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**Bank Lending, Real Estate Bubbles  
and Basel II**

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## Τραπεζικός Δανεισμός, «Φούσκα» Αγοράς Ακινήτων και Βασιλεία II.

Γιάννης Παναγόπουλος και Πρόδρομος Βλάμης

### ΠΕΡΙΛΗΨΗ

Το παρόν άρθρο επιδιώκει να αναλύσει και να συσχετίσει δύο διαφορετικές βιβλιογραφίες. Η πρώτη σχετίζεται με την χρεοκοπία εταιριών ανάπτυξης/διαχείρισης ακινήτων (*real estate companies*) και η δεύτερη με την εποπτεία του τραπεζικού συστήματος (*capital adequacy framework*). Πιο συγκεκριμένα, περιγράφει πώς η χρεοκοπία επιχειρήσεων που δραστηριοποιούνται στο κλάδο της ανάπτυξης/διαχείρισης ακινήτων μπορεί να δημιουργήσει κρίσεις στο τραπεζικό σύστημα οι οποίες με τη σειρά τους μπορούν σταδιακά να μεταφερθούν και στο σύνολο της οικονομίας προκαλώντας έτσι γενικευμένη οικονομική ύφεση (αποτέλεσμα ντόμινο). Το παραπάνω συνέβη στη Βρετανία κατά τις οικονομικές κρίσεις του 1973 και του 1990, γεγονός που αναλύεται στο άρθρο.

Εν συνεχεία συζητείται επισταμένως πως το θεσμικό πλαίσιο της Βασιλείας II επιδιώκει να αντιμετωπίσει το πρόβλημα αυτό. Παρουσιάζονται δηλαδή όλες εκείνες οι μεταβολές που εμφανίζονται στο νέο σύστημα εποπτικών κανόνων κεφαλαιακής επάρκειας της Βασιλείας II, σε σχέση με το παλαιό (Βασιλεία I), όσον αφορά δανειοδοτήσεις εταιριών με εμπράγματα εξασφαλίσεις.

Θεωρούμε ότι με την εφαρμογή της Βασιλείας II γίνονται σοβαρά βήματα προς την κατεύθυνση αποφυγής νέας «φούσκας» στην αγορά ακινήτων. Ωστόσο, κατά τη γνώμη μας, το πρόβλημα δεν αντιμετωπίζεται επαρκώς. Για το λόγο αυτό το παρόν άρθρο επιχειρεί να αναδείξει τις αδυναμίες του θεσμικού πλαισίου της Επιτροπής της Βασιλείας. Επίσης προτείνει συγκεκριμένες λύσεις προς τη κατεύθυνση του να αντιμετωπισθούν έγκαιρα οι όποιες ατέλειες του όσον αφορά τη δανειοδότηση εταιριών με εμπράγματα εξασφαλίσεις.

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## ABSTRACT

The aim of the paper is to show how major failures in the real estate sector have been accompanied by banking failures in the UK and elsewhere during the 1973 banking crisis and the 1990 economic recession. We argue that prudence needs to be reinforced by some form of regulation in order to prevent a repetition of the property market collapses and banking crises of the 1970s and early 1990s. The Basel Committee on Banking Supervision acknowledges the fact that conventional lending concentration to industries such as commercial real estate is a common source of major credit problems for banks around the world. We briefly refer to the old capital adequacy framework, commonly known as Basel I, and we also review the new framework, Basel II (Pillar 1), which has been recently initiated. We especially focus on banking supervisors' views with regard to real estate lending in Basel II (Pillar 1) and our scepticism regarding these views. This paper represents our effort to build on the existing literature on bank regulation and banking crises and our contribution will hopefully be useful for the financial system regulator, real estate professionals, shareholders and investors.

**JEL Classification:** K23, G21, L85.

**Keywords:** Basel II, Banking Crisis and Real Estate Companies

## 1. Introduction

Experience from around the world indicates that poor credit quality coupled with weak credit management practices continue to be a dominant factor in bank failures and banking crises. Many of the credit losses suffered by banks, thrifts and insurance companies in the United States in the early 1990s have resulted from excessive portfolio concentrations of loans in the real estate industry (residential mortgages, commercial real estate mortgages and commercial real estate loans). More specifically, US banks loaned enormous amounts of money to commercial real estate companies, for the period 1989-1994, based on optimistic projections of rental income growth and increased asset values (Browne & Case, 1992). “When the (real estate) bubble burst, banks had to charge off around \$34 billion in real-estate-related loan losses” (Caouette et al., 1998; FDIC, 1997).

European countries such as Switzerland, Sweden and the UK – as well as Japan (Siebert, 2002: 116-119) and East Asia (Hilbers et al., 2001; Collyns & Senhadji, 2002; Quigley, 2001) – experienced similar crises in the 1970s and 1990s. Historical data show that there is a very close relationship between the over-borrowing of the real estate companies, the real estate bubbles and the banking crises (see BCBS April 2004). The interlinkages between banks and real estate companies involve an inherent transfer of credit risk.

Does the commercial property market have characteristics that make commercial real estate lending hazardous for banks? Real estate development companies are, by nature, highly leveraged companies (Ball et al., 1998; Harvey & Jowsey, 2004). They use high debt in order to finance the construction of large buildings for residential or commercial use. High gearing ratios make them sensitive to interest rate swings, particularly in countries like the UK where most debt is at floating interest rates (Rowlatt, 1993; Artis & Lewis, 1993; Lewis, 1994; Miles, 1994). This particular characteristic of the real estate industry is an important parameter that needs to be considered within the profit equation of banks and in assessing their likely survival. Another interesting question is why banks are attracted to property lending. It seems that commercial banks, in their attempt to increase their market share, very often concentrate their portfolios in particular sectors. For example, it is evident that around 10% of the total bank loans in the UK were diverted to property companies in the early 1990s (Ball et al., 1998: Fig. 12.2, p. 326). Real estate lending accounted for around 30% of lending to all private non-financial companies in early 2003 (Whitley & Windram, 2003).

Should – and can – anything be done in order to prevent a repetition of the property market collapses and banking crises of the 1970s and the early 1990s? Prudence needs to be

reinforced by some form of regulation of the financial system. We review here both *Basel I* and the recently initiated *Basel II* regulatory framework with particular reference to real estate lending. We argue that property is only a small part of the New Basel Capital Accord which consists of three pillars.<sup>1</sup> We believe that the sections dealing with real estate lending need to be further explored.

In section 2, we show how major failures in the real estate sector have been accompanied by banking failures in the UK during the 1973 banking crisis and the 1990 economic recession. Section 3 discusses the lessons to be learnt from these macroeconomic and banking crises. We then examine in section 4 the Basel I and Basel II regulatory framework (Pillar 1 - Minimum Capital Requirements) and we present our criticism (and scepticism) regarding the sections of the Basel II proposals dealing with real estate lending. Section 5 concludes the paper.

## **2. UK Real Estate Companies, Real Estate Bubbles and the Banking Crises in the 1970s and 1990s**

Default risk of real estate investment companies has asymmetric properties across business cycles. In an upturn in the business cycle, credit is easily available: banks are willing to sanction property loans and to fund new developments, usually at very low interest rates, which boost economic activity. Confidence is high, the expected profitability of new developments improves and the probability of default of construction and development companies is kept at reasonable levels. In contrast, in a downturn there is oversupply of new developments (overbuilding) while simultaneously demand for new space levels off because of the contraction in economic activity. In this phase of the business cycle, monetary authorities usually follow tighter monetary policy in order to reduce liquidity in the system and to combat potential inflationary pressures in the economy. This results in higher interest rates which increase the debt burden of real estate investment companies. At the same time they also find themselves unable to generate sufficient income to cover the interest payments on their loans because of the contraction in economic activity. Moreover, refinancing becomes more difficult because lenders alter their risk assessments, switch to conservative/more cautious lending policy and become unwilling to provide property loans

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<sup>1</sup> Strictly speaking, Basel II has three Pillars but we are interested in analysing just the first one. Pillar 2 deals with the supervisory review process requirements and Pillar 3 aims “to bolster market discipline through enhanced disclosure by banks” (BCBS, June 2006).

since capital values of real estate – used as collateral – have declined. This is the so called “credit crunch” phenomenon. Consequently, the probability of default of the real estate investment companies increases dramatically, along with bankruptcies.

In the early 1970s a crash in the UK property market was produced owing to the monetary and fiscal tightening as well as the general economic crisis directly linked to the oil crisis of 1973. The high interest rates, the fall in property rents and capital values<sup>2</sup> and a drying-up of finance pushed many property companies into insolvency. The collapse of the property market had negative repercussions for the equity market, the banking industry and the economy as a whole. Particularly, several small banks, the so-called “secondary banks”, whose main business was lending funds to sectors such as commercial property, became insolvent on the back of injudicious property lending.<sup>3</sup> The situation turned into a serious threat for the whole UK banking system. There was widespread fear of a generalized crisis; that was reflected in Government pressure, through the Bank of England, for larger banks to extend credit to smaller banks in order to avert the all-out crash that would have occurred if the smaller banks had had to place even more property on the market to repay their debts. The Bank of England organized a rescue operation (the “Lifeboat”) with the help of the major clearing banks. Twenty-six small banks were supported by up to 1.3 billion pounds in loans (Bank of England, 1978). Reid (1982) makes an excellent presentation of the outbreak of the secondary banking crisis and the launching of the “Lifeboat”. The UK financial system was saved from the consequences of widespread failures of the secondary banks but that came at a certain financial cost: both the Bank of England and the clearing banks taking part in the “Lifeboat” made losses totalling around 150 million pounds (Bank of England, 1978).

The pattern of the 1972-75 recession neatly repeated itself, thereby underlining the rather cynical observation that “the only thing we learn from history is that we learn nothing from history” (Harvey & Jowsey, 2004). Large falls in commercial property prices (-14.4% in 1990, -27.7% in 1991 and -30.1% in 1992) (Davis, 1995: 268) as well as considerable declines in nominal house prices (-1.3% in 1990, -1.4% in 1991 and -3.8% in 1992) (Davis, 1995: 268) followed the 1990 recession in the UK. In the residential sector, the high loan/value ratios of up to 100%, at the time, turned a significant proportion of mortgage

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<sup>2</sup> According to the Investment Property Databank, after rising by about 24% in 1972 and 1973, the capital value of commercial property fell by 20% in 1974, and the following year’s recovery was only 5%.

<sup>3</sup> Bank lending to property companies increased from 71 million pounds to 1,332 million pounds between 1970 and 1973 (Harvey & Jowsey, 2004).

contracts into cases of negative equity (property prices below the value of the outstanding mortgages).

Additionally, the sale of the repossessed houses put further downward pressure on house prices. The high interest rates along with the fall in property rents and capital values once again pushed many property companies into insolvency.<sup>4</sup> Difficulties in the commercial property sector, which arose from the recession itself and the preceding boom in construction, entailed marked losses for the UK banking industry. “Thus for many UK banks it was the second time in 20 years that there has unfolded a scenario of rising property values and increasing lending, followed by falling values and a residue of bad debts” (Lewis, 1994). The crisis in the banking sector in the early 1990s was exacerbated not only by the substantial lending to commercial real estate companies<sup>5</sup> but also because of the heavy personal sector borrowings.

There were, though, certain difficulties within the small banks, which in turn led to heightened caution among depositors and lenders in wholesale markets. Three small banks – Chancery, Edington and Authority – were left to fail in early 1991 (BCBS, April 2004) as the Bank of England did not consider such failures to be a threat to the UK financial system. “Several building societies had to merge with larger institutions when loan losses resulting from earlier imprudent lending cast liquidity or solvency into question” (Davis, 1995). From the middle of 1991 the Bank of England kept 40 small banks, which had been heavily involved in the property market, under particularly close review and intensified regulatory monitoring (Logan, 2000). Over the next few years, a quarter of these banks failed.<sup>6</sup> The central bank also established arrangements to provide liquidity support to a few small banks, e.g. the National Mortgage Bank, because it was thought at the time that the risks of contagion to other larger banks had increased.<sup>7</sup>

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<sup>4</sup> Between summer 1990 and summer 1994, around 15 quoted previously successful property companies, like Olympia & York, Mounntleigh, Rosehaugh and Spaeyhawk, became insolvent. Smaller property companies were also taken over by receivers (Property Week, 1995).

<sup>5</sup> Between 1985 and 1990, yearly bank lending to property companies increased in money terms from 7 billion pounds to 38.9 billion pounds with overseas investors providing some 40%. By 1990 the banks’ total property debt amounted to approximately 500 billion pounds (Harvey & Jowsey, 2004).

<sup>6</sup> The Bank of England considers as “failed” those banks that entered into administration or liquidation, had their banking licence revoked or received liquidity support.

<sup>7</sup> The only significant bank failure of the period was the collapse of the Bank of Credit and Commerce International in July 1991 but that was due to fraud. Bank of Credit and Commerce International had worldwide debts of \$10 billion and 400 million pounds in the UK (Lewis, 1994).

### **3. Lessons to be learnt**

Taking as examples the 1973-1975 Secondary Banking crisis and the 1990 economic recession in the UK, one might argue that lack of attention to changes in economic or other circumstances can lead to deterioration in the credit standing of a bank's counter-parties. Also, experience from around the world indicates that credit risk of a bank's counter-party is crucially affected by the institutional framework and the characteristics of the credit markets within which it functions.

Credit risk of a company or the riskiness of a loan will be affected by the existence of a number of factors:

- 1) *Collateral*: Loans may be collateralized by real property, automobiles, equipment, inventories, accounts receivable, securities, savings accounts as well as mutual funds and life insurance;
- 2) *Third party guarantee*: If a loan is endorsed by a third party guarantee then the third party is committed to repay the borrower's debt in case the borrower defaults;
- 3) *Loan covenants*: Usually the credit contract between a bank and a borrower contains covenants limiting the possible actions of the borrower. These covenants might vary across countries but usually include the responsibility of the borrower to submit financial statements frequently, the commitment not to issue new debt, restricted dividend payment etc.;
- 4) *Information costs*: Possibility of sharing information about the credit history of borrowers in order to reduce the unavoidable information costs inherent in the lending decision;
- 5) *Bankruptcy legislation*: Bankruptcy process is complex in reality and varies across countries due to the different bankruptcy legislations. For example, the level of protection of the different parties involved in the bankruptcy process (workers, suppliers, shareholders, and creditors) is different from one country to another. Although we will not attempt in this paper to describe differences in bankruptcy legislation across countries, it is important to note that these differences affect the value of the bank's claim on the bankrupt firm;
- 6) *Creditworthiness* of the obligor.

### **4. The Basel Committee on Banking Supervision, the 1988 Capital Accord and Basel II**

The Basel Committee for Banking Supervision (BCBS hereafter) established in 1975, the G7 Finance Ministers, the G10 central bank Governors and international financial institutions such as the International Monetary Fund and the World Bank, have called for

progress in the area of market discipline of financial institutions in general and, in particular, banks. The Committee's aspiration as outlined both at Basel I (1988) and Basel II (2006) is to stabilize the relationship between commercial banks' equity capital – as expressed by its core (Tier I) and supplementary (Tier II) elements<sup>8</sup> – and their risk-weighted assets. These assets are included either in the banking book (that is, the different categories of loans) or in the trading book (that includes financial instruments such as bonds, equities and derivatives).

BCBS has published a series of documents<sup>9</sup> to provide “guidance to banks on recognition and measurement of loans, credit risk disclosure and related matters”. It is clear that information on banks' credit risk profiles, including the quality of their credit exposures and the adequacy of their credit risk management process, is crucial in market participants' assessment of their condition, performance and ability to survive in the long-run. BCBS sets out banking supervisors' views on sound loan accounting and disclosure practices for banks focusing on how to minimize the credit risk in the loan portfolio.

The sound practices specifically address the following areas: (i) Establishing an appropriate credit risk environment, (ii) Operating under a sound credit-granting process, (iii) Maintaining an appropriate credit administration, measurement and monitoring process, and (iv) Ensuring adequate controls over credit risk” (BCBS, 2000). Credit risk can be potentially minimized through accurate loan pricing (the riskier the borrower the higher the loan rate), credit rationing (availability of a certain type of loan is restricted to a selected class of borrowers), use of collateral, loan diversification, use of quantitative/qualitative methods to predict the probability of default by the borrower and financial regulation/supervision.

#### **4.1. The Basel I Regulatory Framework**

Apart from those guidelines proposed by the BCBS, we also need to consider the 1988 Basel Capital Accord or Basel I, the international capital standard for banks. BCBS (1988) established the basic architecture for setting minimum-risk based capital requirements for banking organizations in order to stabilize the international financial system. At the time,

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<sup>8</sup> According to Basel II (2006), Tier I is the bank's Core capital that consists of equity capital (common stocks) plus disclosed reserves (mainly the post tax retained earnings) and Tier II consists of preferred stock and subordinated debt.

<sup>9</sup> -BCBS (July 1999), “Sound Practices for Loan Accounting and Disclosure”, Basel Committee Publications, No 55, Bank of International Settlements.

-BCBS (September 2000), “Best Practices for Credit Risk Disclosure”, Basel Committee Publications, No 74, Bank of International Settlements.

-BCBS (September 2000), “Principles for the Management of Credit Risk”, Basel Committee Publications, No 75, Bank of International Settlements.

Basel I recognized only *credit risk* exposure as the important element of the risk equation for banks. This is linked to the banking book assets. At a later stage, due to trading book expansion, BCBS recognized the importance of the *market risk* exposure as well.

The Basel *Capital Adequacy Agreement* imposes internationally agreed weights for different types of risk, including off-balance-sheet risks, and requires that banks in countries subscribing to the agreement should maintain a ratio of 8% capital (consisting of Tier 1 and Tier 2 elements described above) to risk-weighted assets. Risk weights (RW hereafter) which vary from 0–100% are applied to both banking and trading book categories of assets to derive the *Risk Weighted Assets*<sup>10</sup> (RWA hereafter). In order to derive the RWA we multiply the total exposure for banks with the corresponding RW. According to Basel I, banks were obliged to hold eight per cent (8%) of their equity capital (Tier I and Tier II form) as a cushion to the credit and market risk exposures. This is known as the *Capital Adequacy Ratio* (CAR hereafter) and initially had the following algebraic form:

$$CAR = \frac{Equity(Tier\ I + Tier\ II)}{\{Credit\ Risk\} + \{Market\ Risk\}} \geq 8\% \quad (1)$$

where market risk is the banks trading book actual exposure and credit risk is the corresponding banking book actual exposure.

#### 4.2. The Basel II Regulatory Framework

The rapid pace of financial innovation in recent years (e.g. securitization) has focused regulatory attention on potential shortcomings in Basel I. “The fundamental objective of the Committee’s work to revise the 1988 Accord has been to develop a framework that would further strengthen the soundness and stability of the international banking system while maintaining sufficient consistency that capital adequacy regulation will not be a significant source of competitive inequality among internationally active banks” (BCBS, June 2004). More specifically, large banks around the world engage in what is termed as *regulatory capital arbitrage*.<sup>11</sup> Those banks attempt to drive down the effective “regulatory capital” requirement for a set of risk positions, to levels well below the Basel Capital Accord’s nominal 8%. Problems like this have justified the need for better methods of risk

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<sup>10</sup> Basel I provide analytical tables for the percentages attributed to all banking and trading book categories of assets.

<sup>11</sup> For example, banks remove from the banking book financial instruments for which the 8% Basel capital standard is too high, relative to the underlying economic risks, while retaining instruments for which the Basel standard is too low. For an extensive presentation and discussion of “the principal techniques used to undertake capital arbitrage and the difficulties faced by bank supervisors in attempting to deal with these activities” under



quantification.

In response to these problems, a new capital adequacy framework has been initiated and is commonly known as Basel II. The New Basel Capital Accord consists of three pillars. The BCBS publication on “Basel II: International Convergence of Capital Measurement and Capital Standards: a Revised Framework (Comprehensive Version)” in June 2006 sets out “the details for adopting more risk-sensitive minimum capital requirements for banking organizations” (Pillar 1). The revised framework explicitly requires that credit risk quantification models and internal credit risk rating systems<sup>12</sup> become an important element of large commercial banks’ measurement and management of the credit risk of both individual exposures and portfolios.

After many years of consultation with the interested parties, and in the light of a rapidly globalizing financial environment, BCBS (2006) published some new clarifying “directives”, which focused on three main issues. In particular, Basel II initiated:

1. New methods for a more accurate estimation of the banking book (credit risk) exposure that is the *Standardized* and the *Internal Rate Based* (IRB hereafter) methods. These methods take into account both financial collateral and the relevant “haircuts”<sup>13</sup> attached to them.
2. An increased number of banking book and trading book categories of assets (with an analogous increase in financial collateral) for a more accurate calculation of credit risk and market risk exposure.
3. The re-estimation of CAR by taking into account banks’ exposure to Operational Risk as well.<sup>14</sup> The new CAR, which emerged from Basel II, has the following algebraic form:

$$CAR = \frac{\text{Equity (Tier I + Tier II)}}{\{CRWA\} + \{MRWA\} + \{ORWA\}} \geq 8\% \quad (2)$$

where CRWA is the weighted assets for credit risk, MRWA is the weighted assets for market risk and ORWA is the weighted assets for operational risk. There are also two major restrictions:

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Basel I, please see Jones (2000).

<sup>12</sup> Internal credit risk models are used in estimating the economic capital needed to support a bank’s credit activities. For a description of the internal rating systems presently in use at the 50 largest US banking organizations please see Treacy and Carey (2000) and Federal Reserve System Task Force on Internal Credit Risk Models (1998).

<sup>13</sup> “Haircut” is the standard deviation of the price of the different types of financial collateral. Basically, a haircut is a reduction in the value of collateral to allow for possible fluctuations in its market value.

<sup>14</sup> For an analytical presentation of the *Operational Risk* exposure see BCBS (Nov. 2005) and Akkizidis and Bouchereau (2006).

i) *Tier I* (core capital)  $\geq$  *Tier II* (supplementary capital) and

$$\text{ii) } CAR = \frac{\text{Equity (Tier I)}}{\{CRWA\} + \{MRWA\} + \{ORWA\}} \geq 4\% \quad (3)$$

We next present Basel II propositions, focusing on Pillar 1 with regard to real estate lending (RE hereafter), in our attempt to identify its strong and weak points.

### **4.3. Basel II Framework: Bank Exposure to Real Estate Lending**

BCBS initially recognized two simple real estate (hereafter RE) lending categories, that is, the *residential mortgage loan* category with RW=50% and a more general one, the *commercial real estate loan category* with RW=100% (see Basel I, 1998). However, this was a rather poor classification of RE loans and the need for a better and more detailed categorization become obvious very soon. As was previously mentioned, credit risk exposure is estimated in Basel II with two alternative methods – the *Standardized* and the *IRB* method. In the following section we show how banks' exposure to RE lending is calculated/measured, first in the Standardized and secondly in the IRB approach.

#### **4.3.1. The Standardized Approach**

In the Standardized approach, banks are in a position to estimate the actual RE loan exposure by using RW which are exogenously set by the Basel II framework. As shown in Table 1, RW vary from 35% (in the case of mortgages on residential property) to 100% (in the case of non-performing residential mortgage loans which are past due for more than 90 days). In order to derive the RWA we multiply the total exposure for banks with the corresponding RW.

**Table 1: Risk Weights in the Standardized approach for the different Real Estate categories of loans**

Mortgages on Commercial Real Estate	100% <sup>15</sup>
Mortgages on Residential Property	35%
Non-Performing Residential Mortgage Loans (past due for more than 90 days)	100%
Past due Residential Mortgage Loans (with specific provisions for more than 20% of their outstanding amount)	50%

Source: Basel Committee on Banking Supervision (2006)

#### **4.3.2. The Internal Rate Based Approach**

BCBS recognizes the existence of three sub-classes of RE lending (embedded in the *Corporate* and *Retail risk*) when the IRB approach – for use by more sophisticated banks – is implemented. These are:

##### ***a. The Income Producing Real Estate category of loans***

The Income Producing Real Estate (IPRE hereafter) is part of what is defined in Basel II as “Specialized Lending” (*SL* hereafter) and includes loans collateralised by real estate such as office buildings to let, retail space, multi-household residential buildings, industrial or warehouse space and hotels. In this case bank credit exposure is collateralised by the cash flows generated by a property i.e. rental, lease payments or sale of the real asset.

##### ***b. The Highly Volatile Commercial Real Estate category of loans***

The *Highly Volatile Commercial Real Estate (HVCRE)* hereafter) is also part of the “Specialized Lending” category of loans. This includes “loans financing any of the land acquisition, development and construction phases for properties” (BCBS, 2006, p. 54). In this

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<sup>15</sup> However, BCBS recognises that, in “exceptional circumstances for well established markets, mortgages on office and/or multi-purpose commercial premises and/or multi-tenanted commercial premises may have the potential to receive a preferential RW of 50% for the tranche of the loan that does not exceed the lower of 50% of the market value or 60% of the mortgage lending value of the property securing the loan. Any exposure beyond these limits will receive a 100% RW. This exceptional treatment will be subject to very strict conditions. In particular, two tests must be fulfilled, namely that (i) losses stemming from commercial RE lending up to the lower of 50% of the market value or 60% of loan-to value (LTV) based on mortgage-lending-value (MLV) must not exceed 0.3% of the outstanding loans in any given year; and that (ii) overall losses stemming from commercial RE lending must not exceed 0.5% of the outstanding loans in any given year. This is, if either of these tests is not satisfied in a given year, the eligibility to use this treatment will cease and the original eligibility criteria would need to be satisfied again before it could be applied in the future. Countries applying such a treatment must publicly disclose that these and other additional conditions (that are available from the Basel Committee Secretariat) are met. When claims benefiting from such an exceptional treatment have fallen past due, they will be RW at 100%” (footnote 29, p.24, BCBS 2006).

case, the “source of repayment at origination of the exposure is either the future uncertain sale of the property or cash flows whose source of repayment is substantially uncertain e.g. the property has not yet been leased to the occupancy rate prevailing in that geographic market for that type of commercial real estate” (BCBS, 2006, p. 54).

When a bank decides to use the IRB approach for the two sub-categories of *SL* (*IPRE* and *HVCRE*) and – for any reason – is not able to “produce” internal estimations for the PD, LGD and EAD, the calculation of the regulatory capital is undertaken by using the corresponding RW which are exogenously set by the Basel II framework. More specifically, RW for the *IPRE* (varying from 70% to 250% according to the counterparty credit condition assessed by an external credit rating agency) and *HVCRE* (varying from 95% to 250% according to the counterparty credit condition assessed by an external credit rating agency) sub-categories of *SL* are given in Tables 2 and 3, respectively.

**Table 2: Risk weights for unexpected losses (UL) for IPRE**

Category	<i>Strong</i>	<i>Good</i>	<i>Satisfactory</i>	<i>Weak</i>	<i>Default</i>
	BBB- or better	BB+ to BB	BB- to B+	B to C-	
RW (%)	70%	90%	115%	250%	0%

Source: Basel Committee on Banking Supervision (2006)

**Table 3: Risk weights for unexpected losses (UL) for HVCRE**

Category	<i>Strong</i>	<i>Good</i>	<i>Satisfactory</i>	<i>Weak</i>	<i>Default</i> <sup>16</sup>
RW (%)	95%	120%	140%	250%	0%

Source: Basel Committee on Banking Supervision (2006)

For a better understanding of the way the *SL* approach operates, we give below an example of how the regulatory capital requirements can be calculated. Let’s assume that a bank’s counterparty is classified – by an external credit rating agency – as Good in an *IPRE* case, and the bank’s real estate loan exposure is €30.000 (EAD). By multiplying the relevant RW (from Table 3 we get that RW is equal to 90%) by the bank’s exposure and by the capital adequacy ratio one can get the capital requirement which is € 2160 (=90% X 30.000 X 0.08).

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<sup>16</sup> When a bank counterparty defaults, the EAD should be equal to the regulatory capital. The bank is obliged to cover the lost amount of money from its equity. This happens only when the RW is 1,250%. Thus, the proper RW in a case of default should actually be 1,250% and not 0% as presented in Tables 2 and 3.

**c. Residential Mortgage Loans**

There is no provision of RW exogenously set by the Basel II framework as far as residential mortgage loans concerns. This happens because in the *Retail risk* category, where the *Residential Mortgages* are included, banks must provide their own estimations<sup>17</sup> of PD, LGD and EAD. The capital requirement for this RE lending case is calculated by using the system of equations provided in the next section.

**4.3.2.1. The Advanced Internal Rate Based approach**

If banks are in a position to calculate their own PD, LGD and EAD, they will be able to implement the Advanced Internal Rate Based approach.

**a. The Income Producing Real Estate category of loans**

Basel II provides a system of equations to calculate the regulatory capital for the IPRE SL case. This system of equations is the same as in the general Corporate risk category. More analytically, the following system is implemented :

$$\text{Correlation (R)} = 0.12 * \frac{1 - e^{-50*PD}}{1 - e^{-50}} + 0.24 * \left( 1 - \frac{1 - e^{-50*PD}}{1 - e^{-50}} \right) \quad (4)$$

$$\text{Maturity adjustment}^{18}(b) = (P_a - P_b * Ln(PD))^2 \quad (5)$$

$$\begin{aligned} \text{Capital Requirement (K\%)} = \\ = \left( LGD * N \left( \frac{G(PD)}{(1 - R)^{0.5}} + \left( \frac{R}{(1 - R)} \right)^{0.5} * G(0.999) \right) - PD * LGD \right) * \frac{1 + (M - 2.5) * b}{1 - 1.5 * b} \quad (6) \end{aligned}$$

where N stands for the cumulative normal distribution and G for the inverse normal distribution.

$$\text{Risk Weighted Assets} = K * 12.5 * EAD \quad (7)$$

$$\text{Regulatory Capital} = CAR * RWA = 8\% * RWA \quad (8)$$

where : PD: stands for Probability of loan Default<sup>19</sup>,

LGD: stands for Loss Given Default and

EAD: stands for Exposure At Default.

<sup>17</sup> For the retail exposures, banks do not have the choice between the Foundation IRB and the Advanced IRB. They are required to follow the Advanced IRB in order to provide their own estimations of PD, LGD and EAD.

<sup>18</sup> The  $P_a$  and  $P_b$  are the risk weighed function parameters and their arithmetic values have been estimated by Petersen and Petersen (2005) and BCBS (2006). Their value is 0.11852 and -0.05478, respectively.

<sup>19</sup> It is also important to note that Basel II sets the restriction that a bank's internal PD calculation cannot take a value smaller than 3%, in a year's time period of calculation.

**b. The Highly Volatile Commercial Real Estate category of loans**

In the *HVCRE* case, which is also part of the *SL* exposure category, if the banks are in a position to calculate their own PD, LGD and EAD and they have decided to implement the *Advanced* IRB approach then, at national discretion, they ought to use the same formula with the other *Corporate* exposures with the exception to implement the following Correlation (R) formula :

$$\text{Correlation (R)} = 0.12 * \frac{1 - e^{-50*PD}}{1 - e^{-50}} + 0.30 * \left( 1 - \frac{1 - e^{-50*PD}}{1 - e^{-50}} \right) \quad (9)$$

If, on the other hand, they are not in a position to estimate their own *LGD and EAD* then they have to use the supervisory parameters for *LGD and EAD* for corporate exposures.

**c. Residential Mortgage Loans**

In the *Residential Mortgage* lending case (which as mentioned in the text is incorporated in the *Retail* risk category and is not part of the *SL*) the above system of equations is transformed to the following form:

$$\text{Correlation (R)} = 0.15 \quad (10)$$

Capital Requirement (K%) =

$$\left( LGD * N \left( \frac{G(PD)}{(1-R)^{0.5}} + \left( \frac{R}{(1-R)} \right)^{0.5} * G(0.999) \right) - PD * LGD \right) \quad (11)$$

$$\text{and Risk Weighted Assets} = K * 12.5 * EAD \quad (12)$$

**4.4. Basel II Framework and Real Estate Lending: A Critique**

It seems that property is only a small part of the Basel II proposals. The sections dealing with real estate lending are some of the least well-defined and we believe that there is a need for further exploration. A number of issues are not present at all in Basel II and particular attention should be paid to them.

First of all, there is no reference in the Basel II proposals to what methods can be used in order to value real estate as an asset class. It is necessary to have an (internationally) acceptable definition of what constitutes market value and to acknowledge international valuation standards for real estate. There are basically five principal methods of valuation

which should alternatively be adopted when the market value of real estate needs to be calculated. These are: a) the Direct Capital Comparison, b) the Investment Approach, c) the Residual Approach, d) the Profits Approach and e) the Cost Replacement Approach. When banks loan money to real estate companies they should be able to figure out the value of the real estate collateral by using one of the above-mentioned methods.

Moreover, Basel II does not take into account real estate firm-specific issues regarding their assets and investment property type. The different types of property investment, i.e. retail, office, residential and industrial, have different risk-return characteristics. For example, we expect that real estate companies investing in the office market (purchase of existing assets) or developing office space (creation of new fixed assets) face lower risks (thus, lower probability of default) than companies investing in industrial factories and warehouses. As a result, offices' yields tend to be less than those of industrial and residential properties. This is the case because prime offices can often be let to a single tenant providing an excellent covenant. Also, industrial premises tend to be less popular as investments because of the high risks involved. For example, "many factories are built for a special purpose and if they have to be relet difficulty may be experienced in finding a similar tenant, or, alternatively, expense is incurred in adaptation" (Harvey & Jowsey, 2004).

Consequently, we expect that loans to real estate companies investing in the office market (purchase of existing assets) or developing office space (create new fixed assets) have lower probability of default, lower than loans to companies investing in industrial factories and warehouses. In this respect, different types of property companies should be treated differently by the Basel II framework and have different risk weights regarding the way that banks should calculate their capital requirements for property lending. This is not clear in Basel II which only makes a distinction between HVCRE and IPRE categories of loans. We argue that clarification and a more concrete definition of the different types of property investment (retail, office, residential and industrial) are necessary. Such information will not only assist banks in the construction of diversified loan portfolios but also make them identify the potential merits of investment grade property as optimal collateral.

Lastly, we believe that the mutual quest for improved standards requires the establishment of a regular dialogue with the valuation profession. The Royal Institute of Chartered Surveyors (RICS), which represents 110,000 Chartered Surveyors worldwide, the Counselors of Real Estate (CRE) in the US, and other similar institutions around the world, need to be approached and asked for advice – if this has not already been done – regarding

those areas of Basel II that are perceived as relevant to the property profession and property market.

## **5. Conclusions**

BCBS acknowledges the fact that conventional credit concentration in industries such as commercial real estate is a common source of major credit problems for banks around the world. History tells us that real estate lending is a significant part of every bank's banking book portfolio. Any crisis in the real estate sector, produced by the sharp and unexpected fall of real estate collateral prices, is immediately transmitted to the bank's effective exposure. This is then transferred to the bank's equity capital causing a banking crisis. Historical data in the UK (the 1973-1975 Secondary Banking crisis and the 1990 economic recession) and elsewhere (USA, Switzerland, Sweden, East Asia and Japanese real estate bubble in the early 1990s) show that there is a very close relationship between the over-borrowing of the real estate companies, the real estate bubbles and the banking crises.

Should, and can, anything be done in order to prevent a repetition of the property market collapses and banking crises of the 1970s and the early 1990s in the UK and elsewhere? Prudence needs to be reinforced by some form of regulation of the financial system. The main objective of the BCBS is to secure the stability and soundness of the international financial system through regulation of financial institutions and, in particular, of commercial banks. Having said that, "the Basel Committee on Banking Supervision does not possess any formal supranational supervisory authority, and its conclusions do not, and were never intended to, have legal force" (BCBS, 2000). Nevertheless, it is expected that once implementation progresses, the Basel II framework will: 1) Make banks more risk sensitive; 2) Allow banks to better cope with future banking crisis; 3) Provide cross-border consistency in capital standards; and 4) Allow banks around the world to undertake in unison what they are reluctant to do individually. Basel II will become effective for EU member states in January 2008 and is on target to become effective in the USA in January 2009.

As far as real estate lending is concerned, we believe that the relevant sections in Basel II proposals need to be further explored. A number of issues are not present in Basel II and particular attention should be paid to: 1) The adoption of the international definition of market value; 2) A better clarification of what constitutes HVCRE and a more concrete definition of IPRE; 3) Considering the potential merits of investment grade property as the optimal collateral; 4) Acknowledgement of international valuation standards; and lastly, 5)



The establishment of a regular dialogue with the valuation profession.

This paper represents our effort to build on the existing literature on bank regulation and banking crises and our contribution will hopefully be useful for the financial system regulator, real estate professionals, shareholders and investors. It remains an open issue, and a question for future research, how the banking supervisors' views outlined in Basel II can potentially affect borrowing by the real estate sector and consequently reduce the probability of having new bubbles in this market. Whether or not Basel II will lead to a reduction in real estate lending remains to be seen.

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