

## The Challenges of Basel II

**T**HE new international accord on bank regulation and supervision, Basel II, is due to be finalized in 2004 for implementation in member countries of the **Basel Committee for Banking Supervision** before the end of 2006. As no country in Latin America and the Caribbean is a member of the Basel Committee for Banking Supervision, and the International Monetary Fund (IMF) and the **World Bank** have said that implementing **Basel II** will not be considered a requisite in terms of their financial sector assessments, whether the region should adopt the new accord is an open question.<sup>1</sup> At the same time, countries in the region all claim that they calculate capital requirements according to the Basel I methodology, and in terms of its international acceptance, the 1988 agreement stands as one of the most successful financial standards. A central question is whether Basel II will become as popular a standard as Basel I. In turn, this will depend on whether the countries in the region find the new standard appropriate and whether market or peer pressure encourages countries to adopt it.

Moreover, Basel II contains many alternatives, including the standardized approach and the more advanced internal rating-based (IRB) approaches. A secondary but important question is then, if Basel II is to be adopted, how should countries in the region implement it? To date the official sector has published little guidance, and there appears to be an urgent need for navigational aids (see Powell 2004). This chapter suggests that Latin America and the Caribbean largely falls between the standardized approach, which may yield little in linking regulatory capital to risk, and the IRB approaches, which appear complex. Hence, an intermediate approach is suggested, perhaps as a transition measure, the **centralized rating-based (CRB) approach** (see Powell 2004). Furthermore, although Basel II has been written with internationally active banks in mind, it pays surprisingly little attention to a set of important cross-border issues. Given the importance of foreign banks in Latin America and the Caribbean, their regulation by the home and host supervisors and the

coordination of their supervision are key issues facing banking regulators.<sup>2</sup>

### RELEVANT ASPECTS FOR LATIN AMERICA AND THE CARIBBEAN

There are many general descriptions of **Basel II**, including those available on the [www.bis.org](http://www.bis.org) website. This chapter focuses on the aspects of Basel II that are particularly relevant for Latin America and the Caribbean. The new accord consists of three pillars: Pillar 1, Regulatory Requirements; Pillar 2, **Supervisory Review**; and Pillar 3, **Market Discipline**. After some brief words on Pillars 2 and 3, the chapter focuses largely on Pillar 1.

Pillar 2 echoes much of what was discussed in Chapter 6 on banking regulation and supervision. It suffices to say that countries complying fully with the Basel Core Principles for Effective Banking Supervision (BCP) would mostly comply with Basel II, Pillar 2. Unfortunately, the region has not done well when it comes to BCP compliance, especially on issues regarding supervisory independence and powers, remedial actions, and analysis of other risks. The countries would then have to become much more fully compliant with the BCP to implement Basel II, Pillar 2.

Although it is entitled **Market Discipline**, Pillar 3 focuses more on the **disclosure** of a bank's **capital requirements** according to various breakdowns and the actual amount of bank capital. Given the pattern of BCP compliance, the results from studies reviewed in Chapter 6 regarding the ineffectiveness of many indicators of strong supervision in reducing the probability

<sup>1</sup> Also relevant is the recent decision of the United States to keep the vast majority of U.S. banks on Basel I, to make Basel II's advanced approaches obligatory for fewer than 20 top banks, and perhaps to allow only a handful of others to adopt Basel II—and if so only the advanced approaches.

<sup>2</sup> See the recent Basel Committee for Banking Supervision's high-level principles regarding cross-border issues, BIS (2003), available at [www.bis.org](http://www.bis.org).

of a banking crisis, and indicators of moral hazard that increase that probability, there is a need for measures to enhance private **market discipline**. The question perhaps is whether Pillar 3 goes far enough. Chapter 8, which focuses on market discipline, provides a discussion of the types of policies that might be employed in the region.

The main motivation for Pillar 1 is that **capital requirements** are not adequately linked to risk-taking under Basel I.<sup>3</sup> This is particularly true in Latin America and the Caribbean, where in many countries risk is defined by accruals rather than by forward-looking criteria. Under such a definition, a loan is only perceived as risky when the loss is already realized and banks start to build up capital to buffer such a loss, when it is too late. One of the main problems is that this causes banks to behave procyclically, generating high volatility in credit markets. To avoid these types of pitfalls, Pillar I of **Basel II** proposes several alternatives to attaching capital requirements to asset risks.

In terms of underlying **credit risk** evaluation, the alternatives include the following: (i) the standardized simplified approach, (ii) the standardized approach, (iii) the foundation internal rating-based (F-IRB) approach, and (iv) the **advanced internal rating-based (A-IRB) approach**. Each general approach to underlying credit risk evaluation involves choices regarding credit risk mitigation techniques, **securitization risk**, and operations risk. Countries have to decide whether to stay with Basel I or, if they move to Basel II, which of the many alternatives on offer should be adopted. Table 16.1 organizes the many choices under Basel II in a four-by-four matrix.

Arguably, the most relevant options for developing countries are the standardized approach and the simplified standardized approach.<sup>4</sup> The latter is the closest cousin to Basel I and may be understood as a collection of the simpler approaches within the standardized approach across the columns in Table 16.1. Under the simplified standardized approach, the only way in which bank capital requirements become more sensitive to risk is through the use of official export credit agency country ratings published on the Organisation for Economic Co-operation and Development website.<sup>5</sup> Although this may also feed into bank ratings for use in interbank lending (under this approach banks would be rated one rating “bucket” or group worse than the sovereign), it would not yield capital requirements more sensitive to risk for nonbank corporate clients. Hence, it would result in a flat minimum capital charge for corporate borrowers of 8 percent in a similar vein to Basel I.

Moreover, because there is little risk differentia-

tion for corporate borrowers, there are also only minimal changes for credit risk mitigation techniques and securitization risk. In relation to securitization risk, standardized simplified approach banks can only invest; they cannot originate, which may be a significant restriction for a country wishing to develop local capital markets. A difference relative to Basel I, however, is the introduction of a specific capital charge for **operational risk**. As there is no reduction in capital charges for loans to higher-rated corporate borrowers, this will essentially be an add-on to capital required for credit risk. The simplified standardized approach is relatively easy to monitor, with the extra supervisory task related to operational risk resulting in higher overall capital requirements relative to Basel I, but its implementation would result in little gain in terms of relating bank capital requirements to risk.

The standardized approach also allows for the use of external **ratings** by private rating agencies to fix capital requirements. Table 16.2 illustrates how the system works. Thus, a corporate borrower with a rating from a recognized credit rating agency may have a lower capital charge than the current minimum of 8 percent if the rating is a reasonably good one (better than or equal to A-), or a higher charge (up to 12 percent) for poorer ratings. Interestingly, if the corporate borrower is non-rated, it will continue to have an 8 percent charge, so there may be a disincentive for a corporate borrower to be rated if the rating is likely to be a poor one.

The use of external ratings is a simple way to relate bank capital requirements to risk for rated corporate borrowers and is thus easy to monitor. The main drawback of this approach for Latin America and the Caribbean is the low penetration of rating agencies in the region. The majority of bank portfolios are currently unrated, and hence this approach may also do little to link bank capital to risk. An argument might be made that the increased use of external ratings should set in motion incentives for corporate borrowers to become rated. Here the danger is that, unless such ratings are carefully monitored by the private sector or otherwise, there may be a race to the bottom in terms of the quality of the ratings. And, as pointed out, there is little incentive for a corporate borrower to be rated if it knows that the rating may be a poor one.

<sup>3</sup> Rojas-Suárez (2001) provides a detailed analysis of the weakness of Basel I in this aspect, especially in emerging market economies.

<sup>4</sup> The simplified standardized approach is in effect a collection of the simplest (Pillar 1) alternatives of the standardized approach.

<sup>5</sup> www.oecd.org.

**TABLE 16.1** | **ALTERNATIVES UNDER BASEL II**

Approach	Basic credit risk measurement technique	Credit risk mitigation	Securitization risk	Operational risk
<b>Simplified standardized</b>	Export credit agencies (www.oecd.org, Trade Directorate, ECA page).	Simple: risk weight of collateral substitutes that of claim.	Banks can only invest (cannot offer enhancements or liquidity facilities). Risk weight=100 percent.	Basic indicator: capital = 15 percent gross income.
<b>Standardized</b>	Export credit agencies or credit rating agencies (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 bank capital = weighted sum of gross income across activities.
<b>Foundation internal rating-based</b>	Banks' internal ratings for default probability, and the Basel II formula sets the capital requirement (loss given default 45 percent for senior and 75 percent for subordinate).	Comprehensive, then loss given default adjusted given reduction in exposure and capital requirement provided by Basel formula.	Investing banks may use bank ratings according to a standard scale. Originators may use supervisory formula.	More sophisticated banks will be expected to graduate to the advanced measurement approach where the capital requirement is given by the own risk measurement system.
<b>Advanced internal rating-based</b>	Banks set the internal rating (default probability), loss given default, exposure at default, and maturity. Capital requirement still given by Basel formula.	Own model determines loss given default and exposure at default, and capital requirement is given by formula.	As for foundation IRB.	As for foundation IRB.

*Source: www.bis.org.*

The standardized approach also includes a set of specific changes in the Capital Accord that in particular affects the capital requirements on mortgages, retail exposures, lending to the sovereign in local and foreign currency, and lending to other financial institutions. On the first three, the standardized approach introduces lower charges for credit risk. For example, the minimum capital charge on a residential mortgage will fall from 50 percent of 8 percent to 35 percent of 8 percent; that is, the risk weight is reduced from 50 percent to 35 percent. In relation to lending to the sovereign, there is now an explicit discussion that allows, as a "preferential treatment," a zero-risk weight (zero capital charge) for lending to a bank's own sovereign if that lending is funded and denominated in local currency.

It is understood that the local currency of Italy is the euro and that of Panama and Ecuador would be the dollar. However, if lending is in foreign currency, then the loan should have the relevant capital charge depending on the rating of the sovereign. If the preferential risk weight is applied to the sovereign, then there is also a reduction in the capital charge of lending to another bank relative to the capital charge that would otherwise result. In particular, if the loan has a maturity of fewer than 3 months and is lent and funded in local currency, then the rating of the bank can be increased by one rating bucket from the bank's actual rating. However, the rules on interbank lending are likely to lead to significantly higher charges than those in Basel I, which allowed a 20 percent risk weight if the loan was for fewer than 6 months.

**TABLE 16.2** | **THE BASEL II STANDARDIZED APPROACH**  
(Percentage of benchmark capital requirement)

Characteristic	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 1 (rating refers to bank)	20	50	50	100	150	50
Claims on banks option 1 (preferential treatment for short-term claims)	20	20	20	50	150	20
Claims on corporate clients	20	50	100 <sup>a</sup>		150 <sup>b</sup>	100

<sup>a</sup> BBB+ to BB-.

<sup>b</sup> Below BB-.

Source: www.bis.org.

These special rules are all subject to national discretion, and hence it is left as an open question whether each jurisdiction wishes to apply them to fix minimum capital requirements. In the case of Latin America and the Caribbean, it is doubtful that a reduction in capital charges is warranted on risk grounds for mortgages (given poor creditor rights and ineffective legal systems), retail credit (given the importance of systemic risk), or lending to the sovereign (given the experience reviewed in Chapter 6). On lending to other financial institutions, the case is perhaps more mixed. However, it is fair to point out that there has been a startling lack of empirical work in developing countries in attempting to estimate the appropriate relative risks of various types of loans.

The final two approaches are labeled F-IRB and **A-IRB**. The main difference relative to the standardized approach is that under these approaches, the banks rate their clients, and these internal ratings are used to set capital requirements. In fact, the bank must first develop a rating system with a specific minimum number of rating buckets. It must then map each rating bucket to a probability of default. Under the F-IRB, these default probabilities are then fed into a published formula and, together with a set of other parameters determined by the supervisor, a capital requirement is thus calculated. In the case of **A-IRB**, the bank determines some of the other parameters by the supervisor established under F-IRB. For example, under **A-IRB**, banks may determine the loss given default, the exposure at default, and the loan maturity.

For a bank with a portfolio of loans, the formula that is applied to each individual loan in turn ap-

proximates the so-called **value at risk** of the portfolio. The formula thus has embedded in it an estimate of the structure of correlations of default probabilities between the individual loans.<sup>6</sup> The formula is discussed in Box 16.1. The value at risk is defined as the maximum loss subject to a particular probability. In other words, a 99.9 percent value at risk is the maximum loss that would be expected once in 1,000 repetitions. If banks' capital covered the 99.9 percent value at risk, and the horizon was 12 months, then the bank would be expected to use up its capital one year in a thousand years, or one bank in a thousand such banks would exhaust its capital.

There has been wide discussion regarding the technicalities of the IRB approach, and even regulators have appeared to disagree among themselves as well as in discussions with the private sector.<sup>7</sup> A recently announced change that is especially relevant for Latin America and the Caribbean has to do with the relation between capital and provisions. Indeed, most economists would agree that the sum of bank provisions and capital should add to value at risk, and not just capital. Modern theory has it that provisions should reflect **expected loss** (the mean of the probability of loss distribution), and capital should reflect the difference between the expected loss and the value at risk (known as the **unexpected loss**). However, in the Basel II proposals,

<sup>6</sup> The formula is an estimate of a single factor portfolio model of credit risk in which each individual exposure's risk is modeled along the lines of Merton's classic model of corporate default risk. See Merton (1974) and Gordy (1998) for details.

<sup>7</sup> A wide selection of comments is available on www.bis.org.

**BOX 16.1 | THE MATHEMATICS OF THE INTERNAL RATING-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  $G(\cdot)$  denotes the inverse cumulative normal distribution function for a standard normal variable. The formula is:

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

where

$$\begin{aligned} \text{Maturity\_Adjustment}(b) &= (0.08451 - 0.05898 * \log(PD))^2 \\ \text{Correlation}(R) &= 0.12 * (1 - \text{EXP}(-50 * PD)) / (1 - \text{EXP}(-50)) + \\ &0.24 * [1 - (1 - \text{EXP}(-50 * PD)) / (1 - \text{EXP}(-50))] \end{aligned}$$

The formula is for corporate, sovereign, and bank exposures, and the capital requirement is 99.9 percent of value at risk for 1 unit of exposure. As discussed in the text, the formula is an approximation

of the value at risk of a portfolio of correlated assets, where asset returns are driven by a single factor.

The risk-weighted assets ( $RWA$ ) are  $K$  multiplied by  $EAD$  multiplied by 12.5 (=100/8), and the capital requirement is then 8 percent of the  $RWA$  as in the Basel I methodology.

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

For small and medium-size enterprises (where the reported sales of the consolidated group of which the firm is part are less than 50 million euros), there is an adjustment to the correlation,  $R$ , such that:

$$\begin{aligned} \text{Correlation}(R) &= 0.12 * (1 - \text{EXP}(-50 * PD)) / (1 - \text{EXP}(-50)) + \\ &0.24 * [1 - (1 - \text{EXP}(-50 * PD)) / (1 - \text{EXP}(-50))] - \\ &0.04 * (1 - (S - 5) / 45) \end{aligned}$$

where  $S$  denotes sales in millions of euros, and sales of less than 5 million euros are set equal to 5 million euros, allowing for the maximum allowable reduction in capital requirements.

the formula for capital is calibrated to cover the whole value at risk. This conservative position seems reasonable because there is no international standard as yet on provisions and hence no guarantees that a country's provisions actually reflect **expected loss**. However, in countries where provisions are equal to or exceed expected loss, there is a possibility of double counting. Indeed, in Latin America and the Caribbean provisions tend to be high. This may be related to the fact that regulators frequently have more freedom to set provisions than capital, which is frequently fixed by law. In the final version of Basel II, banks will be able to deduct appropriate provisions from value at risk to calculate the Basel II IRB capital charge, which will minimize problems of double counting.

However, there remains a significant issue for the region regarding the overall calibration of the IRB approach. To date it has been calibrated such that it approximates a 99.9 percent value at risk for a typical G10 corporate loan book. This calibration may not be appropriate for Latin America and the Caribbean. Balzarotti, Falkenheim, and Powell (2002) and Balzarotti, Castro, and Powell (2003), working with pre-crisis Argentine

data, suggest that recalibration may be required, and the second paper suggests a simple technique to do so. The tentative conclusion of Majnoni, Miller, and Powell (2004) on data from Argentina, Brazil, and Mexico also suggests that the value at risk of banks in the region may call for greater capital than the Basel formula. However, there is surely much more work to be done in estimating credit portfolio risk for banks in Latin America and the Caribbean.

The IRB approaches imply a dramatic change in bank risk management and supervisory tasks. Banks must develop their own rating methodology and a technique to map those rating buckets to default probabilities. The IRB documentation stipulates that banks must have a significant time-series history of internal ratings and their performance over time to "back test" the methodology to ensure that it is working effectively and that the stated defaults are good estimates of the actual outcomes. Although it might be argued that in developed countries this change in regulation brings regulation closer to the practice in (some) large and more sophisticated institutions, in developing countries banks lag behind in terms of their risk management so-

phistication and systems. It will require a huge effort on the part of most banks in Latin America and the Caribbean to comply with these recommendations, and a huge effort on the part of supervisors to monitor them effectively.

However, as Table 16.1 indicates, Basel II, Pillar 1, includes more than simply changes in the underlying credit risk assessment. Indeed, Basel II introduces several advances over Basel I in terms of credit risk mitigation techniques, securitization risks, and the new charge for operational risk. In terms of credit risk mitigation techniques, a simple approach uses the external credit ratings of securities or other instruments provided as collateral to reduce the capital charge of a standard loan. This is especially important for repo markets and other markets where rated securities are used as collateral. A more complex, comprehensive approach would take into consideration the type of security and its statistical price behavior, including its volatility, in finer calculations for the determination of the capital charge. In terms of securitization risk, Basel II also makes advances relative to Basel I for banks investing in securities and those issuing securities but retaining some risks on their balance sheets. These changes are important for countries that have significant capital markets or wish to develop them. Ensuring that banks have appropriate incentives to securitize assets on their balance sheets may be an important element in the development of capital markets in the typically bank-dominated financial systems of developing countries.

Finally, this is the first time that the Basel Committee has recommended a specific capital charge for the operational risk charge, which is an important element of bank risk. Previously, it was understood that some unspecified part of the overall 8 percent charge for credit risk covered operational risk. For the distribution of ratings found in a typical G10 country, and given the potential reductions in capital charges for mortgages and small and medium-size enterprises, the calibration of the standardized approach plus the addition of the operational risk charge should net out. In other words, the additional capital charge for operational risk should roughly equal the reduction in capital for credit risk given that most companies in a G10 country will have ratings that imply a reduced capital charge. However, for the case of a developing country with a much lower rating penetration and possibly a worse distribution of ratings (that is, more lower ratings), this will not be the case, and the standardized approach is likely to imply higher capital requirements.

The basic indicator approach to setting the opera-

tional risk capital charge is that it will be 15 percent of a bank's gross income. The standardized approach sets the charge equal to the sum of a bank's gross income across business lines, each multiplied by a different percentage. Banks adopting the IRB approaches are likely to have also developed their own operational risk models, and the final approach allows a supervisor to authorize an appropriate model for the bank to estimate its operational risk capital charge based on the bank's history of losses. It is likely that the basic indicator and the standardized approach to operational risk will be the most relevant for the region.

The quantitative impact study conducted by the Bank for International Settlements (BIS) appears to indicate high and variable operational risk capital requirements for banks from developing countries.<sup>8</sup> One view is that banks in developing countries tend to have higher gross income due to lower scale and higher costs and risk than their G10 counterparts. A second view is that those banks did not respond well to the study questionnaire, especially to the definition of gross income. Again, the appropriate calibration of the capital requirement for operational risk is an area that has received scant attention to date in Latin America and the Caribbean, so there is considerable uncertainty as to whether the current calibration is appropriate.

## IS BASEL II GOOD FOR LATIN AMERICA AND THE CARIBBEAN?

The Basel Committee, the IMF, and the World Bank have all suggested that developing countries will likely need more time to implement Basel II than the 2006 deadline established for developed economies. Moreover, the IMF and the World Bank have suggested that, in terms of their ongoing Financial Sector Assessment Program, implementation of Basel II will not be considered a requisite.<sup>9</sup> Thus, it is an open question whether countries in the region should implement the new accord or whether they should continue to consolidate Basel I and improve BCP compliance with a view to possibly moving to Basel II at some date in the future. Given the large number of alternatives on offer, the

<sup>8</sup> The Quantitative Impact Study 3 is available on [www.bis.org](http://www.bis.org).

<sup>9</sup> One view is that many developing country supervisors will not wish to be seen as lagging behind this new "standard" and some country authorities may be concerned that the market may punish them for nonimplementation, even if the international financial institutions do not.

official sector has so far provided little guidance as to which of the many options countries should choose. In an attempt to fill in this void, Powell (2004) suggests five country characteristics that might assist countries in navigating the so-called sea of standards. These are the following:

1. The degree of compliance with Basel Core Principles (and Basel II, Pillar 2)
2. The penetration of rating agencies and the operation of the rating market in general
3. The current level of bank capital and the feasibility of increases in bank capital ratios
4. The depth or strength of desire to develop domestic capital markets
5. The availability of information and degree of sophistication of banks and/or the supervisor in assessing and monitoring loan loss provisioning.

Figure 16.1 shows how countries may wish to choose among the various alternatives based on these characteristics, and the following sections discuss them in more detail.

## Compliance with the Basel Core Principles

The data reviewed in Chapter 6 on banking regulation and the IMF and World Bank's Financial Sector Assessment Program illustrate that many countries (especially developing countries) are far from fully compliant with the Basel Core Principles for Effective Banking Supervision. On average, developing countries lag behind their G10 counterparts (see World Bank 2002). Lack of compliance is of particular concern in the following areas: (i) effective consolidated supervision; (ii) supervisory independence, resources, and authority; and (iii) effective, prompt corrective action. If supervisors lack resources and the basics of effective banking supervision, *correcting this should be the first priority, and more complex rules on capital requirements (Basel II Pillar 1) may well be counterproductive.* Basel II also introduces a significant change in the level of consolidation required for banking supervision—from the bank itself to its holding company. The many countries that do not comply with more modest versions of consolidated supervision remain far from the spirit of the Basel II proposals.

However, full BCP compliance is too strict a precondition for moving to Basel II—after all, many G10 countries are not compliant with all the BCPs. In general, a country should be BCP compliant to the degree required to implement the appropriate alternative cho-

sen within the Basel II framework. For example, if a supervisor does not have the resources (including data, information, technical competence, staffing, and management) to consider whether the calibration of the Basel II IRB approach is appropriate for that country, or to monitor effectively how banks would apply the IRB methodology, then a simpler alternative should most certainly be adopted.

## The Credit Rating Industry

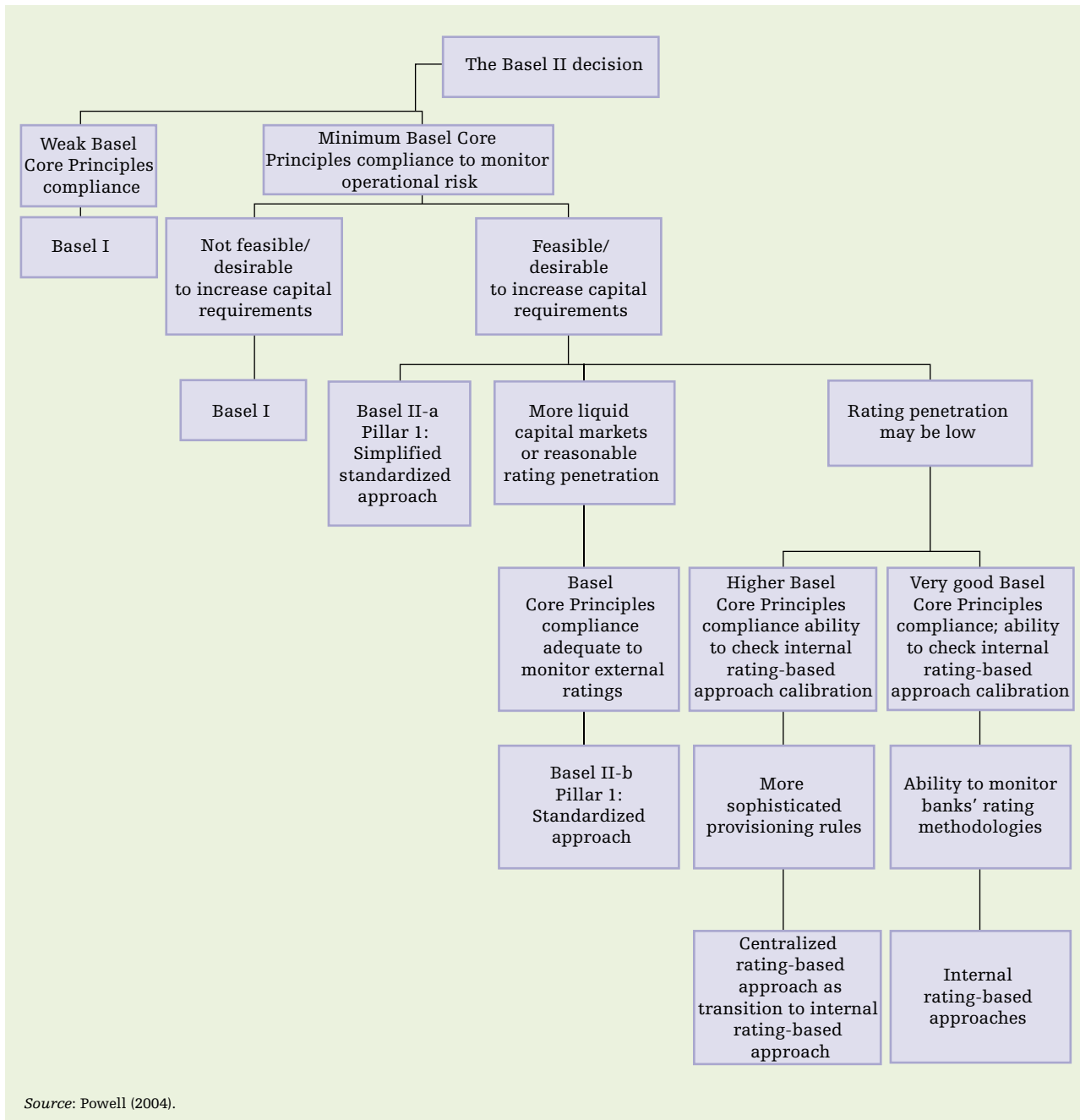
The second characteristic is the state of the ratings market.<sup>10</sup> For a country with no ratings market to speak of, the standardized approach makes little sense. Such a country should stick with Basel I, adopt the simplified standardized approach, or, if it has reasonably high compliance with the BCPs, consider an alternative approach (such as the CRB discussed later in this chapter) as a potential precursor to Basel II's IRB. For a country with an active ratings market, the standardized approach makes more sense.

## The Feasibility of Increasing Capital Requirements

For a country adopting the simplified standardized approach, or a country with a shallow market for ratings adopting the standardized approach, Basel II would likely imply a sharp increase in bank capital requirements. This would especially be the case if the risk weight on mortgages is not dropped to 35 percent, no extra benefit is given to retail exposure, and tighter rules are employed on lending to the sovereign. The source of the extra capital charge is operational risk. For a country adopting IRB or the standardized approach with a deep ratings market, the add-on for operational risk may be offset by lower capital charges for higher-rated claims. However, for a developing country adopting the standardized approach or standardized simplified approach, this is unlikely to be the case. An increase in capital requirements may not be bad, but a developing country considering adopting Basel II should consider carefully the current level of bank capital and the feasibility of increasing it.

<sup>10</sup> Felaban (2003) and CLAAF (2001) discuss the problems of adopting Basel II in countries with underdeveloped credit rating agencies.

FIGURE 16.1 Basel II Decision Tree



### Depth of Capital Markets

Basel II includes significant enhancements for the credit risk implications of **securitization risk** and credit risk mitigation techniques. A country with a fairly inactive ratings market may still benefit from the use of ratings in these areas. For example, if a country has an active market for securitized claims (which are growing in importance in some countries), then those claims will most likely be rated, and hence the Basel II standard-

ized approach regarding securitization risk might be gainfully adopted. If a country wishes to develop capital markets, then ensuring that banks have the right incentives to securitize claims is important. Basel II does a much better job here than Basel I.

A similar argument can be made for credit risk mitigation techniques. Basel II makes significant enhancements, so that if markets using securities as collateral are important—or a country wishes to develop them—moving to Basel II may be appropriate.

## Assessing and Monitoring Loan Loss Provisioning

The final characteristic suggested is the sophistication of the supervisor and banks in terms of provisioning rules, monitoring, and control. The spirit of Basel II is to replace a set of ad hoc rules regarding capital requirements with a more robust estimate of credit risk reflecting **value at risk**. Value at risk may be decomposed into expected loss and **unexpected loss** subject to a statistical tolerance value. According to current theory, provisions should reflect **expected loss**, whereas capital should reflect unexpected loss (see Rojas-Suárez 2001). For an economist, the appropriate levels of provisioning and capital for credit risk both come from the same probability distribution—they simply reflect different statistics of that same distribution.

Considering this more general approach, a supervisor that has advanced in terms of more forward-looking provisioning rules has also advanced in terms of considering finer risk-based capital rules. In several countries in the region, supervisors have set up centralized databases to monitor the large debtors of the financial system and ensure that each lender knows the total debt outstanding of larger borrowers. In some cases these databases have been expanded to cover most loans in the financial system and they are used to monitor and control provisioning requirements. Miller (2003b) reviews the design and use of these databases (see Chapter 13). Although in most countries, such requirements are not forward looking but reflect arrears, if such a database is in place, the move to a more forward-looking system for provisioning and capital is certainly more feasible. For example, some countries have incorporated into these databases a bank rating that includes not only backward-looking variables, but also cash-flow type analyses.

The ability to assess and monitor loan loss provisioning reflects the sophistication of the supervisor and banks in terms of information on provisioning and loan losses. A supervisor that has regularly tracked loan losses across banks and developed monitoring tools—such as transition probability matrices and simple credit scoring techniques to monitor provisioning rules—is in a much better position to implement Basel II's IRB approach or the simpler **CRB approach** detailed below. Still, it is likely that the IRB or CRB will be appropriate only for the larger and more sophisticated banks. Indeed, for a country with a highly concentrated banking sector, where a few large and sophisticated banks control a large percentage of the sector, there are added benefits in moving to IRB or CRB at least for those banks.

## Summing Up

The five characteristics may provide some navigational aid for countries regarding the Basel standards. Countries that do not comply with many of the basic Basel Core Principles should probably stay with Basel I. However, if it is desirable to increase bank capital requirements, then Basel II's simplified standardized approach should be considered if the extra burden of supervising **operational risk** is feasible. Countries that have only a shallow market for ratings will reap limited benefits from the standardized approach and should be advised that this will also lead to an increase in capital requirements. They should either stick with the simplified standardized approach or, if they have developed sufficient supervisory capacity, consider Basel II's IRB or the CRB. However, countries that have deeper capital markets or a strong desire to develop them should reconsider the standardized approach for its enhancements to securitization risk and credit risk mitigation techniques. Finally, countries that have made advances in terms of forward-looking provisioning rules and have the information and systems to control banks' provisioning practices are better placed to consider IRB or the simpler CRB approach.

### THE CENTRALIZED RATING-BASED (CRB) APPROACH AS A TRANSITION TO BASEL II IRB

On the one hand, most countries in Latin America and the Caribbean have shallow markets for ratings such that the standardized approach yields little in terms of linking banks' capital with risk. On the other hand, the drawbacks of Basel I (and in the simplified standardized approach) are well known. The financial authorities want to increase the link between capital and risk, but many supervisors may feel that they are well away from being able to implement and effectively monitor the IRB approach, which gives greater autonomy to regulated institutions.

Due to these considerations, perhaps as a transitional tool, a methodology might be considered in which the supervisor dictates a rating scale and asks banks to rate borrowers according to that centralized scale.<sup>11</sup> Each rating would then correspond to a probability of default and, combined with other loan information, that rating would imply a capital charge. This system would have the drawback that each bank would

<sup>11</sup> This proposal is outlined in Powell (2004).

be forced to use the same scale, which may not be the particular scale most appropriate to the borrowers of that bank. For example, a bank specialized in a particular type of lending or sector would not necessarily wish to use the same scale as a more general bank or one specialized in another business. The rating scale could be devised to be appropriate for the larger institutions in order to minimize costs for countries with a more concentrated banking sector.<sup>12</sup>

The benefit of this approach is that it makes it possible for the supervisor to monitor and control banks' ratings and hence more effectively monitor and control their capital sufficiency in relation to risk. In particular, the supervisor would be able to easily monitor banks' average ratings and ratings for the same borrower, type of borrower, type of loan, and economic region. These kinds of comparisons, combined with simple procedures for spotting outliers and keeping track of the banks' ratings of their main borrowers, are extremely valuable tools for a bank regulator. Naturally, for countries that had already developed a bank rating system for the purposes of provisioning, this proposal would build on those systems.

This methodology is not truly an IRB approach because "internal" in IRB normally refers to the scale and not just the rating. However, the type of minimum criteria discussed in **Basel II's** IRB could serve as the minimum criteria for this system, for example, in terms of the number of rating buckets and the history of information. Moreover, Basel II's IRB curve could be used to calculate the capital charge based on the centralized ratings and a mapping of those ratings to default probabilities. The centralization of the rating scale provides another advantage because the supervisor can use actual loan data to check the mapping and calibration of the curve bank-by-bank and systemwide.

Furthermore, there is a simple way for a country to adopt a CRB approach and be fully compliant with Basel II at the same time. In particular, a country could adopt the standardized approach but still employ the CRB approach to calculate the total value at risk (after all, Basel II's IRB approach is currently calibrated to cover the whole value at risk). The difference between the total CRB calculated value at risk and the capital charge given by the standardized approach could be used as an estimate of the forward-looking provisioning requirement appropriate on a loan. Under the revisions to the Basel II proposals currently underway, it is understood this would then allow a country to be fully Basel II compliant and link banks' reserve policies closely to risk using the simpler CRB approach.

Finally, the CRB approach could be used as a pre-

cursor to IRB. Once the CRB approach was working, the supervisor could work with banks to approve their rating scales and rating methodology by using the basic CRB approach as a reference tool.

## REGULATION OF FOREIGN BANKS IN LATIN AMERICA AND THE CARIBBEAN

As noted in Chapter 10, **foreign banks** have become particularly important for the region's local banking markets. Moreover, banking has become global and not just international.<sup>13</sup> Table 16.3 summarizes **BIS** reporting on bank activity around the globe.<sup>14</sup> The figures indicate that BIS reporting banks had total claims of US\$14.7 trillion, of which US\$1.4 trillion was lent to developing countries and US\$468 billion to Latin America and the Caribbean. This implies that BIS reporting banks lend more to the region than any other developing country region. Moreover, US\$468 billion is a significant fraction of the the US\$595 billion that makes up total domestic credit in Latin America and the Caribbean. Hence, the regulatory treatment of these banks is of critical importance to the region.

Of the US\$468 billion, US\$223 billion is international claims (cross-border claims or local lending in foreign currency), and US\$245 billion is local claims (local lending of entities consolidated in BIS reporting banks in local currency). Unfortunately, there is no breakdown of international claims into cross-border versus local lending in foreign currency. However, it is clear that the local lending component of foreign bank activity in developing countries, and in Latin America and the Caribbean in particular, has grown considerably. Hence, how the local subsidiaries and branches of BIS reporting banks are regulated is also of growing importance.

The international claims consist of US\$38 billion in lending to banks, US\$45 billion in lending to governments, and US\$137 billion in lending to non-bank private corporations. Although sovereign lending

<sup>12</sup> A slightly more complex version could have a centralized portfolio rating scale.

<sup>13</sup> Internationalization refers to cross-border lending, whereas globalization refers to banks setting up brick and mortar operations in multiple countries. There was a marked increase in globalization in the 1990s.

<sup>14</sup> BIS reporting banks are those incorporated in countries that have joined in the homogeneous reporting requirements stipulated by the BIS, which are generally countries in the G10 and one or two offshore centers. The figures refer to the end of September 2003.

**TABLE 16.3** CLAIMS OF BANK FOR INTERNATIONAL SETTLEMENTS REPORTING BANKS, 2003  
(Billions of U.S. dollars)

Country group	Total	International claims		Sovereign claims	Nonbank claims	Local claims
		Total	Bank			
All	14,659	10,240	4,567	1,555	4,008	4,419
Developed	12,085	8,473	4,071	1,360	2,948	3,612
Developing	1,459	884	249	169	456	575
Africa	180	144	44	24	76	36
Asia Pacific	447	282	103	52	121	165
Europe	363	235	64	47	122	128
Latin America	468	223	38	45	137	245
Offshore centers	1,031	799	212	8	574	232
Unallocated and other	85	85	35	17	31	0

Note: Values are BIS consolidated banking statistics.

Source: www.bis.org.

remains important in international claims, it is clear that international banks are significant in lending to the nonfinancial private sector. Assuming that the same proportion of local claims goes to the nonfinancial private sector as international claims (undoubtedly an underestimate), then total lending to the nonfinancial private sector would be about US\$290 billion compared with total domestic credit to the nonfinancial private sector of US\$334 billion.

Foreign banks play an important role in the region, and hence their regulation and behavior is of critical importance. A debate revolves around whether foreign banks provide stability in credit intermediation or induce instability (Martínez Pería, Powell, and Vladkova 2002; CLAAF 2002; Galindo, Micco, and Powell 2003). Furthermore, foreign banks raise a set of regulatory issues. This section considers two such issues: the mode of entry and Basel II implementation.

### Foreign Bank Authorization and Mode of Entry

In general terms, foreign banks may enter local markets through a controlling or 100 percent stake in a subsidiary, or through a **branch** operation. Table 16.4 illustrates the approaches countries have taken, with the majority allowing both legal forms.

The selection of mode of entry involves trade-offs. For example, a branch would be first and foremost regulated within the context of the consolidated entity by the home regulator, and a common view is that a branch would tend to be backed to a greater degree by the main office of an international bank. A subsidiary would be

**TABLE 16.4** APPROACHES FOR FOREIGN BANK ENTRY, SELECTED COUNTRIES IN LATIN AMERICA

Subsidiary or branch	Subsidiary	Branch
Argentina	Costa Rica	Guatemala
Aruba	Mexico	Paraguay
Bahamas		
Bolivia		
Brazil		
Chile		
Colombia		
Ecuador		
El Salvador		
Peru		
Venezuela		

Source: Cemla (2002).

regulated by the local regulator as a bank (as well as most likely by the home regulator under consolidated supervision) and hence would require capital within the host country and would come under the full monitoring of the local authorities. However, some countries, including **Argentina**, require that the branches of international banks also have local capital as if they were local banks. Although subsidiaries might be separate legal entities on paper, in practice, if the institution is run as an integrated global organization (rather than an essentially autonomous organization that responds to a majority shareholder), international courts might de-

cide its head offices have greater responsibilities (see del Negro and Kay 2002).

These issues are relevant when considering what would happen in the unlikely event of a major problem in a local institution or an international bank. In turn, this depends on the underlying bankruptcy code of a country. If the local (host) code is one of *single entity resolution* (such that an incorporated company is liquidated as one entity in its location of incorporation), then it would seem advisable that foreign banks enter as subsidiaries such that local liabilities are backed by local assets and capital. If the local bankruptcy code were one of *separate entity resolution*, then if an international bank failed, the host country would expect any local assets and local capital to be employed first to pay local liabilities; net assets would then be transferred to the international entity even if the local entity were a branch. Therefore, if branches provide greater protection against other shocks, domestic liability holders might be better protected if foreign banks entered as branches. However, if the country follows the practice of many developed countries in not asking for local capital for branches, then arguably a subsidiary might again be preferred. This said, however, it should also be noted that inconsistencies remain across bankruptcy regimes in different countries. Given the globalization of banks, the international financial system needs to resolve this concern.

### Cross-Border Issues and Basel II

Basel II does not change the basic premises on which cross-border banking regulation has developed; currently local host regulators may apply a different regulatory standard than home supervisors and banks. Indeed, banks 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.<sup>15</sup>

As some countries will remain with Basel I, and Basel II contains several alternatives, dual regulatory treatment is likely to remain the normal state of affairs. And because an international bank may operate in many locations, the organization may have to comply with multiple regulatory regimes. At the same time, there is clearly an argument that calls for greater homogeneity of regulatory treatment and reduction in regulatory costs for both supervisors and banks.

The issue for a host regulator is that the risk of the subsidiary is not necessarily the same as the risk of the international bank. The risks might be treated in the same way if the international bank gave a compre-

hensive and transparent guarantee to the subsidiary, but this would not normally be the case. If there is no transparent and comprehensive guarantee, and if the subsidiary is large for the host country, then it is more likely that the local regulator will insist on rules that (i) ensure adequate protection to the local financial system and (ii) are designed so that the local regulator can understand, monitor, and enforce them.

At the same time, an overriding 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 across the globe. Indeed, greater cooperation and knowledge transfer are likely to lead to faster regulatory homogeneity. For example, a simple idea is that whenever an onsite inspection is made of an international bank in a developing country, the host supervisor should have the option of sending its own staff to accompany the inspection. However, there are surely other modes of cooperation that could be developed and formalized to enhance knowledge transfer.

Many of the international banks operating in Latin America and the Caribbean are likely to adopt the IRB approach on a global consolidated basis. Perhaps of particular interest is the case where an international bank adopts IRB, and the local subsidiary, due to local regulations, must apply either Basel I or Basel II's standardized approach.

In the interests of regulatory efficiency, and especially if the subsidiary is not too large compared with the international bank, there must be a good case for the home supervisor to simply allow the international bank to use the standardized approach—at the very least for local claims in local currency—to calculate the consolidated capital charge. Although this would raise some issues of consolidation, it might reduce regulatory costs without much loss in terms of linking capital to risk.<sup>16</sup>

In some cases, particularly for the more sophisticated emerging economies, the host may allow an IRB

<sup>15</sup> As noted by Felaban (2003), the fact that banks may be subject to different regulatory frameworks might generate undesirable effects due to regulatory arbitrage. If, in the same country, similar banks are subject to different regulations, it is likely that some distortions would arise. For example, there would be some risk that the best corporate debtors might move to the banks that adopt the IRB, given that under the new approach these would require lower capital.

<sup>16</sup> An important aspect of the use of the standardized approach is the question of which ratings should be used. Local regulators will no doubt employ the local currency ratings for domestic corporations. In this proposal, the home supervisor should also accept these ratings, especially for local currency instruments.

approach for the subsidiaries of **foreign banks**. However, this does not necessarily mean that the regulatory treatment would be the same in the home and host countries. Indeed, it seems unlikely that the IRB curve would be calibrated correctly for Latin American and Caribbean risks (see Balzarotti, Castro, and Powell (2003) on Argentina). Several of the supervisory parameters for the foundation IRB approach may need to be reconsidered—such as loss given default and exposure at default. Basel II is understood to be a minimum; many countries have implemented Basel I with stricter requirements, so this type of recalibration for Basel II should be noncontroversial.

In the interests of regulatory efficiency, the home supervisor might use the regulatory capital estimate of the host supervisor in calculating the total capital charge of the bank. Pillar 3 (on **market discipline**) uses the concept of materiality to suggest the disclosures a bank should make regarding capital and capital requirements, by subsidiary and type of risk. If the home supervisor allows the bank to use the local regulations toward its home capital requirement, then under Pillar 3 and the local regulator's rules, the bank would have to disclose the requirement and its actual level of capital.

However, in the case where the home supervisor does not allow the bank to use its local capital requirement for the purposes of the home supervisor, if the bank is large for the host, then the bank should be asked to reveal the capital requirement of the subsidiary and the capital according to the rules of the home supervisor. In other words, in the case of a subsidiary in a developing country, what is material should be decided by the host regulator and not by the home regulator.

This argument is reinforced by the fact that most foreign banks have entered developing countries through the purchase of domestic institutions and not through start-ups. 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 delisting and, depending on the bank and its internal organization and funding strategy, local debt instruments may cease to be issued or be 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 a normally nontransparent guarantee from the parent.

This reasoning begs the question whether applying Pillar 3 to the subsidiary in each host country, regardless of whether it is material to the group, goes far enough. Indeed, a complementary strategy would be to ask the subsidiary to issue a specified quantity of subordinated debt locally. This would at least ensure that there was some market and hence price discovery on the risk of the subsidiary, and hence some market assessment of the value of the parent's guarantee.<sup>17</sup>

## CONCLUSIONS

This chapter has presented a brief discussion of the new international agreement regarding minimum levels of bank capital, Basel II, and its relevance for Latin America and the Caribbean. More than 100 countries worldwide have adopted Basel I, and all countries in Latin America and the Caribbean claim to calculate bank capital requirements according to the Basel I methodology. It is therefore natural that serious consideration will be paid to these new proposals. Moreover, the proposals include many alternatives, so the question is not only whether to implement Basel II, but if so, how. At the same time, it is of interest that the IMF and **World Bank** have indicated that Basel II will not be required as part of the **Financial Sector Assessment Program**, and the United States has stated that it will keep the majority of U.S. banks on Basel I.

Simpler (standardized) approaches may not give much in terms of relating regulatory capital to risk, while the more advanced (internal rating-based) approaches look complex and difficult to monitor, especially considering the pattern of compliance with the Basel Core Principles as reviewed in Chapter 6. This chapter has suggested an intermediate approach, which, following Powell (2004), is labeled the centralized rating-based approach, as a potential transition measure. The chapter has discussed a set of cross-border issues that, surprisingly for an international agreement, remain largely unresolved.

<sup>17</sup> See Calomiris and Powell (2002) for a review of Argentina's experimental subordinated debt regulation.

