

IMPLICATIONS OF THE GLOBAL FINANCIAL CRISIS FOR PROPERTY INVESTMENT

Professor Alastair Adair, Professor Ali Parsa and Dr Terry Grissom

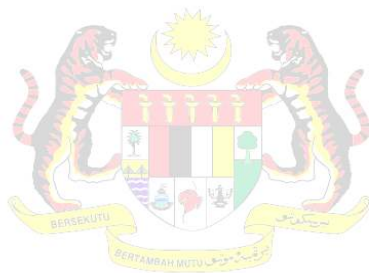
University of Ulster
Shore Road, Newtownabbey
Co Antrim
Northern Ireland
Email as.adair@ulster.ac.uk

Abstract

The global financial crisis has had a major impact on international property markets with a sharper focus on prime income producing properties at the expense of secondary locations and the prospects for capital value uplift.

The paper assesses the impact of the global financial crisis on commercial property investment decision making. Macroeconomic and property data (NCRIF for US and IPD for UK) are utilised to analyse trends in the general economy and property returns in order to demonstrate the impact of the financial crisis.

The implications for returns and also for risk are considered in relation to the new financial climate for investment. The financial crisis has adverse implications for investment strategies for both prime and secondary property with the latter in terms of major urban renewal projects being most highly impacted in the short run period.



1.0 Introduction

The global financial crisis has had a major impact on international property markets as demonstrated in the real estate press with a sharper focus on prime income producing properties in order to service debt obligations at the expense of secondary locations and the prospects for capital value uplift. The turmoil in commercial property markets has escalated concerns regarding the giant overhang of real estate loans, many under the control of the bailed-out UK banks, which are likely to have major adverse impacts on refinancing estimated at £35 billion in 2010 and up to £120 billion by 2013 (Economist, 2009).

The adverse impact of the financial crisis on the property market and its implications for future investment decision making have raised questions as to why so many market participants did not see the downturn coming. The significant uplifts in capital values during the rising phase of the market, which were not supported by prospects of rental value growth, are set by Reinhart and Rogoff (2009) in a context of 'boom and bust' cycles. Their analysis indicates that the most common investment advice given in the boom arises from the perception that this time the growth phase is different. The inference is that the traditional rules of market valuation no longer apply rather there are new fundamentals operating. Furthermore it is often considered that market participants, governments and financial advisors are now more sophisticated than in previous eras so that the current boom, unlike earlier ones that preceded catastrophic collapses, is considered to be different. The view is that the current boom is built on sound fundamentals, structural reforms, technological innovation and good policy.

In more recent years it has been considered that improvements in financial engineering and the conduct of monetary policy have facilitated a smoothing of the business cycle thereby limiting the risk of financial contagion. However the recent financial crisis has proved this wrong. The current crisis has been a dramatic transformation in the global economic environment and its ultimate resolution will likely reshape politics and economics for at least a generation (Reinhart and Rogoff, 2009).

This paper assesses the impact of the global financial crisis on commercial property investment decision making. We test the hypothesis that this time the financial crisis is different from earlier crises that impacted on real estate performance. If the current financial crisis is different or not different the implications for returns and also for risk are considered in relation to the new financial climate for investment. The analysis undertaken in the paper examines four main macroeconomic variables and their relationship to property investment returns in the UK and USA and implications for the prime and secondary property markets.

The structure of the paper encompasses five sections. Section 2 comprises a critical evaluation of the literature of the impact of financial crises on the investment environment. Sections 3 and 4 highlight the methodology employed in the paper and the analysis of results respectively prior to the presentation of conclusions in Section 5.

2.0 Impact of the Financial Crisis on the Investment Environment

In an analysis of the impact of the late 2000s credit crunch and financial crisis Inderst (2009) found that the credit crisis starting in 2007 has altered the broad investment scenario. Due to tighter liquidity and lending conditions, and the global economic slowdown, asset prices have adjusted downward with resultant effects on private equity, real estate and infrastructure funds. However the impact is not uniform and varies across infrastructure sectors and investment vehicles, depending on the level of gearing, the debt profile, the exposure to business cycles and other factors.

Inderst (2009) notes that in 2008, some large Australian infrastructure funds started to divest assets, in some cases in order to reduce debt levels when interest costs rise and asset prices fall. In contrast another effect of the credit crunch is that the comparatively stable infrastructure sector has attracted new investors in the form of private equity firms, hedge funds and sovereign funds.

Parkinson et al (2009) examined the impact of the credit crunch on regeneration in the UK during 2008 and argue that worries about the viability of sub-prime mortgage lending spread around the financial system, are undermining the ability of banks and building societies to borrow sufficient resources or to feel confident about continuing lending to customers. Across the globe over the past twelve months there has been a chain reaction as it gradually became clear that in a globalised financial system bad risks had spread into many national and international banks with no clarity about where the risks lay.

The recession of the early 1980s resulted from the tight fiscal and monetary policies which raised interest rates and reduced public spending to reduce the budget deficit and bring down inflation. Following the 'Lawson Boom' – the economic upturn and the halving of the official unemployment count – in the late 1980s, the UK went into recession in the third quarter of 1990 as a result of anti-inflationary policies and the collapse of the housing market. The origins of the current recession lie within the financial sector and the subsequent collapse of credit, house prices and demand (The Work Foundation 2010).

Coaffee (2009) concludes that the potential impact of the credit crunch and impending recession is often talked about in negative terms and in relation to the social and economic fissures that may widen still further and the funding models that now appear redundant.

Ward (2009) argues that the UK banking system has faced two crises, one of insolvency, the other of liquidity. Corporate lending has been falling and banks which have seen their solvency put at risk, are urgently trying to reduce their liabilities in order to improve their balance sheets.

Parkinson (2009) postulates that the housing business model which underpinned the boom of the 1990s will not work in the next business cycle. The financial crisis underlines the weaknesses of that model which depends upon the individual landlord rental model.

Newell et al (2009) examine the impact of the global financial crisis on property securities markets in Asia over the first six months of 2009 with performance in 2008. The dramatic downturn in the markets in 2008 is demonstrated relative to the first half of 2009. Real estate investment at a global level has grown in significance over the past decade as evidenced by the increase in capital flows and the range of investment funds targeting the sector.

Newell et al (2009) highlight the expansion of global property investors from traditional property markets into emerging property markets especially in Asia where significant economic growth and increased market maturity has characterised the region and individual countries such as China.

Mueller et al (2008) argue that the growth in global real estate investment funds requires new investment strategies to help real estate investors. They examine the literature relating to volatility, correlation in returns across international markets and diversification benefits of including real estate in a domestic portfolio. On the basis of their analysis they propose a change in the portfolio's regional allocation when the home region volatility moves from one predefined level to another. A higher allocation to North America is justified in declining and low volatility periods whereas a higher allocation to Europe is warranted during rising and medium volatility periods however no clear allocation strategy was identified during the two high volatility periods. This last finding is interesting given the significant turbulence in markets created by the global financial crisis.

Jin et al (2007) in their study of Asian-Pacific countries found that since the Asian financial crisis the currency effects on emerging markets provided benefits for US investors. However domestic investors suffered financial loss by the currency effect against the US dollar after converting the US-denominated return to local currency level. Currency fluctuations in emerging markets tended to be more volatile which is a major concern for international investors in evaluating risks in such markets compared to mature markets. Despite the currency risk Jin et al (2007) showed that mixed-asset portfolios from emerging economies outperformed the assets of developed countries for moderate and aggressive investors targeting Asian-Pacific countries.

The De Montfort University survey analyses the lending activity of the major commercial property lenders operating within the UK during the first two quarters of 2009. It reports a total of £242.1bn of outstanding debt secured on commercial property located in the UK, and including loans to social housing, was reported to the survey as at 30 June 2009. of bank lending for commercial property. At mid-year 2009 approximately £224.1bn of outstanding debt was secured by UK commercial property and retained on the loan books of organisations that contribute to the De Montfort University Report. This represents a decrease of 0.6% from £225.5 recorded at year-end 2008. This is the first time that this report has recorded a negative rate of growth in the net aggregated commercial property loan book size. This rate of growth compares to 3% recorded during the first half of 2008. During the whole of 2008, outstanding loan books grew by 8.5%. Table 1 presents the year-on-year changes in value of outstanding debt secured by commercial property and recorded by organisations that have consistently reported to this research.

Table 1: Year-on-year increases in the value of outstanding debt recorded in loan books
Year in value of aggregated outstanding loan books

<i>YEAR</i>	<i>% increase in value of aggregated outstanding loan books</i>
1999 to 2000	29%
2000 to 2001	20%
2001 to 2002	11%
2002 to 2003	17%
2003 to 2004	13%
2004 to 2005	16%
2005 to 2006	10%
2006 to 2007	18%
2007 to 2008	8.5%

Year-end 2008 to Mid-year 2009 - 0.6%

Source: De Montfort University The UK Commercial Property Lending Market: Mid-Year 2009

Grissom et al (2009) use Arbitrage Pricing Theory to test for differences in the levels of integration between the UK and US property markets and the influence of cyclical patterns and trend reversion behaviour. Their findings are developed to formulate decision strategies for cyclical investment in the UK relative to global financial performance and US real estate markets. They cite earlier literature to show the importance of macro-level system attributes on the pricing of property and equities.

Relatively low correlations are found between the two property markets which contrast with moderate to high associations of macro-economic variables and high negative correlations between capital factors in the two markets.

Grissom et al (2009) show that UK property market performance as characterised by trend reversion behaviour is segmented and not directly integrated with US real estate performance. Consequently US macro-economic and property market behaviour does not provide a signal of turning points in the UK market. They conclude that differences in the US and UK property markets are due to endogenous spatial, institutional and structural differences in economic and investment behaviour. Furthermore they conclude that the UK property market will turnaround before the general economy, while the opposite is forecast for the US.

Fiorilla et al (2010) argue that the current financial crisis unlike earlier crises has caused a paradigm shift in the financing of real estate. They show that over the period from 1952 to 1996 the ratio of debt:GDP for the private non-financial sector grew by 1% per annum. Since 1996 the ratio has increased by about 9.5%. They highlight that while GDP was growing in nominal terms at about 5% annually, private debt outstanding increased at 9.5% annually. The reason for the rapid growth is the emergence of new financial technologies such as securitisation, collateralised debt obligations and credit default swaps which provided creative vehicles to move risk to third parties and manage balance sheets.

Fiorilla et al (2010) employ three approaches to estimate the likely contraction in the commercial mortgage market: the first is to compare debt outstanding to GDP, the second compares the share of commercial mortgages to private debt and private debt relative to

GDP, while the third models origination and refinancing volumes against the supply of and demand for debt. Their analysis indicates a reduction in outstanding commercial mortgage holdings of 10-30% over the next five years leading to a void of several hundred billion US dollars. This will create a major refinancing problem as loans mature within this period.

Fiorilla et al (2010) conclude that this gap in refinancing is likely to be filled by equity funds such as speciality lenders, sovereign funds and investors with an appetite for distressed assets. The era of high leverage has been replaced by a more cautious financial environment which is likely to persist over the short run period. The implication is that less debt will result in more equity and falling property prices creating opportunities for REITs.

Parkinson (2009) highlights that the financial model that underpinned regeneration during the past decade is now fractured, if not broken. The banks and investors that paid for it in the past are unlikely to do so in the same way in the future implying that financial partnerships between the public and private sectors and the use of public resources in those partnerships will become a more fruitful way forward. Ward proposes that we need a new concordat between the public and private sectors – sharing assets and risk to ensure that development takes place. This will involve experimenting with a variety of institutional arrangements – joint ventures, local housing companies, asset back vehicles.

Reinhart and Rogoff (2009) analyse banking crises covering 66 countries over nearly 8 centuries and find a pattern of serial banking crises in advanced economies over the period 1800-2008. They argue that real estate cycles around banking crises display similar patterns in duration and amplitude in both advanced and emerging economies which is surprising as most other macroeconomic variables exhibit higher volatility in emerging economies. However leading financial centres in advanced economies such as US and UK have the highest frequency of banking crises, 13 and 12 respectively since 1800. Only China (10) and Japan (8) approach this magnitude whereas other Asian economies display a much lower frequency, Malaysia (2) and Singapore (1).

Reinhart and Rogoff (2009) further find that periods of high capital mobility at a global level have consistently produced international banking crises over the long run period. The authors demonstrate a link between banking crises and financial liberalisation across both advanced and emerging economies. They argue that despite the “this-time-is-different” view in the 2000s US, financial innovation as a variant of the liberalisation process contributed to the banking crisis.

Reinhart and Rogoff (2009) further undertake a comparative historical analysis of the aftermath of systemic banking crises. They argue that such benchmarking is important as in analysing extreme shocks such as the current financial crisis standard macroeconomic models may be of little use. Severe financial crises share three characteristics:

- Asset price downturns tend to be deep and prolonged
- Banking crises tend to be associated with deep falls in output and employment
- Government debt increases dramatically due not to bailing out the banks but primarily from a loss of tax revenues due to output contraction

Following the Great Depression of 1929 countries took an average of ten years to reach the same level of output as in 1929.

The duration of house price declines at 6 years is longer than equity price falls at 3.4 years. The latter tends to be much steeper (55.9%) than the former (35.5%). Emerging markets, particularly those in Asia unlike advanced economies record better performance in terms of unemployment. Recessions related to banking crises tend to be unusually long compared to normal recessions which typically last less than a year.

The literature concludes that the severity of the current financial crisis unlike earlier episodes has created a new financial environment in terms of investment decision making and financing real estate. Global property investment has grown in response to diversification opportunities however increased volatility in emerging economies and currency fluctuations create uncertainty. Increasing focus is being placed on macroeconomic performance as a guide to property market recovery. The following section examines the relationship between four macroeconomic variables and property market performance in the pre and post crisis periods in the UK and US.

3.0 Methodology

The methodology employed in the paper comprises two stages. The first is an analysis of four macroeconomic variables relative to property performance. The macroeconomic variables are Gross Domestic Product, unanticipated inflation, term structure and risk premium.

Gross Domestic Product: percentage change in GDP employs monthly data from UK National Statistical Office and US Bureau of Economic Analysis. GDP measures the rate of real production or change in potential national income at the national level. Diermeier et al (1984) identify the variable as a proxy for incremental flow of actual real capital supply.

Unanticipated Inflation: is the spread between LIBOR, as a proxy for anticipated inflation embedded in the short term interest rate, and actual inflation which is defined by change in the RPI in UK and CPI in the US.

Term Structure: measures the spread between long term interest rate and short term LIBOR. The former is based on the 10 year Treasury Bond in the US whereas the UK rate is based on the return for 5-15 year gilts.

Risk Premium: is the spread between the risk free LIBOR rate and equity capital returns measured by the S&P 500 stock index in the US and the FTSE 100 in the UK. The variable facilitates an industry performance measure in the US and UK relative to the opportunity cost of capital that has a bearing on investor decision making.

Change in the macroeconomic variables in the UK and the US is measured relative to periods of economic growth and recession.

Property performance is analysed over the period 1985 to 2009 using monthly Investment Property Databank (IPD) in the UK and quarterly National Council for Real Estate Fiduciaries (NCREIF) data for the US, comparable to Grissom et al (2009). We also use equity and bonds data. To facilitate comparability in analysis NCREIF quarterly data were converted to monthly returns.

Regression modelling of the impact of the recession relative to macroeconomic and property performance is undertaken as a second stage of the methodology. Regression analyses are undertaken as follows:

- UK: returns over the period 1988 (M1) to 2008 (M9) comprising 249 observations after adjustments.
- US: returns over the period 1988 (M1) to 2009 (M1) comprising 253 observations after adjustments.

The UK market context shows that over the period 2001-2009 a boom and slump occurred. A period of 65 consecutive months of growth from February 2002 to June 2007 saw capital values increase by 53%, 8.2% per annum in nominal terms (4.8% in real terms). The down phase is demonstrated by the reduction in capital values from July 2007 to May 2009, 23 consecutive months. From June 2007 to March 2009 the IPD monthly index fell by 40% in 21 months, an average of 2.5% per month. In the previous downturn in the early 1990s the index fell by 27% over 43 months, an average of 0.7% per month.

4.0 Analysis of relationship of macroeconomic and property variables

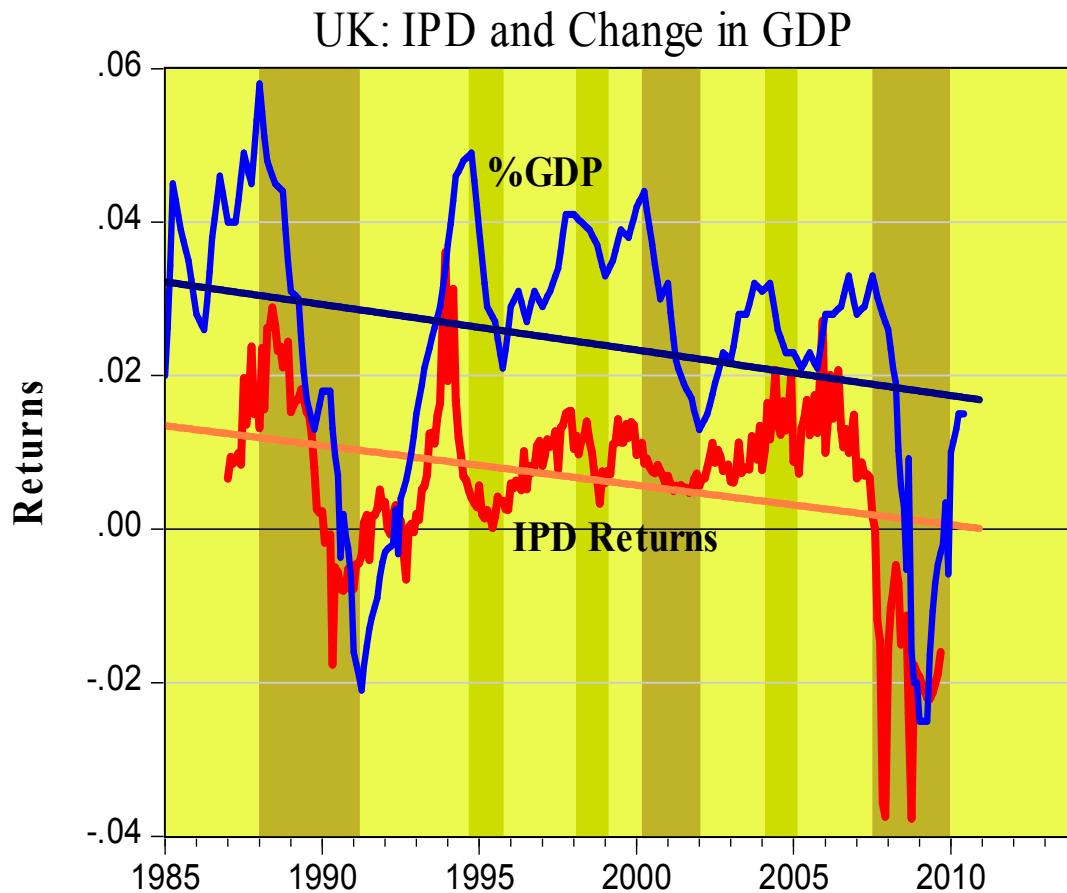
The relationship between property and economic variables is examined in relation to the business cycle and builds upon the analysis employed by Grissom et al (2009). Economic and property variables are mapped onto business cycles over the period 1985 to 2010. The lighter shaded vertical bands in Figure 1 represent recessionary phases in the UK, defined as two consecutive quarters of decline in GDP, namely, 1994-95, 1998-99 and 2004-05. The darker shaded bands reflect recessions in the US. Where recessions in UK correspond with those in US the bright and dark shaded bands overlap.

4.1 Property Performance and Change in GDP

The pattern of GDP growth in the UK has generally provided a good indicator of movement in the IPD index as expected (Figure 1) however GDP growth has been more amplified than the IPD index.



Figure 1 UK IPD and change in GDP



The study undertaken by Grissom et al (2009) showed that the real growth trend in the UK was positive going into the crisis. In contrast the current research in 2010 shows that change in the long term pattern of GDP and the general economy now has a negative slope. This reversal is in line with the US pattern of GDP (Figure 2).

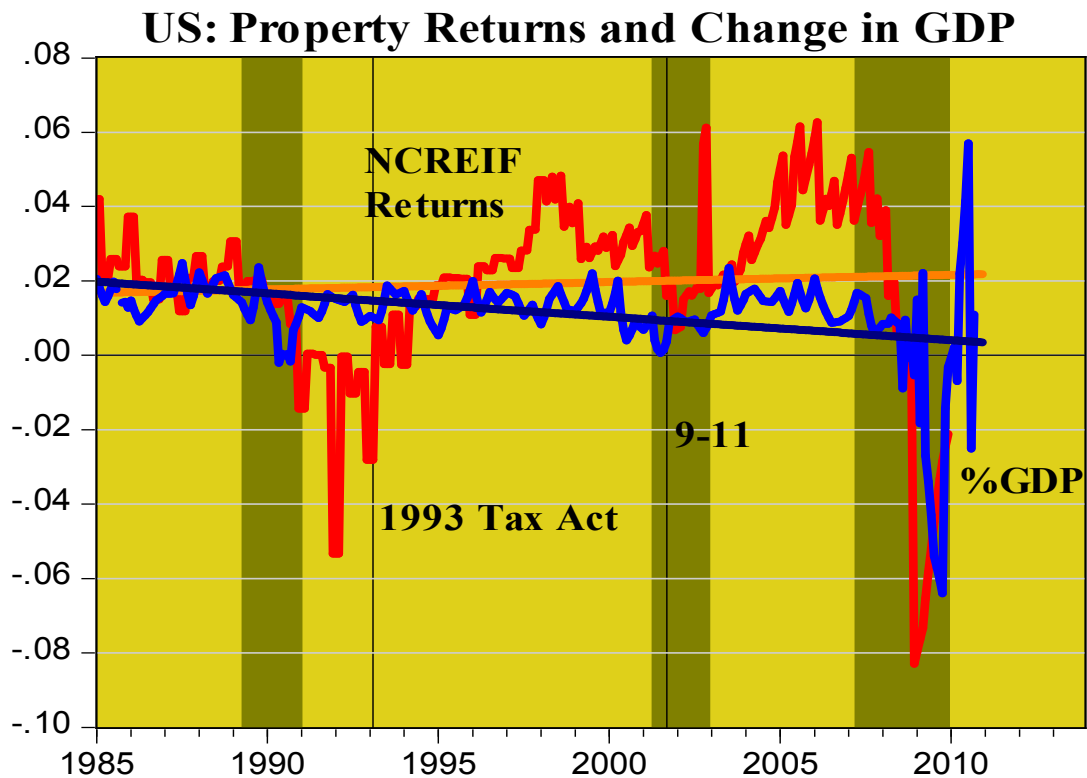
The downward trend in GDP is heavily influenced by the downturn in the economy from mid 2007. The emerging upturn since mid 2009 is not sufficient to influence the long run impact highlighting the severity of the downturn experienced over 2007-2009.

Over the long run the general economy appears to be more volatile than property performance in UK. However the recession is correcting. The degree of fluctuation at the end of 2009 led to suggestions of a double dip but such a trend is not evident in the analysis.

The negative long term trend in UK property performance raises questions about the short-term recovery of the market if a positive real growth trend occurs. The inference is that recovery in the property market may take significant time which is not reflected by GDP performance measures.

In the US the long term performance of the real estate market has exceeded GDP but unlike the UK the US market shows greater volatility than the underlying economy.

Figure 2 US NCREIF and change in GDP



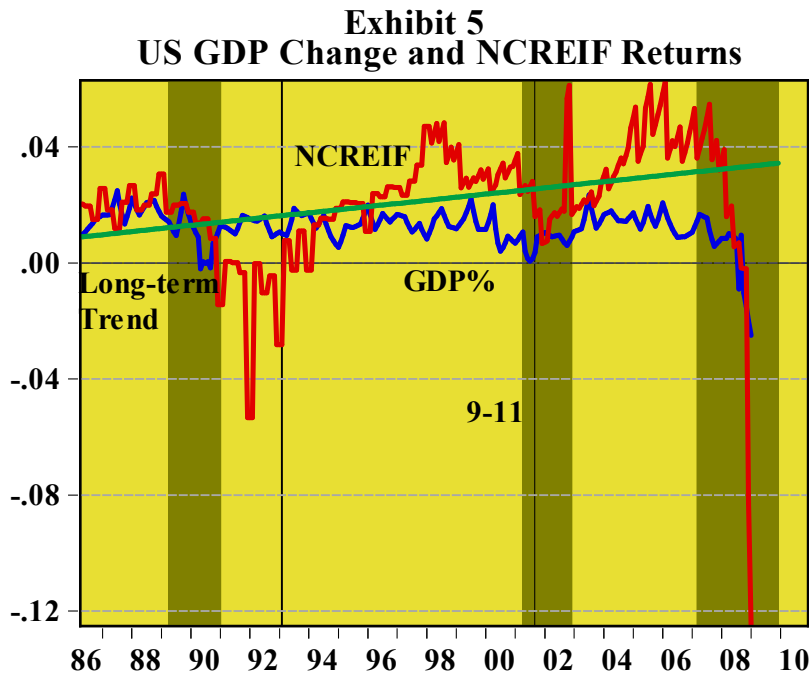
The decline in GDP has increased as a result of the impact of the crisis. The long-term trend is down, even though the current market rose quickly and then dropped by about half reinforces the inference of the double dip recession. The property long run trend is still positive but greatly modified from the trend prior to or into the early part of crisis (Figure 3).

Grissom et al (2009) note that the high level of volatility in the real estate market is due to financial capital growth arising from economic policy and innovative funding unconnected from the real estate fundamentals.

The introduction of the 1993 Tax Act highlights the structural change in the real estate market indicating a large scale movement by institutional investors into property. This allowed the restructuring of REITS. Of special significance is the 5 years plus growth in property yields.

The Asian crisis of 1997-98 is more marked for UK property (Figure 1) than US real estate returns (Figure 2) reflecting the greater impact of overseas investment in the UK than in the US.

Figure 3 US NCREIF and change in GDP prior to the crisis



4.2 Property Performance and Term Structure

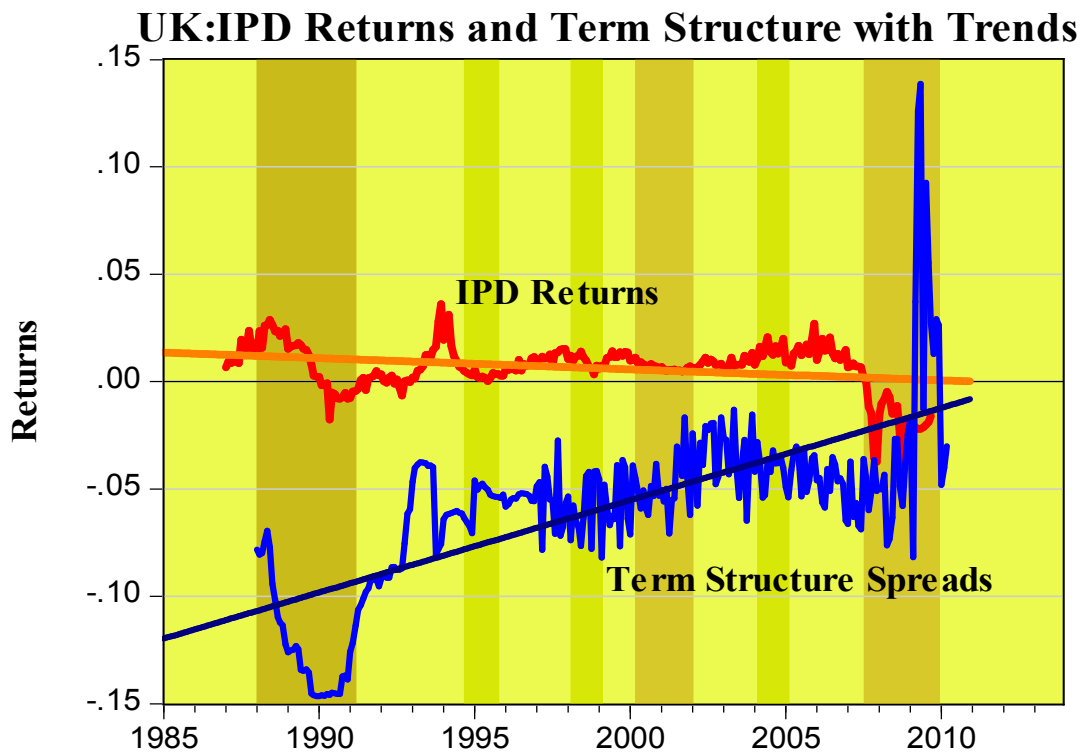
The spread between short-term and long term interest rates in the UK is negative inferring an inverse yield curve in the debt capital market (Figure 4), the inverse situation of pricing short term risk over long term spreads. The current risk is more relevant than future risk, there is not an incentive for saving or taking long-term investment risk, and the relationship is diminishing over time.

A positive yield curve is noted for the period from 2009 into 2010 which infers a concern with long term asset risk at the height of the crisis. A negative slope is observed in the capital market, focussing on pricing of assets in the short run. This may infer that the problems that led to the financial crisis are not going to be addressed easily.

Analysis of the term structure shows that the impact of the current financial crisis is different from the 1991 crisis. The volatility in 2009 is greater.

The yield curve related to term structure is much more positive in US, the long term rate is higher than the short term reflecting a positive slope from the short term rate to long term. This indicates a major difference between the UK and US capital structures.

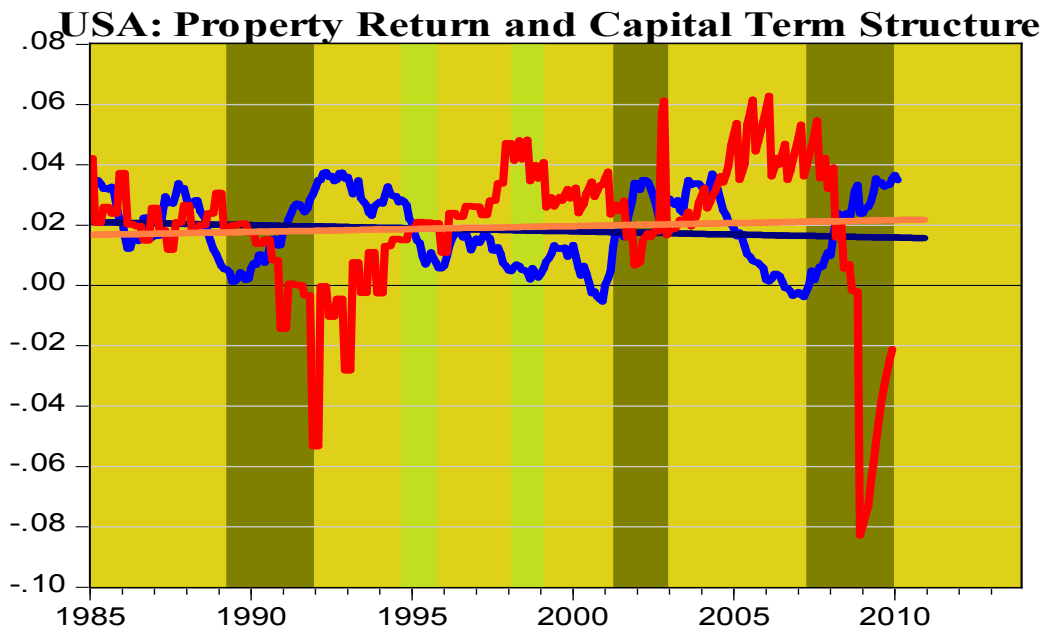
Figure 4 UK IPD returns and term structure



In the US, despite the higher rate for long term saving/investing relative to short-term, the trend is declining so that the spread is becoming smaller. This suggests greater convergence with the same capital outcome occurring in the US as in UK despite different starting positions. Both economics appear to be heading to a flat yield curve indicating little difference in both long term and short term yields. A reduced time period risk linkage, zero discount for a pure time preferences, however other risk issues may dominate. A further explanation may be an increase in the options and variety of financial investment assets.

It is also noted that the long run property return trend is positive sloped, however there not at much variance from the money/financial debt spread trend. Therefore is property in US performing like the capital market? This is the spread between the 10 year bond and LIBOR which is assumed to be similar to the lease structure (10 years) in a DCF model and base interest rate (LIBOR). The question arises why is there less spread for time in the UK (negative between UK 15 year gilts and LIBOR)?

Figure 5 US NCREIF returns and term structure



4.3 Property Performance and Unanticipated Inflation

Unanticipated inflation is the spread between actual inflation (or recorded inflation as typically measured by the RPI in UK) and anticipated or expected inflation. Expected inflation is estimated as the spread between the nominal interest rate (LIBOR and the real interest rate – as suggested by Fisher (1930) where $i = r + E(\phi)$ where $E(\phi)$ = expected inflation and r = real interest rate and i = nominal interest rate; so by definition $E(\phi) = i - r$. The expected rate has also been determined with the Livingston Survey, a survey of economists on the level of expected inflation. Furthermore it has been calculated using a moving average of the previous three (month) period.

In the US, unanticipated inflation has only occurred positive 5 times (years) of 50 years observed. The longer periods of negative observations means that the estimation of expected inflation has greatly exceeded actual inflation. They are becoming more equivalent and converging towards the trend for property in UK.

Does this mean that the potential for property as an inflation hedge increasing? Will this be a forward concern of investors to the financial and property crisis?

Figure 6 UK IPD returns and unanticipated inflation

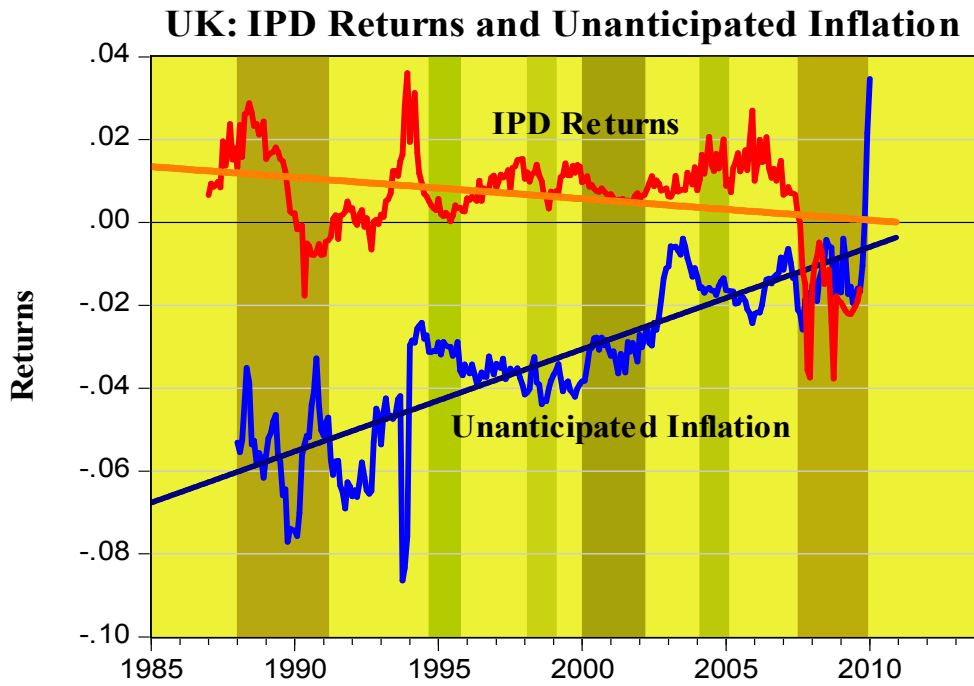
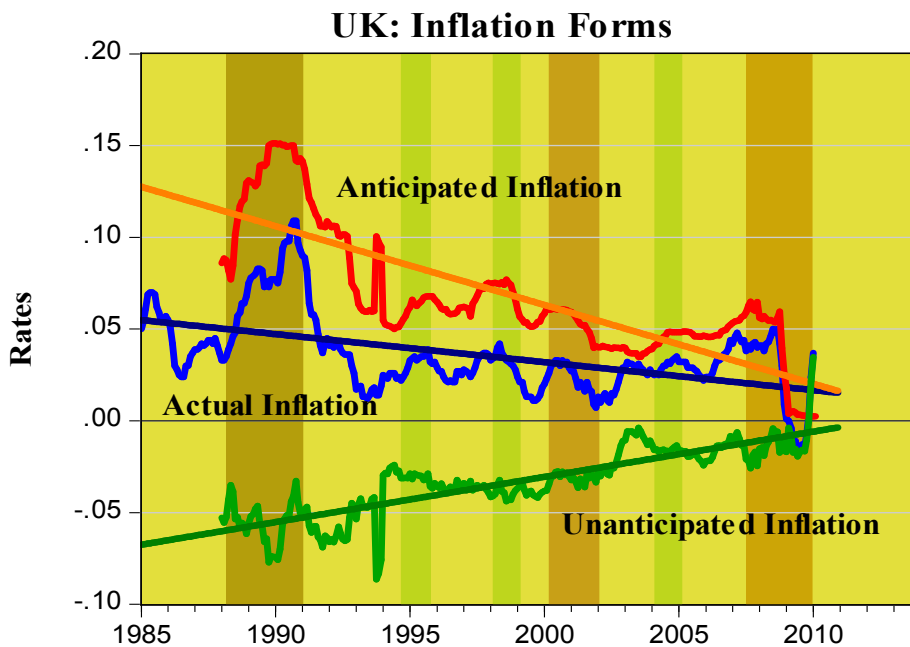


Figure 7 UK inflation forms

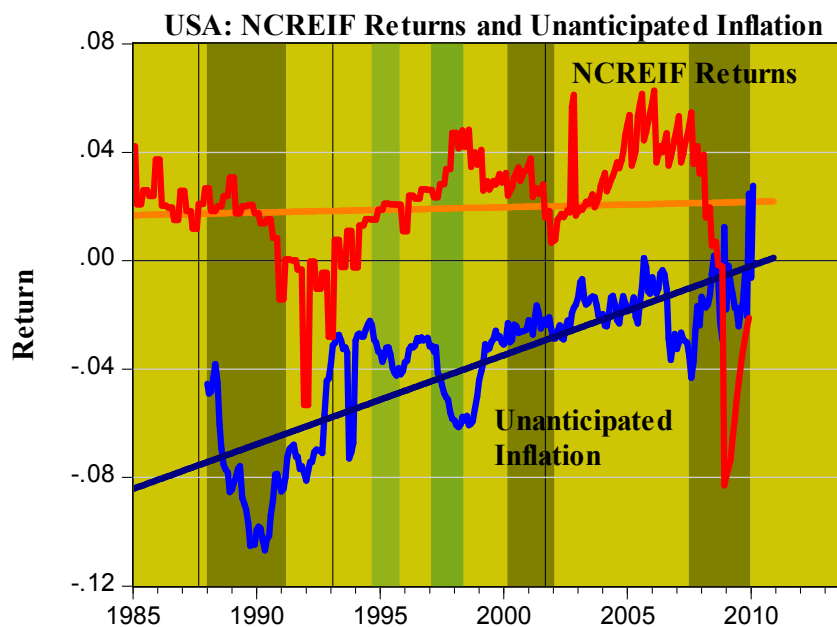


The variant forms of inflation show that lenders have been well protected since before the recession of the early 1990s (Figure 7). Expected inflation, which is loaded into the nominal interest rates as per the Fisher Equation has been greater than the actual inflation experienced

or at least measured by the RPI index. The excess of expected inflation over actual inflation accounted for produces measures of negative unanticipated inflation.

The unanticipated inflation based on the spread between anticipated and recorded inflation is decreasing towards zero (in its negative magnitude). This is suggesting a decrease in financial uncertainty and suggests that a possible decline in future interest rates. The deduction in negative unanticipated inflation as a construct spread in expected and actual inflation also shows the distance between the high inflation experienced in 1979 and impounded in financial decisions. It is important to note the long time period that had been required to purge the cost of capital from the high inflation that built up from the 1950s to the deregulation experienced in the Thatcher and Reagan administrations in the 1980s.

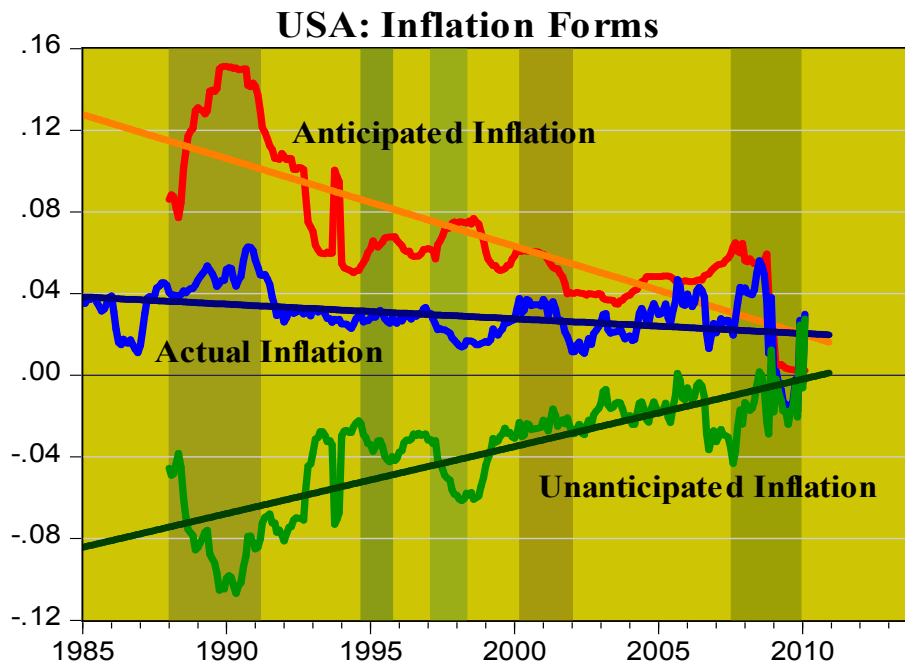
Figure 8 US NCREIF returns and unanticipated inflation



Despite the relative large drop in property returns, the equity decline was larger, but the pattern for both risky assets is converging in the financial crisis. Correction of the crisis may witness a future dispersion during the positive growth phase. But in the US property markets the long term trend is positive despite the greater decline in performance during the crisis. With the possible capital cost convergence occurring at a higher rate than the near zero position in the UK.

The patterns with all finance and investment variables are fairly similar. The trend in the US is similar to UK, but the spread between anticipated and actual inflation is smaller than in UK, which produces a smaller unanticipated inflation rate than experienced in the UK. This results in more moderate trends than experienced in the UK.

Figure 9 US inflation forms



4.4 Property Performance and Risk Premium

The volatility experienced in the returns from equity (stock) assets show a magnitude that greatly exceeds the volatility of the property market in the UK (Figure 10). Despite the magnitude of differences in returns, it can be observed that the property and equity markets tend to have similar cyclical patterns, though they are converging from the positive returns for property and the negative real premiums given stocks return spread over the risk free rate (LIBOR). The lack of a positive risk premium over risk free rates for equity supports much of the literature on the equity premium puzzle in which empirical measures of risky assets (macro-finance) have not supported the risk reward suggested by theory. The implication is that investors do not require the risk loadings over more certain investments, that is often suggested.

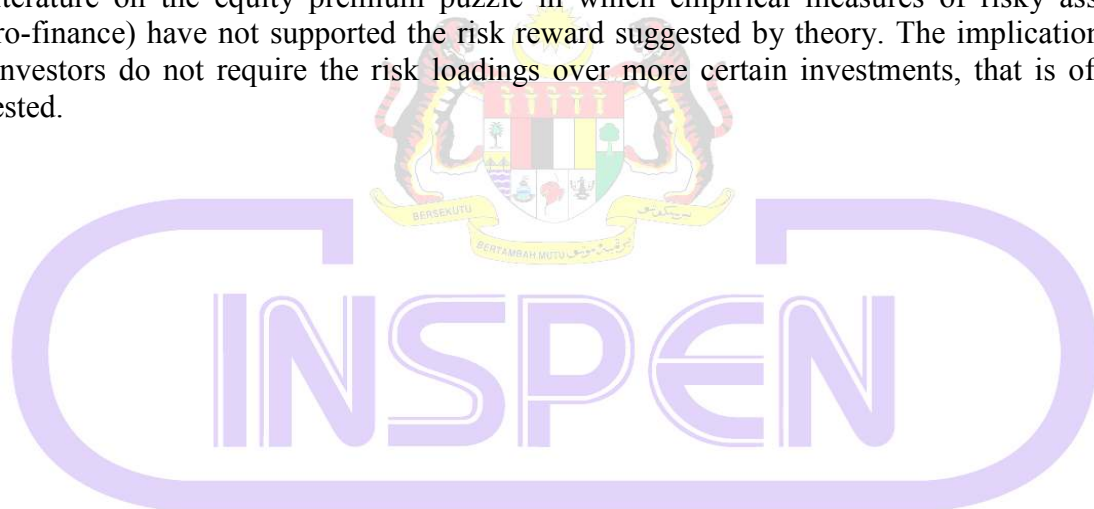
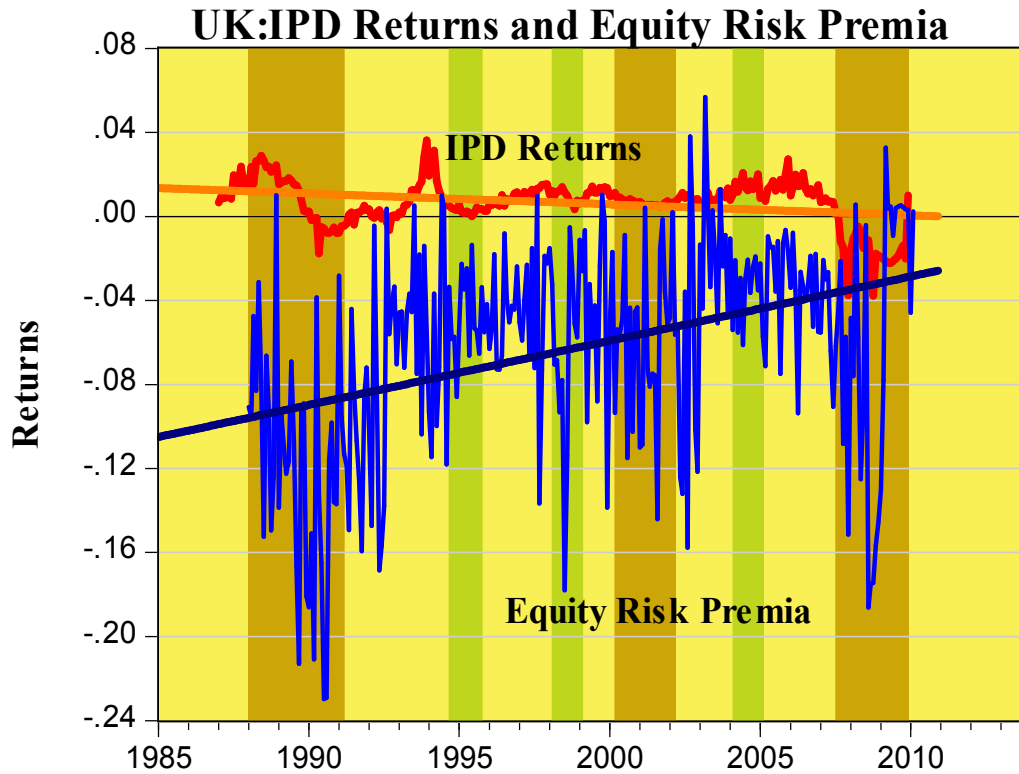


Figure 10 UK IPD returns and equity risk premia



In the US as compared to UK, the periodic volatility though high is less periodically variant than UK, but has much greater variance at the extreme points of fluctuation, especially the market drop in 1987 and the peaks in the early 1990s (Figure 11). Note that equity markets in both countries reflect major drops concurrent with the Asian crisis in the latter 1990s and the current crisis. This differs from the associations noted with the real economic measures (change in GDP), but is more consistent with the term structure measures.

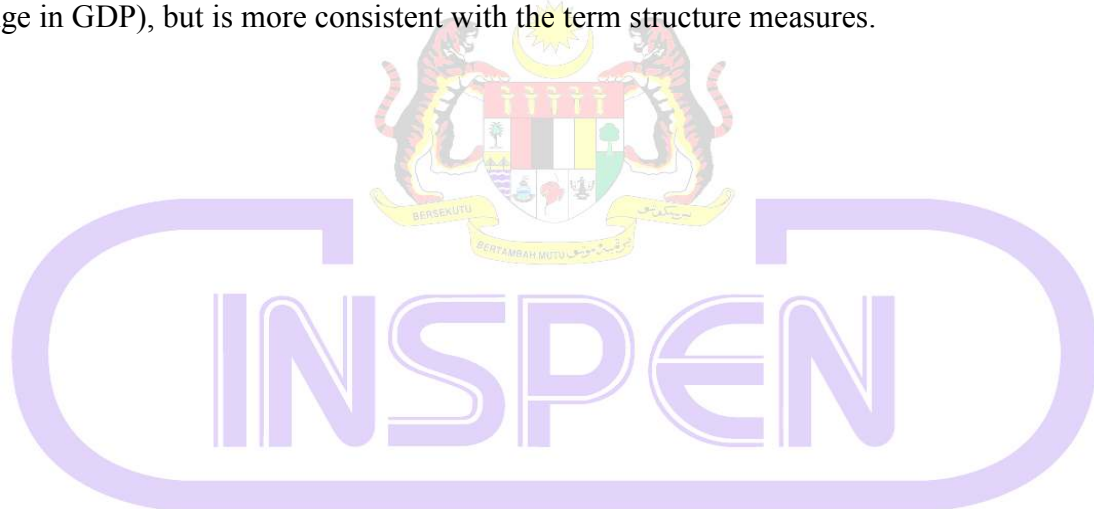
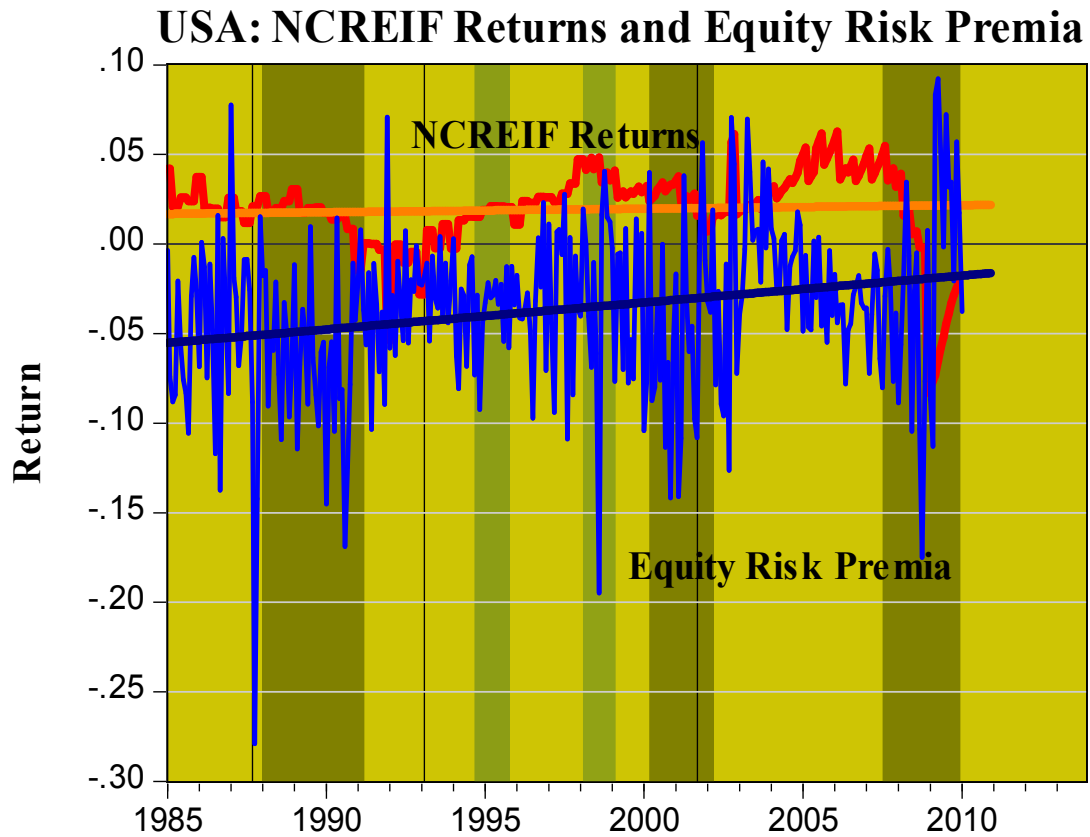


Figure 11 US NCREIF returns and equity risk premia



4.5 Regression Analysis

The analysis examines the impact of the financial crisis on the expected returns for US and UK property with the change in the general economy (GDP) as a function of the financial crisis.

The econometric analysis for the UK and the USA prior to full consideration of the crisis shows that there is a decrease in systematic risk in both the UK and US when the period covering the financial crisis is included in the valuation. This is witnessed by the decline in the R^2 measures and the reduction in the t-statistics and p value for the term structure in the UK and the risk premium variable in the US.

Coincidentally, the intercept or measure of expected unsystematic risk becomes significant in both the UK and US, with the US showing a major increase in the (expected) unsystematic component of the predicted return. In combination the systematic decline and the increase in the level and/or significance of fundamental risk infers an increase in uncertainty in both markets. This is consistent with asset pricing and financial expectations in a monetary based capital recession.

The association of asset deflation with financial conditions more so than the (real) economy and business cycles (GDP) supports the implications and theory associating property with the banking crises.

Prior to the financial crisis the regression model shows that the four variables explain 93% of the variability in property returns (Figure 12) whereas when the financial crisis is included this figure reduces to 48% (Figure 14). The t-statistic for term structure reduces from 2.318 (probability 0.0213) to -1.70 (probability 0.0899).

The magnitude and sign of the coefficient for the unanticipated inflation variable pre (-0.8686) and post (0.1303) the crisis points to a change in the pricing of risk.

Figure 12 UK Pre Financial Crisis

Dependent Variable: PROPRETURNUK
 Method: Least Squares
 Date: 02/20/09 Time: 19:38
 Sample (adjusted): 1988M01 2008M09
 Included observations: 249 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
GDPUK	0.347208	0.043835	7.920781	0.0000
UNANTICIIFLATUK	-0.868562	0.050658	-17.14555	0.0000
TERMSTRUUK	0.108614	0.046866	2.317567	0.0213
RISKPREMUK	0.035194	0.013662	2.576084	0.0106
C	-0.003927	0.002219	-1.769832	0.0780
R-squared	0.932774	Mean dependent var		-0.063514
Adjusted R-squared	0.931672	S.D. dependent var		0.034610
S.E. of regression	0.009047	Akaike info criterion		-6.552910
Sum squared resid	0.019971	Schwarz criterion		-6.482278
Log likelihood	820.8372	F-statistic		846.3853
Durbin-Watson stat	0.527139	Prob(F-statistic)		0.000000

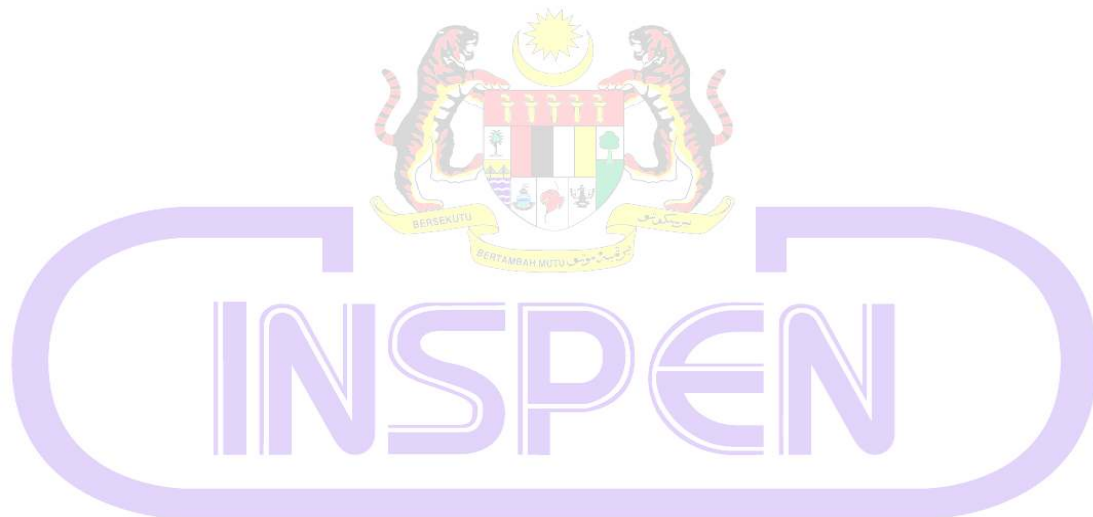


Figure 13 USA Pre Financial Crisis

Dependent Variable: PROPRETURNUSA

Method: Least Squares

Date: 02/20/09 Time: 21:21

Sample (adjusted): 1988M01 2009M01

Included observations: 253 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
GDPUSA	1.209816	0.232400	5.205751	0.0000
UNANTIINFLAT	-1.221854	0.100710	-12.13241	0.0000
TERMSTRUSA	0.188532	0.123262	1.529515	0.1274
RISKPREMUSA	0.079061	0.032403	2.439929	0.0154
C	-0.008317	0.004089	-2.034205	0.0430
R-squared	0.759743	Mean dependent var	-0.049201	
Adjusted R-squared	0.755868	S.D. dependent var	0.042816	
S.E. of regression	0.021155	Akaike info criterion	-4.854284	
Sum squared resid	0.110992	Schwarz criterion	-4.784454	
Log likelihood	619.0669	F-statistic	196.0566	
Durbin-Watson stat	0.361493	Prob(F-statistic)	0.000000	

In contrast the reduction in the US resulting from the financial crisis is much less severe showing a reduction from 75% figure (Figure 13) to 51% (Figure 15). The reduction in the t-statistic (2.440 to -0.1037) and p value (0.0154 to 0.9175) for the risk premium variable in the US highlights the decrease in systematic risk when the period covering the financial crisis is considered.

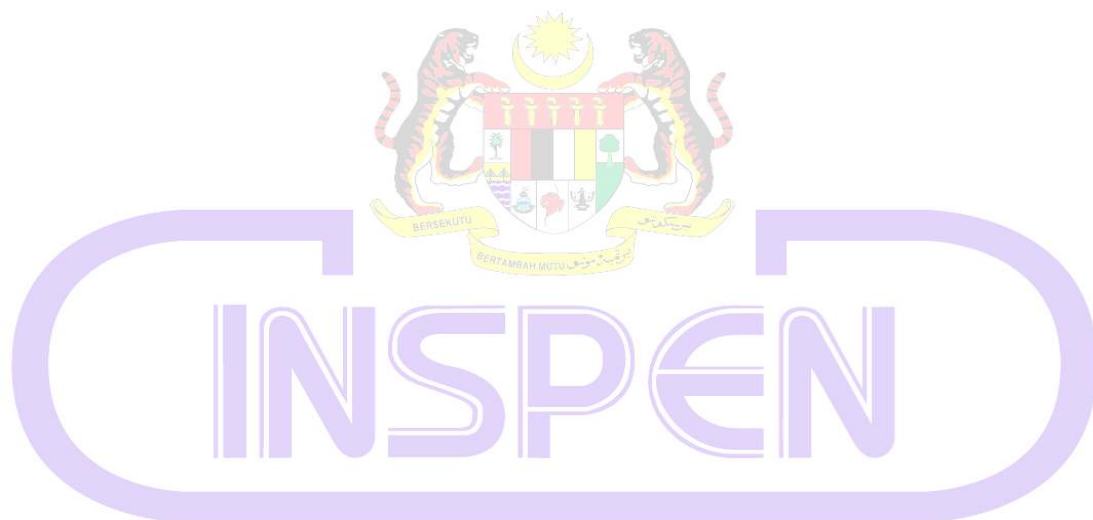


Figure 14 UK Post Financial Crisis

Dependent Variable: IPDUK
 Method: Least Squares
 Date: 02/25/10 Time: 20:20
 Sample (adjusted): 1988M01 2009M09
 Included observations: 261 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
GDPUK	0.416887	0.030983	13.45528	0.0000
UNANTICINFLATU				
K2010A	0.130288	0.037238	3.498781	0.0006
TERMSTRUUK	-0.031604	0.018566	-1.702271	0.0899
RISKPREMUK	0.034178	0.011678	2.926709	0.0037
C	-0.007605	0.001403	-5.419054	0.0000
R-squared	0.483731	Mean dependent var	0.006278	
Adjusted R-squared	0.475665	S.D. dependent var	0.011190	
S.E. of regression	0.008103	Akaike info criterion	-6.774230	
um squared resid	0.016808	Schwarz criterion	-6.705944	
Log likelihood	889.0370	Hannan-Quinn criter.	-6.746781	
F-statistic	59.96646	Durbin-Watson stat	0.398913	
Prob(F-statistic)	0.000000			

Figure 15 US Post Financial Crisis

Dependent Variable: NCREIF
 Method: Least Squares
 Date: 02/25/10 Time: 16:40
 Sample (adjusted): 1988M01 2009M12
 Included observations: 264 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
GDPUSA	0.856913	0.097397	8.798164	0.0000
UNANTINFLATLIB				
OR2010	-0.252811	0.043093	-5.866691	0.0000
TERMSTRUSA2	-1.122147	0.095596	-11.73844	0.0000
RISKPREMUSA2010	-0.002586	0.024942	-0.103687	0.9175
C	0.038715	0.002971	13.03141	0.0000
R-squared	0.511940	Mean dependent var	0.018685	
Adjusted R-squared	0.504403	S.D. dependent var	0.024767	
S.E. of regression	0.017436	Akaike info criterion	-5.241841	
Sum squared resid	0.078737	Schwarz criterion	-5.174114	
Log likelihood	696.9230	Hannan-Quinn criter.	-5.214626	
F-statistic	67.91822	Durbin-Watson stat	0.476224	
Prob(F-statistic)	0.000000			

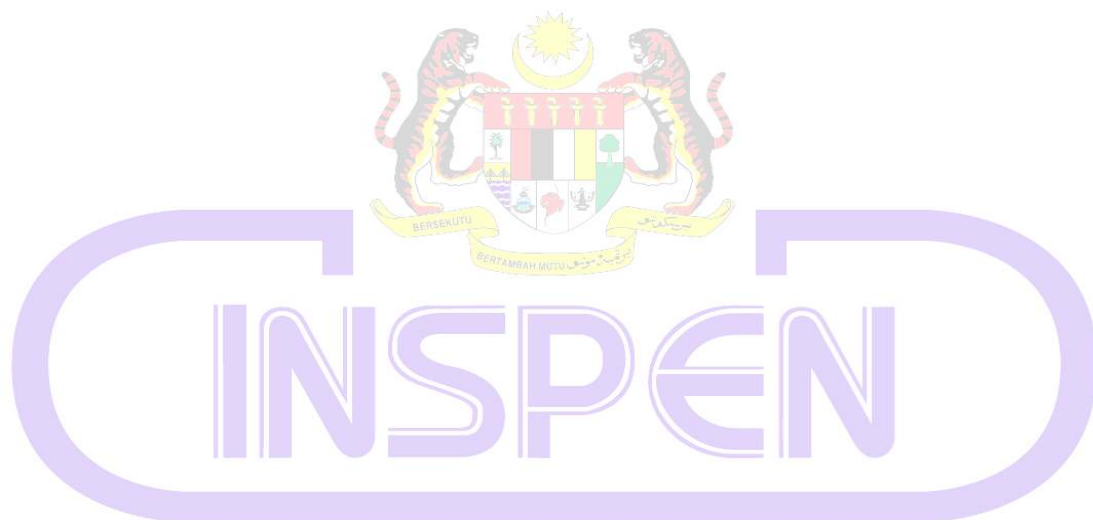
5.0 Conclusions

The research undertaken in this paper highlights that the impact of the current financial crisis on the property market is much greater than previous downturns. The severity of the current recession is evidenced by the downward trend in GDP in both the UK and US and the economic variables point to a much longer recovery period for the property market than in previous recessions.

While the impact of globalisation suggests that markets show greater levels of convergence the analysis of term structure and property performance indicates major differences between capital structure in the UK and US.

The regression modelling suggest that the impact of the financial crisis while variable across the UK and US has had a greater adverse impact on UK property performance. The magnitude of the impact relative to earlier recessions does support the thesis of Reinhart and Rogoff (2009) that this time is different.

The impact of credit crunch on funding of urban renewal projects in the UK has been significant however, despite concerns that many new regeneration schemes have become unviable in the current economic climate, regeneration property has proved surprisingly resilient and hasn't significantly underperformed in comparison to the IPD All Property average. The implications are that, in the field of regeneration, considerable change is needed in the way the property industry and its funders operate. This is particularly the case at the boundaries between investment and development, short term holding and long-term holding and the boundaries between different property types, including residential.



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