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Basel II and Developing Countries: Sailing through the Sea of Standards

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Abstract

Despite recently announced delays, Basel II - the new standard for bank capital - is due to be completed this year for implementation in the 13 Basel Committee member countries by the end of 2006. Should the other 170 or so member countries of the World Bank also adopt Basel II? Basel II was not written with developing countries in mind, but that does not necessarily mean that there is nothing in it for developing countries or that it can be ignored. Basels I and II represent a wide "Sea of Standards", this paper suggests five alternative Island-standards and five navigational tools to help countries choose their preferred Island within the Sea. It is suggested that for some developing countries the Standardized Approach will yield little in terms of linking regulatory capital to risk but that countries may need many years of work to adopt the more advanced Internal Rating Based Approach. The paper then proposes a Centralized Rating Based (CRB) approach as a transition measure. The paper also makes proposals regarding a set of largely unresolved cross-border issues.

Contents

1. Introduction and Executive Summary

Despite recently announced delays, the members of the Basel Committee on Banking Supervision remain set to implement a new Accord on bank capital, replacing the 1988 Basel I agreement, by 2006[2]. A natural question, and the focus of this paper is, what should the remainder of the 184 members of the World Bank do[3]? Should non-G10+ countries also implement Basel II, as many of them have implemented Basel I? If so which of the many alternatives under Basel II should be adopted? The alternatives under Basel I and Basel II now represent such a wide, "sea of standards", there appears to be need for navigational aids. This policy paper represents a first attempt to develop a navigational chart.

The World Bank's "client countries" range from a relatively small number of more sophisticated emerging economies to a relatively large number of countries that, to date, are still struggling to bring banking regulatory and supervisory standards to international "best practices"[4]. The experience from the World Bank's and IMF's surveillance of financial standards indicates that 50% of countries are only compliant with a maximum of 10 of the 30 Basel Core Principles (BCP's) of Effective Banking Supervision and one third are only compliant with a maximum of 5 BCP's[5]. The statistics for developing countries lag this mixed group. The average developing country is compliant with just 7 BCPs. The corresponding figure for developed countries is 19, implying there is still work to be done across the board – see Figure 1 below.

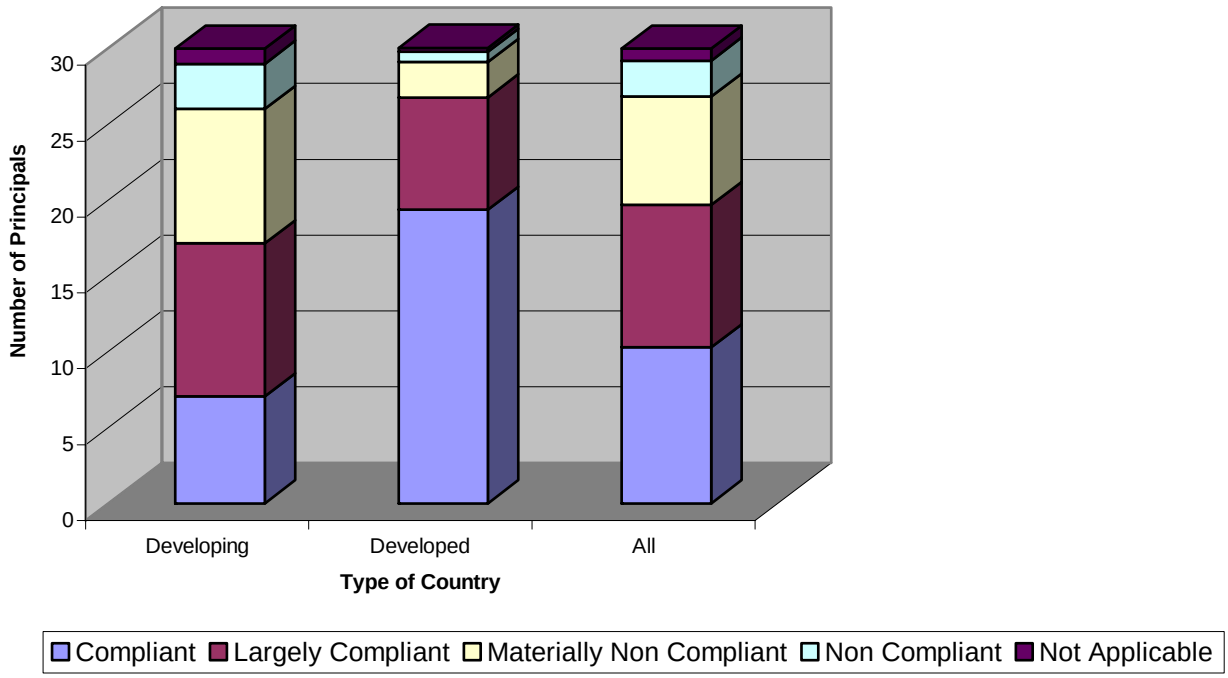
[2] The members of the Basel Committee for Banking Supervision (BCBS), responsible for the development of Basel II, come from the Central Banks of 13 countries: Belgium, Canada, France, Germany, Italy, Japan, Luxembourg, the Netherlands, Spain, Sweden, Switzerland, United Kingdom and the United States. There is an implicit understanding within these countries that the new Accord will be implemented in each jurisdiction although there is no legally binding international treaty to this effect. In the words of the BIS website the BCBS, "formulates broad supervisory standards and guidelines and recommends statements of best practice in the expectation that individual authorities will take steps to implement them through detailed arrangements - statutory or otherwise - which are best suited to their own national systems".

[3] The World Bank website lists 184 countries with voting rights in the IBRD. Not all countries listed have individual bank regulators (e.g.: the countries of the East Caribbean Currency Union) and in a few cases a country may have more than one e.g.: Hong Kong is not included in the 184.

[4] I will refer to the non-G10+, "non-Committee" or World Bank client countries that are the focus of this paper henceforth as developing countries noting that this label includes a very diverse group of economies.

[5] In fact there are 25 BCP's. Here I count the sub principles of Core Principle 1 as Principles in their own right. The figure is calculated on the basis of a survey of 60 (developed and developing) countries.

Figure 1: BCP Compliance



In environments where banking supervision is weak, attempting to implement sophisticated ways of calculating required bank capital may simply give regulated institutions more ways to game their regulators. Where regulatory resources are particularly thin, this negative will dominate any positive gains of attempting to link bank capital more to risk. Moreover, the thin regulatory resources will be deflected away from where the priorities should lie.

Most countries will surely need to continue to implement more fully the Basel Core Principles. Where BCP compliance, and hence supervisory discipline is weak, countries would be advised to focus primarily on Basel Pillars 2 and 3 rather than Pillar 1. Indeed, such countries may wish to consider measures to enhance complementary market discipline that go beyond Basel II, Pillar 3.

However, countries that are applying Basel I and satisfy the Core Principles to a reasonable minimum, may wish to introduce particular aspects of Basel II. Indeed it is argued that as countries have implemented Basel I in different ways, so too they should be able to implement Basel II adjusting certain aspects to their own country characteristics. A potential problem with this approach is that the essence of a "standard" is lost. Hence I define below

Basel II-a and Basel II-b as suggested "sub-standards" that might be useful benchmarks.

Moreover, many developing countries now have had the benefit of foreign bank entry. In many cases this has increased competition, efficiency and improved financial stability. These "internationally active" banks are precisely the ones that will be implementing the more advanced approaches of Basel II on a worldwide, consolidated basis. While efficiency considerations may suggest harmonization of supervisory methods, different legal environments and different levels of regulatory resources may necessitate different approaches. Moreover, if a subsidiary of a foreign bank is a relatively large bank for a host country, but small compared to the bank's global operations, home and host supervisory priorities may differ. Home-host regulatory and supervisory issues are already present under Basel I but they are accentuated under Basel II for two reasons; a) Basel II includes different alternatives so there is greater scope for multiple regulatory treatment and b) within the different Basel II approaches, there is a set of cross-border issues that to date remain largely unresolved.

Finally, there is a group of more sophisticated emerging countries that may find that they fall between two stools. On the one hand, developing country regulators may consider that the IRB approach gives too much autonomy to banks or that the approach is too complex or too difficult to monitor - at least for the coming years. Necessary conditions for Internal Rating Based (IRB) implementation include a) the ability to demonstrate (using actual data and modern credit risk modeling techniques), that the calibration of the model is reasonable for the task at hand and b) that supervisors are in a position to properly monitor banks' rating methodologies and how the mapping from rating to default probability has been assigned and tested[6]. On the other hand, some emerging countries may feel that the Standardized Approach will give little in terms of linking capital to risk due to low rating penetration.

For these more advanced emerging countries, a Centralized Rating Based (CRB) approach is advocated as a transition tool to IRB. Under this approach banks would rate their borrowers but the rating scale, and how the ratings then mapped to default probabilities, would be determined by the regulator. Moreover, given the changes underway to the Basel II proposals related to

[6] As Basel I has been applied across the world with different capital ratios, Basel II calibration may also be questioned for developing countries. If there are not the data or expertise to demonstrate appropriate calibration, then a simpler approach should probably be adopted.

expected and unexpected loss, this approach could be used to determine forward looking provisions, building on current policies in some countries, while the regulator adopted the Standardized Approach under Basel II for capital. This is explained in more detail below.

Basel II was not written primarily with developing countries in mind. Indeed a variety of institutions are now suggesting that many developing countries may wish to stick with Basel I - despite its well-known drawbacks. However, the issues that Basel II raises will undoubtedly shape an important part of the dialog regarding the improvement of banking regulation and supervision going forward. Moreover, the spectrum of regulatory approaches now encompassed in Basel's I and II is very wide indeed. The intention of this paper is to discuss the different options available and attempt to suggest, in a constructive manner, how to navigate safely and efficiently through this sea of standards.

The plan of the paper is as follows. In the next section, as background I discuss what's new in Basel II and whether it is relevant to developing countries. In section three, particular navigational aids for the sea of standards are introduced. In particular I suggest that there are 5 characteristics that might provide a useful way to think about the most appropriate alternatives on offer. Section four lists salient and largely unresolved cross-border issues with some specific proposals[7]. In section five of the paper I discuss a simple approach to check the calibration of the Basel II advanced approaches for emerging countries[8]. Section 6 concludes.

[7] These issues are explored in more depth in a separate planned note.

[8] Basel I has been applied in many countries with higher minimum capital ratios than Basel's recommended 8%. Recent papers have indicated that higher minimum capital ratios may be required for Basel II also. See Balzarotti, Castro and Powell (2003) and Majnoni, Miller and Powell (2004).

2. Basel II: what's new and is it relevant to developing countries?

2.1 An Overview

At first glance, the Basel II documentation is daunting. The New Accord currently runs to 216 pages, but there are literally thousands of pages of supporting documents depending on definitions[9]. The new Accord consists of 3 Pillars: (1) Minimum Capital Requirements, (2) Supervisory Review Process and (3) Market Discipline. However, to understand what's new about Basel II, the "Capital Accords" need to be placed within the context of the (wider) Basel Core Principles for Effective Banking Supervision (BCPs).

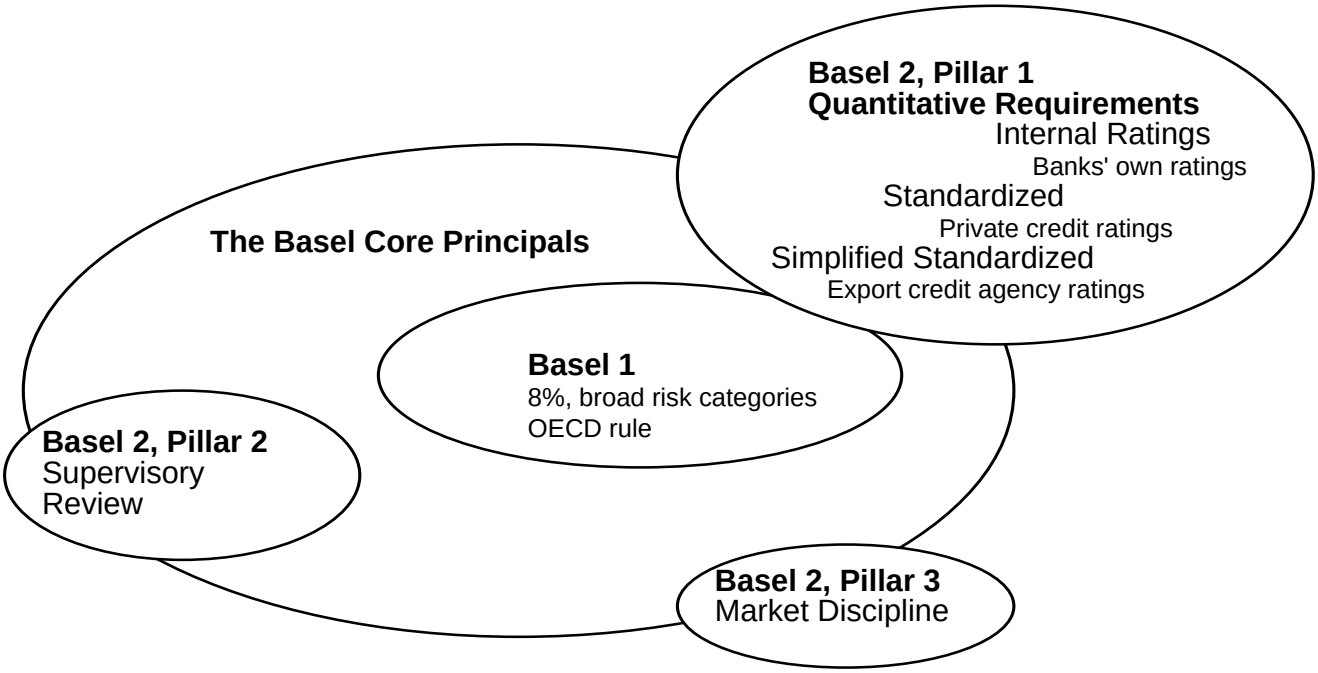
Figure 2 gives a very simple graphical representation of the Basel standards. The idea of the figure is the following. The Basel Core Principles cover a great deal of ground and more than encapsulate Basel I[10]. This is indicated in the figure as Basel I is depicted as totally within the space of the BCPs. Indeed, BCP number 6 on capital adequacy is normally understood as more general than any particular capital adequacy standard and arguably calls for the application of Basel I as a minimum[11].

[9] There are 216 pages to the English language .pdf version of the Third Consultative Paper (CP3), although there are 226 if one downloads the new Accord section by section. In other languages, the Accord is somewhat longer. The BIS website lists 103 documents published by the Basel Committee for Banking Supervision (BCBS) responsible for Basel II. While not all these documents are strictly relevant to Basel II, more than 50% would probably be deemed relevant and the average document length is well-over 20 pages.

[10] The Basel Core Principles for Effective Bank Supervision are generally subdivided into 7 areas, (i) Objectives, autonomy powers and resources (BCP 1.1-1.6), (ii) Licensing and structure (BCP 2-5) (iii) Prudential regulations and requirements (BCP 6-15) (iv) Methods of on-going supervision (BCP 16-20) (v) Information requirements (BCP 21) (vi) Remedial measures and exit (BCP 22) (vii) Cross border banking (BCP 23-25)..

[11] A counter argument is that Basel I is only intended for "internationally active banks" and hence may be considered to go beyond what would be required under the capital adequacy assessment for the BCPs. However, if Basel I is the minimum for larger, more diversified institutions, then in the context of a developing country, it seems reasonable that it should also be considered a minimum for smaller and more concentrated institutions. Many developing countries have implemented Basel I for all banks and, with stricter limits, reflecting this view. This is evident analyzing the World Bank, bank regulation database available on www.worldbank.org.

Figure 2: A Simple Graphical Representation of the Basel Standards



Basel II, Pillar 2 (Supervisory Review) is very largely also encompassed by the BCPs; there is actually relatively little new in Pillar 2 – we discuss what's new in more detail below. There is more that's new regarding Pillar 3 (Market Discipline) but its really in Pillar 1 where most of the innovation of Basel II lies. While Pillar 1's so-called "simplified standardized" approach (SS) might almost overlap with Basel I, Pillar 1 goes well beyond the BCPs, when all the alternatives under the Standardized Approach (SA) and the Internal Rating Based approach (IRB) are considered.

One important general issue regarding what's new in Basel II relates to consolidated supervision[12]. Arguably Basel II takes as granted that there is consolidated supervision and then takes it to a higher level. Consolidated

[12] The first sentence of BCBS (2003a) reads, "The ... (New Accord) will be applied on a consolidated basis to internationally active banks".. By consoldiated supervision in this document I refer to the consiolidated supervision of banks. This is quite distinct from the issue of whether regulatory agencies should be integrated into a single agency. Logically a country can have separate agencies for financial regulation (still the norm although integration is increasing) and consolidated supervision for banks or integrated agencies and banking supervision that still does not comply with Basel's definition of, "consoldiated supervision". See BCBS (2003a), pages 1-5 on the Scope of the Accord.

supervision is included in the BCP's but the data on BCP compliance (BCP 20) indicate that it is an area where many countries fail[13]. Indeed BCP 20 has the highest percentage of countries in either non-compliance or material non-compliance than any other Basel Core Principle and this area is singled out for special mention in a recent paper by the World Bank and the IMF on concerns regarding the pattern of BCP compliance[14].

If we extend consolidation to the cross-border variety (BCP number 23), then the picture becomes even more worrisome. Cross border here might include an "offshore bank" owned by a national bank or a retail or other type of bank operating in another jurisdiction. In the case of developing countries, especially those with a history of capital flight, cross border consolidation can be important. In Latin America in particular such institutions have been the source of serious problems and regulators frequently do not have the appropriate authority, enforcement powers or information[15].

The aim of Basel II, is that banking supervisors will consolidate from the holding company of a banking group down and not just traditional consolidation i.e.: down from the bank within a holding group. This change is understandable given the changing face of financial group structures in many countries but as many developing countries do not have traditional consolidated supervision represents a huge challenge[16].

[13] The wording in the new Accord does allow for a national supervisor not to consolidate all entities within a group (paragraphs 7 and 8 of the CP3). However, the spirit of the Accord is clearly towards a deeper level of consolidation and in those instances where an entity within a group is not consolidated a) it must be subject to other (appropriate) regulation, b) it remains imperative that banking supervisors still have sufficient information on those entities and c) all investment in those entities must be deducted from capital. As the paragraph on the BCP surveillance indicates, many countries fail on the current definition of consolidated supervision let alone the more ambitious Basel II version.

[14] "Implementation of the Basel Core Principles for Effective Banking Supervision, Experiences, Influences and Perspectives", World Bank and IMF, Sept 23 2002.

[15] In the case of Argentina an essentially unregulated offshore operation caused the first bank to close during the Tequila crisis, in late 1994, and in Ecuador the offshore sector was a source of considerable problems and eventually was even granted a deposit guarantee in the banking crisis of 1999/2000.

[16] On the other hand, Basel II is decidedly weak on investments in non-financial companies and on related lending. Basel II is the first time that the BCBS has introduced specific rules on something like related lending. The rule in the proposals is that any single investment above 15% of bank capital (and aggregate investments of this type over 60% of capital) would be deducted from bank capital. Moreover, below this limit the investment would attract a 100% risk weight under the standardized approach and at least that under the IRB approach. Many developing countries already have stricter rules including actual limits and not just deductions from capital over a given threshold. Ecuador has the strictest rules I am aware of where the limit is literally zero i.e.: a bank cannot lend to a "related" party. Related lending is covered in BCP 10.

2.2 What's new in Basel II, Pillar 2: Supervisory Review

Pillar 2 actually covers very little material that is not already in the Basel Core Principles but is more specific on a number of issues. This serves a useful purpose for developing countries, as compliance regarding Pillar II type issues within the Basel Core Principles remains particularly weak. Pillar 2 starts with four key principles and then lists a set of "other risks" that banks and supervisors need to consider that did not make it into Pillar 1 regarding actual quantitative requirements.

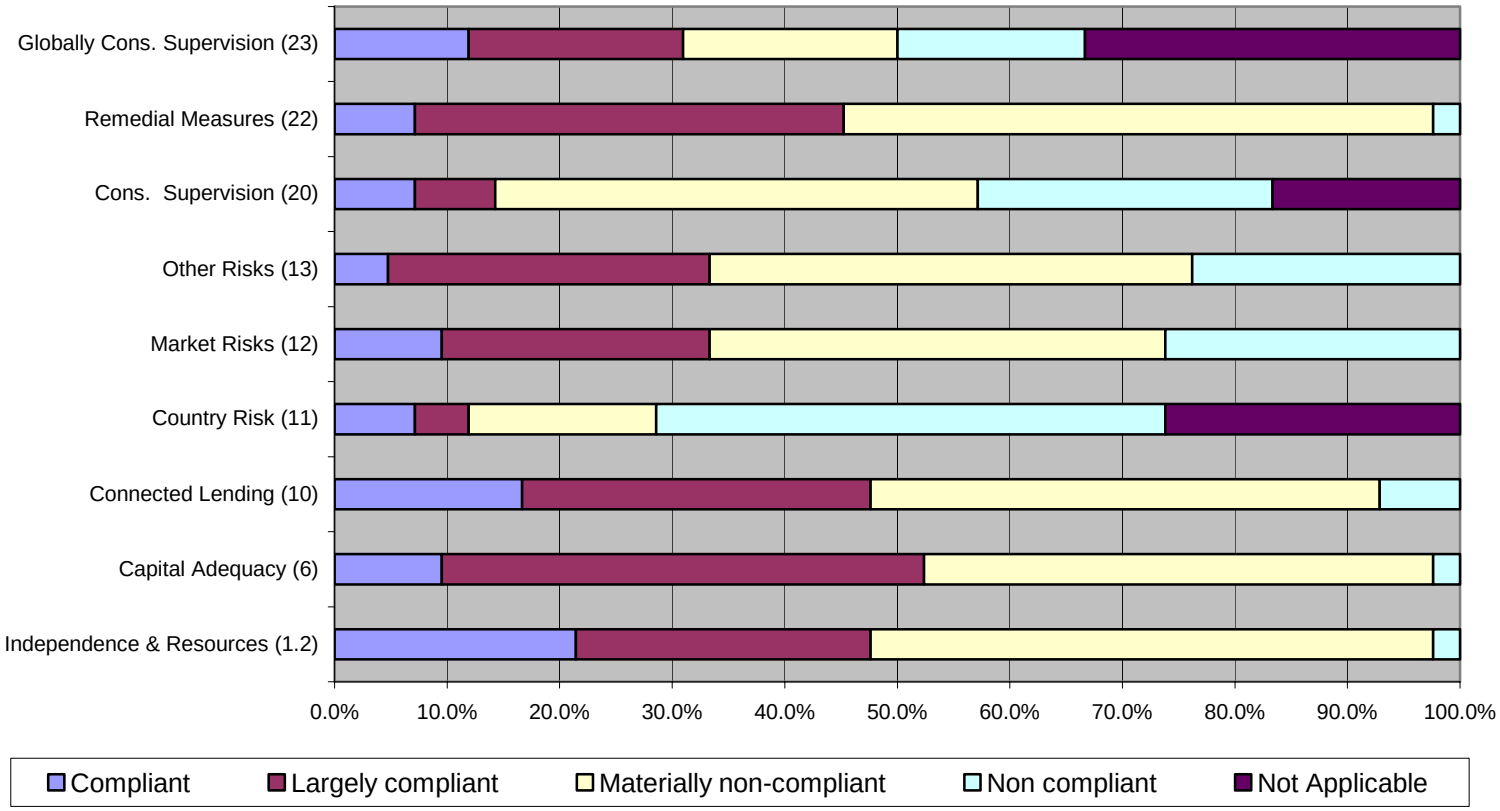
The four key principles commence with the responsibility of the bank (a set of internal processes for assessing capital adequacy including not only credit risk but also market risk, liquidity risk and interest rate risk) and second the responsibility of the supervisor[17]. Third, Pillar 2 states categorically that supervisors should normally "expect" banks to operate with capital above the regulatory minimum and should have the ability to require banks to have more than any standard minimum amount (this relates to BCP 6 on capital adequacy and BCP 1 on the legal framework and enforcement). And fourth it states that supervisors should seek to intervene at an early stage in the case of problem institutions (which again relates to BCP 1; enforcement authority and independence and also BCP 22 on remedial measures).

After the four key principles, Pillar 2 lists a set of "other risks" that a bank must be capable of analyzing including Interest Rate Risk, Credit Concentration Risk and Liquidity Risk[18]. In this list I have not included Market Risk where Basel II represents no material change to Basel I's "Market Risk Amendment"[19]. To a large extent these "other risks" are risks that banks need to monitor carefully, but where there is not (yet) agreement on whether or how quantitative requirements could be developed.

Pillar 2 is particularly relevant here for two reasons. First, many countries continue to fall short of complying with the key principles of supervision. Figure 3 plots BCP compliance for a set of key core principles for a sample of developing countries - please refer to the Appendix for a key and a Graph of developing country compliance with all BCPs.

[17] Related to BCP 11-14 and BCP 16-19 respectively.
[18] Covered by BCP 12 and 13.
[19] Covered in BCP 12.

Figure 3: Developing Country Basel Core Principle Compliance (Key Core Principles)



It is striking that over 40% of developing countries are Non-Compliant or Materially Non-Compliant with several critical BCPs that relate to Pillar 2. These include BCPs 11,12 and 13 (that banks have systems to measure, monitor and control transfer risks, market risks and all other material risks), BCP 10 (on related lending), BCP 22 (on prompt adequate remedial actions), and BCP 1.2 (on the skills, resources and independence of the supervisory agency) and BCP 10 on connected lending.

The second reason Pillar 2 is highly relevant is that the "other risks" tend to be particularly important in the often-volatile context of developing country banking. countries with liquid financial markets, such risks can frequently be thought of as price risks and banks can frequently manage such risks with market-traded instruments. Banks may take risks but those risks can normally be quantified reasonably accurately and they can normally be priced and insured. These risks in developing countries tend to be much more systemic in nature and are more difficult to price and to insure – all due to a lack of deep financial markets- and in the final instance, they tend to manifest themselves as liquidity risks. Hence what might look like a maturity mismatch in domestic currency (and hence considered an interest rate risk) may swiftly turn into a high demand for dollar currency and a liquidity risk and a sharp change in the currency composition of a bank's balance sheet.

The appropriate treatment of such systemic risks – and the degree to which banks should insure against them – is an area where as yet banks and their supervisors have only very partial answers. The high liquidity ratios in many higher-quality developing country banks, indicates the severity of the problem and the lack of compliance with BCPs 12-13, on market and other risks, therefore particularly worrying.

In summary, while Pillar 2 may not contain too much that is really new, the issues remain highly relevant to developing countries[20]. There is no doubt that if all countries **truly** adopted Basel II, Pillar 2 this would represent a significant advance in the quality of banking supervision across the globe.

[20] There are some sections of Pillar 2 that are only relevant for countries wishing to apply the more advanced approaches in Basel II, Pillar 1 that may be less relevant.

2.3 What's new in Basel II, Pillar 3: Market Discipline

Pillar 3 is entitled "market discipline". However, it focuses largely on the appropriate disclosure of bank capital and capital adequacy. Basel I did not make specific reference to what banks must disclose to the public and, as the focus of the BCP's is "supervisory discipline", their focus is on reporting (what a bank must know and report to the supervisor) rather than disclosure to the market. Pillar 3 is then new; but is it relevant?

Pillar 3 first dictates how a banking group should disclose figures depending on how that group is consolidated. Here a definition of the over-riding concept of materiality gives a substantial responsibility and discretion to the bank to decide what disclosures are relevant to that institution[21]. Second, Pillar 3 includes disclosure requirements on capital structure (tier 1 versus tiers 2 and 3) and third on capital adequacy both in the aggregate (across the group and for each significant bank subsidiary), by portfolio and by type of risk reflecting the different portfolios and "risks" as defined in Pillar 1 (see below). There are also disclosure requirements for credit risk, for the risk of equity investments, for credit risk mitigation techniques, for securitization risks, for market risks, for operational risk and for interest rate risk in the banking book.

Developing country financial sectors are typically characterized by 1) banks that are closely held, 2) opaque information regarding bank and associated economic groups and 3) thin and illiquid markets for non-insured bank debt. Assuming consolidation rules and materiality are appropriately applied (implying effective monitoring and enforcement), enhanced disclosure of bank capital would indeed be useful in such environments. On these grounds and with these qualifications, Pillar 3 may then be considered to be relevant for many developing countries.

However, to significantly enhance market discipline would probably call for other (more general) policies and there is much of Pillar 3 that appears highly specific. For example there is much in Pillar 3 on disclosures related to the IRB approaches in Pillar 1 that may be largely irrelevant for most developing countries. There has been much attention recently in academic circles on market discipline in banking and there have been several proposals on how it

[21] Of course if a subsidiary is really non-material then arguably it need not be consolidated, if it is consolidated then arguably it should be thought of as material. Pillar 3 however does not say this and one presumes that at the discretion of the bank and its main regulator , some subsidiaries might be consolidated but not considered material and hence their individual capital adequacy not disclosed. This is relevant to World Bank client countries as discussed below.

might be enhanced. There appears to be reasonably general agreement that the market may play a complementary role in both monitoring and discipline but less agreement on the specific instruments to achieve that goal especially in the context of developing country markets[22] [23].

An interesting issue with respect to Pillar 3 relates to the disclosures that home supervisors will require of international bank subsidiaries in host countries. We come back to this cross-border issue in Section 4. On balance, Pillar 3 is relevant to developing countries but many may find the proposals highly specific. It would certainly be useful for the Basel Committee to extend Pillar 1's Simplified Standardized Approach to Pillar 3. Finally, in those environments where traditional supervision is weak, there remains an urgent need for the consideration of complementary measures to enhance market discipline more widely.

2.4 What's new in Basel II, Pillar 1 (Quantitative Requirements)

As illustrated in Figure 2, Pillar 1 is where most of the real innovation in Basel II lies. This paper will not offer another description of Pillar 1 rather the focus is on, what's new and what's relevant for developing countries.

[22] By monitoring I refer to the generation of information and by discipline the reaction of the bank to that information – either pre-emptive or forced by the market or by the supervisor. The reason that the market may be complementary to supervisors in both activities is that a) information sets may not be the same and b) the incentives to act on the information may differ. In particular, the market may play an important role in limiting supervisory forbearance.

[23] Argentina in the mid 1990's probably went further than any other country in this regard. The regulator combined strong rules regarding disclosure of information (I) with strict rules on auditing (A) to validate that information, with forcing each financial institutions to have a credit rating (C) and to issue uninsured bonds subordinated to other claims (B). Combined with traditional supervision (S), the letters made the acronym BASIC which was the name given to the system. See Calomiris and Powell (2000) for a review.

Figure 4: Basel II, Pillar 1

The Approaches	*Basic Credit Risk Measurement Technique*	*Credit Risk Mitigation*	*Securitization Risks*	*Operational Risk*
Simplified Standardized	Export Credit Agencies (www.oecd.org, Trade Directorate, ECA page)	Simple: risk weight of collateral subsitutes that of claim.	SSA banks can only invest (cannot offer enhancements or liquidity facilities). Riskweight=100%	Basic Indicator: Capital=15% Gross Income
Standardized Approach	Export Credit Agencies or Credit Rating Agencies (eg: S&P, Moody's, Fitch)	Simple: (as above). Comprehensive: exposure amount reduced subject to claim and collateral haircuts.	Standardized: uses export credit agency ratings (only investing banks can use below BB+)	Basic Indicator. Or Standardized Approach where Requirement is weighted sum of gross income across activities
IRB Foundation	Banks' internal ratings for default probability and Basel II formula sets capital requirement (Loss Given Default 45% for Senior and 75% Subord).	Comprehensive, then LGD adjusted given reduction in exposure and capital requirement given by Basel formula	IRB Approach: Investing banks may use Bank Ratings. Originators may use Supervisory Formula	More sophisitcated banks will be expected to graduate to the Advanced Measurement Approach where capital requirement given by own risk measurement system.
IRB Advanced	Banks set internal rating (default probability), LGD Exposure At Default and Maturity. Capital requirement still given by Basel formula.	Own model determines LGD and EAD and capital requirement given by forumula	As IRB Foundation	As IRB Foundation

The four main Pillar 1 approaches are indicated in the rows of Figure 4; (i) the Simplified Standardized Approach (SSA), (ii) the Standardidized Approach (SA), (iii) the IRB Foundation approach and (iv) the IRB Advanced Approach. The four columns of the Figure represent four topics covered in Pillar 1; (a) basic credit risk assessment, (b) credit risk mitigation (c) securitization risk and (d) operational risk. The content of the matrix gives a brief summary of how each topic may be dealt with in each approach, elaborated on in the text below.

2.4.1 The Simplified Standardized Approach (SSA)

The Simplified Standardized Approach (SSA) is not so much a different approach as a collection of the simpler alternatives across the different topics – credit risk measurement, credit risk mitigation, securitization and operational risk. The SSA approach is the closest to Basel I as regarding basic credit risk measurement there is only, in the first instance, a finer calibration of capital to risk for sovereigns through the use of average official Export Credit Agency

ratings - to be published on the OECD's website[24]. Corporate claims would continue to attract a minimum 8% capital charge. Considering the implementation of Basel II in a developing country banking system, sovereign ratings are frequently less important as banks tend not to lend too much of their portfolio abroad and in that case the SSA is then similar to Basel I across the board 8% minimum requirement.

However, even under SSA's basic approach to credit risk there are some differences to Basel I. First, there is a difference in lending to a bank's own sovereign – or holding bonds of the sovereign in an investment account. If the loan is funded and lent in the sovereign's own currency, then this may attract a zero capital charge minimum but, if not, it would attract the charge relevant to the (Export Credit Agency) rating of the sovereign[25]. Second, the altered sovereign ratings feed into different ratings for banks[26]. Third, Basel II SSA would allow residential mortgages to have a minimum 35% risk weight (under Basel I this was 50%), and fourth a 75% minimum the retail exposures and fifth a 150% weight for loans in arrears if provisions are less than 20% (previously this was not specified and hence 100% with the presumption that provisioning would increase)[27]. Six, there is a subtle change for short term lending to banks. Under Basel I, shorter-term loans (initially under 12 months and then reduced to 6 months) to banks attracted a 20% charge. Under SSA, the normal procedure would be that bank loans to other banks had a capital requirement that corresponded to one rating worse than the sovereign. However, if the loans were under 3 months, funded and lent in the own-currency of the country, and the country used the zero risk weight for lending to the sovereign, then a more generous treatment might apply. However, for a developing country with a non-investment grade rating this would certainly be higher than the previous 20% treatment.

Perhaps most importantly, SSA would imply the introduction of a capital requirement (and associated supervisory monitoring and enforcement) for

[24] The advantage of this is that it replaces the old "OECD rule" under which sovereign members of the OECD attracted a zero capital charge whereas non-OECD members attracted 8%.
[25] Again, this refers to the replacement of the Basel I "OECD rule". However, this was rarely applied to a bank's own sovereign and hence there was something of a vacuum. It is not clear whether developing countries will apply Basel II as written when it comes to bank's own sovereign. In practice, there is a growing list of developing countries that do already apply capital charges to lending to their own sovereign and that go beyond Basel II. This is an area where further consideration is certainly required.
[26] Under SSA loans to other banks attract a capital requirement that corresponds to one rating "bucket" worse than the sovereign itself.
[27] To obtain the capital requirement the risk weight must be multiplied by the basic capital requirement – the minimum in Basel II as in Basel I is 8%.

Operational Risk. Here SSA uses what is referred to as the Basic Indicator approach, discussed below, that boils down to a capital requirement of 15% of a bank's gross annual operating income (based on a 3 year average).

The SSA is likely to be relevant for developing countries because it represents the simplest way to comply with Basel II. Indeed, the SSA was developed in part with developing countries in mind. However the real question is, does it imply an improvement to Basel I? The use of Export Credit Agency ratings for sovereign exposures provides little in terms of linking capital to risk for developing country banks. It is unlikely that the reductions in minimum requirements for mortgages are appropriate for developing countries that tend to be weak on creditor protection or have slow and inefficient legal systems. And the reductions in capital requirements for retail exposures may not be appropriate where there is high systemic risk and little real diversification. The preferential treatment in lending to a bank's own sovereign may be more relevant to higher rated countries than those with weaker ratings where many would advise supervisors to take a much tougher stance. Moreover, it will be interesting to see how many developing countries supervisors apply the export credit agency ratings that may be politically associated to the OECD, to lending to their own sovereign. It seems likely that the situation here may remain as it is now with developing countries following their own rules.

The main change will then be with regards to operational risk. As discussed below, this will tend to increase capital requirements for developing countries that apply SSA (or even SA)[28]. As discussed below a quantitative impact study that focuses squarely on developing countries is clearly required urgently to consider the effects[29].

2.4.2 The Standardized Approach

The Standardized Approach (SA) adds the possibility of using private credit Rating Agencies as well as Export Credit Agencies to establish credit risk assessments that would then feed into capital requirements. As credit rating agencies rate corporates and banks, as well as sovereigns, this adds the possibility of using these assessments to link capital to risk more finely.

[28] However, there may be little difference between applying SSA at 8%, but including operational risk, with Basel I but a higher requirement

[29] The BCBS has conducted 3 quantitative impact studies - see BCBS (2003c) - but the results are presented on banks from the 13, "committee countries" and, we are told, 30 "other countries". The other countries then include industrialized, developing and offshore centers. It is then difficult to disentagle the effects of the different components of changes in capital requirements for developing country banks.

There has been much discussion and criticism on the use of external credit rating agencies for bank regulatory capital purposes. Much of this has focused on sovereign credit assessments and whether rating agencies do a good job, whether their ratings lead or follow the market and whether their use may increase bank pro-cyclicality[30]. These issues are however more related to sovereign risk and the implementation of Basel II internationally than the domestic implementation of Basel II in developing countries; the principle concern of this paper.

Box 1: Basel II Standardized Approach

This box illustrates how ratings (in this case a Standard & Poor's scale) map into risk weights for Basel II SA banks adopting the SA. Risk weights must be multiplied by 100% to obtain the relevant capital requirement.

	AAA to AA-	A+ to A-	BBB+ to BBB-	BB+ to B-	Below B-	Unrated
Claims on Sovereigns	0%	20%	50%	100%	150%	100%
Claims on Banks Option 1 (rating refers to sovereign)	20%	50%	100%	100%	150%	100%
Claims on Banks Option 2 (rating refers to bank)	20%	50%	50%	100%	150%	50%
Claims on Banks Option 3 (preferential treatment for short term claims)	20%	20%	20%	50%	150%	20%

Claims on Corporates

AAA to AA-	A+ to A-	BBB+ to BB-	Below BB-	Unrated
20%	50%	100%	150%	100%

Considering the domestic implementation of the SA across the globe, the main problem is the very low penetration of Credit Rating Agencies. This means that most claims will be rated 100% and so there would be no change with respect to Basel I or the SSA. And moreover, the claims that are rated are arguably not where the very serious credit risks lie. Such companies in

[30] See Powell (2003) for a discussion of these issues.

developing countries have a rating because they have issued some kind of debt instrument and hence probably already have some external investors. It is precisely the corporations that are not quoted and have not issued and hence that probably do not have a rating where more information is required.

A similar argument, regarding the penetration of rating agencies, could be made for the portfolio of regional banks in the US or Europe but the significant difference is that such banks do not represent a systemic risk to the banking system[31]. In the case of many developing countries, it is the bulk of the portfolios of the major banks that are not rated.

This may limit the attractiveness of the SA for some countries or, if implemented, may imply that there is a strong pressure for companies to obtain a rating quickly (assuming it is a reasonably good one) and hence provoking a potential deterioration in the quality the ratings.

2.4.3 The Internal Rating Based Approaches (IRB)

Most pages of the Pillar 1 proposals are devoted to the more advanced IRB methodologies. IRB gives a significant degree of autonomy to banks to define their own rating scales and to use those scales to determine default probabilities. While the debate in G10 has been couched in terms of how the IRB approaches do not give banks sufficient discretion to use their own internal credit risk models (that may model risk diversification directly), the debate in developing countries is more that the IRB approach would give banks greater autonomy hence making monitoring and control more difficult tasks, especially given the tight supervisory resources and deficiencies in BCP-compliance discussed above.

The IRB approach consists of two sub-approaches; Foundation and Advanced. In the Foundation approach, banks estimate probabilities of default for each borrower[32]. In the Advanced approach banks estimate Probability of Default and other parameters such as Loss Given Default and Exposure at Default. These estimates are then fed into a formula or a "curve" that gives the actual capital requirement. It is understood that the formula is calibrated such that a "standard loan" (with a default probability of 1%, maturity of 2.5 years and a

[31] This observation may be one of the reasons that have led the US authorities to say that banks in the US will apply Basel II, IRB or stay with Basel I. In other words, they have viewed the costs of Basel II's standardized approach as outweighing the advantages for banks that are not considered significant.

[32] In practice banks will place credits in different buckets corresponding to particular ranges of default probabilities.

loss given default of 45%) would have a capital requirement of 8%. Loans of higher default-probability, longer maturity or higher loss-given-default would attract higher requirements.

Box 2: The Mathematics of the Internal Ratings' Based Approach

The formula to calculate the capital requirement is a function of the Probability of Default (PD), the Loss Given Default (LGD), the maturity of the loan (M) and the Exposure at Default (EAD). N(X) denotes the cumulative normal distribution function and G(.) the inverse cumulative normal distribution function for a standard normal variable.

$$Capital\_\mathrm{Re}quirement(K) = LGD * N[(1-R)\text{^}0.5 * G(PD) + (R/(1-R))\text{^}0.5 * G(0.999)] * (1-1.5 * b(PD))\text{^}(-1) * (1+M-2.5) * b(PD) \quad (1)$$

Where: $Maturity\_Adjustment(b) = (0.08451 - 0.05898 * \log(PD))\text{^}2$

$$Correlation(R) = 0.12 * (1-EXP(-50 * PD))/(1-EXP(-50)) + 0.24 * [1-(1-EXP(-50 * PD))/(1-EXP(-50))]$$

$$Risk\_Weighted\_Assets(RWA) = K * 12.50 * EAD$$

The formula is for corporate, sovereign and bank exposures and the capital requirement is the 99.9% Value at Risk for 1 unit of exposure. As discussed in the text the formula is an approximation to the Value at Risk of a portfolio of correlated assets where asset returns are driven by a single factor.

The risk weighted assets is K multiplied by the Exposure At Default (EAD) multiplied by 12.5 (=100/8) and the capital requirement is then 8% of the RWA as in the Basel I methodology.

For smaller and medium sized enterprises (where the reported sales, of the consolidated group of which the firm is part, are less than 50 million Euros), an adjustment to the Correlation, R, such that this then becomes:

$$Correlation(R) = 0.12 * (1-EXP(-50 * PD))/(1-EXP(-50)) + 0.24 * [1-(1-EXP(-50 * PD))/(1-EXP(-50))] - 0.04 * (1-(S-5)/45)$$

where S = sales in millions of Euros and sales of less than 5 million Euros will be set equal to 5 million allowing for the maximum allowable reduction in capital requirements.

I do not enter into details here as to how the curve was derived or calibrated. Indeed the proposals themselves give scanty information. Suffice to say that we are told it comes from a model of (corporate) default due to Robert Merton but that the curve can also be thought of as "fitting" portfolio models of default risk including Creditmetrics or CreditRisk+[33].). The curve then contains an assumption regarding the covariances within a credit portfolio. Recent papers that show how such a function for each individual claim may approximate the results of a portfolio model include Gordy (2003) and Emmer and Tasche (2003). Basel II IRB calibration is the subject of Section 5 below.

An IRB approach may well be useful for developing countries that lack deep capital markets and deep penetration by external ratings agencies. The issue will be whether the approach as detailed can be calibrated, implemented and monitored effectively in developing countries.

2.4.4 Operational Risk

Apart from different approaches for underlying credit risk measurement, Basel II also includes a specific capital requirement for Operational Risk. As Basel I rested on a minimum capital charge of 8% for most claims and Basel II's basic requirement is also 8%, at first sight this appears as an additional requirement that will increase banks' capital requirements overall. However, under the Standardardized Approach only non-rated loans, poorly rated loans or loans in default attract capital requirements of 8% (or higher) and in general loans will receive a lower credit risk capital charge under Basel II than Basel I. Under IRB all loans with a lower probability of default that the "Standard loan" will have lower capital requirements. However, for countries that apply the Simplified Standardized Approach or the Standardized approach but where credit rating penetration is very low, then in those cases the Operational Risk charge, on top of essentially an unchanged 8% requirement, may well imply a significant increase in capital requirements[34].

[33] CreditMetrics is a model developed by JP Morgan offshoot, Riskmetrics and Creditrisk+ a model developed by Credit Suisse Financial Products of CSFB.

[34] This is supported by the results of the Basel Committee's Quantitative Impact Study Number 3 (QIS 3 – see BCBS (2003c) and BCBS (2003d). The first publication finds a 12 % increase in capital requirements for "other" (non G13, non EU) countries for the standardized approach. Indeed credit risk capital requirements rise by 2% and operational risk capital requirements are about 11% of the current capital charge. Curiously, QIS 3 also finds an 11% inccrease for large banks from G13 (and yet only a 6% increase for Eu large banks implying that this comes from non EU G13 countries), but then these banks will most likely not apply the standardized approach and will most likely apply IRB. In BCBS (2003d), which apparently takes into

As indicated in Figure 4, there are three different approaches that can be adopted for the treatment of operational risk: Basic Indicator, Standardized and Advanced Measurement Approach. Under the Basic Indicator approach, capital requirements for operational risk are simply 15% of Gross Income. Under the Standardized Approach capital requirements are the weighted sum of the gross income stemming from different sources with the weights ranging from 12% for gross income from the retail portfolio to 18% for gross income from corporate finance and trading. Under the Advanced Measurement Approach the regulatory capital will be given by a risk measure generated by a bank's own model of operational risk. This model must be calibrated on the banks own experiences with regard to operational risk related losses and hence the bank must have a methodology for measuring such losses and the relevant historical data[35].

Banks opting for the Simplified Standardized Approach will adopt the Basic Indicator methodology for Operational Risk. Banks adopting the Standardized Approach for Pillar 1 capital, in theory, can choose between any of the methodologies but are likely to adopt either the Basic Indicator or the Standardized Approach and only those banks adopting Pillar 1, IRB are likely to adopt the Advanced Measurement Approach for Operational Risk. Indeed banks that adopt IRB are certainly expected to opt at least for the Standardized Approach and to graduate to an AMA approach over time.

An explicit capital charge for operational risk is clearly new. It is also undoubtedly relevant for developing countries. While the Basel Core Principles require a bank to consider all risks including operational risk, to date there has not been a formal benchmark laid down in an international standard.

It is likely that most banks in developing countries will not have developed operational risk models and will therefore adopt the Basic Indicator or the Standardized Approach. The inclusion of an explicit operational-risk, capital charge should not in theory imply a significant increase in required supervisory resources, as supervisors should be assessing operational risk

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account certain modfications of the new proposals embodied in Consultative Paper 3, no information is given on banks from "other countries'.

[35] There has been much detailed work on the identification, measurement and management of particular aspects of operational risk that may then feed into the AMA approach. For example the World Bank has been working on E-Finance and associated operational risks including security risks – see Glaessner et al (2002) for example.

anyway! However, as the BCP compliance data above makes clear in practice Other Risks are not well-covered by supervisors in many developing countries that have been assessed. In practice there is then a need to enhance supervision here and Basel II may provide an incentive for extra resources to be provided. Of course, whatever the precise regulation adopted, the real job of supervisors is to consider whether the bank has sufficient capital for its overall risk-profile.

In terms of simply checking the capital adequacy against the regulation, the Basic Indicator approach would not require large resources if banks income statements are believed. The Standardized Approach is slightly more problematic as banks may have the incentive to massage their income statements such that greater gross income appears against the business lines that attract the lower operational risk. If supervisors have little experience or expertise, low effective control over and confidence in the veracity banks' income statements, there may be an argument to staying with the Basic Indicator Approach.

However, as countries have experimented with different levels of the basic capital requirement for credit risk, it may also be that countries will wish to consider whether the actual percentages suggested by Basel II (currently 15% under the Basic Indicator or the various percentages under the Standardized Approach) are relevant for their particular circumstances. The 15% figure was calibrated largely on the basis of G10 banks. However, gross income in developing country banks tends to be high compared to their G10 counterparts, perhaps reflecting higher risks but also perhaps higher costs. It is understood that the results of Basel's quantitative impact study (known as QIS3) indicated that the operational risk charge for some developing country banks could be very high. The appropriate calibration of the operational risk capital requirement for developing countries is then an issue for continuing future research.

2.4.5 Securitization Risk

The securitization of bank-originated claims has grown enormously in recent years. While, in terms of size, the markets in G10 swamp those in developing countries, some developing countries have made significant advances in terms of the volumes of these transactions. Moreover, this is an area that is generally deemed to be one where developing countries should advance further in order to enhance the supply of credit in certain areas, reduce the

risks in the banking sector (where long term assets are frequently funded by sort term deposits) and develop domestic capital markets further. One area where such transactions are becoming particularly important is in housing finance. When a bank securitizes assets from its balance sheet it frequently maintains an exposure. Basel II makes significant advances as to how these residual exposures should be treated depending on the structure of the transactions. In order to develop these markets further, it is critical to ensure that the incentives of the different parties including banks are appropriate.

As regarding capital requirements for credit risks on a loan, Basel II allows for a Standardized Approach and an IRB approach to securitization risks. Indeed a bank that uses the Standardized Approach for credit risk for the underlying exposure must use the Standardized Approach for securitization risk. A Simplified Standardized Approach is also discussed, but a bank that adopts SSA is only allowed to invest and not originate. This might be a significant restriction for developing country supervisors considering adopting the SSA for their entire banking systems.

Moreover, normally a securitization would attract a credit rating from an external agency and hence it is likely that the regular Standardized Approach would be relevant, even within the context of a developing country. This raises the possibility of employing the Export Credit Agency ratings for the underlying credit risk but adopting the more general SA for securitization risk.

This section of the new Accord will then be relevant to World Bank client countries depending on the existing size and the desire to grow, domestic capital markets.

2.4.6 Credit Risk Mitigation Techniques.

Markets for credit instruments with different forms of collateral have also grown in many countries. In particular, repo. markets in some jurisdictions are highly liquid with literally billions of dollars of contracts per year. The collateral behind such instruments is normally a Government bond (either local or say a US Treasury) but other instruments may use a corporate or bank security, gold or cash. As with securitization risk, the regulatory treatment for capital of such claims has lagged significantly behind the market's design of the relevant transactions and banks' own risk assessments. Basel II makes significant advances here with respect to Basel I. These proposals are then

relevant to the extent that the development of local capital markets is seen as a priority in developing countries.

In the case of the standardized approach, the focus here is not on collateral as in a mortgage (where the risk weight is reduced in the standardized approach to a minimum of 35%) or other forms of real collateral where some benefit may be given through provisions. Banks that employ the standardized approach for credit risk may adopt a Simple Approach for credit risk mitigation where, as in Basel I, it is the rating of the collateral rather than the actual obligor that is employed.

In the case of developing countries, if the collateral is a security it is likely that this will have some type of rating and then the Simple Approach will give some benefit in terms of credit risk mitigation. Indeed even where rating penetration is low, if securities generally used for collateralizing such instruments have ratings this approach may be useful.

However, for developing countries with reasonably developed financial markets, or those that strongly wish to develop them, Basel II's Comprehensive Approach may be more attractive. The "comprehensive approach" allows a reduction in the effective exposure of the original claim depending on haircuts that increase the nominal value of the original claim and decrease the value of the collateral. These haircuts may be provided by the supervisor (see paragraph 122 of Basel 2003a) or supervisors may permit banks to use their own haircuts. We note that the haircuts increase sharply for lower rated claims and for a sovereign with a rating in the BB- to BB+ category is 15%. Sovereigns with lower ratings are not listed[36].

In the case of a bank adopting the IRB approach, collateral may also include residential mortgages and the existence of the collateral basically feeds into revised estimates of Exposure At Default and Loss Given Default in somewhat similar vein to the comprehensive approach discussed above.

From the standpoint of a developing country, paragraph 95 of the proposals, on the overall framework for credit risk mitigation techniques, draws the reader's attention. This states that the credit quality of the counterparty and

[36] There is a more detailed issue here as to whether the Supervisory Haircuts presented are appropriate for developing country financial markets. As Basel's Market Risk Amendment (unchanged in Basel II) has been adapted by some developing countries for their own financial markets, the details of the comprehensive approach here may also need to be adapted.

the value of the collateral, "must not have a material positive correlation. For example, securities issued by the counterparty – or by any related group entity – would provide little protection and so would be ineligible. Under a strict interpretation, and given typical correlations in developing country bond markets, this may severely limit the use of a developing country government's bonds as collateral to any loan in the same developing country[37]. Again the use of a developing country sovereign Government bond being used as collateral and the haircuts relevant for such instruments is left as an important topic of future research.

3. Navigational Aids for the Sea of Standards

In the above I have tried to give an idea as to what is new about Basel II and which elements of the Accord may be relevant to developing countries. In this section, I will try to suggest how, depending on certain characteristics, countries may wish to adopt elements of the Basel standards as banking supervision and regulation is improved.

It is clear from the above discussion, that the first priority should be to attempt to fully implement Basel II, Pillar 2. Full implementation of Pillar 2, would imply a significant enhancement in Basel Core Principle compliance in many countries and this single policy would undoubtedly bring the best rewards in terms of improvements in banking sector safety. Moreover a country that has not implemented Basel II, Pillar 2 fully cannot be said to be implementing Basel II. Having said that, it is too harsh a conclusion that a country that has not fully implemented the Basel Core Principles (or possibly even fully Pillar 2) should stay away completely from Pillar 1 (or Pillar 3). Indeed many Basel Committee countries are not fully compliant with the Basel Core Principles and are set to implement Basel II before 2006. This then suggests that, depending on BCP (and Pillar 2) compliance, different elements of Pillar 1 might be gainfully adopted.

A criticism that has been leveled against Basel II is that there is such a wide variation of Pillar 1 alternatives, that the essence of a standard is lost. Hence, in what follows I try to define particular Islands within the Sea of Standards. In particular, I suggest that countries may wish to consider five basic

[37] This clause may well limit the subsidiary of an internationally active bank in a developing country using that government's bonds as collateral against a domestic loan depending on the interpretation of the host supervisor.

alternatives: (1) Basel I, (2) Basel II-a, (3) Basel II-b (4) Basel II-CRB or (5) IRB.

Basel I is self-explanatory with the qualification that countries opting to stay on Basel I should of course continue to improve their compliance with the Basel Core Principles. Moreover there is nothing to stop and possibly much to gain such countries adopting Basel II Pillars 2 and 3 and such counties may also consider introducing further measures to enhance market discipline. The Islands of Basel II-a and Basel II-b standards are defined further in Box 1 below.

Box 1: Five Islands in the Sea of Standards

1. Basel I

Continued work to enhance Basel Core Principle compliance and Basel II Pillars 2 and 3 and consideration of further measures to enhance market discipline.

2. Basel II-a

Elements: (i) Simplified Standardized Approach to basic credit risk measurement (ii) the Standardized Approach to Securitization Risk, (iii) the Simple Approach to Credit Risk Mitigation Techniques and (iv) the Basic Indicator Approach to Operational Risk. Countries adopting Basel II-a should be working towards full Pillar 2 and Pillar 3 compliance and to develop other measures of market discipline.

3. Basel II-b

Elements: (i) the Standardized Approach to basic credit risk measurement (ii) the Standardized Approach to Securitization Risk, (iii) the Simple or Comprehensive Approach to Credit Risk Mitigation (the latter with Supervisory Haircuts) and (iv) the Basic Indicator or the Standardized Approach to Operational Risk. Full implementation of Pillars 2 and 3 should be a requisite to Pillar 1 implementation.

4. Basel II-Centralized Rating Based (CRB)

Elements: (i) the Standardized Approach for basic credit risk measurement for capital (ii) the IRB approach to Securitization Risk, using banks' ratings according to a centralized scale, (iii) the Comprehensive Approach to Credit Risk Mitigation (the latter with Supervisory Haircuts), (iv) the Basic Indicator or Standardized Approach to Operational Risk and (v) the Centralized Rating Based approach such that bank ratings are used to set forward looking provisions compatible with the standardized approach for capital (defined further in the text below).

5. Basel II-IRB

Elements: (i) the IRB for basic credit risk measurement for capital (ii) the IRB approach to Securitization Risk, using banks' ratings according to a centralized scale, (iii) the Comprehensive Approach to Credit Risk Mitigation (with Supervisory or bank estimated haircuts), (iv) the Standardized Approach or Advanced Measurement Approaches to Operational Risk.

Basel II-a and Basel II-b are essentially differentiated by the degree of Basel Core Principle Compliance. A Basel II-a country would implement the SSA of Basel's Pillar 1 but strictly may not be implementing Basel II because there may be less than full compliance with Pillar 2 and in particular with consolidated supervision. The country may however wish to implement the Standardized Approach to Securitization to allow banks to originate and to employ ratings on securitized instruments. The standard would also include Basel I rules on mortgages (50% risk weight) and on retail portfolios (100% risk weight) rather than the reduced Basel II figures and would imply the added Basic Indicator operational risk capital requirement.

A Basel II-b country would apply the Standardized Approach for underlying credit risk measurement and Securitization Risk and the Simple approach for credit risk mitigation and the Standardized Approach to Operational Risk. Here it would appear useful to insist on full Pillar 2 compliance and possibly also consolidated supervision of banks.

I define a further potentially useful standard for countries that do not have significant rating penetration but have reasonably high compliance on the BCPs. This I label as the Basel II-Centralized Rating Based (CRB) approach. Here the idea is that the regulators set a "rating scale" as some countries have already done in relation to provisioning requirements. This scale may reflect the scale of a leading rating agency such as Standard and Poor's or Moody's.

Banks are then asked to rate loans according to this centrally determined scale but the rating remains the rating of the bank. One approach would be to have capital set according to the SSA or SA but then adjust individual loan provisions such that the sum of the estimated Expected Loss and Unexpected Loss equaled the sum of the SSA or SA given requirement plus provisions. The sum of Expected and Unexpected Loss should be estimated by the regulator through statistical means and complemented by a scenario or other approaches and may be checked against the Basel IRB curve. The IRB curve gives the estimated expected and unexpected loss for a "standard" loan calibrated according to the Basel Committee's estimates. This would allow a regulator to be compliant with Basel II, to have an approach to setting banks' reserving policies fully consistent with Basel's IRB approach but without the degree of autonomy that Basel's IRB gives to regulated institutions. This

standard also has advantages for those regulators that have autonomy in setting provisions but where capital is determined under the law[38] [39].

The CRB approach has the disadvantage that the bank has not developed the rating scale itself and the centrally determined scale may not suit each bank's particular client base. However it has the advantages of a) reflecting the current policies in some countries regarding how provisions are set, b) homogeneity of rating scales across banks allows for the regulator to monitor banks' rating much more easily (indeed rules regarding how different banks rate the same client may be introduced or where there are discrepancies on an important borrower, the supervisor can initiate more informal discussions to seek a common understanding) and c) the regulator can aggregate information across banks more easily for the purposes of analysis and in order to calibrate the requirements.

The final Island is the IRB approach. This is the most advanced approach and requires greater supervisory resources and skills and hence greater BCP compliance.

In choosing between these five Islands in the Sea of Standards, there are five dimensions of country characteristics that I suggest are critical:

(a) The degree of BCP (and hence Pillar 2) compliance.

(b) The current level of bank capital and the feasibility of increases in bank capital ratios in the shorter term

(c) The penetration of rating agencies and the operation of the rating market in general

(d) The size of, or the strength of the desire to develop domestic capital markets.

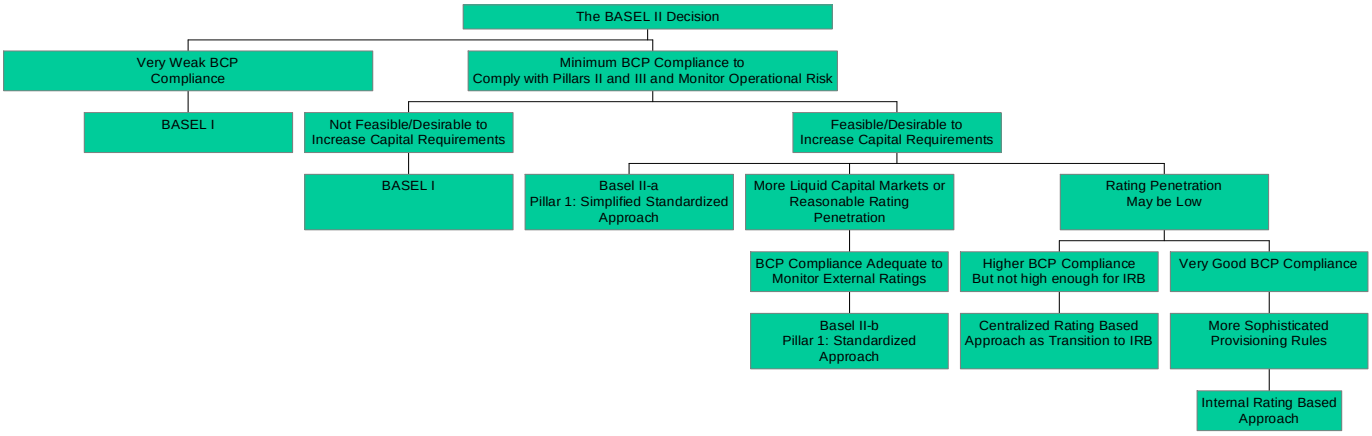
[38] In some developing countries where this is the case, provisions are typically very high as the regulator has compensated explicitly or implicitly for a capital requirement possibly considered as too low for the context of the environment.

[39] A second approach would be to have provisions equal to expected loss and capital adjusted to the unexpected loss following the expected revisions of Basel II's, IRB approach and using the revised Basel II curve. However, the centralized scale sits uncomfortably with the language of Basel's IRB approach where "internal rating" appears to have the bank determining both the scale and the rating.

(e) The availability of information and the degree of sophistication of banks and/or the supervisor in terms of assessing and monitoring loan-loss provisioning.

Figure 5 illustrates a decision tree as a navigational aid between these different choices

Figure 5: A Basel II Decision Tree



a) On BCP Compliance: The higher the degree of BCP compliance, then the more complex approaches within Basel II may be realistically contemplated. However, the Basel Core Principles do not allow for an easy set of specific preconditions. The exception to this is perhaps BCP 20, consolidated supervision. As the spirit of Basel II is very much towards strengthening consolidation, BCP 20 might be considered as a pre-requisite for Basel II implementation. Having said that, a country that has not implemented consolidated supervision may gain from implementing SSA or SA on a non-consolidated basis. The Basel II- standard is then defined for countries that are in this situation.

With this qualification, the SSA does not imply a significant degree of additional complexity to Basel I, and not considering Pillar 2 compliance itself, the BCP compliance required to implement SSA should not then be more than Basel I. The main differences lie in (1) monitoring Operational Risk (2) evaluating particular elements under national discretion[40] (3) and implementing and monitoring Pillar 3.

These considerations imply that a precondition for Basel II-a might be thought of as compliance with the "other risks" component of BCP to at least ensure that the supervisor has considered carefully risks including operational risk as well as the capacity to consider the elements under national discretion.

[40] Here the most important relate to a) the 75% weighting for retail claims and the relevant portfolio limits b) the new 35% minimum on residential mortgages and c) the new rules on lending to sovereigns including banks' own sovereign.

The Standardized Approach increases the complexities of banking supervision. The extra supervisory responsibility relates to the definition and monitoring of credit rating agencies, their credit ratings and the extra task of ensuring that banks use those ratings appropriately – both for underlying credit risks and for securitization risk and credit risk mitigation. While this extra supervisory complexity may not appear large for countries with low rating penetration, there is an argument that it will divert limited resources and attention from where priorities should lie i.e.: enhancing Pillar 2 and basic BCP compliance. Only countries with some reasonable minimum standard of BCP compliance should then adopt the SA[41].

There is a further and very significant step up required in supervisory skill and resources to successfully implement the IRB approaches. Indeed, high BCP compliance and full Pillar 2 compliance should be thought of as the preconditions for IRB implementation. As written, IRB gives a great deal of autonomy to banks to determine key parameters that feed into capital. It also implies that supervisors should have the human capital and the information to check what banks are doing. Moreover, as countries have experimented with different Basel I ratios (normally higher than the 8% recommended minimum), there is an important question as to whether Basel II is calibrated correctly for the setting of a developing country. One precondition for successful IRB implementation is that the supervisor has the information, resources and skills to be able to demonstrate that the IRB approach is appropriately calibrated.

b) On the feasibility of increasing capital requirements: if a country's financial system has significant excess capital over Basel I ratios and increasing the requirement across banks presents little problem, or there is a desire to ensure that the financial system is more highly capitalized, then this calls for early SSA or SA implementation. As reviewed, the SSA and SA will imply an increase in capital requirements for most developing countries as the added operational risk component will not be compensated either by lower

[41] Some banking supervisors, including some of those that maintain centralized information on large borrowers payments' histories for the purposes of monitoring provisioning, already supervise bank ratings. These supervisors will already be checking the banks' ratings against those of ratings from rating agencies where these exist. In this sense the extra supervisory task is related to BCP number 8 on loan evaluation and loan loss provisioning. On securitization risk, the supervisor will also wish to ensure that loan securitizations are properly rated depending on the types of structures employed. Depending on the particular area of the securitization – e.g.: housing, credit card, car-loan - this, may well require specialist (and frequently international), rating expertise – and if securitization is common, this will also increase supervisors' responsibilities and required resources.

underlying requirements on highly rated credits or by more generous treatments for particular credits, although this does depend to some extent on the distribution. As SSA does not represent much in terms of supervisory complexity if there is no problem or a desire to increase regulatory capital ratios implementing SSA may be a useful way to do this.

c) On rating agency penetration: The higher the penetration of rating agencies and the more confidence there is in the workings of the rating market then the more attractive the full standardized approach becomes relative to Basel 1, SSA or IRB. Confidence in the rating market is increased given the depth of local capital markets so there is a relation between this and the following dimension. The fear of using ratings for regulatory purposes is that the company being rated becomes the client and not investors that create the right incentives for the rating agency to develop and maintain a reputation. The increased use of ratings for regulatory purposes may then imply a greater chance that ratings will be "captured" and will be less than fully independent. The penetration of the rating industry, the confidence in the quality of the ratings and the depth of capital markets and the strength of the investor community will then be fundamental determinants as to whether a country will consider the Standardized Approach as appropriate.

d) On capital market depth: Banks and security markets do not develop independently but are intimately tied together. As banks are normally critical to the development of security markets, providing banks with appropriate incentives for risk spreading may be an important part of the development of local security markets. For those countries that have some depth to capital markets, or a strong desire to develop them, there will also be greater motivation for Basel II implementation sooner rather than later. In environments where BCP compliance is strong enough to consider Basel II implementation but not strong enough to think of more advanced approaches, such countries should consider carefully the Standardized Approach.

The implementation of SA would serve to (a) to increase bank regulatory capital due to operational risk as reviewed and (b) provide for more appropriate treatment and incentives with respect to credit risk mitigation techniques and securitization risks. When considering securitization risk, the penetration of the rating industry more generally may be less relevant. If a bank is to securitise a retail portfolio this will normally be done in the context of obtaining a rating for the portfolio or the security created. If a bank seeks insurance to mitigate credit risk, the guarantor (or the securities used as

collateral) may have a rating even if general rating penetration in the country is low. Hence the Standardized Approach may be more useful for the treatment of these elements, and hence the development of local security markets, rather than the treatment of the underlying risks in some developing countries.

e) On loan loss provisioning expertise: According to Basel Core Principle number 8, banks should have a methodology for determining provisioning requirements and this should have a component that is forward looking. Supervisors may simply monitor banks' systems in this regard but many regulators in developing countries (and Italy and Spain and in Europe) have developed centralized databases to monitor loan repayments and, in some cases, ask banks for a "rating" on a forward looking basis. To the extent that banks have developed these, "rating systems" and supervisors have developed appropriate databases and techniques to monitor them, they will be better placed than many developed countries to implement either the CRB or even the IRB approach.

4. Cross Border Issues

As banking has become globalized and not just internationalized, cross border regulatory and supervisory issues have grown[42]. While Basel II does not change the basic premises on which cross-border banking regulation has developed, it does create a set of interesting issues as noted in the recent "High Level Principles" – BCBS (2003b). This note makes clear that local host regulators may apply a different regulatory standard than home supervisors and banks, as they do today, may well be asked to satisfy the local regulations at the level of subsidiary or branch and the regulations of the home supervisor on a consolidated basis internationally[43]. This may imply dual regulatory treatment. And for an international bank in many different locations potentially multiple systems considering the many different alternatives offered in Basel II. On the other hand, and as the note suggests, there is clearly an argument that calls for greater homogeneity of regulatory treatment and

[42] The BIS and others refer to internationalization as cross-border lending and globalization as banks setting up brick and mortar operations in multiple countries. There has been a marked increase in globalization in the 1990's.

[43] We note that some developing countries ask branches to have capital as well as subsidiaries. The choice between allowing branches or subsidiaries of international banks and whether branches should have local capital may depend largely on local bankruptcy legislation. However, as recent cases (such as BCCI) have shown this is an area where there are still issues to be resolved and further international cooperation is required to attempt to reduce legal uncertainties.

reduction in regulatory costs both for supervisors and for banks. In practice this is likely to be something of a balancing act for home and host supervisors.

BCBS (2003b) does not discuss what factors may push home and host country supervisors towards different ends of the single-treatment to dual-system spectrum. The smaller an international bank is in a particular host, and the stronger the guarantee from the parent, then the more the local supervisor may wish to homogenize local regulations with those of the home supervisor. However, to the extent that the international bank is large for the host but small for the international bank and for the home regulator, then the more the local regulator should insist on rules that ensure adequate protection to the local financial system and that the local regulator can understand, can monitor and can enforce.

One very stark example is with regards to operational risk. For a large internationally diversified bank the operational risk of the whole bank is smaller than the sum of the operational risk of its constituent parts and indeed Basel II's more advanced approaches now gives explicit recognition of this. However, for a country with the subsidiary of a foreign bank, the relevant risk is the risk of the subsidiary not necessarily the diversified entity. If the international bank gives an unconditional guarantee to support its subsidiary under all states of the world, then the relevant risk would indeed be that of the diversified bank. However, few international banks would wish to give such a guarantee and in practice the guarantee afforded to a subsidiary is not at all transparent[44]. Indeed, it is not even particularly transparent regarding a branch; although US law has now gone some way to defining the states of the world under which a US bank parent may not be held liable for liabilities of an overseas branch[45]. Failing a transparent and broad guarantee, many host countries will surely wish to ensure that operational risk is covered at the level of the subsidiary.

This argument is of course more general. It covers credit risk as well. However, Basel II currently does not allow explicit benefits given a greater diversification of credit risk – the IRB approach is apparently calibrated for a (fixed) 20% correlation between default rates. Again unless there is a transparent guarantee across the consolidated entity, host supervisors may

[44] One reason why banks may not wish to extend such a guarantee is that they are then subject to a type of regulatory hold-up problem. Once having entered and taken on sizeable liabilities and expending large sunk costs, local regulators or law makers may take decisions rendering their operations les sand less profitable and yet exit costs may be very large.

[45] See Del Negro and Kay (2002) for a discussion.

wish to consider the diversification of a subsidiary and not the international bank[46].

A second dimension affecting the appropriate place to choose on the single versus dual regulatory treatment spectrum is compliance with the Basel Core Principles. If the home and host country are close in terms of their compliance with the BCPs (and hence Pillar 2), then it is more likely the two regulators will adopt the same approach to Pillar 1. However, if there is a wide difference regarding BCP compliance, then it is more likely that the home and host country will adopt different standards.

Indeed, an over-riding objective of Basel II should be to use the cross-border supervisory issues as a springboard for supervisory cooperation and where possible for knowledge transfer in order to enhance BCP compliance. One simple idea is that whenever an on-site inspection is made of an international bank in a developing country, then the host supervisor should have the option to send its own staff to accompany that inspection. However, there are surely other modes of cooperation that can be developed and formalized to enhance knowledge transfer.

The details of Basel II however also suggest particular issues. Below I simply list some issues that may be particularly relevant to developing countries. I start by assuming that both home and host are adopting the Standardized Approach (SA).

Pillar 1: Both home and host adopt the Standardized Approach

Many developing country companies have local ratings that are normally on local currency instruments issued in local markets. It seems likely that local ratings will be employed by local regulators to fix capital standards under the SA. However, as local ratings do not take into account convertibility and transfer risks and may be determined using a different scale, the host supervisor of an international bank may not accept the local currency ratings of corporate or other clients.

Linked to this, if the subsidiary of an international bank lends to a developing country sovereign in own currency and funded in own currency the home

[46] Although we note that Griffith-Jones and Spratt (2003) argues that international diversification of credit risk may imply 20% is too high.

supervisor must decide whether that will be treated with a zero risk weight by the consolidated entity. Further, the same issue applies to the more favorable treatment of short-term inter-bank loans in local currency. A set of further questions arise given the long list of items subject to "national discretion". For example, if the local regulator chooses not to apply the 35% for mortgages (or the 75% for retail etc.) would the home regulator still allow the subsidiary of an international bank to adopt the 35%?

Many developing countries may apply the SA multiplying the risk weight obtained in the Basel II tables relevant to the local rating by the relevant basic requirement. Some developing countries currently have an 8% basic requirement but others have higher requirements. This implies that the SA may not be so Standardized when it comes to cross country comparisons. First there is an issue as to whether one country's local AA is the same as another's and second that rating is then converted into a capital charge using different basic requirements (8%, 10%, 11 % etc). It seems further work is required here to consider the calibration issues involved across different countries where local ratings are employed.

Pillar 1: Where the home country bank adopts IRB.

A major concern with the advanced approaches of Basel II is that there will be an inappropriate application of the advanced approaches where supervision is not strong enough to be able to monitor the more sophisticated rules on capital appropriately. This fear is also relevant for the subsidiaries of foreign banks, especially where the foreign bank is large for the host country.

In these circumstances it would appear paramount that the host supervisor adopts a system that it can monitor effectively. Only if the foreign bank gives a broad and transparent guarantee to its subsidiary or branch, then it might be appropriate for the host supervisor to lean more on the work of the home supervisor. The home regulator clearly has to adopt an appropriate system for the consolidated international bank, however this should not imply a regulatory treatment by a host supervisor that the host is unable to monitor.

This argument implies, given the level of BCP compliance across many countries as detailed above, that it may be fairly common that an international bank is using an IRB approach on an international basis whereas particular host supervisors are adopting the SSA or SA approaches. There is then an interesting issue as to whether the host supervisor would allow the bank to

simply add the SSA or SA calculated capital requirement for the relevant subsidiary to the IRB calculated capital requirement for other parts of the bank and how consolidation would work in this case. For subsidiaries that are not large relative to the international bank as a whole, allowing an international bank to use the SSA or the SA in particular jurisdictions may be appropriate in the interests of regulatory efficiency.

In some cases, and particularly for the more sophisticated emerging economies, the host may adopt the IRB approaches for the subsidiaries or branches of foreign banks. However, this does not necessarily mean that the regulatory treatment will be the same in the home and in the host country. Indeed it is extremely unlikely that a bank will consider it appropriate to use the same IRB scale for say US risks and developing country risks and crucial parameters will differ. For example in the IRB Foundation approach it is very likely that the supervisor determined parameters such as exposure at default and loss given default will be different.

Moreover, the host country may consider the Basel II IRB curves as giving too low a level of capital, if default probabilities from the US or other G10 countries are employed and too high a level of capital if the default probabilities are estimated using local data. In other words, the IRB calibration may simply not be appropriate given the very different risks. We come back to this point in the next section. Or, as discussed above the host regulator may wish to have a centralized scale (referred to above as a CRB approach) to set either capital or provisions. In conclusion, if home and host both allow the IRB approach, this does not necessarily mean that the bank will be facing a very homogenous regulatory system.

Pillar 3 Issues

In this overview paper, I have not entered into a detailed discussion on Pillar 3. However there is an interesting point to be made with respect to cross-border issues. Pillar 3, as written, gives significant autonomy to the bank to determine which subsidiaries are "material" to the group and hence whether more detailed information on the loan-book, on capital requirements and on capital should be provided. However, as implied in the general discussion in this section, what is material to the bank and what is material to a particular host country may be two different things. Where an international bank has a subsidiary or a branch that is large for a particular host country, there are clearly advantages in ensuring that there is a high degree of transparency

whether the subsidiary or branch is material to the group or not. This argument suggests that it should be the host supervisor that should determine whether the subsidiary or a branch is material or not and not the bank or the host supervisor that will consider material only in relation to the overall bank. Again, unless an international bank has given a broad and transparent guarantee to its subsidiary or branch, then in the public interest of transparency and the ability of depositors and other creditors to perform adequate risk assessment, there is a strong case that Pillar 3 should apply to each subsidiary or branch in a host country.

This argument is reinforced by noting that most foreign bank entry into developing countries has been effected through the purchase of a domestic institutions and not through start-up. In turn this implies that valuable information has been lost. Typically the domestic institution would have been quoted on the local stock market and would have other fixed liabilities outstanding such as bonds. Foreign purchase is typically associated with stock market de-listing and depending on the bank and its own internal organization and funding strategy, local debt instruments may also cease to be issued or issued in much smaller quantities. This implies that, in terms of the potential for risk assessment, the transparent market prices of equity and debt are replaced by the non-transparency of some measure of guarantee from the parent.

This reasoning begs the question of whether the proposal here of Basel II Pillar 3 to apply at the level of subsidiary or branch in a host country – whether that subsidiary or branch is material or not to the international bank – really goes far enough. Indeed, a complementary strategy would be to ask the subsidiary or branch to issue a certain quantity of debt locally akin to Argentina's subordinated debt regulation. This would at least ensure that there was some market and hence price discovery on the risk of the subsidiary augmented by the parent's guarantee.

5. On IRB Recalibration in developing countries

As Basel I has been applied around the world with different basic capital requirements – 8% and higher – there is a natural question as to whether the calibration of Basel II is appropriate for developing countries where credit and other risks are generally higher. In a series of recent papers with coauthors from the Central Bank of Argentina, and in a project sponsored by the World Bank including the Central Banks of Argentina, Brazil and Mexico, a set of

related methodologies have been developed that may be applied to test the calibration of Basel II's, IRB approach in the context of a developing country[47].

The different approaches have two elements in common, (a) the estimation of loan default probabilities typically using historical data on loan default rates and econometric techniques such as a logit or probit analysis and (b) the application of a credit risk portfolio model[48]. An alternative is to use the Carey (2002) sampling methodology to estimate credit risk directly. Clearly a pre-requisite in each case is the availability of reliable and appropriate data.

This data may exist at the level of the bank. However in some countries, extensive loan databases have been built up. These are reviewed in a recent book, Miller (2003). While the origins of these databases are various and their uses multiple, one increasingly common use is to monitor provisions. In other words, the databases are used to check which loans are past due and to set and monitor bank provisioning policies.

Some countries have gone further than this and asked banks to provide a forward-looking rating for borrowers according to a standardized scale. In this case the ratings of different banks for the same borrower can be compared very easily and discrepancies investigated. These databases have then become important tools of banks' reserving policies.

These types of public credit registries are also an extremely useful source of information to estimate probabilities of default and other parameters to feed in to credit risk models. For each of the techniques described above, combined with other assumptions (e.g.: on underlying correlations and on loss given default) the final result is a curve that represents the loss probability distribution function of losses for a portfolio of loans. We will refer to this as the Supervisor's credit risk model.

To consider a concrete example, suppose the result for a particular portfolio is a curve that tells the analyst, for a particular bank portfolio of say $100

[47] See Falkenheim and Powell (2003), Balzarotti, Falkenheim and Powell (2002), Balzarotti, Castro and Powell (2003) all on historical Argentine data and Marquez (2002) on Mexican data. See also xxxx for a very similar study on Italian data.

[48] Such models include Creditrisk+ (often referred to as an actuarial model and focused more on risk than on pricing, developed by Credit Suisse Financial Products a part of Credit Suisse First Boston) and Creditmetrics (developed by JP Morgan offshoot, Riskmetrics, perhaps simpler conceptually than Creditrisk+ but more taxing in terms of data and focused on pricing as well as on risk).

million, what is the probability of losing $1 million, $5 million, $10 million etc. There may then be a 10% chance of losing $1 million, a 1% chance of losing $5 million, and a 0.1% chance of losing $10 million. The Basel II IRB curves are apparently calculated using a Value at Risk rule that asks the question, what is the maximum amount that might be lost considering 99.9% of the distribution or what is the amount that might be lost that corresponds to a 0.1% probability. This maximum, or Value at Risk, in the above example is then $10 million.

The value at risk is then a different concept to the expected loss. The expected loss is the loss that one would normally expect. It is the average or mean of the distribution. The value at risk is the expected loss plus an extra amount, often referred to as the unexpected loss, up to a particular statistical tolerance – in the above example 99.9%. The Basel II IRB curves, as stated in the Consultative Paper number 3 are calibrated to cover the whole value at risk or in other words both the expected loss and the unexpected loss.

This has led to some controversy, as the more modern theory has it that provisions should be forward looking and cover expected loss and hence it appears that there may be double counting. On the other hand, given the lack of an international agreement on provisioning rules, one can understand the position of the Consultative Paper number three as one of safety first. However, the result of recent discussions is that Basel II will eventually allow banks that can show provisions in excess of expected loss, to reduce capital accordingly and hence avoid double counting.

This discussion is important in terms of the calibration of Basel's IRB curves. As the IRB curves are calibrated with a set of parameters that are only partially known, any recalibration looks potentially quite difficult. However, Balzarotti, Castro and Powell (2002) develops a reasonably simple way to do this for those unfortunate enough not to be privy to the full set of parameters and methodology employed.

In broad terms, the methodology consists of the following:

1. The sum of expected and unexpected loss for a bank's portfolio or a bank sub-portfolio is estimated using the techniques described above – using the Supervisor's credit risk model.
2. The Basel II IRB approach is simulated using the same default probabilities and loss given default assumptions as used in (1)

but employing the Basel IRB curve directly to calculate the capital requirement – which in CP3 is also equal to expected plus unexpected loss.

3. Given sufficient observations on (1) and (2) (i.e.: given a large enough number of banks or if not using the sub-portfolios of available banks), a regression can be performed between the estimated capital requirement, using the Supervisor's model, and the Basel II calculated requirement.
4. If the Supervisor's model is close to one of the standard techniques (that lie behind the Basel II curve), then the regression should give a close-fit and the regression coefficient will yield a conversion factor from the Basel II formula produced capital requirement to the estimate provided by the Supervisor's model. This conversion factor can then be applied to Basel II's curve for application of the IRB approach.

Once the Basel II curve is recalibrated there are then various possibilities in terms of implementing revised capital regulations. One is to set provisions by means of a rule to simulate the expected loss and publish a revised Basel II IRB curve (netting out the expected loss as the final Accord is expected to allow) as the capital requirement. Banks may then generate their own default probabilities (and possibly other parameters) as per Basel's IRB. However, if a rating based provisioning system already exists, then the Centralized Rating Based approach discussed above has the tremendous advantage of building on the known technology and secondly enhances the ease of monitoring banks' credit risk assessments. The disadvantage is that the centralized scale may not fit so well a particular bank's set of clients.

Let us assume that the CRB approach is followed. Then based on the centralized rating scale, the regulator may set a rule for provisioning to simulate the expected loss and for capital to simulate the unexpected loss according to the adjusted Basel curve. Let us take an example of a risky uncollateralized loan, perhaps to a developing country small or medium sized enterprise. Let us assume that the total value at risk is 18%. If the expected loss is 6%, then provisions should be set at 6% and the appropriate capital requirement would be 12%.

However, this may be felt by some not to comply with Basel II's IRB as the rating scale is centralized. Moreover some developing country jurisdictions may find it difficult to obtain the necessary authority from Congress or other

relevant authority to implement such a complex system or give the supervisor the necessary autonomy to set capital in that way. An alternative approach, as outlined in the previous section, is for the country to adopt the Basel II's SA or even SSA for Pillar 1. For most loans this will give a capital requirement of 8%, except in the unlikely event that the loan has a rating. Then, the above technique can be used to set forward looking provisions. In the example cited if the Basel SA gave a requirement of 8%, then the forward looking provisions would have to equal 10%. Although it is often difficult to reconcile logically, while many developing country supervisors do not have the autonomy to set capital, they tend to have more autonomy to set provisions. This would allow a country to be compliant with Basel II by the letter and yet the total bank reserving policy would still be that equal to a Basel II (CP3), IRB type rule of Expected plus Unexpected Loss.

This process may sound simple. However, the data and other requirements are large and there is also a tremendous amount of work that is required to ensure that the data is of reasonable quality and that each step in the process is carefully checked. In the case of Argentina, to develop a public credit registry with a reasonable standard in terms of data quality and of a useful size to cover most of the banks' loan portfolios took a process of some 5-6 to years. And the data that was then available to truly test the Basel calibration was only for about a two year period before the crisis began - when the database suffered once more from serious problems of non-reporting from some institutions, changing definitions of variables and generally a poorer quality consistency. A two year period is clearly an insufficient one to truly test a capital rule and the results were only thought of as indicative by the Argentine authorities.

However, independently of Basel II, the learning process on the part of bank supervisors and bank regulators to understand the loss probability distributions of different banks, which in turn depend on the distribution of the default probabilities and the concentration of each bank's loan portfolios and how they changed over time, and how that started to feed into thinking regarding appropriate provisioning and capital rules for individual banks was a highly promising one.

The above procedures come with the standard health warning that these types of VAR analyses should only be thought of as one component in terms of how

to fix capital requirements[49]. Still, it is hoped that this exercise may be of interest to countries with reasonable sophisticated banking supervisors considering how to implement, and check the calibration of, Basel's IRB approaches.

6. Conclusions

This paper has attempted to provide navigational tools for developing countries and their advisors regarding the decision of whether to adopt Basel II and if so, how. For many countries, Basel II represents a considerable challenge. The first priority should be the full implementation of Basel I and the Basel Core Principles (BCPs). Basel II should only be considered after some reasonable BCP compliance is attained such that scarce supervisory resources are not diverted from improving basic banking supervision. Basel II, Pillar 2 and Pillar 3 compliance should be seen as at least as important as Pillar 1 compliance. Moreover, in countries where traditional supervision is weak, countries should consider going beyond Basel II, Pillar 3 to capture the complementarities between regulatory and market discipline.

Having said that, the simpler approaches of Basel II, Pillar 1 may be feasible for countries with a reasonable compliance with the BCPs. The Simplified Standardized Approach (SSA) does not imply a significant increase in complexity than Basel I in terms of credit risk assessment. SSA does imply that operational risks would have to be supervised (of course, they should be under the BCP's anyway) and would most likely imply higher capital requirements for developing countries as the operational risk requirement would not be compensated by a reduced requirements for credit risk.

However, under SSA, developing countries however may not wish to reduce risk weights on mortgages and retail loans depending on observed default rates and default rate correlations. Moreover, for countries that wish to grow capital markets the Basel II approaches for credit risk mitigation and securitization risk that use credit ratings may be more attractive even if rating penetration more generally is poor. Hence a useful standard (in this labeled paper Basel

[49] Argentina's experience shows this very clearly. Credit risk capital requirements did not take into account the full currency risk component of credit risk that resulted from a maxi-devaluation. Some estimates have it that bank capital would have provided protection for a 40% devaluation – close to estimates of real exchange rate over-valuation. Nor were capital requirements designed to protect banks from the effects of the asymmetric pessification of banks' assets and liabilities or the entire risk of default on public sector assets. Argentina placed a 100% risk weight (11.5% capital requirement) on loans to Argentine provinces and a lower requirement on loans and bonds of the Federal Government.

II-a) may be 1) SSA for basic credit risk evaluation, (but with Basel I risk weights for mortgages and retail credits) 2) the Simple Approach for Credit Risk Mitigation and 3) the Standardized Approach for Securitization Risk and 4) the Basic Indicator approach for Operational Risk.

The Standardized Approach (SA) for basic credit risk becomes more attractive for countries with deeper rating industries and higher BCP compliance such that supervisors can take on the extra task of ensuring that the rating industry is working reasonably well. A standard Basel II-b is then defined that consists of 1) the SA for basic credit risk, 2) the Simple or Comprehensive Approach to Credit Risk Mitigation 3) the Standardized Approach to Securitization Risk and 4) the Basic Indicator (or possibly Standardized Approach) for Operational Risk.

Still, it is clear that many developing countries fall between two stools. On the one hand rating penetration is low so that the SA will yield little in terms if linking bank capital to risk. On the other hand, the IRB approaches look complex and most developing countries will not wish to implement these more advanced approaches for many years to come. In view of this, a Centralized Rating Based (CRB) is proposed here as a transition tool towards the more advanced approaches.

The CRB approach calls for the Supervisor to set the rating scale in terms of default probabilities and in how those default probabilities map to a capital requirement[50]. Banks would then rate their clients according to this standardized scale. This would not be an IRB approach as such as although the ratings would be the ratings of the individual banks, the rating-scale would be determined by the regulator. IRB calls for both the scale and the rating to be determined by the bank. The drawback of this proposal is that an individual bank may not have the exact rating scale it wishes. However, the tremendous advantage is that the regulator could easily compare a) the ratings of the same borrower by different banks b) the average ratings of different banks, c) banks' ratings in the same sector d) banks' ratings in different regions and e) banks' ratings for a particular instrument etc. Thus it would be much easier to monitor and supervise.

For countries that wish to implement the CRB approach but be fully Basel II compliant according to the letter and not just the spirit of the proposals, then

[50] This might follow the IRB curve as published or a developing country may wish to recalibrate to impose higher requirements as many have done with Basel I.

one possibility is to adopt the Standardized Approach for capital and use the CRB approach to define provisions. Under recent changes to the Basel II proposals, if the CRB approach is calibrated to give provisioning levels equal to the full "Value at Risk" minus the Standardized Approach's capital requirement, then a country would have a fully Basel II compliant and rational system where banks' reserving policies were roughly equal to the Value at Risk[51]. Such an approach would build very naturally on the types of public databases many countries have built up to monitor and enforce provisioning rules. This standard might be labeled Basel II-CRB.

There are then a group of developing countries that will indeed wish to implement the IRB approach - at least for a small group of larger and more sophisticated banks. These countries will of course need to dedicate substantial resources to consider carefully the IRB proposals, possibly recalibrate them for the task to hand, and monitor and supervise them effectively. There will also be a substantial cost for banks in these countries in terms of regulatory costs for the data and systems required. Only countries that score well in terms of BCP compliance will be in a position to fully reap the rewards of these more advanced approaches.

One criticism of Basel II has been that there are so many alternatives that the essence of a standard has been lost. It is hoped by defining the Islands of a) Basel I, b) Basel II-a, c) Basel II-b d) Basel II-CRN and e) Basel II IRB, that countries may navigate more effectively through the Sea of Standards.

Finally, given the globalization of banking, Basel II will also focus the mind of supervisors on a set of important cross-border issues. These range from particular definitions in different countries regarding both the SA and the IRB approaches to broad issues regarding the degree of desired homogeneity of approaches in home and host countries. From the standpoint of a developing country, if a bank (whether a subsidiary or a branch depending on local legislation) is large in the local financial system and there is no broad, transparent and legally binding guarantee from the parent, then the local regulator will no doubt wish to ensure a regulatory regime is in place that is appropriate and that it can monitor effectively and enforce. Moreover, it will be useful for regulators to define such banks as "material" for the purposes of Pillar 3, even if the bank in the host country is very small relative to the size of the entire international bank. Moreover, if foreign bank entry has been

[51] The roughly comes from the use of a reserving policy for individual loans for a portfolio of credit risks – as Basel II's IRB approach also approximates to the full Value at Risk of a loan portfolio.

accompanied by delisting and a reduction in the market information available regarding the local bank, then local regulators may wish to consider other techniques to obtain market signals on the risk of subsidiaries of international banks operating in their jurisdictions.

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P1	**BASEL CORE PRINCIPLES FOR EFFECTIVE SUPERVISION**
C1	**Chapter 1 Objectives, Autonomy, Powers, and Resources (CP 1)**
CP1	**Principle 1. Objectives, Autonomy, Powers, And Resources. An effective system of banking supervision will have clear responsibilities and objectives for each agency involved in the supervision of banks. Each such agency should possess operational independ**
SP11	Principle 1(1). An effective system of banking supervision will have clear responsibilities and objectives for each agency involved in the supervision of banks.
SP12	Principle 1(2). Each such agency should possess operational independence and adequate resources.
SP13	Principle 1(3). A suitable legal framework for banking supervision is also necessary, including provisions relating to authorization of banking establishments and their ongoing supervision.
SP14	Principle 1(4). A suitable legal framework for banking supervision is also necessary, including powers to address compliance with laws, as well as safety and soundness concerns.
SP15	Principle 1(5). A suitable legal framework for banking supervision is also necessary, including legal protection for supervisors.
SP16	Principle 1(6). Arrangements for sharing information between supervisors and protecting the confidentiality of such information should be in place.
C2	**Chapter 2 Licensing and Structure (CPs 2-5)**
CP2	Principle 2. Permissible Activities. The permissible activities of institutions that are licensed and subject to supervision as banks must be clearly defined, and the use of the word "bank" in names should be controlled as far as possible.
CP3	Principle 3. Licensing Criteria. The licensing authority must have the right to set criteria and reject applications for establishments that do not meet the standards set. The licensing process, at a minimum, should consist of an assessment of the banking
CP4	Principle 4. Ownership
CP5	Principle 5. Investment Criteria
C3	**Chapter 3 Prudential Regulations and Requirements (CPs 6-15)**
CP6	Principle 6. Capital Adequacy
CP7	Principle 7. Credit Policies
CP8	Principle 8. Loan Evaluation and Loan-Loss Provisioning
CP9	Principle 9. Large Exposure Limits
CP10	Principle 10. Connected Lending
CP11	Principle 11. Country Risk
CP12	Principle 12. Market Risks
CP13	Principle 13. Other Risks
CP14	Principle 14. Internal Control and Audit
CP15	Principle 15. Money Laundering
C4	**Chapter 4 Methods of On-Going Supervision (CPs 16-20)**
CP16	Principle 16. On-Site and Off-Site Supervision
CP17	Principle 17. Bank Management Contact
CP18	Principle 18. Off-Site Supervision
CP19	Principle 19. Validation of Supervisory Information
CP20	Principle 20. Consolidated Supervision
C5	**Chapter 5 Information Requirements (CP 21)**
CP21	Principle 21. Accounting Standards
C6	**Chapter 6 Formal Powers of Supervisors (CP 22)**
CP22	Principle 22. Remedial Measures
C7	**Chapter 7 Cross-Border Banking (CP 23-25)**
CP23	Principle 23. Globally Consolidated Supervision
CP24	Principle 24. Host Country Supervision
CP25	Principle 25. Supervision Over Foreign Banks' Establishments

Appendix 1: A Key to the Basel Core Principles

Figure A1: Developing Country Compliance by Key Basel Core Principle