capital expenditure in response to depreciation and given that property is normally priced within a multi-asset context.

An inflation hedge can even be perverse in that returns are negatively related to inflation rates and so the volatility of underlying wealth increases in response to changes in inflation, all else being equal. An asset can also be a super-hedge if returns increase by more than the increase in inflation, all else equal.

The statistical model used to test whether asset classes exhibit hedging attributes in line with the definition in this report looks at real total returns over five-year intervals for 'All Property', for individual sectors, or for other asset classes, and examines how these returns are related to:

- inflation over those five years;
- GDP growth over those five years; and
- five-year real total returns over the previous five-year period.

Five-year averages are used because commercial property investments are almost always held for several years. Five years is a typical holding period or at least a typical evaluation period when an investment is being assessed. Experiments were made with different length time periods, but the results were much the same, so the results reported here focus on five-year averages. This is also consistent with the approach adopted in the 2011 IPF report on Property and Inflation.

3. IS COMMERCIAL PROPERTY AN INFLATION HEDGE?

Inflation is included as the primary explanatory variable of interest. As explained below, a significant negative relationship between real returns and inflation is taken to indicate that the asset class is not a perfect hedge. The estimated relationship with inflation is after having allowed for movements in GDP growth and for real total returns in the previous five-year period. GDP growth is a key driver of property returns that must be included. Real total returns over the previous five-year period are also included as they are a highly significant variable and improve the statistical validity of the model. As shown later, the dependent variable (real total returns over a five-year period) is negatively related to real total returns over the preceding five-year period.⁵ Therefore, their inclusion appears to be picking up an element of the cyclical in real returns.

3.2. Have commercial property returns hedged inflation over time?

Before discussing the statistical results, it is worth looking at the key relationships graphically. Figure 3.1 charts the relationship between five-year All Property real total returns and five-year inflation rates back to 1965 (as these are five-year growth rates, the 1965 figures are 1961-1965 averages, etc.). A rough negative relationship between inflation and real total returns can be discerned, although this is obscured by the large peak in UK inflation in the mid-to-late seventies which dominates the inflation data and makes it harder to see the inverse fluctuations in the post circa-1987 inflation and real returns data. Interestingly, as is shown later, the period spanning this era of very high inflation is the one for which there is the best evidence of property having acted as a perfect inflation hedge.⁶

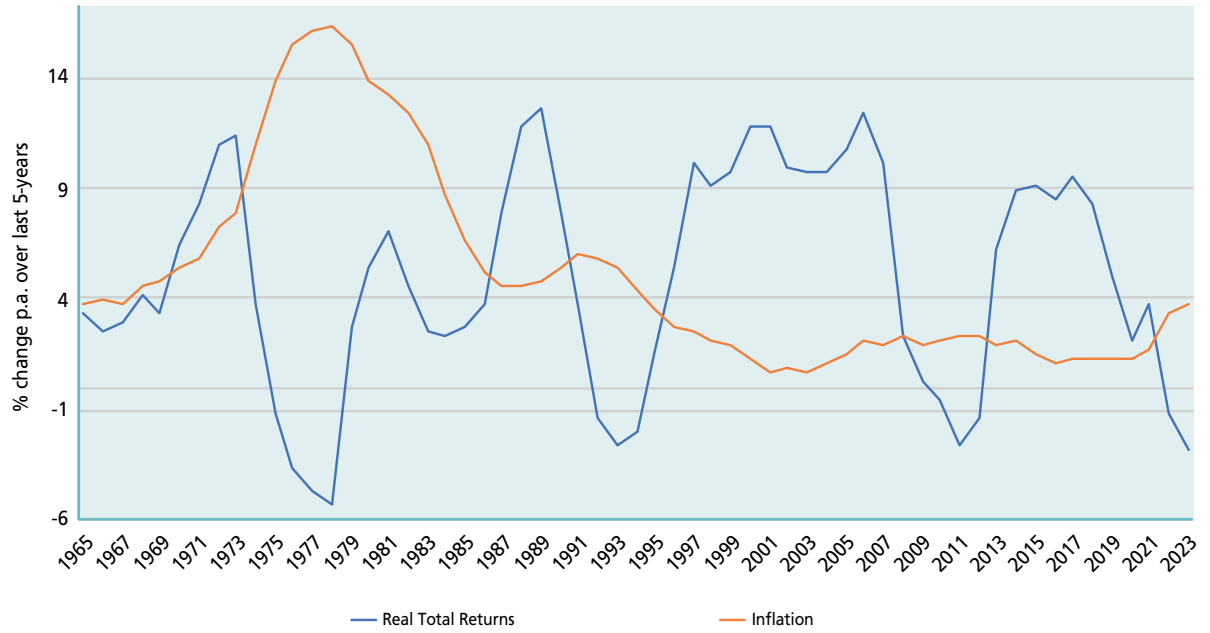
There are several distinct inflationary episodes visible in Figure 3.1. One is the high inflation period running from 1965 to around 1993 (1961-1965 to 1989-1993 as these are five-year averages). Inflation averaged over five years is continuously above 5% over this period with a peak of 16.3% in 1978 (1974-1978). This is followed by a period of slowing inflation and then a period of sub-2.5% inflation which runs until 2021 (2017-2021). Inflation over 2018-2022 and 2019-2023 was then above 2.5%, at 3.4% and 3.9% respectively. Even if UK inflation then comes down as expected over the next few years, five-year annual average inflation will still be above 2.5% until 2028 (2024-2028).

⁵ I.e., real total returns over years $t-5 \dots t$ are negatively related to real total returns over $t-10 \dots t-5$.

⁶ See Section 3.3, Figures 3.3 and 3.4 plus Appendix C, Table A2.

3. IS COMMERCIAL PROPERTY AN INFLATION HEDGE?

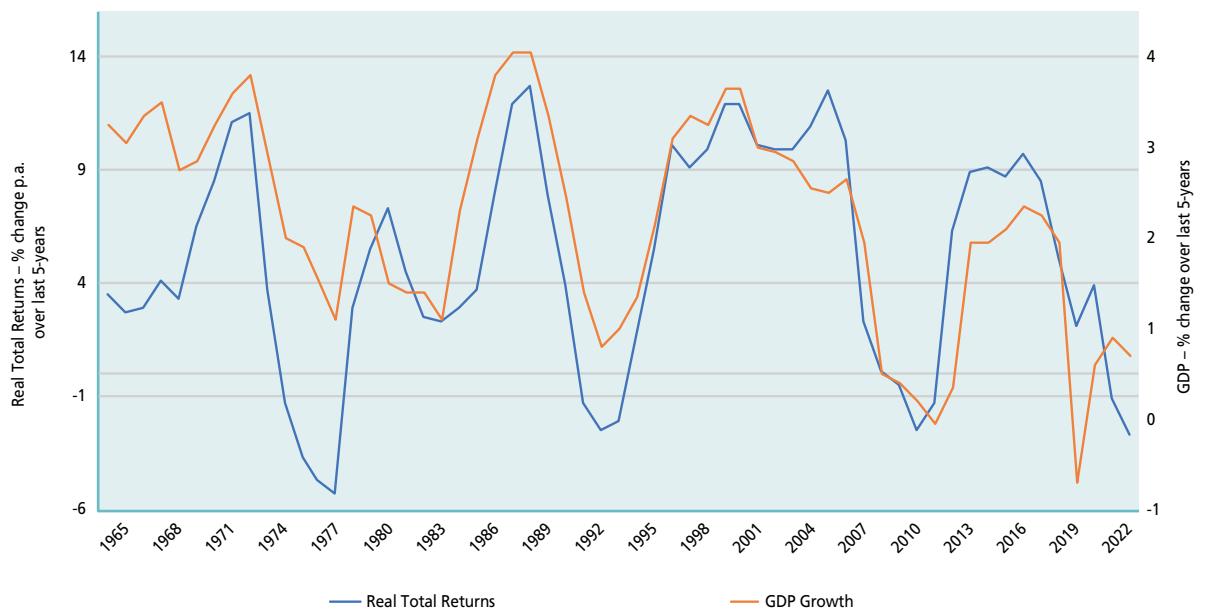
Figure 3.1: UK All Property Real Total Returns and Inflation – five-year averages



Source: MSCI/IPD/Scott, ONS and CBRE calculations

The relationship between All Property real total returns and GDP growth shown in Figure 3.2 is much more obvious. There is not a perfect relationship but the cycles in real returns and GDP follow each other quite closely, especially after 1983 (i.e. the five-year period 1979-1983).

Figure 3.2: UK All Property Real Total Returns and GDP Growth – five-year averages



Source: MSCI/IPD/Scott, ONS and CBRE calculations

3. IS COMMERCIAL PROPERTY AN INFLATION HEDGE?

The statistical modelling involves a regression of five-year real total returns on five-year inflation, five-year GDP growth and real total returns for the previous five-year period. This allows the existence and relative size of any relationships to be gauged. More importantly, it allows their statistical significance to be tested, i.e., whether a genuine relationship exists within the bounds of statistical probability (i.e., it is statistically significant) or whether the relationship is too weak to draw firm conclusions (i.e., it is not statistically significant). Further details about the methodological approach are provided in Appendix A.

Table A1 in Appendix C follows Table 3.1 on Page 18 of the 2011 report in presenting estimates for the relationship between the four variables in different periods. The table starts with results for the longest possible estimation period and then shows results for progressively shorter sub-periods, each ending with the most recent year. The most recent year in this study is 2023. In the 2011 report, it was 2009.⁷

As the dependent variable is real total returns, a coefficient on inflation which is not significantly different from zero can be said to demonstrate that the asset has been a perfect hedge (with a 95% level of confidence). A coefficient that is negative and significantly different from zero means that real total returns fall as inflation increases so it is not a perfect hedge. If the coefficient on inflation is negative but significantly greater than minus one then the asset class can be said to have offered a partial hedge (real returns fall relative to what would otherwise have happened but not by as much as inflation increases, while nominal returns increase but not by as much as inflation).

Estimated Coefficient on Inflation	Implication for Hedging Ability	Example implication to underlying property returns
Not significantly different from zero	Property is a perfect inflation hedge (with a 95% level of confidence)	Nominal returns, relative to what they would otherwise have been, will increase in line with the change in inflation
Positive and significantly different from zero	Property is a super hedge	Nominal returns, relative to what they would otherwise have been, will increase by more than the change in inflation
Negative but more than and significantly different from minus one	Property is a partial inflation hedge	Nominal returns, relative to what they would otherwise have been, will increase but not as much as the change in inflation
Negative and significantly lower than minus one	Property is a perverse inflation hedge	Nominal returns, relative to what they would otherwise have been, will be lower when inflation increases

⁷ Regression analysis gives both a central estimate of the relationship between variables (i.e., the coefficient) and an estimate of the reliability of that estimate (the standard error). The t-statistic is the estimated coefficient divided by the estimated standard error and gives an idea of how likely it is that the true coefficient is not equal to zero. If the absolute value of the t-statistic is greater than approximately two, we can say that the estimated coefficient (i.e., the estimated relationship) is statistically significantly different from zero.

3. IS COMMERCIAL PROPERTY AN INFLATION HEDGE?

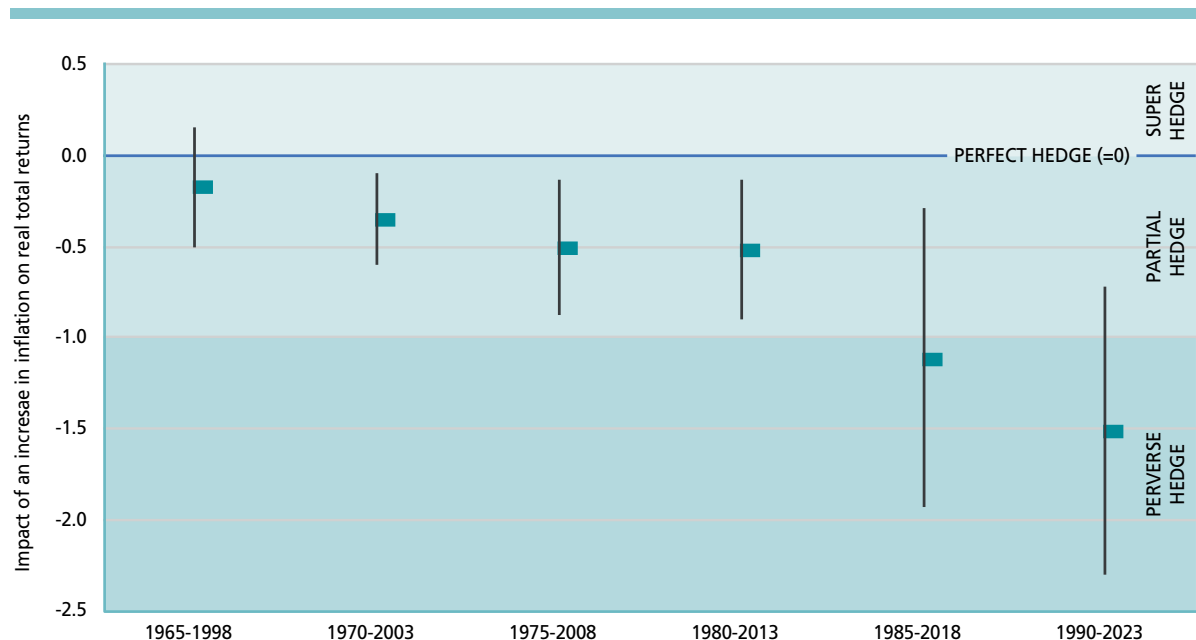
As an additional guide to interpreting the estimation results, the tables in Appendix C give a 95% confidence band for the inflation effect. In the case of Table A1, for the estimation period 1970 to 2023, this ranges from a low of -.78 to a high of -.30. This means that UK commercial property was a partial but not a perfect hedge against inflation when measured over the 1970 to 2023 period since the coefficient is negative, but more than (and significantly different from) minus one.

Table A1 in Appendix C shows that using estimation periods that end in 2023, UK commercial property has not been a perfect hedge against inflation for any of the sub-periods considered. Although the estimated coefficients on inflation from 1985-2023 onwards are less than minus one, it is still possible that commercial property could be a partial hedge, as the values that are greater than minus one are within the 95% confidence intervals. All these findings are very similar to the results shown in the 2011 report.

3.3. How has the relationship changed through time?

Table A2 in Appendix C splits the estimation periods up in a potentially more useful way. This presents estimation periods (windows) of 34 years that advance by five years in each column shown, illustrating how the relationship has changed over time. A 34-year estimation period was chosen to allow six periods of equal length within the available data. Figure 3.3 illustrates the various central estimates for the impact of inflation on real total returns (the horizontal bars) and the 95% confidence intervals for the estimates (the extent of the vertical lines).

Figure 3.3: Estimated Impact of Inflation on UK Real All Property Total Returns



Note: Data from Table A2, Appendix C

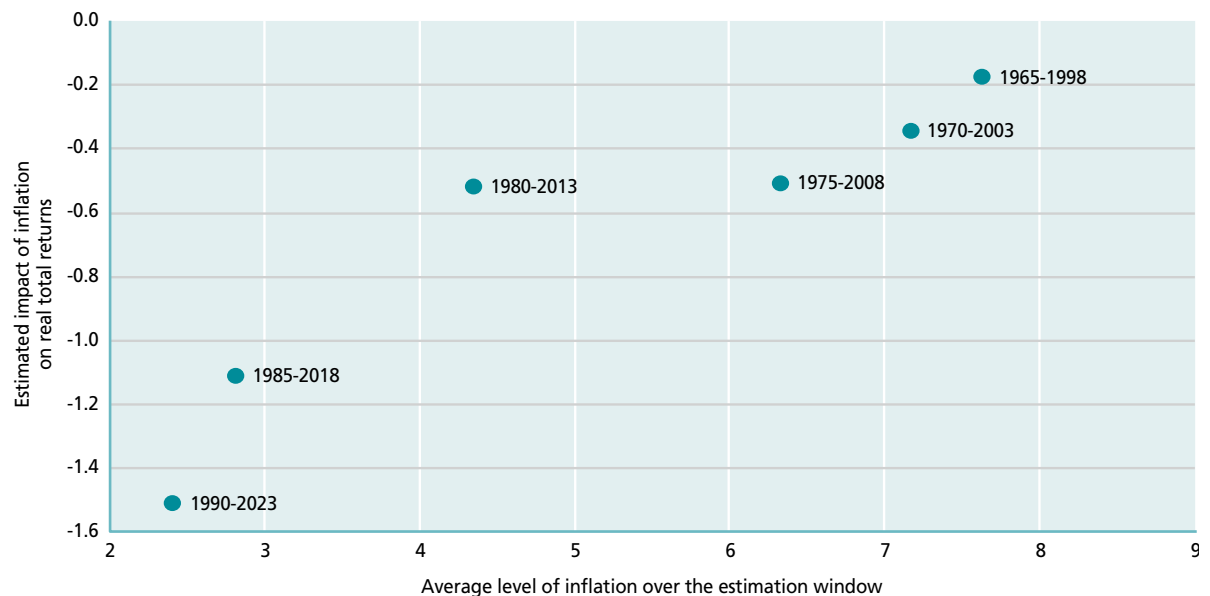
3. IS COMMERCIAL PROPERTY AN INFLATION HEDGE?

The results are very similar to those in Table A1 of Appendix C, but splitting the estimation periods in this way highlights several changes over time.

- Between 1970-2003 and 1975-2008, the results are reasonably stable with both the central estimate of the inflation impact and the confidence intervals indicating that UK commercial property was a partial hedge against inflation (i.e., the coefficients are likely to lie between minus one and zero).
- For the last two estimation windows, 1985-2018 and 1990-2023, the negative impact of inflation on real total returns appears to be much bigger and there is greater uncertainty regarding the true value of the coefficient. It is still possible that commercial property was a partial hedge (i.e., the upper bounds for the estimated impact are above minus one), but it is more likely that commercial property offered no protection against inflation, and it may even have been a perverse hedge.
- For the first estimation window (1965-1998), it is possible that commercial property was a perfect hedge against inflation. At worst, it was at least a good partial hedge.

This raises the possibility that commercial property is a better hedge against inflation when inflation is high and a weaker hedge or no hedge when inflation is low.

Figure 3.4: UK All Property: Estimated Impact of Inflation vs the Level of Inflation



This shows up clearly in Figure 3.4, which is a scatter plot of the estimated impact of inflation on real total returns for property (as measured by the regression coefficient) against the average level of inflation over the period concerned. When inflation averaged over 4%, commercial property returns appear to be at least a partial hedge. When inflation was low over the last two estimation windows, commercial property looks unlikely to be an inflation hedge.

3. IS COMMERCIAL PROPERTY AN INFLATION HEDGE?

The last two estimation windows were also horizons when inflation targeting spanned much of the periods. This could have meant that higher inflation, when it happened, was unexpected and more likely to have affected property values. On the other hand, if investors believed that inflation would always return to target if it went above (or below) it, then property pricing should not have been quite so adversely affected. So, it is not entirely clear why low inflation should diminish or remove the inflation hedging capabilities of commercial property, even though it is clear in the data.

Another consideration is that the last two estimation windows contained the GFC and an extended period of ultra-low interest rates that were reinforced by a policy of quantitative easing. While the interview findings are considered later, it is worth noting here how several interviewees felt that this unusual period had unduly distorted property pricing. This might have contributed to the change in relationship between property performance and inflation observed in Figure 3.3.

The last window also contained the Covid-19 pandemic, and this may have changed or accentuated the relationship between inflation and commercial property returns. The interviewees noted that the policy response to the pandemic led to an extension of the period of quantitative easing and ultra-low interest rates, as well as the pandemic itself accelerating structural changes in the occupation and use of property that have impacted the market overall and the relative performance of different sectors.

The possibility that UK commercial property was a perfect hedge for inflation over 1965-1998 is intriguing in that this might explain the mismatch between the long-held industry belief that commercial property is a hedge against inflation and the contrary indication in much of the statistical analysis. Could it be that the long-held assumption about the inflation hedging attributes of commercial property stems from a period some time ago when inflation tended to be much higher? That is certainly possible, but another possibility concerns the data. IPD data (published prior to their takeover by MSCI) starts in 1971 and, before that, the data used is based on a much smaller sample of investment properties as researched by Scott (1996). This sample could give the impression that commercial property was a good hedge when the reality might have been rather different.

3.4. Other influences on real commercial property returns

Figure 3.2 clearly shows a strong relationship between real commercial property returns and GDP growth and this is reflected in the estimation results. GDP growth is statistically significant in every sub-period shown in Tables A1 and A2 of Appendix C. Therefore, it looks like GDP growth may be the primary driver of real returns with inflation playing a secondary role. This suggests that the inflation-GDP growth combination is important. High inflation accompanied by high GDP growth might not be that detrimental to real property returns while high inflation accompanied by weak GDP growth (stagflation) is definitely detrimental. The importance of the inflation-GDP growth combination is returned to in Section 7.

The importance of GDP growth in determining real total returns is one of the features that attracted defined benefit pension fund investors to commercial property. Tables A1 and A2 illustrate what can be termed 'Nominal Income Matching', which is the sum of the coefficients on inflation and GDP growth. This shows that, in the more distant past, commercial property has been a very good hedge against nominal income growth (i.e., nominal economic growth). When nominal income has grown more quickly, real property returns have increased by even more. This is a very desirable feature for matching future liabilities that are related to nominal income growth (such as final salaries). However, the results also show that this characteristic has become weaker in recent years and that commercial property has become only a partial hedge against nominal income growth at best.

3. IS COMMERCIAL PROPERTY AN INFLATION HEDGE?

Five-year real total returns lagged five years are also a significant explanatory variable in all but one of the sub-periods in Table A1 and all sub-periods in Table A2 of Appendix C. There is also a negative coefficient for this variable. This means that, all else being equal, a period of above average real total returns will be followed by a period of below average real total returns, and vice versa. This, no doubt, reflects the cyclical nature of commercial property markets and should be an important consideration for investors.

3.5. Income and capital growth - breaking the results down

The analysis so far has focused on real total returns, but Figure 2.1 showed how capital growth has created most of the volatility while accumulated income created most of the growth in the total return series. Total returns are equal to capital growth plus the income return.

A similar statistical analysis can be conducted for capital growth as for total returns, but the income return is different as its measurement depends not only on the income received, but also capital values (which are in the denominator of an income return formula). This means that, while income return captures the reward provided by income relative to the capital invested, one cannot easily determine how income itself has risen or fallen in real terms over time. It would be desirable to observe how income changes from period to period as this would indicate whether the income stream from commercial property has provided investors with an inflation hedge even if the capital values are subject to other influences including any long-term drag from capital expenditure.

Therefore, as an alternative, an analysis has been performed using MSCI data on gross rent passing growth rather than the income return. While rent passing growth is not the same as growth in the net cash flow from property investments, it does give some idea of the responsiveness of property income to inflation and other variables. As with the other measures of property performance, rent passing growth has been converted into real (inflation adjusted) terms.

The length of the time series for gross rent passing growth is shorter than that for total returns and capital growth so Table A3 of Appendix C shows the results for a single period: 1990-2023. It shows side-by-side the estimated responsiveness of real total returns, real capital growth and real rent passing growth, respectively to inflation, GDP growth and the five-year lagged dependent variable. The main observations are:

- All the perverse inflation hedging properties of commercial property come from capital growth, as when inflation increases, it appears that capital growth falls. This is almost certainly due to interest rates' (policy rates and longer-term rates) response to rising inflation, and its impact on property pricing, although other aspects of monetary policy and monetary events may play a role.
- In contrast, gross rent passing growth appears to have been a near-perfect hedge against inflation.
- Nonetheless, the inflation hedging attributes of total returns are dominated by the capital growth effect.

Note that high inflation might be associated with higher capital expenditure and non-recoverable operating costs, so the results for gross rent passing might not carry over directly into net income. That said, the hedging properties of gross rent passing offers another possible explanation for the mismatch between common perceptions and the statistical results found for total returns. When industry professionals say that commercial property is a good hedge against inflation, they may well be thinking that the income generated by commercial property is a hedge against inflation.

3. IS COMMERCIAL PROPERTY AN INFLATION HEDGE?

UK commercial leases have shortened in length over recent decades, which might have an influence on the results. Our interviewees noted that shorter leases have enabled more frequent marking-to-market of passing rents when compared with traditional longer leases that had upward only rent review clauses. This could mean a stronger relationship between property cash flows and economic conditions.

However, some interviewees noted that shorter leases increase the risk of vacancies and the need for more active management of properties, including capital expenditure to maintain the attractiveness of assets to occupiers. Hence, if high inflation coincided with a period of economic weakness, returns could suffer as occupiers vacate or flex their requirements, and owners are faced with higher costs. In any case, the impact of inflation on the total returns of UK property has been dominated by the impact of inflation on capital growth, and this appears to have become more perverse in recent years.

With regards to the variables other than inflation, GDP growth and the dependent variables lagged five years are important to both capital and rent passing growth, but they are more important to capital growth. This emphasises that more of the cyclicity in property returns comes from capital growth than from income and suggests that GDP growth may have an additional impact on capital growth through expectations effects on yields.

4. SECTORAL DIFFERENCES

This section presents results on whether the returns from investment into different sectors of the commercial property market have provided investors with a hedge against inflation. There has been a divergence in the returns delivered by different property types in recent years, so it is possible that results for All Property are masking inflation hedging attributes of individual sectors such as offices or industrials. The results suggest that the returns in some sectors might have provided a partial hedge against inflation. Once again, income growth shows stronger inflation hedging attributes than total returns.

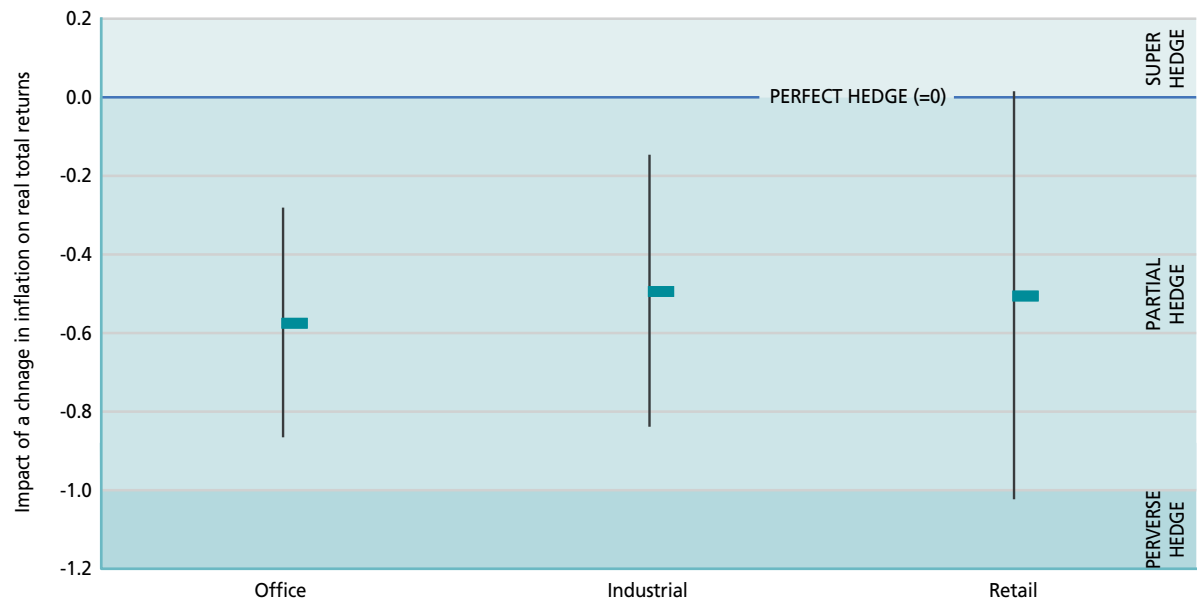
The investment universe for property has widened over time to include alternative property types, including operational sectors such as healthcare and self-storage, and different forms of residential investment such as purpose-built student accommodation and build-to-rent multifamily property. Data constraints, especially the length of appropriate time series, precludes statistical analysis of inflation hedging in such cases, but analysis of hotel returns and of house prices has been conducted to widen the scope beyond the retail, office and industrial sectors that were the traditional focus for UK property investment.

For two of the sectors, industrial and retail, a variable for the growth of e-commerce has been added to the existing model specification. The emergence of e-commerce has structural implications for the demand for both industrial and retail property. The variable used is the share of e-commerce in retail sales or 10.0%, whichever was the highest. The reason for 10.0% is that we could find no discernible impact when the share was less than 10.0%. The share of e-commerce reached 10.0% in 2013 and it was 26.8% in Q4 2023. As might be expected, e-commerce has had a significantly positive impact on industrial total returns and rent passing growth, and a negative impact on retail property performance.

Tables A4 and A5 in Appendix C report results for the statistical analysis on the drivers of real total returns and real rent passing growth broken down by UK sector. Figure 4.1 shows the estimated impact of inflation on real total returns graphically. Results are presented just for 1975-2023 for total returns and for 1990-2023 for rent passing growth. This is for the sake of brevity in the case of total returns and because of data constraints in the case of rent passing growth. Results for capital growth are likely to be similar to the results for total returns.

4. SECTORAL DIFFERENCES

Figure 4.1: Impact of Inflation on UK Real Total Returns by Sector (1975-2023)



Total returns for offices and for industrials appear to provide a partial hedge against inflation. Retail might be a perfect hedge but the error margin for the estimated impact of inflation on real retail total returns is so wide that the hypothesis that it is a perverse hedge cannot be rejected either. The statistical evidence is that hotels are a perfect hedge. However, this result is treated with caution since (as noted earlier) the composition of the MSCI sample of hotels is unclear. Furthermore, the time series length is considerably shorter for hotels. The possibility that retail might be a perfect hedge against inflation is a reminder that inflation hedging is not the same as inflation matching. Retail has had the weakest total returns performance of all the sectors since the GFC while, at the same time, the analysis cannot rule out (with a 95% confidence level) the possibility that it provided a perfect inflation hedge.

Sector level results for the growth in real gross rent passing in Table A5 of Appendix C confirms the 'All Property' evidence (Table A3). Income from property does appear to be a perfect hedge against inflation and, in the case of industrial and retail, it appears to be a super hedge (nominal income increases by more than the increase in prices). Therefore, as with 'All Property', it appears that the capital growth element of sector level returns is not a good hedge against inflation while the income generated is a good hedge.

Table A4 in Appendix C reported analysis for house prices. As mentioned above, this is neither the equivalent of capital growth nor total returns as recorded for commercial property investments, but it still gives an idea of where residential fits into the picture. The estimated impact of inflation on real house price growth indicates that owner occupied house price growth is only a partial hedge against inflation, although the hypothesis that it is a perfect hedge is only narrowly rejected.

5. A COMPARISON WITH ALTERNATIVE ASSET CLASSES

The inflation hedging attributes of UK commercial real estate are compared to those of the principal domestic asset classes of equities and government bonds in this section. They are also compared to those of UK listed real estate. The results indicate that the hypothesis that UK equities were a perfect hedge against inflation over the period analysed cannot be dismissed. However, as with commercial property, conventional gilts typically did not provide an inflation hedge to investors.

Table A6 in Appendix C shows results from an analysis of real total returns for commercial property, equities, and gilts. For brevity, results are presented just for the period of 1975-2023. Listed real estate is also included, although it has a shorter estimation period than the other asset classes owing to data availability. Slightly different model specifications were required for each asset class, so a summary of the inflation and GDP growth effects are given in Table A6. The estimated coefficients and t-statistics show that direct commercial property and gilts are likely to be only a partial hedge against inflation, while we cannot reject the hypothesis that equities and listed real estate are perfect hedges against inflation.

To help understand the meaning of these results, the central estimates and 95% confidence intervals for the estimated inflation effect are shown in Figure 5.1. This chart is like Figure 3.3 except that it compares results for a single time period (1975-2023) across a number of asset classes rather than the results across different time periods for a single asset class.

Figure 5.1: Impact of Inflation on UK Real Total Returns by Asset Class (1975-2023)

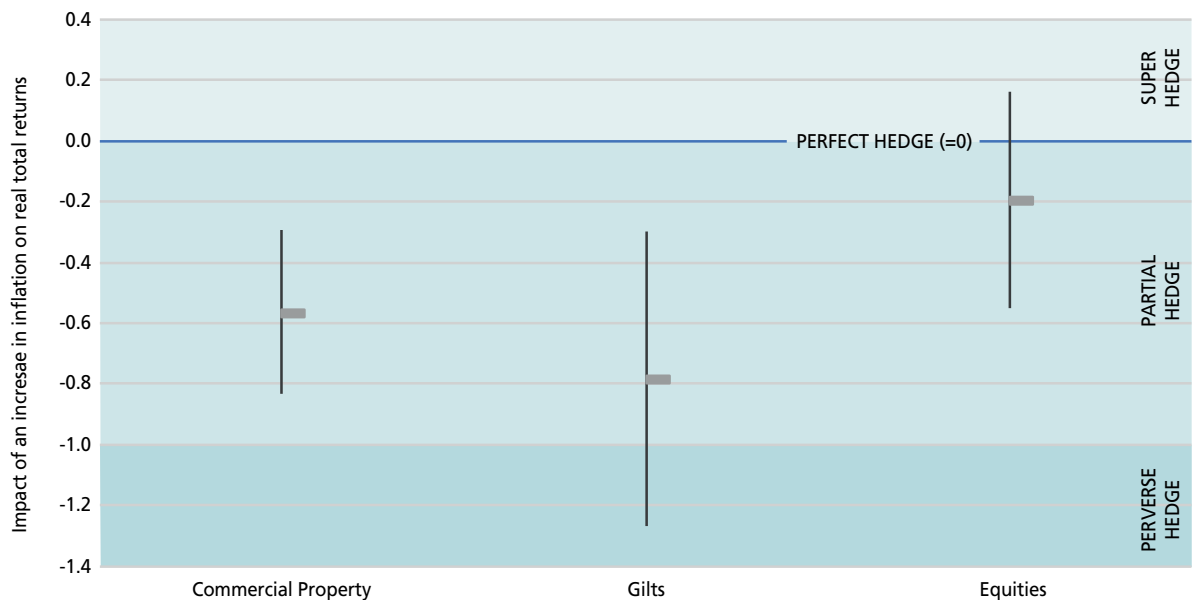


Table A6 and Figure 5.1 show that the central estimates of the impact of inflation on real total returns are negative in each case, but there are important differences between asset classes. It can be said that commercial property (i.e., UK All Property) is a partial but not a perfect hedge against inflation with a 95% level of confidence, at least when evaluated over the period considered here (1975-2023). The central estimate also indicates that gilts are a partial hedge against inflation, but the possibility that gilts provide zero hedge or are a perverse hedge cannot be ruled out as the lower bound for the estimate is less than minus one (i.e., real total returns decline by more than an increase in inflation).

5. A COMPARISON WITH ALTERNATIVE ASSET CLASSES

Equities, on the other hand, have a central estimate that is negative, but it is not significantly different from zero. This is illustrated in Figure 5.1 by confidence intervals for equities that span the zero line. As can be seen from the chart, it is possible that UK equities are a perfect inflation hedge within a 95% confidence bound.

Listed real estate is omitted from Figure 5.1 as the 95% confidence bounds are so wide. The central estimate for the impact of inflation on real listed property returns is -0.5 but the confidence bounds imply that the true value could lie anywhere between -3.7 and $+2.7$, so it is difficult to draw any conclusions.

Listed real estate, however, was the most responsive asset to GDP growth followed by direct real estate. Real total returns for gilts are, unsurprisingly, not responsive to GDP growth (there is no reason why a fixed interest rate investment with low default risk should be responsive to GDP growth). More surprisingly, while equities are estimated to have a positive response to GDP growth, the estimate is not significantly different from zero. This means that, for the period analysed, the possibility that there is either no or a low relationship between GDP growth and the real return on UK equities cannot be ruled out. This might be because the pricing of equities is more forwards looking or because a lot of companies in the UK equities market derive their income from overseas.

Whatever the reason, it looks like UK commercial property returns, whether direct or listed, are the most exposed of the major asset classes to changes in UK GDP growth, with UK residential property following on behind (see Table A4 in Appendix C)

6. INSIGHTS FROM IPF ROUNDTABLE AND INTERVIEWS

This section summarises insights from an IPF roundtable about the implications of higher inflation for UK commercial real estate, and from nine interviews with senior real estate investment professionals undertaken for this research project.

The IPF roundtable took place in February 2023 against a backdrop of double-digit UK inflation rates, several increases to the Bank of England Bank Rate and a marked downward adjustment in the capital values of UK commercial property through the second half of 2022.

The roundtable examined how property had fared as investment given recent high inflation, and how this compared to previous experiences in earlier economic environments. Participants reflected on the experience of traditional sectors such as offices and retail as well as sectors that have emerged more recently such as institutional grade residential assets, operational property, and long income. The challenges that economic conditions now posed for advancing sustainability in the commercial property stock was also debated.

The interviews took place in December 2023 and January 2024. The questions to the interviewees expanded on several of the themes discussed at the roundtable. Interviews were semi-structured in format and the topics discussed were:

- changes to lease structures, especially shorter lease lengths;
- the more operational nature of commercial real estate investments;
- whether variation between different property types has increased;
- the effects of ESG requirements, both across and within property types;
- nature of real estate as an asset class and its links to other asset classes;
- the impact of the wider macroeconomic and monetary policy environment;
- the impact of specific political and economic events in the last decade such as Brexit; and
- views on the future for UK inflation and interest rates, and its implications for real estate.

Each interview began with an outline of preliminary findings from the statistical modelling. (Note that these findings did not vary markedly from results set out in this report.) Interviewees then considered how trends, events, or developments in market practices might have affected the ability of commercial property to provide investors with either an inflation hedge over short horizons or, alternatively, positive real returns over longer horizons.

The interviewees were not surprised to find that UK All Property total returns were not a good technical hedge against inflation in the periods analysed. Nor were they surprised to find that, among the main domestic asset classes, equities had provided the best hedge and (conventional) government bonds the worst hedge against inflation. Several interviewees stated that inflation hedging, as defined in this report, was not a motivation for them or their clients to invest in property. Instead, it was expected that commercial property would provide a competitive real return in the long term, i.e., returns that exceeded inflation and which were commensurate with the risks of the asset class (defined here as inflation matching). However, some interviewees felt that inflation hedging in a technical sense still influenced investment allocations by investors such as pension funds and insurers.

6. INSIGHTS FROM IPF ROUNDTABLE AND INTERVIEWS

There was recognition at the roundtable and among the interviewees that the income and capital value components of property performance might respond to inflation differently. Some interviewees believed that rental income would increase over time as the general level of prices increased, but this view was not shared by all. However, the effect of capital markets on the pricing of real estate was widely perceived to be the main factor that had prevented property from acting as an inflation hedge in recent times. Recent increases in interest rates in response to higher inflation, as well as expectations of higher future interest rates have caused government bond yields to rise markedly. This has placed upward pressure on property yields that has not been counteracted by any great expectation of inflation-led income growth, at least not at an All Property level.

Most UK commercial property leases are shorter in length compared to previous decades and it was noted earlier that this has enabled more frequent marking-to-market of rental income. Rents can also be tied directly to inflation through inflation linked review clauses. This practice is more common in continental Europe than in the UK, although it is prevalent in certain segments of the UK market such as supermarkets and long income investments. Where inflation linked reviews had been negotiated, several interviewees noted that these typically contained caps that prevent income from matching inflation when the latter increases sharply. Yet, without these caps, it might not be practical to enforce the full rent rise if it would place the viability of the occupier at risk.

Shorter leases were also seen to increase the need for more active management, including capital expenditure to keep assets competitive. Arguably, this is exacerbated by ESG requirements that are affecting both occupier and investor demand, most clearly in the office sector. Unsurprisingly, assets with the strongest ESG credentials were seen by interviewees and roundtable participants as better placed to offer inflation protection for investors moving forwards, whereas those with weaker ESG credentials were expected to face significant challenges in terms of performance. It was noted that capital expenditure was needed to address depreciation caused by contemporary ESG regulations and requirements, but construction cost inflation had reduced the viability of projects to upgrade or convert poorer quality stock. This was impacting pricing for such assets, but there was recognition of the potential longer-term impacts on returns if ESG issues are not addressed.

All the interviewees perceived that there was now more variation between the main sectors of the property market, both in overall performance and their likely ability to track inflation through time. Each sector has been impacted differently by structural trends that have fed through into income and pricing. The contrasting fortunes of the retail and industrial sectors over the last decade was an obvious example, although the results in Section 4 showed that stronger overall performance for the industrial sector has not made it a better inflation hedge from a technical standpoint. This was because industrial values were more exposed to the change in capital market conditions in late 2022 while the rate of inflation was high. This reinforces further the importance of definition and time horizon, since industrial assets might still deliver stronger real returns as holding periods lengthen.

Two interviewees felt that investor sentiment had exacerbated the difference in performance between sectors, while a third argued that thematic investing has changed the relationship between sectors and reduced interest in a simple, balanced exposure to property as an asset class. One of the key beneficiaries of these shifts in strategy and sentiment has been the residential sector. While more operational in nature than traditional commercial properties, institutional grade multifamily and student housing investments were seen as the most likely candidates to provide an inflation hedge to investors. In addition to more favourable demand and supply dynamics, short leases were cited as enabling a more rapid marking-to-market of rental income that, in turn, would enable cash flows to keep pace with inflation.

6. INSIGHTS FROM IPF ROUNDTABLE AND INTERVIEWS

Some interviewees discussed the emergence of alternative sectors such as hotels, self-storage and healthcare, and the ability of assets in these sectors to offer an inflation hedge. Since operators in some of the alternative sectors prefer the increased certainty of occupation provided by a longer lease, many such assets had become the basis of long income investments. However, other investors had chosen to invest in or partner directly with operators themselves. While this might improve the inflation hedging capabilities of the investment compared to conventional real estate, it was noted that this approach adds volatility and complexity as there is both a property and a private equity component to investment performance.

The roundtable and the interviewees also debated the impact of political and economic events over the last decade, such as the exit of the UK from the European Union and the impact of the Covid-19 pandemic. It was argued by some that inflation and interest rates in the UK were somewhat higher because of Brexit, with implications for property pricing and borrowing costs. Yet, while property markets in the UK and continental Europe had been hit by the global rise in interest rates over the last two years, the latter might have been hit harder because of the very low levels of interest rates and property yields that had prevailed in the Euro Area. No one thought that the inherent sensitivity of property performance to inflation had changed because of Brexit since there were long standing differences in market structures, leasing practices and valuation practices between the UK and other European property markets.

Arguably, the Covid-19 pandemic and response had a greater impact than Brexit on both inflation and other drivers of property returns. In terms of monetary policy, this led to an extension of the period of quantitative easing and low interest rates introduced in the GFC. Yet supply chain issues post-pandemic caused an increase in inflation that was exacerbated by the effects of the war in Ukraine and its impact on energy and commodity prices. It was this that prompted the reversal in monetary policy as central banks in the UK and elsewhere sought to bring inflation back down. By the time of the interviews, inflation was observed to be falling and interviewees perceived that there would be cuts to interest rates that would benefit property performance. Yet there was no belief that either short-term or long-term interest rates would return to the low levels seen over the previous decade.

7. CONCLUDING DISCUSSION

7.1. Inflation matching vs inflation hedging

This report has sought to clarify the confusion between ‘inflation matching’ and ‘inflation hedging’. The former is defined as the ability of the returns to an investment to increase in real (i.e., inflation adjusted) terms over the long run. The latter is defined as the ability of the returns from an asset to offer protection to investors against fluctuations in inflation. A perfect hedge is when the increase in nominal returns, relative to what would otherwise have been expected, is equal to the increase in inflation (i.e., where real returns are unaffected). A partial hedge is where nominal returns increase relative to what they would otherwise have been but not by as much as the increase in inflation.

Property depends on a wide range of factors such as economic growth and structural changes in demand and supply as well as inflation. Higher inflation can reduce real returns relative to what they would have been but still leave returns outpacing inflation over a period of time. This means that it is quite possible for property to be an inflation match but not to be a perfect or partial inflation hedge.

UK commercial property returns do grow in real terms in the long run but, except in the years of high inflation in the 1970s and 1980s, are not a perfect inflation hedge. Long-run estimates show that property is likely to have been a partial hedge against inflation, but recent estimates based on the years of relatively low inflation overall indicate that it might not even be a partial hedge. These conclusions refer to the ability of total returns to hedge against inflation. Further analysis has shown that the income from commercial property, as opposed to total returns, is able to provide a hedge against inflation. The vulnerability of total returns to inflation is entirely on the capital growth side.

7.2. Do hold periods matter?

This raises the question whether an appropriate hold period can overcome the inflation vulnerability. Inflation causes low real total returns and lower real capital growth (or real capital decline). This is likely to be because monetary tightening pushes up yields and lowers capital values. The monetary tightening may be in the form of higher interest rates or restrictions on capital availability. Both have similar effects. While this is happening, all else being equal, the income from property grows in line with inflation. When inflation is brought under control, interest rates fall and/or monetary conditions ease and property yields compress. Real total returns then increase, and it looks as if commercial property can act as an inflation hedge after all if an investor can sit out the inflationary episode.

The problem with this argument is that all else is not usually equal. Partly, this is because GDP growth is not constant. It can fall when monetary conditions tighten and this hits both the income and capital values of property investments. In other cases, it is possible that higher GDP growth causes the higher inflation. In that case, commercial property would do rather better (see ‘Good Inflation’ vs ‘Bad Inflation’ below).

7. CONCLUDING DISCUSSION

The other complication is whether an investor can simply sit tight and wait for better days. There are numerous reasons why an investor may be forced to, or want to, sell sooner. These include:

- uncertainty over whether and/or when inflation will return to target;
- deteriorating returns caused by weak economic conditions or by sector-level structural issues;
- an inability or unwillingness to refinance debt when required;
- deteriorating income because of weaker economic growth means that interest payments cannot be serviced;
- a requirement to meet redemptions of fund units; and
- a need for cash caused by problems elsewhere that means an asset must be sold.

If none of these constraints are present, then the logical course of action is to hold during temporary periods of high inflation. Indeed, 'buy the dip' would be a better strategy than selling into it. The cyclical nature of commercial property returns as evidenced by the negative relationship with a five-year lagged dependent variable adds to this argument.

7.3. Inflation and economic growth: the wider picture

All the estimation results shown in the appendices that try to explain real total returns or real rent passing growth for commercial (and residential) property indicate a big positive role for economic growth as well as a negative role for inflation. This supports the notion that there is 'Good Inflation' and 'Bad Inflation' from a commercial property viewpoint.

'Good Inflation', also known as 'Demand-Pull Inflation', is when the inflation is driven by strong economic growth. Higher inflation and higher interest rates might put upwards pressure on yields, but this is more than offset by higher income growth and the impact of continuing higher income growth on yields. This might explain episodes such as the late 1960s and early 1970s when inflation was picking up, but real returns to UK commercial property were also increasing. The problem with good/demand pull inflation comes when the bubble bursts, often due to monetary tightening. In that case, GDP growth turns down and property suffers even if inflation subsequently falls.

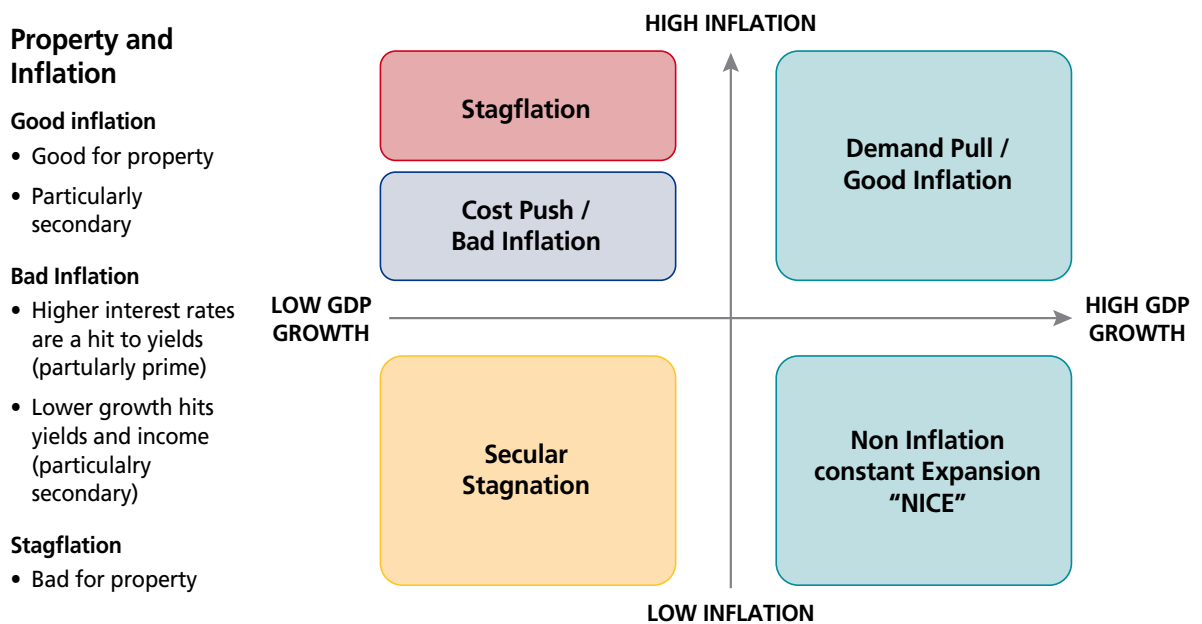
'Bad Inflation', also known as 'Cost-Push' or 'Supply-Shock' inflation or, in its most damaging form as 'Stagflation' is when the driver of inflation is coming from an external source. This can push GDP growth down because of a real incomes effect (higher inflation generated outside of the UK drives down real income in the UK), but it is also usually accompanied by a monetary response which drives economic growth down further. This combination of weak GDP growth and high inflation is unambiguously bad for real commercial property returns. Stagflation is the extreme case when inflation is high, and GDP is flat or falling.

Note that in the cases of both 'Good' and 'Bad' inflation, the impact of GDP growth on rental income growth plays a part. It is not just about capital growth. In the case of 'Bad' inflation, this complicates the hold versus sell decision discussed above. The holding investor needs to be confident that economic growth will recover, and that inflation will fall within a reasonable time frame.

7. CONCLUDING DISCUSSION

A conceptual framework is illustrated in Figure 7.1 where the impact of 'Good' and 'Bad' inflation on commercial property performance is identified. In this framework, green is good for property, brown is bad, and red is more so. Yellow (i.e., secular stagnation) falls somewhere in between.

Figure 7.1: Real Property Returns and GDP Growth/Inflation Combinations



7.4. What if inflation is expected to fall?

The statement that commercial property is at best only a partial hedge against inflation has a negative connotation. True, an investment that offers protection against unexpectedly high inflation is desirable and the risks to inflation are not usually symmetrical (it is unusual for inflation to go below zero). But how should the present situation be interpreted when, if consensus economic forecasts are to be believed, inflation in the UK is expected to fall and economic growth is expected to pick up?

If the consensus outlook is realised and, as usual, all else is equal, the combination offered by property of a high responsiveness to economic growth and a weak hedge against inflation, combined with starting from a cyclical low, will be an advantageous one. In other words, the potential for real total returns for UK property over the next five years or so is promising, other considerations such as ESG and the future of the office notwithstanding.

APPENDICES

Appendix A: Methodological approach

Real total returns using overlapping multi-year periods are related to changes in consumer prices and GDP over the same overlapping periods within the following model:

$$\begin{aligned} \ln\left(\frac{RTR_t}{RTR_{t-5}}\right) &= \beta_0 + \beta_1 \cdot \ln\left(\frac{P_t}{P_{t-5}}\right) + \beta_2 \cdot \ln\left(\frac{P_{t-1}}{P_{t-6}}\right) + \beta_3 \ln\left(\frac{Y_t}{Y_{t-5}}\right) \\ &+ \beta_4 \ln\left(\frac{RTR_{t-5}}{RTR_{t-10}}\right) + r_t \end{aligned}$$

Where:

RTR -	Real total returns (MSCI total returns adjusted for inflation)
P -	Consumer prices
Y -	Real GDP
$\beta_0 \dots \beta_3$	Estimated coefficients
r -	Residual

This is a log approximation to growth rates. This example, and the results reported below, show five-year growth rates which generally gives a good fit to the models. Experiments were made with other durations, but without big differences in the results and interpretation.

For clarity, Tables A1-A6 in Appendix C present the sum of the estimation coefficients on the inflation variables together with the joint t-statistics. The errors are assumed to be serially correlated and this has been allowed for in the estimation procedure. These tables also show the estimated coefficients and t-statistics for the other variables.

If the absolute value of the t-statistic is greater than approximately two, it can be said that the estimated coefficient (i.e., the estimated relationship) is statistically significantly different from zero. Another way of thinking about this is to say that the estimated coefficient is only a spot estimate and that there are error ranges around it. Several of the tables below give 95% confidence intervals for the estimated impact of inflation on real returns. If these bounds fall entirely above or entirely below zero, it can be said that the estimated impact of inflation is statistically different from zero at a 95% confidence level. If the 95% confidence intervals span zero, then we can say that the estimated impact of inflation on real returns is not statistically different from zero and, hence, the possibility that the asset class (or sector) is a perfect hedge cannot be ruled out.

In terms of hedging properties and hedging terminology:

Impact of Inflation on real returns = 0 Is a perfect hedge
-1 < Impact of inflation < 0 Is a partial hedge
Impact of inflation > 0 Is a super hedge
Impact of inflation < -1 Is a perverse hedge

Where the impact of inflation is the sum of the estimated coefficient on current and lagged inflation.

All the results are period specific. Estimation over 1990-2023 for example, gives different results to 1991-2023. In most cases, these differences are not important, but it is shown how different periods matter in some cases (in Table A2, for example). In other cases, a single estimation period is reported. This is for brevity rather than to hide any results that do not fit in with the general argument.

APPENDICES

Appendix B: Data

Property Data

The principal source of information on real estate investment performance is the MSCI annual index for the UK commercial property market. This comprises annual frequency data on total returns, income returns, capital growth rates, rental growth rates and gross income growth back to 1981, based on a large sample of underlying assets held in the portfolios of domestic institutional investors such as insurance companies, pension funds, and listed property companies.

The MSCI data relate to 'All Property', which includes retail, office, industrial, hotel and residential sectors, as well as 'other' property types. The series are value weighted in nature and, historically, are dominated by the performance of investments in the retail, office, and industrial sectors, though there has been a big increase in the value of residential investments in recent years.

At the time of writing, the MSCI Annual Index was only available to 2022. Therefore 2023 estimates of returns are taken from the MSCI Quarterly Index.

As the model specification is based on five-year return rates, and includes a lagged five-year return rate variable, the MSCI data has been extended further back in time to enable the analysis of longer periods spanning different economic environments. The principal source for the earlier data is the work of Scott (1996). This incorporates estimates of property investment returns for 1971-1980 sourced from IPD. MSCI subsequently purchased IPD but no longer publishes the investment returns for these earlier years.

Scott (1996) has also published property investment returns from 1949-1970. These return rates are based on his own archival research using the records of one and then two insurance companies with commercial property investments in the retail, office, and industrial sectors over this period. Sector level return rates are published from 1959 onwards. It should be noted that there could be some differences in calculation methods versus the later IPD and then MSCI series, and the fact that they are based on far smaller samples of assets is a limitation of this source.

The Scott data includes total returns, income returns and capital growth rates, but not estimates of gross rent passing growth.

Estimates of total returns for UK listed real estate are for the 'General Quoted Index for Gross Total Returns' that is published by Global Property Research (GPR). This index of return rates commences from the end of 1983.

APPENDICES

Other Assets

The historical dataset on the performance of UK equities and gilts that was originally assembled for the 2011 IPF report on Property and Inflation was extended to 2023. Estimates of total returns for gilts for the period up to 2023 are based on the FTSE Fixed Income Indices, using the series that covers all maturities of gilts. Estimates of total returns for UK equities are based on the FTSE All Share index. The figures used to update the data series were accessed through the Macrobond platform.

Economic Data

GDP and the consumer price deflator data are taken from the ONS' National Accounts. Note that the consumer price deflator is equal to current price consumer spending divided by constant price consumer spending. It was chosen as a measure of inflation because it provides the longest consistent consumer price estimate. It is closely correlated with the ONS' CPIH price index.

The common alternative measures produced by ONS, CPI and CPIH, were not used as the data only begin in 1988. The alternative long-run RPI measure was not used as it is no longer classified as an Official Statistic, and it is arguably not as accurate a measure of inflation than the alternatives. Note that property generally shows up as a perverse hedge if RPI is used. This is probably because of the inclusion of mortgage interest payments in RPI and the negative relationship between interest rates and capital values.

APPENDICES

Appendix C: Estimation results

This appendix presents the detailed results from the regression models estimated to test for inflation hedging.

Tables A1 and A2 report results for the total returns generated by UK All Property (i.e., commercial property) across different estimation windows. Table A3 then reports results for capital growth and gross rent passing growth over 1990-2023. Results are reported for only a single time frame because of data constraints.

Table A4 presents results for the total returns from different sectors of the UK property investment market. For brevity, these are presented for a single time frame, but the table includes estimates for the hotel sector over a shorter estimation window, as well as results for UK house prices as a proxy for residential returns. Table A5 then reports further tests of gross rent passing growth, but for the different sectors of the property market.

Finally, Table A6 reports the results for total returns from different domestic asset classes, as well as for UK listed real estate, with the latter also subject to a shorter estimation window.

Table A1: All Property Real Five-Year Total Returns

Estimation Period	1970-2023	1975-2023	1980-2023	1985-2023	1990-2023	1995-2023
Inflation						
Estimated Coefficient	-0.54	-0.56	-0.60	-1.23	-1.51	-2.45
t-statistic	-4.49	-4.10	-3.56	-3.20	-3.90	-2.20
GDP						
Estimated Coefficient	2.40	2.15	2.02	2.50	2.22	1.79
t-statistic	8.26	6.82	5.71	7.14	5.88	2.76
Lagged Dependent Variable(5-years)						
Estimated Coefficient	-0.35	-0.38	-0.37	-0.37	-0.25	-0.22
t-statistic	-4.15	-4.42	-3.93	-3.93	-2.42	-1.86
Constant	0.21	0.25	0.26	0.26	0.31	2.89
MA(1)						
Estimated Coefficient	0.66	0.72	0.77	0.77	0.67	1.00
t-statistic	4.13	4.84	5.21	5.21	3.12	0.00
R ²	0.87	0.88	0.85	0.85	0.89	0.91
Inflation						
Lower 95% Confidence Bound	-0.78	-0.84	-0.93	-2.00	-2.31	-4.75
Upper 95% Confidence Bound	-0.30	-0.29	-0.26	-0.46	-0.72	-0.15
Nominal Income matching						
Estimated Coefficient	1.9	1.6	1.4	1.3	0.7	-0.7
t-statistic	6.3	4.7	3.5	3.1	1.6	-0.5

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Table A2: All Property Real Five-Year Total Returns

Estimation Period	1965-1998	1970-2003	1975-2008	1980-2013	1985-2018	1990-2023
Inflation						
Estimated Coefficient	-0.17	-0.34	-0.51	-0.52	-1.11	-1.51
t-statistic	-1.07	-2.79	-2.78	-2.79	-2.77	-3.90
GDP						
Estimated Coefficient	2.90	3.19	2.77	2.36	2.89	2.22
t-statistic	4.81	5.43	3.90	3.76	6.66	5.91
Lagged Dependent Variable (5-years)						
Estimated Coefficient	-0.48	-0.36	-0.34	-0.35	-0.21	-0.25
t-statistic	-4.93	-4.25	-2.81	-3.32	-2.37	-2.42
Constant	-0.01	0.03	0.16	0.22	0.19	0.31
MA(1)						
Estimated Coefficient	0.55	0.57	0.81	0.76	0.51	0.67
t-statistic	2.94	2.68	5.31	3.42	1.95	3.12
R ²	0.89	0.92	0.89	0.85	0.90	0.89
Inflation						
Lower 95% Confidence Bound	-0.51	-0.60	-0.88	-0.90	-1.93	-2.30
Upper 95% Confidence Bound	0.16	-0.09	-0.13	-0.14	-0.29	-0.72
Nominal Income matching						
Estimated Coefficient	2.7	2.8	2.3	1.8	1.8	0.7
t-statistic	3.8	4.3	2.8	2.7	3.3	1.6

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Table A3: All Property: Real Total Returns, Capital Growth and Rent Passing Growth 1990-2023

	Real Total Returns	Real Capital Growth	Real Rent Passing
Inflation			
Estimated Coefficient	-1.51	-1.67	0.07
t-statistic	-3.90	-4.48	1.12
GDP			
Estimated Coefficient	2.22	1.79	0.64
t-statistic	5.91	4.42	7.91
Dependent variable lagged 1 year			
Estimated Coefficient	n.a.	n.a.	0.78
t-statistic	n.a.	n.a.	15.92
Dependent variable lagged 5 years			
Estimated Coefficient	-0.25	-0.28	-0.17
t-statistic	-2.42	-2.47	-4.91
Constant	0.31	0.01	-0.04
MA(1)			
Estimated Coefficient	0.67	0.74	0.04
t-statistic	3.12	4.43	0.22
R ²	0.89	0.88	0.98

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Table A4: Real 5-Year Total Returns by Property Sector, 1975-2023

	Office	Industrial	Retail	Hotels ⁸	Residential ⁹
Inflation					
Estimated Coefficient	-0.57	-0.49	-0.50	-0.07	-0.33
t-statistic	-3.92	-2.86	-1.95	-0.18	-2.16
GDP					
Estimated Coefficient	2.15	2.31	2.09	3.28	1.65
t-statistic	4.95	4.07	2.06	9.27	4.79
Internet Share					
Estimated Coefficient	n.a.	0.03	-0.02	n.a.	n.a.
t-statistic	n.a.	2.74	-1.67	n.a.	n.a.
Lagged Dependent Variable					
Estimated Coefficient	-0.37	-0.36	-0.32	-0.18	-0.23
t-statistic	-3.60	-3.00	-2.14	-1.18	-1.92
Constant	0.22	0.27	0.24	0.21	0.09
MA(1)					
Estimated Coefficient	0.73	0.67	0.69	0.57	0.86
t-statistic	5.84	4.03	3.73	3.05	9.47
R ²	0.86	0.82	0.86	0.87	0.83

⁸ Estimation period for hotels is 1985-2023. Total returns uses all property pre-1980.⁹ House prices

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Table A5: Real Gross Rent Passing Growth 1990-2023

Estimation Period	All Property	Office	Industrial	Retail	Hotels
Inflation					
Estimated Coefficient	0.07	0.02	0.27	0.12	0.15
t-statistic	1.12	0.22	4.06	2.42	0.70
GDP					
Estimated Coefficient	0.64	0.82	0.57	0.49	-0.01
t-statistic	7.91	7.42	6.09	6.35	-0.02
E-Commerce Share					
Estimated Coefficient	n.a.	n.a.	0.01	-0.01	n.a.
t-statistic	n.a.	n.a.	4.87	-6.35	n.a.
Dependent variable lagged 1 year					
Estimated Coefficient	0.78	0.70	0.75	0.88	0.58
t-statistic	15.92	11.30	12.45	24.89	5.14
Dependent variable lagged 5 years					
Estimated Coefficient	-0.17	-0.18	-0.26	-0.21	-0.40
t-statistic	-4.91	-3.38	-7.91	-4.92	-4.07
Constant	-0.04	-0.05	-0.08	-0.02	0.08
MA(1)					
Estimated Coefficient	0.04	-0.13	0.07	n.a.	n.a.
t-statistic	0.22	-0.59	0.25	n.a.	n.a.
R ²	0.98	0.95	0.99	0.99	0.72

Table A6: UK Real 5-Year Total Returns, 1975-2023

	Inflation		Change in Inflation		GDP	
	Estimated Coefficient	Estimated t-statistic	Estimated Coefficient	Estimated t-statistic	Estimated Coefficient	Estimated t-statistic
Commercial Property	-0.56	-4.11	-0.18	-0.37	2.15	6.85
Gilts	-0.78	-3.16	-2.62	-5.42	-0.08	-0.17
Equities	-0.19	-1.06	-4.68	-4.02	1.77	1.70
Listed Real Estate ¹⁰	-0.50	-0.30	-0.30	-0.14	3.18	2.38

¹⁰ 1993-2023



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