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To: Secretariat of the Basel Committee on Banking Supervision,  
Bank for International Settlements,  
CH-4002, Basel  
Switzerland

10-Sep-10

Dear Committee Member,

Please find enclosed comments on the Countercyclical capital buffer proposal Consultative Document issued by the Basel Committee in July 2010.

If you have any further questions or comments, please do not hesitate to contact us.

Sincerely,



Mr. Anish Goorah  
Director of Research & Analytics  
Email: [a.goorah@endurian.com](mailto:a.goorah@endurian.com)

Encl: Comments on Countercyclical Buffer Proposal

# Memo

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**To:** Basel Committee

**Cc:** John Windeler; Christophe Cuny

**From:** Anish Goorah

**Subject:** Comments on Countercyclical Buffer

**Date:** September 10<sup>th</sup>, 2010

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## 1. INTRODUCTION

The Countercyclical Capital Buffer Proposal (the “Countercyclical Buffer”) issued by the Basel Committee in July 2010 calls for the introduction of an additional layer of capital to assist in achieving the macroprudential goal of protecting the banking sector in times of stress. The Countercyclical Buffer’s aim is to maintain the flow of credit to the economy without the solvency of the banking system.

This document contributes to the debate surrounding the Countercyclical Buffer in the following ways:

- A distinction between the various types of credit and their impacts on bank lending. In particular, lending against property – residential or commercial – not only dominates credit extension but also creates a self-reinforcing cycle between asset prices and the supply of credit;
- Calibration of the Countercyclical Buffer for lending against commercial and residential real estate. The real estate cycle is also known to be of asymmetric duration: the upswing is longer than the downswing. Further, the real estate and the GDP cycles are also known to be coincidental (figure 2 below).

The deviation of real estate returns from its long term trend can be modeled. This deviation, combined with an optimum statistical distribution describing real estate returns, can in turn be used to estimate the size of the real estate specific Countercyclical Buffer. Real estate lending represents the majority of borrowing in the advanced economies.

The suggested mechanisms will quantify the pro-cyclical collateral risk associated with real estate lending. Further, a mechanism for calibrating the real estate component of the Countercyclical Buffer via conditional loss distributions is proposed. The use of a distribution also gives regulators the added option of choosing the relevant percentile of the distribution at various points in the cycle: Whenever the credit-to-GDP ratio is deemed excessive, regulators could conceivably opt for a higher percentile of the distribution and thereby require banks to hold a higher amount of capital under the Countercyclical Buffer. The converse would hold whenever the economy is in early stages of the recovery. All other aspects of the Countercyclical Buffer as stated in the Basel Committee’s Consultative Document would remain unchanged.

The proposals made in this document have been developed over a number of years. They are part of a wider repertoire of tools which share the common principle of improving real estate risk management. A biography of the authors and relevant contact information is included in Section 5 of this document. The authors welcome any feedback that the Basel Committee may have on this particular proposal.

## 2. EVOLUTION OF BANKS BALANCE SHEET

Although the analysis presented in this section is focused on the UK banking sector, the overall conclusions would be unchanged across most developed economies. A cursory look at the balance sheet of the UK banking system is useful in illustrating the transformation in banking activities seen over the last 45 years or so. Inspection of Table 1 below reveals that over that time period, household deposits grew by less than 90% whilst household lending saw an increase of almost 450%. In a not too dissimilar manner, corporate deposits grew by less than 150% whilst corporate lending saw a rise of 170%.

	1964		2009	
	Deposit, % of GDP	Lending, % of GDP	Deposit, % of GDP	Lending, % of GDP
Household	39	14	72	76
Corporate	7	13	17	35

**Table 1: Deposits and Loans, UK Banking System. Source: Bank of England**

Table 1 shows the presence of the well known “customer funding gap”: By 2009, client deposits irrespective of their source were not adequate to cover for lending. This gap was bridged by increased reliance on wholesale funding. Further, Table 1 also shows that by the end of 2009 the banking sector as a whole occupied a much larger share of GDP<sup>1</sup>.

The undisputed conclusion from the above is that between 1964 and 2009, there has been there has been increased leverage in the household and corporate sectors.

### **Increased Leverage focused on Real Estate Financing (or, the Dead Parrot Lives!)**

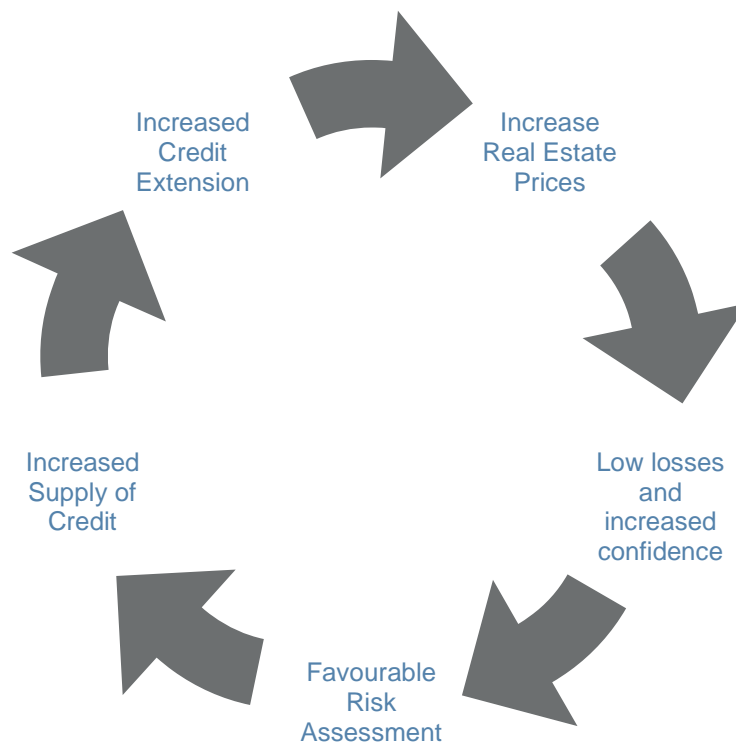
Data from the Bank of England show that residential mortgage lending increased from about 14% in 1964 to slightly over 60% of GDP by 2009. Although a comparable increase was seen in unsecured personal loans over the same time frame, at the end of 2009 unsecured personal loans only accounted for 9% of GDP – a figure far less significant than the size of residential mortgage lending.

An even sharper contrast emerges from the commercial real estate sector: In Q1-1987, commercial real estate lending represented around 3% of GDP. This number increased to around 20% of GDP in Q1-2009, representing a rise of around 600% over 22 years<sup>2</sup>. Over the same time period, non commercial real estate lending *fell* from around 15% to 12.5% of GDP.

The reasons as to why there has been such a massive increase in real estate lending are beyond the focus of this document. Nonetheless, real estate lending has the ability to become self perpetuating. This can be illustrated by the supplier induced demand potentially arising with the increased availability of real estate financing. Figure 1 below depicts how such an occurrence might arise:

<sup>1</sup> The size of the banking sector as a percentage of GDP would be significantly higher if the ever increasing web of intra-financial transactions were taken into account.

<sup>2</sup> Data from the UK Office of National Statistics and Finstats



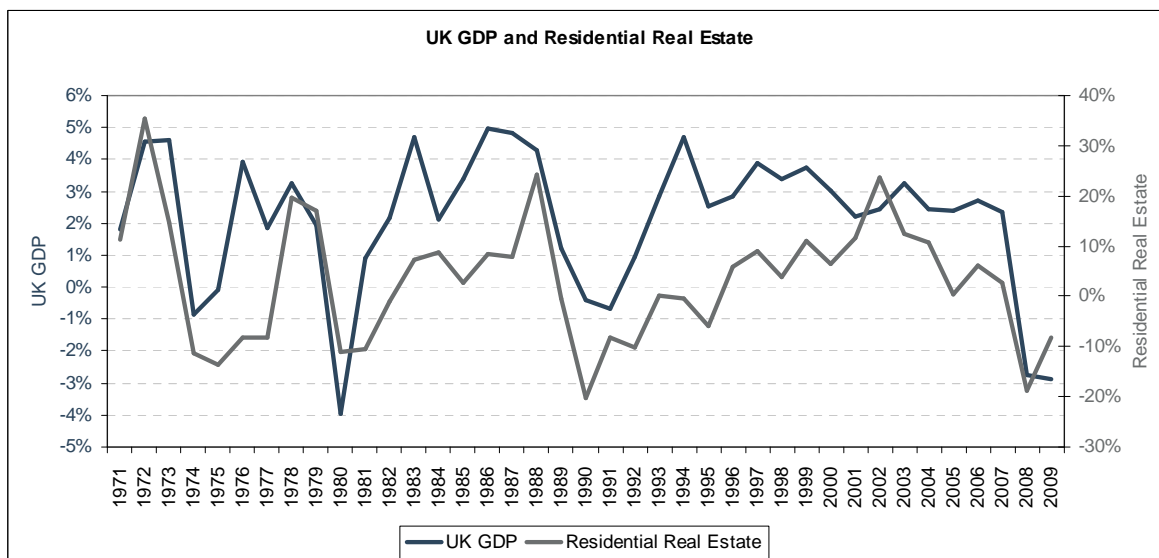
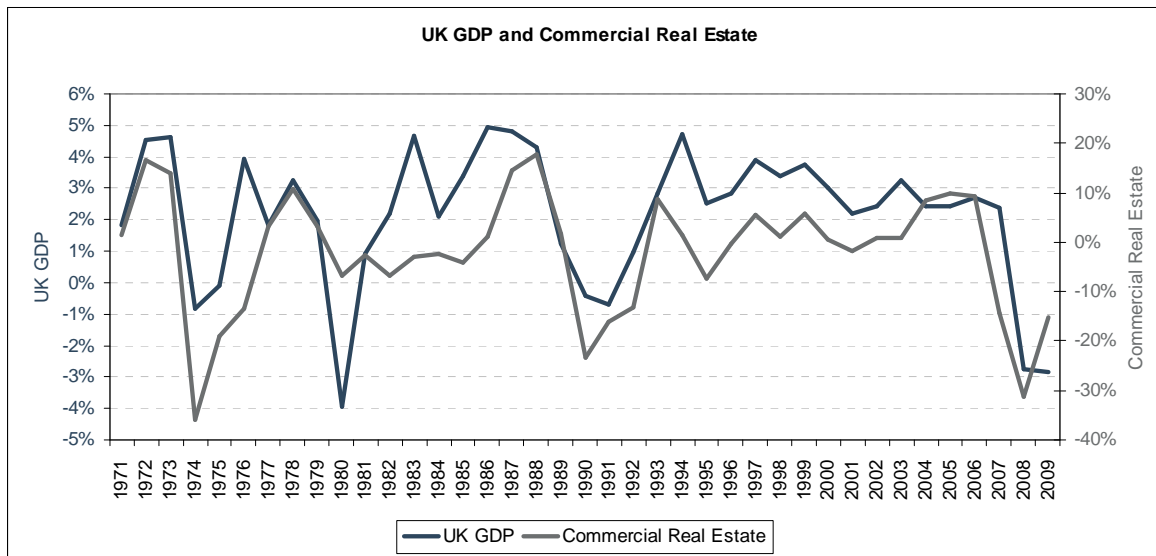
**Figure 1: Credit and Asset Price Cycles**

- Increased availability of real estate financing to developers may lead to real estate prices rising given that building supply is inelastic in the short run;
- Increased asset prices in turn drive expectations of further price increases, which in turn is one of the primary drivers for credit demand;
- The resulting increase in real estate prices results in myopic loss aversion for banks: lower losses, are seen, shareholders benefit from improved profitability, lending officers become more confident and the risk premium (reflected via the lending spread) for real estate falling. This results in additional credit being extended to meet investor demand.

The case for a similar – and perhaps even stronger – cycle can be made when talking about the relationship between credit and asset prices in the presence of securitization and mark-to-market accounting.

### **Coincidental relationship between real estate and GDP**

Figure 2 below shows the historical relationship between UK GDP and real estate. The top panel of figure 2 shows the relationship between the UK GDP and IPD Annual Index, which is assumed to be representative of commercial real estate. Inspection of the top panel shows that both series are correlated. A similar conclusion can be drawn for the bottom panel of figure 2. The correlation coefficients for the top and bottom panels are estimated to be around 70 and 67% respectively.



**Figure 2: Historical Relationship between UK GDP and Real Estate. Source: OECD, IPD and Lloyds.**

In conclusion, the increase in bank lending seen in the post war period has been primarily concentrated towards real estate financing. This fact, combined with the coincidental nature of the real estate and GDP cycles, suggest that it would be logical for the Countercyclical Buffer to broadly reflect the risks of lending against real estate.

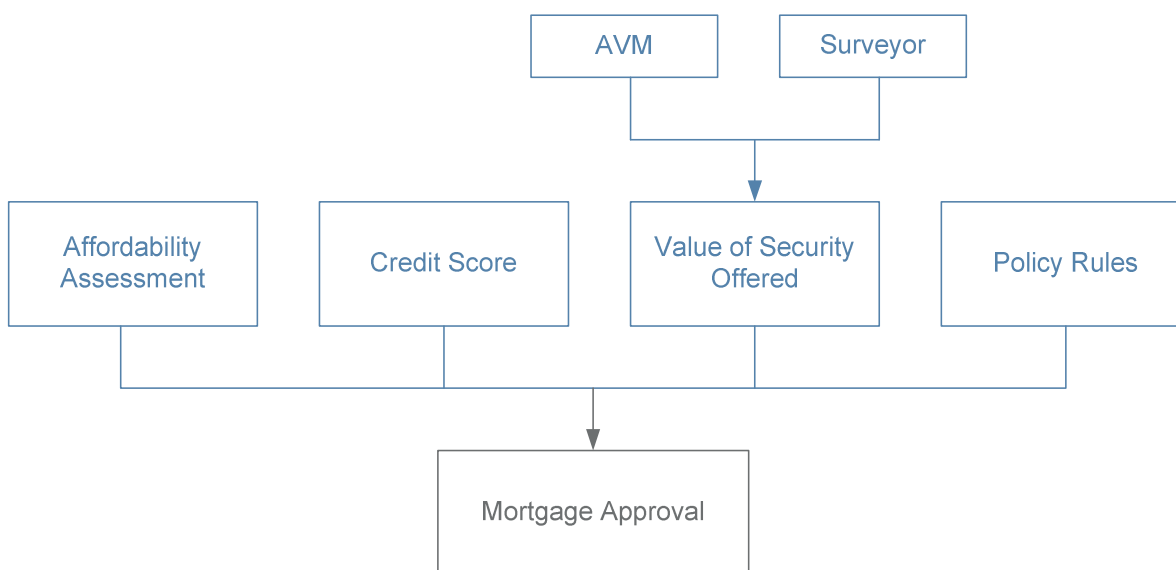
### 3. OVERVIEW OF REAL ESTATE RISK MEASUREMENT

Banks are not the only organizations with significant exposure to real estate. Over the last decade, real estate has become increasingly accepted as an investable asset class. Pension funds and other institutional investors have deployed substantial capital to real estate. Despite the increased sophistication of real estate investors and the amount of lending secured against real estate, there has been little improvement in real estate risk measurement.

The decision as to whether to extend credit is based primarily on three factors (the “Three Cs”):

1. **Character:** Individuals’ credit history and personal background. In the case of commercial real estate, banks would examine the relevant corporate vehicle;
2. **Capacity:** The amount of debt a borrower can handle. For instance, this may be a multiple of his or her income. In commercial real estate, this could be the interest coverage ratio on the property;
3. **Collateral:** The downside risk associated with the underlying asset.

Real estate credit extension has been focused mostly on the first two factors with relatively less emphasis placed on the collateral risk. This can be illustrated by looking at the factors influencing the mortgage approval decision for residential real estate (figure 3 below).



**Figure 3: Residential Mortgage Approval Process**

The affordability assessment, personal credit score and policy rules would reflect the borrower’s capacity and character. The value of the collateral is often independently assessed by an Automatic Valuation Model or by sending out a surveyor. In either case, the valuation exercise provides the *current* market value of the asset. Although the valuations may be subject to a haircut, the aim of haircuts is to account for valuation error; as opposed to reconciling the valuations with the likelihood and magnitude of future falls in asset prices. Thus, the probability that the collateral might see a fall in value – the “downside risk” - in stressed times is not explicitly taken into account. A comparable picture to figure 3 could be drawn for commercial real estate lending.

In summary, having made the case for an explicit inclusion of real estate risk measures in the Countercyclical Buffer in section 2 earlier, we are now able to say that such a risk measure should be focused on the downside risk associated with real estate.

### **3.1. DOWNSIDE RISK ASSESSMENT**

While not a smoking gun on its own, the underestimation of real estate downside risk was one of the reasons for the credit crisis seen between 2007 and 2009. There are various reasons why robust risk measures have yet to be developed for real estate<sup>3</sup>. The most significant ones include:

- **Heterogeneity:** No two houses or buildings are identical. Even in the presence of a large portfolio of real estate holdings, the asset specific differences tend to be persistent. In addition, perfectly identical pieces of real estate may trade for different prices even if the trades were to occur quasi simultaneously;
- **Smoothing:** Real estate is an illiquid asset class. Data from the UK Land Registry and the Department of Communities and Local Government show that only 3 – 7% of housing stock is traded every year. The trading frequency of commercial real estate is also of the same order of magnitude. Thus, price discovery is non instantaneous and often elusive.

The low trading frequency of real estate assets often result in real estate indices being “smoothed”. Hence the true volatility and/or downside risk seen from real estate indices often suffers from downwards bias;

- **Data:** Although real estate data quality has improved significantly, the limited amount of historical data (most indices only go as far back as one cycle) is often a challenge to reliable statistical analysis.

While the above are challenges to be overcome, they do not represent an insurmountable obstacle to real estate risk measurement. Continuous data improvements and the bridging of the gap between real estate and modern finance imply that these three obstacles can be mitigated – if not overcome.

### **3.2. CONDITIONAL LOSS DISTRIBUTIONS: RESIDENTIAL REAL ESTATE**

The use of conditional loss distributions to assist in estimating the size of the Countercyclical Buffer for lending against real estate is proposed. The following steps are used in computing the loss distributions for residential real estate:

1. **Data:** Although there is still an on-going debate as to whether transacted indices are superior relative to appraisal based ones, transacted indices are favoured for the purposes of calibrating the real estate Countercyclical Buffer. This is because transacted prices do not suffer from artificial smoothing due to appraisal bias. In most advanced economies, including the UK and the US, transacted based real estate indices are already available.

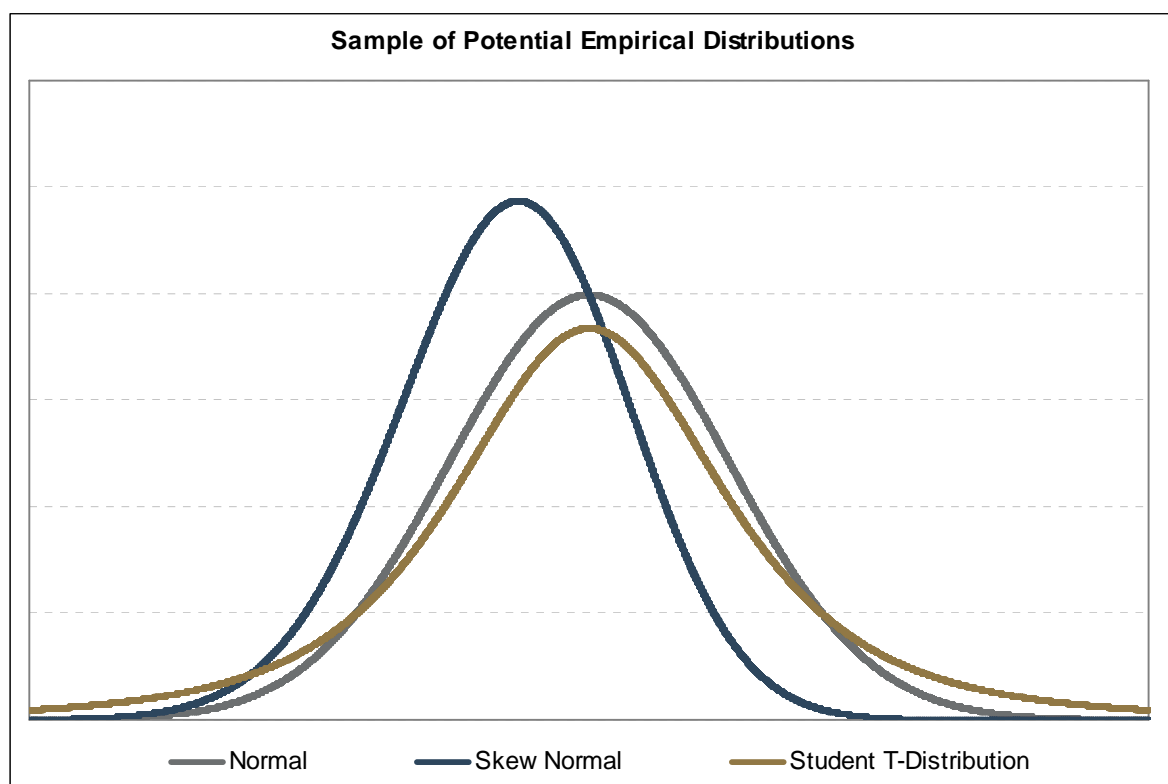
The quality and depth of the transaction data is likely to vary on a country-by-country basis. In some countries (e.g. the UK), the data may be granular enough to allow for risk assessment at a post code area and property type level. Irrespective of the depth of data in most countries, there is sufficient data available to allow for a real estate specific calibration of the Countercyclical Buffer with a reasonable degree of accuracy;

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<sup>3</sup> There is a caveat to this statement: Value-at-Risk and other risk measures are often reported for those real estate assets held on the trading book. However, these measures can only be viewed as a noisy proxy for real estate risk at best: they are also reflective of risks associated with the debt capital markets in general. Further, save for a few exceptions, Value-at-Risk has traditionally been based on a normal distribution; an assumption which has been shown to be woefully inadequate.

2. Real estate returns are then modeled through a mean reverting stochastic process. In theory, such a process would imply the existence of a long term average and any deviations from this long term average will be temporary;
3. With the stochastic processes calibrated, Monte Carlo simulations to produce forward looking distributions are then computed. Various distributions are considered and the distribution providing an optimum fit on a historical basis is selected. The selection of the optimum distribution is essential for an accurate calibration of the Countercyclical Buffer. Figure 4 below shows 3 potential candidates each with identical means and variances, but with different features. Relative to the Normal distribution:
  - The Student-T distribution is less peaked and has fatter tails;
  - The Skew-Normal distribution has a fatter left tail and is more peaked than the normal distribution.

Both non-symmetric returns and “fat tails” are stylized facts observed in real estate returns;



**Figure 4: Sample of Potential Empirical Distributions**

4. The losses from the simulated distributions are then computed, thereby providing a providing a conditional loss distribution. Figure 5 shows sample conditional loss distributions produced for the UK residential property markets. In the case of the UK, the real estate data were granular enough to allow for risk assessment by post code area and property type;
5. The residential real estate Countercyclical Buffer could then be calibrated by choosing a percentile of the resulting conditional loss distribution (figure 5). In fact, the usage of a distribution gives regulators an additional tool in setting out the level of the Countercyclical Buffer. For instance, when the Basel Committee's proposed credit-to-GDP ratio is above its long term average, a higher



percentile of the loss distribution (e.g. the 5<sup>th</sup> percentile would imply an estimate of 2.76% for South East Flats and 2.10% for Manchester Flats) may be chosen. Conversely, when the economy is emerging from a recession a lower percentile (e.g. the 2<sup>nd</sup> percentile which would give an estimate of 1.16% and 0.87% for South East and Manchester Flats) may be preferred. On a portfolio basis, the capital required under the Countercyclical Buffer required for holding both Manchester and South East flats will be no more than the amount of capital required for holding Manchester and South East flats individually. Thus, diversification benefits where present can be factored in.

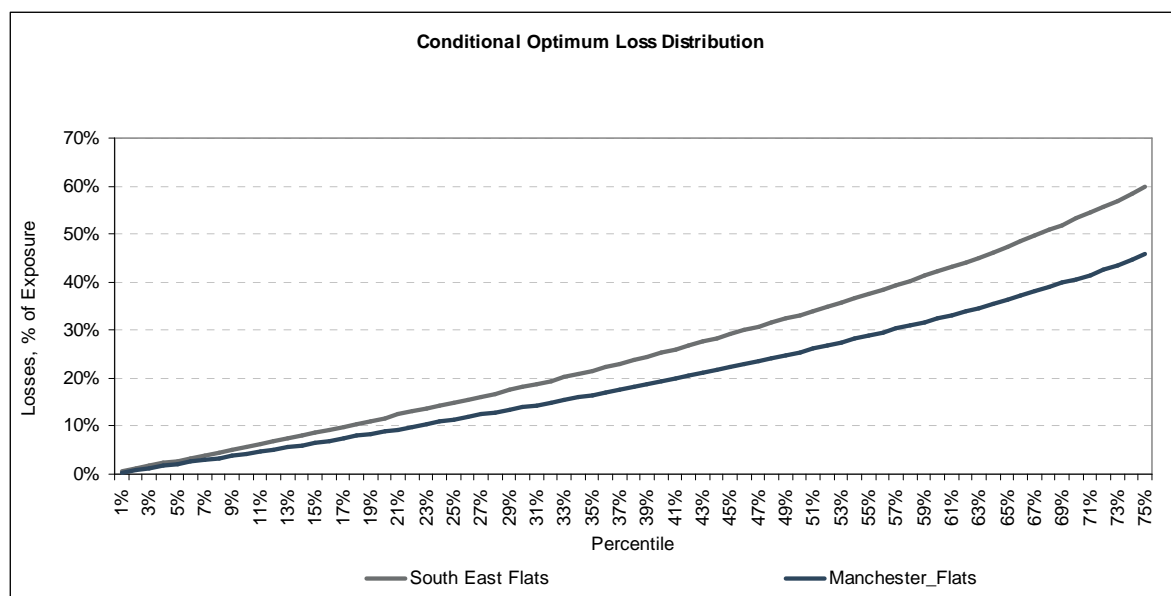


Figure 5: Conditional Loss Distribution

### 3.3. CONDITIONAL LOSS DISTRIBUTIONS: COMMERCIAL REAL ESTATE

The suggested approach for Commercial Real Estate is broadly similar to the one outlined in 3.2 above for residential real estate, except for the following major differences:

- For offices and retail properties, the modeling approach benefits from an optional asset specific risk component. The asset specific features allow for a more accurate modeling of the underlying real estate. For instance, even if one assumes that it is possible to have two identical office buildings, the tenant quality in each building may differ. At a minimum, asset specific modeling would be available for the US and UK markets.

In those geographies or commercial property types where asset specific modeling is not feasible, an index based model would still give regulators a superior way of calibrating the Countercyclical Buffer;

- Smoothing is addressed differently for commercial real estate. In this particular case, the modeling infrastructure is based around a joint bivariate mean reverting stochastic process. The variables underlying the stochastic process are rents and vacancy rates, which are directly observable and thus not prone to artificial valuation smoothing. The interdependence seen by rents and vacancy rates (a generally negative correlation) is used to justify the joint modeling approach.

In an analogous manner to residential real estate, with the commercial real estate stochastic processes calibrated, simulations are then used to construct conditional loss distributions. The latter can subsequently be used to calibrate the Countercyclical Buffer.

#### **4. CONCLUSION**

This document provides an illustration of how the Countercyclical Buffer could be calibrated. It starts by showing that the lending activities of the banking system have been focused on real estate in the post war period. Furthermore, the coincidental relationship between real estate and the economy imply that the downside risk associated with real estate lending should be reflected in the computation of the Countercyclical Buffer.

Conditional loss distributions appropriately reflecting the risks in real estate provide a robust way of calibrating the size of the buffer. In addition, loss distributions provide regulators with an additional tool in calibrating the Countercyclical Buffer: a higher percentile of the loss distribution may be used in times of stress. It is our view that the explicit recognition of real estate risks in the Countercyclical Buffer is key to ensuring that the latter is successful.

## 5. BIOGRAPHY AND CONTACT INFO

Real Risk Management Limited is a sister company of Quantum Alpha Limited ("QAL"). Over the last 4 years, QAL's activities have been focused on developing a new innovative insurance produce called Negative Equity Insurance which protects homeowners against the risk of falling into negative equity. The risk models underpinning Negative Equity Insurance, which has been underwritten by two global insurance companies, have been developed by the authors of this document. Negative Equity Insurance is expected to be launched in the UK in 2011Q2.

This document has been authored by:

1. John Windeler serves as Chairman and CEO of QAL. Prior to that, he was the Global Treasurer and CFO of National Australia bank between 1989 and 1994. John was appointed as the Chairman the Merchant Bank of Irving Trust (now Bank of New York) in 1984. John is currently a member of the Board of Governors of DeMontfort University. John holds an MBA in Finance and a BA in English, both from the Ohio State University;
2. Anish Goorah is experienced in developing and implementing real estate risk management tools. Anish is currently employed as Director of Research & Analytics at QAL. Anish was previously employed in the Real Estate Global Principal Investment Group of the OMERS pension fund, where he was also an active participant of the fund's firmwide risk management committee. A selection of Anish's research has been published in peer reviewed academic journals. Anish holds a Masters of Financial Economics degree from the University of Toronto. He also has an honours Bachelors degree in Economics with a focus in Mathematics from McGill University;
3. Christophe Cuny was previously employed at Eurohypo as head of property derivatives with a special interest in asset specific risk pricing. Prior to this, he was responsible for the Structuring and Distribution of Property Derivatives and Property-Linked Notes for ABN AMRO, and Head of Structured Hedging and Inflation at Abbey Santander. In addition, Christophe has consulted for various alternative investment houses and fund of funds on inflation derivatives and alternative investments. Christophe holds an MBA (First with distinction) from Cass Business School and a double honours Bachelors degree in Business Administration.

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