BASEL II: CHALLENGES AND RISKS

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ABSTRACT

This paper presents a comprehensive overview of the New Basel Capital Accord (Basel II). The study raises a number of issues and research questions concerning the Basel II capital adequacy framework as well as the regulatory capital treatment of asset securitization and their potential impact on current competitive positions of banks and the securitization markets. The article also briefly discusses the challenges and risks of implementation of Basel II in the U.S. and Asia-Pacific countries.

INTRODUCTION

The Basel Committee on Banking Regulation and Supervisory Practices devoted significant resources and considerable attention to the development of the capital adequacy framework for internationally active banks, known as the 1988 Basel Accord (Basel I). The primary purpose of the 1988 Capital Accord was to make regulatory capital requirements more responsive to the credit risk associated with a bank's portfolio of assets and off-balance sheet activities. However, critics have argued that the simplified approach to credit risks under Basel I has encouraged many depository institutions to shroud credit risk embedded in their assets as well as in off-balance sheet activities. In response to the deficiencies of Basel I, the Basel Committee created a new capital adequacy framework including a new "securitization framework" to determine the risk-based capital requirements for banks against credit risk, operational risk, and market risk arising from their on-balance assets, off- balance sheet and securitization activities. The new capital adequacy framework, which is often referred to as Basel II [1], was developed to better align regulatory capital to the underlying risks. The primary goal of Basel II is to improve safety and soundness in the global financial system by placing increased emphasis on bank's risk measurement, internal control, risk management processes and models, the supervisory review process, and market discipline.

The implementation of Basel II has begun in EU countries and is due to take effect in the U.S. by the year end 2007. The primary purpose of this paper is to discuss the reasons for Basel II and the likely effects of Basel II on banking industry and securitization markets in the United States. The rest of the paper proceeds as follows. In Section 2, I outline some weaknesses associated with Basel I and provide the rationale for the development of Basel II. In this section, I present an overview of Basel II. Section 3 discusses the criticisms on Internal Ratings Based (IRB) approach prescribed by Basel II and their impact on competitive positions of banks in the U.S. In this section,

I also provide rationale for supervisory concern for inherent risks associated with securitization activities and the reasons for new regulatory capital treatments for asset securitization. In Section 4, I discuss the potential challenges of the implementation of Basel II including some issues associated with the cross-border implementation in the U.S. In this section, I address the key challenges and risks faced by bank managers and supervisors in the emerging Asia-Pacific countries. Section 5 discusses the capital adequacy beyond Basel II and its potential impact on financial services industry. Section 6 concludes with some final thoughts.

BASEL I CAPITAL REGIME AND REASONS FOR BASEL II

The basic principles of the Basel Capital Accord of 1988 known as Base I [2] are based on minimum capital requirements that a bank must hold against its assets, which allows the bank to sustain losses before depositors are hit[3]. This framework relies on the concept that different asset categories represent differing degrees of risk, and that capital must be calculated appropriately to guard against such risks. The minimum capital requirements comprise three fundamental specifications:

1. What constitutes regulatory capital,
2. Weights that must be applied to the different assets,
3. A minimum capital requirement of 8 percent of total risk-weighted assets.

Basel I requires loans and investments to be grouped into four distinct *buckets* with risk weightings of 0, 20, 50 and 100 percent. Banks were then allowed for the first time to allocate and maintain capital in a manner somewhat consistent with the risk profile of their on- and off- balance sheet activities. Though the risk buckets were limited and did not fully reflect the range of risk sensitivities in the 100 percent bucket, their implementation represented a significant improvement over prevailing practices at the time.

Basel I – on which the world's regulatory capital regime has been based for more than fourteen years - was intended to level the playing field for banks that operated across national boundaries. However, there are several reasons why the Basel I capital adequacy framework is considered obsolete. First, capital requirements under Basel I framework are based on crude measures of risk-weighted assets that do not reflect the increasing complexity of banks' true risk profile. Second, this inadequacy is particularly relevant for large banks, which use non-traditional instruments, such as asset-backed securities (ABS) to securitize loans of all types and to meet their liquidity and investment needs. Third, the existing Basel I capital adequacy rule is less relevant for large international banks today because they generally use enhanced technology resources and risk-management tools to measure and manage all types of risks. Fourth, the 1988 Basel Accord does not recognize the risks left on balance sheet when the assets are securitized and taken off the balance

sheet because it focused on rules for compliance rather than assessments of soundness of banks' risk management mechanisms and internal controls. Finally, Basel I capital adequacy framework does not fully capture the extent of the risk reduction that can be achieved by the use of modern credit risk mitigation techniques.

In order to institute an effective capital framework, the Basel Committee on Banking Supervision introduced a new capital adequacy framework known as Basel II [4] to replace Basel I.

Basel II

Basel II aims at improving the capital adequacy framework that emphasizes on banks' internal controls, risk sensitivity, and risk management[5]. Three elements comprise the essential P*illars* of the "Basel II Framework". The first Pillar is minimum *regulatory capital* requirements. The second is the *supervisory review* element which focuses on the need for banks to assess their internal economic capital adequacy positions appropriate to their own risk profiles[6]. The supervisory review process emphasizes the quality of risk management and internal controls which are not fully addressed in *Pillar I*[7]. *Pillar* 3 is the *market discipline* which places emphasis on enhanced public disclosures of capital adequacy and bank risk.

Pillar I focuses on new approaches for calculating risk-weighted assets which align capital charges more closely with the underlying risk. It provides a specific treatment for securitization, risk measurement and management techniques which are not fully addressed in the 1988 Capital Accord (see Appendix-A).

PILLAR 1: MINIMUM CAPITAL REQUIREMENTS

The following section reviews the modifications in the risk-weighting and definition of the capital ratio.

The Modifications in Risk-weighting and Capital Ratio

The risk sensitivity of minimum capital requirements is increased substantially under the Basel II framework. It introduces three distinct approaches for assessing credit risk as well as operational risk. These approaches vary from the crude to the sophisticated in determining minimum capital requirements. The more sophisticated approaches rely more on supervisory judgment than the standardized approach. The provision of this choice emerged from the non-optimal nature of a "one-size-fits-all" approach to the measurement of either credit risk or operational risk in terms of feasibility and desirability. These approaches allow banks and supervisors to select the slant that they believe is most appropriate to the state of evolution of banks' credit risk and operational risk management methods and practices, and the stage of development

of financial markets. Basel II recommends three primary approaches (**Standardized Approach**, **Internal Ratings Based Foundation Approach**, and **Internal Ratings Based Advanced Approach**) for calculating regulatory capital against credit risk.

Under Basel II, the definition of regulatory capital remains the same as those specified in Basel I. However, the new definition of risk-weighted assets has been modified in two primary ways. First, the treatment of credit risk has been substantially changed. Second, the explicit treatment of operational risk will be included in the denominator of a bank's capital ratio as shown below:

$$0.08 = \frac{K_c + K_o + K_m}{12.5(K_o + K_m) + A_{rw}} \tag{2.1}$$

Where, K_c = capital requirements for credit risk
K_o = capital requirements for operational risk
K_m = capital requirements for market risk
A_{rw} = total risk-weighted assets

When a bank is required to deduct a securitization exposure from regulatory capital, the deduction will be taken 50% from Tier 1 and 50% from Tier 2, and 100% from Tier 1 if it has already been accounted for in regulatory capital.

Standardized approach to credit risk

This approach, detailed in **Appendix- A,** is structurally similar to the old Accord in that banks are required to slot their credit exposures into supervisory categories based on observable characteristics of the exposures (e.g. whether the exposure is a corporate loan or a residential mortgage loan). It establishes fixed risk weights corresponding to each supervisory category. The number of asset classes and risk buckets has been increased to make the new approach more risk sensitive than the old one. In theory, the risk-weighted assets can be represented as:

$$A_{rw} = \sum_{i=1}^{n} A_i \cdot R_i \tag{2.2}$$

where $R = R(r_c, r_m, r_i, r_o, r_r, n, \varepsilon)$ is the risk weight for a given asset A_i. (2.3)

The subscripts are: c = credit, m = market, i = interest rate, o = operational, r = reputational, *l* = legal, and ϵ represents the residual risk.
For Basel I:, $0 \leq r_c \leq 1.0$, $N = 4$, and r_i, r_o, r_r, and r_l are subsumed in ϵ
For Basel II: $0.2 \leq r_c \leq 3.5$ for the standardized approach, and $0.2 \leq r_c \leq 6.5$ for the Internally Ratings Based (IRB) approaches. In both the Basel II cases, $N = 5$, and only r_i, r_r and r_l are subsumed in ϵ.

IRB Approach to Credit Risk

There are three key elements for each asset class covered under the IRB framework:

1. *Risk components - estimates of risk factors provided by banks some of which will be supervisory estimates. The risk components include measures of the probability of default (PD), loss given default (LGD), the exposure at default (EAD), and effective maturity (M).*
2. *Risk weight functions - the means by which risk components are transformed into risk weighted assets and therefore capital requirements.*
3. *Minimum requirements - the minimum standards that must be met in order for a bank to use the IRB approach for a given asset class.*

In some cases, banks that qualify for the IRB approach may be approved for using the *Ratings Based Approach* (*RBA*) that relies on their own internal estimates of risk components in determining the capital requirement for a given exposure. In other cases, banks may be required to use a *supervisory value* (*SV*) for one or more of the risk components. The degree of reliance on SV determines whether the banks are using the *foundation* or the *advanced* IRB approach, or a hybrid. Under the foundation approach, banks provide their own estimates of PD and rely on supervisory estimates for other risk components. Under the advanced approach, banks provide more of their own estimates of PD, LGD, EAD and M, and rely less on SV.

Operational Risk

Operational risk refers to losses resulting from inadequate or failed internal processes, people, and systems or from external events. Basel II created an additional add-on to capital for operational risk. Basel Committee recommends three specific methods to compute capital to protect against operational risk: the **Basic Indicator Approach**, the **Standardized Approach**, and the **Advanced Measurement Approach** (see **Appendix C** for details)

PILLAR 2: SUPERVISORY REVIEW

Pillar 2 focuses on empowering supervisors for early and discretionary (in terms of excess capital) intervention. This pillar provides a central role to national supervisors. The underlying rationale for such a role dwells on the scale economies that a central monitoring agency enjoys, and the fact that financial stability is a public good[8]. Acquiring information, the skills to process it, and then processing it is costly for retail depositors. In addition, there is no one private agency that has the incentive to internalize the negative externalities resulting from bank failure. These externalities induce moral hazard particularly in banks that are perceived as *too big to fail*, which further reinforces the need for supervisory discipline.

In cases where banking activities are undertaken in a mixed activity or mainly non-banking financial group, supervisors should seek to ensure that the Basel requirements are not being circumvented, for instance, through the leveraging of capital issued at levels above the bank (or bank holding company). Thus, the second pillar is based on the following four principles[9]:

1. Banks should have a process for assessing their capital adequacy in relation to their risk profile, and observe a strategy for maintaining their capital levels.
2. Supervisors should review and evaluate banks' internal capital adequacy assessments and strategies, as well as their ability to monitor and ensure compliance with regulatory capital ratios. Supervisors should take appropriate supervisory action if they are not satisfied with the result of this process.
3. Supervisors should expect banks to operate above the minimum regulatory capital ratios and should have the ability to require banks to hold capital in excess of the minimum.
4. Supervisors should seek to intervene at an early stage to prevent capital from falling below the minimum levels required to support the risk characteristics of a particular bank and should require rapid remedial action if capital is not maintained or restored. In the United States, risk-based capital ratios along with the traditional leverage ratio will define well capitalized, adequately capitalized, undercapitalized, significantly undercapitalized, and critically undercapitalized banks as part of the prompt corrective action (PCA) program under the FDICIA legislation. For securitization exposures, in particular, Basel II addresses concerns of risk transfer, the use of call provisions, and early amortization features. In addition, possible supervisory responses are outlined to address instances when it is determined that a bank has provided implicit recourse.

PILLAR 3: MARKET DISCIPLINE

Pillar 3 aims at encouraging market discipline through enhanced disclosure by banks. Basel Committee sets out disclosure requirements and recommendations in several areas including the way bank computes its capital adequacy and assesses its risk exposures. Basel II disclosure framework is aligned with national accounting standards that don't conflict with broader accounting information disclosure standards with which banks must comply.

Criticisms on IRB Approach to Credit Risk

Qualifying banks using IRB approach can use various techniques including subjective measures of risk, rigorous capital allocation methodologies, and internal models. Ideally, the chosen internal capital targets should be well founded, and should have a robust stress-testing process in place to support their assumptions. In practice, the banks' decisions on the actual level and structure of capital will continue to reflect largely judgmental considerations including implicit or explicit regulatory expectations, peer group analysis, market expectations and other qualitative factors.

Regulators need to be aware of the advantages and limitations of IRB approach under the Basel II framework. On the plus side, internal ratings may incorporate supplementary customer information such as detailed monitoring of the customers' accounts, or greater knowledge of any guarantees, or collateral, which is usually out of the reach of an external credit assessment institution. The IRB approach may also cover a much broader range of borrowers, providing assessments of the credit quality of individuals and small-to-medium sized companies through credit scoring, and assessment of larger non-rated borrowers through detailed analysis.

On the negative side, the lack of homogeneity among the rating systems at different banks, together with the central role of subjective risk factors and business judgments in assigning internal grades, means that comparability across institutions and countries could be compromised. Moreover, given the multiple roles of internal ratings in overall risk management, such ratings may not be specifically suited for minimum capital requirements. The major challenge with this approach is how supervisors should assess the overall adequacy of bank rating systems. In addition, there are other risks associated with the use of the Advanced IRB (A-IRB) approach. First, it depends too much on past data to predict future losses. Second, the A- IRB approach permits each bank to have different capital charges for the same type of loan based on the assumptions made about the probability of default (PD) and the loss given default (LGD). Third, it is possible that some banks using the A- IRB approach will be motivated to "understate the risks to minimize the initial risk capital required in order to price a loan below their competitors" (e.g., Gup, 2004). Fourth, to the extent that capital is taken into loan pricing, the adoption of A-IRB approach creates an uneven playing field for the banks that employ the Standardized Approach (Gup, 2004)[10].

Empirical analysis conducted by Guill, Smithon and Song (2003) suggests that the minimum regulatory capital requirement calculated using the Standardized Approach is larger than the capital requirements calculated using either of the IRB approaches. However, the minimum regulatory capital using the A-IRB Approach is likely to be higher than that using the Foundation IRB Approach. Saurina and Trucharte (2004) find large banking organizations that adopt the Advanced Internal Ratings-Based (A-IRB) Approach would use reduced risk weights for loans made to small and medium enterprises (SME). Hence, the implementation of the Basel II capital requirements will affect the competitive positions of banks in the SME credit market (Berger, 2004).

Therefore, models used under the IRB framework must be conceptually sound, empirically validated, and must produce capital requirements that are comparable across institutions. Regulators must pay attention to the robustness of the model, the quality of the data, stress-testing, the extent to which it responds to changes in exogenous variables, and the areas of operational risk not covered by the model. The Basel Committee notes that, currently very few, if any, banks have a model that meets these criteria, and therefore, such models could only be used at a later stage. The Committee also points out that the paucity of data and the difficulty in validating models make it impossible to set explicit regulatory capital requirements based on them[11]. Thus, depending on the quality of the model, supervisors could still apply a multiplier or other adjustment factor to the model output. Thus, a dynamic bank that is at the cutting edge of providing new products will by definition, develop new sources of risk that are not well captured in the central internal risk management system. (See Appendix D)

Basel II and Securitization Markets

Securitization transforms illiquid assets into instruments that are actively traded in secondary capital markets. It has become one of many secondary market credit activities that have come to include loan syndication, loan sales and participations, and credit derivatives, as well as the provision to these transactions of credit enhancements, and liquidity facilities. Non-mortgage securitizations sponsored by the ten largest bank holding corporations in the U.S. have been estimated to represent more than 25% of their total risk-weighted loans, and more than 50% in some cases[12]. This evolution has served to broaden and deepen bond markets. Securitization has also enhanced bank profitability as well as credit availability, particularly to small and medium enterprises (SMEs) that otherwise had only limited funding opportunities[13].

On one hand, asset securitization has helped financial institutions manage their risk, return, and liquidity characteristics of financial portfolios, on the other hand, critics argue that the simplified approach to credit risks in the 1988 Basel Accord (Basel I) has encouraged many depository institutions to shroud credit risk embedded in their books by allowing for regulatory capital arbitrage. In response to such criticisms, Basel II created a new framework to determine the risk-based capital requirements in connection with securitization activities of banks.

Basel Committee developed a comprehensive framework for securitization that is risk sensitive. It provides banks with incentives to move from the Standardized Approach to the IRB Approach. The Committee also states: *"In recognition of asset securitization as an important source of funding mechanism for credit risk transference, the IRB approach should be neutral with regard to the capital requirements it produces in order not to create incentives or disincentives for banks to engage in securitizations."* The securitization framework requires highly subordinated positions to be wholly deducted from capital. Under the Basel II framework, a qualifying banking institution that uses internal ratings Based (IRB) approach and that securitizes assets must deduct from its capital any first loss position associated with securitization activities. This deduction must not be less than an amount of capital (referred to as "KIRB") that would have been required to maintain in connection with assets not being securitized. Similarly, banks that invest in securitizations established by third-party organizations must deduct those that are unrated or of low credit quality. For IRB banks that invest in highly rated securitization exposures, a treatment based on the presence of an external rating, the granularity of the underlying pool, and the thickness of an exposure has been developed. In the IRB framework, the capital requirement for unrated positions, such as liquidity facilities and credit enhancements extended to asset-backed commercial paper (ABCP) conduits, is dependent upon a number of factors. They include (1) the asset quality of the underlying pool, (2) the degree of credit enhancements supporting a given position, (3) the thickness of credit exposure, and (4) the effective number of risk exposures in the pool. Bank providers of liquidity facilities are required to calculate KIRB for exposures in the underlying pool on an ongoing basis. Otherwise, the exposure in question must be deducted.

In the U.S., banking institutions have long been involved in asset-backed securities (ABS), both as investors and as major participants in the securitization process. In recent years, banks have both increased their participation in the long established residential mortgage-backed securities market and expanded their activities in securitizing other types of assets, such as credit card receivables, automobile loans, boat loans, commercial real estate loans, student loans, nonperforming loans, and lease receivables[14]. Under Basel I capital regime, regulatory capital is explicitly required only against the amount of the direct-credit substitute, which can be significantly different from the amount of capital that the institution should maintain against the concentrated credit risk in the guarantee. For example, partial, first-loss direct-credit substitutes that provide credit protection to a securitization transaction can, in substance, involve the same credit risk as the risk involved in holding the entire asset pool on the institution's balance sheet.

Under Basel II, supervisors and examiners are required to ensure that banks have implemented reasonable methods for allocating capital against the economic substance of credit exposures arising from early-amortization events and liquidity facilities associated with securitized transactions. If, in the supervisor's judgment, an institution's capital level is not sufficient to provide protection against potential losses from such credit exposures, this deficiency is to be reflected in the banking organization's CAMELS or BOPEC ratings. Furthermore, supervisors and examiners

are required to discuss the capital deficiency with the institution's management and, if necessary, its board of directors. The institution is then expected to develop and implement a plan for strengthening the organization's overall capital adequacy to levels deemed appropriate given all the risks to which it is exposed[15].

Basel II is likely to have significant impact on future securitization activities of banks under the new securitization framework, which creates a strong pressure on banks to minimize their exposure to credit risk. For example, Table 1 shows that the Basle II securitization framework allows banks to hold lower capital by investing in rated securitized assets rather than directly holding a comparable pool of unrated securitized assets (e.g., Jobst, 2005). As shown in Table 1, Basel II does require banks to hold significant amount of regulatory capital against their credit risk associated with unrated securities or sub-investment grade tranches.

Table 1: External Ratings and Risk Weights of Securitized Assets

(Long-term rating category)					
External Credit Assessment	AAA to AA-	A+ to A-	BBB+ to BBB-	BB+ to BB-	B+ and below or unrated
Risk Weight	20%	50%	100%	350%	Deduction
(Short-term rating category)					
External Credit Assessment		A-1 /P-1	A-2 / P-2	A-3 / P-3	All other ratings or unrated
Risk Weight		20%	50%	100%	Deduction

Source: BCBS (June 2006)

Guill, Smithon and Song (2003) documents that new rules for securitization only partially achieve the objective of neutrality of adopting IRB approach with respect to the calculation of the capital requirements. For example, the cap on the capital requirements for originating banks results in the same minimum regulatory capital before and after the securitization. However, in the case of investing banks, the IRB approach or *Supervisory Formula (SF)* results in larger minimum regulatory capital after the securitization especially for the non-investment grade portfolio. Thus, Basel II could potentially influence how banks structure their securitization deals. Furthermore, given the potential growth in the securitization markets and financial institutions' appetite for credit derivatives, the application of the Basel II securitization framework and its impact on securitization markets will depend largely on banks' risk management practices and the types of securitization transactions (e.g., the type of assets, the inherent default risk, recovery rates of the underlying assets, the tranching of the resulting securitization structure etc.), and how banks identify and respond to new regulatory capital incentives provided by Basel II.

IMPLEMENTATION OF BASEL II IN U.S.

The U.S. agencies incorporated many of the tenets of Basel II into its bank legislation, although some difference of opinion remains, particularly for the small and community banks. In the United States, the Federal Reserve requires that only ten of the largest and most complex banking institutions, and another ten or so that "opt in", will be subject to the new Capital Standards. Supervisors in the U.S. have for some time contemplated that only the most risk-sensitive approaches such as the Advanced Internal Ratings Based (A-IRB) option for credit risk and the Advanced Measurement approach (AMA) for operational risk will be applied to only the largest and most complex, internationally active banking organizations. Banking agencies in the U.S. (FRB, OCC, OTC, and FDIC) reached an agreement on July 20, 2007 that depository institutions with consolidated banking assets of $250 billion or more and/or foreign exposures of $10 billion or more (core banks) are required to adopt the advanced approaches of Basel II by the end of 2007. Other depository institutions (non-core banks) that meet the infrastructure requirements for risk measurement and management could choose to apply the Basel II framework or continue to use Basel I.

Bank regulators in the U.S. will require the largest and most complex banks, but not large banks, to use the costly and more risk-sensitive, sophisticated and complex Advanced IRB approach and Advanced Measurement Approach (AMA) to determine regulatory capital under Basel II. However, the implementation of the Basel II framework in the U.S. raises a number of questions. Will the adoption of Basel II have significant impact on lending to small- and medium sized firms due to increased capital requirements for credit exposures in the U.S.(e.g., Berger, 2004) or in EU (e.g., Saurina and Trucharte, 2004)? To the extent level of bank capital is taken into loan pricing, does Basel II create an uneven playing field for the large banks in the U.S.? (e.g., Repullo, R. and J Suarez, 2004) Will there be "competitive inequality" in bank capital in creating a new framework for how banks measure and allocate capital against credit risk (e.g., Calem and LaCour-Little, 2004; Gup, 2004)? For example, critics have argued that the difference in capital treatment would place those banks that do not adopt Basel II at a competitive disadvantage in the residential mortgage credit market (e.g., Macomber, 2004; and Calem and Follain, 2005)[16]. Critics suggest that the adoption of an IRB and advanced IRB approaches proposed by Basel II framework may lead to lower capital requirements compared to the minimum capital requirements under current regime. This would cause adopting banks to increase their acquisition activity (e.g., Hannan and Pilloff, 2004).

Supervisory Co-operation and Cross-border Implementation of Basel II

Effective supervision of large banking organizations necessarily entails a closer and a more co-operative partnership between industry participants and supervisors. Under the New Accord,

cross-border issues are likely to receive even greater attention than they do today. Basel II requires continuation of existing cross-border responsibilities of supervisors, as set out in the Basel Concordat and Minimum Standards documents. Enhanced cooperation between supervisors will be necessary, especially for the cross-border supervision of complex international banking groups. In particular, redundant and uncoordinated approval and validation work should be avoided in order to reduce the implementation burden for banks, and to conserve supervisory resources. Consequently, in implementing Basel II, supervisors should communicate as clearly as possible to affected banking groups about the respective roles of home- and host-country supervisors so that practical arrangements are understood. Cross-border implementation of Basel II will not change the legal responsibilities of supervisors for the regulation of their domestic banking organizations and the arrangements of consolidated supervision. Since home country supervisors may not have the ability alone to gather the information necessary for effective implementation of the revised Accord, information exchange among supervisors would be essential. Thus, the principle of "mutual recognition" for internationally active banks would be the key for international supervisory co-operation and effective promulgation of the Basel II framework. This principle implies the need for recognizing common capital adequacy approaches when considering the branching of internationally-active banks into host jurisdictions.

Challenges of Basel II for Asia-Pacific Countries

From a banking regulation perspective, both in a regional and global context, the implementation of Basel II poses a formidable challenge for Asia Pacific countries (e.g., see Barth, Caprio, and Levine, 2004). The Asia Pacific region comprises a range of vastly different financial markets with a varying degree of financial development. The countries in Asia Pacific region can be broadly categorized into two groups. The first group comprises countries with well developed financial markets such as Japan, Australia, Singapore, Hong Kong and Taiwan[17] and the second group consists of nations with emerging financial markets such as India, China, Malaysia, Thailand and Sri Lanka. While the countries with developed financial markets in general are planning to incorporate the Basel II framework into their national regulations by the end of 2007, the emerging APEC nations have announced that they need additional time to adopt the new capital guidelines, and thus, are deferring the implementation of Basel II[18]. Some critics suggest that the Basel II framework is not suitable for developing countries, particularly in Asia (e.g., Aldis and Hla, 2002; and Saidenberg and Schuermann, 2003) for following reasons. First, these countries are typified by concentrated ownership structures, with a small number of powerful networks controlling banks, non-banks, and the government (e.g., Karacadag and Taylo, 2000a and 2000b; Griffith-Jones and Spratt, 2001; Powell, 2002; and Ward, 2002; and Large, 2003). Second, do banks have an incentive to disclose accurate information concerning risk and capital adequacy to the markets? Using a game-theoretic model, Estrella (2004) finds that voluntary disclosure can be useful only in the presence

of direct bank supervision and financial market discipline. Thus, if the bank regulator is not independent and the financial markets are not well developed, then all pillars are of limited use. Third, the inadequacy in most emerging countries relate to the difficulty in enforcement rather than the lack of written legislation[19]. Fourth, banks in emerging Asia-Pacific countries lag far behind the banks in mature market in the use of sophisticated risk management tools and in the application of sound risk management practices (e.g., Parrenas, 2003). Finally, the emerging Asia-Pacific countries are not mandating their banks to adopt the Basel II framework by the end of 2007 due to lack of adequate resources and expertise available to either supervisory authorities or bank managers[20].

CAPITAL ADEQUACY BEYOND BASEL II

Pillar I of the Basel II framework covers the regulatory capital requirements for credit, operational, and market risk. However, Basel II does not address the capital requirements due to cyclical effects in credit, operational or market risk. For example, historical evidence suggests that default risk displays a procyclical pattern- increasing during economic downturns and decreasing during economic expansions (e.g. Allen and Saunders, 2002). In addition to creating procyclicality in credit risk, systematic risk factors could lead to procyclicality in operational risk (e.g., Allen and Bali, 2004), and in market risk (Caramazza et. al., 2004; and Forbes and Rigobon, 2002)[21]. Furthermore, the correlations across risks may either heighten or dampen the cyclicality in each of the above risk factors. For example, while credit risk and operational risk tend to be procylical, and market risk tends to be counter-cyclical (e.g., Allen and Saunders, 2004), then the independent measurement of credit risk, operational risk, and market risk as proposed by the Basel II framework would overstate the overall risk exposure and the capital requirements.

While the Basel II framework is primarily designed for banking institutions, the process of intermediation of risks is changing. The new proposal does not address the increasingly integrated nature of the financial world. With the development of large multifunctional finance groups, it is harder now to demarcate institutions according to securities, insurance and credit. With significant increase in securitization transactions and growing linkages to the insurance sector, systemic risk is no longer confined mainly to the banking sector. Like EU countries, should the securities and insurance industry in the U.S. not have a Basel II of their own (e.g., Large, 2003)? While the Basel II framework explicitly addresses capital requirements tied to credit risk, operational risk, and market risk, it ignores systemic risk which may arise from liquidity problems. Thus, the importance of liquidity management should not be overlooked while focusing on capital adequacy and risk management. Some thought needs to be given to mechanisms that could be devised to ensure that liquidity continues to be available in times of crisis such as “liquidity crunch” experienced by large banks around the globe during July-August 2007 “sub-prime lending” crisis.

CONCLUSIONS

Basel II will replace Basel I and it is expected that Basel II will be implemented in the U.S. by the end of 2007. However, only ten largest internationally active banks in the U.S. (core banks) will be required to use the advanced internal rating based (A-IRB) approach to calculate capital against credit risk and to use the advanced measurement approach (AMA) to calculate capital against operational risk. Other banks (non-core banks) may "opt-in" to adopt a standardized approach under the Basel II Accord or continue to use Basel I. It is expected that only a small number of non-core banks will opt-in. Basel II explicitly requires banks to hold capital against credit risk, market risk, and operational risk. Regulators also expect the Basel II framework to provide incentives for banks to continue improving their risk measurement and management on an ongoing basis. It is also envisaged that a new securitization framework which accounts for several important risk drivers such as the credit quality, asset correlations, thickness of tranches, rating of tranche, and the underlying pool's granularity, will help determine regulatory capital requirements for securitized assets.

The study discusses the shortcomings of Basel I and outlines the reasons for the creation of Basel II. The study summarizes the three *Pillars* of the Basel II framework (minimum capital requirements, supervisory review and disclosure) which are recognized to be the key elements of a safe and sound financial system. The paper also discusses the advantages and some limitations of IRB approach and the regulatory capital treatment of asset securitization and raises some concerns about their potential impact on current competitive positions of banks. In addition, the study also raises some issues related to cross-border implementation of Basel II. Thus, the implementation of Basel II may have the unintended consequence of distorting competitive equity in the U.S. banking industry.

Implementation of Basel II will be a major challenge for emerging Asia-Pacific countries. In emerging countries where the corporate governance, public disclosures, regulatory structure and institutions supporting markets are weak, the probability of market failure is significantly high (e.g., IMF, 1998; and Ergungor, 2004). Therefore, the implementation of Basel II in emerging Asia-Pacific nations will be a challenging task for both supervisory authorities and bank managers.

One of the major weaknesses of Basel II is that it does not address the capital requirements due to systematic risks arising from cyclical effects in credit, operational or market risk. Therefore, the future research ought to focus on an integrated approach for capital requirements that incorporates procyclical risk factors into risk measurement and management. Thus, Basel II will continue to provide many opportunities for researchers to contribute to policy debate.

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ENDNOTES

1. See Basel Committee on Banking
2. BIS, 1998
3. The level of capital also affects manager behavior (Dewatripont and Tirole, 1993), although the effect is ambiguous in theory and difficult to measure empirically (see Jackson et al. 1999).
4. The Basel Committee on Banking Supervision is a committee of banking supervisory authorities which was established by the central bank Governors of the Group of Ten countries in 1975. It consists of senior representatives of bank supervisory authorities and central banks from Belgium, Canada, France, Germany, Italy, Japan, Luxembourg, the Netherlands, Sweden, Switzerland, the United Kingdom and the United States. It usually meets at the Bank for International Settlements in Basel, where its permanent Secretariat is located.
5. The level of capital also affects manager behavior (Dewatripont and Tirole, 1993), although the effect is ambiguous in theory and difficult to measure empirically (see Jackson and others, 1999).
6. Bank supervisory responsibilities were set by statute in the U.S. as early as 1863 (National Currency Act of 1863)Italy in1926, Japan in 1928, in Germany, France, Belgium and Switzerland in the 1930s, and in the UK in the 1970s (although the Bank of England exercised an informal supervisory function for many years prior to that).
7. See for example, Mishkin, 2000
8. See, Dewatripont and Tirole(1993).
9. Each principle is supported by explanatory text, and there is a supporting technical document explaining the meaning and its implications.
10. Wyatt (2004) uses the Standardized approach of Pillar I to study the impact of Basel II on capital requirements for 27 New York banks. Wyatt finds that the adoption of Standardized approach prescribed by Basel II would help lower the capital requirements for such banks.
11. See BIS, June 2004
12. Jones, 2000
13. Quite apart from the incentive to holders that pooling of loans provides, securitized issues often require a credit enhancement, which lends the asset a higher credit rating than one the borrowing institution may be able to obtain by itself.
14. See Interagency, 2001
15. The effect of Basel II on a bank's decision to securitize assets will depend upon several factors including default rates and recovery rates of the underlying assets, the types of assets being securitized, and features of the structuring process such as excess spread and reserve funds. (See Fitch Ratings, September, 2005).
16. Hancock, Lehnert, Passmore, and Sherlund (2005) suggest that non-adopters would be largely unaffected by the implementation of Basel II.

[17]. These countries are viewed by Standard and Poor's (October, 2004) as being the most advanced in the region in adopting Basel II.

[18]. See the article, "Basel II Timetable Thrown into Doubt following QIS 4 Capital Declines", Global Regulator News Service, May 2005.

[19]. Some critics suggest that the Basel II framework is not suitable for developing countries, particularly in Asia (e.g., Aldis and Hla, 2002; and Saidenberg and Schuermann, 2003) for following reasons. First, these countries are typified by concentrated ownership structures, with a small number of powerful networks controlling banks, non-banks, and the government (e.g., Karacadag and Taylo, 2000a and 2000b; Griffith-Jones and Spratt, 2001; Powell, 2002; and Ward, 2002; and Large, 2003). Second, do banks have an incentive to disclose accurate information concerning risk and capital adequacy to the markets? Using a game-theoretic model, Estrella (2004) finds that voluntary disclosure can be useful only in the presence of direct bank supervision and financial market discipline. Thus, if the bank regulator is not independent and the financial markets are not well developed, then all pillars are of limited use. Third, the inadequacy in most emerging countries relate to the difficulty in enforcement rather than the lack of written

[20]. China and India have formally rejected the implementation of Basel II in 2006, but may implement the new framework at a later stage. South Korea's 19 commercial banks will be required to comply with Basel II, the new international capital standard, by the end of 2007. Basel II will be adopted in Thailand in 2008.

[21] See the literature survey on cyclical effects on operational risk, credit risk and market risk provided by Allen and Saunders (2004).

REFERENCES

Aldis, V. and F. M. Hla (2002). **"**Implementation of the New Basel Capital Accord in the Asia Pacific Region: Potential Challenges and Rewards," *Bulletin on Asia-Pacific Perspectives,* United Nations Publication.

Allen, L. and A. Saunders (2004). "Incorporating Systematic Influences Into Risk Measurements: A Survey of the Literature", *Journal of Financial Services Research*, 26 (2), 161-192.

Allen, L. and A. Saunders (2002). "Cyclical Effects in credit risk ratings and Default Risk", *Credit Ratings: Methodologies, Rationale and Default Risk.* London: Risk Books, pp. 45-79.

Allen, L. and T. Bali (2004). "Cyclicality in Catastrophic and Operational Risk Measurement", Working paper, May 2004.

Bank for International Settlements (1998), "ON THE USE OF INFORMATION AND RISK MANAGEMENT BY INTERNATIONAL BANKS, " Report of a Working Group established by the Euro-currency Standing Committee of the central banks of the Group of Ten countries, October.

Barth, J., G. Caprio, & R. Levine (2004), Bank Regulation and Supervision: What Works Best, *Journal of Financial Intermediation.*

Basel Committee on Banking Supervision (1988), "International Convergence of Capital Measurement and Capital Standards", July

Basel Committee on Banking Supervision (2004), "Basel II: International Convergence of Capital and Capital Standards: a Revised Framework", Basel publication No. 107, June.

Berger, A. (2004), "Potential competitive effects of Basel II on Banks in SME Credit Markets in the United States", *Working paper, Board of Governors of the Federal Reserve System, February.*

Calem, P.S. and M. LaCour-Little (2004). "Risk-based capital requirements for Mortgage Loans" *Journal of Baking and Finance*, 28, pp. 647-72.

Calem, P. & Follain, J. (2005), An Examination of how the proposed bifurcated implementation of Basel II in the U.S. may affect competition among Banking organizations for Residential Mortgages, Federal Reserve Board, Working..

Caramazza,F., L. Ricci, R. Salgado (2004). "International Financial Contagion in Currency Crises", *Journal of International Money and Finance* 23, 51-70.

Dewatripont, M and Tirole, J (1993) *The Prudential Regulation of Banks* Cambridge: MIT Press

Ergungor, O.E. (2004), "Market-vs.Bank-Based Financial Systems: Do rights and Regulations Really Matter?", *Journal of Banking and Finance*, 28, 2869-2887.

Estrella, A. (2004), "Bank Capital and Risk: Is Voluntary Disclosure Enough?", *Journal of Financial Services Research,* 26(2), 145-160.

Forbes, K. J., and R. Rigobon (2002). "No Contagion, Only Interdependence: Measuring Stock Market Comovements", *Journal of Finance*, 57 (5), 2223-2261.

Griffith-Jones, S and Spratt, S (2001) 'Will the new Basel Accord have a net negative effect on developing countries?' mimeo, IDS, University of Sussex.

Guill, Smithson and Song, P.H. (2003). "Empirical Examination The Basel II Proposals for Asset Securization", The *Risk Management Journal.*

Gup, Benton E. (2004). "The new Basel Capital Accord". Thompson Corporation.

Hancock, D., Lehnert, A., Passmore, W. & Sherlund, S. (2005). An analysis of the potential competitive impacts of Basel II capital standards on U.S. Mortgage Rates and Mortgage Securitization, *Federal Reserve Board*, Working Paper.

Hannan, Timothy H. and Pilloff, Steven J.(2004). "Will the adoption of Basel II encourage increased bank merger activity? Evidence from the United States" *FRB Working Paper*

Interagency (2001), Risk-based capital: Adequacy guidelines, maintenance, recourse treatment, direct credit substitutes and residual interests in asset securitizations, 59613–59667 [01–29179], November.

International Monetary Fund (1998) International Capital Markets Developments, Prospects, and Key Policy Issues, *WORLD ECONOMIC AND FINANCIAL SURVEYS*, Annex I: Developments in Selected Emerging Markets Banking Systems**,** September

Jackson, P et al. (1999). Capital requirements and bank behavior: the impact of the Basel Accord, Basel Committee Working Paper No. 1, April

Jobst, Anreas (2005). "The regulatory treatment of asset securitization: The Basel Securitization Framework explained", *Journal of financial regulation and Compliance* Henry Stewart Publications *Vol 13, No. 1 pp 15-42*

Jones, D (2000). 'Emerging problems with the Basel Accord: regulatory capital arbitrage and related issues', *Journal of Banking and Finance*, 24, pp. 35-56.

Karacadag, C and Taylor, M W (2000a) 'The New Capital Adequacy Framework: Institutional Constraints and Incentive Structures', IMF Working Paper WP/00/93, June

Karacadag, C and M W Taylor (2000b), "Toward a New Global Banking Standard: The Basel Committee's Proposals", *Finance & Development*, December,

Large, A. (2003), Basel II and systemic stability', British Bankers' Association - Basel II/CAD 3 Conference, London.

Macomber, M.E.(2004), "Regulatory Relief for Community-based Banks," Congressional Testimony, May 12.

Mishkin, F (2000), Prudential regulation: why is it important and what are the issues? *NBER Working Paper No.* 7926.

Parrenas, J. C. (2003), "The Regulatory and Business Environment for Risk Management Practices in the Banking Sectors of APEC Economies: Report of a Collaborative Survey Undertaken by the Pacific Economic Cooperation Council Finance Forum and the Asian Bankers' Association".

Powell, A (2002) 'A Capital Accord for Emerging Economies?' mimeo, Universidad Torcuato di Tella, March

Repullo, R. & J. Suarez (2004). Loan Pricing under Basel Capital Requirements, *Journal of Financial Intermediations*, 13, 496-521

Saidenberg, Marc, Schuermann, T. (2003), "The new Basel capital accord and questions for research"

Saurina, J. & Trucharte, C. (2004), The impact of Basel II on lending to small and medium sized firms: A Regulatory Policy Assessment based on Spanish Credit Registration Data, *Journal of Financial Services Research*, 26(2) 121-144

Ward, J (2002), Working Paper 04: The New Basel Accord and Developing Countries: Problems and Alternatives (0k), Cambridge Endowment for Research in Finance, December

Wyatt, K. (2004). "CP3's Standardized Approach for Credit Risk and Current Capital Requirements", *Journal of Financial Services Research*, 26(2) pp. 103-120.

Appendix A: Important Characteristics of the Three Pillars of Basel II

PILLAR I	PILLAR II	PILLAR III
Minimum Capital Requirements	Supervisory Review	Market Discipline
Market risk ● No significant changes from Basel I **Credit risk** ● Significant change from Basel I ● Three different approaches to the calculation of minimum capital requirements ● Capital incentives for banks to move to more sophisticated credit risk management approaches based on internal ratings ● Sophisticated approaches have requirements as well as qualitative requirements for risk management **Operational risk** ● Not explicitly accounted for in Basel I ● Three different approaches to the calculation of minimum capital requirements ● Adoption of each approach subject to compliance with defined 'qualifying criteria'	● Banks should have a defined process for assessing their overall capital adequacy and strategy for maintaining capital levels ● Supervisors should review and evaluate internal capital adequacy assessment and strategies for banks ● Supervisors should expect banks to operate above the minimum capital ratios and should have the ability to require banks to hold capital in excess of the minimum requirement (i.e., trigger/target ratios in th United Kingdom ; prompt corrective action in the United States). ● In U.S., Prompt Corrective Action (PCA) triggered by FDICIA of 1991 requires supervisors to intervene at an early stage to prevent capital from falling below minimum levels.	● Market discipline reinforces efforts to promote safety and soundness in banks and supplementary disclosures to make market discipline more effective

Source: Basel Committee on Banking Supervision, 2004

Appendix B: Credit Risk Approach under Basel II			
Criteria	Standardized Approach	Internal Ratings Based (IRB) Approach	
Rating	**External**	**Foundation Approach**	**Advanced Approach**
Risk Weight Probability of Default (PD): the likelihood that a borrower will default over a given time period Exposure of Default (EAD): for loans, the amount of the facility that is likely to be drawn if a default occurs Loss Given Default (LGD): the proportion of the exposure that will be lost if a default occurs Maturity: the remaining economic maturity of the exposure Data Requirements Credit Risk Mitigation Techniques (CRMT) Process Requirements (compliance with minimum requirements will be subject to supervisory review under Pillar II)	Calibrated on the basis of external ratings by the Basel Committee Implicitly provided by the Supervisors: tied to risk weights based on external ratings Supervisory values set by the Basel Committee Implicitly provided by the Basel Committee; tied to risk weights based on external ratings Implicit recognition ● Provision dates ● Default events ● Exposure data ● Customer segmentation ● Data collateral segmentation ● External ratings ● Collateral data defined by the supervisory regulator; including financial collateral, guarantees, credit derivatives, netting (on and off balance sheet), and real estate ● Minimum requirements for collateral management (administration/evaluation) ● Provisioning process	Internal Function provided by the Basel Committee Provided by bank based on own estimates Supervisory values set by the Basel Committee Supervisory values set by the or At national discretion, provided By bank based on own estimates (with an allowance to exclude certain exposures) ● Rating data ● Historical data to estimate PDs (5 years) ● Collateral data All collaterals from Standardized Approach; receivables from goods and services; other physical securities if certain criteria are met Same as Standardized, plus minimum requirements to ensure quality of internal ratings and PD estimation and their use in the risk management process	Internal Function provided by the Basel Committee Provided by bank based on own estimates Provided by bank based on own estimates Provided by bank based on won estimates, extensive process and internal control requirement Provided y bank based on own estimeates (with an allowance to exclude certain exposures) Same as IRB Foundation, plus: ● Historical loss data to estimate LGD (7 years) ● Historical exposure data to estimate EAD (7 years) All types of collaterals if bank can prove a CRMT by internal estimation. Same as IRB Foundation, plus minimum requirements to ensure quality of estimation of all parameters
Source: Basel Committee on Banking Supervision 2004			

Apendix C: Operational Risk Approach under Basel II			
Approach	Basic Indicator Approach	Standardized Approach*	Advanced Measurement Approach (AMA)
Calculation of Capital Charge Qualifying Criteria	● Average of gross income over three years as indicator ● Capital charge equals 15% of that indicator ● No specific criteria ● Compliance with the Basel Committee's "Sound Practices for the Management and Supervision of Operational Risk" recommended function	● Gross income per regulatory business line as indicator ● Depending on business line, 12%, 15%, or 18% of that indicator as capital charge ● Total capital charge equals sum of charge per business line ● Active involvement of board of directors and senior management ● Existence of OpRisk management function ● Sound OpRisk management system ● Systematic tracking of loss data	● Capital charge equals internally generated measure based on: – Internal loss data – External loss data – Scenario analysis – Business environment and internal control factors ● Recognition of risk mitigation (up to 20% possible) Same as Standardized, plus: ● Measurement integrated in day-to-day risk management ● Review of management and measurement processes by internal/external audit ● Numerous quantitative standards-in particular 3 – 5 years of historic data
Source: Basel Committee on Banking Supervision, 2004			

Appendix D

Constituent	Current Situation	Effects of Basel II	Challenges	Risks
Banks	● Use "one-size-fits-all" regulatory capital approach under Basel I	● Need to implement risk management framework tying regulatory capital to economic risks ● Need to choose credit and operational risk approaches (Pillar I) ● Need to gather, store, and analyze wide array of new data ● Need to embed new/enhanced practices across the organization	● Interpret new regulations and understand effects on business ● Need for enhanced resource, processes, and IT system architecture ● Manage change to risk culture ● Secure and maintain board and senior management sponsorship ● Face new expectations from regulators, rating agencies, and customers ● Need to consider whether to target certain customers/products or eliminate others ● Determine what to do with surplus capital	● Fail to diversify loan portfolio to mitigate risks ● Fail to determine the extent of change required, associated costs, benefits, and relevant options ● Fail to implement change consistently across the organization ● Need to avoid 'gaps'/overlaps in operational and credit risk approaches ● Receive a reduced credit rating ● Become a target of consolidation
Regulators	● Operate in a fragmented environment ● Need enhanced information to be able to anticipate bank problems (vs. react in crisis/default)	● Gain access to more and timely information through the new disclosures Basel II requires of banks ● Gain power to set incentives, penalize wrong-doers, and act (not react) – thus contributing to increased financial stability and transparency	● Need well-trained, educated professionals to fill roles that are traditionally not as well paid as comparable positions within financial institutions ● Create regulation that reflects the linkages among risks ● Provide incentives for banks to evaluate risks through stress-testing and scenario analysis	● May create new costs for banks and ultimately for customers ● Impose numerous locally specific choices that diminish the effects of the leveled playing field that Basel II seeks to create

Sources: Basel Committee on Banking Supervision, 2004 and KPMG International, 2004

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